WORLD CONFERENCE ON DROWNING PREVENTION

VIETNAM
10-13 MAY
2011

Building a global platform to reduce drowning

Program and Proceedings

Presented by

EVERYONE CAN BE A LIFESAVER
Royal Life Saving
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The Alliance for Safe Children

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On behalf of the International Life Saving Federation Board of Directors, I would like to thank you for participating in the World Conference on Drowning Prevention 2011. This is your world and our family for drowning prevention, lifesaving and lifesaving sport. Our drowning prevention effort needs all of the world's drowning prevention experts, collaborative partners and civil authorities to provide collective advocacy and actions to save lives.

Global drowning mortality and morbidity directly impacts more than one million people and families per year. Drowning disproportionately affects children, low income and less adaptive populations. Research and surveys continually show us that drowning has reached epidemic proportions in many Asian countries and is the leading killer of children in those nations. The UN Millennium Development Goal #4 to reduce child mortality will not be achieved until there is a substantial reduction in Asian child drowning mortality.

By working together and using the World Conference on Drowning Prevention as a stepping stone, we can stem the tide of this global drowning epidemic. We can discover and implement culturally sensitive drowning prevention strategies that reduce the global burden and family tragedy of drowning.

Armed with the results of this conference and with the Conference Declaration for Global Drowning Prevention, we will have a detailed blueprint that will equip all collaborative drowning prevention partners to reduce the global burden of drowning. By empowering communities with evidence – based interventions, many thousands of lives will be saved from drowning and other injuries—now and in the future.

This conference has brought together the world's leading researchers, experts, practitioners and policy makers in the drowning prevention sectors—the right people to advise governments, assist communities and aid people in the prevention of drowning. We value and respect learning about new information, innovative interventions and scaling up evidence based efforts to immunize all nations of the world against drowning.

This conference also seeks to ensure best practice in lifeguarding and rescue standards, aquatic risk management, medical treatment and the continuing development of lifesaving as a sport.

Drowning is major global public health issue. We need to work together to prevent drowning in all nations of the world. We will strive to learn and act respectfully to create opportunities for knowledge sharing and action plans that will save many lives.

That drowning is a global issue is reflected by the attendance at this conference by Her Excellency, Ms Quentin Bryce AC, Governor-General of the Commonwealth of Australia. I gratefully acknowledge Her Excellency and her work as Patron of Royal Life Saving Society – Australia, a member organisation of the International Life Saving Federation.

I also wish to acknowledge Madam Kim Ngan, Minister for Labour, Invalids and Social Affairs. The work of the Vietnamese Government in tackling child drowning—an issue that is devastating the people of Vietnam—has been inspiring to all of us working in life saving and drowning prevention. I thank the Minister and the Vietnamese Government for welcoming us and for granting us the opportunity to hold the World Conference on Drowning Prevention in their beautiful country.

The World Conference on Drowning Prevention 2011 is an inspirational learning and sharing opportunity. I thank you for joining us. We hope you will stay connected to your ILS Family. We need your knowledge and skills to deliver the global reduction of drowning.

Dr Steve Beerman

President,
International Life Saving Federation

We all know, the issue of child death from drowning does not only take away the right to survival and children's lives, affecting every family, but also creates a burden to the society. It is time for the whole society, all ministries and agencies to have a strong commitment and more decisive actions.

Particularly, strengthening the cooperation of ministries at the central level, the leadership of local authorities on drowning prevention, protection and safety for children becomes more urgent than ever, in order to help our children live and grow up in a safe and healthy environment.

This World Conference on Drowning Prevention in Da Nang, co-hosted by The Ministry of Labour, Invalids and Social Affairs (MoLISA), the Royal Life Saving Society – Australia (RLSSA), The Alliance for Safe Children (TASC), UNICEF, and WHO, is part of the claim of the Vietnam's Government in reducing child drowning.

We express our gratitude to the International Life Saving Federation and the Australian Government for supporting drowning prevention in Vietnam.

Madam Kim Ngan
Minister of MoLISA-VN

Government of Vietnam
Ministry of Labour,
Invalids and Social Affairs

The World Conference on Drowning Prevention 2011 organisers would like to acknowledge the Vietnamese Organising Committee.

The committee members are:

Mr Nguyen Trong An
Deputy Director, Child Care and Protection Department, Ministry of Labour, Invalids and Social Affairs (MoLISA)

Mr Jonathon Passmore
Team Leader, Non-Communicable Disease & Health Promotion, WHO Viet Nam

Mr Nguyen Phuong Nam
Project Officer, Non-Communicable Disease & Health Promotion, WHO Viet Nam

Ms Nguyen Thi Thanh An
Child Injury Prevention Specialist, Child Survival and Development Programme, UNICEF Viet Nam

On behalf of the Board and Members of Royal Life Saving Society – Australia, it is my honour to welcome you to the World Conference on Drowning Prevention 2011. Viet Nam, and the province of Da Nang, offers a beautiful, diverse and rich backdrop for the serious topic of building a global platform to reduce drowning.

Drowning research from across Asia has shocked many in recent years; the numbers of children drowning in Viet Nam alone represents a challenging scenario. In bringing the international community to Viet Nam our aspiration is to illuminate the tragic scale of drowning in developing countries and to prompt a coordinated international response. As a nation with such a strong affinity with the aquatic environment, Australia is uniquely placed to play a prominent role in reducing the burden of drowning, particularly in the Asia–Pacific Region. Royal Life Saving Society – Australia is committed to providing knowledge, expertise and resources to help make a significant contribution.

We wish to acknowledge the support of key contributors to this event.

Firstly, to the Board of the International Life Saving Federation, we thank you for having thecourage to support our vision to host this event, not in Sydney, Melbourne or Canberra, but in Vietnam. We trust that this conference experience supports you in your mission to lead global advocacy to reduce drowning.

To our partners, The Alliance for Safe Children, we acknowledge the significant contribution you make in helping us understand the true and complex burden of drowning in the region. We too are optimistic that our shared research into drowning interventions is showing such great potential for an effective, scalable and integrated approach to reducing drowning in Asia and beyond.

To the Government of Viet Nam, and specifically to Madam Kim Ngan, Minister for Labour, Invalids and Social Affairs, we thank you for welcoming us to this great nation. We trust that our humble contribution to your efforts to address drowning as a leading cause of child mortality will enhance your already extensive commitment alongside United Nations Vietnam and your other partners.

To the People's Committee of Danang, with whom we have been working to build a culture and system for survival swimming in recent years, we thank you for your warm welcome. International events such as this are not possible without strong government and corporate support. We are most grateful for the support of the Australian Government, principally through the Agency for International Development, AusAID.

This support has not just delivered a conference, it has been the catalyst for drowning research in Bangladesh, Viet Nam and Thailand; numerous drowning focused workshops in the region, and provided support for more than seventy representatives from developing countries through the scholarship program.

We are honoured also, to welcome Her Excellency Ms Quentin Bryce AC, Governor-General of the Commonwealth of Australia. As our patron, Her Excellency has had a long standing and deep commitment to drowning prevention in Australia.

Her Excellency's presence serves as an important reinforcement of the strong relationship between Australia and Viet Nam, and the shared commitment to reduce drowning in Viet Nam.

Finally, to each and every one of you, irrespective of your background, we share our ultimate goal of a world free from drowning. We look forward to this World Conference on Drowning Prevention 2011 taking us all one step closer to achieving that goal.

Terence Higgins

President,
Royal Life Saving Society - Australia

EVERYONE CAN BE A LIFESAVER
Royal Life Saving
ROYAL LIFE SAVING SOCIETY - AUSTRALIA

It is an honor to welcome everyone to the World Conference on Drowning Prevention. Vietnam is an exciting place to be right now and Da Nang is an excellent place to hold a global forum on drowning prevention. I congratulate ILS leadership on their choice of venues and for holding the WCDP in a country where the problem is recognized and there are national polices to do something about it.

TASC has been working with national and international partners since 2002 to more accurately quantify the magnitude of the child injury issue in Asia, and drowning has consistently emerged as the leading cause of death among children in country after country where we have been working.

We are not just interested in defining this problem. We are also keen to find practical, real world solutions to it. At this Conference you will hear about some of the work being done in Bangladesh, Thailand and Vietnam by TASC, Royal Life Saving Society – Australia, and our national partners to reduce child drowning on a meaningful scale.

We are particularly excited about the evidence being presented from Bangladesh. It has taken five years to create this evidence, but we now know beyond a statistical doubt that it is possible to prevent child drowning as effectively and as cheaply as the other major child killers – diarrhea, respiratory diseases and malaria for example. We now need to focus on scaling these proven interventions up to make a difference at national scale and across the region. Children who live in countries experiencing high rates of drowning no longer have to die from drowning now that we know what works to prevent it.

It is my sincere hope that through the auspices of this expanded group of water safety experts and interested parties which the ILS has brought together here in Da Nang we can create the additional momentum needed to elevate drowning prevention to the attention level it deserves as an international issue. The time for action is now.

I wish all attendees a successful and enjoyable week here in Da Nang.

Pete Peterson

President,
The Alliance for Safe Children

TASC
The Alliance for Safe Children

Australian Government
AusAID

Open Letter to the Australian Government

The International Life Saving Federation, Royal Life Saving Society – Australia and The Alliance for Safe Children, wish to acknowledge the Australian Government for the significant support provided to the World Conference on Drowning Prevention 2011, and to the drowning focused research and interventions they have implemented in Asia over the last few years.

The Australian Government has encouraged efforts to increase awareness and collaboration and to support an evidenced-based approach to prevention strategies.

Australians have been at the forefront of developing and refining the skills and expertise in drowning reduction. Much of this is transferable, and by working in partnership with local organisations, the capacity development is far-reaching and long-lasting.

As a major conference partner, the Australian Government, through its Agency for International Development, AusAID, has contributed to the following activities:

1. **World Conference on Drowning Prevention 2011**, through AusAID and the Australian Embassy- Vietnam. This has allowed organisers to focus on expanding this event from a four day conference to two years' worth of regional drowning prevention activities, including many workshops and targeted advocacy to raise awareness of drowning.
2. **Developing Countries Scholarship Fund**, through AusAID's International Seminar Support Scheme. This has resulted in the attendance of over 25 scholars from across Asia-Pacific and Africa.
3. **International Drowning Research Centre – Bangladesh**, through AusAID and the Australian High Commission – Bangladesh. This research centre contributes to knowledge in areas including drowning in children under four, expansion of survival swimming to national coverage, and the feasibility of resuscitation training and use in rural communities.
4. **SwimSafe Drowning Prevention Intervention – Vietnam**, through AusAID and the Australian Embassy – Vietnam. SwimSafe serves as a demonstration and capacity building activity for Danang and the Vietnamese Government. Since 2009 it has reached over 10,000 local children with survival swimming education.
5. **Other Australian Government Support** including: the Australia–Malaysia Institute, who has contributed to the Malaysia Scholarship Program, the Council of Australia–Arab Relations (CAAR), who is supporting scholarships for people from Egypt, the United Arab Emirates, Lebanon and Sudan, and the Australia–Thailand Institute (ATI) who support the SwimSafe program in Thailand.

Finally, we wish to acknowledge the presence of Her Excellency, Ms Quentin Bryce AC, Governor-General of the Commonwealth of Australia, whose presence adds significantly to the national, regional and global call to action to reduce drowning.

Dr Steve Beerman
President,
International Life Saving Federation

Terence Higgins
President,
Royal Life Saving Society - Australia

Pete Peterson
President,
The Alliance for Safe Children

The United Nations in Viet Nam is proud to support this important injury prevention conference, to be organised for the first time in a lower and middle income country.

In Viet Nam, United Nations' support to the Government on drowning prevention is primarily done through the work of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), working collaboratively with relevant national agencies to advocate for and provide technical and financial assistance to the implementation of evidence-based good practice.

In November 2009, Viet Nam was chosen by WHO and UNICEF to host the global launch of the World Report on Child Injury Prevention. This event not only involved the release of the most up-to-date data and evidence for effective planning of a response to prevent child injuries (including drowning), but also served as an important platform for high level Government attention to drowning and other child predominate injuries in Viet Nam.

With the support to this conference, the United Nations would like to highlight issues related to both the burden as well as key actions for drowning prevention in Viet Nam. Organizing this conference on drowning prevention in a country like Viet Nam, where the problem is most urgent, is very significant and timely. Drowning has been well established as a leading cause of death and disability in Viet Nam. 6,153 people fatally drowned in Viet Nam of whom children and adolescents aged 0-19 accounted for 57.2 per cent. While drowning is the second leading cause of injury death after road trauma, it is the leading cause of deaths in children and adolescents aged 0-19. Importantly, 18 per cent of all drowning deaths are in children under five[1].

With the support of WHO and UNICEF, the Ministry of Labour, Invalids and Social Affairs, Ministry of Health and the Hanoi School of Public Health are currently completing the Viet Nam National Injury Survey, a representative survey to apportion various leading causes of injury from all causes. This survey, a follow up from the 2001 Viet Nam Multi-Site Injury Survey, is anticipated to again highlight the urgent need of strengthened and more prioritised approaches to prevention of drowning in Viet Nam.

On behalf of the United Nations Country Team, welcome to Viet Nam!

UNITED NATIONS VIET NAM

[1] Ministry of Health (2010) Injury related mortality statistic for 2008

Background to the World Conference on Drowning Prevention 2011

In welcoming you to Danang, we felt it important to share the background of how an ambitious idea conceived in the back of a bus in Portugal during World Water Safety 2007 grew to become the World Conference on Drowning Prevention 2011.

Three events provided the initial inspiration for this conference: First is the World Congress on Drowning that was held in Amsterdam in 2002 and hosted by the Maatschappij tot Redding van Drenkelinge, the oldest known lifesaving organisation. This event was a catalyst for many things: new partnerships, identification of an ambitious research agenda and perhaps most significantly, the publishing of the definition of drowning.

Secondly, the World Water Safety Conference held in Portugal in 2007 and organised by International Life Saving in partnership with Portuguese lifesaving agencies. WWS2007 included many milestones including the emerging and confronting data that mapped drowning across Asia. Presentations from The Alliance for Safe Children (TASC) and the Centre for Injury Prevention and Research in Bangladesh left an indelible mark.

And finally, the adoption of the ILS Strategic Framework, which was initiated at WWS and provided ILS with an expanded focus on drowning prevention. This focus recognises the need to forge new collaborations, prioritise research and policy development, increase advocacy and build organisational capacity to address the global burden on drowning – particularly that borne by children and during aquatic disaster.

Among the key lessons of WWS2007 was the notion that 96 per cent of drowning occurs in low and middle income countries—much of that in the region of Asia—and mostly through everyday life, and not recreational activities. Most of the attendees had both a high income background and a focus or specialisation on drowning in recreational settings.

During WWS2007 and in the months that followed, it became increasingly clear that the ILS Conference, the international community and, more importantly, the cause of drowning, would benefit greatly from the staging of the next event in a low and middle income setting.

Vietnam was chosen under the guidance of TASC for three simple reasons: it is a beautiful and rich tourist destination; it has a large drowning burden and is the middle of a region where drowning burden is perhaps greatest; and it offered an opportunity for conference participants to experience firsthand the challenges of preventing drowning in this context. It also provided the opportunity to showcase the success of the Government of Vietnam and other NGOs in the region.

At this point we must acknowledge the vision and courage of the board of Royal Life Saving Society – Australia, including its past President Mr Shayne Baker, Current President, The Honourable Chief Justice Terence Higgins AO, and CEO Rob Bradley, and the board of the International Life Saving Federation. This is not a conventional conference model, and whilst it represented significant opportunities to make a difference, at a board level the risks were carefully considered.

Conferences are often two, three or four days—memories of good ones last a little longer—but truly great conferences have far-reaching influence. The organising team took the impact of the World Conference Congress on Drowning 2002 and the growing confidence and focus of ILS that was initiated at WWS 2007, and began devising strategies to ensure the World Conference on Drowning Prevention 2011 was not just memorable, but would have an enduring legacy.

The Australian Government, who rarely sponsor conferences, were attracted by the opportunity to highlight the drowning burden in Asia, foster emerging research, and support Vietnamese and Australian collaboration and leadership. With their support, the plan consists of the following four key components:

Firstly, over the past two years we have worked to raise the profile of the drowning issue, support existing initiatives and create new research and initiate capacity building activities. Consequently, the conference has supported drowning focused workshops in Vietnam, Bangladesh and representatives attended one in the Philippines. Asian research and policy makers have been invited to Australia, and exchanges have occurred throughout the region.

Secondly, we sought to engage a wide variety of people in conference planning. ILS commissions, and committees, and many others were encouraged to participate in the review of themes and papers and to contribute to the program. Whilst not all targets have been met, we believe that this collaborative model can only grow and support ILS goals of collaboration and fostering diversity.

Thirdly, given that the conference is in Vietnam, it made no sense to confine ourselves to a conference venue and PowerPoint when, over the road, up the beach or across the river, real opportunities exist to witness the context of drowning and drowning prevention initiatives in a country like Vietnam. The interactive tours are therefore central to our hopes for the conference experience. The opportunity to debate the drowning context and emerging intervention research, before stepping outside to see it firsthand was too good to miss.

Finally, recognising that the impact was focused on low and middle income countries, it seemed logical to set some targets to ensure that these stakeholders were well represented. Issues of cost, confidence and validation can be significant barriers, and fortunately with the support of many donors we have been able to provide scholarships and assistance to over 75 people, with many more finding local funds or funds from other donors to attend. This has resulted in over 50 countries being represented and over 400 people who will bring great diversity and perspectives.

So, please maximise the individual and collective opportunity that the World Conference on Drowning Prevention 2011 promises. Meet new people, consider different perspectives, conceive new plans, and raise fresh questions. Take the challenge to get out of your comfort zone. If you are new to this sector, don't be afraid to engage with its leaders; if you are an existing leader make sure you are open to the quiet mentoring of others that has potential to make a lasting impact.

We must acknowledge the important role that sponsors and partners play. Of particular importance has been the role of the Government of Vietnam, through the Ministry of Labour, Invalids and Social Affairs (MoLISA) and its Administration for Child Care and Protection. With leadership and support from the UN agencies UNICEF and WHO Vietnam, MoLISA has supported this conference and continues to lead the Government's Inter-ministerial Plan for Child Drowning Prevention.

We must thank the key support of The Alliance for Safe Children, specifically Pete and Vi Peterson, Dr Mike Linnan and Ross Cox for giving us the confidence to do this, and assisting us through the complexities of working abroad and in an unfamiliar sector.

There are many people who have contributed to getting us all to this point. Many hours, many sacrifices, some frustration. Most are acknowledged elsewhere in the program, but a few warrant specific acknowledgements. Amy Peden has taken on coordination of the interactive tours and the scholarship program with great vigour. Matthew Smeal has been tireless in the task of editing and preparing abstracts and other communication tools for this program book. Finally, one person stands out for her skills, commitment and patience. Monique Sharp, the Event Organiser has managed to do twelve months work in three, and we thank her for all that she has done. If you see any of the team, please give them your appreciation and feedback.

In closing I note that the World Conference on Drowning Prevention 2011 sets an ambitious goal of building a global platform to reduce drowning. This is a long term project, and together we hope that the conference will contribute to some tangible steps in the lofty vision of a world free from drowning.

Justin Scarr

Conference Convener
ILS Drowning Prevention Commissioner

The International Life Saving Federation's World Conference on Drowning Prevention is being held with the support of the Vietnamese Government's Ministry of Labour, Invalids and Social Affairs (MoLISA), Danang People's Committee and United Nations - Viet Nam.

Ministry of Labour, Invalids and Social Affairs (MoLISA)

The Vietnamese Government is proud to support the World Conference on Drowning Prevention 2011 through the Ministry of Labour, Invalids and Social Affairs (MoLISA). MoLISA oversees the areas of employment, vocational training, labour, salary, social insurance, occupational safety, social protection, child protection, and gender equality across the country of Vietnam. MoLISA holds the current chair of the Vietnamese Government's Child Drowning Prevention Panel and is active in working with key stakeholders to identify and address key drowning issues.

MoLISA has been enlisted by the Vietnamese Government to coordinate a national response to child drowning as the leading cause of child mortality as part of its National Plan for Child Injury Prevention.

MoLISA cooperates with other ministries and mass organisations to strengthen advocacy and communication activities and to provide guidance and monitor the implementation of child drowning prevention activities in the 15 provinces with the highest rate of child drowning.

Government of Vietnam
Ministry of Labour, Invalids and Social Affairs

Danang People's Committee

Vietnam is one of the countries having a high child drowning rate in the Asian region. As shown by statistics, drowning is a leading cause of death for Vietnamese children. This is an increasing trend in the community, contributed by many reasons such as unsafe environment, insufficent awareness by local people, loose supervision of children by adults, and lack of swimming skills of children. Da Nang is a coastal city which has a lot of rivers and springs with a high number of people living along these water sources. It can be said that the geography of Da Nang is an advantage for the socio-economic development of the city. However, it raises issues of water safety and child drowning prevention, especially child drowning mortality in rainy and stormy seasons.

With the support from RLSSA and TASC, Da Nang City has implemented SwimSafe, a swimming training program for children at schools. Da Nang has received positive outputs from this program with about 10,000 children trained in survival swimming and water safety in just 2 years.

It is an honour for Da Nang to be chosen to host the "World Conference on Drowning Prevention". Hopefully, through this conference, the city's relevant agencies will gain lots of valuable experience in drowning prevention from other countries in the region, and the awareness of the society in drowning prevention for children will be raised as well.

United Nations – Viet Nam

The United Nations in Viet Nam is proud to support this important injury prevention conference, to be organised for the first time in a lower and middle income country.

In Viet Nam, United Nations' support to the Government on drowning prevention is primarily done through the work of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), working collaboratively with relevant national agencies to advocate for and provide technical and financial assistance to the implementation of evidence based good practice.

With the support to this conference, the United Nations would like to highlight issues related to both the burden as well as key actions for drowning prevention in Viet Nam. Organizing this conference on drowning prevention in a country like Viet Nam, where the problem is most urgent, is very significant and timely.

The conference is presented by the International Life Saving Federation (ILS), Royal Life Saving Society – Australia in collaboration with The Alliance for Safe Children.

International Life Saving Federation (ILS)

The International Life Saving Federation (ILS) is a global, non-profit federation of over 100 national lifesaving organisations. The Federation leads the worldwide effort to reduce the global burden of drowning. ILS is the world authority for drowning prevention and lifesaving sport. ILS leads, supports and collaborates with national and international organisations engaged in drowning prevention, water safety, water rescue, lifesaving, lifeguarding and lifesaving sport.

Through its work, and that of its Member Federations, ILS leads the global effort to reduce injury and death in, on, or around the water. ILS accomplishes this by assisting existing national lifesaving organisations; facilitating and developing a global exchange of lifesaving information and of best lifesaving practices; helping establish lifesaving organisations in areas of the world where they are needed, but do not exist; acting as the International Federation for lifesaving sport; and cooperating with other international bodies with shared goals.

Royal Life Saving Society – Australia (RLSSA)

Royal Life Saving Society – Australia (RLSSA) was established in 1894 and has been the leading water safety, swimming and lifesaving education organisation in Australia for 117 years. Royal Life Saving aims to prevent loss of life and injury in the community with an emphasis on the aquatic environment. Royal Life Saving is dedicated to turning everyday people into everyday community lifesavers through education; training; health promotion; aquatic risk management; community development; sport and participation; advocacy; research; and international networks. Royal Life Saving has branches in every State and Territory in Australia. Royal Life Saving also has an international commitment to drowning prevention in the Asia-Pacific region. Royal Life Saving's skills and expertise are increasingly being utilised to assist international communities in most need. Royal Life Saving has worked with emerging lifesaving agencies or individuals in developing countries, providing equipment and capacity building support.

Royal Life Saving is active all over Australia. Its branches, members, volunteers, trainers, employees and lifesavers are found in almost all communities. Royal Life Saving's approach is inclusive and some of their biggest achievements occur away from large capital cities. Royal Life Saving programs, products and services are underpinned by research and a commitment to continual improvement. They are constantly evaluated, improved and benchmarked against world's best practice.

The Alliance for Safe Children (TASC)

The Alliance for Safe Children (TASC) was formed in 2002 to research and advocate child injury issues across Asia. Recognising that gaps in the way data is collected on child death and injury exist in many Asian countries, TASC undertook a series of large scale community surveys in a bid to define the extent and scope of the problem. The primary finding was that death from injury was vastly under-estimated because the children affected never saw a health professional of any kind. This is particularly true for the leading cause of death in children: drowning. The research TASC and partners carried out in household surveys in six Asian countries involved interviews in almost three-quarters of a million households and clearly show the leading single cause of death in children after infancy in Asia is drowning.

TASC is now in its second phase, developing effective prevention programs for child injury that focus on early and middle childhood, where the leading causes of injury death and disability are most easily prevented. Drowning prevention is at the heart of these programs, TASC's focus countries currently are Bangladesh, Cambodia, China, Indonesia, the Philippines, Thailand, and Vietnam. TASC's primary office is in Bangkok, Thailand, with a satellite office in Da Nang, Vietnam. TASC's research and capacity development activities highlight the need for action to prevent drowning.

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Laerdal
helping save lives

Maatschappij tot Redding van Drenkelingen (Society for the Rescue of Drowning Victims)

Maatschappij tot Redding van Drenkelingen (MRD) was founded in 1767 to promote all forms of enterprise that might help to lower the incidence of drowning in the Netherlands.

Maatschappij
tot Redding van
Drenkelingen

AUSTSWIM

AUSTSWIM as the national organisation for the teachers of swimming and water safety is setting the national standard for the training and licencing of AUSTSWIM teachers. AUSTSWIM was established over 30 years ago as a result of national and state based aquatics organisations identifying the need to have a national body to oversee the training and accreditation of swimming and water safety teachers. Since inception over 30 years ago, AUSTSWIM has continued to grow and develop to the changing needs of the aquatic industry and the wider community.

AUSTSWIM has a strong philosophy that is founded on the belief that all Australians should have appropriate and relevant swimming and water safety skills and understand the principles and practices of water safety.

AUSTSWIM is a member of the National Water Safety Council and works in partnership with RLSSA, SLSA & Swimming Australia Ltd. AUSTSWIM is also working with international organisations to introduce the AUSTSWIM training and licensing systems into countries including Hong Kong, Singapore, Dubai, New Zealand, Sri Lanka, Vietnam and others.

AUSTSWIM

Commonwealth Lifesaving

The Royal Life Saving Society is dedicated to the prevention of drowning and is working to eliminate drowning in the Commonwealth. Established in 1891, Commonwealth Lifesaving is the oldest established international lifesaving and drowning prevention organisation and is one of the oldest civil society organisations committed to the Commonwealth.

Commonwealth Lifesaving has drowning prevention and lifesaving programmes, developed and delivered by Member Branches in nations across the Commonwealth. Our focus is on effecting change at the community level to reduce drowning. With 48 of the 54 Commonwealth countries classified as low and middle income countries, and with drowning rates being highest in low income, high density countries, Commonwealth Lifesaving has the significant challenge of working with its Member Branches to address some of the highest drowning rates in the world.

ROYAL LIFE SAVING SOCIETY

IDP (Vietnam)

IDP Education is a world class educational organization founded by 38 Australian universities in 1969 with a network of 75 offices in 29 countries around the world. IDP Education represents more than 600 educational institutions at all levels and is officially registered with the Australian Government.

With its presence since 1996, IDP Education (Vietnam) has always been a leader of educational counseling services and Australian education development in Vietnam. Over the years, IDP has supported thousands of full fee paying and scholarship students to study in Australia.

Furama Resort Danang

The Furama Resort Danang is a true icon of Vietnam tourism. Located on world-famous Da Nang beach.

Furama Resort Danang has subsidised ten local participants to attend the conference.

Meinhardt (Vietnam)

Meinhardt (Vietnam) Ltd, as part of the Meinhardt Group has operated in Vietnam since 1995 with its head office in HCMC, Vietnam and representative offices in Hanoi and Danang. MVN is an engineering consultant specialized in providing world-class skill and local knowledge for the following services: Master Planning and Feasibilities, Structural, Civil and Infrastructure Engineering Designs, Mechanical and Electrical Engineering Designs, Project Management, Construction Management & Supervision and Quantity Surveying for many types of projects of substantial value nationwide.

With the support from more than 300 experienced expatriate and local staffs, Meinhardt (Vietnam) Ltd. always delivers optimum solutions to Clients.

Cooper Foundation

Cooper Foundation has contributed funds to support Vietnames participation.

Cooper Foundation

The World Conference on Drowning Prevention 2011 has been made possible by the support of many committees.

Organising Committee

Justin Scarr (Convener) – Chief Operating Officer, Royal Life Saving Society – Australia; Development Coordinator, ILS Asia-Pacific

Monique Sharp (Conference Secretariat/Organiser) – National Manager, Marketing and Events, Royal Life Saving Society - Australia

Amy Peden (Scholarships and Interactive Tours Coordinator) – Senior Project Officer, Royal Life Saving Society – Australia

Dr Michael Linnan (Adviser) - Technical Director, The Alliance for Safe Children

Ross Cox (Danang Regional Coordinator)- Senior Operations Officer, The Alliance for Safe Children (Danang)

Norm Farmer (ILS Conference Liaison) - General Manager Strategic Development, Surf Life Saving Australia

Vietnam Local Organising Committee

Mr Nguyen Trong An, Deputy Director, Child Care and Protection Department, Ministry of Labour, Invalids and Social Affairs (MoLISA)

Mr Jonathon Passmore, Team Leader, Non-Communicable Disease & Health Promotion, WHO Viet Nam

Mr Nguyen Phuong Nam, Project Officer, Non-Communicable Disease & Health Promotion, WHO Viet Nam

Ms Nguyen Thi Thanh An, Child Injury Prevention Specialist, Child Survival and Development Programme, UNICEF Viet Nam

Event Conference Team Royal Life Saving Society – Australia

Do Thi My Hoa (Local Support and Logistics)

Dr Richard Franklin PhD (AV and presenters support)

Matt Griffiths (AV and presenters support)

Rhonda Groneman (Finance)

Helen Khoudair (Event Support)

Penny Larsen (Tradeshow and Event Support)

Emma MacMillan (Event Support)

Nguyen Dang Thuy Loan (Local Support and Logistics)

Sam Rodgers (Event Support)

Tarina Rubin (Interactive Tour Support and Logistics)

Matthew Smeal (Media and Communications)

Tran Quang Son (Local Support and Logistics)

Scientific Program Development

The Scientific Program was developed after two calls for abstracts, an extensive review process by the Thematic Review Committees from across the conference disciplines, with targeted promotion to identify key papers and speakers. Following the evaluation of abstracts and prioritisation of key areas, a draft program was developed and circulated to a Program Reference Group.

The program was then finessed by the Conference Convener Justin Scarr with support of the organising committee. Specifically, abstracts were edited for this publication by Matthew Smeal, Monique Sharp and Helen Khoudair. Monique Sharp provided speaker support throughout the submission and review process.

A special thanks goes to the following Program Reference Group members who assisted with the finalisation of the conference program.

Elizabeth Bennett, Director, Advocacy And Partnerships, Seattle Children's Hospital

Dr Joost Bierens, Member ILS Medical And Aquatic Disasters Committees, Reddingsbrigades Nederland

Norm Farmer, General Manager, Strategic Development, Surf Life Saving Australia

Dr Richard Franklin PhD, National Manager Research And Health Promotion, Royal Life Saving Society - Australia

Peter George, Chief Operating Officer, Surf Life Saving Australia

Anthony Handley, Chief Medical Adviser, Royal Life Saving Society UK

Dr Michael Linnan, Technical Director, The Alliance for Safe Children

Dr Kevin Moran, Principal Lecturer, University Of Auckland

Martin O'Sullivan, Chair ILS Rescue Cttee - Member ILS Lifesaving Commission, Irish Water Safety

Dr Linda Quan, University Of Washington School Of Medicine

Dr AKM Fazlur Rahman, Centre for Injury Prevention and Research Bangladesh

Dr Aminur Rahman, Technical Director, Centre For Injury Prevention and Research, Bangladesh (CIPRB)

Dr Robert Stallman, Norw. LS Soc/Nor Sch SS

Dr David Szpilman, Sobrasa

Richard Ming Kirk Tan, President, Singapore Life Saving Society

Thematic Review Committees

Thematic review committees were convened to review abstracts in each of the program areas. These committees include representatives of related ILS committees, as well as other experts from each field. The abstract review process was facilitated via an online management system which enabled broad participation in the review process.

Drowning Research
Norm Farmer, Australia
Dr Linda Quan MD, United States
Dr Kevin Moran PhD, New Zealand
Dr Julie Gilchrist MD, United States
Dr Patrick Morgan MD, United Kingdom
Dr Richard Franklin PhD, Australia
Dr Shauna Sherker PhD, Australia
Dr Bo Lofgren MD PhD , Denmark

Child Drowning
Dr Aminur Rahman MD, Bangladesh
Dr AKM Fazlur Rahman PhD, Bangladesh
Neal Boniface, United Kingdom
Carol Devaux, St Lucia
Shivakumar Sundaram, India
Dr Zaid Chelvaraj Abdullah MD, Malaysia
Dr Michael Linnan MD, TASC
Barbara Byers, Cananda
Elizabeth Bennett MPH CHES, United States

Emergency Response and Medical
Dr Anthony J.Handley MD, United Kingdom
Dr David Szpilman MD, Brazil
Dr Natalie Hood MD, Australia
Dr John Pearn MD, Australia
Dr Peter Wernicki MD, United States
Dr Youshihide Nakagawa MD, Japan
Dr Andrea Felici MD, Italy
Dr Joost Bierens PhD MD, Netherlands
Dr Mohamed Saleh MD, Egypt
Dr Zaid Chelvaraj Abdullah MD, Malaysia
Dr Patrick Morgan MD, United Kingdom

Advances in Lifesaving
Martin O'Sullivan, Ireland
Peter Agnew, Australia
Danny Bryant, United Kingdom
Ortwin Kreft, Germany
Behrooz Esfandiari, Iran
Erik Bech, Denmark
Cliff Nelson, United Kingdom
Graeme Cullen, New Zealand
Les Mole, Australia
Isabel Garcia, Spain
Adam Wooler, United Kingdom

Swimming and Water Safety
Richard Tan, Singapore
Job Kania, Kenya
Shayne Baker, Australia
Jane Cooper, United Kingdom
Giuseppe Andreana, Italy
Tsutomu Komine, Japan
Anne Singh, Trinidad & Tobago
Robert Clark, Canada
Abby Tsoi, Hong Kong
Daniel Price-Davies, United Kingdom
Javier Sanz, Spain
Nabil El-Shazly, Egypt
Robert Keig Stallman, Norway

Disasters and Climate Change
George Karagiannis, Greece
Dr Joost Bierens PhD MD, The Netherlands
Ken Bird OAM, Australia
Pradipta Ghosal, India
Kay Smiley, United States
Sandy Ng, Hong Kong

Regional Perspectives
Francene Leaversuch, Australia
Peter Davis, United States
Dr Detlev Mohr PhD, Germany

Lifesaving Sport
Dave Thompson, Australia
Greg McLennan, Australia
Rick Wright, Australia
Rebecca Boyd, Cananda
Jolanda Van Dalen, The Netherlands

Partnerships and Programs
Dr Kwok-Ki Chan MD, Hong Kong
Di Standley, United Kingdom
Robert Clark, Canada
Niranjan Singh Malik, India
Connie Harvey, United States

AMBASSADORS

The Ambassador Program is a key component of the conference legacy activities.

The ambassadors are key opinion leaders from across government, international agencies and corporations who act as advocates for the conference and the issues of drowning.

We gratefully acknowledge the Conference Ambassadors.

"Drowning prevention needs strong global advocacy. The global burden of drowning mortality, morbidity and disability has been significantly underestimated. The burden of drowning has disproportionately affected children, low income nations and less adaptive populations. Many at risk groups are in nations and regions with no lifesaving lead organizations."

Dr Steve Beerman

President,
International Life Saving Federation

"The Australian Embassy in Vietnam and the Australian Agency for International Development (AusAID), is proud to support this important conference bringing together policy makers, medical professionals, swimming and survival experts, researchers and lifesavers, NGOs and others to discuss how governments and communities can better prevent drowning and its terrible human and economic cost."

Mr Allaster Cox

Australian Ambassador to Vietnam

"Drowning is the scourge of the Asia-Pacific Region. It is completely unacceptable that over 300,000 children drown every year in a region that has the knowledge, experience and unallocated capacity to significantly reduce drowning deaths. We have the ability to bring knowledge and skills to every community... to every family."

Mr Rob Bradley

President Asia-Pacific,
International Life Saving Federation

"The greatest benefit of the international lifesaving movement is that it encourages an ongoing exchange of information that allows individual excellence to transform into collective success. It is in the laboratory of these quadrennial conferences that the latest ideas are shared, presented, and challenged, to the enduring benefit of world water safety. We can do better; we must do better; we will do better; and the waters of the world will be a safer place."

Mr Chris Brewster

President Americas Region,
International Life Saving Federation

"As a nation with such a strong affinity with the aquatic environment, Australia is uniquely placed to make a major contribution to reducing the burden of drowning, particularly in the Asia-Pacific Region. Royal Life Saving Society – Australia is committed to providing knowledge, expertise and resources to help make a significant contribution."

Hon Chief Justice Terence Higgins AO

National President,
Royal Life Saving Society – Australia

"Bangladeshi lives, especially in the rural areas, revolve around water. With climate change likely to increase the rate and severity of our annual floods and unfortunately the rate of drowning, the World Conference on Drowning Prevention is an important step in combating this surge."

Dr AKM Fazlur Rahman

Executive Director, Centre for Injury
Prevention and Research Bangladesh (CIPRB)

"I believe that the lifesaving federations around the world should work together to reduce the tragedy of drowning. The ILS is uniquely placed to encourage collaboration, to build partnerships and show leadership in this vital area. By combining the skills, knowledge and expertise available in International Life Saving Federations we can build a safer world for our children in the future."

Dr Harald Vervaecke

Secretary General,
International Life Saving Federation

"Drowning is one of the main problems of death, fighting against drowning is an important task all over the world. Prevention activities and teaching how to swim must be improved, especially in countries with high drowning rates. Collaboration between lifesaving, swimming and other interested organisations is a way of perspective and should be realised all over the world."

Dr Klaus Wilkens

President Europe,
International Life Saving Federation

"I'm happy to be able to provide support to help raise overall awareness of the major issues and drive relevant solution-based communications to different target audiences. Our aim will be to reach, educate and inspire a wide range of stakeholders from government policy makers to the private sector, to the media and, ultimately, to the parents and children living in these communities."

Mr Mark Webster

Asia Pacific Business Development Director,
J. Walter Thompson

"The impact of this conference will be an influence on the region for many years to come and prepare a new generation of lifesavers dedicated to the cause. The opportunity to share and learn together should provide some great insights, strategies and partnerships that will contribute to the challenge in a meaningful manner as collectively we can make a difference in the effort to reduce drowning."

Mr Shayne Baker

Immediate Past President,
Royal Life Saving Society – Australia

World Conference on Drowning Prevention 2011 organisers established the Developing Countries Scholarship Fund as a strategy to ensure that the conference is accessible to those in greatest need but without the resources required to attend an international conference of this type. Contributions to the fund assisted in areas such as subsidising registration, travel and accommodation.

Organisations that have contributed to the fund and scholarship recipients are listed below.

Australian Government
AusAID

AusAID

The Australian Government is proud to support the World Conference on Drowning Prevention 2011 via the Australian Agency for Development Assistance (AusAID) and the Australian Embassy Vietnam. The Australian Government recognises the emergence of drowning as a public health issue impacting on communities and countries across Asia, and is encouraging of efforts to increase awareness, collaboration and to support an evidenced-based approach to prevention strategies. It also recognises the key role of Australian organisations in supporting countries in the region to build their policies and capacity to address drowning. The Australian Government is also supporting the SwimSafe program in Danang and the International Drowning Research Centre – Bangladesh.

Scholarship recipients: International Seminar Support Scheme (ISSS)

Dr. Somchith Akkhavong, Deputy Director General, Department of Hygiene and Prevention, Ministry of Health, Lao People's Democratic Republic

Mr. Larry Joie S. Alag, Secretary General, Philippine Life Saving Society, Philippines

Mr. Austin Andemani, Secretary, Royal Life Saving Society – Uganda, Uganda

Dr. Juanita Basilio, Medical Officer, National Centre for Disease Prevention and Control, Department of Health, Philippines

Mr. Nicholas Bulamile, Senior Officer for Sport, Tanzanian Ministry of Culture, Tanzania

Mr. Sodara Chan, Deputy Chief, Technical Office, National Institute of Public Health, Ministry of Health, Cambodia

Mr. Jerome Dralega, President, Royal Life Saving Society – Uganda, Uganda

Miss Som Ekchaloemkiet, Public Health Technical Officer, Department of Disease Control, Ministry of Public Health, Thailand

Mrs. Suchada Gerdmongkolgan, Public Health Technical Officer, Department of Disease Control, Ministry of Public Health, Thailand

Mr. Pradipta Ghosal, Vice President and National Trustee Member, Rashtriya Life Saving Society (India), India

Mr. Channa Lankanatha Guneratne, Honorary President, Life Saving Association of Sri Lanka, Sri Lanka

Dr. Gopalkrishna Gururaj, Professor and Head of Department of Epidemiology, National Institute of Mental Health and Neuro Sciences, India

Dr. Nomita Halder, Project Director (Deputy Secretary) Empowerment and Protection of Children Project, Ministry of Women and Children Affairs, Bangladesh

Dr. AKM Jafar Ullah, Deputy Project Manager (Arsenic and NCD) and Focal Person of Injury Prevention, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh

Mr. Job Kania, President, Kenyan Life Saving Federation, Kenya

Mr. Stewart Kiluswa, Advisor Tanzania Life Saving Society & Tanzania Scouts Organisation, Tanzania

Dr. Soewarta Kosen, Director, Centre for Health Services and Technological Research and Development, Ministry of Health, Indonesia

Dr. Huan Linnan, Public Health Professional, Child Injury Prevention Advisor, China

Mr. Boniface Mutatina, Researcher, Injury Control Centre Uganda (UCC), Uganda

Mr. Collins Mwesigye, National Program Officer (Focal Person Injury Prevention), World Health Organisation (WHO), Uganda

Mr. Jose Arne Aguila Navarra, President, Philippine Life Saving, Philippines

Mr. Puspa Raj Pant, PHD Student, University of West England, Nepal

Ms. Rashida Parveen, Programme Manager (Adolescent Development Programme), BRAC, Bangadesh

Mr. John Ernest Philp, President, Fiji Surfing Association, Fiji

Dr. Phisith Phoutsavath, Chief, Hospital Management Division, Department of Health Care, Ministry of Health, Lao People's Democratic Republic

Dr. Aminur Rahman, Director, International Drowning Research Centre – Bangladesh & Centre for Injury Prevention and Research, Bangladesh (CIPRB)

Dr. Mizanur Rahman Arif, Deputy Programme Manager (Hospital Logistics), Directorate General of Health Services, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh

Mr. Asad Rezzvi, Member, Pakistan Aquatic Life Saving (PALS), Pakistan

Mr. Reza Samad, President, Pakistan Aquatic Life Saving (PALS), Pakistan

Mr. Purushottam Sharma, President, Rashtriya Life Saving Society, India

Dr. Xiaoming Shi, Deputy Director, Division of Chronic Diseases Control and Community Health, China Centre for Disease Control and Prevention, China

Assistant Professor Dr. Ratana Somrongthong, Associate Dean, College of Public Health Sciences, Chulalongkorn University, Thailand

Major General Adisak Suvanprakorn, Assistant Secretary, Thai Life Saving Society (TLSS), Thailand

Ms. Edwina Tangaroa, Health Promotion Officer (Focal Point for Injury and Violence Prevention), Department of Health, Cook Islands

Dr. Jacqueline Uriyo, Paediatrician, Epidemiologist and Researcher, Kilimanjaro Christian Medical Centre, Tanzania

Australia-Malaysia Institute (AMI)

The Australia-Malaysia Institute (AMI) was established in 2005 to strengthen people-to-people and institutional links with Malaysia and to deepen mutual understanding and cooperation between Australia and Malaysia.

The AMI has contributed funds to allow people from Malaysia to attend the World Conference on Drowning Prevention 2011 to assist in strengthening the drowning prevention response in the country.

Scholarship Recipients: Australia Malaysia Institute (AMI)

Dr. Zaid Chelvaraj Abdullah MD, Deputy President, Life Saving Society Malaysia

Mr. Kwai Fong Chan, Vice President, Life Saving Society Malaysia

Mr. Ooi Win Juat, Executive Committee Member, Life Saving Society Malaysia

Mr. Lee Soon Keong, Member, Life Saving Society Malaysia

Ms. Chan Ngee Mun, Member, Life Saving Society Malaysia

Mr. Geh Thuan Tek, Honorary Secretary, Life Saving Society Malaysia

Mr. Lim Kok Wey, Executive Committee Member, Life Saving Society Malaysia

Council for Australian-Arab Relations (CAARR)

The Council for Australia-Arab Relations (CAAR) was established by the Australian Government in January 2003, as an initiative to strengthen ties between Australia and Arab countries.

The CAAR has contributed funds to allow people from Arab countries to attend the World Conference on Drowning Prevention 2011. The aim of these scholarships are to strengthen skills and knowledge in drowning prevention research and practice within Arab nations.

Scholarship recipients: Council for Australian-Arab Relations (CAAR)

Dr. Hesham El-Sayed, Professor of Paediatrics and Member of Clinical Epidemiology Unit, Suez Canal University, Egypt

Dr. Haya Hamade, Paediatrician, American University of Beirut, Lebanon

Dr. Emad Hokkam, Lecturer of Surgery, Suez Canal University, Egypt

Mr. Tilal Salih, Projects Delivery Manager, British Council, Sudan

Captain Yahya Hussain Mohammed Yahya, Head of Dubai Sea Rescue, Dubai Police Rescue Department

Royal Life Saving Society – Australia

The Royal Life Saving Society – Australia has a proud history of lifesaving, water safety and drowning prevention in Australia. Royal Life Saving also has an international commitment to drowning prevention in the Asia-Pacific region and is co-presenter of the World Conference on Drowning Prevention 2011.

Royal Life Saving Society – Australia contributed additional funds to many individuals where scholarships were unavailable. These contributions assisted with travel, accommodation and registrations.

Scholarship recipients: Royal Life Saving Society – Australia (RLSSA)

Mr. Justin Bakinga, President, Royal Life Saving Society Cameroon, Cameroon

Dr. Wijaya Godakubura, President, Safe Bottle Lamp Foundation, Sri Lanka

Dr. Georgious Marios Karagiannis, Researcher, Ecole Nationale Superieure des Mines de Saint-Etienne, France

Mrs. Padma Karunaratne, Head of the Resilient Cities and Urban Disaster Risk Management Department, Asian Disaster Preparedness Centre (ADPC), Thailand

Mrs. Orapin Laosee, Student, College of Public Health Sciences, Chulalongkorn University, Thailand

Mr. Makara Chhun, Officer at Department of Education and Training, Cambodian Ministry of Tourism, Cambodia

Mr. Samouth NEB, Deputy Director General of Tourism, Cambodian Ministry of Tourism, Cambodia

Mr. Chey Sathia Chuon, Officer at Directorate General of Tourism, Cambodian Ministry of Tourism, Cambodia

Dr. Harihar Wasti, Department of Forensic Medicine, Institute of Medicine, Maharajgunj, Kathmandu, Nepal

Philippine Life Saving Society Conference Party:

Pearl Navarra, Lyle P. Lagman, Mark P. Joseph, Benedict Reyes, Edgar Ybanez, Larry Neil Abalajon, Bernard Morillo, Oliver Atienza, Marian Evangelista, Cesar Miguel, Diane Salvaleon, Mark Neri, Jonathon Espiritu, Jonathan Mercado, Ger Ann Lopez, Lyden Barcelita, Terisita Asinero, Ronel Alemania, Rod Sun, Carlito Venus and Jorelyn Budong

Building A Global Strategy To Reduce Drowning

The International Life Saving Federation and organisers of the World Conference on Drowning Prevention 2011 set some significant targets in terms of leveraging participation and interest in the event to initiate, influence and promote action to save lives.

It is vital that the global drowning burden and all those impacted have advocates, and that these advocates use the best available evidence to clarify the burden and promote meaningful, sustainable and achievable action to reduce this burden.

It is thought that drowning may claim as many as one million lives every year and impacts millions more in communities across the world. We are committed to reducing the global drowning burden through active prevention strategies customised to fit the specific needs of different countries and cultures.

Some of the targets set and achieved prior to the conference included:

- Supporting the participation of low-and-middle-income based research, policy and practice professionals from Asia, Africa, the Pacific and the Middle East.
- Funding targeted child drowning research projects in Bangladesh.
- Establishing a SwimSafe demonstration project site in Danang, Vietnam.
- Facilitating and participating in a range of regional workshops in drowning prevention.

Perhaps the most ambitious target is to use the conference to initiate and build a global strategy to reduce drowning. Of course this will be a long-term project, but we are committed to making the most of this opportunity to capture the science, the expertise, and the commitments of those attending this conference.

The first challenge is to create an insightful, meaningful and strategic conference statement that can be built and owned by the 400 conference participants. We hope to harness your energy and ideas throughout the conference to formulate a statement that will form a key building block of a global strategy to reduce drowning. In due course, it is anticipated that the global strategy to reduce drowning, with the statement as its base, will be used by the International Life Saving Federation and drowning prevention partners across the globe to inform country, regional and global strategies to reduce drowning.

The process was set down to occur in four broad stages:
Pre-conference review and drafting of the statement.
Conference presentations, debate and discussion at World Conference on Drowning Prevention 2011.
Review and in principle endorsement by ILS Board, Commissioners and partner organisations.
Post-conference review, refinement and publishing.
We were delighted with the volume and quality of feedback provided during the two steps in stage one; we are now asking for your thoughtful review in light of the presentations and conversations taking part at the conference.

To enable feedback, we broke the statement into two steps: Framing the Problem; and Framing The Response. The intent was to enable all conference participants to reach an agreed set of principles which form the core issue of drowning globally, before moving into tangible solutions.

The focus of the effort to date is primarily on the 96% of deaths which occur in low-and-middle-income countries as this is the area of greatest need. This doesn't mean to diminish those issues impacting drowning in high-income contexts, and our challenge is to develop a platform that respects the needs of all.

Please remember that we are all committed to reducing drowning. The intent of the statement is global and overarching in nature. It may not be possible to incorporate all interests and needs at this level, but it is hoped that as we move towards more coordinated and collaborative efforts to reduce drowning the appropriate level of detail will be completed.

This statement needs to resonate with all stakeholders including Governments, donors, non-government organisations, and professionals in the areas of research, policy and practice. In time it may be adjusted for a more general community-based audience.

There are three key ways you can contribute to the development of the statement and ultimately the global strategy to reduce drowning during the course of the conference:

1. Attend all the sessions in your area of interest and make the time to hear from some of the speakers outside your specific field.
2. Engage wholeheartedly in debate throughout the conference.
3. Speak up. Scribes will be present at each of the sessions. Your feedback during the sessions will refine the overall statement and help form a preliminary draft.

After the conference, the preliminary draft will be circulated to all conference participants so you can continue to participate in the discussion once you return home.

We look forward to hearing your insights on the statement and the broader goal of the global strategy to reduce drowning over the coming days and weeks.

Regards,

Justin Scarr

Conference Convener
ILS Drowning Prevention Commissioner

NOTES

Program and Abstracts

Abstracts are included for all presentations received by 14 April 2011 and are listed under the themes as outlined in the conference program. Within each theme abstracts are listed by Theme in Focus, Workshop, Oral Presentation and Poster Presentation. The presenting author is highlighted in bold text. Authors and their abstracts are also referenced via the index of abstracts at the end of this booklet.

Disclaimer

The Conference Program and Abstracts were correct at the time of printing however presentations and/or presenters may change due to circumstances beyond the control of the organisers, which may necessitate substitutions or alterations to the conference program. Information presented in this document does not necessarily reflect the views of the International Life Saving Federation or those of the organising committee.

Program Snapshot

Please find the Program Snapshot following. The complete program will be available as a supplement at conference registration.

TIME	DAY 1 – Tuesday, 10 May 2011
16.00–18.00	**SESSION 1 – Official Opening by ILS President, Hosts and Vietnam Representatives** Opening Address, VIP Speakers, Plenary Address

TIME	DAY 2 – Wednesday, 11 May 2011							
8.30–10.30	**SESSION 2 – Plenary Session – Global Drowning Challenges**							
10.30–11.00	Morning Tea (Includes Poster Displays – Session 1)							
11.00–13.00	**SESSION 3 – Themes in Focus**							
	Child Drowning in LMICs		Swimming		Rip Research Forum		Boating and Snorkelling	
13.00–14.00	Lunch (Includes Poster Displays – Session 1)							
14.00–15.30	**SESSION 4 – Concurrent Session**							
	Child Drowning in LMICs	Swimming	Rip Research Forum	Aquatic Industry	Life Saving Research	Research	Collaboration	Program and Evaluation
15.30–16.00	Afternoon Tea (Includes Poster Displays – Session 1)							
16.00–17.30	**SESSION 5 – Free Paper Session**							
	Child Drowning in LMICs	Vietnam	Rescue	Tourist Drowning	Africa Forum	Swimming	Collaboration	Can Swim Forum
19.30–23.30	**Conference Dinner**							

TIME	DAY 3 – Thursday, 12 May 2011							
8.30–10.00	SESSION 6 – Plenary Session – Perspectives on Life Saving Research							
10.00–10.30	Morning Tea (Includes Poster Displays – Session 2)							
10.30–12.30	SESSION 7 – Themes in Focus							
	Research		Swimming		Fishing		Disaster	
12.30–13.30	Lunch (Includes Poster Displays – Session 2)							
13.30–15.00	SESSION 8 – Concurrent Session							
	Child Drowning in LMICs	Swimming	SwimSafe Danang	Disaster	Open Water Task Force	Medical	Rescue	Research
15.00	Afternoon Tea (Includes Poster Displays – Session 2)							
15.00–18.00	SESSION 9 – Interactive Tours							
	Hoi An River Cruise	SwimSafe Marble Mountain	SwimSafe Son Tra	Disaster Management	Cycle Urban Hoi An	Cycle Rural Hoi An	Lifeguard Service Son Tra	Traditional Fishing

TIME	DAY 4 – Friday, 13 May 2011						
8.30–10.30	SESSION 10 – Themes in Focus						
	Child Drowning		Research		Medical		Ethnicity, Culture and Drowning
10.30–11.00	Morning Tea (Includes Poster Displays – Session 3)						
11.00–12.45	SESSION 11 – Concurrent Session						
	Child Drowning	Research	CPR	Disaster	Sport	Asia Pacific Forum	Swimming
12.45–13.45	Lunch (Includes Poster Displays – Session 3)						
13.45–15.00	SESSION 12 – Free Paper Session						
	Child Drowning in LMICs	Child Drowning in LMICs	Partnerships	Disaster Forum	Sport	Swimming	Swimming	Water Safety
15.00–15.30	Afternoon Tea (Includes Poster Displays – Session 3)						
15.30–17.00	CLOSING SESSION & ADDRESS – Conference Celebration						

Interactive Tours

The World Conference on Drowning Prevention 2011 includes several interactive tours on Thursday 12 May as part of the conference program to give conference participants a firsthand look at current drowning prevention strategies, and the water hazards and risks associated with everyday life in Vietnam.

1. Cycle Tour – Water Hazards and risks in Asia – Urban Tour

Participants will enjoy a leisurely ride through a residential area of Hoi An and hear from guest speakers as they cycle past residential houses, wells, rivers and ferry crossings and witness the drowning hazards Vietnamese people encounter every day. Cyclists will visit a pre-school and hear about their efforts to keep young Vietnamese children safe from drowning.

2. Cycle Tour – Water Hazards and risks in Asia – Rural Tour

Like those in the Urban Cycle Tour, participants will witness Vietnamese life but this time in a rural setting of Hoi An. Guest speakers will discuss rice paddies, irrigation channels, rivers, ferry crossings, homes and wells, and other drowning hazards Vietnamese people encounter every day.

3. Traditional Fishing and Coracles

Taking place on the famous China Beach, delegates will be introduced to traditional Vietnamese fishing methods including the small, round coracle, other boats and large fishing nets used by hand. Participants will gain a fascinating insight into the life of Vietnamese fishermen and see a demonstration of a coracle in use.

4. Lifeguarding – Beach

Participants will hear from lifeguards and members of the Lifeguard Administration Board as they discuss the challenges and methods of keeping people safe on the beach and in the water. This tour will include a demonstration of lifeguarding equipment and participants will be able to witness the different patterns of beach usage during the afternoon and how this impacts upon lifeguarding operations. This tour will take place on the famous China Beach.

5&6. SwimSafe – Survival Swimming Program

The SwimSafe Survival Swimming Program has taught 12,000 Vietnamese children to swim over the past two years. Participants will see this program, including the use of portable pools, and hear school officials and SwimSafe instructors discuss the impact this program has had on their school, the students and the broader community. This tour will run in two locations.

7. Disaster Management

This easy walking tour will take participants through the World Heritage Town of Hoi An. The tour will reveal the reality of disaster risk in an area where flooding, storm surges and tropical storms are regular occurrences. The importance of the Thu Bon River for fishing, trade and tourism will be apparent to participants as they stroll along its banks, and stop at a number of sites to hear about the impact of floods and the coping strategies in the Hoi An community.

8. River Cruise

From the comfort of a river boat, participants will witness people's daily interactions with water including traditional fishing techniques and trade and transportation along the Thu Bon River. Tour participants will hear a presentation and discuss strategies for drowning prevention and awareness-raising in Vietnam and the region. The tour will end with a stroll through the historic Old Town.

Photo: RLSSA

Keynote Addresses

KEYNOTE PRESENTATION

ID:1031 / Paper:420

Drowning prevention: Challenges and prospects for global progress

Dr David Meddings[1]
World Health Organization[1]

Drowning is a major global public health challenge. Progress on infectious diseases over the last decades has unmasked drowning as an important threat to child survival. Continued progress on the child survival agenda will require that countries implement intervention programming that responds to the child morbidity and mortality epidemiology in their setting. For many countries this should mean re-orienting child survival programming and funding to include a major focus on drowning prevention.

This poses a series of challenges to the drowning prevention field, which is characterized by a complex injury issue with a history of both policy and research neglect and which is subject to important differences in terms of the risk factors for drowning in high income versus low-and middle-income countries. A number of these issues will be discussed within the context of the global epidemiology of drowning, and the current state of, and prospects for, drowning prevention research. A number of thoughts will be advanced with regard to the opportunities for catalysing a genuine and sustained global interest in addressing drowning prevention, including some potential pitfalls to be avoided; the challenges and timing of taking interventions to scale; the need for collaboration around a prioritized research agenda; and the role of normative institutions and frameworks such as the prospect of a World Health Assembly resolution on child injury prevention.

Corresponding Author
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KEYNOTE PRESENTATION

ID:329 / Paper:500

Child drowning in Asia: From evidence to action

Michael Linnan[1], Fazlur Rahman[2], Aminur Rahman[2,3], Justin Scarr[4,5] and Ross Cox[1]

The Alliance for Safe Children[1], Centre for Injury Prevention Research, Bangladesh[2], International Drowning Research Centre – Bangladesh[3], Royal Life Saving Society – Australia[4], Drowning Prevention Commission, International Life Saving Federation[5]

The scale of the child drowning epidemic in Asia has been greatly underestimated by the global public health community, in large part due to the current methods of estimating drowning deaths and projecting them across many countries where there is little, if any, population-based data. The large disparity in the numbers of children drowned estimated by the Global Burden of Disease for Vietnam and Bangladesh and those found in the countries when directly counted, led to a series of large, household surveys in low and middle income countries (LMICs) across east and south Asia.

The surveys have shown a number of fundamental differences with the conventional wisdom on drowning in LMICs in Asia: Beyond the large difference in numbers of children drowned when estimated compared to counting them directly, there are actually two epidemics – one in children under five, and one in children over five and both epidemics differ from those in same-aged children in high income countries.

The surveys collected detailed information on risk factors and examined their association with the risk of the child drowning. For very young children the risk factors examined were those related to loss of active, adult supervision. For the older children, case-control studies nested within the surveys examined the association of the lack of swimming ability and increased risk of drowning. In both groups the risk factors were significantly associated with increased risk of drowning.

Both risk factors were potentially modifiable on a population basis through development of interventions designed to specifically target both factors. Thus began a four year collaborative effort funded by UNICEF Bangladesh with the Centre for Injury Prevention Research, Bangladesh, The Alliance for Safe Children and the Royal Life Saving Society – Australia to show the efficacy and cost-effectiveness of interventions that were suitable for the low resource setting of a rural LMIC, where the largest burden of the child drowning epidemic occurred. The program has shown a four-fold reduction in drowning mortality in children in early childhood and a five-fold drowning mortality reduction in middle childhood and adolescence. With the involvement of AusAID as a participating partner, the program is now focused on developing the means to achieving national scale so that child drowning in LMICs can be reduced to the same scale as HICs.

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KEYNOTE PRESENTATION

ID: 1559 / Paper: 423

The cost of reducing drowning in rural Bangladesh and implications for governments, policy makers and donors

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Drowning is the single leading cause of child death in rural Bangladesh after infancy. Among children aged 1–4 years, drowning is responsible for over half of all deaths. Currently there are no drowning prevention programs on a national scale in Bangladesh. Unless interventions are begun, this leading cause of early child death may present a significant impediment to achieving the Millennium Development Goal related to early child mortality.

Although many interventions exist to reduce the incidence of drowning in rich countries, they are for the most part unaffordable for rural Bangladesh. Additionally, the circumstances of drowning in low and middle income countries mandate different approaches in order to be effective in the context of rural low income populations. In this session we present data on the costs, effectiveness and cost-effectiveness of a drowning prevention program implemented on a large scale in rural Bangladesh. This low cost program was specifically designed to be appropriate, sustainable and effective in reducing drowning in rural populations.

The program consists of two intervention components: 1) the Anchal, a community-based crèche program for children under five during high-risk periods with a link between the crèche and the child's home; and 2) SwimSafe, a survival swimming and water safety program taught in village ponds for children ages four and older. Results show that the Anchal component can be implemented for about $70int per child per year and the onetime cost of SwimSafe is roughly $18int per child. Both components are highly effective. As a result, the cost effectiveness ratio of the combined program compares favorably to other commonly funded programs that aim to reduce childhood mortality in developing countries.

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Evidence Based Standards in Lifesaving: The Conclusions of the US Lifeguard Standards Coalition

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United States Lifesaving Association[1], American Red Cross[2], YMCA of the USA[3]

Lifesaving programs and organizations throughout the world operate under standards and guidelines. These rules, techniques, and operational strategies have been developed over the years by various methods. These methods have included trial and error, expert opinion, tradition, and inference from related fields. Few appear to have been based upon objective experimentation and research. Medicine and science based fields are now re-examining their recommendations and protocols to ensure that they are in accordance with objective evidence. The United States Lifeguard Standards Coalition was established to do just this for US lifesaving. Its outcomes may have relevance for lifesaving worldwide, since many techniques and standards in place in the US are also used in other countries. A preliminary plan for the coalition was presented at WWS 2007.

The US Lifeguard Standards Coalition was a partnership between the United States Lifesaving Association, the American Red Cross, and the YMCA of the USA. These organizations set standards for training of the vast majority of lifeguards in the US, with each specializing in particular areas. The coalition was formed to critically and thoroughly evaluate our common lifesaving standards and strategies. The evaluation included efforts to uncover and evaluate all of the available and pertinent evidence based science and research. Dozens of additional non-profit agencies and organizations with appropriate expertise and resources agreed to participate in the coalition. These included the ILS, Centers for Disease Control and Prevention, American Heart Association, National Park Service, US Coast Guard and many others.

Multiple national meetings were held over the past three years along with extensive electronic communication. To begin the process, after thorough debate, fifteen basic questions pertaining to lifesaving were developed. They involved qualifications, scanning, staffing, first aid etc. Examples included: Is there evidence to support recommending a minimum age for lifeguards? How long should a lifeguard be assigned to continually watch the water before interruption of duty? Is oxygen safe, effective, and feasible in the drowning process resuscitation? These questions were individually evaluated by research teams. They investigated all the evidence available and graded its level of efficacy in answering the specific questions. Standards and conclusions were agreed upon by consensus of all the participants. The draft document was widely circulated worldwide on several occasions for comment and input. Where pertinent additional information was supplied appropriate edits were made.

The final results and conclusions were recently published in the International Journal of Aquatic Research and Education (Feb 2011). They are now available for presentation and discussion among the world lifesaving community. These final standards can be used by individual lifesaving organizations to modify existing standards or formulate new ones. In several instances there was little to no appropriate evidence available to answer some of the questions posed. This has served to highlight the strong need for future research and studies in lifesaving.

The US Lifeguard Standards Coalition process represented the most comprehensive evidence based review of lifesaving and associated literature ever performed. Further information and the final report can be found at www.lifeguardstandards.org

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Keeping the Safety Messages Simple: The International Task Force on Open-Water Recreational Drowning Prevention

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Globally, many organizations addressed the risk of drowning associated with aquatic recreation by promoting a plethora of drowning prevention messages. Preliminary discussion among drowning prevention advocates suggested that messages could be contained within simplified generic messages applicable to all settings. Using a modified Delphi technique to harness expert opinion, the Task Force finally agreed on 16 key messages that would foster open water drowning prevention. Messages were categorized into '*Care of self*' and on the '*Care of others*'. Learning swimming and water safety survival skills was the dominant message in both categories. It is hoped that by providing simple and consistent prioritised safety messages that are applicable to a range of communities and settings, the ultimate goal of saving lives will be achieved.

Introduction

Drowning as a consequence of aquatic recreation is a significant cause of unintentional death worldwide. In many countries, aquatic recreation is an integral part of the lifestyle, especially where there is easy access to a wide range of water environments such as beaches, rivers, lakes, and other waterways. In many countries, the highest proportion of drowning deaths occurs in open waters.

Globally, many organizations have attempted to address the risk of drowning associated with aquatic recreation in open water by promoting a diverse plethora of drowning prevention messages. This diversity reflects the multifaceted nature of the drowning problem and has invariably resulted in specific water safety advice relative to particular environments (such as surf beaches or rivers) or specific activities (such as swimming or surfing). International and national organizations have disseminated information and advice on a wide range of water safety issues. Other organisations have developed expertise in, and engaged in the promotion of, specific aspects of water safety (such as Surf Life Saving Australia for surf safety or New Zealand Coastguard for boat safety), while others have focused on particular at-risk groups (such as Safe Kids, for children).

While site-, activity-, and group-specific water safety messages are valued components of any targeted promotion, their multiplicity has the potential to obfuscate or dilute critical messages or confuse intended recipients. Our purpose was to establish simplified water safety guidelines to prevent open water recreational drowning.

Method

The process of developing generic open water drowning prevention messages started with the Washington State Drowning Prevention Network. It met to develop water safety messaging for recreational open water settings for parents and families, focused on in-water activity (such as swimming and playing in water) rather than aquatic sports (such as fishing or diving) or water craft-related activity (such as boating or surfing). A brainstorming workshop during the World Water Safety Conference 2007 in Oporto, Portugal added to the initial list of messages and identified the need to base the process on drowning experts' recommended best practices. Eighteen drowning prevention advocates from 16 countries were both invited and agreed to participate in a Task Force to develop and prioritize open water safety messages.

From initial rounds of teleconferencing among Task Force members, a list of 65 and 66 water safety messages respectively was compiled into two categories: '*Care of Self*' and '*Care of Others*'. Using a modified Delphi technique to distill the opinions of experts, Task Force members rated the messages by assigning a total of 100 points to messages in each category. After the first round, points were totaled and only the top 50% of messages were retained in each category. Messages were reviewed and refined by the group. The second round, using the same scoring point system, identified the top remaining 50% of messages.

Two subsequent rounds of voting occurred to approve the wording, combine or delete messages due to lack of supporting information. Final messages had to receive at least 80% approval by Task Force members. Finally, a brief reader friendly rationale was developed for each message based on content developed during the message generation process (available at: www.drowning-prevention.org).

Results

A total of eight messages for each category—'*Care for Self*' and '*Care for Others*'—was ultimately approved (Tables 1 and 2).

Table 1: Open-water Drowning Prevention: '*Care of Self*'

Key Messages
1. Learn swimming and water survival skills
2. Always swim with others
3. Obey all safety signs and warning flags
4. Never go in the water after drinking alcohol
5. Know how and when to use a life jacket
6. Swim in areas with lifeguards
7. Know the weather and water conditions before getting in the water
8. Always enter shallow and unknown water feet first

Table 1 shows, in descending order of priority, the designated eight most important messages related to '*Care of Self*' during recreation in open water environments. Learning swimming and water safety survival skills was seen as paramount in keeping one's self safe. Another three messages were well supported by Task Force members: always swim with others, obey all safety signs and warning flags, and never go in the water after drinking alcohol.

Table 2 shows that, as was the case with '*Care of Self*' messages, the learning of swimming and water safety survival skills was again the dominant message to prevent drowning when caring for others. Other messages receiving strong support in the '*Care of Others*' category related to safe supervision and included the need to swim under lifeguard supervision, to set and follow rules. These reflected the need for general awareness about water safety and thoughtful preparation prior to arrival at the recreational site.

Table 2: Open-water Drowning Prevention: '*Care of Others*'

Key Messages
1. Help and encourage others, especially children, to learn swimming and water safety survival skills
2. Swim in areas with lifeguards
3. Set water safety rules
4. Always provide close and constant attention to children you are supervising in or near water
5. Know how and when to use a life jacket, especially with children and weak swimmers
6. Learn first aid and CPR
7. Learn safe ways of rescuing others without putting yourself in danger
8. Obey all safety signs and warning flags

Discussion

From an original database containing over 60 messages related to '*Care of Self*' and '*Care of Others*' during swimming-related, open water recreation, the Task Force members agreed on 16 key messages they believed would prevent drowning. Task Force members had long standing drowning prevention experience, were mostly surf/beach based and lifeguard/rescue based, and from primarily high income countries. Thus, another group of experts might develop different prevention messages. Furthermore, while the recommendations may represent best practice they are not entirely evidence based. The lack of strong evidence for many recommendations serves as a research mandate for prevention of open water drowning.

While learning swimming and water safety survival skills was the dominant message in both '*Care of Self*' and '*Care of Others*' categories, the Task Force reiterated that swimming ability alone is no guarantee of safety. They recognized that learning to swim in a pool or calm water setting does not fully prepare swimmers for open waters such lakes, rivers or beaches; even good swimmers can encounter life-threatening problems. Task Force members agreed that water safety is more than just swimming competency; it is also about having the knowledge and attitudes to be safe in and around water. It was further reasoned that encouraging others, especially children, to learn swimming and water safety survival skills is a prime responsibility, especially for parents and caregivers.

Another strongly supported message in both '*Care of Self*' and '*Care of Others*' categories related to swimming with lifeguard supervision. While recognizing that no water is ever completely free from risk and the lack of strong evidence of the efficacy of lifeguard supervision in drowning prevention, Task Force members agreed that lifeguards promote safe behavior around the water and prevent drowning by providing rescue and medical assistance. Furthermore, the Task Force recommended them as a resource of safety advice before people enter the water. This and other messages focused on making informed decisions about one's safety.

Importantly, the messages provided a more expanded definition of adequate supervision. Not only do the messages recommend that those supervising should have before-hand knowledge of an open water recreational site and use its resources (lifeguards and signage), but that supervisors should provide close, constant, and undistracted supervision even when a lifeguard is present. Moreover, the supervisor should have the skills to safely respond to someone in distress in the water.

The only technology recommended was the use of approved lifejackets. Traditionally associated with boating and land-based fishing safety, lifejackets were deemed valuable in open water swimming activities especially for children, weak, or unsure swimmers. Open water fencing was not considered as this would be the responsibility of an organization vs an individual.

While our goal was to develop widely usable messages, lack of universally agreed terminology and language constraints limit their meaning. We anticipate that various cultures and languages will need to interpret the recommendations with caution. Hopefully the generic water safety messages provide a comprehensive, concise and universal framework for communicating open water drowning prevention messages at an international, national, regional, and community level.

Conclusion

The recommendations have established informed, consistent, and concise messages that promote safe recreational use of open water. It is hoped that they will improve the clarity of communication between drowning prevention organizations and the public they serve as well as provide a framework for safety messaging that is applicable to a range of communities and settings with the ultimate goal of saving lives.

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How recent developments in behavior change science could reduce deaths from drowning?

Dr Dave Jenkins[1]

SurfAid International[1]

Purpose

Using working examples of successful disaster preparedness and child survival projects Dr Dave Jenkins will introduce recent developments in behavioral science that will assist in the design of scalable drowning prevention models.

Introduction

Dr Dave Jenkins founded SurfAid International during a surfing holiday in the Mentawai Islands of Indonesia. He discovered 10% of children were dying of diseases largely preventable by parental behavior change. SurfAid's mission is "To significantly improve the health, wellbeing and self reliance of people in remote areas connected to us by surfing".

In 2005 Dr Dave Jenkins was awarded the 'Rainer Fellowship' for social entrepreneurs where he has studied and applied behavior change approaches designed for maximum impact and scalability. SurfAid projects now include disaster preparedness and response, malaria control, and clean water being integrated into maternal and child survival projects. SurfAid's vision includes designing, executing and scaling a cost effective model for community based maternal and child survival projects. This includes helping communities to shift cultural norms utilizing recent developments in behavioral science to successfully engage, mobilize, and facilitate communities towards self reliant and sustained action.

All scalable models require a cost-effective behavior change process but many projects fail to capitalize on new behavioral science and associated tools and approaches. The presentation will give participants an outline of these key developments.

Creating Behavior Change

The presentation will give working examples of three key components for designing successful behavior change activities and projects.

1. Triggering motivational emotional responses includes:
   a. Appealing to parental protective urges
   b. Triggering visceral responses
   c. Participatory media and appeals
   d. Shrinking and clarifying the change
   e. Cultivating a sense of pride and identity
   f. Systematic peer pressure
2. Providing the rationale includes:
   a. Locally identifiable success stories and positive deviants
   b. Participatory analysis of pregnancy outcomes
   c. Scripting the simple but critical moves
   d. Pointing to a clear destination
3. Creating supportive environments for change includes:
   a. Creating local laws
   b. Recruiting religious, natural and cultural leaders
   c. The use of action triggers and choice architecture
   d. Raising status of volunteers

The Cross Cutting Notion of Happiness

There is a growing body of quality research about what makes people happy, and solutions that leave people happier, work better and last longer. How to best use a set of themes that cut across cultures as an additional tool to shape design will be discussed.

Summary

In conclusion, Dr Jenkins will examine the critical success factors in developing a viable path to scaling a community based development model.

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NOTES

Photo: Exotissimo

Vietnam in Focus

ORAL PRESENTATION

ID: 1582 / Paper: 456

Cross-sectoral approach to child drowning prevention and the coordination role of the Ministry of Labour, Invalids and Social Affairs in child drowning prevention

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Drowning is the leading cause of injury related mortality. It is responsible for about 50% of injury related mortality for children and adolescents aged 0–19. In 2008 alone, 3523 children and adolescents aged 0–19 died of drowning, equivalent to more than nine children and adolescents per day.

Preventing child drowning requires strong participation of all relevant sectors. Therefore, since 2002, the Ministry of Labour, Invalids and Social Affairs (MOLISA) has been taking the lead role in coordinating child drowning interventions, particularly in the areas of communication, policy development and implementation. Specifically, messages on child drowning prevention have been conveyed to general public, especially parents, care givers and children in various formats. Furthermore, in 2009, for the first time, nine relevant ministries and mass organizations signed an inter-sectoral plan on child drowning prevention. In addition, child drowning prevention has been addressed under MOLISA's plan of action.

In the next five years, child drowning will continue to be one of the priorities for child injury prevention and therefore, it will be part of the national programme for child injury prevention with budget allocated by the Government at different levels. Moreover, strategic communication and education of general public, particularly parents, child care takers and children on child drowning prevention (particularly reduction of environmental risks, child supervision, teaching children to safely swim) will be strengthened.

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The situation of drowning mortality in Vietnam 2005–2009

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Drowning is one of the leading causes of fatal injuries in the world as in Viet Nam, especially for children. With an aim to assess the real situation of drowning in Vietnam from 2005–2009, the Health Environment Management Agency collected all causes specific mortality from A6-YTCS book of over 10,000 communes in 63/63 provinces/cities in Vietnam.

The study showed that injury mortality rate accounted for 10–12% of the total deaths. Of which, drowning was the second leading cause with 17% after traffic accidents. Annually, the average ratio of drowning mortality was 8/100.000 population. This number seemed to decrease in recent years. Male were experienced in drowning more greatly than in female with the mortality ratio of 12/100,000 population and 4.9/100,000 population, respectively. Children were at high risk of drowning. Specifically, those of group age 0–4 were predominant with the average rate of 22/100,000 children per year. Among them, boys were suffered from drowning 1.4 times as much as girls.

Thanh Hoa, Nghe An and Ha Noi had the highest mortality rate of drowning. This result was in accordance with the findings from a study on causes specific mortality on Viet Nam in 2008. The mortality rate of drowning in children under five years-old was similar to the native malformation rate of 18%. The research described a great number of relatively comprehensive results on drowning mortality and risk factors in Vietnam. Development of policy to reduce drowning deaths requires appropriate interventional measures such as the national drowning prevention plan or sentinel surveillance systems on determination of risk factors of drowning in the community.

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ID: 1584 / Paper: 458

Swimming lessons for children and rescuing skills for adults – Ways forward

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One of the major causes that lead to high rates of child drowning in Viet is children's lack of swimming skills. Teaching swimming and developing skills among children is an effective approach to bring about reductions in the number of drowning incidents.

According to the Ministry of Labour, Invalids and Social Affairs (MOLISA), research into drowning incidents in the Mekong Delta showed that 84 per cent of the children who drowned did not know how to swim. In the last nine years, the Department of Public Sports and Gymnastics – Ministry of Culture, Sport and Tourism organised hundreds of training for trainers courses in swimming and rescuing, especially in the Mekong Delta Region where there is a high rate of child drowning. As a result, more than 5,700 swimming coaches/trainers have been trained with a final view to training other adults and children how to swim at their home provinces.

Swimming lessons have been provided to children aged 6–15. In the upcoming year, the Ministry of Culture, Sport and Tourism will strengthen its linkage with other relevant ministries and Government at all levels for resource allocation, especially at local levels for developing swimming skills for children. Intensive swimming courses will be recommended to be undertaken during summer vacation by the Ministry in conjunction with Ministry of Education, MOLISA and Youth Union.

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ID: 1585 / Paper: 459

Study on evaluation of life jacket utilization in Vietnam

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According to the World Health Organization, an appropriate usage of life jackets is an effective method to contribute to the reduction of drowning mortality. Till now, Viet Nam has not ratified a specific regulation on life jacket wearing when participating in watery traffic.

This study was implemented with a goal to assess the quality and utilization of life jacket as well as to recommend some interventions to increase the rate of life jacket wearing and to minimize drowning in Viet Nam. The study showed that there were eight kinds of life jacket with various form and origin in Viet Nam.

Interviewing results of 375 high school students in Dong Thap indicated that 93.7% of them had positive awareness on life jacket usage. However, only 15.93% of them utilized life jackets which were subsidized. In this group, 46.15% of children did not wear a life jacket regularly. The study also described that two kinds of life jacket with brand of X-26 and Hoa Sua were preferable for utilization with 88.5%.

A number of interventions to contribute to drowning control were also recommended; namely enhancement of life jacket usage through free provision and price decrease; construction of bridge; replacement of bamboo bridges with cement ones; suitable management of ship and boat; rejection of utilization of old ships; and assurance of an adequate quantity of life jackets on boat.

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Review of the five year communication campaign on life jacket wearing

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Viet Nam has more than 2300 river wharfs with more than 5000 ships, boats, and ferries in operation, but many of these boats are not equipped with sufficient lifejackets and flotation devices and they are not operated in compliance with water safety regulations. Therefore, many tragedies happened to boat passengers including children.

At the beginning of 2010, the Ministry of Transport (MOT) launched a comprehensive communication campaign to promote life-jacket wearing at all ferries throughout the country. Specifically, after one year, the MOT mobilized financial and in-kind resources to equip child passengers who travelled on boats with thousands of life jackets. In addition, hundred thousand copies of Information-Education-Communication materials on water safety regulations were developed and disseminated to boat owners and passengers throughout the country.

During the 2010 campaign, the MOT learned that quality life-jackets should be in different sizes to fit passengers (adults and children) and when life-jackets become too old, replacement should be taken into account.

In the upcoming years, the MOT will continue to advocate for local resource allocation to promote communication and better enforcement of the life-jacket wearing apart from financial resources budgeted at the central level. People living in remote and disadvantaged areas will be prioritised for any kind of support.

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Role of the Waterway Police in child drowning prevention

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Viet Nam has a coast line of 3,260 km and 2360 rivers. Waterway transportation plays an important role in the national economy. However, at present, nearly 80% of means of waterway transportation have not registered for safety checking and 80% of boat drivers have not obtained a licence. From 2005–2008, there were 928 waterway accidents that killed 683 passengers, injured 101 people and damaged 789 boats and ferries.

The Waterway Police under the Ministry of Public Security has a role in enforcing all waterway related regulations and laws. In the past few years, the waterway police have the role of: (i) Maintaining a surveillance of waterway related accidents in conjunction with authorities at different levels, military and defense forces; and (ii) Enforcing all waterway related regulations through monitoring and communication.

The Waterway Police has some initiatives to further strengthen waterway safety, for example: 2010 Writing Competition on Waterway Safety and Drowning Prevention with the participation of 32 localities and the initiative of "Self-Managed Groups in which local people organized themselves to promote Waterway Safety, especially children when going to school in some provinces.

In the coming years, the Waterway Police will continue to implement its responsibilities as one member ministry which signed the inter-sectoral plan on child drowning prevention with a stronger role in enforcing waterway safety regulations.

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ORAL PRESENTATION

ID:1177 /Paper: 389

Drowning injuries in Vietnam: More burden in vulnerable group

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Introduction

The World Health Organization (WHO) in recent years showed that drowning is one of the leading causes of fatal injuries in the world, particularly in developing countries. Drowning is a particularly large cause of death in Vietnam. We compare deaths and DALYs from drowning in Vietnam with Thailand and Malaysia.

Method

A Burden of Disease (BOD) study was done in Thailand in 1999; in Malaysia in 2000; and in Vietnam in 2008. BOD of each country combined both mortality and disability components into a single metric, the Disability Adjusted Life Year (DALY). The method of estimating mortality varied between the three countries depending on available data sources. The Thai vital registration (VR) system has more than 40% ill-defined causes of death. Instead, the causes of death were derived from a large verbal autopsy (VA) study in 10 provinces and correction of underreporting of deaths based on an intercensal survey. In Malaysia, the VR is complete for the majority of the population living on the Peninsula. For the states of Sabah and Sarawak, morality rates were computed from a small study of completeness of their VR data. In Vietnam, causes of death were also determined by VA in a representative sample of communes. For morbidity due to drowning, both Thailand's and Malaysia's BOD used data from hospital admissions to estimate incidence rate. Vietnam's incidence was derived from a national injury study. The results are presented as age-standardised death rates and DALY rates per 100,000 population.

Results

The death rate of drowning in Vietnam in 2008 (7.6 per 100,000) was higher than that in Malaysia (3.6 per 100,000) but lower than the rate in Thailand (9.2 per 100,000). In Vietnam and Thailand death rates from drowning were 2.5 times higher in males compared to females. The sex ratio in Malaysia was 3.5. Drowning death rates in all three countries were highest in the young and the elderly. Drowning was the 14th leading cause of disease burden in Viet Nam. The ranks in Thailand and Malaysia were 19 and 34, respectively. However, the Viet Nam study included fewer diseases than the studies in the other two countries.

Conclusion and discussion

Drowning is an important cause of death and disease burden in Vietnam and the two other South East Asian countries for which we had comparable data. Drowning prevention in the region deserves attention in priority setting.

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Drowning in Low and Middle Income Countries

Drowning in low and middle income countries is a significant problem that accounts for as much as 96% of the global burden of drowning deaths. This section includes many papers from researchers and policy makers from across Asia and Africa, and covers a diverse range of themes.

A key component of this stream is intervention research, collaborations and perspectives on what is needed to impact this significant issue.

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A longitudinal study of child drowning in rural Bangladesh

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Introduction

Drowning is a major but neglected public health problem. About 97% of all deaths from drowning occur in low/middle-income countries. Child mortality from drowning has been known to be very high from studies done in Matlab, Bangladesh. The Bangladesh Health and Injury Survey (BHIS), a national injury survey done in 2003, confirmed the high rates and showed drowning was the leading single cause of child death after infancy throughout childhood. As a result of BHIS, an injury prevention project named PRECISE was undertaken in three upazilas in rural Bangladesh from 2005 through 2010. This paper reports on the results from the five year longitudinal study of drowning in children over the period of the project.

Methods

Approximately 350,000 children were under active surveillance in three rural upazilas over the period of the study. A demographic surveillance system in the project areas captured all child deaths and complete death investigations were conducted for all deaths resulting from injury. All drowning events were investigated and a complete set of epidemiologic, demographic and incident descriptors were recorded.

Results

The five years surveillance showed a declining trend in fatal child drowning in three PRECISE intervention areas. At base-line in 2005 the rate of drowning in under 18-year-olds was 29.9 per 100,000, which declined to 18.4 per 100,000 in 2010. Over the five year period there was a 38.4 percent reduction in fatal drowning in children.

Conclusions

The PRECISE intervention was effective in reducing child drowning mortality rates in rural Bangladesh over the four year life of the project.

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Drowning, an impediment to achieving MDG4 in Bangladesh

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Introduction

Meeting MDG 4, the Millennium Development Goal for Health, requires that the under-five mortality rate (U5MR) for Bangladesh be reduced by two thirds from its level in 1990 by 2015, only four years from now. The U5MR is made up of the infant mortality rate (IMR) with the child mortality rate (CMR). Bangladesh has experienced significant and ongoing reductions in the IMR. However, the CMR has not declined at the same rate, in large part due to the large contribution of injury, and in particular, drowning to mortality in the 1–4 year age group.

Methods

Drowning mortality rates in children under five-years-of-age from a four year ongoing rural injury prevention project know as PRECISE will be presented and compared to results from the Matlab Demographic Surveillance System.

Results

An increasing proportion of both IMR and CMR is the result of drowning. The impact is particularly significant in children 1–4 years old, where currently more than half of all mortality in this age group is drowning.

Conclusions

There is an expectation among the Government of Bangladesh and the international community that MDG4 will be achieved based on past rates of decline of under-five mortality. There is considerable evidence that the sustained rate of reduction in the CMR may prove a significant impediment to MDG4 achievement. Current evidence from the Matlab DSS as well as the PRECISE DSS shows that well over half of all 1–4 mortality is due to drowning. Without large scale drowning intervention programs, it will be difficult to continue the rapid decline in CMR necessary to assure MDG4 achievement in 2015.

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Safe haven effect of anchals – Preventing drowning in early childhood

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Introduction

The four-year-long injury prevention project implemented in Bangladesh, known as PRECISE has shown that the majority of drowning occurs in early childhood with the peak age in the second year of life. Other information on child drowning such as the Bangladesh Health and Injury Survey confirms that most drowning occurs in very early childhood, and is associated with difficulty in supervising very young children while caretakers attend to the necessary domestic work in and around the home. The PRECISE project developed a village-based crèche that provided adult supervision from 9am to 1pm for children between 18 months and five years. An active surveillance system allowed the evaluation of the crèche for drowning prevention.

Methods

A cohort study was conducted to examine the protection from drowning provided to children attending the crèches. Children 18 months through five years old who attended the crèches since 2006 through September 2010 made up the crèche cohort. Their survival over the same time period was compared to an age- and sex-matched cohort of control children who did not attend the crèches. Survival differences were determined using Kaplan Meier and Cox Proportional Hazards analyses.

Results

The crèche cohort was made up of 11,501 children who were graduates or current attendees with sufficient exposure times and known survival status as of Sept 30, 2010. The control cohort was made of of 11,501 children matched on age and sex with the crèche children. Results of the Kaplan Meier and Cox Proportional Hazards analyses showed a substantial, statistically significant protective effect from drowning for crèche attendance. Additionally, the analyses showed a substantial protective effect from other causes of fatal injury as well. Detailed results will be presented at the conference.

Conclusions

The safe haven effect of the crèche is robust. When only looking at the time period when children were physically in the crèche, no drowning occurred in the crèche cohort which prevents the efficacy from being calculated using the current survival information. The analysis is continuing with longer follow-up times to provide additional risk exposure information. The protective effect extended beyond the crèche hours, continuing in the hours that the children were at home during crèche days, and throughout the days where the crèche was not held (holidays and weekend). This extended protective effect was substantial and effective in preventing drowning in children in rural villages in Bangladesh.

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Survival swimming – Effectiveness of SwimSafe in preventing drowning in mid and late childhood

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Introduction

Conclusive evidence of the protective effect of swimming has been lacking in high income countries. Nested case-control studies in surveys done across Asia have shown significant associations between swimming ability and protection against drowning in children four years and older. In order to confirm that the relationship between swimming ability and protection from drowning was a causal relationship, a four year cohort study of a structured survival swimming program known as SwimSafe was undertaken in Bangladesh.

Methods

A cohort study was conducted to compare the protection from drowning conferred by participation in the SwimSafe survival swimming. The survival swimming cohort was made up of children primarily aged 4–12 years old who were graduates of the SwimSafe program in rural Bangladesh. The non-survival swimming cohort was made up of age- and sex-matched children from neighboring villages who were not participants in the SwimSafe program. Death from drowning was compared in both groups using survival analysis techniques.

Results

A total of 81,659 children had been taught survival swimming in the study area who had been followed through September 30, 2010 and whose survival status was known. A cohort of 140,479 non-SwimSafe participants had been followed in the same system and whose survival status was known. Children from this non-SwimSafe cohort were matched on age and sex with SwimSafe graduates and a total of 66,066 children from each cohort were fully matched. The matching cohorts were subjected to Kaplan Meier and Cox Proportional Hazard survival analyses with fatal drowning as the primary outcome. These showed a substantial and statistically significant reduction in relative risk of drowning in SwimSafe children as compared to the matched non-SwimSafe children. Detailed results will be presented at the conference.

Conclusions

Survival swimming, as taught in the SwimSafe survival swimming program with its highly structured and skills-based methodology confers protection from drowning in children who graduate from the SwimSafe program. The duration of protection cannot be inferred from this trial beyond three years at present; however, the epidemiologic evidence from previous research done in Asia strongly suggest protection from survival swimming will last throughout childhood.

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Optimal age to learn survival swimming in Bangladesh

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Introduction

To maximize effectiveness at the population level, an intervention must act upon the largest number of those at risk of an adverse outcome. For drowning, the greatest risk is in early childhood and in Bangladesh, the child drowning rate peaks in the second year of life and declines thereafter. As a result, over eight out of 10 incidents of child drowning occur before five years of age. Thus, the earlier in early childhood that survival swimming can be taught, the larger the impact it will have in preventing child drowning. However, in rural LMICs many children suffer growth and development delays due to nutritional deprivation and previous morbidities. This places them at potential risk when placed in water over their heads when learning to swim. The optimum age to learn swimming is a balance between ability to acquire the motor skills involved and the ability to deliver a safe, supervised teaching program. The development of the SwimSafe program used data from a variety of sources to choose the age of swim teaching which minimized risk of injury to the child, as well as maximizing the protection from drowning for the longest period of childhood.

Methods

Review of data from anthropologic, epidemiologic, nutrition surveys and community assessments were used to determine the optimal age of teaching survival swimming skills in rural Bangladesh.

Results

The epidemiologic studies indicated that the peak age of drowning was between the second and third year of life. Results from the early childhood growth curves showed growth retardation as a result of nutritional deficiencies affected a significant proportion of rural children. However, by four years of age 99% or more of rural children had achieved sufficient motor development to allow acquisition of swim skills and 90% had achieved a height of at least 90cm. The anthropologic assessment data showed most three-year-old children in rural areas were already engaged in play in ponds designed to lead to natural swimming competence.

Conclusions

Motor development in early childhood needs to progress to a stage where a child can be safely taught survival swimming. The anthropologic data showed that beginning to learn swimming at three years of age was common practice in rural communities, thus providing evidence of community norms that allowed very young children to be taught swimming. Children in LMICs often lag in height development because of nutritional causes or prior morbidities. However, growth velocity curves from rural Bangladesh showed at least 90% had achieved a height of 90cm by four years of age. The SwimSafe program built in an additional margin of safety by using a platform in teaching ponds to ensure the maximum height of water for very young children was 80cm. Evidence from the SwimSafe program in rural villages in Bangladesh shows survival swimming can be safely taught at four years of age. To date, over 130,000 children have been trained in survival swimming and no injuries have occurred in the SwimSafe teaching process.

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Desk research into communities at risk of drowning – Case of Uganda in East Africa

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Background/Introduction

Uganda is based in east Africa, and it is where River Nile starts from Lake Victoria—the largest lake in Africa—and shared by three East African countries including Uganda. This country also has many major water bodies which include Lake Kyoga, Lake Albert, Lake Edward, Lake Mburu, and Lake George as the main lakes and many other small water bodies. Unfortunately this blessing in form of large water bodies has also been a curse in the form of cases of water accidents.

Aims/Objective

To access extent of water related accident in Uganda.

Methods Objectives

Secondary Data based on Newspaper Report was used.

Results Objectives

There are many water accidents that occur in the countries, though the cases that are reported are those of high magnitude and in urban areas. Journalists leave out minor accidents even though the rate of death in those water related accidents is high, for example: from 2002–2008, and in one major incident that occurred in 1996, 1364 cases were reported out which only 81 survived, implying a death rate of 94.06 percent. While this year there were 33 major cases where 31 died and only two survived, implying death rate of 93.9 percent. Government unfortunately does not consider it as a priority area. The current government organisations that is to say, police marine, army marine section and fire brigade were actually trained by the representative of Royal Life Saving Society in Uganda but unfortunately they are reactive rather than proactive. Some of those who are also trained are life guards in swimming pools which has lead to a reduction in fatal accidents in swimming pools. This unfortunately is not the case in big natural waters or during flooding which has become a common phenomenon in the country during rain season due to global warming.

Discussion

The fact that government does not consider water related accidents as a priority, since the country has many other pressing needs such as poverty, HIV and malaria, has lead to insignificant intervention by government. The major non-governmental organisations also funds areas which government considers as priority area. Though the Royal representative has interest in increasing its interventions it has been affected by facilities, for example, initially before government privatised hotels, swimming pools used to be accessed freely for training, but currently due to profit orientation of the new owners it has become hard to access facilities for training.

Conclusion

With the current level of government intervention in water related accidents, and less involvement of non-governmental organisations coupled with inadequate facilitation of Royal Life Saving Uganda, most of water accidents in Uganda will end up being fatal unless the current trend is changed.

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Arising the immune protection of the children drowned in Thailand

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Background

Drowning is the first leading cause of child mortality among Thai children under the age of 15 years old (1). This is higher than the deaths with a result of infection, twice higher than road traffic injury. Each year approximately 1500 Thai children under the age 15 die of drowning. The mortality rate per 100,000 children aged 0–14 years is between 9.3–11.5, (2004–2008) (2). In foreign countries, it has been found that teaching children to swim and survive in the water is one of the measures to prevent children from drowning while in Thailand children's opportunity to learn to swim is still limited (3–5). Furthermore, the current swimming instruction does not include water safety skills, skills to survive in water, water casualty prevention, and water rescue (5). According to a survey on swimming ability among Thai children across the country in 2003–2004, 16.3% of Thai children under 15 years can swim (6). In other words, among the 13 million children under 15, only 2 million can swim.

Objective

To drive Thai children to arose drowned immune protection.

Methodology

The study involved a comparison of two different swimming programs, a general swimming and a survival swimming course. From the evaluation it was found that the group who participated in the survival swimming course had more survival and rescue skills than the other group, and the difference was statistically significant. Therefore, all Thai children should be protected from drowning by receiving appropriate instruction. However, the strategy to drive participation from all parties involved is important, so relevant agencies are invited to join the programme to produce the survival swimming curriculum. Executives of all relevant agencies were invited to evaluate the curriculum and to disseminate information about the difference between the two types of swimming course.

Result

The executives have developed a policy that Thai children must be protected from drowning, and are encouraged the relevant agencies to promote drowning protection in Thai children by bringing the survival swimming curriculum into the curriculum at the elementary education level, the Institute of Physical Education and programs of the First Responder. It also has been pushing for the regional Training Center. In remote areas, the local administration operated to provide resources for teaching the survival swimming curriculum such as budget, instructor, mobile swimming pool, teaching materials and maintenance.

Conclusion

It is important that all relevant parties are involved from the beginning and feel ownership in the plan in order to execute it successfully. To promote the opportunity for children to learning survival swimming curriculum is to immunize them, likewise the immune children which have been infected by communicable disease.

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Policy advocacy on child drowning prevention in Thailand

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Background

In Thailand, drowning is the first leading cause of fatality among children under 15 years of age, and the fatality rate is much higher than those for other causes including infectious and non-infectious diseases (1–4). Each year, nearly 1,500 children in Thailand die because of drowning, or about four children per day on average (2). The child drowning death rates per 100,000 children under 15 years of age between 1999 and 2008 ranged from 7.7 to 11.5 (5).

Objectives

To advocate child drowning prevention in Thailand.

Method

The data were collected from many sources using both primary and secondary data such as research articles, news items, death certificates and hospital data. These were analyzed and synthesize for important issues. The information on magnitude of child drowning problem was utilized to promote mass media and other communications focusing particularly on disseminating information in conjunction with important events and those that interest people such as Songkran Festival, Loy Krathong Day and flood disasters. Implementation of the specific measure showed the interest of executives. The information is also disseminated through regular meetings of the relevant agencies and with the participation of the private sector. Operations initiated since 2007.

Results

The Ministry of Public Health and relevant agencies established child drowning prevention measures such as formation of child drowning prevention committees, instituting a child swimming policy, designating a Child Drowning Prevention Day, and establishing a policy that in every hospital parents who bring children to be vaccinated should be given knowledge about child drowning prevention, prepared the Survival Swimming Curriculum in collaboration with expert swimming instructors from relevant agencies. The Ministry has also instituted child drowning surveillance and investigation, extent ion of model development on child drowning prevention through Regional Public Health Agencies, and disseminated information through mass media with support from the private sector, and promoted adjustment of the legislation related to child drowning prevention. In addition, prevention programs for children drowned in the First Responder. After the implementation, the mortality rate of child drowning decreased from 11.1 in 2006 to 9.8 and 9.3 in the years 2007 and 2008 respectively.

Conclusion

Widespread information dissemination to the public should also influence executive and other relevant agencies to perceive the significance and lead to assignment of priority and the appearance of policy concerning child drowning prevention. Besides, some of the specific measures had such a clear result, executives now see the importance of the measures and child drowning prevention has become a top priority national issue.

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Model-driven community towards the child drowning prevention in Thailand

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Background

Drowning is the first leading cause of death among Thai children compared to other causes of fatality including infectious and non-infectious diseases (1,2,4). The proportion of child drowning deaths is 33.9%–46.5% of all injury-related fatalities (1,3). Among children under 15 years of age, 1,420 die from drowning each year, or about four per day (10-year average). The child drowning death rates between 1999 and 2008 ranged from 7.7 to 11.5 per 100,000 children under 15 years (3,4).

Objective

To target the communities in Krai Klang subdistrict to prevent child drowning by using mechanisms of self-driven community.

Methodology

The study was a participatory action research. It will start by collecting information from the communities and then by influencing government administration executives to participate in the programme and co-coordinate with community leaders to analyze the causes of the problem, and organize the community members participation in the child drowning prevention plan.

Result

The results of the study show that after the first year, knowledge of child drowning prevention was communicated through community leaders, schools and local public health centres to target all levels of the community. A community swimming pool was built at the local administrative office, while the budget, instructors and all relevant equipment and supplies needed for the construction were provided by the local administrative office and the community. Personnel development was also carried out with support from the Institute of Physical Education. The community now has a system-maintenance swimming pool and the system is maintained with the budget of the local community. In the following year, there was the environmental management of community safety, including measures such as fencing, warning signs, providing the life-saving devices and publicity through local media.

Conclusion and Discussion

In order to maintain the continuity and efficiency of the child drowning prevention, there must be sufficient resources within the community and the cooperation of all community members.

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Drowning in a developing country in Asia. Its nature and the support that such countries need

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Background

Sri Lanka is a small island in the Indian Ocean with several lakes and many rivers. Its population is 20 million, and the annual death toll from drowning is around 1100, which is 5.5 per 100,000 population. There are no reliable data on these incidents such as whether the victims could swim or had consumed alcohol, how many drowned while trying to save another, whether CPR was given and about 'near drowning'. However, newspaper reports indicate that most of them could have been prevented if concerted attempts had been made. In towns, there is pipe borne water whereas in rural areas water is obtained from wells. Some have private wells in their gardens while others draw water from public wells. Most wells have neither a protective wall around nor a wire mesh to cover them. They also have no mechanical or electric pumps, and water is drawn using buckets attached to long ropes. There are very few houses with private swimming pools, but many big hotels and apartment buildings have pools with none having fences around them. Water transport is not a cause of drowning in Sri Lanka as there is no transport along rivers unlike in some countries; boats are used for recreation, for crossing in areas where there are no bridges and for fishing in the sea.

Aim

To present the different aspects of the problem of drowning in countries like Sri Lanka, and to highlight the areas where attention, study and support are needed.

Drowning Patterns

A toddler who crawls to an unprotected well sees his own reflection in the water and it usually ends in a tragedy. In the month of February 2010, one Sri Lankan newspaper published four reports of children falling into unprotected wells, out of which three had died. During the last 25 years, some 1000 children would have died in this manner! Older children and youth, mostly males, are very fond of bathing in rivers, lakes and the sea. When they are in a crowd they tend to consume alcohol, do not bother to choose safe bathing spots and take more risks. Among the older people drowning is less common; deaths occur mainly during floods and among the fisher folk. Flooding is a regular feature in certain areas a few times every year. The tsunami in 2004 killed over 35,000 people.

Rescue Attempts

When one is in difficulty, others do not think about their own safety and make heroic attempts to save the friend. The result is that two, three or four drown instead of one person. Many of them cannot swim and do not know the basic steps in rescuing people. First Aid: Due to paucity of media publicity, people are unaware of the great value of immediate CPR that needs to be given by the on-lookers till those experienced arrive on the scene. They also have no idea how to give CPR as no TV station has yet shown it. What is tragic, is that after rescue people go about in search of vehicles but what arrives in the hospital is a dead body!

Conclusions

There may be many developing countries with the above scenario. Individual governments and international bodies involved in drowning prevention should address the problem and come out with solutions to suit the respective countries. These include surveillance, intensive media publicity to highlight the problem, swimming training in schools, warning boards in unsafe bathing places, legislation to ban drinking near swimming pools and bathing spots, prosecution of people who have unprotected wells in their compounds and demonstration of CPR on television etc.

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Development and implementation of community-based drowning prevention interventions in a selected urban coastal community in the Northern Philippines

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Introduction

According to the World Report on Child Injury Prevention (2008), 175,000 children and youth less than 20 years old around the world died of drowning in 2004. Ninety eight percent (98%) of deaths due to drowning occurred in low-income and middle-income countries (1). In South East Asia, the death rate was 6.6/100,000. Drowning is also a leading cause of child injury deaths in the Philippines. In 2003, death rate among children 1 to 4 years was 17/100,000, while that among 10 to 14 years was 10/100,000 (2). In its desire to address the problem, the Department of Health (DOH) conducted an assessment and implemented community-based interventions in a pilot site in the Northern Philippines.

Objectives

This describes the knowledge, attitude and practices of community residents in an urban coastal community on drowning prevention. In addition, the drowning-prone areas in the area were identified and community-based interventions were planned and implemented in the pilot site.

Methods and Materials

Quantitative (community-based survey) and qualitative (key informant interview, focus group discussion, observation) data collection methods were used. Results were presented to the community through a community assembly. Community leaders and residents actively participated during the planning phase and were highly involved in the implementation of local drowning prevention initiatives.

Results/Discussion

Awareness of drowning prevention programs and activities in the community is also quite low. The respondents have positive attitude towards supervising children while swimming or playing in high risk areas, in buying and wearing flotation devices, in conducting CPR training for resort owners, and participating in drowning prevention measures. Practices on child supervision, wearing of flotation devices and participation in water safety awareness activities should be improved given the children's easy access to open water. Several areas in the community were also identified as drowning-prone areas. Community drowning interventions were planned and implemented. Health promotion materials and drowning prevention messages were developed and used in community health campaigns. Training programs on First Aid, Basic Life Support, and Basic Survival Swimming were also done. Trained community residents developed their own indigenous rescue devices which they can use in saving the lives of drowning/near-drowning victims in their respective areas. Orientation on the use of Online National Electronic Injury Surveillance System (ONEISS) was also conducted. For the identified drowning-prone areas in the barangay, barriers/fences and covering of manholes were constructed.

Conclusions/Recommendations

Authorities must support the local initiatives on drowning prevention. In the same way, the community leaders and trained community members must join hands in looking for ways and means to sustain the efforts that they have started.

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The process of learning natural swimming

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Introduction

In surveys done by TASC and UNICEF across Asia, natural swimming ability was uncommon in Vietnam, Thailand, Philippines, Indonesia, China and Cambodia. However, in Bangladesh, natural swimming ability was almost universal by age 18 years, and most children had learned to swim naturally by age nine. This high prevalence suggested that the skill was seen to be useful for children and that an active process of teaching must be present. An anthropologic study was undertaken to understand the swimming learning process and the role of family and community.

Methods

An anthropologic study was undertaken to examine the process of acquisition of natural swimming ability. A pilot study was conducted in six regions of the country to determine the research population and location and to design the research tools. In each region, the pilot research focused on both urban and rural populations. Research tools such as observational checklists, scripts for focus group discussions, frameworks for in-depth interviews and kits for development of detailed documentation of observations and behaviors were developed. Following this a study was performed on water familiarization rituals and games used with infants and very young children (through 3 years of life).

Results

The research sample contained 192 children between three and nine years of age and their families and others associated with natural swim training. Detailed results will be presented describing the processes used as well as profiles of the children, families, teachers and others involved in the process. The major risk identified was very young children going to water, sometimes alone or sometimes with peers who do not know how to swim and did not have rescue skills.

Conclusions

Children in Bangladesh learn swimming at a very early age. Especially for children in villages, who have daily opportunities for exposure and play in water, the acquisition of natural swimming ability is a norm of mid childhood. Most acquire the natural swimming skills on their own or from informal, but organized teachers who are usually adolescents or young adults. The process is organized and supported by the village itself. While an effective process for teaching natural swimming, there are significant risks associated with the practices, especially those for very young children. The process can inform the creation of a structured curriculum that adheres to best practices and uses accepted risk management processes to increase safety.

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A model for raising water safety awareness in low & middle income countries: A case study from Tanzania

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Introduction

In low and middle income countries drowning prevention is often not prioritized, in favor of AIDS, malaria, dysentary, etc. Yet in many countries it is estimated that drowning claims more lives than some of these diseases. In countries like Tanzania, with a long coast line, the Great Lakes and e.g. the Ruaha and Rufigi rivers, many people are at risk every day. BBC Kiswahili radio reported that 5000 people drown only in Lake Victoria every year. Probably one half are Tanzanians. This alone is > 5.0/100,000/yr, 3–4 times that of most western countries. And most Tanzanians cannot swim. Kiluswa et al (1) reported a pilot project in which the Tanzanian Life Saving Society and the Tanzanian Scout Association launched a cooperative effort to raise water safety awareness.

Aims

The aim of this project is to establish a model which can be expanded in Tanzania and perhaps used in other countries. It is an extension of the pilot named above. Here we describe the steps that have been taken since the pilot.

Methods

Two goals were established, to a) locate local sources of expertise, and b) identify a specific target group(s), preferably with a broad infra-structure. The Tanzanian Life Saving Society (TALISS) possesses the expertise. The Tanzanian Scout Association (TSA) is the most widespread youth group. Already the results of the pilot project are that two, one-day workshops have been held and four, three-day camps in the first 12 months. Additional networks have since been established and are in development.

Results

The following recommendations have been elicited:

1. On finding a source of expertise, establish immediately whether there is a nationally active organ. In this case, TALISS.
2. Search for the most active and widespread target group(s). In this case, Tanz. Scout Assoc. The Scout leaders were the pilot target group.
3. Make contact with local branches of the above, if any. If not, try to establish.
4. Establish local media contacts and report every project.

From this point every country will present its unique challenges. There is no set formula. Explore the natural local, national and international contacts. In Tanzania, the following contacts have been made, and are under development: The Tanzanian Swimming Association, The Tanzanian YMCA, Rotary Tanzania, The National Police Academy, Tanzanian Navy.

Discussion

Once a start has been made, networking becomes a function of time and effort. In our case, modest sums were initially placed at our disposal by the Norwegian Life Saving Society and the Irish Life Saving Foundation. At present, local persons now in four cities are continuing the local contact work. All of these are persons who have participated in one of the above mentioned courses.

Conclusions

Networking can lead in unexpected directions. Grip every opportunity. Local sponsorship is possible and can appear from unexpected sources.

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Epidemiological profile of drowning in Nepal. Preliminary data from the Kathmandu region

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Background

Unintentional drowning rates in low- and middle-income countries, especially in South-East Asia, are higher than in high-income countries. In Nepal, no injury surveillance system exists and WHO data as well as national or regional statistic data on drowning are not currently available. However, medico-legal autopsies are generally performed for all non-natural deaths, including drowning.

Aim

To describe the epidemiological profile of unintentional drowning death in the Kathmandu district (pop. ca. 1,300,000), November 2005 to October 2010.

Methods

All bodies found in water during the study period and referred by the police authorities to the Department of Forensic Medicine, Kathmandu, for medico-legal autopsies were included in the study. All medico-legal records were screened to extract available demographic and circumstantial data.

Results

During the study period 205 bodies (166 males, 39 females) were found in water and were investigated at the Department of Forensic Medicine, Kathmandu. Among these, 163 were found in the Kathmandu district, which include the capital metropolitan area, and 42 bodies in six adjacent districts, which include popular picnic spots along rivers. The most common certified cause of death was drowning (n=144). In 50 cases, the cause of death was not specified, mainly because of the delayed recovery of the body from water with advanced decomposition changes. However, in most of the latter cases too, drowning was likely the cause of death. The manner of death was unintentional in 144 cases, undetermined in 58 cases, suicide in six cases and homicide in one case. Overall, 79 (38.5%) of victims were less than 18-years old and 49 (23.9%) less than 11-years old. The number of victims among those older than 50 years was 18 (8.8%). The most common site of death was river (n=118; 57.6%) followed by well (n=31; 15.1%), water reservoir tank (n=19; 9.3%), ditches (n=12; 5.9%), ponds (n=9; 4.4%), swimming pools (n=6; 2.9%), bucket or other small water containers (n=6; 2.9%) and canal (n=4; 1.9%). Most deaths (n=115; 56.1%) occurred during the rainy season, i.e. from May to August. Concerning the circumstances and pre-drowning activities, four main patterns of drowning accidents were identified: a) drowning while crossing a river during the rainy season in areas with no bridges, b) children drowning while bathing and swimming in unattended and potentially dangerous bodies of water, c) infant and children drowning as a consequence of fall in water reservoir tanks, buckets or ditches while playing, d) drowning of drunken people or non-swimmers while attempting to swim in rivers, near picnic spots.

Conclusions

In Nepal, medico-legal autopsy rates in drowning cases are high compared with other low- and middle-income countries. Medico-legal reports represent a potentially reliable tool to monitor basic information on drowning deaths. However, in Nepal, drowning is still a neglected public health issue and so far no procedures for the systematic collection and analysis of in-depth data on drowning accidents exist and no specific countermeasures are being developed. The high rates of drowning deaths in the Katmandu district, especially among children, and their specific circumstantial profiles, suggest that drowning deaths could greatly beneficiate, also in Nepal, from basic prevention programs.

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Limitations of ponds and natural water sources for swimming teaching

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Introduction

Most LMICs lack the infrastructure usually associated with swim teaching in HICs. Swimming pools are extremely rare, usually only present in the capital city, or very large urban centers and these are usually reserved for national swim teams or for paying members. Most LMICs lack other man-made water bodies suitable for swim teaching. While many LMICs have rivers and often a significant coastal area, usually a small minority of the population actually lives within 5km of a river or beach. Thus, these are not able to serve as swim teaching locations for the vast majority of the at-risk population that needs to be taught survival swimming. However, the rural environment of many LMICs is characterized by ponds used to provide household water, water for animals and for aquaculture. In Bangladesh these ponds provide a venue to teach survival swimming in villages in rural areas.

Methods

Operational research trials were conducted over four years in using naturally occurring water sources (ponds) in close proximity to rural villages in Bangladesh.

Results

Over 125,000 children were trained in ponds specially adapted to teaching SwimSafe survival swimming over the four years of program operation. Almost all of these were trained in the months from June through October. The period from November through May was the dry season, and receding water tables prevented continued use of the ponds. Cold temperatures also presented a barrier and in the few ponds that still retained sufficient water, the air and water temperature was too low to permit swim teaching during those months. Additionally, ponds with a dual use—swim teaching as well as aquaculture had significant limitations due to water quality issues and were often not able to be used as a result.

Conclusions

Although ponds are a viable option for teaching survival swimming in rural areas in Bangladesh, there are significant limitations in their use. They cannot serve urban children, and these make up almost a quarter of the child population. For rural children, they can only be used less than half of the year due to water level, water quality and water/air temperature issues. While ponds are sufficient to train large numbers of rural children over time, any effort that seeks to greatly scale up swim teaching will be severely constrained by these limitations. Portable pools are potential alternatives that provide access to all children, are functional for longer periods, have better water quality and have potential advantages in safety and teaching efficiency. They have shown promise in SwimSafe research in Thailand and Vietnam. They may present one needed answer to the question of how to train very large numbers of children rapidly in a national program. ICDR-B, established by AusAID, is conducting feasibility studies on their use in Bangladesh.

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Natural swimming – Prevalence and association with protection from drowning in Bangladesh

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Introduction

There are abundances of natural water bodies in Bangladesh and the children are exposed to those water bodies. Due to daily exposure to water children learn swimming from their peers or relatives. The swimming that the children learn through this process are labeled as "natural swimming" ability. The objectives of the study were to determine the prevalence of natural swimming ability and its association with protection of children from drowning.

Methods

The Bangladesh Health and Injury Survey (BHIS) was a national, cross-sectional survey measured mortality from all causes and mortality and morbidity from injury. As part of BHIS, the prevalence of natural swimming ability was determined. A case control study was nested in BHIS to investigate the association of naturally acquired swimming ability and protection from drowning among children between five and 17 years. A highly structured and standardized interview was conducted with the caretaker of all drowned children and an age-, sex- and venue-matched control. Data was entered with Epi Info software and results were analyzed with SPSS software.

Results

The prevalence of natural swimming was 68.1 percent in children at the end of 17 years of childhood. The prevalence of natural swimming in rural and urban areas was 70.9 and 41.6 percent respectively. The median age for 50% prevalence of swimming ability was 9 years for rural children and urban children did not reach 50% by the end of childhood. The nested case-control study showed that natural swimming ability was associated with a four-fold reduction in the odds ratio for drowning in children 5–17 years (OR 0.21, CI 0.03-0.98).

Conclusions

A large proportion of children of Bangladesh learn swimming naturally. However, the proportion was lower in younger age group (5–9 years). The case-control study revealed that natural swimming ability is associated with reduction in drowning. A cohort trial is underway to establish whether there is a causal relationship with swimming ability and protection from drowning.

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Child drowning in Thailand

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Introduction

The Thai National Injury Survey (TNIS) was the largest community-based survey on child mortality and morbidity ever conducted in Thailand. It used a nationally representative sample selected by the National Statistics Office. It was undertaken to understand the burden of injury as compared to other causes of mortality and morbidity, to understand the epidemiology and risk factors for injury and to enable development of interventions. This report focuses on child drowning.

Methods

The country was stratified into the five regions that are customarily used to describe the country: North, Northeast, Central, South, and Bangkok. Within each region a number of provinces were randomly selected. Bangkok was treated as one province. In total 23 provinces were selected. Each province was then stratified into urban and rural areas. Bangkok, being entirely urban, was stratified by slum and non-slum areas. Clusters of households were randomly selected from the provinces by the Thai National Statistics Office. The interviewer for each household met with a primary respondent who was asked about all morbidity and mortality events that occurred to members of the household. The respondent was asked to recall all mortality events in the last one, two and three years and all morbidity events in the last one, three, six and 12 months. The total sample size was 100,179 households, including 61,464 from rural areas, 35,706 from non-slum municipal areas and 3,009 from slum areas in Bangkok. The survey covered 389,531 individuals within these households, including 98,904 children between the ages of 0 and 17.

Results

The peak drowning rate was 106.8 per 100,000 in two-year-old males; for females, the peak rate was in two-year-olds at 50.6 per 100,000. Overall, rural children aged 1 to 17 were almost five times more likely to drown than their urban counterparts. Over half (56%) of all drowning deaths occur within 100 meters of the child's home. For toddlers, this proximity is even more striking. Almost three quarters (74%) occur within 100 meters of the home, and almost 40% occur within 10 meters of the home. Most drowning occurs in bodies of water not connected with the household. Wells are the leading cause of drowning deaths in toddlers, while rivers are the leading cause in the 5–9 age group (72%) and in children generally (1 to 17, 35%). Most (85%) of children over the age of four who die from drowning do not know how to swim.

Conclusions

Drowning was the single leading cause of death in children after infancy. Over 2,600 children drown in Thailand annually. Given the majority of drowning occurs in early childhood, interventions will need to focus on increasing supervision as well as isolating these very young children from water hazards. Because the older children drown in locations further from the home and most lack swimming ability, interventions should focus on providing these children with swimming and other water safety skills.

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ORAL PRESENTATION

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Community based child drowning prevention project in Jiangxi China

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Introduction

After the 2005 Jiangxi Injury Survey (JIS), UNICEF China in collaboration with the Chinese government launched a child injury prevention program. Jiangxi Province was selected as one of the pilot sites. The goal of the project was (1) Improve safety knowledge and behaviour among parents and children; (2) Modify environment to reduce drowning hazards; (3) Develop and enforce safety policies and regulations; (4) Test feasibility of a comprehensive Safe School, Safe Home, and Safe Community injury prevention model in rural China.

Methods

The project covered 50,118 population in three rural townships in Coren county of Jiangxi province, China. There were 3,784 children younger than six years old and 7,751 primary and secondary school students covered in the project. Interventions were focused on (1) Developing safety policy and multi-sectoral collaboration mechanisms; (2) Communications to improve safety knowledge and risk awareness; (3) Conducting environment safety audit to remove hazards from homes, schools and communities; and (4) Developing a school and community-based child injury surveillance system to monitor progress.

Results

Annual community-based injury surveillance for 0–6 year old children showed the fatal drowning rate fell to 52.9/100,000, 79.3/100,000 and 52.9/100,000 in 2007, 2008 and 2009 respectively, a reduction of from five annual drowning deaths in 2006 to 2.3 drowning deaths annually over the three years of the project. Functional multi-sectoral project management mechanisms were established with participants from local government administration, Women's Federation, health, education, public security, and communication sectors. More than 50 local safety regulations were developed and reinforced.

Caretakers' drowning prevention knowledge increased significantly after the intervention in areas of supervision, teaching children and removing drowning hazard from home. Eighty per cent of community open water sources (ponds and reservoir) were fenced, up from 29% before the intervention. All ponds and wells located inside school campuses were fenced and covered. More than 65% of the households with children under six removed drowning hazards in and around the home (well, water container etc.).

Conclusions

The project demonstrated that it is feasible to implement a comprehensive safe school, safe home, and safe community injury prevention model that adapts international injury prevention best practice to rural China. Communication and education programs led to improved awareness, knowledge, skills in parents and caretakers to prevent child drowning and other types of injury. Local policies and regulations coupled with removing drowning hazards from homes, schools and communities also contributed to an overall reduction in child drowning.

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Probability of drowning during childhood in Bangladesh

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Introduction

There are many drowning studies in children that have the potential to allow calculation of the risk or probability of drowning during specific periods of childhood. However, almost none of them include a nationally representative population of children and are large enough to contain enough drowning deaths to have statistical precision in estimating the per-year-of childhood risk of drowning. The Bangladesh Health and Injury Survey (BHIS) allows just such an estimate to be calculated, which puts an actual probability of drowning by year of childhood for children in Bangladesh.

Methods

The mortality experience from the child sample from BHIS was examined. A life table was constructed from the child dataset which showed the probability of survival by each year of childhood according to cause of mortality.

Results

169 deaths from drowning occurred in children in BHIS. The multiple decrement life-table analysis which shows age-specific probabilities of drowning for children in Bangladesh will be presented at WCDP.

Conclusions

The annual risk of dying for children in Bangladesh is already known from the census and other surveys and is high compared with high income countries. The cause-specific mortality risk calculated from the BHIS survey dataset shows that drowning is the largest risk of death from a single cause to children who survive infancy in Bangladesh through their 18th birthday, when they become adults.

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The social autopsy – A tool for community awareness after a drowning event

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Introduction

There is a long history of developing community awareness of prevention of child mortality from infectious disease deaths in LMICs. Many programs have used community meetings to create an opportunity for discussion among community residents about why a child has died from a particular disease. This is done to raise awareness of risks to other children in the community, to change attitudes among caretakers of those children that favor risk reduction for the child, and to educate the caretakers in specific actions they can take. These have ranged from bringing children to immunization stations to planting gardens to improve micro and macro-nutrient deficiencies. In the PRECISE project in Bangladesh, a similar community activity was undertaken whenever a child died from an injury death. The activity was known as a social autopsy. A community meeting was held with the parents of the drowned child, neighbors and community leaders and moderated by staff of the Centre for Injury Prevention Research, Bangladesh.

Methods

A descriptive study of the process of conducting community awareness meetings that centered on fatal child drowning events in rural villages in the PRECISE project.

Results

A total of 305 social autopsy meetings were conducted during the last four years in the PRECISE intervention areas. More than 15,000 people attended those meetings. Parents, relatives and the neighbours of the deceased child were the participants meeting. Among the total 305 meetings, 130 meetings were due to drowning events. Many discussions and decisions made in the meetings led to changes in environmental risks for drowning. These included fencing the pond/ditches, filling in ditches and unused water reservoirs, and organizing meetings to make people aware about improving active, adult supervision of children.

Conclusions

Community meetings that focus on particular child drowning events are a feasible method for involving the parents and caretakers of the drowned child, as well as neighbors and village elders in a dialogue. Observational evidence shows the process has led to changes in knowledge, attitudes and practices.

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Anchal – An integrated child survival and development center: a promising initiative for prevention of drowning among young children

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Introduction

Drowning is the leading cause of death among 1–4 year old children in many Asian countries including Bangladesh. However, due to other child health priorities drowning prevention has gained little attention. Strengthening supervision has been identified as one of the important measures for addressing child drowning. Institutional supervision provides a means of providing this for prevention of childhood drowning. This paper describes the development process of an integrated child survival and development centre (Anchal) as an example of institutional supervision for prevention of drowning among young children in rural areas of Bangladesh.

Methods

The methods employed to develop and pilot the Anchal centres for institutional supervision of children in three different rural areas in Bangladesh included gathering information on people's perception and attitudes on institutional supervision system at rural communities, organising workshop with relevant stakeholders on the development of Anchals and establishment of a small number of anchals initially and then gradual expansion over five years.

Result

The Anchal was developed for supervision of 20–25 children 1–5 years of age during the most vulnerable time of drowning occurrence, i.e. 9am to 1pm. Community people provided a room without any cost for running the Anchal activities. The preferred site of an Anchal was within a cluster of 50–60 households where the required number of children would be available and within 5 to 10 minutes walking distance. A woman of the local community with secondary level education and showing an interest to be a paid volunteer was recruited as Anchal caregiver. The Anchal care giver received training on supervision of children, stimulation of early childhood development, parenting, health, and nutrition. The annual cost including remuneration of Anchal caregivers, maintenance of Anchal and supervision and monitoring was less than USD$30, per child per year for Anchals located within the project area. The program has undergone international evaluation and has been found to be effective.

Conclusion

The Anchal is a unique approach for prevention of drowning among rural young children and ensuring their development. The Anchal programme has been found to be acceptable, feasible and sustainable regarding its management costs, utilization of local resources and wider participation of community people.

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Barriers to CPR training in a rural LMIC setting

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Introduction

CPR is recognized as being a life-saving intervention when delivered to a drowning victim who isn't breathing and lacks a heart beat if it is begun soon enough. It is a lifesaving skill that can be taught to laypersons so that the intervention can be offered to drowning victims as soon as possible after discovery. A large amount of experience has shown that adolescents as well as adults can learn the skill and be effective in using it in high income countries. The success may depend on a basic knowledge of physiology, basic levels of literacy, as well as cultural attitudes that permit strangers to come into intimate contact with drowning victims in order to deliver CPR.

Methods

Qualitative research as well as observational studies and effectiveness trials are being conducted in various populations of older children, adolescents and young adults with differing levels of general knowledge, various levels of literacy and in both urban and rural settings in Bangladesh.

Results

Results from initial village level courses have shown a number of religious and cultural barriers to CPR training in Bangladesh. The majority of participants have noted that they would feel uncomfortable conducting CPR on a person of the opposite sex due to cultural beliefs. Participants have also stated that social hierarchy would dissuade them from doing CPR on their elders out of 'respect'. Despite their concerns regarding the conduct of CPR, all participants have shown competence in CPR following a comprehensive two day training course. Data regarding retention of knowledge will be collected throughout the year.

Conclusions

Early results from limited trials provides basic evidence that CPR competence can be achieved across a broad spectrum of groups with varying levels of knowledge about physiology, literacy and in older children as well as adults. It is not clear that wide scale use will result and trials are underway to examine this as well as the duration of skills retention.

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Moral Hazard and SwimSafe – The early results are in and it does not increase risk-taking

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Introduction

Moral hazard occurs when a person shielded from risk behaves differently than they would behave if fully exposed to the risk. In terms of drowning prevention, moral hazard occurs if children who learn survival swimming think that they are completely protected from drowning and consequently engage in high risk behaviors that actually increase their risk of drowning. In an intervention that would train hundreds of thousands or millions of children in survival swimming, it is a significant theoretical risk. The SwimSafe survival swimming program has been designed to minimize this risk. As part of the SwimSafe operational research program, there is ongoing research to monitor the potential for this risk occurring.

Methods

In July 2010 and April 2011, monitoring cohorts were examined for details of water exposure in the previous 48 hours, with data collected on swimming, playing in the water and time spent in water. Equal sized cohorts consisted of children who had graduated from the SwimSafe program, children who had natural swimming ability but who had not attended SwimSafe, and children who were unable to swim. The different water exposures were compared between the groups.

Results

Early monitoring results show that SwimSafe graduates do not engage in increased water exposure or exhibit high risk behaviors such as swimming alone when compared to natural swimmers who have not received SwimSafe training. Early indication suggests that exposure rates in SwimSafe swimmers are lower than natural swimmers (NS).

Conclusions

The data gathered indicates that the survival swimming training provided in the SwimSafe program does not result in participants having an increased level of water exposure or engaging in high risk activities related to swimming, within the limits of precision of the sample in the first round of the monitoring program. The monitoring program will continue with quarterly samples enrolled until a minimum of 50,000 children have been monitored for high-risk behaviors and increased water exposures secondary to participation in the SwimSafe survival swimming program.

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ORAL PRESENTATION

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Risk taking behaviors concerning water in early childhood, Bangladesh

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Introduction

Immersion in water is a daily life experience for most children in rural Bangladesh. Piped water supplies to houses are virtually absent in rural areas and almost all homes have a pond nearby which serves as the household water source for drinking, bathing and cooking. Children of very young ages frequently play in the water supervised only by older siblings. This behavior is one of many that results in very high childhood drowning rates in Bangladesh. Staff of IDRCB conducted research on water exposure to understand the risks involved and the frequencies of water exposure, as part of a drowning prevention program designed to increase awareness of water safety and proper supervision of children.

Methods

Previous behavioral and anthropologic research conducted on water exposure as part of BHIS and the PRECISE project was reviewed and contributed to the development of a survey using quantitative tools to measure water exposure in the previous 48 hours for young children. The survey was conducted with three groups of children: children who had not learnt to swim naturally, children who had learned to swim naturally, and children who had learned to swim in the SwimSafe program.

Results

Detailed results will be presented at the WCDP.

Conclusions

Children of all ages have exposure to water multiple times a day in rural Bangladesh. The exposure rates are likely several orders of magnitude in frequency compared to rural children in high income countries and research is currently underway to make direct comparisons. Many of the exposures occur in the context of bathing and performing activities of daily living and are not amenable to reduction in frequency. Decreasing hazard from these will require behavioral and environmental modifications. However a large proportion of the water exposures relate to water play and games of socialization for children of early and middle childhood. Given the cultural context in which such exposure occurs, the most expedient manner of reducing the potential hazard involved will be to provide survival swimming lessons as early in life to as many children in rural Bangladesh as possible.

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Community based child drowning programme

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Background

Drowning is a global public health issue of childhood. The most susceptible victims are in low- and middle-income countries. In Cambodia, at least eight children aged between one and four years die from drowning daily. Within this age group, the vast majority of accidents take place in the house or nearby the house. Generally, drowning is known to be preventable and can be reduced through integration from various sectors such as health, education, public security and especially from a great contribution of community efforts, volunteers, peers, care givers, local authorities, and drowning prevention partners.

In 2009, the Preventive Medicine Department of Ministry of Health provided training on water safety, cardiopulmonary resuscitation (CPR) and safety measure for child drowning prevention to focal points from 10 communes surrounding Mekong and Tonle Sap rivers of Kampong Chhnang province. After they attained skills and knowledge from the training courses, drowning prevention was widely promoted at schools, health facilities, pagodas and individual households in their respective communes. Interventions have been proved to reduce drowning in children i.e. covering water hazards, fencing around homes, using personal floating devices when boating children, and keep close supervision on their small children.

In addition, the village health support group and commune council members put their persistent efforts to promote awareness on drowning prevention and to collect data on drowning in their respective communes.

In 2010, the project intervention is extended within existing areas of Kg. Hao, Kg. Os, Prey Kry, Pralay Meas, Chulsa, Trakel, Peam Chhkauk, and Plaotuk communes in Kg. Chhnang province. The interventions will focus on a well structured framework for drowning prevention, active involvement of community for safer homes, enhancement of water safety skills and knowledge, and resuscitation response, improved data collection and workable and practical model of drowning prevention with the main goal to reduce mortality and morbidity rates of drowning among children under-five within existing areas namely.

Objectives of the project

1. To determine risk factors of drowning in 10 communes of Kg Chhnang Province
2. To understand the community perception on interventions and the risk and vulnerability reduction to drowning
3. To implement initial integrated community response to intervention package
4. To develop a sustain surveillance of child drowning fatality and morbidity
5. To evaluate the packages effectiveness

Activities of the project

Project activities based on the recommendation of the workshop and meeting as well as the results of child injury survey in 2007:

1. Establish strong coordination structure from community to national level:
- A technical working group has been established composed of relevant Ministries
2. Increase the use of life jacket and it awareness:
- Life jackets were distributed to school children and small children in floating community
3. Teach children to swim:
- Community still need a consensus with community members to develop swimming environment/site for safe swimming teaching in community
4. Learn CPR:
- Two (2) session of training on CPR were given to volunteers and health staff. They still need more training for families with vulnerable children and active members of the community because if CPR can be performed by bystander during waiting, it could make a difference in saving life.
5. Safe home and safety devices based on local setting:
- Bamboo was given to schools and households for making barriers to surround the house and keeping the school absolutely float and balance. As sanitation is seen as an integrated issue in that areas, additional activities regarding health education and water filters were also taken into account.
6. Keep close supervision of small children (ideal of community day care for small children):
- Good example of Bangladesh of community crèches will take into consideration after discuss with technical working group and community representatives.

Result:

1. Risks of child drowning determined through workshop community meeting.
2. Intersectoral technical working group established and meet every quarterly.
3. 75% of home safety improved
4. 80% of access to safety devices
5. 30% receive water filters for safe water
6. CPR training for 64 trainees including commune council members, health staff, village health support group and school teachers.

Conclusion

To make this project sustainable, it should be integrated progressively with safe community activities. Each community should consider the development of necessary procedures and regulations that will benefit to childhood drowning prevention.

The project evaluation will be conducted in April 2011, so hopefully its results will be shared widely at the conference.

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Large-scale community training in CPR as a basis for a community response system in an LMIC

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Introduction

Studies in high income countries such as Japan and the US have shown that community response networks can provide CPR to victims and result in increased survival. However, layperson delivered CPR in these settings is universally followed by rapid response of emergency medical personnel who often defibrillate the victim, provide advanced life support and quickly transport the victim to a hospital for further specialized care. This is not possible in the setting of rural LMICs. However, logic and anecdotal reports of rescues not connected to EMS services would indicate that for many victims of drowning, a community response system that allowed rapid delivery of CPR to a drowning victim would result in successful resuscitation regardless of whether further medical services were available. Developing a community response system with sufficient numbers of providers to ensure rapid CPR delivery to drowning victims throughout the community will be a very resource intensive effort as well as involving significant expense. Therefore pilot programs are needed to explore feasibility, provide information on the numbers of CPR trained persons needed in different age groups and community roles, and develop operational procedural protocols.

Methods

Review of existing literature on first response and CPR, organising workshops among medical specialists, safety advocates, and key persons from rural areas allowed development of a first response manual. Focus group discussions with community leaders regarding their perception and attitude towards the large-scale training in CPR and first response allowed an understanding of the knowledge and attitudes of the potential recipients. These efforts and risk-management considerations resulted in the development of a pilot program for a community response network in rural Bangladesh.

Results

IDRC-B is in the process of training 2400 community residents, including adolescent school and non school-going children and rural key stakeholders such as Village Injury Prevention Committee members, school teachers, medicine shop keepers, medical assistants, Anchal maa (crèche mothers), and community swimming instructors in 20 villages in Raiganj districts. The community participants will attend a two-day training course on first response and how to treat various injuries using available resources. A training manual has been developed by reviewing the global literature and in consultation with local medical and first response experts. The manual and other training materials take into consideration the low literacy level of rural people and the low-resource environment. Master trainers have been trained to conduct the training activities and a monitoring system is in place to understand if 1) How long the participants are able to retain their skills; 2) will participants use their first response skills in the real-life setting in the village; and 3) what impact will this have on drowning and other injury rates in the village. A reporting system has been developed and will record any instances of water rescue, hospitalization following treatment by responder, CPR, and fatality. The study will provide evidence on feasibility of teaching first response to rural community people and thus the scalability in low income country like Bangladesh.

Conclusions

While community response networks are common in HICs and evidence exists to documents their effectiveness, they depend on many factors that are not present or present at minimal level in LMICs. HICs are characterized by excellent health, communications and transport infrastructure; well educated populations who are both literate and knowledgeable about the urgency required in resuscitation of drowning victims, and have a community ethos of bystander intervention. LMICs lack most or all of these and it is not clear which are the critical factors necessary for an effective community first response system in the context of an LMIC. Given the realities of the very high drowning rates in rural Bangladesh and the impossibility of providing rapid, trained professional emergency response, if such a system is possible, it will have to be implemented in a very resource poor environment. The paucity of resources includes the infrastructure, the educational level of residents and may involve community voluntarism on a number of levels. These have been shown to be significant barriers to achievement of other community-based health and development interventions in similar environments. Therefore, it is necessary to take an operational research approach to determining the feasibility of creating such a network and to maximize the potential to overcome the many barriers that exist. That is the aim of the operational research program described here and implemented by the International Drowning Research Centre Bangladesh with funds from AusAID.

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Development of the Philippines National Framework of Action on Drowning Prevention 2011–2015

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Introduction

The World Health Organization Global Burden of Disease Report estimated that there were 388,000 who died as a result of drowning in 2004 and that 45% of them (approximately 175,000) were under the age of 20 years. Drowning is the third leading cause of unintentional death, it ranked 13th as the overall cause of death among children under 15 years old, with 1–4 year age group appearing at greatest risk. An overwhelming majority (98%) of these deaths occurred in low-income and middle-income countries. The same is true in similarly categorized countries in the Western Pacific Region which have the highest rates of drowning deaths (13.9 per 100,000 population). The Philippines portrays similar scenario vis-a-vis other Asian countries. The Philippines , as an archipelago of 7,107 islands which are not only surrounded by water but also has an intricate network of inland tributaries composed of rivers, lakes and ponds, provide vast opportunities to use those bodies of water for recreational and non-recreational activities. Moreover, the country is often visited by typhoons (average of 20–25 annually) causing floods, flooded areas, flash floods and turbulent seas which undeniably cost the lives of Filipinos. Thus the Philippines provides the following statistics: about eight persons die every day due to drowning (DOH Health Statistics, 2004) and that more were reported to be victims of near drowning (10 cases per day, 2008). Drowning is noted to be the second leading cause of death among children fourteen and below which accounted for 36% of reported 3,000 drowning cases among Filipinos who died annually. While the National Policy on Injury and Violence Prevention has already been formulated by the Department of Health, it has been recognized that much still needs to be done in the field of drowning prevention. Thus, a multi-sectoral conference on drowning prevention was organized to propel a concerted effort in addressing the problem. This provided the opportunity for the key stakeholders to develop the draft National Framework of Action on Drowning Prevention as the first major step in the fulfilment of its commitment to eliminate drowning as a crucial concern of the country.

Objectives

The main objective is to establish a strategic framework of action for drowning prevention which will provide guidance in planning and implementing programs, project and activities related to water safety and drowning prevention.

Materials and Methods

A number of records and reports were utilized as resource materials in the development of this document to ensure alignment of the Framework to the current policies and plans relevant to drowning prevention. Technical working group (TWG) members met regularly to come up with the framework. The draft framework was presented in a national stakeholders meeting to elicit comments and suggestions before its finalization.

Results and Discussion

The National Framework of Action for Drowning Prevention 2011–2015 provides a broad foundation and specifies the general direction the country may take in preventing drowning.

There are five (5) strategic action areas identified to be the focus of initiatives which aim to fast track the decrease of mortality and morbidity associated with drowning. These five (5) strategic action areas as key priorities of interventions include:

- Policy, Standards, Regulation and Enforcement
- Service Delivery System
- Research and Development
- Program Management
- Social Mobilization

Conclusion

The development of the framework for drowning prevention is a major step undertaken by the Philippines Department of Health in response to the growing concern on drowning problem. With the strategies outlined in this policy directive, it is hoped that drowning incidents in the country will be lessened.

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Child drowning in Jiangxi Province, China – A silent killer

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Introduction

In 2005 a provincial household survey was done to assess all causes of child mortality with an additional focus on injury mortality, morbidity, disability, and risk factors. The survey objective was to compare injury mortality with that of other diseases and to guide future child injury prevention programs.

Methods

A multi-stage, stratified, random cluster sample was selected using probability-proportional-to-size (PPS) sampling methods. Jiangxi Province was selected as a typical inland province which exhibited most characteristics of "middle China" as compared to "coastal China" or the far West. One hundred thousand and ten (100,010) households in Jiangxi province (population 43 million), China were interviewed in November 2005. The respondents numbered 319,543 including 98,335 children under the age of 18. The questionnaire was the third iteration of the UNICEF/TASC standard questionnaire used in similar surveys in other Asian countries. A sub-analysis was done on households where parents were absent due to work and where their children were left in care of grandparents or alternative caretakers. These children are known as children left behind (CLB).

Results

(1) Drowning was the single leading cause of all deaths among children after infancy at a rate of 36.5/100,000 and accounted for almost half (47.2%) of these deaths; (2) Fatal drowning was highest at age two years at 196.3/100,000; (3) Fatal drowning rates were highest in children 1–4 years old (81.3/100,000) and declined thereafter; (4) Drowning occurred overwhelmingly in rural areas (96%); (5) Children 1–4 years have the highest non-fatal drowning rate 81.4/100,000; (6) Risk factors such as place, time, activities, accompany persons, care takers, first aids, and children's swim ability were examined; (7) Risk factors were different between pre-school and school age children; (8) Children left behind (CLB) had a higher risk of drowning then children living with their parents. Drowning for CLB 1–17 years were 2.8 times that of same age children with both parents present.

Conclusions

Drowning was the single leading cause of child death after infancy. Drowning prevention needs to be a major, high-priority focus for child health programs. A comprehensive child injury prevention program which focuses on drowning prevention is needed in Jiangxi Province to reduce child injury deaths and decrease injury morbidity. Interventions in the program will be designed to target risk factors for different age groups and conform to local conditions and cultural norms.

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Rescue rates following SwimSafe training

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Introduction

Evidence from drowning investigations conducted by CIPRB in Bangladesh, and TASC in Cambodia, China, Indonesia, Philippines, Thailand and Vietnam, shows that virtually all methods used for resuscitation are ineffective or harmful. The same research shows that rescue done by children often results in the rescuer drowning or failing to rescue the drowning child. As a result, the SwimSafe curriculum incorporates training to avoid the use of these inappropriate resuscitation skills and training in skills used for safe rescue. As part of the SwimSafe evaluation process, a study was done to examine whether children put the rescue skills taught to use in conducting rescues.

Methods

In July 2010 and April 2011, monitoring cohorts were examined for use of rescue skills taught in the SwimSafe program. The cohorts were made up of SwimSafe graduates of varying age and included both sexes. They were asked for details of rescue activities following graduation from SwimSafe.

Results

Of 5,274 SwimSafe graduates surveyed in July 2010, 6.1% (n=321) claimed to have conducted a rescue. Most recues were conducted on children younger than the rescuer (97%), and took place in the peak drowning hours between 12noon and 6pm, in water bodies within 50m of the victim's house. Detailed results from the latest round of monitoring cohorts will be presented at WCDP 2011.

Conclusions

Children taught safe rescue techniques while participating in SwimSafe used them at very high rates. The majority of the rescues were in-water rescues because the rescuer was already in the water with the rescuee at the time the rescue was conducted. Based on the evidence from the monitoring cohort, it appears that young children in an LMIC who are trained in rescue make use of the skills at high rates and conduct successful rescues. The rate of rescues conducted by the children in the monitoring cohort appears to be significantly higher than rescue rates for same-age children in high income countries. This suggests that the rescue skills taught as part of SwimSafe will provide a significant increase in prevention effectiveness of SwimSafe as a drowning intervention in LMICs. Additional research is underway to confirm that the SwimSafe graduates avoid the use of inappropriate resuscitation techniques and use the techniques taught in SwimSafe.

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SwimSafe teaching tools: guidance for survival swimming to children in low and middle income countries

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Introduction

Drowning is the leading cause of death (28.6 per 100,000 child-years) in children aged 1–17 years in Bangladesh – as measured in the Bangladesh Health and Injury survey (BHIS). BHIS showed a reciprocal relationship between swimming skill and drowning. Furthermore, a case-control study nested in BHIS also showed natural swimming ability to be associated with protection from drowning. These data provided evidence of association but confirmation of causality required a cohort study. The cohort study required very large numbers of children trained in survival swimming. As a result CIPRB collaborated with the Bangladesh Swimming Federation (BSF), Royal Life Saving Society- Australia (RLSSA), and The Alliance for Safe Children (TASC) to develop a survival swimming curriculum that was effective in training children safely in a minimum of time, suitable for the highly decentralized environment of rural villages.

Methodology

Workshops, consultative meetings with stake-holders and operational trials were used in the development of the curriculum and manual. Consultative meetings were organized with the technical expertise of RLSSA and BSF, assisted by TASC. After a series of workshops, a draft curriculum was prepared on survival swimming teaching. Later a teaching manual was prepared. The draft manual and curriculum was piloted for one year in three modified swimming venues at Savar, Dhaka. Based on the experience gained, the curriculum and the manual were finalized. The manual includes strategy, techniques, steps, logistics, venue or structure, instructor's criterion, training schedule, definition of swimming graduates, etc. The manual and curriculum has been tested and modified accordingly over the 4 year period of the SwimSafe program in Bangladesh.

Results

The curriculum contains guidelines for swim teaching, logistics, venue management, instructors' criteria, training details of skill sets and graduation criteria. The manual includes 21 steps for teaching survival swimming. Eight steps relate to water familiarization; another eight steps relate to acquisition of different components of swim skills; three steps for rescue techniques and another two for acquiring competence as a survival swimmer. The process emphasizes a highly structured teaching methodology, with teaching venues that are designed for safety of children and effectiveness in transferring skills, requires involvement of the child's parents and ongoing monitoring of graduates.

Conclusion

A rigorous, highly structured, operational research process has been used to develop the SwimSafe curriculum, manuals and other supporting tools for safely and efficiently training young children in survival swimming. The resulting children trained have made up the SwimSafe intervention cohort for the efficacy trial. They have been age- and sex-matched with control children and a survival analysis provides statistical evidence that the curriculum is effective in preventing drowning and has been used to safely train more than a hundred thousand children in rural Bangladesh, Further analysis has shown that children trained using the SwimSafe curriculum do not increase risk taking behaviors and are able to use the safe rescue skills provided to rescue peers at risk of drowning.

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ORAL PRESENTATION

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The scale required for impact on child drowning in middle and late childhood and implications for safety

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Introduction

The scale of the drowning epidemic in Asia is immense. Studies across Asia have shown drowning is the single leading killer of children after infancy in Asia and a working group at TASC has estimated that 800 children drown each day across Asia. The recently released findings of the cohort study on effectiveness of survival swimming show it is highly protective against drowning. The studies across Asia show that essentially every child is at risk of drowning, whether in an urban city or rural village. This means about a billion children 4–17 years are at risk of drowning and require the protection afforded by survival swim training. These children will have to receive the training near where they live—it is not possible to transport them to centrally located swim teaching centers. That means establishing a highly decentralised system to provide the training. The experience from other such systems such as the Expanded Programme on Immunisations (EPI) which provides immunisations to very young children shows that the development of highly structured training systems, certification of participants, stringent quality control, and constant monitoring are required to minimise the risk of harm to children receiving services from the system. A similar approach will be necessary to minimise the risks to children in providing survival swimming training.

Methods

A review of existing data sources on the burden of drowning in Asia; the experience gained in developing the SwimSafe survival swimming and water safety curricula in three countries, knowledge bases related to risk management and consultation with public health authorities.

Results

Will be presented at WCDP.

Conclusions

The scale of the effort to provide survival swimming skills to children across Asia can only be met through a highly decentralised swim teaching infrastructure that makes full use of facilities that provide health and educational services to children. For the most part, this is schools and similar facilities. Schools have major advantages as the infrastructure is highly decentralised, highly regulated and teachers are trained to interact with children in the safest manner possible. Placing a non-swimming child in water and progressing them to the stage of competence in survival swimming has the potential to result in harm to the child. Experience from development of the SwimSafe program shows that teachers can be trained and certified in survival swimming training and water safety and can follow the necessary safety processes to safely and effectively train children. Large scale pilot training activities have shown that when the SwimSafe process has been implemented and all quality assurance and monitoring mechanisms are in place, the risks to the children involved are minimised to an acceptable level compared with the child's risk of drowning as a non-participant.

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The process of learning natural swimming

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Introduction

Surveys done by TASC and UNICEF across Asia included measurement of natural swimming ability in children 4-17 years old. Prevalence of natural swimming ability was low in Vietnam, Thailand, Philippines, Indonesia, China and Cambodia. However, in Bangladesh, natural swimming ability was nearly universal by age 18 years, and most children had learned to swim naturally before age ten. The high prevalence of natural swimming ability suggested the skill was seen to be useful for children and that an active process of teaching must be present. An anthropologic study was undertaken to understand the swimming learning process and the role of family and community.

Methods

An anthropologic study was undertaken to examine the process of acquisition of natural swimming ability. A pilot study was conducted in six regions of the country to determine the research population and location and to design the research tools. In each region, the pilot research focused on both urban and rural populations. Research tools such as observational checklists, scripts for focus group discussions, frameworks for in-depth interviews and kits for development of detailed documentation of observations and behaviors were developed. Following this a study was performed on water familiarization rituals and games used with infants and very young children (through three years of life).

Results

The research sample contained 192 children between three and nine years of age and their families and others associated with natural swim training. Detailed results will be presented describing the processes used as well as profiles of the children, families, teachers and others involved in the process. The major risks identified were very young children going to water bodies, sometimes alone or sometimes with peers unable to swim, and the lack of anyone with rescue skills being present.

Conclusions

Children in Bangladesh learn swimming at a very early age. Especially for children in villages, who have daily opportunities for exposure and play in water, the acquisition of natural swimming ability is a norm of mid childhood. Most acquire the natural swimming skills on their own or from informal teachers who are usually adolescents or young adults. The process is organized and supported by the village itself. There are significant risks associated with this process of learning natural swimming and a structured teaching process that uses best practices and risk management approaches would make the process safer.

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Prevention of childhood drowning in Malaysia

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Background/Introduction

World Health Organisation (WHO) world data shows that the Western-Pacific Lower and Middle Income Countries (LMIC's) exhibits the highest total fatal drowning rates at 13.9 per 100,000 population (1). No standardised database on childhood drowning in Malaysia exists and preventive measures are limited.

Aims

To obtain comprehensive data on childhood drowning in Malaysia and review existing drowning prevention measures in place, with a view to institute/improve prevention measures.

Target

Drowning data from 2000–2007 including general drowning prevalence for the population and specific data on childhood drowning under 18 years of age.

Methods

A retrospective study using secondary data obtained from government and non-governmental organizations (NGOs) on drowning events from 2000–2007. Sources included government organizations from the Department of Statistics, Ministries of Health, Transport, Education & Sports, police authorities and policymakers. NGOs included Life Saving Society Malaysia, Fire & Rescue Volunteers Malaysia and newspaper sources. Drowning rates per 100,000 total population were calculated. Childhood drowning rates were studied for differences by region, month, gender, age and ethnicity to identify a risk profile. Formal enquiries were made to government and NGOs about existing water safety measures already in place.

Results

There were between 600–700 notified fatalities due to drowning per year (mean=643.3, SD=43.4 over 8 years). No apparent rise or decrease in volume of fatalities over these years. In 2007 the national fatal drowning rate in Malaysia was 2.3 per 100,000. Drowning rates were highest in east coast states (Terengganu 4.6, Kelantan 4.2), and in monsoon period (November to March). 250–300 children died each year due to drowning from 2000–2007 (mean=286, SD=27.5 over 8 years). This is 40–45% of fatal drowning each year. In 2007, the fatal drowning rates were 3.0 for ages below 18 years and 2.9 for ages below 20 years. Childhood fatal drowning rates were 4.6 in boys and 1.3 in girls. Highest fatality rates were in children aged 10-14 years (3.4), and Malays had the highest number of cases (192).

Discussion

Key findings: No reduction in drowning fatalities from 2000 to 2007. Most took place in east coast states from November–March. Almost half of total incidents were children. It was 3–4 times more common in boys than girls and was most prevalent in the 10–14 years age group. Current water safety measures and regulations require revision.

Comparison with other studies

The Malaysian childhood drowning fatality rate in 2007 (2.9) was below the Western Pacific Region LMIC rate of 13.9 for children below 20 years of age. The Malaysia's rate was closer to the HIC region's rate (1).

Strengths and limitations

This report has not taken into account unreported drowning incidents. We could only capture snapshots of detailed drowning information from local newspaper archives. This is the first national study in Malaysia which hopes to set a platform for more studies in the future.

Unanswered questions/future research

Effective drowning prevention initiatives in Malaysia.

Implications for managers

In order to draw up effective drowning prevention measures, it is necessary to understand the nature of drowning, location and how it happens. One mechanism is to classify deaths according to the ICD-10 (1) and this information could be translated into the Department of Statistics database for future use.

Conclusion

Fatalities due to drowning are an unrecognized major child health issue and require national attention.

Acknowledgements

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Child drowning in Cambodia

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Introduction

The 2007 Cambodia Accident and Injury Survey (CAIS) was a national cross-sectional survey conducted in February and March 2007 to describe, understand and measure accidents and injuries in Cambodia and to quantify the burden of injury in order to develop prevention programs. The research was a joint project between the National Institute of Statistics of The Ministry of Planning (NIS), the National Institute of Public Health of The Ministry of Health (NIPH), the United Nations Children's Fund in Cambodia (UNICEF), and The Alliance for Safe Children (TASC). This report focuses on drowning in children of all ages and also looks at drowning in early childhood, an age group specifically targeted by the Millennium Development Goals.

Methods

The sample was a nationally representative sample, using probability proportional to size (PPS) sampling, with a sampling fraction of approximately 3.5 percent. The sample size was 66,576 households containing 323,129 residents of whom 133,322 were children aged 0–17 years. Household interviews were conducted in a standardized fashion, to collect detailed epidemiologic and economic information on deaths from all causes in the previous three years and non-fatal injuries in the preceding year. Respondents were the most knowledgeable household members according to the context of the question. For economics and questions related to adults, it was the household head or the adult most knowledgeable (usually the actual victim if non-fatal injury and the spouse if an injury death occurred). For children, it was the mother or caretaker of the child. Causes of death were determined from medical certificates if available and verbal autopsy if not.

Results

Two thirds (65%) of drowning deaths occurred in children aged five or younger. The drowning rate was highest for two-year-olds, and rapidly decreased after age six. For children one to four years old, males were more than four times as likely as females to drown. Almost all children (95%) over the age of four who died from drowning did not know how to swim. In children under five, over half (58%) of all drowning deaths occurred within 100 meters of the child's home. In older children, the water bodies were further from the house, and more likely on routes to and from school. Drowning was the second leading cause of death identifiable in children 1–4 years old and for these children, drowning accounted for almost one out of every six deaths (15%) in this age.

Conclusions

Drowning was the leading cause of all child deaths after infancy. About 2,000 children drown each year which is an average of six children each day. In children aged 0–17, 16% of drowning deaths occurred in urban children and 84% in rural children. This is the same as the urban:rural population distribution, making drowning a major health issue regardless of place of residence.

For children in the 1–4 year age group, drowning was the second leading cause of death identifiable and accounted for almost one out of every six deaths. Most other causes of under-five deaths, such as communicable disease and non-communicable diseases have intervention programs in operation. Drowning does not, and may be an obstacle to attainment of MDG 4 with its significant contribution to mortality in early childhood. The main group to be targeted for drowning prevention, mothers and other caretakers of young children, are already targets for CD and NCD prevention and drowning interventions could be easily integrated as well.

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No more drown in 15 minutes

Adisak Suvanprakorn[1]

Thai Life Saving Society[1]

No more drown in 15 minutes.
Mae Shee Loy Nam.

In Thailand, for more than 40 years, students were taught only Competition Swimming. Now to prevent our children from drowning, Thai Life Saving Society is teaching them 'A Survival Swimming Curriculum' which includes: Water Safety Knowledge, Basic Self Rescue and Swimming Stroke and Basic Water Rescue in 15 hours.

In Basic Self Rescue, to prevent our children from drowning, we teach them how to float: 1) face up floating or Mae Shee Loy Nam 2) face down floating or survival floating and 3) dog paddle.

Face up floating is very simple, in nature the human body can float, float or drown are very close. If we think about the Archimedes theory and spread our body weight on the surface of the water,we can float very easily. It's up to: how big our lungs are (our big PFD inside), how much fat we have in our body and the weight of our bones. The face up floating is very easy, short time to practice, 99% of students can do it in 15 minutes. If someone can't float, they can use their slipper or plastic bottle instead of a PFD and they'll not drown.

Thai Life Saving Society, works very hard on this curriculum to prevent our children from drowning and wants the world know how to prevent drowning by 'face up floating or Mae Shee Loy Nam'. Drown no more.

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ORAL PRESENTATION

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Drowning in the Great Lakes of Uganda: A neglected problem

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Introduction
Drowning was demonstrated in a 1997 community study to be the lead cause of injury deaths in the greater Mukono area of central Uganda contributing 27% of injury deaths. Hospital Studies in this area did not confirm the findings of this community study. This area borders on the largest lake in Africa, Lake Victoria and Lake Kyoga which is a large reservoir of the River Nile. Activities implicated as causes of drowning include ferry/ boat transportation and commercial fishing. Since the above study was conducted there has been neither follow up research nor intervention programs introduced to address the burden of drowning. Moreover interfaces of humans and water bodies have continued. There are neither community studies nor mandatory death registrations to drowning related data.

Objective
To compare drowning and near drowning cases reported in the hospital trauma registries and the media in the year 2010.

Methods
We searched five Uganda-based English print media published reports of drowning in 2010 newspaper magazines and compared these with drowning and near drowning cases recorded in a nationwide regional hospital based trauma registry.

Results
From January–July 2010, a total of 98 persons were reported in the five newspapers. All newspapers carried some information on drowning events involving at least 20 people. Of the 98 cases, a total of 61(62.2%) drowning deaths were confirmed while a total of 21(21.4%) were near drowning cases. There was inconclusive information regarding the survival and or rescue of the remaining 16 (16.3%) persons. All the media reported cases were transportation related drowning. From a total of 2834 trauma registry cases in the same period of 2010, only 3 (0.1%) cases were recorded. All these were near drowning cases.

Conclusions
Drowning is common and among the leading causes of injury deaths in the central region of Uganda. This problem is likely not limited to central Uganda as there are large lakes on the Ugandan border and Lake Victoria is also part of the geography of Eastern Uganda. There is no systematic process to record and track drowning related incidents and deaths in Uganda. Hospital-based trauma registries greatly underestimate the burden of drowning. The lack of information could be attributed to a lack of synthesized research and information regarding the burden of drowning.

Recommendations
Systematic community-based surveys are needed to quantify the burden of drowning and act as a baseline research for drowning interventional research in Uganda.

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Behavioral change communications for drowning prevention in low literacy environments

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Introduction

The PRECISE project had a number of behavioral change communication interventions designed to be appropriate for rural village environments, as well as to be effective in the low literacy environments that characterize rural Bangladesh.

Methods

Descriptive presentation of the various drowning prevention interventions that primarily used communication to elicit behavioral changes which reduced drowning risk for children at the household and community level in rural Bangladesh.

Results

The 'interactive popular theatre' (IPT) and 'docu-dramas' are extremely popular within the CIPRB intervention areas. Over the last five years of implementation, the IPT was shown over 1,200 times with an average audience of 500–700 people each session. The docu-drama has been performed by local community members over 500 times with an average audience of 300–500 people.

Both forms of BCC have resulted in frequent requests for performances in many villages of the project area as community members want to learn about and teach their children about safety and injury prevention including drowning. They are also a unique way to reach the male population of the villages, as they are performed at night once the males (and females) have finished their work and seek some form of entertainment.

Surveillance data shows a marked decrease in injuries including drowning in the project areas since the implementation of the PRECISE project involving BCC activities.

Conclusions

Drowning prevention interventions have major communications components that can be integrated into them. The goal is to engage caretakers and others who have significant responsibilities that determine the supervision of the at-risk child in a variety of ways which are effective in their cultural context. Additionally, the communications interventions facilitate the changes needed in the home and community environment of the at-risk child, and help change risk and behavioral norms in these environments. When implemented as part of a comprehensive set of activities, they contribute to reduction in drowning rates in children.

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The evaluation of general swimming and safety swimming programmes

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Ministry of Public Health, Thailand[1]

Background

Drowning is the first leading cause of death for children age lower than 15 years. Each year about 1,500 children had died from drowning, which is approximately four children per day (1). The mortality rate per 100 000 children aged 0–14 years is between 9.3–11.5, (2004–2008) (1–2).

A survey on the swimming ability of Thai children under 15 reveals that only 16.3% of them can swim (3). Moreover, it has been found that the current swimming instruction lacks the emphasis on water safety skills, how to survive in water, and how to rescue other people from drowning which are the basic skills that all children are supposed to learn (4).

Objective

To evaluate of general swimming and safety swimming program.

Methodology

This study is the Quasi-Experimental Research, which has the objective to evaluate three groups of children's ability to swim and skills to make them survive when they have crisis during swim. These groups of children were given different swimming courses. Group 1 took part in the safety swimming course while the other two groups took part in general swimming courses. The questionnaire and an in-depth interview were also used as data collection methods. The descriptive statistics, t-test and correlation analysis were used for data analysis.

Result

The result of the study showed that after completion of the courses, there were no significant differences among three groups of children in terms of the ability to swim, when they were tested to swim for 25 meter distance. However, in terms of ability to perform safety and rescue swimming, the children in Group 1 demonstrated more effective than other children from Group 2 and Group 3 respectively.

Conclusion and Discussion

In summary, we found that the children who took part in the course that was specific for safety and rescue swimming had more ability than the ones who took part in general swimming course. Therefore, the safety and rescue swimming courses (survival swimming curriculum) should be promoted widely throughout the country, and this will help to reduce the death of children due to drowning.

Acknowledgements

Dr. Tairjing Siriphanich.

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SwimSafe – A survival swimming curricula

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Introduction

The case-control studies nested in the TASC-UNICEF national surveys showed that naturally acquired swimming ability was associated with protection from drowning. This led to the need for large, controlled cohort studies to confirm that the relationship was causative. Training the numbers of children needed required standardized curricula that could be taught in natural as well as man-made water bodies, to a specified level of tested skills and without an increased risk of harm in the process. This necessitated a structured operational research program for development of such curricula.

Methods

An anthropologic study was undertaken to examine the process of acquisition of natural swimming ability. Following this, the natural process was categorized into practices used to teach individual skills and the combinatorial process used to chain the individual skills into natural swimming competence. International experts in swim teaching and water safety then classified the different processes according to whether they met criteria for good practice, best practice and/or harmful practice. Following this, a structured curriculum was developed based on the good practices that would safely result in acquisition of swimming ability for children four years and older, coupled with basic knowledge of water safety, and safe rescue. The curriculum was piloted in Bangladesh, Thailand and Vietnam.

Results

A detailed presentation on the changes resulting from the operational research on aspects of the curricula for all three sites will be made at the World Conference on Drowning Prevention.

Conclusions

The process of studying the development of swimming skills in very young children naturally allowed an understanding of the most culturally appropriate and acceptable methods as well as an assessment of risks and benefits from each confidence and skill-building process. Using risk management techniques, a highly structured curriculum was developed which then underwent testing in the natural environments used in Bangladesh.

Following final development, the curriculum was modified for use in Thailand and Vietnam, in accordance with local environments and customs. The curricula has been in use in three separate programs with over 140,000 children taught survival swimming in Bangladesh, Thailand and Vietnam. There have been no injuries in any teacher or child and cohort studies are underway to measure actual protection efficacy from drowning.

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New local PFD innovation

Adisak Suvanprakorn[1]

Thai Life Saving Society[1]

Slipper or Plastic bottle.

The human body can float by itself. We need only a small amount of buoyancy to float ourself. Our new local PFD innovation is a slipper or plastic bottle.

'Face up floating' takes five conditions:

1. Buoyancy theory of Archimedes
2. Spreading our weight on the surface of the water
3. Lung capacity
4. Fat
5. Our bone

These five conditions made everybody float in six positions.

We need to move our center of gravity: CG from horizontal to vertical (head, body, hands, knees and feet) and our CG be at the feet. If we wear a slipper, the buoyant of the slipper will raise our feet up to float. And also plastic bottle can be our PFD at all times. It's easy to find because we carried it at all time of travelling and the buoyancy of a plastic bottle (800–1,500cc.) can float our body weight while in horizontal position.

Drown no more.

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Situation and causes of drowning among children aged 0–14 years – Nakhon Ratchasima Province

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This descriptive research was to study the drowning situation and its causes among children 0–14 years old in Nakhon Ratchasima province, B.E. 2550. There were totally 79 children reported drown. Data was collected from all of the drowning children by interviewing both qualitative (questionnaires) and quantitative methods (indepth interview). Interviewees composed of child care givers and the others who were responsible for community safety. Data was analysed by descriptive statistics and content analysis.

The results showed that drowning children were male more than female 1.3 times. Most of them study in primary schools (70.9%) and their learning abilities were moderate (63.5%) and good (36.5%). They lived with their parents (54.4%). The relationships in their family were good (75.9%). Their main attendances were parents (49.4%) grandparents (39.2%). Almost all of the child attendances had jobs (96.2%). Their educational level was primary school (97.1%) and an average income was 1000–4999 baht. The drowning children had normal physical and mental health including physical development (98.8%). Most of them died in water sources (91.2%). They could not swim (87.5%). There were friends with them during drowning (73.8%). They drowned in the afternoon (1.00pm–4.00pm) (79.7%). Most of them did not intend to swim (54.4%) but they fell accidentally into the water owing to picking up a fallen thing or helping another child who was sinking in the water. Among the children who intended to swim (45.6%), they swam in the risky water source such as deep and with a swift flow. There was no support equipment when they were drowning (100%). The child did not request permission from their parents (72.2%). The water sources where the children drowned were pond (51.9%), dike dam (16.5%). Most of the water sources were man made (78.5%) and were in community area (95.0%) less than 1 kilometer away (57.0%). The water source owners were field owners or land owners (43.0%) or local administration organization (39.3%). The water sources were small (88.6%) less slope of bank (92.4%). The purpose of those water sources was for agriculture aspects. Almost all of them lacked of safety precaution and management such as warning sign or fence (98.7%).

This study could be concluded that the major causes of drowning were 1) risk behaviors (100%), 2) risk water sources (97.5%) and 3) child care givers (46.6%).

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Message from Sri Lanka

Hiran Ukwatte[1]

Freight Links International / Life Saving Association of Sri Lanka[1]

Few Key Points to overcome the challenges faced by Sri Lanka.

1. Have a meeting with WHO Sri Lanka branch and conduct a National survey in drowning in order to maintain statistics and introduce drowning preventions strategies.
2. Launch National Level CPR and Water Safety Training programs.
3. Appoint a panel of doctors who have mastered cardiology as a subject for the life saving association of Sri Lanka.
4. Include life saving as a sport to the National Sports Policy.
5. Conduct Regular meetings with UNICEF / UNDMT / UNESCO / UNDESA / WHO in order to enhance the know-how and share experiences on related subjects.
6. Link up with national coast guards for surf life saving service related activities. National coast cards in Sri Lanka will be linked up with International Rescue's Maritime Federation.
7. Introduce life saving Nippers Program in Sri Lanka – starting from pre schools level.
8. Introduce drowning as a subject to the national education curriculum. Link up with the Ministry of Education in Sri Lanka.
9. Get strategic partners on board for financial support.
10. Appoint a board of directors in Sri Lanka for strategic development in life saving.

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NOTES

Photo: REUTERS

Drowning Research

This stream focuses on high quality and innovative drowning research from across a range of disciplines and subjects. Research is not restricted to drowning and covers other water related issues.

The stream has been divided into the following areas to provide further guidance to participants, speakers and conference partners and includes areas such as: the global burden of drowning, definitions and data collection, epidemiology, and prevention research. It will give a taste of the range of research being undertaken and reveals the gaps in knowledge that make this area of public health a dynamic area for research.

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Standard World Health Organisation (WHO) data on drowning: A cautionary note concerning undetermined drowning

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Background

Standard WHO data for drowning are available for many countries worldwide but furnish no reliable figures on the global burden of drowning because most developing countries collect no or inadequate data on water-related mortality. WHO-reported unintentional drowning rates vary widely between countries, but international comparisons are generally possible only for non-boating drowning based on narrowly defined WHO data. Standard WHO data include neither drowning from natural calamities nor boating-related drowning, nor land-transport drowning. Moreover, WHO statistics do not account for unintentional drowning concealed under the category of 'undetermined' drowning, i.e. unintentional or purposely inflicted. Studies on drowning classified as undetermined are exceedingly rare, with cross-country comparisons limited to few countries.

Aims

The main aims of this study are to assess: a) cross-country differences in undetermined drowning deaths, b) reasons for discrepancy in undetermined drowning rates among countries.

Material and Methods

The latest available ICD-10 data on unintentional non-boating drowning deaths (codes W65–W74), boating-related drowning (V90, V92), and undetermined (Y21) drowning for each country were extracted from the WHO mortality database. Crude drowning rates were calculated using the last WHO estimate population and the proportion of undetermined drowning was calculated by country.

Results

As of August 2010, of the 193 member countries, 100 (51.8%) submitted mortality data to the WHO using ICD-10 codes for drowning. All 100 have data on non-boating unintentional drowning, boating-related and undetermined drowning. Only countries (n=72) with more than 20 unintentional drowning cases were considered in this study.

We found a large discrepancy between countries regarding percentage of all drowning classified as undetermined, in 29 countries less than 5%, in 15, 10–24%, in 8, 25–50%, and in the remaining 3 >50%. In Asia, undetermined drowning ranged from <1% in Thailand to 37.4% in Korea, in Africa from 29.2% in Egypt to 86.9% in South Africa, in Europe from <1% in Italy to 44.7% in the UK, in North America from 6% in the USA to 14.4% in Canada, and in South America from <1% in Chile to 20.9% in Argentina. Undetermined drowning rates across countries vary, based on levels of evidence (beyond reasonable doubt, balance of probabilities) required by judicial systems to assess the intent, whether intent is determined by medical staff or legal professionals, on inadequate transfer of data to statistic offices, low frequency of medico-legal investigations, and on inter-examiner differences. Despite accurate scene investigations, collection of extensive information about the victim, and comprehensive medico-legal autopsies, intent may remain undetermined due to factors inherent in single drowning cases, such as lack of reliable witnessing and difficulty in linking victim's background to the actual drowning.

Conclusions

The WHO undetermined-drowning category accounts for significant artifact differences in unintentional drowning rates between countries, leaving unintentional drowning rates underestimated without considering undetermined drowning. To minimize this discrepancy, physicians must better report information useful for codification, causes and manner of death should be systematically transmitted to statistic offices after medico-legal investigation; differences between intent needed for judicial purpose and probable intent should be clear on death certificates. Specific training for certifiers and coders should focus on standardizing the approach to borderline cases, when circumstances and individual background allow no unequivocal determination of the intent.

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Systematic review of non-Utstein style drowning terms

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Introduction

The efficient study of drowning is hampered by nomenclature variability among drowning definitions. The 2002 World Congress on Drowning (2002 WCD) established a consensus definition of drowning: 'the process of experiencing respiratory impairment as the result of submersion/immersion in a liquid medium'. The guideline further states that the Utstein style reporting of drowning incidents should be limited to 3 outcomes: morbidity, no morbidity, and mortality. This precludes the use of terms such as silent, wet, dry, near, active, passive, and secondary drowning.

Aims/Objectives

This systematic review identifies the prevalence of Non-Utstein Drowning Term Use (NDTU) for the terms 'wet', 'dry, 'near', 'active', 'passive', and 'secondary' drowning.

Design

IRB approved, systematic review using the Cochrane style.

Data Sources

English-language articles, published between 1 January 2003 and 15 July 2010 using Medline/Pubmed and Web of Science. A panel of emergency physicians and an academic librarian developed the search strategy. The search terms used were: 'drowning', 'dry drowning' , 'drowned' , 'wet drowning', 'active drowning' , 'silent drowning', and 'secondary drowning'.

Data Selection

Using a citation management system, the titles and abstracts of the initial search yield were independently screened for inclusion/exclusion criteria by two authors, JS,DS.

Inclusion criteria

(1) Articles relevant to the public health, impact, surveillance, treatment, pathophysiology, or prevention of drowning, and (2) article titles that contained the terms 'drowning', 'immersion', 'submersion', or water related injury/mortality/safety.

Exclusion criteria

(1) Purely forensic or microbiologic articles (2) opinion/editorial pieces, (3) non-peer reviewed publications, (4) non-human studies, (5) inability to obtain reference.

Data Extraction

Two trained abstractors, JS,BP, independently reviewed the final article cohort using a standardized data tool. These elements were extracted: presence of any non-Utstein drowning terms; presence of a drowning definition; and determination if this definition was WCD-consistent. If available, each journal's impact factor and cited half-life were recorded. Discrepancies for the title/abstract screening were tracked and resolved by consensus.

Outcomes

The primary measure was the prevalence and 95% confidence interval (95%CI) of any NDTU. Secondary measures were the prevalence of the exact Utstein-style drowning definition, the mean impact factor, and median cited half-life of those journals which contained NDTU. Interrater reliability (IRR) was calculated for both the title/abstract screening and for the data extraction using the Kappa statistic.

Results

The initial search yielded 1,148 articles. 119 non-English articles were excluded, 789 did not meet inclusion criteria, and 13 were excluded due to an inability to obtain full text. The final cohort consisted of 227 articles from 131 journals. The IRR for the data extraction by the two reviewers was very high [Kappa (95%CI) = 0.929 (0.88,0.98)]. The prevalence (95%CI) of NDTU was 42.7 (35.6,48.4)%, with most being attributed to the use of 'near' drowning' n=94/97 (97%). The terms 'active', 'passive', and 'silent' drowning were not found in any of the articles. 37/227 (16%) contained an explicit drowning definition, of those, 18/37 48% (95%CI=32,64) used the Utstein-style definition. For articles containing NDTU, the mean (SD) Impact factor for the journal in which they appeared was 2.24 (1.84) [range=0.132-13.66) and the median cited half-life was 6.1 years.

Conclusion

There is high nomenclature variability in the current medical literature with nearly half of the included articles using non-Utstein drowning terminology. The primary NDTU found, 'near drowning', accounted for 97% of NDTU, evidence that it continues to persist in the medical literature despite the WCD 2002, Resuscitation 2003, and WHO 2005 articles strongly suggesting against its use. Nomenclature variability could hamper the study of the prevention, rescue, and treatment of drowning. The journals in which NDTU appear may serve as targets for editorial intervention to achieve uniform reporting of drowning to the scientific and medical communities.

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ILS Drowning Data and Research Survey

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In 2007, the International Life Saving Federation released its first World Drowning Report with the intent of having a report on a regular basis. The inaugural report provided a picture of the size of the drowning problem, who was drowning including supplementary information from 16 ILS members, limitations in our current understanding of the problem, key issues and interventions.

It has now been four years since the report was delivered and with the World Conference on Drowning Prevention to be held in May 2011 this is an excellent time to revisit the data on drowning and explore any changes which have occurred over the past four years. As such in January 2011 the ILS Drowning Prevention Commission undertook to collect information from ILS members about their organisations' capacity to generate, interpret and utilise drowning prevention related research.

Aims

To explore the size of the drowning burden using ILS countries.
To gain an understanding of ILS member data requirements and uses of data.
To gain an understanding of those issues considered more important for drowning prevention.

Methods

A survey to collect information on drowning and its prevention was developed in December 2010 using the on-line survey tool SurveyMonkey™. The survey was then reviewed and piloted. In January 2011 one person from each ILS member or affiliate organisation was sent an e-mail asking them to participate in the ILS Drowning Data and Research Survey. Unfortunately not all members have an e-mail nor did all e-mails work. Where an e-mail bounced and we had a second e-mail address, either for another person in the organisation or a second e-mail for the person, they were sent another e-mail. In a small number of cases the organisations who we sent an e-mail too asked us to send another e-mail to a different person. In total there were 107 e-mail addresses invited to participate – of these 55 responded.

Results

At the time of writing this abstract the survey had only recently been completed and the following is a snapshot of the initial results. Please note results may changes once the data has been cleaned and analysed. There were 55 people who responded to the survey; 18 partially completed the survey (i.e. answered some of the questions but did not complete) and 37 completed the survey. This represented results from 45 countries. Of these 45 countries, 24 provided some information on the number of people who drowned in their country. Of these eight were from the ILS Region America, five were from the Asia-Pacific region, 11 were from the Europe region.

These results cover 1.2 billion of the world population and approximately 25,400 deaths per annum or a crude rate of 2.2 per 100,000 people per annum. It is interesting to note that the crude rates varied significantly by region with Asia-Pacific having the lowest rate at 1.8 per 100,000 people and Europe having the highest crude rate at 3.8 per 100,000 people, with Americas at 2.1 per 100,000. While the regions do not exactly map they were all lower than the estimates from the World Health Organisation.

There were 37 responses from 30 countries to the questions on 'how important for drowning prevention are the following issues'. The following summarises the number of responses who said they were extremely important: alcohol (32%), home swimming pools (8%), training (32%), public education (51%), legislation/regulations/standards (32%), drugs (8%), floods (11%), Tsunami (3%), lifejackets (35%), lifeguards/lifesaver training (51%), lifesaver/ lifeguard recruitment (32%), cold water (11%), parent supervision (43%), CPR (24%), signage (including flags) (24%), drowning as a method of self harm (8%).

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Drowning statistics in Germany – Comparison of different reporting systems

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Drowning is one of the major causes for unnatural death in Europe especially for children as well as for elders. Nearly half a million people drown each year worldwide. The drowning figure of Europe was about more than 37,000 reported by WHO in year 2000. Nearly 5,000 of the drowning victims were children. Every second victim in Germany was a senior person 50 years of age or older. One of the main messages of the World Water Safety Conference in Porto 2007 was: Drowning needs more attention. Prevention needs better and more information about the real reasons.

The DLRG has been collecting data on cases of drowning in Germany since the year 2000. The collection is based on press cuttings. The cuttings are identified on the base of specified keywords by a large press cutting agency with partners in Europe.

In most cases, the data collection procedure enables an exact classification of fatal water accidents and their circumstances.

The parameters are

- Sex
- Age
- Date of the accident
- Place of the accident (ocean, lake, private or public pool etc)
- Assignment to regions
- What has happened and
- Contributing factors (boats surfboards, inflatable toys, alcohol)

The national drowning statistics based on ICD classification can not give answers to the questions where and how to prevent.

Death in the water has more causes than those of drowning according to ICD.

The real drowning figures are higher as in the official national statistics of death.

Statistics based on collecting press cuttings gives a lifesaving federation information for strategic decisions and activities in prevention. The objective of the analysis is to gain knowledge about where what preventive measures must be taken in order to reduce the number of fatal water accidents significantly in the future.
Fatal accidents are reflected in media reports to a particularly great extent. Therefore, press cuttings generated from such reports offer an abundance of information about causes and circumstances of deaths by drowning as well as background information about the people concerned.

The national death statistics should be completed with data from press analysis. The objective of any drowning statistics is to gain knowledge about what preventive measures must be taken and where they must be taken in order to significantly reduce the number of fatal water accidents in the future. The method is not expensive. The data can give information about drowning during different activities (swimming, surfing, sailing, diving, etc.) and dangerous locations. Thus, the evaluation and presentation of the results in the standard categories is carried out to a large extent on the base of the IDB (injury data base) code as well. Comprehensive statistics about non-lethal drowning injuries in Germany do not exist. There are only estimations of the dark figures available as well as for deaths late after the drowning accident based on research data of studies in smaller regions, which will be referred by the author.

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Drowning under the influence of drugs and alcohol

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Background

Alcohol is considered the most important single risk factor for drowning. Individuals under the influence of alcohol are more likely to fall into the water, to swim or boat in dangerous situations, to operate a boat improperly; and once in the water, their capacity to swim or survive can be significantly hampered. Moreover, alcohol may hamper decision-making regarding safety. The relation between drowning and alcohol has been documented in different countries and various settings, with most studies reporting 25% to 50% of drowning as alcohol-related. While the role of alcohol in drowning has been extensively investigated, little is known regarding the presence of other drugs in drowning victims, although central nervous system drugs may hamper psycho-motor performance and cognitive functions in a variety of critical tasks involved in water activities. Finnish law (459/73) allows an extensive medico-legal investigation into cause of death, with virtually 100% of drowning undergoing police investigation and a full medico-legal autopsy, including toxicology. Thorough post-mortem investigations seek to verify the diagnosis of drowning and to assess contributing factors leading to the fatal outcome in each drowning case.

Aims

The main aims of the present study are to investigate the proportion of alcohol and drug-positive drowning cases, the nature of drugs found in victims' blood, and the role of psychoactive drugs and alcohol as factors contributing to drowning.

Material and methods

Retrospective analysis of toxicological findings in drowning cases occurring in Finland from 1 January 2000 to 31 December 2009. All drowning cases for which a toxicological analysis was performed were selected for analysis by use of the ICD-10 'nature of injury' code for drowning (T75.1) from the database of the Laboratory of Toxicology, Department of Forensic Medicine, University of Helsinki, which carries out by statute post-mortem alcohol analysis and all other toxicology for the entire country. Blood alcohol (BAC) and drug concentration were investigated by intent of drowning (unintentional, suicide, homicide) and a set of victims' individual variables and circumstantial factors.

Results

Toxicological analysis was performed in 2828 drowning cases, of which 2058 were unintentional, 547 suicides, 11 homicides, and 212 undetermined. BAC analysis was performed on all victims (0 to 93 years old, M: F RR: 3.5). Among all drowning victims, 1451 (51.3%) had a BAC ≥ 0.5 mg/dl, and 1131 (40.0%) ≥ 2.0 mg/dl.

Screening for drugs other than alcohol was performed on 2013 (71.2%) drowning victims. Among the victims tested, 1118 (55.5%) tested positive for at least one drug other than alcohol in the blood. In 839 (41.7%) drownings, a central nervous system (CNS) drug was identified, and in 279 (13.8%) another drug, mostly for the cardiovascular cardiovascular system. Among cases testing positive for nervous-system drugs, 378 (45.1%) tested positive also for alcohol, and 284 (33.8%) had a concentration exceeding the therapeutic range. Only 20 cases (1%) were positive for illicit drugs (amphetamine, tetrahydrocannabinol, gammahydroxibutirate). The potential role and mechanisms of alcohol and psychoactive drugs in events leading to drowning are evaluated and highlighted.

Conclusions

Psychoactive drugs, which, in addition to alcohol, may hamper psychomotor performance and cognitive functions, are detectable in a thus-far unreported high percentage of unintentional drowning victims. Alcohol and psychoactive drugs may play an additive role in events leading to boating- and non-boating-related drowning. Drowning prevention efforts should consider the risks related to combined use of alcohol and drugs in water settings, as is the practice for land traffic injuries.

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Calculating estimates of drowning morbidity and mortality adjusted for exposure to risk

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Background

The calculation of drowning mortality and morbidity rates has often been hampered by the lack of appropriate denominators that reflect exposure to water, resulting in poor estimates of the risk of drowning. For example, calculations of the drowning rate for adults typically use the total adult population as the denominator. This underestimates the risk of drowning as it includes adults who are never or very rarely exposed to water and consequently are not at risk for drowning. Ideally, only the number of adults who are exposed to bodies of water to the extent that drowning is a risk should be used to calculate the rate of adult drowning.

Population-risk (proportion of population exposed to potential hazard) and person-time risk (amount of time a person is exposed to potential hazard) have been taken into account in the calculation of injury risk in some settings, such as using per million hours worked to estimate the risk of occupational injury. However, this type of exposure information has not been available for drowning mortality or morbidity in Australia.

Aims

To estimate and compare the rate of unintentional drowning mortality and hospitalised morbidity using population-based, population-risk and person-time risk estimates and then compare exposure-based rates for drowning with road traffic fatality rates.

Method

Retrospective analysis of unintentional drowning mortality and hospitalised morbidity of New South Wales (NSW, Australia) residents during 1 January to 31 December 2005. Information on water-related population-risk and person-time risk exposure was obtained from the 2005 NSW Population Health Survey. Road traffic mortality data was obtained from the NSW Roads and Traffic Authority (RTA) and population- and person-time risk estimates from the Australian Bureau of Statistics Survey of Vehicle Use, NSW Transport Data Centre Household Travel Surveys and RTA Speed Surveys in 2005.

Results

The estimated drowning mortality and hospitalised morbidity rates were consistently higher using population-risk and person-time risk exposures compared to population-based exposure. Population-based estimates of road traffic mortality were four times higher than drowning mortality rates, but exposure adjusted person-time estimates for drowning were 200 times higher than equivalent exposure-adjusted rates for road traffic fatalities.

Conclusions

Drowning risk is strikingly higher than previously thought based on population-based estimates. This research shows that the risk of drowning is underestimated when the total age-specific population is used to calculate the drowning rate instead of actual population-risk or person-time exposure. This research highlights the importance of establishing an appropriate denominator for the population-at-risk.

Drowning is less frequent than road traffic fatalities as fewer people are exposed to water hazards, but when water exposure occurs, the risk of death is much higher compared to exposure to the road environment. This information is important for decision-making and policy development as it provides a basis for comparing the inherent risk in exposure to hazards with potential to cause injury.

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A drowning risk assessment (DRA) observation instrument: Developmental proposal

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Background/Introduction

Drowning is a leading cause of injury and death worldwide (1)(2). Organizations providing lifeguard training have identified characteristics of individuals classified as drowning victims and tired swimmers (3). The Aquatic Readiness Assessment (ARA) is a valid and reliable developmental swimming assessment that describes swimming behaviors in observable terms similar to those used to describe drowning victims (4).

Aims/Objectives

Modify components of the Aquatic Readiness Assessment (ARA) to become the Drowning Risk Assessment (DRA) for identifying swimmers/bathers at risk of drowning.

Target

Lifeguard educators, drowning prevention researchers, practicing lifeguards.

Methods/Implementation

The ARA is a series of components that track how a person progressively acquires swimming skills over time. Inexperienced swimmers tend to have a near vertical body position, skilled swimmers remain closer to horizontal (4). Paradoxically, persons at risk of drowning regress backward through the sequence order from swimmer to tired swimmer to drowning victim (3). The ARA component sequences for breath control, body position, arm and leg actions, and front swimming describe progressive ordered categories that objectively assess swimming development. In reverse order as the Drowning Risk Assessment (DRA) the components describe how swimmers regress to become a drowning victim. The current proposal establishes validity and reliability of the DRA as a drowning risk assessment instrument by using existing collections of swimming videos. The established inter-rater objectivity of the ARA exceeds 80% exact agreement with similar rater objectivity for DRA since the observed behaviors are described similarly.

Results/Evaluation

Selected components the ARA each have established levels of validity, reliability, and objectivity for the purpose of assessing swimming development. The validity and reliability coefficients of component categories described in reverse order for use as the DRA need to be established by empirical study. Developmental validity examines the degree to which swimmers and drowning victims recorded on video are observed to transition (regardless of time frame) from low risk behaviors to higher risk behaviors in the order described across individuals. Reliability requires estimating how consistently those transitions occur among individuals.

Discussion

This study addresses the unique, but little-studied principle of developmental directionality that asserts movement changes such as swimming skills can occur both progressively and regressively. Progressive change as validated by the ARA emerges from a variety of individual and experiential constraints imposed over time. Regressive change from a state of swimming with a low risk of drowning to becoming a drowning victim is likely caused by rapidly-altered individual and task constraints such as fatigue, distance, or depth. Identifying the validity and reliability of a drowning risk assessment (DRA) is invaluable in training lifeguards as well as providing a recognized assessment instrument for such studies as Can You Swim (5).

Conclusion

Converting the developmental ARA into its converse, the Drowning Risk Assessment (DRA), holds promise for assessing both the risk of drowning as well as for investigating the link between capability in swimming and likelihood of drowning.

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Applying existing scientific technology and methods to life saving research

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Introduction

All aquatic activities have an element of drowning prevention, directly or indirectly. They are all related and have much in common. However, each has its own unique needs and characteristics. Thus there is fertile soil for cross polination of ideas, instrumentation, technology, methods. All aquatic activity areas and all academic disciplines should participate in this exchange. In the context of drowning prevention, we can profit greatly by applying methods used elsewhere.

Advances in technology, mathematical modeling, instrumentation and methodology are advancing at a rapid rate. There are many important research hypotheses to be tested within the rich area of water safety and life saving.

Aims

The aims of this presentation are a) to present several recent developments in aquatic research, and b) to propose several examples of research hypotheses requiring exploration.

Methods

A search of recent aquatic research identified methods and topics suggesting application to water safety. Several are selected, only as examples, with examples of concrete proposals for future research.

Results and Conclusions

a. Examples of newer concepts and methods from various areas of aquatic research having relevance for life saving research:

1. unsteady effects in hydrodynamics, added mass and vortex theory
2. passive & active drag measurements
3. 3D modeling and computational fluid dynamics of aquatic movement
4. energy cost analysis

b. Examples of proposals for future life saving and water safety research:

1. Energy cost of selected rescue towing techniques; the effect of the body position of the victim &/or rescuer; the effect of choice of arm and/or leg strokes; the effect of the choice of equipment.
2. Heat loss/energy expenditure in selected positions in floating &/or treading water. The dilema of heat loss with head submerged vs energy loss with the head above the surface.
3. Passive drag in selected body positions of the victim in towing; effect of various equipment, clothing.
4. Active drag in selected techniques of the rescuer in towing; effect of arm or leg strokes; body position.
5. Risk taking behavior and personality traits.
6. Post traumatic stress syndrome; victim & rescuer? Implications? Treatment?
7. Cross cultural analysis of prevalence of selected life saving techniques; award schemes in swimming & life saving; implications, etc. All areas of aquatic research can benefit from borrowing methodology from others. Life saving and water safety have a rich selection of important hypotheses waiting to be tested. In general, life saving research is under represented both in the aquatic experimental litterature (1,2,3) and at existing centers of aquatic research.

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Open water safety messages: Spreading the word

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Seattle Children's Hospital[1], University of Washington School of Medicine[2], University of Auckland[3]

Globally, many organizations have promoted a variety of messages and skills to prevent drowning in recreational open water settings. This diversity reflects the multifaceted nature of the drowning problem, the number of different groups involved in prevention and the lack of an evidence basis. Our objective was to develop and disseminate a consensus-based set of simple, generic drowning prevention messages for the general public for non-boating related recreation in various open water settings such as lakes, rivers or the ocean(1). The focus of this presentation is to look at how these messages can be disseminated through the assets and resources of a volunteer international open water drowning prevention task force.

Development of key messages related to drowning is common practice at a local, state, federal or global level. This often involves partnerships between organizations or individuals with common interests. What is more variable is what is done to develop and measure specific strategies and tactics related to dissemination (2,3).
Our objectives were twofold:

1. Raise awareness internationally among aquatic, water safety, drowning prevention and injury prevention professionals about the development and availability of non boating related open water drowning prevention guidelines
2. Raise awareness among the general public about key actions to keep self and others, such as children, safe around open water

We focused outreach in three ways that would provide the greatest impact with limited resources: publication and presentation of the guidelines and methodology in professional journals and conferences; dissemination through task force members and their organizations; internet available information. Evaluation methods included: tracking task force members' self reports of activities; web site hits and web searches to identify use of messages.

The tools, strategies, and tactics from this effort will be shared. They can be replicated at a small or large scale. During the course of this work we learned that dissemination through multiple channels and organizations involved both centralized and decentralized approaches to sharing information. We had to decide on what we could control – for example, the message wording in English vs. what we couldn't control – exact translations or educational vehicles unique to a country.

Challenges included the volunteer nature of task force member involvement which made it difficult to know what to expect in terms of dissemination. Presentations at conferences were both planned and opportunistic which led to some last minute preparation and missed opportunities.

For effective dissemination on a global scale, a plan must be made at the national and international level from the beginning, addressing costs, roles and responsibilities. Because dissemination involves different disciplines and specialized resources, consultation with media and public relations resources is needed. Effective communication strategies and tactics are as critical a part of the process as the messages themselves.

We would like to acknowledge our colleagues in the international open water drowning prevention task force: S. Beerman (Canada), J. Bierens (Netherlands), B.C. Brewster (USA), J. Connelly (Ireland), N. Farmer (Australia), R. Franklin (Australia), P. George (Australia), J. Kania (Kenya), B. Matthews (Australia), A. Rahman (Bangladesh), R. Stallman (Norway), T. Stanley (New Zealand), D. Szpilman (Brazil), R.M.K. Tan (Singapore), M. Tipton (UK); Secretariat: M. Tansik (USA).

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Open water safety messages: Spreading the word in New Zealand

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WaterSafe Auckland[1]

An International Task Force, comprising of 18 drowning prevention experts and practitioners from around the world, was formed after the 2007 World Water Safety Conference in Oporto in order to establish simple, consistent, generic drowning prevention guidelines targeted at parents, caregivers, and individuals around open water. After two years of deliberation, the Task Force finally agreed upon 16 key guidelines that addressed open water drowning prevention. These were subdivided into two sections – keeping yourself safe and keeping others safe. Whilst it proved a difficult enough task for experts to agree on clear, concise messages that are relevant in all open water settings around the world, the success of the task can only be determined by the uptake of the messages.

The first phase in the dissemination of the messages worldwide was to create a set of generic on-line resources to facilitate communication to water safety organisation and the drowning prevention community at large. The co-chairs of the Task Force developed a toolkit comprising of introductory letters, power point presentations, media releases and posters for the promotion of the messaging.

In the case of New Zealand, the dissemination of the messages is being delivered via the following methods:

- Website – promotion of messages and rationale on www.watersafe.org.nz
- Media release – distribution of media release to national media
- Newsletter – promotion in Waiora newsletter. Distribution to 1000 aquatic organisations, health promotion, and injury prevention organisations, local government councils, politicians and community groups
- Presentations
  - at a regional forum to 65 individuals from various aquatic organisations (such as Surf Life Saving Northern), 5–10 swim schools (such as Aquanauts Swim School and SwimMagic), community groups (such Safekids New Zealand), health promotion groups (such as Auckland District Health Board), injury prevention organisations (such as Auckland Pasifika Injury Prevention Network), lifejacket manufacturers, politicians and council pool compliance staff
  - at national education forums comprising of 35 national aquatic organisations (such as Surf Life Saving New Zealand, Swimming New Zealand, Coastguard New Zealand) who are members of the national organisation, Water Safety New Zealand
- Development of specific formal education material for school children freely available on the internet and promoted to teachers through professional development

An exciting development has been the use of the open water safety messages to provide the basis for the development of the 'New Zealand Open Water Safety Code', a guide that sits alongside the Mountain Safety Code and the Recreational Boating Safety Code. It is anticipated that this Code will form the basis of a national safe summer promotion at the beginning of the New Zealand Summer in October 2010.

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Using the public health approach to prevent drowning in Hawaii

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Background

Hawaii is an island state with a large visitor industry, world class beaches and warm weather conducive to recreational ocean activities year round. Drowning was the fifth leading cause of injury-related mortality in Hawaii (9%), including residents and visitors for the years 2005–2009 (1). Over the five year period of 2003–2007, Hawaii had the second highest resident drowning rate (13.3/100,000) (behind Alaska: 18.6) of all United States (2). The Ocean Safety and Lifeguard Services Division of Honolulu has been the lead in addressing drowning prevention for the state. The Hawaii State Department of Health, Injury Prevention and Control Program (IPCP) supports the efforts of drowning prevention partners including all the county ocean safety divisions (Honolulu, Hawaii, Maui and Kauai) by providing data, technical assistance and funding.

Objectives

To reduce drowning and water-related injuries in Hawaii utilizing a public health approach.

Target

Residents and visitors are both at risk of drowning in Hawaii. Between 2000–2009, nearly half of the ocean drownings were residents (48%) (1).

Implementation

The public health approach to drowning prevention requires a systematic assessment of the issue, identification of risk factors and developing, implementing and evaluating interventions to control or prevent the problem. Utilizing Haddon's Matrix, interventions are targeted at the pre-event, event and post-event phases of a potential drowning scenario (3). In Hawaii, the full-time, trained, professional lifeguards are essential to prevention efforts. Lifeguards interact with beachgoers before they enter the water, utilize personal watercraft to assist in ocean rescues and are trained as first responders. Other interventions support the work of the lifeguards. Additional pre-event strategies include a web-based real time assessment of beach hazards and conditions at all lifeguarded beaches across the state (www.hawaiibeachsafety.org) and pictogram signage at every beach.

Results

As a result of IPCP's involvement, ocean safety and public health professionals now have a better understanding of the epidemiology of drowning. IPCP utilizes a variety of databases to provide statewide and county specific reports about drownings. IPCP recently conducted a beach sign recognition survey to assess beachgoers' understanding of the pictograms and their resulting behavior. The evaluation has been available since late 2010.

Discussion

Using a public health approach in drowning prevention enhances efforts and focuses resources. Lifeguards provide a valuable, effective service and need to be viewed as essential public safety personnel (4). The visitor industry needs to understand that promoting public safety will not deter visitors. Strong partnerships and clear communication channels between other first responders, including fire and emergency service providers are important to overall public safety.

Conclusion

Drowning prevention requires many partners. Highly skilled and full-time professional lifeguards are essential to providing ocean safety for residents and visitors.

Acknowledgements

IPCP would like to acknowledge the CDC Preventive Health and Health Services Block Grant for funding various projects over the years and our community partners, especially the ocean safety personnel in Hawaii.

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ORAL PRESENTATION

ID: 1051 / Paper: 249

Drowning deaths – The estimated ratios between drowning, morbidity and no morbidity

Erik Bech[1]
Surf Lifesaving Denmark[1]

The presentation covers the research made in Denmark on drowning deaths statistics, and the span from a close encounter in the water to a permanent fatal drowning accident.

Methods of mapping and classification of drowning deaths are described in a number of cases.

The learning objectives to the audience are to understand the following issues:

1. Public awareness and understanding of drowning definitions, and drowning risks
2. Challenges in safe statistical identification of non-treated drowning accidents
3. Awareness of the scale of near-misses to drowning death. Drowning deaths and drowning morbidity are considered to be a major safety problem worldwide, and drowning is rated as one of the biggest primary causes of death.

Drowning accidents occur in all sorts of water habitats, ranging from the deep oceans, up on the shallow beaches and into the backyard pools and domestic bathtubs.

Reliable and valid drowning statistics are not easy to produce, and also not always easy to understand and interpret. The ICD 10 code is briefly described as the common standard in international drowning statistics, and some of the complexity in the codes are described.

The ratios of fatalities to morbidity to unregistered close encounters are described. Based on the references, estimates on the ratio of fatal drowning deaths to non-fatal drowning accidents in Denmark is described.

The presentation describes how preventive measures to all layers of the public in general, and to parents in particular is key to increase the knowledge of the peril, and thus to avoid many drowning accidents taking place.

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Research methods: Tips and tricks for those interested (and maybe never have considered that research is fun)

Dr Joost Bierens[1,2]

Reddingsbrigades Nederland[1], Medical Commitee International Life Saving Federation[2]

Although drowning is an eminent public health and clinical health problem, very little research has been performed. Most drowning related research, published in peer review journals, relate to epidemiology, prevention and deceased drowned bodies.

Rescue and resuscitation are of relevance for the lifesaving community but receive meager attention in research agendas, research grants or research institutes. A possible way to increase the evidence-based practice is that lifesaving organizations start to promote, fund, facilitate or initiate research projects.

During this presentation an introduction is given about how to set up drowning related research in such a manner that the results can be published in peer reviewed scientific journals. Aspects that are discussed include:

- why quantitative or qualitative research
- the international and national organisation of research (strategic level)
- research institutes and other research stakeholders (tactical level)
- formulating the right research question (operational level)
- coping with problems when facilitating, initiating or performing research.

During an additional interactive workshop, the tips and tricks to start drowning related research will be further explored in an interactive manner with those interested in or experienced with research.

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Establishing New Zealand's water safety research strategy and online research bibliography

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Water Safety New Zealand[1]

Background

During 2008/2009 Water Safety New Zealand (WSNZ) established the Research Advisory Group (RAG). The RAG identifies, prioritises and addresses gaps in current data sources and knowledge working to enhance the evidence base of effective interventions and programmes in New Zealand. It further provides for the coordination and support of New Zealand-specific research into water safety. The RAG has produced a research strategy that contains the national objectives and outcomes for the next three–four years.

Methods/Implementation

In order to establish the research objectives and outcomes needed, a critical review of New Zealand and international research published since 1990 was completed. The review investigated the RAG's main areas of inquiry, focusing specifically on published, unpublished and in-progress research on the following topics:

- Drowning causation, including fatal and non-fatal drowning;
- Water safety education, including:
  - discussion on the effectiveness of water safety education in reducing the risk of drowning and other water related injuries. This will include identifying and discussing the features of effective water safety education;
  - identifying and reviewing research and evaluations on past and current water safety education programmes, both in New Zealand and comparable countries overseas, that may have assisted in reducing the incidence of drowning. This will include identifying common key success factors and factors that promote and inhibit the sustainability of programmes;
  - drawing on the findings from the literature reviewed to identify gaps and overlaps from the New Zealand water safety stocktake (2008, August)
- Policies and training, including qualification and certification procedures. Describing and discussing the wider components of water safety activities that impact on, provide context for and support effective water safety education.

The completed literature review was processed into an annotated bibliography which is available in an online research search tool at www.watersafety.org.nz. In order to understand what gaps of knowledge were present from a national perspective a comprehensive gap analysis was completed. The research strategy was based on the completion of the Literature Review and the Gap Analysis results. The aim 'to be the leading water safety knowledge base for the strategy was taken as it was the primary research goal from WSNZ's Strategic Direction 2007–2012 that was approved by WSNZ's membership. Supporting the strategy's aim are three principles:

1. To promote a culture of research and evaluation within the water safety sector;
2. To provide the sector with research that informs the practitioners working alongside the academic community;
3. To ensure that research is responsive and readily available to the community and sector.

These three principles support three key research objectives:

1. Socio economic and cultural factors and how these impact on water safety;
2. Research into preventing the cause of drowning incidents and looking at what increases the chance of people surviving drowning;
3. Produce outcome and evaluation monitoring tools.

Alongside the three research objectives are two research priorities:

1. Reducing the risk of drowning in young and old males;
2. Learn to Swim and Survive.

A two way hierarchical relationship exists between the principles, objectives and priorities. For each priority area key objectives/research topics have been established around a budget of $150,000 per annum. All objectives/research topics have had desired outcomes and timelines set for completion.

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Suicide by drowning is the 21st century's rescue challenge: A review

John Connolly[1]

The Lifesaving Foundation[1]

Introduction

Most published statistics list only unintentional drowning deaths (1), reducing artificially the size of the world drowning problem. Suicide is examined in a number of countries ranging from low rate (e.g. USA), to high rate (e.g. New Zealand) to show how the published drowning figures vary from the actual figures. The exclusion of suicide numbers from published statistics on the grounds that such deaths are not preventable is not sustainable. Successful strategies used by some Irish water rescue organisations (e.g. Foyle Search and Rescue) point the way to reducing greatly the number of suicidal deaths.

Aim

To overview and describe the burden of suicide by drowning internationally.

Methods

The terms 'drowning', 'suicide', 'rescue', 'swimming' and 'lifeguard' were used as key words in a literature search undertaken to identify suicide and drowning rescue attempts. The search used internet search engines, academic data bases and textbooks. Over 50 journal articles and book references were obtained for evaluation.

Results and Discussion

According to the World Health Organization about 1 million persons globally die from suicide annually; a mortality rate of 16 per 100,000 population. Suicide rates have increased by 60% since the 1960's and it is among the leading causes of death in those aged between 15–44 years, increasing at such a rate among young people that they are at highest risk in one third of all countries (developed and undeveloped) (2). This is also the age range most at risk of drowning – accidental or deliberate (1). Suicide by drowning is most likely present in every country with the reported incidence rate, where recorded, varying between 3% and 26% of total suicide numbers. There is substantial evidence to suggest that the numbers of such deaths are greatly under-reported due to the nature of drowning itself and the legal requirements associated with a verdict of suicide (3). In the USA, between 1999 and 2002, drowning deaths made up 0.9% (n= 873) of male suicides and 2.1% (n= 496) of female suicides; in New Zealand, 2000–2003, 1.9% male (n= 28) and 4.4% female (n= 20); and in the Netherlands, 1996–2004, 6.6% male (n= 607) and female 11% (n= 497). Access to lethal means is a major factor in the method chosen. In the USA, where firearms are abundant 60.6% of male and 35.7% of female suicides shoot themselves (2). In 2004, Ireland had a suicide rate of 10.2 per 100,000 population with one-fifth of males and one-third of females (around 100 persons annually) choosing drowning. Irish organisations such as Foyle Search and Rescue, with their nightly foot patrols, and Dublin Fire Brigade, with its Water Rescue Unit based on the river side, have successfully prevented entry to the water and rescued suicidal persons attempting to drown themselves (4).

Conclusions

The exclusion of suicide figures from published drowning statistics greatly reduces the scale of the global drowning problem. An acknowledgement of this tragic problem and of successful practices in preventing and rescuing suicidal persons should lead to increased research into this important aspect of drowning.

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The rescuer who drowns

Dr Richard Franklin PhD[1] and **Professor John Pearn**[1]

Royal Life Saving Society – Australia[1]

Background/Introduction

There is no greater sacrifice than that made by a rescuer who throws it all on the line to rescue a drowning victim. Professions such as 'lifesaver' or 'lifeguards', either salaried or volunteer, are highly skilled at rescuing a drowning victim. However, many rescues are attempted by those with little or no training and subsequently the 'rescuer' tragically drowns in the rescue attempt. The challenge is to prevent the aquatic 'rescuer' from drowning. This paper examines the circumstances surrounding the drowning deaths of 'rescuers' in an Australian total population study.

Methods

We have identified all drowning deaths using data from the Australian Bureau of Statistics (ABS) Deaths Registrar for the period 1 July 1992 to 30 June 2002 and the National Coroners Information System (NCIS) in conjunction with the National Drowning Report for the period 1 July 2002 to 30 June 2009. Perusal of the details surround every such fatality has allowed us to identify an unselected complete subset of drowning incidents where a 'rescuer' drowned in attempting to effect a save.

Results

Over the period 1 July 2002 to 30 June 2009 we have identified 98 victims who drowned whilst attempting a rescue. Of these over two-thirds (69%) were male. The majority (61%) were aged between 25 and 49 years. Where data concerning the location of the aquatic incident was available (n=37) the site pattern was: beaches (35%); rivers (21%); ocean (16%). Other sites where the 'rescuer' drowned included harbor, bay, public swimming pool and dam. Perhaps as a reflection of aquatic participation, summer (42%) was the season of most 'rescuer' fatalities.

Discussion

The urge to leap into action to help someone in trouble, particularly a loved one, is an altruistic impulse. Such attempted rescues are appropriately a source of pride in Australia. Such courage and altruism is celebrated through the bestowal of medals and other community accolades. Sadly a percentage (unknown) who attempt such a rescue do not return home. The drills and skills taught by lifesaving and water safety agencies provide an excellent skill set which enables a potential rescuer to ensure both that they place themselves only at minimum risk commensurate the circumstance; and that they have the experience to undertake an effective rescue.

Conclusion

'Rescuers' who drown comprise a well recognised but inadequately studied subset of those who drown. We postulate that the sole effective preventative stratagem to reduce the incidence of such tragic incidents is to empower all with the basic drills and skills of non-contact rescues when faced with the imperative to attempt to save a drowning child, family member, colleague or encountered victim.

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Outbreak factors of drowning on the shores of Japan

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Japan Lifesaving Association[1], Ryutsu-Keizai University[2], International Budo University[3], Tokai University Emergency Medical Center[4], Public Works Research Center[5], DHI Water and Environment[6], CREARIA Co., Ltd[7]

Introduction

Many drownings have occurred on the shores of Japan, and more than 200 lives are lost every year. Preventive measures against water accidents are required.

Objectives

In this study, we analyze actual situations of drowning on the shores of Japan and investigate why these drownings have occurred. Then, we propose measures to prevent or reduce these drownings.

Target

This study targets everyone who is using the shore.

Methods

We investigated drownings on the shores of Japan, using the analysis of lifesaver rescue reports, examinations of the regulation for drowning prevention and coastal safety management systems in Japan, and a numerical simulation using calculations of the nearshore currents around coastal structures.

Results

As a result, we found that many drownings on the shores of Japan have been caused by rip currents. These currents often occur around coastal structures. Another finding is that Japan's emergency response organizations, such as the coast guards, the police departments, the firefighting departments and the lifesaver, lack co-ordination and communication between each other, and have no clear system of responsibility. Also there is no public lifesaving system in Japan. Virtually every lifesaver is employed on a volunteer basis. Furthermore, the regulation about drowning prevention is undeveloped. In addition, the education about water safety in elementary and junior high schools is insufficient.

Discussion

What is the cause of coastal drownings in Japan? How can we prevent drowning?

Conclusion

We conclude drowning on the shores of Japan can be classified into three outbreak factors. The first factor is the environmental conditions such as rip currents around coastal structures. The second factor is the human accidents due to a lack of education, especially insufficient safety education provided in elementary and junior high schools about the ocean. And the third factor is that between Japan's emergency response organizations, the responsibility of coastal public safety is indefinite. Taking this into account, we applied research into drowning on the Shonan Coast in Japan, where these three factors were proved to be true. Moreover, we propose that it is important to consider multiple solutions for the three factors to prevent drowning.

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Age pattern of drowning mortality across 44 countries

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Background

Drowning mortality rates vary across age groups and countries owing to differential exposure to bodies of water and water-based activities.

Objective

This study aimed to examine the age pattern of drowning mortality across countries in order to make a global assessment of death by drowning.

Methods

We used data for the most recent years contained in the WHO mortality database to calculate the age-specific drowning mortality rates for each country. In order to identify the age pattern and determine whether mortality was higher for any particular age group, 95% confidence intervals of mortality rates were computed.

Results

We identified five patterns of drowning mortality by age group. Of the 44 countries analyzed, high mortality rates were identified in seven countries among children, 12 among the elderly, seven among both children and the elderly, and 12 (all in Eastern Europe) among adults of working age, while in six countries no significantly high rates were identified in any particular age group. Within each age pattern group, huge differences in mortality, the proportions and nature of the bodies of water involved, and mechanisms of drowning were found between countries. For example, the mortality rate for children aged 0–4 years was 49.7/100,000 in China but only 0.8/100,000 in Germany; the proportion of drowning deaths that occurred in a bathtub among the elderly aged 65 years or above was 72% in Japan but only 2% in Finland; and among the deceased aged 45–64 years in The Czech Republic, Finland, The Netherlands and Taiwan, a greater proportion drowned following a fall into a natural body of water than drowned while already in a natural body of water.

Conclusion

The diverse age patterns observed in the drowning mortality rate, natures of the bodies of water involved, and mechanisms of drowning across countries suggest that different country-specific strategies to reduce death by drowning should be designed to take into account the differences in geographic environment, climate, and cultural activities.

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Establishing a surveillance system to record drowning incidence in a low income country: A top down–bottom up approach

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Kilimanjaro Christian Medical College, Tumaini University[1], Tanzanian Ministry of Health[2], Mt. Meru Hospital[3], Norwegian Life Saving Society[4], Norwegian School of Sport Science[5]

Introduction

BBC Kiswahili Radio has recently published the figure of 5000 annual drowning deaths only on Lake Victoria. Logically, one-third to one-half of these are Tanzanians as Tanzania has the longest coastline of the lake. This alone is an incidence of ca 4.4/100,000, or eight times that of the UK. If the other Great Lakes, the long coast line and the major rivers each contribute a similar number, there may be over 8000 drowning deaths annually in Tanzania or 17.6/100,000; three times the number of traffic fatalities and 30–35 times as many drownings as in the UK.

Because the burden is otherwise unknown, there is little interest from the health sector, believing the problem to be minor. Interventions do not exist above the few random local efforts. The single national organization, The Tanzanian Life Saving Society, both young and small, is powerless in the face of the magnitude of this problem.

Aim

This is an ongoing project. The aim is to follow up on the contacts made in late 2009 and early 2010. The project ends only when the system is in place. The long term goal is to put in place a surveillance system which will provide the information to allow planning and carrying out of intervention strategies.

Methods

The top down – bottom up strategy simply refers to starting at the national level and the local level simultaneously. At the national level, the starting point has been the Dept. of Statistics, Ministry of Health. Preliminary discussions have alerted the Ministry to a problem they had greatly underestimated. At the local level potential sources of primary data have been identified and initial contact made. In addition, other surveillance systems are being examined. Lastly, existing local interventions which have succeeded though small, will be strengthened.

Results

As of 2010, there is no national surveillance strategy. Each major cause of death is investigated individually and usually has external financing. Drowning morbidity and mortality has common elements with traffic morbidity and mortality. Patterning surveillance after the existing traffic surveillance system has shown to be promising.

At the local level potential sources of primary data are: a) municipal and district police, b) hospitals, and c) PHC facilities. Lastly, both fourth year MD and MPH students are being recruited to assist in data collection at specific geographical locations most exposed to risk.

Discussion

Establishing surveillance where it has not existed is difficult in resource poor settings. Without information derived in this way, motivation to impliment intervention strategies is difficult to generate. The vicious circle is hard to turn. At top and bottom, each bit of information must be exploited and used to influence specific, surveillance friendly individuals. At the same time, all possible media sorces must be employed.

Conclusions

While establishing effective surveillance is difficult, the price of not attempting to curb the rising drowning rate is too high to pay.

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Disability and drowning – Personal experiences, research and practicalities

Professor John Pearn[1] and **Dr Richard Franklin PhD**[1]

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One in every fifty individuals are born with a physical or intellectual disability which will potentially modify their and their families' lives. Some such disabilities potentially raise the risks of drowning.

The joy of water and of water experiences (swimming, surfing, boating, fishing) is important for all children and for most adults. How to ensure the opportunities for such aquatic fulfilment, without injury as a result of increased, realised risks is a challenge for all who are advocates for a safer aquatic environment.

Three keynote themes for inclusion of any otherwise disadvantaged groups are 'respect, relationships and opportunity'. Advocates for the promotion of 'water opportunity' need to engage practitioners in each of these three issues.

In this paper, we describe experiences with children with uncontrolled epilepsy; and adults with limb prostheses as examples of individuals with disabilities who nevertheless can participate in a range of aquatic experiences and sports with vigour, yet with safety.

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Drowning death in Brazil: Can we trust our database of death certificates concerning place and circumstance?

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Brazilian Lifesaving Society – SOBRASA[1]

Brazil has one of the highest rates of death by drowning(1). Comprehensive and reliable information on the drowning profile is essential to develop an effective, strategic prevention campaign, and ensure focus and resources where they are most needed. To adequately inform the process, that must include location of the incident, type of watercraft involved, and whether the incident involved transportation or flooding. In Brazil this information is exclusively collected from death certificates completed by a medical doctor who rarely understands how useful and practical this information can be. Our objective is to test how reliable the death certificate database on drowning is in Brazil.

Methods

All ICD10 W65-74 (unintentional drowning deaths), from January 1996 to December 2007 (12 years), in Brazil were considered using death certificates-Health Ministry-DATASUS- <www.datasus.gov.br>. We evaluated all ICD fourth subdivisions W65-74, V90 and V92.

Results

From January 1996 to December 2007, drowning was responsible for 85,540 deaths (average of 7,128 death/year and 4.1/100,000 inhabitants). The average incidence of death was: unintentional – 89.5% (3.7/100.000), intentional – 2.1% and unknown – 8.4%. Unintentional was subcategorized in primary(ICD W65-74) (88.8%) and secondary to watercraft (ICD V90 & V92) (0.7%). Primary were: ICD W65 while in bath tub – 0.1%; W66 fall into bath tub – 0.07%; W67 while in swimming pool – 0.99%; W68 following fall into swimming pool – 0.47%; W69 while in natural water – 34.7%; W70 fall into natural water – 2.1%; W73 Other specified drowning and submersion – 1.9% and W74 Unspecified drowning and submersion – 48%. Drowning secondary to watercraft was: V90 Accident to watercraft – 0.5% and V92 Water transport related drowning without accident to watercraft – 0.1%. The fourth subdivisions ICD for W65 to 74 (place of occurrence of events) and for V90 & 92 (type of water craft) were shown on Table 1. Report ICD fourth subdivisions rates for bath tubs (64%), pools (54%) and water craft (53%) incidents were much higher than for natural bodies of water (13%). Considering all drowning ICD W65 to 74 and V90 & 92 cases, just 10.8% of all cases were appropriately reported by medical doctors.

Discussion

Drowning is a complex process, from the perspective of epidemiology that needs a lot of information to be fully understood. High quality information is essential for a successful strategic prevention campaign. Rescues reports, other than those generated by county lifesaving services, are very difficult to obtain and numbers are often underestimated, which in turn results many places without a full lifeguard service reporting few or no drowning incidents, despite their having taken place. Nevertheless, our gold standard measurement tool for drowning is still based on death certificate. In 1996 (inclusive), the ICD was upgraded to version 10 and became both more complex and complete, with many variables concerning drowning. This strategy alone did not correspond with an increase of knowledge, as medical doctors did not always report appropriately and information coming from pre-hospital care remains highly incomplete. The cause of drowning (intention or not) was appropriately established (91.6%), but information concerning places of occurrence was unknown in 50% of cases. Concerning occurrence (fourth subdivision), bathtub, pools and water craft is not fully reported and natural water is reported in only 13% of cases. When considering all cases, the report of 10.8% is a great statistic 'fiasco'. This research demonstrated clearly that medical doctors in Brazil need to be educated about the importance of the death certificate report in creating accident prevention programs. There is also a need to reevaluate changes at ICD 10, as some information could be excluded (drowning while in bathtub or pool, versus fall) and others should be included (natural bodies of water could be stratified to ocean, river and lakes). Natural disaster (flooding) is completely excluded, and needs to be tabulated. WHO and ILS should lead the effort to highlight the benefits of having reliable information on drowning, to be used in prevention.

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National drowning research project in Finland

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Background

Finland (population 5.4 million) is a water-oriented society with high mortality in aquatic settings. According to WHO data, Finland continues to have, despite a downward trend, one of the highest drowning rates (ca. 3.8/100.000/year) among high-income countries. The quality of drowning data available in Finland is high, with 100% of bodies found in water currently undergoing police investigation and a full medico-legal autopsy, including toxicological analysis. The extensive medico-legal system of investigation of death and the high autopsy rates represent in Finland an excellent and reliable basis for studies on unintentional drowning. However, existing data on drowning collected and partially tabulated by Statistics Finland are clearly insufficient and inadequate to analyze drowning incidents and to develop effective preventive countermeasures. To implement the collection of data on drowning incidents, the Accident Investigation Board of Finland, operating under the Ministry of Justice, has launched, on 1 April 2010, a one-year multidisciplinary national research project on drowning.

Aims

The main aims of the project are:

1. to analyze the circumstances, causes, and contributing factors of all unintentional drowning deaths occurring in Finland and among Finnish citizens abroad during the period 1 April 2010 to 31 March 2011
2. to establish targeted national safety recommendations to prevent drowning
3. to evaluate existing national databases on drowning and the possibility to develop and implement a permanent national surveillance system for water-related fatalities

Methods

By means of a centralized police database, all cases and information concerning a body found in water are preliminarily selected for analysis. These selected cases are further screened, with results of the medico-legal investigations serving to identify cause and manner of death.

All cases of drowning deaths are subsequently analyzed by a multidisciplinary team using—in addition to key information collected from the police, rescue teams, and medico-legal investigation—an ad hoc questionnaire which gathers from police, victim's relatives, and bystanders further circumstantial and individual information (e.g. circumstances, weather conditions, supervision, victim's ability to swim, use of personal flotation devices) for each drowning case. In addition to the thorough study of each drowning case, the project team will select a sample of cases (5–10% of all unintentional drowning) to be analyzed by accident investigation methods such as interviews and technical / behavioral analyses.

The multidisciplinary project team has expertise in accident investigation, forensic medicine, safety research, behavioral science, crime investigation, swimming training, and lifeguarding. It cooperates extensively with all authorities and non-governmental organizations involved in drowning research, prevention, rescue, and education.

Results

The project team has thus far (18 February 2011) collected and begun to process information from about total amount of 300 bodies found in water; data collection and processing will continue through the study period until 31 March 2011. In addition to the strategies used for data collection, our presentation will summarize the main results of the project, including demographic aspects of drowning in Finland, in-depth analysis of individual and circumstantial factors leading to death in water, and recommendations issued for drowning prevention.

Conclusion

National research projects thoroughly examining the background of every single drowning are exceedingly rare. Strategies and approaches used during this research study may assist in developing and implementing a permanent and effective drowning surveillance system in Finland and may serve as a model also for other countries.

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ORAL PRESENTATION

ID: 1193 / Paper: 384

Estimating morbidity associated with unintentional drowning episodes

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Background

Worldwide, there are over 400,000 deaths per annum from unintentional drowning – it is recognized as the second leading cause of global unintentional fatalities. Much less is known about nonfatal episodes, and even less about associated sequelae. This systematic literature review is being completed on behalf of the Global Burden of Disease (2005) Injury Expert Group. The purpose of the review is to estimate the global incidence rates for nonfatal unintentional drowning episodes, and to describe the duration of drowning consequences among those who survive.

Methods

Studies published in any language cited in MEDLINE; EMBASE; PsychINFO or SPORTSDISCUSS between January 1980 and December 2007 were obtained for review. Population-level studies that describe incidence or prevalence of nonfatal (submersion incident involves cardiac arrest and asphyxia for which resuscitation occurs, resulting in survival beyond 24 hours) drowning episodes in pre-determined GBD regions (n=21) or counties within a region, as well as studies that describe the progression of drowning consequences among survivors, were retained for analyses. This includes studies on drowning related to natural disasters (e.g. floods, cyclones, tsunamis), water and other transport incidents. Data were extracted using a standardised abstraction procedure.

Results/Discussion

The initial search strategy yielded 14,926 papers. After reading the title, 13,697 were discarded, leaving 1,229 papers. An additional 814 articles were discarded upon review of the abstract, leaving 367 papers for checking against the review criteria. Of these 367 articles, 159 were discarded, leaving 208 articles for data extraction. Only 60 of these articles included data on nonfatal drowning episodes, and only 12 articles focus solely on nonfatal drowning. Reasons for exclusion included: not population level data (e.g. case-series or occupation-specific); condition-specific studies (e.g. drowning in epilepsy); no primary data present; no numerical data present; study published prior to 1980. Data extraction is almost completed.

Analyses of meta-data indicate that while some GBD regions have rich published data relating to nonfatal drowning incidents, overall there is an absence of high quality epidemiological data on nonfatal drowning incidents. Published data on sequelae is very limited. Data on nonfatal drowning events and associated sequelae are crucial to effectively inform global drowning prevention strategies.

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POSTER PRESENTATION

ID: 1019 / Paper: 229

Alcohol related drowning deaths in Victoria, Australia, 2000–2009

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Life Saving Victoria[1], Coroners Prevention Unit – Coroners Court of Victoria[2]

Introduction

There has been increasing evidence to confirm the risk between drowning and alcohol use during aquatic recreational activities (1–4). It is currently estimated that 20% of all drowning deaths in Victoria are attributed to alcohol consumption (5).However, the true extent of alcohol involvement among Victorian drowning deaths is unknown because this information is not routinely collected, an issue that has previously been identified also (6–9). Incomplete information restricts the capacity to examine potential trends in drowning deaths involving alcohol, including demographics of the drowning victims, activity being undertaken, and location of incident. This information is vital to improve current understanding of alcohol involvement in drowning deaths in Victoria, and in developing appropriate drowning prevention strategies.

Methods

A systematic review will be conducted on the available literature relating to alcohol use during recreational aquatic activity, to determine all contributing factors in alcohol related drowning. The Coroners Prevention Unit will conduct a case series of all unintentional drowning deaths reported to the Victorian Coroner from January 2000 to December 2009. Each death will be examined using the CPU database, coroners' findings and toxicological reports to collect demographics, location and activity at time of incident, presence of alcohol, and contribution of alcohol to the drowning according to coroners' findings.

Results

Detailed results will be provided at the conference. The results will give a true indication of the total drowning deaths in Victoria from January 2000 to December 2009, as well as for each age group. The level of contribution that alcohol consumption has had on drowning deaths, as well as whether the presence of alcohol among drowning deaths in Victoria has changed over time. Any trends in demographics, including age, gender, socioeconomic status and cultural background will also be shown, as well as time, location and activity at time of incident, where a positive blood alcohol concentration is identified.

Conclusion

The results of this project will be used to make recommendations for the development and implementation of alcohol awareness and education interventions that are able to be targeted at the most appropriate audiences. There is also the potential to use this information to influence legislative decisions to further prevent alcohol related drowning.

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POSTER PRESENTATION

ID: 1124 / Paper: 348

Socio-economic transition and mortality from drowning in Lithuania: Critical points in time and place

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In Lithuania, the rates of drowning are among the highest in Europe. Deaths from drowning were responsible for 7.1% of deaths from external causes in 2009, and were among the leading external causes for years of potential life lost, particularly among males.

The aim of this study was to analyse trends in mortality from drowning and to detect demographic and urban/rural differences in cut points over two decades of socio-economic transition in Lithuania.

Methods

Information on deaths from drowning for the 1988–2009 period was obtained from Lithuanian Department of Statistics. Mortality rates were analyzed according to urban/rural residence and sex. The Jointpoint analysis was used to identify the best-fitting points, wherever a statistically significant change in mortality occurred.

Results

Throughout the period under investigation, mortality from drowning of Lithuanian population decreased statistically significantly both in males and females, nevertheless, considerable fluctuations have occurred in different periods of socio-economic transition. The year 1994 was found to be the cut point in mortality both in urban and rural areas, when the increasing trend reversed to the declining one. Drowning mortality rates in rural areas exceeded those of the urban by 1.6–2.5 times in different year under investigation. Throughout the period of the study, mortality from drowning in rural areas was declining by 1.8%, and in urban areas âE" by 1.5% annually ($p<0.05$). The most positive period in terms of mortality decline in urban areas was the period of 1994–2004 for females and 1994–1997 for males. In rural areas, the most positive changes in mortality of females occurred in 1994–2003 (average annual decline was 6.6%, $p<0.05$), while for rural males there were no significant changes in mortality observed in recent years. Mortality from drowning among males was 4.5 âE" 3.5 times higher than that of females throughout the entire study period. The decline in mortality was more considerable in females, compare to males, particularly in the years 1994–2004 both in urban and rural areas.

Conclusion

Drowning is an important but neglected public health issue in Lithuania. Despite the general decline in mortality from drowning, it remains at a very high level, particularly for males and rural populations. Possible contributing causes for this excess might be lifestyles factors, including high consumption of alcohol and increased exposure to water environment due to geographical conditions. Future progress requires sustained improvements in drowning prevention, as well as strengthening emergency response services.

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POSTER PRESENTATION

ID: 648 / Paper: 298

The socioeconomic aspect of drowning death in Brazil: A huge unbalance

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Abstract

'Drowning is a serious threat to world health. United Nations world population projections mean we can anticipate that the drowning problem is going to get worse without significant intervention, especially in developing countries' (1). The incidence of drowning seems to reduce as much general education and swimming lessons is received by a population. Education and swimming lessons availability increase with country's economy. The World Bank classifies economies as gross national income (GNI) per capita as low (less than $995), middle ($996 to $12,195), or high (above $12,196). Low and middle-income economies are also conveniently referred to as developing countries. Per capita income is often used as a measure of the wealth of the population of a nation however it has several weaknesses as a measurement especially if income is not equally distributed (2). Brazil is a developing country (2009 GNI/capita of US$ 8,080) although may have areas with high income (3). Our objective is to find out if GNI per capita is a related risk of drowning death and if so, how much.

Methods

All drowning death (unintentional, intentional and unknown), population and GNI, from year 2006, in each 26 states and 1 Federal District (FD) of Brazil were considered using death certificates based on Health Ministry-DATASUS-www.datasus.gov.br and Brazilian institute of Geographic and Statistic(IBGE)-www.ibge.gov.br. Each state is tabulated to its GNI/capita and death/100,000 population(De/P). Two groups of States were divided based on GNI/capita using a statistical test to find a cross-section by a univariate form through simple tables ('Mantel-Haenszel' method). The Odds Ratio (OR) and the value of P were evaluated. A significant GNI/capita value of P <0.05 (95% confidence interval (CI)) was considered to be of statistical significance.

Results

In 2006, Brazil population was 187 million with GNI/capita of US$6,877 and 3.7/100,000 people died by drowning. A cross-section GNI/capita identified was US$8,826 ((OR = 1.27 (95% CI = 1.03-1.55), P=0.01). Six states and one FD (group 1) were equal or above this cross-section value with an average GNI/capita of US$ 12.106 and 3.5(De/P). Group 2 (20 states) had an average GNI/capita of US$ 5.047 and 5.0(De/P) (table 1 – shows all states with GNI/capita and death/100,000 population).

Conclusion

Per capita gross national income refers to how much each individual would receive if the yearly national income is divided equally among everyone. That's the bias behind the numbers. Brazil has reached a reasonable socioeconomic achievement recently however a few progress on how income is distributed. In 2007, the average income of the richest Brazilian is 28 times of the poorest ones (4). Gross National Income per capita is a determinant risk factor for drowning in Brazil, where we can see two different socioeconomic realities inside one country. States where GNI/capita is below US$8,826 has a chance to die by drowning 27% more often. Cross-section GNI/capita can be different in countries and cities where more attention to education and to equality of income distribution among workers is achieved.

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4. IPEA – Instituto de Pesquisa Econômica Aplicada. World map showing countries above and below the world GDP (PPP) per capita, currently $10,500. Source: CIA World Factbook. Above world GDP (PPP) per capita below world GDP (PPP) per capita

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To properly target drowning prevention resources, you need local data: Evaluate drowning death data at a local level to understand and plan more appropriately

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Brazilian lifesaving is the manager of drowning prevention efforts at the state level under the Fire Department umbrella in almost 95% of the country. In 2007 (1) we established the risk of death by drowning for each Brazilian States (26 states and one federal district), but we did not take into consideration factors such as seasonality, disasters and especially the fact that rates were generalized for an entire state, instead of counties within each state. This approach yielded data that failed to show how some local lifeguard services with excellent drowning prevention results could be mixed with other areas of the state with poor results, but were combined as a single State death rate. Our objective is to stratify the risk of death by drowning in all Brazilian counties and to make this information useful and available for all counties managers.

Methods

All ICD W65-74 (unintentional drowning deaths), from January 2003 to December 2007, in Brazilian counties were considered using death certificates based on Health Ministry-DATASUS- <www.datasus.gov.br>. A time frame of five years was used to reduce bias by disasters and seasonal events. For each county we rated the population and the number of deaths by drowning to stratify the risk of death per 100,000 inhabitants. From those we selected the hundred counties with the highest risk for drowning. Using each county's name, we determined if they have ocean coastline or not by using Google maps.

Results

There were 5,563 counties around the country with an average population of 183 million people and 6,144 deaths by drowning. The average risk of death by drowning was 3.6/100,000 inhabitants and the top risk was 98/100,000. From the one hundred top counties at risk, 89% had no ocean coastline and represented 4.3% of the total. Table 1 shows all the 5,563 counties with an absolute and relative (death/100,000) numbers of death by decreasing order.

Discussion

Any action or prevention campaign in the lifesaving field must be based on strong scientific evidence and good quality information to avoid wasting resources that are already scarce. This includes identifying where the highest risk areas around the country are located. Since the smallest political jurisdiction in our country is a county, this research tabulates each county separately, taking into consideration the population and the numbers of deaths, resulting in our gold standard tool to better identify the location and type of problem. Although this approach does not consider the transient population (tourism), it gives us the opportunity to show to Mayors their county's risk for drowning death, as compared to others, and helps local lifesaving managers target necessary actions.

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POSTER PRESENTATION

ID: 1160 / Paper: 360

Preliminary results for a 6-year review of nonfatal drowning in children and young people 0–19 yrs in Queensland (Australia) 2002–2008

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University of Queensland, Dept Paediatrics and Child Health[1], Centre for Children's Burns & Trauma Research, Queensland Children's Medical[2], University of Queensland, School of Population Health, Injury Epidemiology[3], Royal Life Saving Society – Australia[4]

Literature exists on fatal drowning events; however incidence, mechanisms and consequences of nonfatal injuries in Queensland remain largely unexplored. The overall aims of this study are to: 1) determine morbidity and mortality of drowning in young people (0-19 yrs) in the Australian state of Queensland from 2002-2008; 2) describe injuries associated with nonfatal drowning incidents; and 3) examine risk factors.

Retrospective data on approx 800 nonfatal drowning events among children 0-19yrs are being collated from multiple sources (pre-hospital; emergency department; admitted patients). These data will be linked to, and supplemented by injury and trauma data where possible.

Preliminary analyses indicate that drowning episodes occur in pools and spas in more than half of (58%) nonfatal hospital admissions, followed by natural water bodies (12%) and bathtubs (10%). Additional preliminary analyses of nonfatal incidents are presented.

This poster provides the most accurate estimate possible of the incidence of nonfatal drowning episodes among 0-19 year olds in Queensland during 2002-2008, as well as information about risk factors for these events.
These data will provide the impetus for informed policy, allow priorities to be set, and identify points where interventions can be most effective.

This project is funded by the Queensland Injury Prevention Council. Data have been obtained from Royal Life Saving Society Australia, National Coroner's Information System, Queensland Ambulance Service, Queensland Health, Queensland Injury Surveillance Unit, and the Commission for Children, Young People and their Guardians.

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Photo: RLSSA

Child Drowning

Children, particularly those aged 1 to 4 years, carry the overwhelming burden of drowning in high, middle and low income countries. The majority of papers in this section will concentrate on high income countries (HIC's) where hazards such as home swimming pools, bathtubs and agricultural reservoirs have been the focus of interventions for many years.

The Child Drowning stream will address the following areas: targeted drowning prevention interventions, advances in child drowning research and the impact of public policy on child drowning. It will facilitate the coming together of research, policy and practice for the purpose of identifying, confirming and pondering strategies to prevent child drowning.

A policy strategy to prevent open water drowning among children and teens in Washington State, USA

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Seattle Children's Hospital[1], University of Washington School of Medicine[2], Washington State Department of Health[3]

Drowning is the second leading cause of unintentional injury death among children in the United States. In Washington State, the majority of drownings occur in open water such as lakes, rivers, ponds or the ocean. Drowning disproportionately affects minorities in Washington State, in particular Asian Americans, Latinos, Blacks and Native Americans.

A policy plan was needed to focus specifically on preventing drowning among children and teens in open water. Washington State Department of Health and Seattle Children's Hospital received funding from the Centers for Disease Control for this project. The goal was to develop, implement and evaluate a child injury policy plan focused on open water drowning by using a model approach to develop and prioritize policy strategies. Key project components include:

- A prioritized list of open water drowning prevention policies with strategies outlined for each
- A standardized approach to developing and prioritizing child injury policies
- A policy plan including implementation strategies, success measures and timeline (1)
- Development of Washington State's existing Drowning Prevention Network to promote policy change
- Local level training of water safety advocates to pilot an open water safety report card and pursue policy change at both a community and state wide level

A multidisciplinary task force worked together over 12 months to develop the policy guide. The 18 members included marine patrol, epidemiologists, parents, government affairs experts, health care providers, U.S. Coast Guard, state and local health, aquatics and boating safety professionals. A policy consultant group led the task force through five sessions that included education on legislation and policy development, structured brainstorming and prioritizing. Sessions included review and use of the Haddon Matrix (2); data from child death review, boating programs and health department statistics; specific policy criteria; reviews and presentations from stakeholders and members. Collaboration, local data, stakeholder experience, and knowledge of how to approach the legislative aspect of injury prevention were key to developing a successful plan.

The five year policy road map and evaluation focuses on legislative, regulatory and administrative changes related to: safer water recreation sites, life jacket use, lifeguards, alcohol use, surveillance, physical barriers, swimming skills and water safety education, enforcement of water safety laws and partnerships. Examples of strategies include:

- Require life jacket use in boats to age 17
- Define elements of safer open water swim sites, including lifeguards
- Promote life jacket loaner use and standards
- Strengthen and better enforce Boating Under the Influence (BUI) law
- Require swimming and water survival skills for all children
- Assure there are Healthy Youth Survey questions for life jacket use, swimming ability and use of lifeguarded areas

A summit was conducted in October 2010 to launch the policy guide and build stakeholder engagement. Second year efforts are focused on piloting an open water report card in five communities, educating key stakeholders and implementing 2011–2012 priorities.

Success is being measured by the development and dissemination of the policy guide, the number of organizations and individuals trained in policy as a strategy to prevent drowning, the intention of attendees to participate in policy activities and tracking of policy priorities and actions as part of the implementation plan. We will report on progress and evaluation at the time of the conference.

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Pediatric drowning and submersion injuries in Singapore: A five-year retrospective study

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Introduction

Drowning is amongst the leading causes of accidental death in young children. As emergency care providers, we recognize the importance of prevention strategies minimizing the morbidity and mortality associated with submersion injuries.

Objectives

Description of local epidemiology of drowning and submersion injuries, and identification of possible risk factors. From this, we would be able to raise awareness and recommend preventive strategies to the local community.

Methods

We retrospectively identified all drowning and submersion related Children Emergency attendances from November 2005 to January 2010. The variables analyzed were age, gender, race, co-morbidities, location of submersion, duration of submersion, presence of adult supervision, person who initiated cardio-pulmonary resuscitation (CPR), duration of hospitalization, and highest level of care. Data was analyzed using SPSS version 14.

Results

There were 49 cases of drowning and submersion injuries over this five year period, with a median age of four years eight months and a male:female ratio of 1.2: 1. The ethic distribution was: Chinese 51%, Malay 26.5%, Indian 6.1% and others 16.3%. Four cases had significant pre-morbid conditions: cyanotic heart disease (1), moderate ventricular septal defect (1), Rubenstein-Taybi syndrome with global developmental delay (1), autism (1).

Majority (57.1%) submerged while swimming. 34.7% occurred as accidental falls, and the remaining 8.2% occurred in the bathtub, watercraft / sports-related accidents and suicide / para-suicide. Thirty-one cases (63.3%) occurred in swimming pools. Of note, 77.0% of these cases occurred in private rather than public pools. As for the rest of the cases, seven were located at home and five in the sea. Only 24.5% had a supervising adult who witnessed the submersion. The remaining either had been unsupervised (30.6%), or supervised but submersion un-witnessed (42.9%). CPR was performed in 26 cases – 69.2% – administered by non-medical personnel and 30.8% administered by lifeguard or medical personnel.

Forty-six of the 49 cases required hospitalization, with seven (15.2%) admitted to intensive care (ICU) and 10 (21.7 %) to high dependency (HD). Poor adult supervision was associated with a higher level of care (HD and ICU) (OR 3.4, relative risk 1.28 95%CI 1-1.7). The mean duration of hospital stay was 2.4 days (range 1–12 days) and there were two deaths in our study population.

Discussion

Significant morbidity and mortality is associated with drowning and submersion injuries. In our study population, most cases had nil or poor adult supervision and this in turn seemed to be associated with increased morbidity as demonstrated by higher levels of inpatient care. More submersions were located in private pools. In our local community, private pools are found in homes, condominiums, cluster housing and recreational clubs, often with no lifeguards present. When CPR was done, it was often performed by non-medical personnel.

Conclusion

It is vital to raise awareness of submersion injuries in our community. This study highlights the need for proper adult supervision, and we recommend that management of private pools consider placing lifeguards on duty. Often, the public is the first-line in submersion injuries, thus community education of CPR is important.

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Child drowning in Australia – Meeting the drowning challenge

Dr Richard Franklin PhD[1]

Royal Life Saving Society – Australia[1]

Between1 July 2008 – 30 June 2009 in Australia 32 children under the age of five drowned. While the number of children who drown in Australia has slowly been decreasing, much work is still required. The Australian Water Safety Strategy 2008–2011 identified the need to reduce drowning deaths in children under five as a priority and specifically identified swimming pool, supervision, safe play areas, tertiary prevention skills and public awareness campaigns as prevention strategies.

There have been many small and large steps undertaken in our understanding of how children drown, prevention strategies required, work in preventing death and systems which monitoring and report drowning deaths. However there are still a range of challenges to meet to ensure all children are safe around water.

Pool fencing as a strategy has had a significant impact on the number of children who drown in Australia. While all States and Territories in Australia have legislation requiring pools to be fenced, these requirements vary. Safe play areas on farms are also a possible solution to preventing drowning, and work in North America as well as Australia has provided a greater understanding on what is a safe play areas and their requirements. The use of personal flotation devices, better supervision, monitoring devices and other equipment have also been proposed as strategies to prevent children from drowning.

This paper explore the number of children who could have been saved using currently available strategies and what, if any other strategies are required.

Methods

All drowning deaths (excluding those deaths from natural causes, shark attacks, crocodile attacks, marine stingers, suicide and homicide) were identified from the National Coroners Information System (NCIS) for the period 1 July 2002 to 30 June 2007. These cases were matched against RLSSA data and data from the Queensland Coroner. All children under the age of five were selected.

Results

For the study period there were 169 (or average of 34 deaths per annum) children who drowned in Australia. Of these 47% were in swimming pools, 17% were in bathtubs and 15% were in lake / dam / lagoon locations. Most commonly, children were playing or recreating near the water and fell in (73%), followed by bathing (15%).

Discussion

Often the drowning death of a child is the result of a cascading series of events where a number of factors aligned and the child drowned. As such while the information presented looked at individual strategies there is a need to consider the role of multiple layers of protection and how they may work in concert with one another to ensure a child's safety in, on and around water. From the informational provided it is possible that up to approximately 60% could have been prevented by restricting a child's access to water, either by placing a barrier around the child (i.e. safe play area) or around the water (e.g. pool fencing) and ensuring it is in working order. Approximately another 17% may have been prevented with appropriate supervision as the child was in the water at the time. Water familiarisation may have prevented a small number as would have appropriate supervision. The need to ensure parents and carers are provided with appropriate advice and skills particularly in regards to restricting access to the water may also help reduce the number of children who drown. It is currently unclear the effect of some of the other strategies.

Conclusion

It is possible to continue to reduce the burden of child drowning in Australia, however to do this improved pool fencing regulations and enforcement is required in partnership with a range of other strategies.

Acknowledgements

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Supervision a common factor in Australian unintentional child drowning deaths

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Background
When child drownings occur, frequently a lapse in or lack of supervision is identified as a contributing factor. Studies using retrospective designs to investigate causal factors for child drowning have primarily focused on children aged less than five years, and specific settings, particularly private pools, bathtubs and dams. Although these studies provide information that is valuable for prevention, restricting investigations to specific settings and to very young children makes it difficult to understand and/or identify the extent to which supervision is a contributing factor across child drowning incidents for all children. The robustness and accuracy of Coroners Information Systems enables coroners and medical examiners to play an important and growing role in public health and injury prevention, although these systems are not always utilised fully. Consequently, this study sought to make use of the National Coroners Information System (NCIS), to determine how frequently supervision was identified as a factor in coroner certified unintentional child drowning deaths.

Method
Retrospective case-series analysis of unintentional child (0–14 years) drowning deaths in Australia for the nine-year period, July 2000–June 2009, was conducted using data from the NCIS. Content analysis of text documents (for example police reports and coronial findings) was undertaken to investigate the circumstances surrounding the drowning incident and to determine whether supervision, or lack thereof, was identified as a contributing factor.

Results
In total, 401 unintentional child drowning deaths were identified, of which the majority (339) met the inclusion criteria. Supervision was identified as a contributing factor in almost three-quarters (71.7%) of all unintentional cases of child drowning. Explicit identification of supervision was evident in only 17.7% of cases, although detailed review of all cases identified supervision as a factor in a further 54.0% of unintentional child drownings. Supervision was definitely not a factor in 8.5% of cases and therefore absent or inadequate supervision might be associated with as many as 88.8% of child drownings. Despite supervision being identified in more than 70% of fatal child drownings, only 16 recommendations were made which were related to supervision.

Discussion/Conclusion
With supervision associated with so many drowning deaths, perhaps the importance of the role of supervision is underestimated by caregivers. Our findings confirm that supervision is one vitally important strategy, if not the single most important strategy in child drowning prevention. The NCIS provides relevant information for consideration by stakeholders in the development of drowning interventions, and these findings clearly illustrate that prevention programs need to focus on supervision and specifically target parents and/or caregivers with young children.

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Water Safety NZ and Plunket bath mat campaign – Practice

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Water Safety New Zealand[1]

Background

Drowning of children under five years of age in New Zealand continues to be high. In the last 10 years (2000–2009), 90 under-fives have drowned . Fifty-eight percent of those under –fives drowned while at home, the majority being in a home pool or bath.

Aims/Objectives

Educate parents and caregivers on the importance of constant supervision of young children, specifically while bathing. The campaign has an immediate bath tub focus but the message is relevant in terms of all aquatic environments and will improve awareness of the potential threat should a young child gain access to water without appropriate adult supervision.

Target

The eradication of all bath tub drownings of pre-school children caused by a lack of, or inappropriate supervision.

Methods/Implementation

A direct marketing campaign with the following elements:

1. Bath mat at five month Well Child check – A non-slip bath/shower is provided to each family at the five month core check with the Plunket Nurse. This mat has the message 'Always supervise children around water' 'Tiakina nga tamariki ki te taha wai i nga wakatoa'. Staff will also discuss the issue of safe home environments, emphasising the need to watch children around water and keep a hand on baby at bath time.
2. Sticker at nine month check – Following up on the bath/shower mat, parents are provided with a reminder sticker at the next core check (nine months of age) for placement in their child's Well Child Tamariki Ora book.
3. Poster – An educational poster promoting the campaign is being displayed at all Plunket clinics to reemphasise the message and it's importance.

Results/Evaluation

The outcomes of the bathmat initiative will be evaluated by conducting market research at the end of each year of the three year project. Year 1 evaluation is scheduled to commence January 2011. Specifically we look to evaluate:

- the reach of the bathmat i.e. has it reached its intended audience – new parents/caregivers
- how effectively the messages are understood i.e. can new parents/caregivers recall the messages
- whether the messages impact on their decision making when near water with their under -fives.

Discussion

The campaign facilitates an early introduction to the issue of water safety for all new parents. Immediate benefits of eliminating bath tub drowning are augmented by raising awareness of water safety as an important issue for parents to understand and act upon. This can create a pathway to further education for both the parent and child.

Conclusion

While the factors that contribute towards drownings are often complex this is not the case with infants or preschoolers in the home environment. A lack of adequate supervision is the cause of nearly all drownings in under-fivess and therefore reaching parents/caregivers with the key message of active supervision around water is paramount.

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The supervision myth

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While most water safety organizations worldwide promote close, active, adult supervision to prevent childhood drownings, in reality, supervision is often inadequate because of naturally occurring distractions and simple human error. Because the drowning process is so quick, silent and subtle, even the shortest and most innocent lapses in supervision can lead to catastrophic and fatal results.

While we promote constant, vigilant supervision, this concept is almost impossible to attain by most human beings. It is important to note that the main goal of this presentation is NOT to reduce the role of supervision around the water, but rather, increase simple equipment and advance technologies to keep non-swimmers safely on the surface of the water, because once they slip beneath the surface, the water quickly hides and suffocates. The purpose of this lecture is to:

1. demonstrate how human error caused by distractions and visual errors is a major cause of accidents world-wide, and particularly drowning.
2. promote the use of basic technologies to assist adult supervision when children are in, on and around the water.
3. discuss how technologies have made other other endeavors, particularly transportation, safer.

The presentation will review the literature in Cognitive Psychology and Accident Reconstruction to illustrate that both visual and cognitive errors are a significant contributor to catastrophic accidents. Hopefully, this review will reveal that human beings simply are not very proficient at monitoring other humans. After reviewing the literature, examples will be given as to how technologies have been used to overcome these lapses in surveillance. Seat belts, car seats, airbags, motion detectors, sonar and other technologies will be discussed.

In summary, the presentation will call for the use of basic water safety equipment and technologies to assist those supervising others in the water. The presentation will also call for a change in the water safety culture by making properly fitting lifejackets a requirement for all non-swimmers in swimming pools, whether they be public or private. In the United States for example, lifejackets have been promoted and in many instances required for children in boats, but they are rarely used in swimming pools.

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At risk family: Correlation between drowning and child abuse/neglect in Broward County Florida

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Drowning is the number one killer of children age five years and under in Broward County and the State of Florida. By reviewing the drowning data from the Broward Sheriff's Office (BSO) Child Protective Investigation Section (CPIS) it was found that several trends in drowning deaths have emerged for the county to address. One of these trends depicts a correlation between drowning and child abuse/neglect.

In review of all investigated drowning deaths from 1 January 2006 – 30 March 2009 almost seventy percent of the families of children that had drowned had a prior criminal, domestic violence, drugs and/or abuse/neglect charge(s) in their past. Of the homes investigated, the majority of pools at homes where there was a drowning were 'green' (dirty, not chemically treated and murky) and in poor repair. Ninety percent of the child drowning deaths had exited the home through a door without any one noticing they had left the premises. None of the children had received water safety lessons. More than fifty percent of the families knew CPR training, however not one home had rescue equipment on hand near the pool. The Broward County Death Review Team reviewed every case CPIS had investigated and noted that every case had a varying degree of neglect and every case was preventable.

CPIS receives on average 1,000 reports a month of allegations of child abuse or neglect. Of these 1,000 reports approximately 100 are forwarded to the Broward County Health Department, for processing and coordination with the Broward County Fire Marshall's Office. The reports are then provided to the appropriate city Fire Rescue Division for the home safety evaluation process to begin.

CPIS Investigators complete a water safety survey for every family with children under the age of nine years, as a part of a drowning prevention initiative in Broward County. During the survey the CPIS investigator discusses the importance of water/pool safety. If the family agrees and signs a release form, Fire Rescue in their city will to come into their home and complete an in-home safety evaluation and plan for the family. Part of the safety plan is to install door alarms leading to a water hazard. It has been determined that one way to prevent fatal drowning and non fatal drowning as part of an overall family safety plan is to have many layers of protection or barriers must be in place.

The Drowning Prevention Initiative (DPI) of the Broward County Health Department, is a multi-faceted project that includes barriers to water hazards (i.e. alarms), water safety lessons and CPR training to families considered 'at risk' in Broward County. The DPI in partnership with the Drowning Prevention Task Force and the Broward Sheriff's Office provides training of Fire Rescue personnel county-wide on the survey process and information on home safety resources that are available in our community to persons considered 'at risk' at no cost to the family.

The Drowning Prevention Initiative is funded by the Children's Services Council (CSC) of Broward County, has as one of its goals for this year to address the issue of the 'at risk' family in relation to water safety. This critical public health concern is also being addressed by other CSC funded programs such as the 'Family Strengthening Providers'. Multiple family-based programs addressing the same issue should increase awareness and positive action toward drowning prevention.

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Going to school – Drowning on the way

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Recent studies have identified the disproportionately high risk of drowning to rural children in Asia. The threat of flooded waterways, water-filled paddy fields, irrigation flumes, fish ponds, irrigation dams and natural streams propose a significant threat to children in Vietnam, as they do in all countries where children live, play and work in the vicinity of water hazards.

This paper describes personal experience with a major orphanage in Vietnam, from which residential children go to school each day. Recent experience with the threat of flooded watercourses following torrential rains highlights the particular vulnerability of such children. Orphan children in developing countries are at particular risk of a number of trauma threats, in that the normal parent-child and the inter-generational transfer of experiential knowledge, is not present to the same extent that it is in nuclear or extended families. This paper describes threat to this particular class of vulnerable children.

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Using a conceptual research approach to investigate supervision and inform future research

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Background

Caregiver supervision has emerged prominently in the literature over the last decade as a primary means of preventing child unintentional injury. Studies investigating the relationship between supervision and child drowning have predominantly focused on children aged less than or equal to five years, and specific settings, particularly bathtubs, private pools and dams. A limitation of much of the contemporary aquatic research is the use of retrospective case series review study designs. Whilst retrospective designs have helped to identify some risk factors, limitations associated with restricting analyses to very young children, and specific aquatic settings make it difficult to fully understand the role of supervision in drowning. Consequently, it is essential that prospective research builds on this information and develops a further understanding of drowning risk factors in children, in particular the role of supervision.

Method

To prospectively examine caregiver supervision, a valid and reliable observation instrument and questionnaire were developed. Both instruments used a categorisation scheme based on the taxonomy of supervision developed by Saluja et al, which considers a combination of three dimensions (attention, proximity and continuity) that define supervisory behaviour. Supervision behaviour was unobtrusively observed at popular Eastern Australian beaches in the spring-summer of 2008/09. Participants were caregiver/child pairs (child aged 1–14 years) engaged in beach play. A 20 minute unobtrusive observation was conducted, with caregivers subsequently invited to complete the questionnaire. Retrospective case-series analysis of unintentional child (0–14 years) drowning deaths in Australia for the nine year period, July 2000–June 2009, was also conducted using data from the National Coroners Information System (NCIS).

Results

One hundred and fourteen caregivers, whose supervisory behaviour had been unobtrusively observed, completed the questionnaire. Caregiver demographics; perceptions of injury/drowning risk; attitudes toward supervision; and the level of supervision provided varied among participants. Analysis of survey findings in conjunction with observations illustrated that caregivers' self-reported supervisory behaviour typically reflected actual supervision. Findings from the NCIS confirmed that supervision was a common contributing factor in child drownings, with supervision or lack thereof evident in 71.7% of cases. However, the availability of text documents describing the findings, in addition to the level of detail within these documents varied considerably across jurisdictions.

Discussion/Conclusion

To date, understanding of the relationship between supervision and child injury risk has been limited due to the challenges associated with measuring and defining supervision in the context of injury prevention. The findings of this study demonstrate that the value of the NCIS for drowning prevention can be enhanced by advocating clear and previously reported definitions of supervision to coroners and those reporting drowning deaths. The conceptual approach implemented in this study also confirms the role of supervision as a protective factor in beach settings, and provides information which will be of value to key stakeholders for the development of new interventions aimed to reduce child drowning/near-drowning incidents through supervision.

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Engagement with Community Infant Life Support – Save a Baby Programme

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Background/Introduction

The Save a Baby's Life programme was initially developed to support young parents and to ensure basic life support competencies. CPR is a subject that some people find difficult to engage with. Close personal contact can be threatening and prevents mass take up. Save a Baby attracts significant numbers who are introduced to the concept of CPR, treatment for chocking and basic water safety.

Aims

- To deliver an introduction to community Life Support
- To reach large numbers of participants
- To target communities at risk (sub-projects)

Target

Young parents and carers of children under 12 months. SaBL is a National programme, but often targeted at a local level.

Methods

Save a baby is delivered in a variety of ways from small community workshops (often linked to parental care/play groups) and occasionally as a mass participation event. The formula is flexible but essentially revolves around a two hour interactive workshop. The participants leave with a key messages z-card.

Often lead by RLSS UK accredited trainers, but now more often by medical students keen to develop their portfolio of experience. Where this happens the RLSS UK branch often works alongside to train and support the young doctors.

Ultimately Save a Baby is a soft introduction to basic CPR training.

Results

A number of "saves" have been recorded following the training programme including the baby of an RLSS UK trainer. The numbers attracted to the programme show a willing receptiveness. Feedback from the trainees is very positive.

Discussion

Now looking to see how we can engage new instructors to deliver the programme. There is no need for a highly trained "medical" instructor as the key is facilitation of a common programme.

Looking to develop a wider Community Life Support programme that can be targeted at any group (Save a Child, Save a Teenager etc).

This programme would work in any setting as the appeal of protecting/saving children is worldwide. You need to deliver training/education in a format that has few barriers to participation. We need to ensure the appreciation of CPR skills for all ages.

Conclusion

Baby CPR is an effective medium to draw a wide range of individuals into learning life support skills and basic water safety.

Acknowledgements

Tesco Baby Safe collaboration

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Fresh water drowning prevention video – An impacting way to reduce drowning among children

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The Brazilian Lifesaving Society – Sobrasa has been working since its foundation on the ways to promote drowning prevention, especially among children. One of our most effective tools is a running project at schools around the country where we have been using prevention beach safety messages presented by a cartoon video (1). These strategies have been so successful along these last years that they have driven us to do a drowning prevention cartoon exclusive to fresh water messages.

The project

'Drowning Prevention Cartoon at Fresh Water' is an effort to spread the drowning prevention message to children in a fast, uniform, funny and in an interesting way in Brazil and developing countries. Video messages transmission will be as much visual as possible but with two different language legends. Contents will be based on an international task force on open water drowning prevention—18 drowning prevention experts from 12 countries—which established recently (2010) guidelines for families and individuals recreating at any open water site (2). The prevention messages will focus on rivers, lakes, ponds, pools and floating disasters. General prevention messages (lifejacket, lifeguard importance and others) will be worked in all opportunities. Time frame of duration will be less than 10 minutes, with an introduction about drowning statistics in the world and in Brazil and a focus on the six main general message and eight specific fresh water prevention messages: 1 – Swim in areas with lifeguards and obey all safety signs and warning flags; 2 – Near or in-water, watch your children 100% of time; 84% of drowning occurs because of lack adult supervision; 3 – Learn swimming and water safety survival skills; 4 – Learn safe ways of rescuing others without putting yourself in danger; 50% of victims thought they knew how to swim; 5 – Always swim with others; 6 – While in a boat, know how and when to use a life jacket; 7 – Be careful in rivers and lakes, hide currents and holes can drown you in seconds; 8 – Never go in the water after drinking alcohol or heavy meals; 9 – Always enter shallow and unknown water feet first; 10 – Floating objects are an 'illusion of safety', always use a lifejacket; 11 – Kids can drown any where, so fence, cover, flip off, close or remove any water puddle in or around your house; 12 – Set water safety rules to your children; 13 – On floating disasters, dress immediately in a lifejacket or grab any floatation material; look for high places to protect yourself and call Fireman; never try to cross and stay away from currents; If inside a car, leave the car and protect yourself; If caught in a current stay floating baling up feet first without fighting and wave for help; 14 – 'It was just a blink and he was gone' is a frequently occuring tragedy, don't let it happen to you – be aware – transmit these messages to others.

The cartoon drowning prevention video should be done by March 2011 and will be the main tool of our project with children at primary schools. The objective is to impact them with important messages on drowning prevention and safety without being boring or uninterested. After the video presentation, a lifeguard will have further 10 to 15 minutes to exchange information, answer questions and make final comments. Children will receive a folder with all summary and a link to a web page where video presentation and different and attractive games on prevention are also available. This project is an excellent strategy to impact children and easily reach distant inland areas in Brazil and developing countries.

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Drowning as risk of death in preschool children

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Background
Drowning is a process resulting in primary respiratory impairment from submersion or immersion in a liquid medium. Near drowning is the survival of a drowning event involving unconsciousness or water inhalation and can lead to serious secondary complications, including death, after the event. Pediatricians should alert parents to the dangers that water presents at different ages and in different situations. AIMS: Estimation of risk factors associated with drowning and near drowning can aid in the development of effective prevention strategies in preschool children.

Target
All children under age of six who had drowning or other injures from all seven natural regions of Bosnia and Herzegovina.

Methods
Causes of drowning incidents include bad parental supervision, swimming accidents and suicide. In addition, medical conditions, including mental or physical handicap, epilepsy, heart diseases, autism, or abuse of drugs, may be related to an increased risk of drowning accidents of children in Bosnia and Herzegovina during last decade of beginning of 21st century.

Results
Bosnia and Herzegovina loses less children under age six to drowning than any other country in South East European region . For children aged 1âE"6 yrs in Bosnia and Herzegovina, only 12% of the total number of deaths related to unintentional injury were due to drowning accidents. Overall, the highest death rates were seen in Gypsy boys 4 to 5 years of age (2 per 100 000) and orphans girls 5 to 6 years of age (3 per 100 000). Seizure disorder is a very important risk factor in drowning in capital of Bosnia and Herzegovina, Sarajevo.

Discussion
Drowning victims should be treated even if they have been submerged for a long time. The majority of children who survive (more than 90 percent) are discovered within two minutes following submersion, and most children who die (more than 85 percent) are found after 10 minutes.

Conclusions
Preschool children need to learn to swim. Survey indicate that five percent of children under six years have experienced a situation with a high risk of drowning. Children have drowned in swimming pools, baths, buckets and toilets, inebriates or those under the influence of drugs have died in puddles. Drowning is not generally associated with a complete lack of adult supervision but, rather, with a momentary lapse in supervision. Drowning is a third leading cause of injury-related death of children in Bosnia and Herzegovina.

Key Words
Drowning, Children, Prevention, Pediatricians.

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Fatal immersion child injuries in rapidly developing Middle Eastern country

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Introduction

Injuries are a leading cause of morbidity and mortality in children, including the United Arab Emirates (UAE). Drowning is a second leading cause of injury-related death in the UAE. Country witnessed sharp population growth (4,104,695 in 2005). During 1980-2001 the increase was more than 3x; 810,370 children were born (370,274 nationals & 590,096 expatriates). Unfortunately optimal data for injury prevention are scarce. The aim of the study was to evaluate available data on drowning mortality.

Methods

We reviewed biannual reports of the Ministry of Health in the UAE for the years 2000-2006 and extracted data on drowning mortality in children aged 0-14 years. These reports are based on official death notifications from all Emirates in the UAE. The reports provide information about main external causes and nature of fatal injuries, gender, and nationality for three paediatric age groups <1, 1-4, and 5-14. Data on non-fatal immersions were not available.

Results

There were 76 drowning deaths among children 0-14-years-old in UAE during 2000-2006. On average 11 children died every year. The male/female ratio was 1.45:1. 51% of child drowning deaths involved toddlers 1-4-years-old. The incidence rate for drowning among 0-4-year-olds was 2 per 100,000 person years and among 5-14-year-olds 1 per 100,000 person years. No significant trends were evident during 2000-2006.

Limitations of mortality data

There have been problems with validity of death reporting, especially underreporting as well as categorization of the underlying cause of death with some injury cases classified as “cardiac arrest”. Data also do not include more precise information on activity, together with personal, equipment, and environmental risk factors.

Conclusion

Drowning is a second leading injury-related cause of death among children 0-14-years-old. Official Ministry of Health reports´ data are lacking details needed for prevention and can be improved by already developed new death notification system and hospital-based injury surveillance.

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Information for prevention – Educational activities to promote child safety

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EPES, Escola Profissional de Economia Social Academia José Moreira da Silva[1], AsNaSA, Associação de Nadadores Salvadores Patrão de Salva Vidas Ezequiel da Silva Seabra, Matosinhos, Portugal[2], AsNaSA Portugal, Associação Nacional de Salvamento Aquático, Matosinhos, Portugal[3], GISA, Gabinete de Investigação em Salvamento Aquático da ASNASA Portugal[4]

In Portugal, every year at least 30 children and adolescents die in result of a drowning (1). The vast majority of child drownings can be prevented and prevention (rather than rescue or resuscitation) is the most important method by which to reduce the numbers of drowning mortality and morbidity (2). Considering that child drowning has a considerable variety of risk factors involved, multiple and complementary strategies have to be implemented. Adding to other decisive factors, education and training programs on First Aid and Basic Life Support Techniques are of determinant importance when saving a child's life, given that life and life quality of rescued child greatly depends on immediate and efficient application of rescue techniques.

The present work reports a preliminary study conducted by a finalist student from the Water Safety Professional Course (level IV, European Qualifications Framework*), with Portuguese children aged between seven and 10 years old, from different socio-geographic circumstances. The Water Safety Professional Course (level IV) has been pedagogically approved by the Portuguese Education Ministry and is financed by the Portuguese Government (POPH) and the European Union (European Social Fund).

The specific objectives of this preliminary study were to evaluate the knowledge of those children on first aid and basic life support techniques and the impact of their parents/educational tutors in their children's knowledge and practical abilities acquirement/maintenance. The study involved two sessions of a one morning educational activity during school time, taking place at different Portuguese primary schools, with a gap of three months. The activity started with the filling of a diagnostic questionnaire followed by practical and theoretical sessions, with the explanation of basic techniques such as the Heimlich manoeuvre and basic resuscitation techniques. At the end of the activity, the children were asked to answer another questionnaire (with exactly the same questions as the first one) in order to evaluate the acquisition of knowledge during the session.

The first educational session ended with the explanation, to teachers and children, about the 'Home-follow-up Activity's Guide'. The guide was delivered to parents/educational tutors and was designed to evaluate their impact on long-term maintenance of knowledge on first aid and basic life support techniques by their children, and included an explanation of activities and grid tables for activities' follow-up. After a period of three months a second educational activity took place and a third copy of the same questionnaire was filled in, to evaluate the long-term maintenance of knowledge. The 'Home-follow-up Activity's Guides' were recovered and grid tables analysed for evaluation of parents/educational tutors impact on the process.

Several conclusions can be withdrawn from the results obtained with this preliminary study, and will be further explored during the presentation. However it is relevant to highlight that a local intervention adapted to each socio-geographic region and their water-related characteristics may be in order to effectively implement educational and training programs among children, to reduce drowning mortality and morbidity.

* The educational level hereby mentioned as IV replace the previous level III, and are according to the new regulations of the European Qualifications Framework that will take effect on 1 October 2010.

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14 years of innovative teaching of 12th grade students producing relevant work for lifesaving and social economy organizations

Ana Catarina Queiroga[1,2,3,4], Fernando Martinho[1,2,3,4] and Rui Seabra[1,2,3,4]

EPES, Escola Profissional de Economia Social Academia José Moreira da Silva, Porto, Portugal[1], AsNaSA, Associação de Nadadores Salvadores Patrão de Salva Vidas Ezequiel da Silva Seabra, Matosinhos, Portugal[2], AsNaSA Portugal, Associação Nacional de Salvamento Aquático, Matosinhos, Portugal[3], GISA, Gabinete de Investigação em Salvamento Aquático da ASNASA Portugal[4]

AsNaSA - 'Patrão Salva-Vidas Ezequiel da Silva Seabra' was founded in 1977, having engaged many lifesaving initiatives not only in cooperation with ISN, but specially as an independent and autonomous organization, namely on the themes of Education and Training.

Twenty years after its foundation, in 1997, a milestone was achieved with the official approval of Aquatic Safety level III and level IV Professional Courses (European Qualifications Framework*), designed using the legal definitions for Adult Education and Training Courses and for Education and Training Courses for Younger, by ASNASA Portugal members (AsNaSA, UniNorte, asnaSAcoop and epESaJMS).

The level III courses were designed to provide students and trainees with the necessary background to apply for qualified jobs or to progress to a level IV course. The medium term goal of CTSSMA course is to provide the market with intermediate level professionals, allowing the construction of a sustainable structure of versatile operational teams, where level IV professionals coordinate and become part of level III Aquatic Lifeguard teams. This initiative's intention is to create opportunities, so that the youths from Portugal, EU and developing countries with cooperation agreements with the EU, learn how to evaluate and use vital abilities in an activity that is a traditional symbol for our community. The students attending to the level IV CTSSMA receive social-cultural, scientific and technical training and, among other, will be lectured on subjects as 'Risk Assessment in Water Safety', 'Water Safety and Rescue Techniques', 'Systemic Quality Coordination in Water Safety' and 'Human Resources Management and Organization in Water safety'. As a part of their course, all students (from level III and level IV courses) have to present to a jury, before finishing the course, a final proof of their professional abilities to develop water safety and rescue related professional activities.

So far, 12 educational and training pioneering professional courses, nine conferring level III certification and three conferring level IV certification, have been held in Portugal by epESaJMS (Social Economy Professional School, Porto) since 2001, resulting in more than 150 certified professionals mostly from Portugal, Cape Verde and Mozambique, among others, whose are developing their activities as intermediate level professionals in the Portuguese Marines, Civil Protection Authorities and Education. All the abovementioned courses have pedagogic approval from the Portuguese Education Ministry and are financed by the Portuguese Government (POPH) and the European Union (Social European Fund). Portugal presently has a network of 10 schools lecturing Water Safety level IV courses, from North to South, and is, therefore, pioneer and singular in Professional Education on Water Safety Issues, with ASNASA Portugal leading the way.

This presentation will focus on some distinctive examples of work produced by CTSSMA finalist students at epESaJMS (Social Economy Professional School, Porto, Portugal) that have had real implications on the implementation of Total Water Safety Service Plans, based on ASNASA Portugal's SInQSalvA (Integrated Quality Water Safety System), on lifesaving and social economy organizations.

Public awareness has increased the demand for water safety professionalized structures, with qualified human resources that can promote good water safety practices 'in, on and around the water'. Hopefully, providing the market with intermediate level IV professionals will open the way for future initiatives and projects for international exchanges and cooperation in Europe, CPLP and worldwide, urging the need for the implementation of undergraduate and post-graduated Water Safety and Rescue Courses.

*The educational levels hereby mentioned as III and IV replace the previous levels II and III, and are according to the new regulations of the European Qualifications Framework that will take effect on 1 October 2010.

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Patterns of drowning among children and adolescents in Lithuania during 1988–2009: implications for prevention

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Introduction

Injuries claim the lives of more children and adolescents each year than any other cause of death in Lithuania, whereas drowning compose a significant part in the injury mortality structure. The aim of the study was to analyze patterns of mortality from drowning among Lithuanian children and adolescents during the period of 1988–2009, and to propose injury prevention measures.

Methods

Information on deaths from drowning (ICD-10 code 910) among children and adolescents aged 1–19 for the 1988–2009 period was obtained from Lithuanian Department of Statistics. Mortality rates were age standardized, using the European standard. Mortality trends were explored using the logarithmic regression analysis.

Results

In Lithuania, drowning composed 20.7% in childrens' and adolescents' external causes mortality structure, and was the second leading external cause of death after the traffic accidents in 2009. A significant decrease in drowning mortality among Lithuanian children and adolescents throughout the period of 1988–2009 was estimated (in average by 4.6% per year for boys and by 5.4% for girls, $p<0.001$).

Statistically significant decline in mortality from drowning was found both in urban (by 4.4%) and rural (by 5.5%) areas. Despite the estimated decline, inequalities by gender and place of residence in mortality from drowning were disclosed. Mortality rates per 100,000 population were statistically significantly higher for boys than that for girls in 1988 by 5.12 (95% CI 2.23-8.15) times, while in 2009, the estimated difference was 3.66, though not statistically significant. Urban/rural mortality ratio for boys was 2.26 (95% CI 1.24-3.28) and for girls 2.04 (95% CI 0.87-3.26) in 1988. In 2009 this difference became statistically insignificant and was 2.04 (95% CI 0.67-3.41) for boys and 2.18 (95% CI -1.13-5.49) for girls.

Conclusions

Despite the decline in drowning mortality among children and adolescents and leveling off inequalities, Lithuanian boys and all rural children and adolescents remained at the higher risk of dying from drowning compare to girls and urban counterparts. All the various sectors at the national and community levels should commit themselves to establish and implement policies to prevent drowning, building partnership and ensuring a proper allocation of resources to prevention. The most vulnerable groups of the children and adolescents should be highlighted for the particular attention.

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NOTES

Photo: RLSSA

Emergency Response and Medical Issues

The Emergency Response and Medical stream covers a diverse range of issues of interest to medical professionals, medical researchers and all those working or volunteering in this field. It has been overseen by the International Life Saving Federation's Medical Committee.

This stream will highlight: medical research, advances in the medical aspects of rescue, shallow water blackout, first aid and resuscitation and emergency response. This stream may be of particular interest to medical professionals working across Asia, in urban and rural environments where drowning places a significant burden on the health system.

ID: 74 / Paper: 331

Lack of evidence blocks development of drowning resuscitation guidelines

Dr Joost Bierens[1,2]

Reddingsbrigades Nederland[1], Medical Commitee International Life Saving Federation[2]

Resuscitation authorities and resuscitation organizations aim at introducing increasingly simple guidelines to facilitate worldwide teaching. The most relevant argument for this simplification is that shorter and easier resuscitation courses will allow more widespread acceptance and practical application. At the same time, great concerns are expressed by the lifesaving communities that the increasingly simplified guidelines are becoming not the optimal treatment in situations where lifeguards, most often teams of volunteers with a duty to respond, have to resuscitate during a drowning situation. Standard resuscitation techniques, more notably the popular compression-only CPR, even may potentially be lethal when applied in a drowning arrest.

During the establishment of the 2010 resuscitation guidelines, the advocates of special drowning guidelines were most of all hindered by the lack of evidence on the optimal technique for drowning resuscitation. In the scientific and political arena of guidelines development, arguments based on common sense, practical experience and eminency, have no value in a discussion with conflicting opinions. As a result, the drowning victim is hardly mentioned in the guidelines.

This presentation will first review the formal process of resuscitation guidelines development and explain how important evidence based data are in maintaining, or changing, resuscitation guidelines. After a short summery of the dying process during drowning, the second part of the presentation will list the distinct elements in the guidelines that may differ between a resuscitation in a primarily cardiac arrest and a secondary cardiac arrest caused by hypoxia during drowning. These distinct issues refer to the parameters when resuscitation may be started and stopped, how to deal with the high inflation pressure, and the application of airway devises and oxygen. In addition, the quality of the performance of resuscitation techniques in cardiac arrest and drowning resuscitation by individuals and teams will be addressed. Current knowledge on these issues is summarized and inspiring suggestions will be made for small scaled research projects of which the results can contribute to the discussions on the future resuscitation guidelines in drrowning. The suggestions for more evidence on the resuscitation guidelines for drowning will be further elaborated in an additional workshop.

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Mouth-to-mouth ventilation reduces interruptions in chest compressions during lifeguard CPR: A randomized manikin study

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Introduction

The quality of cardiopulmonary resuscitation (CPR) is a crucial determinant of the outcome following cardiac arrest. Interruptions in chest compressions are detrimental. The aim of this study was to compare the effect of mouth-to-mouth ventilation (MMV), mouth-to-pocket-mask ventilation (MPV) and bag-mask ventilation (BMV) on CPR quality.

Materials and methods

Surf lifeguards in active service were included in the study. Each surf lifeguard was randomized to perform three sessions of single rescuer CPR using each of the three ventilation methods (MMV, MPV and BMV) separated by five minutes of rest. Data were obtained from a resuscitation manikin and video recordings.

Results

In total 50 surf lifeguards were included (35 males, 15 female, mean age 25.4 years). Interruptions in chest compressions were significantly reduced by MMV (8.6+/-1.6 sec) when compared to MPV (10.7+/-3.2 sec, $p<0.001$) and MBV (12.4+/-3.6 sec, $p<0.001$). No significant differences were observed in chest compression depth and rate. Significantly more effective ventilations (visible chest rise) were delivered using MMV (93%) when compared to BMV (59%, $p<0.0001$) while no difference were observed when compared to MPV (80%, $p=0.14$). Tidal volumes were significantly lower following BMV (0.42+/-0.16 L, $p <0.001$ for both) compared to MMV (0.65+/-0.21 L) and MPV (0.62+/-0.26 L), while no difference were observed when comparing MMV and MPV.

Conclusion

MMV reduces interruptions in chest compressions during lifeguard CPR. Furthermore, MMV seems to results in a higher proportion of effective ventilations. Our results suggest that CPR quality is improved using MMV compared to MPV and BMV.

Acknowledgement

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Shallow Water Blackout – The production of a position statement from the ILSF Medical Committee

Dr Phil Dickinson[1,2] and Dr Patrick Morgan[2,3]

Ian Mackie Medical Fellow to the ILS Medical Committee[1], ILS Medical Committee[2], Surf Lifesaving Great Britian[3]

Organisation

This abstract is based on work for the ILSF Medical Committee

Background

Shallow water blackout is one of several reasons why a swimmer may suddenly loose consciousness in water. The definition of shallow water blackout is variable with numerous terms describing the same phenomena. There are also various phenomena described using the same terms! As a result of no standard definition or classification, records of incidence are vague. In a survey of Australian snorkelling deaths between 1987 and 1996, 20% (12 of 60 deaths) of the deaths were attributed to hypoxia from breath holding and hyperventilation (1). There are several different proposed physiological mechanisms.

Aims/Objectives

This work set out to clarify the physiological mechanisms and propose practical casualty reduction measures, to be implemented on a global basis, via the publication of an ILSF Position statement (2).

Target

The International Life Saving Federation, the ILS Member Organizations and collaborative partners in drowning prevention.

Methods/ Implementation

The Statement was constructed using Literature searches and working with input from the membership of the ILSF medical Committee.

It has (by the date of the conference) been published on the ILSF Website with specific casualty reduction measures. These are intended for use by the ILS Member Organizations, to be implemented by the member organizations as soon as practically possible.

Results

We have identified four potential physiological mechanisms that may result in shallow water blackout.

1. Hypoxia associated with Hypocarbia
2. Alteration of free calcium ions
3. The 'Samba' Phenomenon
4. Air Embolism

The work has generated the following recommendations:

The International Life Saving Federation, the ILS Member Organizations and the collaborative partners in drowning prevention should:

1. Institute guidelines for water users that:
   a. Actively discourage hyperventilation prior to 'breath hold' diving
   b. If an individual is stationary or showing signs of swim failure underwater following a breath hold dive there should be a low threshold for immediate rescue and recovery
2. Develop a standardised definition and name for the condition currently known as shallow water blackout This could be achieved with a forum of experts from lifesaving, swimming, free diving, and scuba diving during the 2011 World Conference on drowning prevention
3. Commence global reporting of suspected shallow water blackout incidents. This can only be achieved once a standard definition is approved
4. Encourage more research into the area of shallow water blackout

Discussion / Conclusion

The publication of the position statement on shallow water blackout marks a milestone in the identification and prevention of death and injury due to this phenomenon. It is also intended to encourage further discussion of, and research into this phenomenon. By presenting the work at the World Conference on Drowning Prevention, we hope to further pursue these aims.

Acknowledgements

The authors would like to acknowledge the assistance of the ILSF Medical Committee, particularly Dr Anthony Handley (its chair) for their assistance and comments in the preparation of the position statement. We would also like to acknowledge the advice received from Prof Mike Tipton, University of Portsmouth, UK.

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Do swimming pool incident, accident and medical emergency rates correlate with training provision?

Caleb Brown[1]
David Lloyd Leisure[1]

Pool Lifeguard training programmes contain a large number of training topics which are assigned varying training hours by award providers. However, do these training topics and training hours provision correlate to the actual incidents, accidents and medical emergencies Lifeguards have to manage?

Can a greater focus within pool lifeguard training programmes, on actual incident prevalence, help to reduce the global drowning burden.

The aims and objectives of the study were to evaluate incident, accident and medical emergency statistics to ascertain how they correlate with training provision. Incident, accident and medical emergency rates were collated and analysed at ninety-one European health and leisure clubs over a three year period. All swimming pools within which the study was completed were shallow, with a maximum depth of no greater than 1.4 meters.

During the period of the study club management teams were tasked with recording and logging on a online database, in detail every incident, accident and medical emergency that took place at their club. Statistical analysis was undertaken using key terms and points of reference to ensure the study and outcomes were comprehensive. All statistics were formatted on rates per 100,000 users for comparative purposes.

Lifeguard training provider's policies, lesson plans and schemes of work were analysed to determine the guided learning hours for specific incidents, accidents and medical emergencies.

Comparisons were then made between incident, accident and medical emergency rates for specific categories against training provision.

The research results show that although many lifeguard training programmes are very comprehensive in terms of training topics, the allocated learning time for these topics does not correlate in full with the actual incidents, accidents and medical emergencies lifeguards in the study had to manage.

The aims and objectives of the study were achieved in full.

The study generated unexpected results in terms of the number of suspected spinal injuries reported. Across the whole three year study only one suspected spinal injury was reported and this was caused by a bather colliding with the pool wall and not by diving. However many pool lifeguard training programmes focus heavily on aquatic spinal cord injury management, with up to 21% of training time allocated to this topic.

The results show a clear gap in many areas between the training pool lifeguards receive and the actual incidents, accidents and medical emergencies they are involved in whilst conducting their duties.

The research will continue to be evaluated and updated on a regular basis to monitor any changes in accident prevalence rates.

The work completed in this study can and should be replicated and adopted worldwide to ensure that pool lifeguard training programmes are fully specific to the role. This will inevitably lead to pool lifeguards being better equipped and competent to deal with emergencies they face in the line of their duties.

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Time delay and performance of CPR in surf lifeguards after simulated cardiac arrest due to drowning

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Background

In drowning cases ambulance response time is long, median 15 min (1), it is also known that submersion times longer than 9–16 minutes have poor outcome (2,3,4). CPR increases overall survival and decreases severe neurological damage if initiated early (5). ILS, states that a surf lifeguard should be able to perform a rescue of a conscious victim at 100m from shore (6). In-water ventilations can be given in the water and might double survival and improve neurological survival (2). Quality of CPR in healthcare personnel has been shown to be affected over 1–5 minutes (7).

Aim

To describe time-delay during surf rescue and compare quality of CPR before and after exertion in surf lifeguards.

Methods

A total of 40 surf lifeguards at Tylosand SLSC Sweden, 65% men, age 19–43 performed single rescue CPR for 10 minutes on a Laerdal Skillmeter Resusci Anne manikin. The test was repeated with an initial simulated surf rescue on an uncounscious 80kg victim 100m from shore. Time to victim, to first ventilation and to start of CPR was documented.

Results

Mean time in seconds to start of ventilations in the water was 155 ±31 (mean+sd) and to start of CPR 258 ± 44. Men were significantly faster during rescue (mean difference 43 seconds) than women, (p=0.002). Mean compression depth (mm) at rest decreased significantly from 0–2 minutes, (42.6+7.8) to 8–10 minutes (40.8+9.3; p=0.02). Mean compression depth after exertion decreased significantly (44.2+8.7 at 0–2 minutes to 41.5+9.1 at 8–10 minutes ; p= 0.0008). Compression rate/minute decreased after rescue from 117.2+14.3 at 0–2 minutes to 114.1+16.1 after 8–10 minutes (p=0.002). Proportion of correct compressions at 8–10 minutes was identical before and after rescue (62%).

Discussion

This study has described time delay during simulated surf-rescue at a set distance – 100m with just one lifeguard, These are 'worst-case-scenarios' and times presented can probably be improved. Present study confirms the assumption of Reilly that surf lifesavers posess the necessary fitness to perform CPR (8). In this study even after a water rescue. The impact of a real life drowning event on fatigue and compression depth remains to be evaluated.

Conclusion

In a simulated drowning at 100 m, it took twice the time bringing the patient as reaching him, men were significantly faster. Half the participants delivered continuous chest compressions > 38 mm during 10 minutes of single-rescuer CPR. Quality was identical before and after surf rescue.

Acknowledgements

Lifeguards of Tylosand SLSC, who participated in this study. The study was supported by the Laerdal foundation.

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ORAL PRESENTATION

ID: 1081 / Paper: 318

Sudden death whilst swimming – Is it safe to go into the water?

Dr Anthony Handley[1] and **Dr Patrick Morgan**[2,3]
Royal Life Saving Society – UK[1], Surf Life Saving Great Britian[2] and Royal National Lifeboat Institute[3]

In the developed world, the risk of death whilst swimming has reduced steadily over the years. As it is now relatively rare for a drowning to take place during supervised swimming, such a death, particularly in a young swimmer, attracts considerable media attention.

This presentation will discuss the cause of sudden, unexpected, and often 'silent' drowning in these circumstances, in particular, the role of pre-submersion hyperventilation, and inherited heart conditions.

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Pilot Program for the use of laryngeal mask airway devices by first responder lifeguards

Dr Natalie Hood[1]

Surf Life Saving Australia[1]

Within the current SLSA training guides, the options for delivery of rescue breaths during CPR by a single person or by a team of two are limited, including only mouth to mouth or mouth to mask techniques. Currently, the use of the bag valve mask in a CPR scenario requires three rescuers. Even when the bag valve mask is used, allowing greater oxygen delivery to the patient, the technique probably delivers adequate ventilation to only 50% of patients.

Training lifeguards in a single-handed mask hold technique potentially allows for greater oxygen delivery but is technically difficult for the inexperienced and likely to lead to a further fall in the percentage of patients adequately ventilated.

SLSA has approved the introduction of laryngeal mask airway (LMA) devices for use by select groups of skilled advanced airway providers. The belief is that this will confer a greater chance of successful ventilation and ultimately, improve survival and outcome in drowned or other patients.

Laryngeal mask airways have long been used for in-hospital procedures, with up the 80% of surgical patients anaesthetised via an LMA in some institutions. The device is well accepted by medical personnel as safe, cost efficient and easy to use. Worldwide it is promoted as an alternative device on difficult or failed intubation flowcharts. The use of LMAs has now moved outside the operating theatre and emergency room. LMAs are found on crash carts on hospital wards, for use by nurses and junior doctors, with little anaesthetic or advanced airway training. They are used by ambulance services and by remote area field medics. Use of LMAs by first responders other than ambulance services is an area still requiring further evaluation but initial research suggests some distinct advantages over both face masks and bag valve mask devices.

Single use, low cost LMA devices, along with suitable training manikins, has allowed the practical application outside the hospital environment. Along with oropharyngeal airways and suction devices, LMAs move to inserting something in, rather than on a patient, and this may cause hesitation by some groups. LMA use by many first responders will be infrequent, therefore supports, training and refresher programs will be required to maintain the skill set and user confidence.

Infrequency of use in the lifesaving field means an improved survival outcome will be difficult to show in the short term but competencies and acceptance by users will be assessed, along with collation of positive and negative feedback and adverse events associated with LMA use.

The pilot program being instigated by SLSA aims to provide a superior alternative to lifeguards, particularly those working solo or in pairs. LMA use is likely to be of benefit to all unconscious patients requiring airway or respiratory support, not only the non-breathing patient, but also to the unconscious patient after successful resuscitation and to breathing patients, unconscious due to a variety of other causes. SLSA will be one of the initial non-medical first responder groups to introduce laryngeal mask airways and will report the outcomes, adding much needed knowledge in this area.

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Management of a scuba diving accident

John Lippmann[1]

Divers Alert Network Asia-Pacific[1]

Each year, Divers Alert Network (DAN) emergency hotlines receive calls about hundreds of diving accidents throughout the world. Many of these accidents occur in remote locations, often in developing countries with relatively poor medical facilities. Many diving accidents require specific first aid measures, including appropriate victim positioning, the administration of near-100% oxygen, and, in the event of decompression illness, often prompt transportation to a suitable recompression chamber, capable of treating the victim.

There is an expectation, and in many places, a duty of care, for dive operators to have appropriate oxygen equipment and someone trained in oxygen administration at the dive site. However, there are still many operators, especially in developing countries, who fail to provide this, sometimes increasing the level of morbidity and mortality. In addition, most medical professionals are untrained in the diagnosis and management of diving accidents and this can lead to mismanagement of diving accident victims within the healthcare system. This can occur both in developed and developing countries.

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The role of volunteers in surf rescue emergency response groups

David McLean[1] and George Hill[1]

Surf Life Saving Qld (SLSQ)[1]

Background Introduction

Emergency services rely on lifesavers as experts in white water surf related emergencies to assist in rescue of those in life threatening situations. Whilst adequately covered during patrols there has been a long established need for after hours call out services. SLSQ & SLSA have set up regional dedicated emergency response groups. Volunteers from surf clubs, utilise gear and equipment to provide an emergency response. Utilising this equipment and trained lifesavers can greatly improve the chances of rescuing a drowning victim.

What is the practice?

The system allows for volunteer members of surf clubs across Queensland and Australia to respond in emergencies via a call out system in surf related or other emergencies including natural disasters.

Aims and Objectives

To decrease drowning rates on Australias coastline and improve response capabilities and times. To provide expert white water rescue and response to emergency services. To provide assistance in natural disasters.

Target Stakeholders

We are trying to target those who do not understand the drowning chain. The drowning chain incorporates:

1. A lack of knowledge, disregard or misjudgement of the hazard
2. Uninformed or unprotected access to the hazard
3. Lack of supervision or surveillance
4. Inability to cope once in difficulty

Target stakeholders are

- Visitors
- International tourists
- People from country areas
- Young people
- Persons from different ethnic backgrounds
- General Public
- Persons who Rock Fish
- Not familiar with a beach environment
- All beach goers

Statistics taken from SLSA 2010 National Coastal Safety Report show 82 coastal drowning deaths in 2009–2010 of those 80% were male and 20% were female, majority occurred in December, January and May and occurred between 4pm and 5pm. 50% occurred at beach locations. With 43% of the incidents less than 1 km from a life saving service. These statistics show that we should target the male population after hours at beach locations less than a kilometre from a life saving service to decrease the drowning rates.

Methods implementation

The single call number is 137873. The introduction of the '13SURF' number will nationalise the system and allow it to be implemented across Australia. The emergency services no longer need to look up a host of directories. In the event of an emergency the number is called and a life saving service responds, the phone is manned 24/7 after hours by volunteers who have dedicated call out groups that can attend. It can also be utilised in other catastrophic disasters including flood and cyclone.

Results of evaluation

Results are evaluated by quantity and examples we have been tasked to. Fifty foot trawler boats ashore, strokes, broken bones, floods, SARs, near drownings, multiple drownings, assisted police in apprehending offenders, shark alarms and suicides. Emergency services now rely on the system and makes their job easier by only having to call one number.

Discussion

The system utilising volunteer lifesavers in emergency response groups is a low cost, efficient, skilled resource that can prevent and reduce drownings on Australian beaches. It utilises existing equipment and value adds to the community. Those in a life threatening aquatic emergency will now have an increased chance of survival thanks to quicker response times and prevent drownings along our coastline.

Conclusion

We believe this offers an insight as to how volunteer lifesavers are going above and beyond the call of duty to help prevent drownings on Australian beaches.

Acknowledgements

SLSA – 2010 National Coastal Safety Report

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Lifeguard knowledge and understanding of CPR

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Background

Survival from out-of-hospital cardiac arrest, such as a consequence of drowning, is primarily dependent on the rapid initiation of bystander cardiopulmonary resuscitation (CPR). In the context of drowning incidents, victims are more likely to survive as a consequence of the immediate and effective application of CPR (1). At the beginning of each season, volunteer surf lifeguards in New Zealand are trained/re-trained in CPR procedures, yet little is known about lifeguard skills and understanding of CPR, how effective is their training, or how lifeguards perceive the value of CPR training and skills. The purpose of this study is to ascertain real and perceived competency of CPR technique among volunteer surf lifeguards at the start of a surf lifeguard season and to make recommendations about future training of this aspect of lifeguard work.

Method

The subjects of the study were 252 surf lifeguards in the Auckland region, who voluntarily took part in the study during early season patrols on 10 weekends between November 2010 and January 2011. Only lifeguards who had completed CPR re-training at the commencement of the season (October) were eligible to take part. Lifeguards with a health-professional background were excluded from the study. Participating lifeguards were initially asked to complete a written survey that focussed on their knowledge of CPR protocols and their perceptions of their ability to perform CPR. Immediately after completing the questionnaire, participants undertook a simulated practice of CPR on a Laerdal Resusci Anne SkillReporter manikin. Students were read a standard scenario briefing card, and informed that gloves (optional) and faceshields (compulsory) were available for them to use. The New Zealand Resuscitation Council Level 2/3 adult collapse algorithm was used to assess the correct sequence of actions (2). Adequacy of compressions/ventilations, compression to ventilation ratio and compression rate were assessed using the manikin over a 2-minute period of CPR, commencing from the delivery of the first chest compression. 'Correct compressions' were defined by the manikin as 4–5cm in depth (+/- 15%) with no incomplete release, and 'correct ventilations' as 400–600mL in volume (+/- 15%), with each ventilation delivered over a minimum of one second (3). A printout of the results was obtained from the manikin at the conclusion of the scenario.

Results

It is anticipated that the results will provide a comprehensive analysis of volunteer lifeguard understanding of the theory and practice of CPR, especially as it pertains to current protocols and techniques. It is further anticipated that the results will indicate a strong relationship between real and perceived CPR ability for many volunteer lifeguards. The study will also provide some indication of how important lifeguards view CPR training in comparison with the other requisite lifeguard skills (such as swimming ability and rescue skills) that are required as would-be rescuers. It is also expected that CPR competency will vary according to recency of training, lifeguard age, years of lifeguard experience, and possibly gender.

Discussion

Discussion will focus on the accuracy of recall of CPR protocols among lifeguards, the effectiveness of their simulated practice, the relationship between real and perceived competency, and lifeguard perception of how effective their training was and how important is the acquisition of CPR skills. The role and nature of current re-training methods will be discussed in light of the findings. Limitations of the study will be discussed and future research directions will be suggested.

Conclusions

The study will conclude with recommendations for future CPR training of volunteer surf lifeguards and suggest ways to address any barriers to effective learning of CPR skills that are evident from the results of the questionnaire and simulated testing.

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CPR Online

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Background/Introduction

This project aimed to develop an e-learning solution for cardiopulmonary resuscitation (CPR) training. All general practitioners (GPs) are required to complete CPR training once every three years as part of their ongoing professional development obligations. Currently GPs find it hard to attend a course in CPR due to heavy patient loads and a shortage of doctors. In addition, the many regional and remote GPs struggle further to attend as courses are rarely available outside of the metropolitan area.

Without practice, CPR is a skill that is quickly forgotten – and GPs are in a position where they are more likely to have to use CPR skills than most other members of the community. For this reason, RLSSWA and RACGP saw this partnership as a perfect opportunity to ensure quality training that could be delivered state wide, benefitting all GPs and consequently their respective communities.

The learners will all be GPs, practising throughout Western Australia. The participants are therefore highly educated, however have very limited opportunities to gain skills in CPR. So the introduction of a training solution that enabled them to complete their training requirements from the office or at home eased the process of certification.

The project has resulted in an online training solution that was invaluable to GPs, and a resource that has had a much wider community appeal. As CPR training forms a part of quite a number of qualifications this will be a valuable tool in the delivery of training to people who need a reduced time away from their normal place of work.

Acknowledgements

Australian Flexible Learning Framework

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Aquatic cervical and head trauma: Nobody told me it could be a jump in the darkness!

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A trauma, from a jump into the water can be life altering event that happens suddenly, without warning. It seems to be just a fun and carefree jump, but in a matter of seconds can become a catastrophic incident. Why is the public not better warned of such an important and tragic situation? Since very few papers have been published (1,2,3) and the profile is not entirely known, this may explain why. Our knowledge on this is speculative and scarce. Our purpose is to demonstrate the profile of people injured, which in turn could reduce their incidence.

Methods

All International Code Disease W16 (Fall, jump or diving into water), from January 2003 to December 2007 were evaluated using death certificates and epidemiologic morbidity–DATASUS<www.datasus.gov.br>.

Results

There were 2,923 people injured by falling, jumping or diving into the water (ICD W16), of which 321 died (11%) (67% before hospital). There was an escalating increase of injuries in the period evaluated (500(2003) to 844 (2007)) but the number of deaths were similar (66(2003) to 60(2007)) which demonstrate the decrease of death rates from 13% to 7% mainly from the reduction of death in the pre-hospital setting. Injuries were spread along all ages with a modal curve peaking at 20 to 29 years old (28%). Males were 79% of all injuries, mainly from 1 to 69 year old, with a peak at 20 to 29, being 8.7 times more often than females and 6.3 times at younger than one year old. The most frequent location of injury was natural bodies of water (60%), with swimming pools comprising 5.3%. 2,709 injured patients needed hospitalization over a total of 19,035 days (7 days/patient) with 4% death. Hospital cost was US$1,714,428.30. The Brazilian risk of injury due to a jump into the water was 0.3, and the risk of death 0.04/100.000 inhabitants. In the north region of the country where there is no coastline, the risk of injury was 2.5 times greater.

Discussion

The W16 ICD code includes many different epidemiologic incidents, which can produce a confusing statistical bias and misunderstanding (e.g. drowning after a fall or jump). On the other hand, is very specific in categorizing all injuries from jumping or falling into the water. It allows identification of how many are secondary from one irresponsible act ‘to jump into unknowingly dangerous water’. This number of cases is sometimes under-whelming, when excluding cases of no hospitalization(low severity), some private hospitalizations and cases at hospitals which were not able to charge. Over a five year evaluation period, 67% of death occurred before hospital admission, showing the severity of this aquatic injury. Although the number of cases increased in Brazil during the study period, the number of death is decreased, especially in the pre-hospital setting, probably due to a more efficient assistance in the pre-hospital setting. These injuries affect mostly young males who seek fun at inland natural bodies of water. Brazil has a low incidence (1 per 100,000 inhabitants) compared with other traumas, but considering all costs involved in this injury: 19,035 days out of working (hospitalization) plus time to recovery (unknown time); permanently family income losses; hospitalization cost of US$1,714,428.30 and all costs not fully quantified, the outcome is unacceptable. Especially in a country like Brazil, it would be much more reasonable and less expensive if we were to use all of these resources to warn the population at risk, and thus to reduce the incidence of this injury. Other countries may have different rates, depending on a wide variety of elements but it would be very important to know different figures to allow comparison and the ways to reduce it.

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‘Autonomic Conflict’: A cause of sudden death on immersion in cold water?

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On immersion in cold water the ‘Cold Shock’ response (CSR, Tipton, 1989) can result in drowning and cardiac problems. During head-out immersion the incidence of cardiac arrhythmias in young, fit and healthy individuals is about 2%. This figure can rise to 81% during submersion with breath-holding (1) due, we believe, to coincidental stimulation of the parasympathetic nervous system (PNS, with face immersion and breath holding) and sympathetic nervous system (SNS, with anxiety and the CSR), resulting in cardiac arrhythmias (2). We have given the name ‘Autonomic Conflict’ to the coincidental stimulation of both divisions of the autonomic nervous system on submersion (3).

Autonomic conflict could occur in a range of activities including helicopter underwater escape training (HUET). The present study examined the electrocardiogram (ECG) of individuals undertaking HUET. Given the paucity of reported cardiac problems during HUET, it was hypothesised that either cardiac arrhythmias do not occur or, if they do, they are asymptomatic.

Methods

The experiment received ethical approval. Having given their informed consent and undertaken a medical with 12-lead ECG, 26 naÃ¯ve male participants completed the study.

Participants were fitted with a three lead (V5) telemetric ECG system (Sharktooth, MIE Ltd, UK). They wore underclothing, a cotton coverall and immersion dry suit. Skin temperature was measured on one participant on the chest, forearm, scapula and forehead (Grants Instruments, UK).

Each participant completed five HUET runs into water at 29.5°C, separated by a minimum of 10 minutes. Each run was standardized: after 3.5 minutes seated in the dunker it was rolled to an inverted, submerged position, this took 10s. Once inverted the participants made their escape, this took an average of 10s, during which they breath held. They then rested on their backs at the surface of the pool until 4.5 minutes had elapsed.

The ECG trace was examined by an experienced physiologist and, independently, by a clinician.

Results

The participants had raised heart rates prior to being submerged indicating sympathetic activation. Heart rate increased during the HUET submersion; this was probably more due to additional anxiety and physical effort than cold shock, as skin temperature did not fall significantly beneath the dry suit.

The participants demonstrated a range of cardiac arrhythmias the most prevalent being: bradycardia, premature junctional escape, ventricular ectopics and broad QRS with bundle branch block. 32 arrhythmias were observed in 21 different participants; only 6 of the arrhythmias occurred before submersion (breath holding).

Discussion

The concurrent stimulation of the SNS and PNS due to anxiety and submersion/breath holding, and the release of the stimulus to the PNS with the break of breath holding resulted in cardiac arrhythmias. The timing of the arrhythmias (normally just after the release of breath holding) is consistent with earlier findings (2).

These cardiac arrhythmias were asymptomatic and probably of little clinical significance especially in the young (< 40 years), fit participants tested. It remains to be seen if this is the case with older, less fit people in colder water.

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From drowning to survival: A resuscitation case study

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A young man is found on the water's edge very close to death. He was rescued by an off-duty police officer and placed in the recovery position on the beach. When surf lifeguards arrive, he is unresponsive and not breathing; they commence resuscitation...

The assessment, treatment and aeromedical evacuation of this actual non-fatal drowning victim at New Zealand's Piha beach will be presented. This case is contrasted to the ILCOR 2010 Consensus on Science Treatment Recommendations for drowning. In addition, the role of supraglottic airways, right-sided recovery position and the use of space blankets will be discussed.

In 2003, a revised Utstein template with recommended guidelines for the uniform reporting of data from drowning was published. Included were new drowning definitions, the purpose of which was to standardise terminology and improve comparability of scientific investigations. Although endorsed by the World Health Organization, this terminology has not been fully adopted by all lifeguards, academics and health professionals working in the aquatic safety field.

From 1980–2010, drowning whilst attempting rescue accounted for 1.7% (n = 76) of all water-related deaths in New Zealand. This is an important consideration when educating the public in what to do if they observe a person in distress. In these situations, the priority is to provide some form of buoyancy to the victim; in most cases this will stop the drowning process. Research has identified however that onlookers, and even some lifeguards may not be able to recognise the early and very late signs of drowning.

The 'Wet Chain of Survival' promotes initial ventilations as more important than early defibrillation in improving patient outcomes. In a retrospective study of in-water resuscitation, mortality was lower (15.8% vs. 85.2%, $P < 0.001$) for patients resuscitated in-water compared to those who were not. However, in a separate pooled analysis of drowning victims (n = 2,678), of the 10–12% that required full CPR, mortality on-scene was 88–93%. Mortality of 100% is associated with patients: submerged ≥25 minutes, resuscitated for >25 minutes, pulseless on arrival at the emergency department, and unconscious at the scene and on arrival at hospital.

Although now widely recommended for use in resuscitation, no evidence exists to support the use of supraglottic airway devices (such as laryngeal masks) in drowning. The high inspiratory pressures often required to ventilate patients can result in ineffective ventilation from air leaking around the cuff or entering the stomach. Early endotracheal intubation therefore remains a key component of advanced cardiac life support guidelines for drowning, although its role in improving patient outcomes from cardiac arrest (compared to bag-mask ventilation) has not been determined.

Space blankets are commonly used in aquatic first aid to prevent or treat hypothermia despite inconsistent results of studies into their effectiveness. In 2003, a randomised controlled trial showed space blankets were less effective than two thin cotton blankets at maintaining normal body temperature perioperatively. In contrast, the Mediwrap blanket has been shown to be as effective as a forced air warmer at maintaining normal body temperature before and during surgery, and more effective after surgery. It is the author's opinion having reviewed the literature and used both devices in the field, that lifesaving agencies consider removing the space blanket from service and replacing it with a clinically proven alternative.

In drowning, the majority of lives are saved through rapid removal of the patient from the water, and good basic life support. A much smaller number of lives are saved through advanced life support. Without question, the prevention of drowning will always be a better cure than resuscitation from it.

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Post Traumatic Stress Disorder in aquatic rescue: A review

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Introduction

Post-traumatic stress disorder (PTSD) has been hypothesized to be related to exposure to an extreme traumatic situation (life threatening or a serious injury) transforming capable (before the emergency) rescuers or swimmers to psychological wrecks afterwards.

Aim

This study aimed to assess whether there is evidence to support this claim and to suggest recommendations for prevention and treatment of those affected by PTSD after an aquatic emergency episode.

Method

An extensive literature review was conducted to describe the problem, identify those at risk, discover the possible consequences and the recommended treatment for those affected by PTSD due to an aquatic emergency in order to have a better chance of rehabilitation.

Results / Conclusions

Results confirmed that, in terms of swimmers and lifeguards, there is insufficient scientific evidence for the existence of PTSD symptoms in common aquatic environments. On the other hand, sea rescue services can be affected by PTSD but score lower compared to other rescue services (5). In terms of age, younger rescuers experience more physical assault in association with critical incident exposure. In terms of sex, women have higher rates of general psychopathology and of exposure to psychological aggression (1) and twice the chance of males of having PTSD symptoms (3, 4). In terms of duration, PTSD can be acute (symptoms lasting less than three months), chronic (symptoms lasting three months or longer) or delayed onset (at least six months have passed between the traumatic event and the onset of symptoms) (2). Rescuers and swimmers that may have been affected by PTSD should seek assistance by trained counsellors, psychologists, religious leaders, and psychiatrists who will rule out equivocal signs, and a psychiatrist. Also, because many people with PTSD also suffer from depression, anti-depressants are often prescribed to reduce symptoms and make therapy sessions more effective. Finally, debriefing sessions for rescuers may also be essential.

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Surviving prolonged cold water immersion – An evaluation of immersion dry suit test performance standards

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Introduction

Immersion dry suits are compulsory for offshore workers who are regularly at the risk of being exposed to cold water. The garments are worn in helicopter transit and are designed to be protective against the sudden skin cooling that triggers the 'cold shock' response (6), subsequent critical decreases in deep body temperature (hypothermia) and periodic wavesplash (sprayhood and lifejacket) which increase the risk of water aspiration and drowning (7). Dry suits significantly improve predicted survival times by minimising water ingress in contrast to wetsuits (5). The necessity for dry suit protection has culminated in standards for helicopter immersion dry suits (1, 2, 3). This study examined the performance of the Shark Group 1000 series dry suit in cold water. In so doing the test standards for suit performance in cold water were also assessed.

Methods

Six healthy, non-smoking participants (four male, two female) volunteered (mean [SD]; age 24 [4.0] yrs; height 1.74 [0.12] m; mass 68.94 [11.35] kg; BMI 22.5 [2.5]). Each participant was instrumented with a rectal thermistor, 14 skin thermistors and wore underwear, woollen socks, long trousers, a t-shirt, long-sleeved shirt, woollen pullover and the immersion suit. A volume of water (35mL), determined from a leakage test was added evenly to the liner of the suit. A lifejacket was put on and inflated prior entering 2°C water and resting supine for up to four hours. After three minutes of immersion the participants donned neoprene gloves; time taken to do this was measured. Withdrawal criteria were: deep body temperature <35.5°C; skin temperature of 4°C; skin temperature of 8°C >15 minutes (based on risk of non-freezing cold injury [NFCI]; 4).

Results

The gloves were donned after an average [SD] of 45 [13] s. None of the participants completed the four hour immersion; average exposure time was 139 [37] minutes. Three participants reached the limits of their tolerance and three achieved a skin temperature of 8°C for >15 minutes. The participants reported being very uncomfortable and very cold after two hours of immersion. The average rate of fall of deep body temperature was (0.33 [0.12] °C·hr^{1}), providing a predicted average time to a deep body temperature of 34°C of >4 hours (estimated CLO: 1.33 [0.79]); >0.5 CLO [°C·m2·W·^{1}] was sufficient to pass).

Discussion

The helicopter immersion suit passed the test standard but the test procedure provides limitations and ethical concerns. The test is unnecessarily extreme; this explains why none of the participants completed the test. It is questionable from an ethical perspective to require humans to undertake a test that is more severe than is required. Immersed CLO can be achieved by immersion in water that is warmer than 2°C and that does not carry a risk of NFCI. Moreover, the buoyancy of the lifejacket and immersion suit assembly means the natural flotation angle adopted by participants results in a large percentage of the surface area of the suit being in air. Thus it is mixed 'air and immersed' insulation that is measured; the insulations determined from the test will appear high. Given that deep body temperature is required to be measured during the tests, there seems little point in estimating immersed insulation. Lastly, the relatively calm conditions of the tests do not accurately reflect the rough sea conditions which can significantly alter cooling rate (5). The test standard requires amendment to reflect real life scenarios without exposing volunteers to unnecessarily extreme conditions if suit performance, from the perspective of minimising cold-shock, time to reach hypothermia and ultimately reducing the risk of drowning are to be accurately assessed.

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Dublin Fire Brigade's Water Rescue Service – Past, present and future

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The Lifesaving Foundation[1], Dublin Fire Brigade[2]

Introduction

Dublin Fire Brigade (DFB) was founded in 1862 by Dublin City Council and is controlled and operated by the local authority. Its aim is four-fold; to provide (a) fire, (b) rescue, (c) ambulance and (d) water rescue services to the citizens of Dublin.

Aim

The aim is to offer a historical overview of the past, present and future of this organisation in terms of its water safety and water rescue role.

Past

For the needs of the present paper, past was defined as the period between1862–2000. In 1898 an emergency ambulance service was added to the existing fire service. The Brigade serves Dublin City and its environs and provided fire, rescue, and ambulance services from 14 fire stations. All fire fighters are fully trained paramedics and routinely rotate between fire and ambulance duties. The brigade also has crews trained to fight ship board fires inside the Port of Dublin and off Ireland's east coast. DFB responds to over 145,000 emergency calls annually.

Present

We defined as present the period 2000–2010. In 2010 DFB has water rescue units based at three locations within Dublin City and has two rescue boats, one of which is moored on the River Liffey close to the central fire station. The brigade has 70 trained rescue boat crew members, 300 fire fighters trained as Swift Water Rescue Technicians and over 1000 trained as Swift Water First Responders.

Water Rescue Services

In addition to providing a 24 hour/7 day fire fighting and ambulance service DFB also operates a water rescue service; all front line fire engines carry two dry suits for use in water rescue emergencies. This addition, to what is usual for fire services, arose out of a recognition that although an average of 40 persons die in fires annually in Ireland an equal or greater number of persons die from drowning in the greater Dublin area every year. Fire fighters regularly called to drowning incidents found that they were neither equipped nor clothed properly for water rescue or water removal situations. The fire brigade budget was not sufficient to purchase equipment and pay additional salary to specially trained water rescue crew so the fire fighters themselves agreed to undergo specialist training in their own time and to operate specialist water rescue equipment on a voluntary basis.

Future

The brigade will continue to upgrade the water rescue training provided to fire fighters, as funds allow. The likelihood of regular serious flooding in urban areas has made this an imperative.

Conclusion

In the 10 years since the water rescue units were established, DFB has responded to over 2,000 water incidents and has rescued over 1,000 persons from drowning. DFB appears to be unusual in that all fire tenders responding to call outs are crewed by fire fighters who are also experienced paramedics and trained lifesavers.

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The success at Foyle Search and Rescue – Suicide prevention and rescue in the city of Derry, Ireland

Patrick Wilson[1], Craig Smyth[1] and **John Connolly**[2]

Foyle Search and Rescue[1], The Lifesaving Foundation[2]

Introduction

Where recorded, drowning is the method of choice in between 3% and 26% of all suicide deaths worldwide with a likelihood that there is under-reporting in some countries for cultural reasons (3). Ireland has a serious suicide by drowning problem (1,2). Most lifesaving organisations do not include suicide deaths in their statistics, possibly because there is a belief that such deaths are not preventable (4). Foyle Search and Rescue (FSR) was established in the City of Derry, Northern Ireland, in 1993, with the aim of reducing the high number of suicide by drowning deaths in the River Foyle. FSR operates a successful voluntary prevention and rescue service, proving that it is possible to make a permanent positive impact into this aspect of the global drowning problem.

Aim

To demonstrate the reduction of suicide drownings that was achieved in the City of Derry due to the work of FSR.

Prevention, Rescue and Treatment

The organisation operates out of a purpose built headquarters upriver and a secondary boathouse downriver and has three linked strategies: 1) Prevention: From 9.30pm to 3.00am on Thursday, Friday and Saturday nights a team of three trained volunteers, supported by a mobile unit, patrol the river bank between the old low level Craigavon Bridge and the new high level Foyle Bridge. Their aim is to intercept anyone entering the river and to bring them back to their headquarters where a trained member will speak with them. They also check the condition of riverside lifebuoys during the patrol. Lifebuoys at key locations are alarmed and monitored by cameras. 2) Rescue: Rescue boats are located upriver and downriver ready to respond immediately on duty nights and on call-out from the police at other times. 3) Treatment: The organisation has links with medical services and mental health and bereavement support groups, some of whom meet weekly at their headquarters.

Results

In the 18 months prior to the establishment of FSR in 1993, there were at least 25 deaths in the river. On the other hand, in the 17 years since 1993 only 74 persons are known to have drowned in the Foyle; FSR volunteers have responded to over 1700 incidents, rescued 129 people from drowning and recovered 74 bodies. Over 1000 people have been led away from the river by foot patrols and less than 1% of them are known to have subsequently died by suicide. Today between 3–5 persons drown annually in the Foyle.

Conclusions

This case example of activities undertaken by FSR, demonstrates that a remarkable reduction of suicide drowning deaths has been achieved within a 17–year period. Future study of other search and rescue services operating in other regions of Ireland, are hoped to correspond to these results, proving that prevention, rescue and treatment can act as a positive factor in suicide drowning death reduction.

Acknowledgements

Author would like to thank Foyle Search and Rescue and the Irish Lifesaving Foundation.

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POSTER PRESENTATION

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Training of survival technique ‘chakuiei’ on JICA program

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Japan International Cooperation Agency (JICA) had a class and introduced survival technique ‘chakuiei’ from sudden water accident for the governmental worker of developing countries. One of the authors (T.K.) contributed to the class as an instructor of the chakuiei on 19 August 2010. The participants composed of six members came from Fiji, Iraq, Kosovo, Burma and Venezuela. They belong to National Fire Department, Department of Interior, military unit, university, rescue organization etc. The curriculum composed of two-hour lecture and three-hour skill. First of all, T.K. introduced water accident occurring and public rescue system developing in Japan during the lecture. In Japan, rescue team of the fire department is dispatched to the accident point by 7–8 minutes in average. Therefore, the victim should float on the water surface with fully clothed more than 10 minutes, i.e. he/she should wait for rescue with breathing. This technique is so called chakuiei. In discussion, some participants pointed out a risk of dangerous creatures during floating in the Torrid Zone. Therefore, additional techniques should be developed with chakuiei for high-risk countries. During chakuiei skill in the swimming pool, all participants could float with fully clothed with no relation to personal swimming ability.

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Assessing the cause of death in bodies found in water

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Background

Due to inadequate vital registration systems and low or inexistent post-mortem investigations, in many low and middle income countries, verbal autopsies, based only on interviews with family or associates, are the only tool to assess the cause of death, including injury and drowning. In many instances, also in high-income countries, a diagnosis of drowning will be based merely on circumstantial evidence and external examination of the victim. However, diagnosis of cause of death in bodies found in water can be a particularly challenging task even with a full medico-legal autopsy performed by an experienced forensic pathologist. A wide range of possibilities must be considered: diseases, injuries, or intoxications can all be among the potential causes of death in water or may have triggered or contributed to death by drowning. Drowning can also be the result of an intentional action, either suicide or homicide.

The Finnish Act on the Inquest into the Cause of Death (459/73) allows extensive medico-legal investigation into cause of death, with virtually 100% of the bodies found in water undergoing police investigation and a full medico-legal autopsy. This improves the possibility to substantiate the diagnosis of drowning, reveal deaths in water other than drowning, and distinguish between unintentional drowning and drowning by suicide or homicide.

Aims

The aims of this presentation are to illustrate: a) the diagnosis of death by drowning and its contributing factors by means of medico-legal autopsies and specific post-mortem investigations, b) natural and injury deaths in water other than drowning, c) non-accidental drowning deaths.

Methods

Up-to-date review of the medico-legal diagnosis of drowning, presentation of selected case studies and medico-legal investigations of more than 2000 bodies found in water investigated during the period 1975 to 2010 at the Department of Forensic Medicine, University of Helsinki (Finland).

Conclusions

The precise cause and manner of death in water can be established only by a thorough assessment of full autopsy findings integrated by analysis of the victims' individual profile and the environment and circumstances surrounding death. In many countries, due to lack of resources or national legislation, no autopsies are performed or only rarely performed in such cases. However, also in these countries, experts and professionals involved in water rescue and treatment and in drowning surveillance and prevention – including those developing and implementing verbal autopsies on drowning – should be aware of the challenges inherent in the diagnosis of drowning and of the possibility of deaths in water other than unintentional drowning.

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Acupressure in first aid for life savers

Dr Patrick Yeung, PhD[1]

The Hong Kong Life Saving Society[1] Dr. Patrick Yeung, PhD, MSocSc, BEd Registered Practitioner of Traditional Chinese Medicine, Chinese Medicine Council of Hong Kong

Rejoice at the World Conference on Drowning Prevention 2011! The Wiseman – Dr. Yeung Patrick – brings three Treasures (Myrrh, Gold & Frankincense) from the Orient to all the delegates attending this conference. These three treasures come in the form of three acupressure points, namely the Philtrum Point (DU 26) – to restore consciousness (wakening effect like the myrrh), the Meeting Valley Point (L.I. 4) – to relieve pain (gold can cure most people's headache), and the Inner Gate Point (P. 9) – to regulate cardiac irregularities (it may claim to have similar value as frankincense).

According to the theories of traditional Chinese medicine, life is a flow of vital energy through the body in a continuous circuit via 14 meridians. Each meridian is associated with specific internal organs, external body parts and physiological functions; along each lie specific points which control or influence the energy flow. Stimulating certain points on the body can enhance traditional first aid procedures. This form of treatment is easy to learn, effective – proven therapeutic value and safe to use, requiring only knowledge of some selected points and one's hands to treat casualties.

The concept of combining acupressure and first aid was developed by Dr. Patrick Yeung in 1973. Introduced to the 1st Asia Pacific Life Saving Commonwealth Conference five years later, and offered the first course to the public in 1987. The three points which comprise this paper were chosen from the full course on 'Acupressure Aid in First Aid' for their specific application in Common Emergencies.

It is hoped that this simple technique can become more widely known and used – and eventually consolidated in First Aid Handbooks worldwide – for the benefit of everyone.

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Photo: REUTERS/Daniel Munoz

Advances in Lifesaving

Lifesaving activity has the strongest presence in high-income countries where there is an established history of lifesaving organisations to monitor, advise, prevent and, where necessary, rescue and resuscitate those in trouble. The development of standards and techniques used by lifesaving and lifeguarding agencies worldwide has always been a focus of International Life Saving Federation activities. These standards and techniques are subject to constant improvement and refining.

There are two distinct forms of lifesavers: those who operate primarily in a beach environment; and those who operate at inland locations such as public swimming pools. The group of papers presented in this stream fall into these two broad categories and focus on new and emerging research.

ID: 900 / Paper: 169

Improving beach safety: The Science of the Surf (SOS) research project

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This research project aimed to develop, implement and evaluate an educational intervention aimed at reducing the risk of beach related drowning. The pre-campaign stage of the project sought to investigate beachgoers' knowledge about beach safety. We administered 376 structured interviews with beachgoers in two regional areas of New South Wales Australia over the 2007 Easter period. Results indicated a low recognition of, and a high intention to swim in, areas characterized by calm water between breaking waves, which is the most common visual characteristic of rip currents in this region. Eighty-five percent of respondents reported that they would swim between the red and yellow flags that signify an area patrolled by lifeguards and lifesavers. These findings are consistent with anecdotal media reports of beach drownings, and informed the development of our beach safety campaign.

One of the areas we had surveyed was exposed to the beach safety campaign. The key message of the campaign was a warning about rip currents that appear as calm water: 'Don't get sucked in by the rip – Don't be fooled by calm, flat sections in the surf, because these are often rips'. We reinforced peoples' motivation to swim between the flags by highlighting the difficulty of identifying rips. A media release and campaign launch achieved some exposure in local print, radio and television. A poster, conveying our key message, was displayed in most local retail outlets. The same image was distributed as a postcard, and on a colourful, image-based brochure. The brochure, distributed via retail outlets and rental accommodation agents, provided more scientific substance to our key messages and included a 'spot the rip quiz' to encourage reading, and to show rips in different surf conditions. The brochure also reinforced peoples' knowledge about what to do in a rip (shown in the pre-campaign stage to be high) and primed thoughts to prevent panic. In the post-campaign stage of the project, beachgoers were again interviewed about their knowledge of beach safety, and about the campaign, in the Intervention area [I] and a similar control area [C], immediately after the campaign (I: n=552; C: n=408).

Consenting post-campaign respondents were sent a follow-up questionnaire after approximately six months and 55% responded (I: n=222; C: n=161). Pre- vs post-campaign analysis compared beachgoers in control and intervention areas on a range of questions including their knowledge of rips and how to handle them. Analysis also compared post-campaign responses for beachgoers in the intervention area who reported that they had seen our campaign with those who did not report that they had seen it. Similar analysis was conducted using follow-up data to determine whether knowledge was maintained. In the intervention area, 28.8% of post-intervention respondents, and 57.2% of follow-up respondents, had seen our campaign. Following the intervention, respondents demonstrated improvement (relative to baseline) in intentions to avoid swimming in a calm-looking rip, ability and confidence identifying a rip, intention never to swim at unpatrolled beaches, and responses to being caught in a rip, compared with controls. Similar improvements were observed for intervention respondents who had seen our campaign compared with those who had not, and for intervention respondents compared with controls at follow-up. Thus, our relatively brief print-based campaign was effective in warning beachgoers about calm-looking rips, and is worth developing further.

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Why were you swimming there? Analysis of risky swimming behaviour on Australian beaches

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The choices people make about where they will swim will determine, to a large extent their risk of drowning, injury, or rescue: it is safest to swim in areas that are patrolled by lifeguards or lifesavers, and swimming outside these areas is risky.

Our previous research demonstrated that while most beachgoers interviewed in New South Wales, Australia are aware that swimming in patrolled areas of the beach is safest, a significant proportion report swimming outside patrolled areas. This study examined the reasons for beachgoers choosing to swim in safe or risky areas on beaches in Sydney, Australia.

Beachgoers observed swimming in a patrolled area, an unpatrolled area with no rip current, or an unpatrolled area near a rip current were approached and invited to answer questions about their choice to swim in that area of the beach. Over 1,000 people were interviewed over two weekends in the summer of 2009. The results of the interviews showed that swimming choice was directed primarily by convenience; beachgoers chose the closest area to swim, even though they were aware that the patrolled area was safer. Swimmers observed swimming in risky locations showed the least knowledge of rip currents. Swimmers in risky locations were also more likely to be younger, to not live near the beach, to not swim regularly and to be less aware of other beach hazards. Multivariate analysis showed that swimmers who choose to swim in an unpatrolled rather than patrolled area were twice as likely to have not assessed the swimming conditions before swimming. They were less likely to have checked for rips, were more likely to be male and to be younger. The study indicates that a specific intervention would be worthwhile for beachgoers who swim outside patrolled areas and further, the study defines who should be targeted to be most effective.

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Reducing rip current drownings: Lessons from interviews with rip current survivors

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This study has responded to the call for a national campaign to educate Australian beachgoers on the potential hazards of rip currents. This hazard is well documented: Surf Life Saving (SLS) reported 94 coastal drownings and over 25,000 rescues during the 2008–2009 season – the vast majority related to rips. While a good scientific understanding of the flow behaviour of rip currents exists, much less is known about the actual beachgoers that are caught in rip currents. By surveying and interviewing people that have been caught in rips, this study has adopted a grass-roots approach to identifying what beachgoers know and understand about the rip current hazard and how this knowledge was utilised (or not) when they were caught in the rip.

This research had two primary objectives:

- To assess the demographic, surf knowledge and behavioural responses of swimmers who have been caught in rip currents;
- To provide information that will assist in the further development of safety messages and information associated with the SLS National Rip Education Campaign and other rip education strategies around the world.

The methodology involved both an online survey instrument comprising structured written responses to short answer questions (posted on various websites), and follow-up interviews with people who have been rescued from rips. Several beaches in the Sydney, Australia, were chosen as study locations. All are popular recreation beaches with high visitation rates encompassing a broad spectrum of beachgoers – locals, tourists, surfers; and all have a high incidence of rip current rescues. The online survey instrument was linked to a number of beach-related websites and the project received considerable radio media coverage and promotion. In addition to the online component, we also approached potential participants shortly after they had been caught in and/or rescued from a rip. Potential participants were given an information card by lifeguards, which included details of the research and contact information so that interviews could be arranged at a later date.

The ethnographic research sought to provide a clearer understanding of the multiple reasons why people may get caught in rips and better elucidate the variety of possible reactions. By utilising a mixed methods approach, particularly the combination of qualitative and quantitative data sources, the research methodology was purposefully flexible and designed to respond to, and acknowledge the diversity of experiences and previous knowledges of beachgoers and rip survivors.

This research will contribute to the SLS National Rip Education Program, by providing valuable social and ethnographic data on rip current survivors. A major outcome of this research has been a clarification of the demographic groups that should be targeted for rip current education, and how prior knowledge of rip currents and education campaigns influences behavioural response when caught in a rip. The authors of this paper welcome feedback and interest from other international researchers engaged in the social investigation of rip current drownings. This will enable further place-based comparisons that will better inform education programs and critically appraise current escape strategies.

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Swim or Float? An evidence-based approach to reducing the risk of rip related drowning in Australia

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Background/Introduction

Rip currents are the major cause of beach drowning and surf rescue in Australia. It is difficult to accurately measure the number of rip related drowning deaths, though it is likely on the order of 30–40 each year. In 2009, SLSA launched an ongoing national rip education campaign based on a behavioural response message for swimmers 'to escape a rip, swim parallel to the beach'. This message is common advice promoted around the world by various beach safety practitioners in regards to rip currents. Subsequently a debate has been raised within the world of rip current education as to the appropriateness and preference of the 'swim parallel' versus 'stay afloat' responses for swimmers caught in rips. Much of the debate has been based on anecdotal information.

Aims/Objectives

To describe an evidence-based multidisciplinary program of research that aims to reduce the risk of rip related drowning.

Methods/Implementation

Multidisciplinary methods of epidemiology, geomorphology and behavioural science are combined to improve our understanding of the flow behaviour of rip current systems and the physical response of people caught in rips. Research on rip dynamics will be undertaken using GPS to determine rip flow direction and velocity. Additional in-depth interviews of beachgoers rescued from rip currents will identify the demographics, surf knowledge and behavioural response of those caught in rip currents. A comparison of rip survival strategies will determine outcomes of active (swim parallel, diagonal or against the rip) vs. passive (float) rip responses. The effectiveness of subsequent educational campaigns will be assessed using impact and process evaluation.

Results and Conclusion

The unique multidisciplinary approach adopted will assist in ongoing clarification of the most appropriate evidence-based messages relating to beachgoer response when caught in a rip current. Rigorous evaluation will ensure that the message has maximal impact on beachgoers at risk of rip related drowning.

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Dynamics of Rip Currents and Implications for Beach Safety (DRIBS): A research and service provision partnership project

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Rip currents are strong and narrow offshore-directed currents in the surf zone that return water seaward that has been transported into the surf zone by breaking waves. Rip currents are found on high-wave beaches with bars and channels. Rip currents can be very strong with flow velocities of 1–2 m/s and are the main hazard to surf zone water users. According to lifeguard records, over 68% of incidents ('rescues') on UK beaches can be attributed to rip currents (1). A similar percentage is reported from Australia and the USA and, in Florida alone, over 100 people drown each year due to rip currents.

The importance of rip currents for beach safety is well recognised by coastal scientists and lifeguards, but we do not fully understand what controls their flow strength and pattern. Our understanding is particularly poor for rip currents on beaches with a large tide range. On some beaches, strong rips flow between bars and sweep swimmers out to sea, whereas on other beaches the rip current develops a large circulating eddy within the surf zone. The risks posed to surf zone water users will depend strongly on the type of rip circulation. We hypothesise that rip currents are strongest when all wave breaking occurs on the bar and none of the waves break in the rip channel whereby the rip generation mechanism is maximized. This depends on wave conditions, tide and bar morphology. All three factors vary over time and even subtle changes in any of them may have significant repercussions for the rip circulation. The overall aim of this project, Dynamics of Rip currents and Implications for Beach Safety (DRIBS), is to test this idea by measuring rip currents under a wide variety of wave, tide and beach conditions, and complementing the data analysis with computer modelling.

We will conduct two 6-week field campaigns on high-wave, large-tidal beaches in north Cornwall where simultaneous coast-wide mass rescue events involving up to 150 people have occurred due to rip currents. Each experiment will measure waves, tides and rip currents in the surf zone and specialist GPS drifters will measure the complete rip current circulation. The drifter tracks will provide useful information on the strength and the type of flow rip current pattern. The drifters are designed to behave like human beings and their movement therefore mimics that of passive bathers. The information collected during the field campaigns will be used to develop a computer model that is able to predict the rip flow pattern for any given wave, tide and beach condition. This model will be used to develop tools for lifeguards to determine the rip current risk and develop risk management strategies.

This three year research project, funded by the Natural Environment Research Council (NERC), involves a partnership between the University of Plymouth (UoP) and the Royal National Lifeboat Institution (RNLI) that has been developed through previous successful collaborations (1). The partnership is mutually beneficial, with the RNLI providing field support, and input on dissemination strategies. The research findings will be incorporated into the RNLI's lifeguard training, public education programs, risk assessment procedures and resource management tools through a carefully researched and comprehensive impact plan. The project aims to provide an example of how impact-lead, academic research can provide groundbreaking science and save lives through a well structured working partnership.

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Measurements of rip current flow and swimmer behaviour in Australian rip current systems using low-cost GPS: implications for beach safety

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Rip currents are a global phenomenon on beaches characterised by breaking waves and are the major cause of beach drowning and surf rescue in many countries. According to Surf Life Saving Australia (SLSA) 94 coastal drowning deaths and 25,000 beach rescues took place in 2008–2009. Many of these were related to rip currents. In 2009, SLSA launched an ongoing national rip education campaign based on a behavioural response message for swimmers 'to escape a rip, swim parallel to the beach'. This message is traditional and common advice promoted around the world by various beach safety practitioners in regards to rip currents.

However, recent and state-of-the-art scientific research on rip currents on beaches in California, the United Kingdom and France using surf zone drifters with Global Positioning System (GPS) units attached showed that rip current flow exhibits a circulatory behaviour without extending beyond the surf zone (1). 80% of the drifters circulated back into shallower depths of adjacent sand bars within minutes. The implication of these findings was that swimmers should adopt a 'stay afloat' and 'do nothing' approach when caught in a rip current within the surf zone. However, this excluded considerations of swimmer reaction and behaviour when caught in rips. Subsequently a debate has been raised within the world of rip current education as to the appropriateness and preference of the 'swim parallel' versus 'stay afloat' responses for swimmers caught in rips. Furthermore, drifters are inanimate objects that may not accurately mimic the drifting tendencies of human beings. Few studies have used human 'rip floaters' to measure rip flow.

Australian beaches are characterised by a plethora of rip currents, but no study has attempted to measure the flow trajectory of GPS drifters and human 'rip floaters' in an Australian rip current simultaneously. Additionally, no study has attempted to test or quantify the 'swim parallel' versus 'stay afloat' response using real swimmers.

This study presents results from a pilot study conducted in a rip current at Bondi Beach in Sydney, Australia in September 2010. The aims of the study were to: i) test the rip circulation results of MacMahan et al. (1) in Australian open beach fixed rip currents by monitoring rip flow trajectories using GPS devices attached to drifters and human rip floaters; ii) directly compare the flow trajectories observed between the drifters and the human rip floaters; and iii) provide quantitative data and observations of the effectiveness of the following types of swimmer responses in rip currents: stay afloat and go with the flow and swim parallel to the beach.

A total of 114 GPS drifter deployments were made over two days with 96.5% of the drifters re-circulating within the surf zone. A total of 125 human floaters entered the rip over two days: 27 swam parallel to the beach to the left, 27 parallel to the right and the remainder simply floated. All of the swimmers reached the adjacent sandbars and 99% of the floaters recirculated. The study was conducted under unusually high wave energy conditions and a strong longshore current which likely affected results. However, the findings provide valuable direction for future similar studies using human rip floaters of various swimming abilities and can easily be replicated in different rip current environments.

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ID: 898 / Paper: 131

What we are selling? – The knowledge to save your life. A public education strategy for rip currents

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Ninety-four people drowned around the coastline of Australia in the 2008–09 season. Surf lifesavers and lifeguards conducted 13,600 rescues, stopped 446,900 people getting into trouble before they needed rescuing and provided first aid for 27,100 others (1).

Currently the safer place to swim is between the red and yellow flags (2), hence Surf Life Saving Australia's (SLSA) core message 'Swim between the Red and Yellow Flags'. This message has strong recall among the Australian population with 96% of beachgoers indicating that they know that swimming between the flags is important (3). It is also noted that 42% of beachgoers admitted to swimming outside the flags in 2007, a rise from 35 per cent in 2004 (4).

Swimming and wading is the highest reported drowning activity within SLSAs drowning data. An overwhelming majority of the rescue and preventative actions arise from swimming at ocean beaches with up to 89% occurring in rips (4). Given that only 4% of Australian beaches are patrolled by lifeguard and lifesaving services (5), many Australians and overseas visitors will visit and swim at unpatrolled beaches, thus requiring a key priority for any public safety strategy to be focused on rip awareness and education.

The complicated nature of rips such as the diversity of appearance, current direction and speed along with differing ocean conditions may explain why public safety messages are complex to develop and that people continue to drown because of lack of knowledge of rips. Much has been written about the nature of rip currents and the technical aspects of such currents however little research has been conducted into the social science and human behaviour when interacting with rips.

SLSA has spent the last 24 months working within a marketing and social science context to develop its latest strategy to educate all Australian about rips. The challenge in developing a campaign around this complex topic has required defining the degree of difficulty in communicating the different aspects of rip currents to the public, testing of appropriate messages and targeting various touch points in the communication process to the public.

This presentation will present the findings of this work, the messages chosen, the communications strategy and the resources developed as part of this nation-wide campaign. It will also discuss the difficulties faced by practitioners, marketers and researchers in the process of attempting to establish the most appropriate advice for rip current survival and the strategy dilemma in trying to find one key message which may have the greatest good for the greatest number.

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Surveillance and detection rates of beach lifeguards

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Background

Lifeguarding is critical to any water safety program, but it is nearly impossible for anyone to see everything that is happening in the sea; particularly when environmental, cognitive and physiological factors co-exist (1). In such conditions, a lifeguard's ability to process visual information, remain attentive and make sound judgments can be compromised (1).

Aims

This study determined the rates of detection of a 'drowning' individual by beach lifeguards, and whether differences exist in the scanning patterns of: i) Lifeguards in non-biased (no rip present) and biased (rip present) conditions, ii) Experienced and less experienced lifeguards, iii) Lifeguards from surf and non-surf beaches, iv) Male and female lifeguards, and, v) Those who did detect a person disappearing ('Detectors') versus those who did not ('Non-detectors'). It was hypothesized that i) Experienced lifeguards would perform better than inexperienced ii) A greater detection rate would be seen in the biased compared to non-biased condition iii) There would be no differences between the surf compared to non-surf lifeguards or male compared to female lifeguards with regard to scanning patterns or detection rates.

Methods

A mobile eye tracker (SMI, Germany) was worn by each lifeguard (N=69: 52 males, 17 females). They watched 12 minutes of animated beach footage projected onto a large screen in two conditions: i) Non-biased (uniform scene). ii) Biased (uniform scene with presumed rip on right side of screen). The lifeguards were informed that at any point in the 12 minutes a person may or may not disappear and to highlight if and where, a person disappeared. Unknown to the participants, a person always disappeared after 10 minutes at the same position within, but not between, conditions. Data were analysed using ANOVA and binary logistic regression. The time periods examined were 2–10 minutes and the time when the person was submerging (3.5s).

Results and Discussion

The detection rate of the different groups (i.e. male/females, experienced/inexperienced etc) of lifeguards was between 0% and 41.2%. Experienced lifeguards were five times ($P<0.05$) more likely to detect the drowning individual than inexperienced lifeguards. There were no significant differences between the visual search patterns of these groups between 2–10 minutes.

The specific detection rates for beach lifeguards averaged 16% in the non-biased condition and 29% in biased conditions ($P<0.1$); the drowning individual was twice as likely to be detected in the biased condition. The visual search patterns changed in the biased condition; experienced lifeguards searched more on the right of the water. Thus, the visual search pattern used by lifeguards can be altered by instruction and detection rates improve as a consequence. This suggests that a training programme for surveillance should increase detection rates.

Between 40% and 42% of the lifeguards did not detect the person disappearing, even though they fixated in the correct location in the final 3.5 seconds in both conditions. This suggests that that some lifeguards may have fixated on, but not processed, relevant visual data (looked but not seen). 25% of the lifeguards in the biased condition, and 36% of the lifeguards in the non-biased condition, did not fixate in the location of the person disappearing, but were able to identify their disappearance. This suggests that peripheral vision was being used effectively by some lifeguards.

Conclusion

All the hypotheses are accepted. Surveillance strategies are amenable to, and could be improved by, training.

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Safety behaviour to avoid drowning – Should we 'Float First' on accidental immersion?

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Introduction

Approximately 400,000 people accidentally drown in the world each year, many of whom are children and who fall in to water whilst clothed. This may be attributable to a lack of basic swimming capability and appropriate survival skills. However, low water temperature is also implicated in these drowning statistics as cold water triggers the 'cold-shock' response (2), disables breathing and reduces swimming capability (1). Therefore, it is sensible to 'float first' for the initial 2–3 minutes of immersion whilst cold shock subsides. The ability of immersed adults, children and adolescents to float in clothing is unknown but it remains possible that air trapped between clothing layers increases buoyancy. This study aimed: a) to quantify the buoyancy of clothed immersed individuals, b) to examine whether any inherent buoyancy is reduced with clothing layers and, c) to determine whether swimming on immersion releases any air present at a faster rate than remaining still (floating).

Methods

The buoyancy provided by four seasonal clothing assemblies was examined, before and after floating or swimming using a brief (20s) underwater weighing procedure with 12 males volunteers (age 22 (3) yrs, 1.78 (0.1) m, mass 75.7 (9.7) kg, body fat 14.0 (8.4) %) and 12 female volunteers (age 21 (3) yrs, 1.69 (0.1) m, mass 66.8 (9.7) kg, body fat 29.0 (4.0) %). The practical consequence of any buoyancy was measured by an assessment of freeboard (mouth to water level distance) and expressed as a percentage of occasions where freeboard was achieved. The float capability of children and adolescents who fell backwards in to a swimming pool and completed either a 'float only' condition or swam for 69 [14] s (25m) was also examined. Freeboard was used as the outcome measure. Sixteen males age 13 (3) yrs, 1.55 (0.2) m, mass 51.6 (17.2) kg, body fat 18.1 (5.3) % and 13 females age 12 (2) yrs, 1.51 (0.1) m, mass 45.1 (14.0) kg, body fat 24.3 (6.2) % were tested.

Results

Mean [SD] buoyancy (Newtons N) in each clothing condition on initial immersion was: Winter 105 [12]; Autumn/Spring 87 [13]; Summer 68[11]: all greater than the control condition; 61[11]. This diminished to a similar extent within-condition after floating or swimming; Winter 75 [17], Autumn/Spring 72 [12], Summer 68[9]; again all conditions were greater than the Control 61[11]. Average freeboard was Winter 63 [2] %, Autumn/Spring 62 [2] %, Summer 66[2] %, Control 15 [1] %; n=24), but showed variation due to gender, being lower overall in males (24[9]%) than females (88[30]%) due to body composition. Children were more buoyant (95 [17]% freeboard achieved), irrespective of gender, than adults and perceived the effort required to swim a short distance (24 [4] m) in clothes as being significantly more difficult (6 [2]) out of 10) compared to remaining still (3 [2] out of 10); likert scale from 1– easiest exercise to 10 maximal exercise.

Conclusion

Significant buoyancy is provided by air trapped between clothing layers and the consequent buoyancy remains higher than that seen in a swim suit (Control). 'Float first' on accidental immersion is recommended as a behavioural strategy for the first few minutes of accidental immersion. This policy is designed to aid immersed victims in the critical first 2–3 minutes of immersion when the 'cold-shock' response (2) is likely to be greatest, swim capability will be reduced (1) and swimming a short distance may be more difficult whilst clothed, particularly for young children. 'Float first' could be included as part of learn to swim campaigns as a basic survival skill.

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The responses of a group of 10 to 11 year old children swimming in cold water

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The physiological responses of adults to immersion in cold water are well understood (1). Extensive research has assessed the respiratory, cardiovascular and metabolic responses to initial and prolonged immersion (2,3). It has long been recognised that children differ from adults; physically, physiologically and psychologically and are considered more susceptible to cold-related illness and hypothermia (4,5). However, there is a lack of data on cooling rates in children swimming in cold water and of any evidence of a 'cold shock response' on initial immersion. Given that these are considered critical to an adult's chances of survival following immersion in cold water (6), it seems inadequate that the current understanding, management, and safety guidelines associated with paediatric immersion and cold-water-induced hypothermia remain largely theoretical or extrapolated from adult studies. With a cohort of children volunteering to train for a cross-Channel relay-swim, this project provided the unique opportunity for data collection in this area.

Following ethical approval, 17 volunteers recruited from applicants to the Bristol Channel English Swim Team (BEST), aged 10 to 11 years, who had had some previous exposure to cold water, were immersed in 15°C water for an initial five minute static period, after which 10 participants went on to swim for up to 40 minutes. Anthropometric profiles were taken of all participants. Measurements of deep body temperature (gastrointestinal radio pill), heart rate, respiration and oxygen uptake were taken throughout, and thermal comfort and sensation were recorded.
On initial immersion, mean (SD) respiratory frequency in minutes 1, 2 and 3 was 34 (10), 32 (12) and 29 (12) breaths. minute-1 respectively, with corresponding heart rates of 109 (14), 99 (13) and 98 (15) beats.minute-1. This compares to a mean resting respiratory rate of 16 (2) breaths.minute-1 and heart rate of 80 (8) beats.minute-1 recorded during the participant's pre-test medical. The 10 subjects who went on to swim, showed a mean deep body cooling rate of 2.5 (3.1) °C.h-1 in the latter part of their swim.

Six of the participants successfully completed the 21-mile relay swim from Dover to Cap Gris Nez in 13.5 hours on September 4th 2010, becoming the youngest team to swim the English Channel. Through further data analysis, we hope to provide a better understanding of accidental and non-accidental injuries resulting from cold water immersion in children. This work also provides advice for the recruitment of children into open water swimming as a competitive sport, as well as the risk assessment of any projects involving paediatric immersion in cold water.

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An evaluation of a community knowledge-based intervention on beach safety: The Science of the Surf (SOS) presentations

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Community knowledge relating to surf hazards, particularly rip currents, is known to be comparatively low even in countries with a strong beach culture like Australia. The 'Science of the Surf (SOS)' community outreach program, which was initiated in 2001 in Sydney, Australia, aims to educate beachgoers by providing them with basic scientific knowledge of how beaches, waves and rip currents work, with an emphasis on beachgoer safety. SOS involves a PowerPoint presentation, which is augmented at some beach venues with an on-beach demonstration involving purple dye being released into a rip current to illustrate the trajectory and speed of the rip. Since its inception, SOS has been presented to over 5,000 members of the community and 10,000 primary and high school students in New South Wales, Australia.

This study was an evaluation of the 'Science of the Surf' information presentations conducted for community groups during the summer season in January 2009. The main research question for this study was: Does a community-based information campaign improve the beachgoers' knowledge about the risks of rips, ability to identify rips, and intentions about where they will swim? This project surveyed attendees about their knowledge of beach safety before and after the presentations and then one month later to test recall of the information presented. The audience of eight presentations were surveyed, as were around 250 beachgoers from Sydney beaches who had not been exposed to the SOS presentations. Three of the presentations involved actual rip current demonstrations using purple dye, while all of the PowerPoint presentations contained the same time sequence photographs of similar dye releases.

The results of this study showed significant improvements in beach safety knowledge immediately after the presentations which remained high at a one-month follow-up survey. In particular, knowledge improved in areas that were specifically targeted by the intervention, including checking for rip currents, and the identifying characteristics of rips. The evaluation showed that the presentations were effective in increasing beachgoer knowledge of rips and that knowledge was maintained for at least one month following the presentation. There was some evidence, however, of increased confidence in swimming choices at follow-up as respondents were more likely to choose swimming outside lifeguard-patrolled areas at follow-up compared to pre-intervention.

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Admission standards – How to make it work

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Organization
The Royal Lifesaving Society has been the lead in the creation of this practice.

Background
After much research into drowning and several coroners investigations and legal case reviews the Society created this standard practice.

Aims
To create a standard policy and doable administrative system that would enhance the safety of those high risk age groups at aquatic supervised facilities. Target groups of this policy were 6–9 year old non swimmers.

Work is underway to establish this as a national standard.

Methods
The policy is adopted by facility owners and imposed on any bathers seeking admission. The policy has been implemented over the years but lately growing support from government has helped to push this policy into place in most facilities in Ontario.

Results
Reduced reported incidents in supervised facilities. Policy still needs to be adopted by government as a part of Regulation.

Discussion
This policy will continue to ensure those bathers who are high risk are directly supervised by guardians and this will help to reduce the incidents involving these young bathers. The challenge has been to create a doable administrative system that supports this policy.

Conclusion
Three level approach is the key: education at home, enforcement of policy at entrance to facility and lifeguard visual identification of those at risk through wrist banding.

Session Description
For many years the society has investigated drowning and water related incidents in lifeguarded settings. In 1996 the society published the admission standard that addressed the circumstances of many of these drowning with the hope that owner/operators and government would adopt this standard. Recently this standard was promoted by the regulatory agency in Canada as a standard seen to enhance safety and reduce the likelihood of drownings.

This presentation will review the society's and Coroner's Office recommended public pool admission policy, the background into the development of this policy and, most importantly, how owner/operators have made this work in their communities. Examples of signage, scripts and swim test standards will be included.

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The decision-making lifesaving protocol

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Introduction

Although in lifesaving training literature the importance of personal safety is identified, however, its importance doesn't seem to translate into lifesaving methodologies and abandoning a rescue appears only occasionally (4). Annually a number of rescuers get into trouble when attempting rescues because, in stressful situations individuals make errors for several reasons; they underestimated the risk, overestimated their ability, failed to select the safest option, tend to 'do things the way they always do' or the way they expect they should be done, freeze or engage in inappropriate activity (1, 2, 3). A protocol can provide a means of managing the identified weaknesses portrayed by individuals. It can act as a 'road map' that prompts rescuers with questions for specific information and offers specific choices at predetermined points in the process. Such a protocol would be beneficial to lifesavers in emergency situations as away of their training environment they have no guidance.

Aims

To construct a protocol that help rescuers manage the high-risk environment of the lifesaving scene.

Methods

A literature review was undertaken that included the, individual and combinations of, the terms: drown, aquatic emergency, lifeguard, lifesaving, rescue, stress, risk management and employment safety as key words to identify literature relating to individual's preparation for, reaction to, and behaviour under stress. Safety in the context of a work environment also proved to be a beneficial subject which resulted from the review. The search used academic and professional aquatic safety textbooks and research studies that are routinely available in libraries, academic electronic databases and search engines. The available literature was limited to those available and published in English. This search obtained more than 20 references that were used to synthesise the lifesaving protocol.

Results

The study suggested the following 10-step protocol: (1) Is there a problem? (yes, no). (2) Do I get involved? (yes, no), (3) Shout for help. (4) Assess the situation (casualties, rescue aids, hazards, own abilities, possibility of a 'dry' rescue, safe exit points, safe entry points). (5) Make a plan. (6) Tell someone the plan (emergency services, a reliable person at the scene). (7) Implement the plan (organise assistance, abort the rescue, carry out rescue). (8) During implementation reassess the plan (as information becomes available, as situation develops, aborts or carries on). (9) Aftercare of casualties and rescuer, (10) Post-incident review.

Discussion

The protocol considers rescuer safety as paramount. Accordingly, it builds abandonment into the process as a high priority option at decision points for the rescuer. This option is not often considered in educational literature. It gives clear steps and decision points for the rescuer to follow. It is easy to follow under stress by prompting the next step and providing options and questions for the rescuer.

Conclusion

This protocol provides a series of steps, which, if followed, will reduce the amount of risk to which a rescuer is exposed. Also, it indicates points where it is appropriate to actively consider exiting from the process. Finally, it follows a process, which guides the rescuer through the full rescue sequence including post rescue care and review of the actions taken.

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YMCA of the USA Aquatic Incident Surveillance pilot study

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Background

Despite decades of public health efforts, drowning and other serious aquatic incidents continue to claim the lives of too many children in the United States. There is currently no national surveillance system in place to capture accurate data on such aquatic incidents in public facilities with lifeguards on duty, making it difficult to develop targeted prevention efforts to reduce their incidence and severity.

Objectives

The objective of the YMCA Aquatic Incident Surveillance Pilot Study was to investigate the feasibility of establishing and maintaining a system-wide YMCA national aquatic incident surveillance system. The long term goal of the pilot study is to reduce the incidence and severity of aquatic incidents by using surveillance data describing the epidemiology of aquatic incidents to drive the development of targeted prevention efforts.

Target

The study was conducted with nine YMCAs located throughout the United States.

Methods

A reporter at each of the nine facilities was asked to log on to an internet-based data collection tool weekly throughout the study period to report exposure and incidence data using an incident report form and, for each aquatic incident reported, to report data on the victim, the incident, and the event. For the purposes of the study, a reportable event was defined as any incident in which advanced emergency medical assistance was provided on site or was called for. An online 'End of Study' survey provided reporters the opportunity to give feedback on their experiences with the study.

Results

Overall, three incidents were reported during the study. Of these incidents, only two met the study definition of a reportable event. Because the incident rate (2.6 incidents per 100,000 exposures) was so low and not all reporters completed an incident report form during the pilot study, reporters were asked to complete a demo incident report form prior to completion of the end of study survey. The online surveillance system was generally reported to be very easy to use. The majority of reporters were either very satisfied or somewhat satisfied with the internet-based surveillance system. The only reported difficulty with the system was one reporter who thought the login information was difficult to remember.

Discussion

Overall, throughout the study, reporters were compliant and required minimal amounts of researcher's time for auditing, indicating that the survey tool and internet-based data collection methodology are relatively easy/intuitive to use. Because of the low incident rate, a large national sample will be needed for future studies. The anticipated difficulty recruiting study participants will likely represent the greatest challenge and the greatest time burden associated with establishing and maintaining a national aquatic incident surveillance system. However, given the ease of use of the reporting tool and the low time burden of reporting, a case could be made for requirement of mandatory participation in a permanent/long term surveillance system utilizing a standardized incident report form.

Conclusion

The development and implementation of the pilot study demonstrated the value and feasibility of establishing and maintaining a permanent/long term national aquatic incident surveillance system. The development of such a system would provide the epidemiologic data needed to drive the development of targeted prevention efforts to reduce the number and severity of serious aquatic incidents in public facilities with lifeguards on duty.

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Lifeguard training effects on the physical and antrometrics at fire department of Rio De Janeiro

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Fire Department of Rio De Janeiro (CBMERJ)[1], Brazilian Lifesaving Society – SOBRASA[2]

Introduction

Surf Lifeguard course (CSMar) of the Fire Department of Rio de Janeiro (CBMERJ) has existed since 1983, where recruits enter through physical tests of aerobic capacity: TCA (Cooper, 1968); Test Repetition of Abdominal (RA) and Flexion Arm Ground in 1 minute (FBS) (Pollock, Wilmore and Fox, 1994); Repeated Bending Test of Arm in the Horizontal Bar (FBBF) (Aahper, 1976); 600m(T600) and 100m(T100) swimming time recorded at swimming pool; and 50m submerse swiming (A50)). Although, the training of strenuous running, swimming and muscular endurance run for hours throughout each training session so far there are no studies that measure or evaluate the indexes of physical fitness of students in order to establish whether the planning physical training program itself of course was effective or not.

Objective

To measure and evaluate the anthropometric measurements, physical tests and time of swimming in a group of students in the CBMERJ-CSMar 2007, before starting the course and after the intervention of physical training program.

Sample

Participants were 19 male volunteers, active military, aged 27.46 ± 3.32 years.

Materials

The subjects underwent assessments of anthropometric measures of weight (W), height (H) and skinfolds (triceps, subscapular, suprailiac and abdomen). The weighing and measuring of the stature were made through Filizola (Industry Filizola S / A, São Paulo, Brazil) with a capacity of 150Kg and precision of 50g. The Body Mass Index (BMI) was obtained by dividing weight over height squared (P / E) 2, and % BF was measured using a compass skinfold Lange (Cambridge Scientific Industries, Cambridge, MD) with accuracy of 0.1 mm, following the protocol of Jackson & Pollock (1985), neuromuscular evaluations consisted of TCA, RA, FBS, FBBF, T600, T100 and A50.

Methods

All samples were subjected before and after intervention with a time interval of 30 weeks. Measures were: a case history (CEFID, 2005???), PAR-Q, fat mass (FM), fat-free mass (MIG) and % G (Faulkner, 1968), P and E to calculate BMI (Bray, 1992), run test in 12 minutes (CT) (Cooper, 1968). The training program was progressive, with aerobic and anaerobic running in sand and at street as well as swimming in the ocean and pool alternate with a muscular endurance work pretty intense, five times a week for 30 weeks, with an average of three hours. Total work out has an average of 450 hours of training.

Statistics

Data analysis was performed using the t-student test ($p < 0.05$) paired. Data were expressed as mean, standard deviation, confidence interval (CI) of 95% and p-value of 5%. The software used for analysis was Microsoft Office Excel 2003. Results: There were significant differences ($p < 0.05$) at post-test on measures of P (77.03 ± 10.16 x 74.08 ± 8.30), MG (13 05 ± 4.13 x 9.82 ± 2.33),% BF (17.32 ± 2.41 x 12.85 ± 3.66) and BMI (23.50 ± 1.65 x ± 21.20 1.32), except in the MIG (63.98 ± 6.73 x 64.26 ± 6.43) when compared to pretest. But the TC (47.38 ± 3.66 x 58.21 ± 5.12), RA (53.87 ± 4.56 x 62.41 ± 5.25), FBS (43.63 ± 8.12 x 65.12 ± 5.11), FBBF (11.12 ± 1.32 x 14.53 ± 2.21) and A50 (41.55 ± 6.12 x 46.88 ± 2.56) an increase in its result ($p < 0.007$), the T600 (686.16 ± 83.48 x 591.63 ± 77.44) and T100 (76.26 ± 9.56 x 71.95 ± 7.35) showed a decrease in time ($p < 0.007$).

Conclusion

It is believed therefore that the training had an effect applied. We suggest further studies to develop, for the course on screen, assessment standards and exercises aimed at improving physical fitness of students in the CSMar CBMERJ in all its aspects.

Keywords

physical fitness, training, lifeguards, fitness test.

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Effects of training program on lifeguards of fire department of Rio De Janeiro

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Introduction

In recent years, there has been a decrease in the level of the Physical Fitness Test (FST). This test consists of estimating the performance of cardiopulmonary and neuromuscular military twice a year to assess the ability or resistance against a maximal effort physical exercise, especially in military administrative and operational functions. Among several reasons for the decreasing rates of TAF, there is a lack of monitoring of a professional education for the prescription of physical training.

Objective

To investigate the changes in the values of VO2max. and the physical qualities of strength and muscular endurance of the abdomen and upper limbs in lifeguards (GV) of the Fire Department of Rio de Janeiro (CBMERJ) after a program physical training wave.

Sample

Participants were 43 males, 21 were insufficiently active working with the administrative tasks (control), mean age 26 ± 2.25 years and 22 individuals sufficiently active, practicing moderate exercise 3–5 times a week with a mean age of 27.21 ± 3.32 years.

Materials

The subjects underwent the following initial and final anthropometric measurements: weight measures (P), height (H) and percent body fat (% BF) through the skin fold (SF) (chest, abdomen and thigh). The measurement of P and E were performed through Filizola (Industry Filizola S / A, São Paulo, Brazil) with a capacity of 150Kg and precision of 50g. The BMI (Body Mass Index) was obtained by dividing the P on E squared (P / E) 2, and% BF was measured using a compass skinfold Lange (Cambridge Scientific Industries, Cambridge, MD) with accuracy of 0.1 mm, following the protocol of Jackson & Pollock (1985).

Methods

All participants volunteered for the study and underwent a wave of progressive strength training for endurance three times a week and aerobic running on asphalt and swimming in the sea, five times a week for 24 weeks of training. All samples were subjected to the following tests: 12 minute run (CT) (Cooper, 1968), arm strength in the flat bar (FBBF) (Aahper, 1976), abdominal flexion in 1 minute (RA) and flexing of the arms soil (FBS) (Pollock & Wilmore Protocols, 1993), measured at two different times: before the intervention and post-intervention. Statistics: For data analysis we used the paired Student t test and non-test ($p < 0.05$). Data were expressed as mean with confidence interval (CI) of 95% and p-value of 5%. We used the program Excel for Windows for statistical analysis.

Results

The analysis of results showed that there was a significant difference ($p < 0.05$) among all anthropometric measurements of BMI and% BF and physical abilities investigated (CT FBBF, RA, FBS) between those two groups.

Conclusion

Based on results, the FBS showed the highest variation, followed by VO2max., RA, and FBBF G% after the intervention period. We suggest further studies to develop assessment standards and exercises aimed at improving physical fitness in terms cardiopulmonary and neuromuscular performance of military operational and administrative functions of CBMERJ.

Keywords:

training, lifeguards, fitness test.

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Risk management solution for drowning and injury prevention

Grant Florence[1]

Surf Life Saving New Zealand[1]

Background/Introduction

SLSNZ has identified that two of four possible casual factors associated with drowning relate to people's ignorance, disregard or misunderstanding of the hazard and because they are uninformed or have unrestricted access to the hazard. These factors are integrated into SLSNZ National Lifesaving Plan. Unfortunately many people drown at beaches throughout the country at locations that have no lifeguarding patrols in place, thus they are faced with the risks of hazard misunderstanding and/or information/restriction.

Aims/Objectives

SLSNZ over the last two to three years has set out to develop an evidence based solution that implements a risk management model and information management system that addresses these casual hazards. This solution has the requirement that it must be able to be applied to any coastal location, regardless of any other environmental factor.

Target

The target for the solution is any person who visits/works/lives in the coastal environment regardless of age, gender or ethnicity. A supplementary target are those Governmental and non Governmental agencies that have responsibility for drowning hazard identification and management. In addition all tourism operators who promote access to safe coastal environments as part of their offer.

Methods

SLSNZ Coastal Public Safety solution now has been applied to over 120 coastal environments in New Zealand. The database integrated to this solution is now by far the most sophisticated source of intelligence relating to beaches on New Zealand. In doing so it captures in depth data relating to environment, hazards, human usage, swell and human activity profiles, facilities and infrastructure and emergency management. This location specific data when applied to water safety related standards and guidelines results in the automatic production of an accurate long term action plan for each location assessed that addresses the evidential risks and actions required mitigating these risks. As an expansion this solution is currently being trialled (with the cooperation with other community parties – Coastguard New Zealand and Accident Compensation Corporation of New Zealand) in the blue water environments of ocean bar crossings and small vessel/boat launch and retrieval. The solution will be migrated to a technology platform and infrastructure so that it is accessible to New Zealanders through the Internet, mobile and sms services providing 24/7 access to this information for all.

Results/Evaluation

The measurement of success and effectiveness of this solution will be a) reduction on coastal drowning rates (both fatal and non fatal), b) independent programme audit, c) quantity and consistency of control measure implementation across New Zealand.

Discussion

SLSNZ has a goal to complete the location specific assessments across in excess of 500 coastal locations in the country. The result will provide a greater reach of hazard risk assessment and reduction that that currently provided through its patrolling services. The solution has the ability to be applied to any location in any country that the casual factors, as outlined in the introduction to this abstract, are relevant.

Conclusion

With the support of key stakeholders and learning from the evidence we are confident that any longer term drowning prevention initiatives will be targeted and meaningful. The Coastal Public Safety solution is about making evidence based decisions to achieve a positive public safety outcome.

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Assessing the application of safety standards in Australian aquatic facilities

Matt Griffiths[1]

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Introduction

The Guidelines for Safe Pool Operation (GSPO) was first published by Royal Life Saving in 1991 and is widely considered the minimum standard for safety in commercial and public swimming pools across Australia. Royal Life Saving uses the Aquatic Facility Safety Assessment (AFSA) to assess the application of the GSPO in facilities based on 227 questions across 12 sections covering aquatic facility design and operations.

Aims

1. To provide a measure of the current application of standards by industry compared with previous years.
2. To identify specific areas of concern from the results of the AFSAs conducted over the three years to March, 2010.
3. To assess the value of a regular policy of regular external auditing via the AFSA.

Method

Royal Life Saving utilises an automated system to complete the AFSA and results are uploaded to a web server. The data was collated from the results of AFSAs conducted between 1 April 2008 and 31 March, 2010. Random samples of one hundred facilities were selected for the twelve month periods of 1 April, 2007 to 31 March, 2008 (2008), 1 April, 2008 to 31 March, 2009 (2009) and 1 April, 2009 to 31 March, 2010 (2010). A statistical analysis was completed to identify key measures of facility performance.

Results

The results demonstrated an increase in the mean compliance from 2008 to 2010. Of the five core sections of the AFSA activated by all facilities, including the Administration, First Aid, Technical Operations, Facility Design and General Supervision sections, four demonstrated a trend of continual improvement. Technical Operations showed a decline in mean compliance from 2009 to 2010 and it was identified that this may be attributed to signage related questions. Questions assessing the use of signage in aquatic facilities consistently reported compliance 10% lower than the mean compliance for all assessments. In many cases, signage often failed to meet the minimum standards for compliance as outlined in the GSPO. Facilities that had undertaken regular assessments demonstrated continual improvements over the three year period. Facilities assessed every year reported a mean compliance in 2010 16.1% higher than those facilities assessed for the first time. The most significant improvement in results was demonstrated in the second assessment; however each subsequent assessment continued to show improvement.

Discussion

The results demonstrate a continued improvement in the application of safety standards in aquatic facilities. It is, however, concerning that facilities are still non-compliant in approximately 15% of the assessment. Those facilities assessed regularly via the AFSA demonstrate the value of the AFSA in addressing compliance issues. Signage items consistently report lower results in the AFSA and therefore the process for determination of what signage is appropriate for each facility through detailed risk assessment may warrant further support by Royal Life Saving. Further research needs to look to segment results based on the different operating conditions of aquatic facilities. This will provide additional opportunities to benchmark individual performance, as well as providing a basis for future policy development. Any future study should also look to validate these results as representative of the entire Australian aquatics industry by utilising a sample of facilities randomly selected from a range of areas, management models, operating periods and age to assert that the facilities represented in this report are representative of the entire industry.

Conclusion

The results of the AFSA over the three years have demonstrated a steady overall improvement in the level of compliance with the GSPO. Those facilities who have committed to an annual auditing process demonstrate the benefit of regular external assessments and how it assists facilities to achieve industry best practice.

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ORAL PRESENTATION

ID: 1064 / Paper: 277

Near-drowning at Jacob Riis park – A case study of physical fitness needed by oceanfront lifeguards

Carl Martinez[1]

U.S. DOI/National Park Service[1]

Endurance capacity in swimming is generally considered to be important for successful outcomes in oceanfront lifeguard work. But so, too, is endurance capacity in running. A near-drowning incident at Jacob Riis Park shows why. Lessons learned from that incident may be useful to others elsewhere. Specifically:

1. The rigorous performance yardstick used at Jacob Riis Park to measure preemployment endurance capacity in running, is a good indicator of potential to handle the physical rigors of on-the-job emergencies. But it is not a guarantee.
2. Daily on-the-job training should include elements that build upon, and also increase, the endurance-capacity minimums in running and swimming measured for in the preemployment test for Jacob Riis Park oceanfront lifeguards.
3. Lifeguards should be prepared to respond immediately to life-threatening emergencies – minus motorized equipment. For that equipment may not always be where it is needed, nor when it is needed.
4. Where the saving of human life is concerned, one should prepare for the unexpected. That is, for what is possible – and not only for what is probable. For, at worst, one will simply be over-prepared.

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Development of an open-access server-based tool capable of providing standardized risk assessment services worldwide

Ana Catarina Queiroga[1,2,3,4], Fernando Martinho[1,2,3,4] and Rui Seabra[1,2,3,4]

EPES, Escola Profissional de Economia Social Academia José Moreira da Silva, Porto, Portugal[1], AsNaSA, Associação de Nadadores Salvadores Patrão de Salva Vidas Ezequiel da Silva Seabra, Matosinhos, Portugal[2], AsNaSA Portugal, Associação Nacional de Salvamento Aquático, Matosinhos, Portugal[3], GISA, Gabinete de Investigação em Salvamento Aquático da ASNASA Portugal[4]

Worldwide drowning data collection is still a difficult task. Nevertheless, even the low quality data reported from developing countries already clearly indicates that drowning is a major problem on these areas (1). Furthermore, the expected increase in the frequency of catastrophic events related to climate change should adversely impact drowning prevention efforts, especially on developing countries (2).

The evaluation of hazards presented at beaches, or in any other aquatic environment, is of paramount importance to promote water safety, being a cornerstone to any comprehensive water safety promoting plan. Such relevance is reflected on the numerous calls for the worldwide implementation, standardization and dissemination of Risk Assessment Methodologies (3). It is clear that RAMs are indispensable to water safety promotion on developing countries, by providing knowledge-based assistance and guidance essential to risk mitigation (3).

Since RAMs are processes still highly dependent on skilled know-how, they remain largely inaccessible to developing countries, whose budget constrains and strategic priorities leave little margin for investment in this area. Contrastingly, studies have shown that most environment-related beach hazards can be reasonably predicted using current scientific knowledge on beach systems (4,5). Consequently, providing developing countries with these services requires innovative approaches that optimize the cost/benefit ratio.

This work comprises the development of an open-access server-based tool aimed at providing free risk assessment services worldwide. The online tool is fed by a set of parameters including location specific environment-related parameters (estimated using oceanographic, meteorological and morphodynamic data), as well as human-related parameters (demographic, economical, safety services availability and beach usage information). As some of the data is to be retrieved from existing internet-based databases, the appropriate tools for automatic data retrieval were developed. This means that for a large number of the parameters the user is only required to geographically pinpoint the selected study site (providing GPS coordinates via free web geographical applications). Additionally, in order to standardize the gathering of the remainder user-dependent information, a form was developed. Care was taken to make the form as user-friendly as possible, following a guided step-by-step approach. The final output is a Risk Assessment Sheet freely provided to the user upon data input.

It should be noted, however, that the adoption of standardized RAMs 'such as the one hereby described is an explicitly pragmatic approach, as its applicability depends on the acceptance by all stakeholders that a slightly less detailed risk assessment is better than no risk assessment at all. This is of extreme importance since the development of inexpensive RAMs could potentially facilitate the bridging of the gap between the highly technological developed countries and the highly disadvantaged developing world, ultimately contributing to save lives worldwide.

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Why delivering accredited training helps to save lives on NSW beaches

Pamela Simon[1]

Surf Lifesaving NSW[1]

Surf Life Saving New South Wales (SLSNSW) is the state's major water safety and rescue organisation, and with over 70,000 members is one of the largest volunteer movements in the state. With over 5000 people rescued last year and more than 100,000 preventative actions performed, the role of surf lifesavers in NSW is essential to saving lives.

SLSNSW have been certified as a Registered Training Organisation, delivering Certificate II, III and IV in Public Safety under the banner of the Australian Life Saving Academy NSW, including a number of Health Training Package Units of Competency.

The primary focus of the Australian Life Saving Academy NSW is to provide high quality, cost efficient vocational education and training for our members, employees and commercial clients.

Why do enterprises become Registered Training Organisations?
SLSNSW encourages and supports their volunteers to complete formal training, which directly contributes to its ongoing viability, ensures we are in line with best practice and can gain the edge over other volunteer competitors. In particular, the benefits of SLSNSW's commitment to support volunteers attain qualifications:

1. Enhances our performance by recognising, valuing and better drawing upon the skills and knowledge of our volunteers
2. Fosters a strong and vibrant organisational culture by improving morale
3. Encourages the standardisation of training and development of our volunteers
4. Increases the attractiveness of our organisation to prospective volunteers

What does this mean in expanding the Australian Skills Base?
Formal training for volunteers has begun to assume special importance, both as a requirement of the volunteering role and as a motivation to volunteer. A trainer of volunteers not only facilitates competency strengthening but also contributes to motivating volunteers by helping them to achieve and maintain satisfaction in their roles.

We also invest in our members by encouraging them to upgrade their skills, educating them in the requirements of compliance, using them as mentors for aspiring trainers and assessors, and recognising their excellence through our annual state and national awards program.

We believe that a volunteer who is competent in their role, and recognised for their competence, will have more of a reason to continue to volunteer than one which is under stress bacause of lack of understanding and skills. At SLSNSW, we make the most of what our volunteers know and this has obvious benefits for both the volunteers and our organisation.

The six key steps to integrated and aligned Registered Training Organisation operations.

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Out of position

Perry Smith[1] and Michael Shane[1]

Royal Lifesaving Society Canada[1]

Organization

The Royal Lifesaving Society has lead this research and resulting modification of practices.

Practice

Owner and operators of supervised aquatic facilities have improperly positioned lifeguards which in some cases has led to reduced safety in these facilities and sometimes major incidents.

Why need for work

By establishing criteria for the placement of lifeguards and identifying common mistakes operators make in their placement, operators can reduce the likelihood of poor positioning and enhance safety in their facilities.

Need

There is a need for this work because poor positioning of staff is often one of the contributing factors in water related incidents. Staff are either stationed poorly or caught out of position which lead to an incident because staff fail to witness an incident.

Aims of work

To identify the common mistakes made by operators and establish factors in successful placement of supervisory staff.

Target

Owner/operators of aquatic facilities and trainer of lifeguarding personnel. This work impacts all agencies and communities that provide supervisory personnel.

Method

This presentation will identify factors that need to be communicated to supervisory personnel and training agencies so that they are able to focus their efforts and education on placement of personnel. Common mistakes will reinforce the appropriateness of this information.

Results

Modifications to national programs, literature have occurred. In addition, operators have modified their training and procedures for facility supervision. Continued education of operators is still required.

Discussion

By using additional examples and educating operators we will reinforce the importance of this practice. The challenge is to ensure all facilities undergo this evaluation and reassign if required their supervisory personnel. Often if nothing is happening(incidents) then operators fail to conduct this evaluation until it is too late.

Conclusion

Lifeguarding personnel are often out of position and poorly stationed. Several factors have lead to these poor decisions and real life examples will reinforce these poor decisions. Positioning criteria will be reviewed.

Session Description

One of the common mistakes made in pool or waterfront operation is the improper positioning of lifeguards during recreational swim activities. Whether it's at a pool or lifeguarded waterfront this session will review the Life Saving Society Positioning Checklist that will help supervisory personnel evaluate lifeguard positioning. A variety of influencing factors (glare, swim testing, activities, design, etc.) will be discussed and a real life example will be used to illustrate this application.

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ID: 516 / Paper: 418

Improving swimming pool management understanding of Health and Safety legislation through attendance at the RLSS UK National Pool Management Qualification (NPMQ)

Diane Standley[1]
Royal Life Saving Society United Kingdom (RLSS UK)[1]

Background/Introduction
The lack of knowledge in both, understanding and compliance with law, regulation and guidance in managing swimming pools.

Program
The RLSS UK National Pool Management Qualification, (NPMQ).

Aims/Objectives
To ensure that all candidates that attend the course have a full understanding of their legal obligations with regards to the management of a swimming pool environment and in addition they understand their employers' legal obligations in the same regard.

Target
The qualification is aimed at any level of manager in a swimming pool environment. The qualification is delivered in the UK and Ireland with courses being delivered in Bahrain and requests for courses in the UAE.

Method
In 2008 RLSS UK commissioned a survey due to changes in legislation, specifically Corporate Manslaughter and Corporate Homicide Act 2007 (and subsequently the Health and Safety Offences Act 2009). The survey asked questions of Senior Managers, General Managers and Junior Managers in all sectors of the UK pool industry operation. Together with case study evidence where operators have found themselves in court, increasing insurance costs and claims, the survey was commissioned as a 'health check' for RLSS UK members. The results highlighted a disparity of knowledge between senior management and front line management.

The qualification was written as the survey results clearly identified some worrying knowledge gaps in both understanding, and complying with, law, regulations and guidance. Having a responsibility to the industry we serve, RLSS UK Ltd has developed the NPMQ to provide a solution to the difficulties the swimming operators face. The content of the qualification is based directly on the gaps that were indentified in the survey results. Using feedback from the industry, advice from Health and Safety professionals and regulatory lawyers, the qualification took two years to create. After completing and passing an online foundation element the RLSS UK NPMQ is a four day course involving four specific subject areas relating to the management of swimming pools.

Element 1 – The Principles of Risk Management
Element 2 – Managing the Team
Element 3 – Understanding the Law
Element 4 – Serious Incident Management System

Following each day all candidates undertake an individual assessment and on day four of the course all candidates complete an end of course assessment. Each element concludes with a management toolbox which is designed to be used back at the leisure facility. The toolbox contains a plethora of sample templates that assist operators with their compliance of legal requirements relating to the management of swimming pools and their environments. So this is not just an academic course but it's also a functional programme of learning that can be quickly applied in the workplace. The course combines traditional Tutor presentation techniques plus video presentation, individual and group work and the use to e-learning. The RLSS UK NPMQ is managed and administered by IQL UK, a fully owned trading subsidiary of the RLSS UK.

Results
The RLSS UK NPMQ has been delivered to over 250 candidates since January 2010 with a considerable amount of courses planned for the remainder of 2011. Feedback has been excellent and suggests that the course meets the objectives of the swimming pool operators in the UK. It is the intention to re-run the survey in 2012 to establish if the disparity of knowledge has reduced. The structure of the RLSS UK NPMQ can be replicated in non aquatics environments and the principles of the course can be applied outside of the UK for all aquatic environments.

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Surf rescue emergency response system – A strategy to reduce coastal drowning deaths in New South Wales

Dean Storey[1]

Surf Life Saving NSW[1]

In an Australian first, Surf Life Saving New South Wales (SLSNSW) has implemented a 24/7/365 Surf Rescue Emergency Response System aimed at enhancing the response of surf rescue resources to coastal emergencies that occur at unpatrolled beaches/locations or after service hours. The Surf Life Saving Australia 2009 Coastal Safety Report (1) has identified that of the 46 people who drowned on NSW beaches during 2008–2009, 40 (87%) occurred at unpatrolled beaches where/when no 'on-duty' lifesaving services were immediately available. Swimmers caught in rip currents and rock fishermen swept from rocks feature as the main contributors to this toll. The average annual coastal drowning figure has increased over the past decade and NSW continues to hold the highest coastal drowning rate in Australia.

Surf Rescue services across the state are often the most appropriate and well positioned resources to respond to coastal (inshore) emergencies, however historically the awareness of – and communication to – these resources by NSW Police as the search/rescue authority have been informal, inconsistent or non-existent. As a result the most appropriate surf rescue resources were not being notified of incidents, or significant notification delays were occurring. Today the Surf Rescue Emergency Response System facilitates the coordinated response of surf rescue resources along the 2137km of coastline and 721 accessible beaches of NSW. This is done via one 24/7/365 'point of contact' (phone: 13SURF) which NSW Police uses to notify 'surf rescue' resources of a coastal emergency anywhere in the state. 13SURF is not a public phone number, but rather an internal emergency service number for police use.

The delivery of the system is twofold. Firstly a small team of qualified and experienced lifesaving personnel (volunteers) are rostered on shift as State Duty Officers (two at any one time). These personnel take the emergency response calls and task the most appropriate surf rescue resources. Secondly a team of full time staff manage the communications, IT and data systems from the SLSNSW State Operations Centre in Sydney. This infrastructure ensures accurate contact information and data is always held by the State Duty Officers and that 100% of emergency calls from police are taken within 30 seconds. Importantly, resources available and activated by this Emergency Response System extend beyond just SLSNSW assets, and relationships with other surf rescue organisations and emergency services are paramount to the success of the system.

Surf Rescue resources include:
- Paid Lifeguard service (SLS/Council)
- SLS Volunteer Lifesaving Clubs
- SLS Emergency Callout Teams
- SLS Regional Duty Officers
- SLS Rescue Water Craft Units
- SLS Offshore/Jet Rescue Boats
- SLS Helicopter Rescue Services

This initiative has and continues to involve the cooperation of a number of levels of government and peak body organisations, including:
- NSW Police (Marine Area Command, Police VKG's, PolAir, Local Police units)
- NSW Council Lifeguard Services
- Surf Life Saving Australia (SLSA)
- Marine Rescue NSW
- State Emergency Service (SES)
- NSW Government – Department of Sport and Recreation & Industry & Investment
- Australian Government, including the Department of Health and Aging (DOHA)

Lives Saved

Since its inception in January 2008, over 600 emergency response requests have been made by NSW Police through the system, with hundreds of lives saved that would have otherwise been lost. The success of the Surf Rescue Emergency Response System in NSW has seen the model adopted in other States across Australia – forming a new 'standard' in 'surf rescue' response operations nationally. In June 2010 SLSNSW received a Surf Life Saving Australia Innovation Award for this initiative.

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Coastal drowning prevention through comprehensive risk management

Adam Weir[1] and **Norman Farmer**[1]

Surf Life Saving Australia[1]

1. The risk of drowning (fatal and non fatal) on the coast has many contributing factors
2. Risk management concepts of hazard, uncertainty and opportunity based risk collectively provide opportunities for drowning prevention.

In many countries of the world people have settled by the coast. For example in Australia more than 85% of the population live near the coast and our tourist beaches alone receive an estimated 100 million visitations every year. The 56,000km coastline of Australia, while an attraction for living and visiting, has it inherent largely unpredictable risk.

Risk assessment techniques that use a range of data inputs to underpin risk analysis and evaluation are vital to addressing public safety treatments at beaches and along the coast. Coastal risk assessment is now a vital process for identifying, analysing and evaluating risk to human life on beaches and the coastline.

Risk assessments have been provided by SLSA to coastal land managers and developers for more than a decade. These assessments involve the following steps:

1. Determine the minimum acceptable level of risks and potential injuries at the location through completion of a risk assessment in accordance with recognised guidelines, standards and best practice;
2. Provide economically sustainable risk mitigation options;
3. Provide recommended staging plans considering the environmental conditions, forecast settlement areas, beach access and usage;
4. Review the status of aquatic safety and signage management;
5. Evaluate the level of compliance or non-compliance with relevant regulations and standards;
6. Reference material and resources;
7. Relevant standards including ISO 20712-1-2008 and AS NZS ISO 31000-2009;
8. Consult with relevant community stakeholders including volunteer surf life saving clubs, beach safety liaison committees and other community organisations involved in or impacted by beach safety.

In recent times SLSA has invested significant resources in further developing its Coastal Public Safety Risk Assessment services. This includes:

1. Spatially enhancing the Australian Beach Safety and Management Programs beach database, containing close to 12,000 individual beach locations. This enhancement provides SLSA with a Geographical Information System containing data on every ocean beach along the coast of Australia.
2. Ruggedised computer hardware for field use during the provision of coastal public safety risk assessment. This hardware provides connectivity for assessors to access SLSAs databases in the field as well as allowing once only data entry from the field.
3. Instant report production – once risk assessment data has been collected in the field reports can be immediately produced and taken to the land manager for discussion.

Risk assessments are beneficial in providing land managers with the detail necessary for them to understand and deal with issues surrounding coastal safety and drowning. By continuing to offer this service to land managers around the Australian coast, land managers are provided with evidence and implementation plans required to help address all quadrants of the drowning cycle, providing an holistic approach to coastal drowning prevention. SLSA has also developed a course in Coastal Risk Assessment which is offered to all interested parties. The course provides participants with the relevent skills and knowledge to provide coastal public safety risk assessment. In recent times SLSA has also provided coastal public safety risk assessment services internationally, assisting Lifesaving Society Korea in its annual coastal audit process.

The next step is to trial these practices in less developed and developing nations to validate the hypothesis that coastal risk management concepts, techniques and actions are effective in drowning prevention irrespective of geographic, demographic and socio-economic conditions.

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Developing a knowledge-based and scientifically supported standard for safe operation of recreational aquatic facilities: Progress of the US model aquatic health code project

Jill White[1]

Human Kinetics/SAI[1]

Background/Introduction

The U.S. Centers for Disease Control and Prevention (CDC) is working with public health and industry representatives across the United States to build a Model Aquatic Health Code (MAHC) (1). In the United States, there is no federal regulatory authority for recreational aquatic venues, and no uniform standards governing the design, construction, operation, and maintenance of swimming pools. Existing code requirements for safety, drowning prevention, and responding to recreational water illnesses (RWIs) can vary significantly. The MAHC will provide data-driven, knowledge-based, risk reduction guidance to prevent disease and injuries. The effort stems from a CDC-sponsored workshop convened in February 2005, to discuss ways to minimize RWI's spread through disinfected swimming venues. In May 2007 a ten member Steering Committee was established to plan MAHC development.

Aims/Objectives

The aim is to develop a MAHC that is user-friendly, knowledge-based, scientifically supported, and free and accessible to all. The objective is to transform varied swimming pool regulations used by U.S. health agencies into a uniform model national code. Transparency and communication are achieved through a public access website.

Methods/Implementation

The MAHC Steering Committee guides the work of various Technical Committees.

The Steering Committee members set priorities, create and advise the Technical Committees, and appoint chairpersons. The Steering Committee exercises editorial control of Technical Committees' products to ensure that developed materials are written uniformly and fit the MAHC's mission.

Eleven Technical Committees provide specialized knowledge. The Technical Committees determine the scientific basis, if any, for existing recommendations, identify scientific information gaps, and outline research needs.

Clear rules of engagement are established for the committee participants, which include wide geographic representation and variety of professionals (epidemiologists, environmental health professionals, operators, suppliers, designers, engineers).

Modules are released as completed, which allows prioritization, and keeps a sense of progress. The update process allows all interested stakeholders to submit position papers and vote on modification of the MAHC.

Progress

Draft modules posted for comment include: 1.0 Preface, 2.0 User Guide, 3.0 Definitions, 6.1-Operator Training/Annex, and 6.5 Fecal-Vomit-Blood Contamination Response/Annex.

Discussion

The MAHC will drive reductions in RWI and injuries, needs for training and education, needs for epidemiological and environmental health surveillance systems, data collection and analysis to support recommendations, data-based decision making, performance based approaches to aquatic facility design and operation, and creation of a research agenda.

Potential exists for a similar international effort. Given the range of international needs and conditions it is unlikely that a single code could be established, but water safety experts could gain much from an international collaboration to standardize swimming venue health and safety practices (2).

Conclusion

The MAHC will serve as a model for local and state agencies in the U.S. needing guidance to implement a pool code in their jurisdiction. The process will create a repository of best practices for operation, including the potential for collaboration on an international effort.

Acknowledgements and Leadership

MAHC is funded through a grant from the National Swimming Pool Foundation.
The Project Director is Douglas C. Sackett, New York State Department of Health.
Steering Committee and Technical Committee members are listed at www.CDC.gov/healthyswimming/MAHC

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European Qualification Framework (EQF) – For the lifeguard profession

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The European Qualifications Framework (EQF) acts as a translation device to make national qualifications more readable across Europe, promoting workers' and learners' mobility between countries and facilitating their lifelong learning.

The EQF will relate different countries' national qualifications systems to a common European reference framework. The core of the EQF are eight reference levels describing what a learner knows, understands and is able to do – 'learning outcomes'. Levels of national qualifications will be placed at one of the central reference levels, ranging from basic (Level 1) to advanced (Level 8). It will therefore enable much easier comparison between national qualifications and should also mean that people do not have to repeat learning if they move to another country.

Following the level of the EQF and considering the ILS-Certificate-System a European version for the Lifeguard Qualifications has been developed.

Our concept has been submitted to the EU/Directorate-General for Education and Culture. The assessment was positive.

This was an important recognition of the work of the ILSE-Lifesaving-Organisation and gives a chance for a support by the EU Leonardo da Vinci and Grundvig Programmes.

The developed system would be also of great interest for other regions of ILS.

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Leadership in lifeguarding for optimum swimming safety

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Introduction

Drowning is a universal and leading cause of accidental death worldwide. Several decades ago, some people believed that a key to improved safety of those swimming was at hand merely through the hiring of lifeguards. Eventually, most aquatic agencies realized that another key to improved water safety is the careful training and supervision of these lifeguards.

In fact, this author argues that we also need a head or lead lifeguard, who will guard, or supervise, the lifeguards.

Aims

To identify the factors that determine and constitute effective leadership in lifeguarding.

Conclusions

The present review proposes that lifeguard leadership is needed for the operation of a lifeguard team to deal with issues of prevention, rescue and treatment. Lifeguard leadership can be learned, and is not the result of an inborn 'charisma'. The factors that determine and constitute effective leadership in lifeguarding are related to the lifeguard leaders personal qualities, the way that the lifeguard team and the daily responsibilities are handled, the leadership decision styles, the type of situation that needs to be addressed and the quality of judging the effectiveness of the lifeguard team (1).

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Teaching rescuers how to treat a drowning swimmer with a near-death experience: A review

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Introduction

Swimmers who became drowning casualties have sometimes reported near-death experiences (NDEs).

Aims/Objectives

To enhance water safety professional's competence regarding the phenomenon of NDE, to identify and suggest NDE-sensitive teaching and practical recommendations both during and after a drowning resuscitation.

Method

The key words drown, near-death experience, CPR, and teaching were used in the undertaken literature review that used sources that are routinely available in academic libraries and electronic databases (e.g. Medline, Sport Discuss, PsychINFO and PubMed). The selection process was based on the following criteria; (a) literature published in USA where NDEs are well researched, and (b) literature covering recommendations about the features of NDE and the resuscitation of swimmers who became drowning victims.

Results

A number of coping strategies are suggested that enable resuscitation and first aid teachers, professional rescuers and lifeguards to provide more quality services to individuals with NDE after a drowning episode. We provide recommendations for the way that resuscitation should be taught and performed, assuming that the casualty might be having an NDE, and for providing effective aftercare to an unconscious drowning casualty, a conscious casualty that cannot verbalize, and the recovered drowning casualty who had an NDE.

Conclusions

Given that about 10–30% of successfully resuscitated drowning casualties have had NDEs, water safety teachers and rescuers can be best equipped to provide the highest quality care to future resuscitants if they are armed with NDE-related knowledge and skills. Also the great majority of reported NDEs suggest a profoundly pleasurable existence beyond physical death, one to which nearly all NDErs look forward to returning when their life's work has been completed. Thus, when water safety professionals inevitably encountered victims who could not be saved, they might very well be comforted to know that any ongoing conscious experience on the part of the victim was most likely of a profoundly pleasurable nature.

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Life saving medallion: Icons or relics?

Shayne Baker[1]

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This presentation will provide delegates with an insight to the impact of the lifesaving bronze medallion throughout the lifesaving regions of the world. Since ancient Roman times the presentation of medals (or medallions) have been presented to individuals to commemorate or recognise achievements of note, be it in the conflict between nations, religious occasion, competition or commemorating some other event.

Throughout history there are 'enough medals to cover just about every subject, no matter how broad, or how narrow' (Johnson 2010). Any topic you choose ranging from aviation, music, space, Olympics, religion, military conflict/service, fire fighters, paramedics and of specific interest – lifesaving.

In lifesaving many organisations have included recognition of achievement by individuals through the awarding of a medallion of some description – many adopting the Bronze Medallion as an indicator of an individual's status within the organisation in achieving a benchmark qualification.

This provides the community with some assurance that any trained lifesaver on-duty meets the standard expected in terms of fitness, knowledge, technology and techniques that can be utilised in the case of an aquatic emergency. Beyond this application people have a genuine interest in earning and displaying medals not only because of the inherent value and recognition derived from the source, but also from the inherit characteristics of medals.

Characteristics such as:

- Accuracy – in the detail
- Bilateral – janus like with two sides
- Permanence – resilient in the material
- Intimacy – due to size and personal focus
- Narration – the picture depicts a story
- Perspective charm – art in miniature
- Commemoration – the celebration of achievement
- Image – status, image
- Beauty – artistic
- Longevity – long lasting memento

Then again is the attraction merely because they are miniature works of art that can be held in the hand?

This display will highlight the characteristics of the specific artefact as well as provide some insight into the history that is part and parcel of the lifesaving organisations that they represent.

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Lessons learned

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Royal Lifesaving Society Canada[1]

Who undertook this research?

The Royal Lifesaving Society Canada has undertaken this research by investigating major aquatic incidents and drownings at supervised sites over the years.

The Issue

There was no consolidation of data from these incidents and no resulting change to policy or training because no organization actually tracked this data nor came forward on a consistent basis to offer recommendations to aquatic facility operators.

Community participation

Many of these operators who suffered these losses came forward and helped confirm the details and often helped deliver the presentations and recommendations.

Aims of work

To gather data, determine similarities in these incidents, and formulate recommendations that will reduce incidents and water related drownings. Often regulatory change, operational modification and education were the result.

Target group

For the most part the public, aquatic facility operators, and government were the target markets. This was focused first as a provincial action but became issues became national.

What did you do

Water related incidents were reviewed and several selected as representative of several key issues. Recommendations were formulated and passed on to operators. These real life situations showed how incidents can really happen and the learning that can result. This learning resulted in changes to regulation, procedures which in turn reduced the frequency of these incidents.

Monitoring

Drowning statistics for supervised facilities where the focus of our work. In addition unsupervised sites were also examined and standards developed.

Achieved it objective

Change is slow and so some improvement has occurred.

Benefits

Real life examples have visually shown supervisory staff that incidents can occur and the review of these incidents have helped shape policy and regulatory revision thereby enhancing safety in aquatic facilities.

Challenges

The fear to share with others and be judged along with the legal implications of data sharing has been the challenges. By reinforcing that they can help others to perhaps change the way they do things and save a life has helped.

Conclusion

There have been several policy and regulatory changes. A new admission standard for aquatic facilities imposing more responsibility on the guardian is one major change.

Description of session

This session will review major aquatic related incidents that have occurred in a variety of aquatic settings including swimming pools and waterfronts. Each case will be reviewed in detail and with the help of diagrams and photographic resources the circumstances of each incident will be identified. Discussion will then centre around the lessons we have learned as a result of these incidents and the regulatory, guidelines and operational changes we have made to enhance safety and reduce the likelihood of this type of incident from re-occurring. The session will focus on a review of the 'Lessons Learned Resource Guide' which contains, case descriptions, photographs and a training strategy for aquatic staff training sessions.

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Do bystanders help or hinder at the scene of drowning incidents? A review of Irish press reports

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The Lifesaving Foundation[1]

If a lifesaver has to deal with a rescue the most likely assistance available will be a bystander. Because of the hazardous nature of lifesaving incidents, lifesaving trainees need to be trained to a standard which is fit for purpose. Accordingly, the lifesaver's operating environment needs to be established and understood as is the likelihood of what occurs at the rescue scene. However, no research has been found which deals with what occurs at the rescue scene or what assistance is available. Therefore, there is a need to fill this information gap.

To identify the environment in which lifesavers operate and to establish what happens at the rescue scene in Ireland. A review of 149 newspaper reports of aquatic rescues undertaken in Ireland between 2002 and 2007 was undertaken. Forty-four of these reports were of rescues undertaken by individuals, not by the emergency services. A literature review identified the assistance which, good practice would suggest, rescuer should seek. It also indicated the reactions of individuals under pressure. By calculating the chances of different types of risks this gives lifesavers an indication of the risk associated with them.

This study established the chances of events occurring and what is likely to happen in a rescue situation. Lifesavers require the following eight types of information:
How do individuals react at the scene of a rescue? (1, 2, 4)
Are the emergency services actively summoned or do they arrive on the initiative of some third party? (2, 3).
Is information sought from bystanders? (5)
How do helpers perform at the scene? (1).
How amenable are individuals to being organised? (1)
Do they accept instructions or directions? (1)
How often do rescuers require assistance?
In what locations are lifesavers likely to attempt rescues?

Discussion

This approach gave an indication of what occurs at the rescue scene in Ireland in a given period. It can be replicated in any geographic area and utilised at any time in the future. Repeating the procedure will allow comparison over time or geographic areas.

Conclusion

The results of this study give an indication of assistance available at the rescue scene and how beneficial it is likely to be. It also suggests that in most cases the rescuer will operate alone. In a small number of cases good quality help is forthcoming, but in a small number of cases the bystander intervention can be extremely dangerous. The rescuer needs to make sure the emergency services are summoned to ensure their own safety.

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Irish Water Safety for the providing the newspaper cuttings used for the research project.

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Life saving imagery on postage stamps

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Introduction

We are all familiar with the postage stamp, they come in a wide variety of sizes, images and value. In 1837 an English schoolmaster (Roland Hill) invented the adhesive postage stamp and subsequently created a uniform postage rate based on weight which made the prepayment of mail postage possible. While early stamps were a one colour picture of the King or Queen of a country they have morphed into colourful, vibrant depictions of the world around us. It is estimated that there are currently over 500,000 different stamps which have been produced.

The imagery used on stamps is varied, it depicts significant events in a country's history, honours those people and organisations who have contributed to the richness of their culture; they sometimes depict those tragedies where the whole nation mourns, and some are fun, depicting popular culture such as people or scenes from movies. This iconography builds a country's character and helps define what is considered important, reflecting those ideals for which a country celebrates its own uniqueness.

Aim

This presentation explores the use of life saving imagery on postage stamps from across the world.

Method

The definition of lifesaving use for this paper revolved around those acts (such as rescues) or items which are or can be used to help save a life, this may include but is not limited to items such as lifejackets, lifebuoys, boathooks, rescue boats. While other items such as lighthouses, communication devices, and bridges all provide a role in reducing drowning deaths they were not included in this round unless expressly stated they were used as a lifesaving or rescue device.

Also included were stamps depicting lifesaving organisations, drowning incidents and those aquatic activities related to lifesaving. However first aid and medical stamps not directly related to an aquatic environment or organisation were also excluded (i.e. there was no water involved or they were being undertaken by a non-aquatic organisation).

Results

To date 102 stamps from 36 countries have been found. The earliest date is from Romania in 1931, which was issued as part of a five-stamp set about boy scouts and depicts a boy scout carrying a young child out of the water to a waiting mother. The money raised from stamps was used to help pay for a Boy Scout Exhibition in 1931 in Bucuresti. It is also interesting to note that throughout the year lifesaving and scouting has been linked on postage stamps reflecting one of Lord Baden-Powell's original skills for scouts. There is a wide diversity of the images and purposes of the stamps including: people being rescued from floods (e.g. Algeria 1969) – often the money raised from these stamps was used to compensate victims of the flood; the removal of dead bodies following the 1997 sinking of the MV Bukoba ferry in Tanzania where over 500 people died – the stamp is a memorial to those who died in the disaster and the rescuer who had the job of removing the dead; stamps depicting significant events in an organisations life, such as the 150th Anniversary of the formation of the HM Coastguard in 1972, the 1963 lifeboat conference at Edinburgh, 75th Anniversary of Royal Life Saving in Australia in 1966, or the 250th anniversary of General Eliott who in the image is directing rescue operations at the Great Siege of Gibraltar (Gibraltar 1967).

Discussion

Each stamp provides a unique insight into the perception of lifesaving around the world, from the heroic acts of rescue to the equipment used. As organisations involved in the promotion of lifesaving we should not underestimate the positive and important impact that stamps can and do play in promoting our work. We should continue to seek opportunity to promote the important role of lifesaving via the humble postage stamp.

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Taking a health promoting perspective on Danish lifesaving culture

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The objective of this master thesis is to investigate whether a development of a Danish lifesaving culture in general can promote health, including changes in the population's knowledge, behavior and attitudes towards swimming and water safety. Drowning accidents are the second most accident-related cause of death in Denmark (1). We find that there are three major reasons for this: the Danish population's poor swimming proficiency, the lack of a lifesaving culture and, last but not least, the lack of interest in lifesaving eligibility from the government. We apply the phenomenology and philosophical hermeneutics as a scientific theory fundament (2). Our study is qualitative and we carry out observations (3) in swimming clubs and on that basis, we perform nine interviews with informants who have knowledge on the subject of lifesaving. Our research task is characterized by a mixture of reflective practice and case study(4) based on the organization TrygFonden Surf Lifesaving and Danish Swimming Federation.

Results / Evaluation

The work is evaluated through: Meaningful coding – communities of practice, learning, progressive Phronesis and practical qualifications (5, 6). Meaning condensation – what should a Danish lifesaving culture consist of / criteria for when a culture is created. Meaningful interpretation – responsibility for water safety / swimming safety, attitudes to swimming proficiency and how the implementation of practical steps is to be done. We have met our objective by defining a Danish lifesaving culture and how it is articulated and made apparent in the Danish population. To some extent a Danish lifesaving culture exists, but it is very fragile and fragmented and restricts itself to being an operational culture. TrygFonden Surf Lifesaving's operative part is an emergency regime, while the informative part rates through wider dissemination, prevention and education of the population. The future priority must be on the educational part of surf lifesaving as the acquisition of knowledge and practical skills promotes a more sensible behavior in and around water.

Discussion

The greatest challenge is that the field of lifesaving is new, therefore, the cornerstone of this research is the empirical work. Because of the lack of relevant literature, we have compensated by making a sufficient number of interviews. The literature in this area is limited to manuals and therefore is not of academic nature. The research has external validity (7) because it produces new knowledge and can be transferred to lifesaving abroad and in relation to development of other sporting cultures. Including health promotion (8) in relation to lifesaving can give people an understanding and awareness of the coast and make people able to translate knowledge and practical skills into action (9). That is to master safe interaction in and around water for oneself and others. Because of the extent of the research and the time limit of nine months we have had to make selections continuously throughout the process. The full extend of the research is better suited for a Ph.D. We would then involve other important Danish surf lifesaving services to get their opinions about the matter.

Conclusion

To improve the Danish lifesaving services internal competition is needed. Lacking coordination, structuring and exchange of experiences is a significant part of the problem. Surf lifesaving is a seasonal phenomenon and therefore only a fragmented part of the consciousness of the government and the Danish population. Not prioritizing the restoration of swimming pools and the devaluing of practical measures such as school swimming lessons has contributed to deteriorating public swimming proficiency. Finally we lack knowledge about mammalian behavior and movement in and around water. With this knowledge and the development of a Danish lifesaving culture, it is our belief that we can prevent many fatal drowning accidents.

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A comparison of performance on a 200m combined test with and without outer clothing

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Introduction

Most people learn to swim in quiet water, often a pool. Most people drown in open water, not always warm and not always quiet. The transition may be too great. We could, as our fathers and grandfathers did, swim more in open water. In several ways teaching in open water is even easier than in a pool, though it may not be possible in some climates much of the year. One of the elements we can approach more systematically is swimming with clothing. The aim of this study was to compare performance on a 200m combined test with long armed shirt and long trousers to only with swimming costume.

Methods

Sixty three (n=63) Grade 8 youth (14yrs old), swam the 200m combined test; a) roll into deep water, recover the surface and level off, b) swim 100m on the front, c) stop and rest three min, half on the back, half on the front, d) level off and swim 100m on the back, e) exit the pool over the side. Each element was awarded three points and results were recorded. A total score (max = 15) was compiled. This was performed by the subjects with only a swimming costume first and within 10 days, again with long armed shirt and trousers. The total score on both trials was compared using the Mann-Whitney U test for group mean differences to assess the degree to which these tests measure different qualities. The two trials were also correlated using the Spearman technique to determine to what degree success on the first trial could predict success on the second trial.

Results

This is a study in progress which will be finished in Sept/Oct 2010. From paired data points plotted from the first subjects tested, the group differences appear to be relatively great (showing that the one test measures different qualities than the other).

Discussion

Something is missing in our approach to teaching swimming when we see stable or increasing drowning incidence rather than reduced incidence. Many aquatic educators assume too much in terms of the protective quality of certain swimming elements, especially stroking. We unquestionably need to focus more on such general qualities as breath control and buoyancy control. However, most critical is the focus on specific survival techniques (of which there are many that are essential and appealing to children and youth). Swimming with clothing is one element which commonly receives too little focus. It is well known that in most societies the largest number of drownings occur in connection with involuntary submersion. This means the victim is clothed.

Conclusions

The results of this study suggest that swimming with clothing is sufficiently different from swimming only in a swimming costume to warrant specific and frequent attention.

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Fining bathers who disrespect the signs can make Brazilian beaches safer?

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In Brazil, from 1996 to 2006, there were 69,901 deaths by drowning, 39% were in natural waters (beaches, rivers, lakes and dams). For every drowning death there were a greater number of aquatic incidents with less severity(1). One of the major steps to reduce these numbers is the use of flags signaling the risk to accidents on beaches and in-land waters: green flag – light hazard; yellow – Medium hazard; and red – High hazard. But does this approach have a good impact on the bathers or is more severe assistance needed or even a police officer to curb the high rate of drowning in Brazil? In Spain, at 'Término Municipal de Cangas' the 'Ordenanza de uso e disfrute das praias' was created – a set of rules that regulate the use of beaches, which includes the application of fines to bathers that do not respect the signalizations, with values ranging from 60 to 300 Euros for minor infractions to 3,000 Euros for very serious infractions (2).

Objective

The aim of this study is to investigate the Brazilian society's opinion about the use of a fine to bathers that disrespect the flags signaling system and undergo to the risk of drowning, especially in the red flag.

Methods

Descriptive and interpretative research realized in Brazil, by information collected in two distinct groups that act in drawing: Group 1 – lifeguards interested in life saving and group 2 – beaches' bathers. The group 1 was interviewed via internet between 6–13 April, 2009 and group 2 between 8–11 August, 2010. Both questionnaires asked whether the application of a fine to the swimmer who does not respect the flags' signs could help to decrease the number of drowning on Brazilian beaches. The collected data was treated by software Microsoft Excel.

Results

In group 1 was interviewed 133 people qualified as: 23.08% of International Lifesaving Community to Prevent Drowning (CIPASS), 6.29% of Brazilian Community of Bodysurfing (CBSP) (4), 17.48% of free professionals, 23.08% by lifeguard and 30.07% of pool lifeguards. From these, 83.92% were male and age superior to 21 years old. In the answers, 75.52% marked that fine bathers who disrespect the flags' sign system could contribute to reduce the number of downing. In group 2, ninety people by a community beach (called 'Piscinão de Ramos') were interviewed, with age superior to 21 years old. 52% were male. 90% agreed that the application of a fine to someone who does not respect the flags' signs could help to decrease the number of drowning.

Conclusion

It is possible that the bathers pressured by a fine's payment, can increase the safety and importance, represented by flags, making the aquatic leisure areas more safe, which can positively enhance tourism and the image of Brazil internationally. This survey's research provides us an evaluation of the opinion by professionals who work in lifesaving as well as those who daily are exposed to the risk of drowning – the bathers, and both pointed directly in favor to reinforce the strongest actions by the State to the preservation of life in this environment. A national survey including a greater number of people, from different social levels and behavior profiling, in different aquatic areas of ocean beaches or not, to test this hypothesis more broadly in Brazil is needed to verify if this action could really contribute in reducing significantly the number of drowning in Brazil.

Keywords

drowing, education, prevention, environment, flag signalization

Enlace Web

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Photo: Matthew Smeal/RLSSA

Swimming and Water Safety

Swimming and water safety education has long been a feature of lifesaving programs in high income countries. These programs are driven by swimming and water safety agencies through school and community systems that seek to build skills with dual goals of protecting against drowning and preparing children for safe aquatic recreation activity.

The Swimming and Water Safety stream includes: advances in swimming and water safety research and policy development, specific teaching techniques and program development, and the role of organisations in this important field.

The Swimming and Water Safety theme is proudly sponsored by AUSTSWIM

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Real and perceived swimming competence among young adults in New Zealand: The Can You Swim? Project

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Background
In developed countries with ready access to water, aquatic recreation is generally perceived as an indicator of a healthy lifestyle even though the risk of drowning is omnipresent. In New Zealand, youth have been identified as at particular risk of drowning because of their propensity for aquatic recreation (Moran, 2009). In the five years from 2003 –2007, a total of 41 New Zealanders aged 15–19 years were fatally drowned. Of these, 66% of victims were male, and most of the fatal incidents (73%) were recreation-related (Drownbase, Water Safety New Zealand, 2009).

While swimming competency is strongly advocated as a critical factor in drowning prevention, little is known about youth swimming competency, their perceptions of that competency and how it might impact on their risk of drowning. The relationship between swimming ability and drowning prevention is further complicated by the lack of concise definition as to what it means to be able to swim in the context of drowning prevention. Traditionally swimming ability has been defined in terms of distance swum and in many studies this ability is self-reported. It was the purpose of the international feasibility study entitled the Can You Swim? Project to explore what constitutes swimming ability and trial ways of measuring 'real' and 'perceived' competency. This paper reports on the New Zealand findings with particular reference to young adults.

Method
The subjects (n = 68) were assessed in a two-part study using an initial self-complete questionnaire that consisted of 20 questions and was designed to provide student self-estimates of seven swimming and survival skills competency (distance swim, flotation, swim on back, dive entry, surface dive, underwater swim, and contact rescue tow) as well as perceptions of how they could perform these practical skills in open water. The second phase of data gathering consisted of a practical test of the same seven swimming-related competencies.

Results
One half of students considered themselves to be good/very good (n = 28; 41%) or excellent swimmers (n = 6; 9%). In comparison, almost half of the students (n = 29; 43%) could swim more than 300m non-stop in the 15 minutes time allowed during the practical test. Analysis by Spearman rank order correlation found moderately strong associations between real and perceived swimming competence (p = .787), and floatation competency (p = .532), both significant at the 1% level two-tailed. Less than half easily completed the 100m back swim on back (n = 30; 44%), the underwater swim of 25m (n = 26; 38%), or the contact rescue tow of 25m (n = 25; 37%). No significant gender differences were found in practical swimming-related tests.

Discussion
Self-estimates of swimming compared well with actual measurements. Similar proportions were obtained for those who thought they could swim more than 300m (estimated 41%; actual 43%). As was the case with all but one of the self-estimated swimming competencies, no significant differences were found in actual swimming-related competencies among male and female students. While the association between real and perceived swimming and floating competencies were quite strong, estimates of other aquatic skills assessed (such as underwater swim and surface dive) did not closely correlate with actual performance.

Conclusion
This is the first study of its kind that attempts to relate perceived swimming competency with real swimming competency among an age group that are generally identified as at high risk of drowning. Further research is required to determine whether the model used for assessing swimming competency is appropriate in the context of drowning prevention, and whether the evidence of an association between real and perceived swimming competence found in this study is consistent across other populations.

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Everyone Swims: Changing policies to increase access to swimming lessons and water recreation

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Background/Introduction

Swimming is a lifetime skill, provides opportunities to be active, opens a door to countless opportunities for water recreation, and is recommended for people with chronic conditions and obesity. It is also a key skill in preventing drowning. Drowning is the second leading cause of unintentional injury death among children in the United States, Washington State and King County. The Wall Street Journal reports that 70% of African-American children and 58% of Hispanic children have little or no swimming ability compared to 40% of Caucasian children (2010).

The goal of the Everyone Swims project is to leverage policy change to improve water recreation access for those at higher risk for obesity and health disparities. It focuses on low income and culturally diverse children, youth and families throughout King County with issues accessing swimming and swim lessons, water recreation and boating programs for exercise like rowing or kayaking. Nineteen percent of the King County population and up to 46% in the focused communities of this project are living at 200% below the federal poverty level. Creating linkages between obesity prevention and injury prevention is critically important to addressing health status on multiple levels. Swimming for exercise and drowning prevention is a great example of how healthy lifestyle and injury prevention can share similar goals.

Project Objectives:

- Change parks and recreation policies for scholarship eligibility. Policy changes that will streamline this process include simpler guidelines, information in multiple languages and scholarships for multiple people in one family
- Develop referral mechanisms from community health clinics to swimming pools and water recreation programs
- Change policies and practices in community clinics to include screening at the five and six year old well child check for swimming ability
- Develop a system to address barriers to swimming and water recreation and enhance access. We will focus on free swim lessons, gender-specific swimming, and water recreation for youth or adults who are obese

Methods/Implementation

Almost twenty pool, water recreation and community health clinic partners are working together to develop and implement policy and system changes. A needs assessment with project partners and with culturally diverse families identified barriers and opportunities and helped in developing and prioritizing system and policy changes (1,2). We will share the needs assessment findings, model policies and initial progress by pools and clinics in pursuing policy and system changes. This project will be evaluated by the actual changes that are made. For example, one community health clinic has added swim screening to the electronic medical record which systematically ensures that the question be asked and addressed.

Conclusion

We are focusing on policy and system changes to improve water recreation and swimming access that can be achieved and maintained. The partnership with multiple community health clinics and pools helps ensure that the proposed work addresses key barriers for families and is achievable.

Acknowledgements

We want to thank our pool and clinic partners in Seattle and King County for their commitment to the health and safety of children and families. Made possible by Communities Putting Prevention to Work obesity prevention funding from the Department of Health and Human Services and Public Health Seattle & King County.

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The 'Note and Float' drowning prevention program

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Aquatic Safety Research Group

National Recreation and Park Association[1], National Swimming Pool Foundation[2],
National Association of Underwater Instructors[3], Penn State University[4]

The Note and Float program is a free, water safety program that has been piloted in the USA and is sure to save many lives. The program was created out of frustration caused by too many young non-swimming children drowning in swimming pools, water parks and open-water areas right in front of parents, and/or lifeguards.

Highlighting this problem are security camera video tapes showing children drowning with appropriate and professional supervision in close proximity to the victim. Another reason for the program is the documentation of two forms of 'body blindness' in the water: one is Physical Body Blindness caused by the 'ripple effect' on the surface of the water, the other is Cognitive Body Blindness caused by common visual errors. The vitally, important lifesaving program is encouraged to be required at all swimming facilities.

The note and float program is both simple and free. Whether the aquatic facility is private or public, the following six steps should be followed*:

1. Upon entering the swimming facility, all non-swimmers must register
2. Parents/guardians of non-swimmers receive site specific water safety information along with 'Learn-to-Swim' information
3. Parents/guardians are advised to supervise their children within arm's reach
4. Non-swimming children under 48 inches tall receive identifying wrist bands and properly fitting lifejackets (USCG approved). Guardians must accompany them into the water
5. Non-swimmers ages 8–12 must wear identifying wrist bands and lifejackets but guardians may be on the premises in close proximity but are not required to be in the water
6. Anyone who wishes to access deep water regardless of age or height, must either pass a swim test or wear a wrist band and lifejacket

* The above six steps may be modified slightly to accommodate different aquatic facilities and populations. This program was launched at Penn State University at its large outdoor pool open to the public in 1999. Since then the City of Winston, North Carolina, PA has adopted the program in its nine inner-city pools. Likewise, Upper St. Clair, PA has adopted the program.

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Pools 2 Schools Pilot: A journey of participation, partnership, performance, and pleasure

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Background

The number of school pools closing is increasing and the access to water space for schools is reducing. Most New Zealand school pools were built in the 1950s and now need financing to upgrade. Some schools fundraise, others close their pools. Low decile schools cannot afford swimming lessons at local pools.

Pilot Project

WaterSafe Auckland took a 10m by 6m portable pool to a school in Papakura for Term 1, 2010. Redhill School is a decile 1 (lowest), full primary with about 250 students, many of which are transitory as they live in Housing NZ homes.

A literacy and numeracy package accompanied the pool allowing the Heath and Physical Education activities to become the focus for cross-curricular learning.

Layers of Protection

Several layers of protection were introduced to decrease drowning or injury risk. The first was that the pool height was 1.3m and the sides were not climbable. The steps were removed each night and locked away in a classroom. The pool had to comply with the Fencing of Swimming Pools Act 1987. The end fence had a child-proof gate and was padlocked at night. It did not go around the pool but was fixed to the marquee sides. Compliance was granted by the local council staff.

The whole complex was under the security cameras. As each layer of protection was different this helped to make the pool safer. People had to overcome each one of these barriers if they wanted to gain access.
An unexpected layer of protection was the development of the unofficial neighbourhood watch group. This showed the sense of pride that there was in the school and community. Redhill area has three gangs and is a decile 1a school.

Teaching and Learning

About 900 children per week had lessons and about 700 children a week swam at lunch times. It was very popular. A number of togs and towels were supplied so that those who did not have were not discriminated against. The school taught both water confidence and learn to swim in the pool. Water safety was added for middle and senior students. Teachers were given professional development to be able to teach their own classes.

Pilot Outcomes

There were a number of positives in having the pool at the school. The juniors swam every day, a buddy system was introduced with seniors, there was a pride, excitement, sense of unity; time was saved and because there were no buses required it was much cheaper. Home partnerships were developed and cross-curricular opportunities including maths and science, language, writing and design. There were issues with the depth of the pool, the numbers in the pool, the temperature, clearance and teaching access and water testing. Extra teacher duties were required due to the popular lunchtimes and the school had a lot of interested visitors, local councillors, press and neighbouring schools.

The Future

A new pool has been purchased, and funding has been sought to replicate the model in other areas of Auckland. The new pool is 3.9 x 9.5m which allows side access for teachers. It has a lockable pool cover with isolated fencing. The plumbing and heating is enclosed on a trailer and pool platforms and rubber mats have been sought. Other accessories such as lifejackets and boards have been provided.

Conclusion

The pilot was a definite success. It showed schools without pools can have a facility at their school for a limited time and exceed expected outcomes for both students and teachers. This model is a successful answer for school without pools.

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The use of portable pools to increase swim learning: The SwimSafe Danang Experience

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Introduction

The numbers of children who are at risk of drowning and would benefit from the protection conferred by SwimSafe survival swimming are in the tens of millions in Vietnam alone. There aren't sufficient pools or natural water bodies to teach this large number of children, and the resources and time required to construct the number needed is not available. The Safe Danang program began an operational research program to examine the feasibility of using portable pools as an alternative. This reports on the activity.

Methods

An operational research program across three different countries, Bangladesh, Thailand and Vietnam, has been underway for three years to test, modify and develop portable pools. The program has focused on safety aspects of teaching young children, suitability for use in different environments, cost, durability and developing implementation experience in urban and rural settings.

Results

Details of various aspects of the longitudinal program in three countries will be presented for discussion at the WCDP.

Conclusions

Portable pools are an effective way to provide the necessary water sources for safely teaching children to swim. They have a number of advantages over other alternatives: controlled water depth, excellent water quality, and a very safe training environment. The costs are significantly lower than in-ground pools; they have unique safety advantages for teaching young children and have an expected durability of five years. When safely sited in primary schools where large numbers of children can be readily accessed, it is possible to safely train large volumes of children in SwimSafe survival swimming at low cost.

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Hoi An Children's Swimming Program – A sustainable & scalable swimming program in Vietnam

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Tribob Children's Swimming Program[1]

Background

Drowning is a major issue in Vietnam where it is the major cause of death in children under the age of 18. The Tribob Hoi An (Vietnam) Children's Swimming Program was initiated in 2008. With only a limited budget and the help of experienced foreign volunteers, the program has expanded and grown over the last three years.
As well as successfully teaching over 1500 children both swimming and water safety skills, the program in 2010 included local swim teacher training and group teacher training workshops with an outcome of international accreditation (Austswim). Lessons commencing in 2011 will be conducted by the newly trained local swim teachers, local management team and assistance from volunteers for ongoing training.

Aims and Objectives

The initial aim of the program was to provide children in Hoi An with basic swimming and water safety skills which could help save their lives.
Our future objective is to develop local swimming programs which are locally sustainable throughout the province and eventually all of Vietnam.

Target

Our target is to expand throughout Quang Nam Province in Central Vietnam by establishing ten new swimming pools, thereby making the swim program available to over 10,000 children. We are on track to achieve this within the next few years.
We have developed over 40 local swimming teachers. Our target is to double this in 2011 and also to up-skill five local swimming teachers to become swimming teacher trainers.
We will be establishing a water safety tour for the primary schools in the region where we envision educating over 100,000 children in water safety principals over the next three years.

Methods/Implementation

The program is run in cooperation with the Local Education Department of Hoi An. The children attend a course of 18 swim lessons as part of their school curriculum. Initially the swimming lessons were conducted by a partnership of local teachers and foreign volunteers. However as local teachers have been sufficiently trained, this system has become more locally self sustaining with ongoing training and support to ensure teaching quality is of an international standard. Now, in the third year of the program, the lessons are conducted by the local teachers with foreign volunteers mainly providing training workshops and courses for local teachers. The program was initiated by Joanne Stewart, who is from Scotland, now a local management team is being developed, with the aim for the entire management structure to be local within the next two years, with minor ongoing support from the organisation.

Results/Evaluation

The program started by successfully teaching 300 children in 2008 and this has expanded to over 700 children in 2010. Children are assessed on the first and final days of their course so results are constantly monitored and shared with local government. Each year discussions are held with the government, teachers and volunteers as to how the program can be improved. The program has reached its initial short term goals however as the program has grown and evolved new goals and targets are now in place with further reviews to take place.

Discussion

This is one model for a scalable and sustainable swimming program. It has systems and strategies in place which could be replicated in other regions and possibly other countries. The key to this is local participation and support. The use of foreign volunteers can be helpful in developing a local team of trained swim teachers. However the main aim should be having the program locally self sufficient within a three year time frame with ongoing support if required.

Conclusion

This program is a highly successful model for a charitable swimming program which is locally self sustaining and can be set up utilizing a limited budget.

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The Sri Lanka Women's Swimming Project

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Sri Lanka Women's Swimming Project[1]

Aim & Target Population

The community-based Sri Lanka Women's Swimming Project (SLWSP), was founded by Christina Fonfe' in the aftermath of the 2004 Asian Tsunami. The Project began in Weligama and is now currently located in the small coastal town of Habaraduwa, on Kogala Lake, and in Galle, the provincial capital.

The aim of the project is to reduce drowning by teaching women and teenage girls to swim so that they, in turn, can teach their own children and families to swim. The best are trained as swimming teachers to international standards and this provides an immediate micro-economic benefit and elevation of social status to those women in the community. Five years on, in Jan 2011, the Project is to set up a residential Women's Swimming Centre to accelerate the output of female swimming teachers.

Background

Swimming is not a universal skill in Sri Lanka; in the recent Tsunami, 80% of the fatalities were women (1). In cultures where females are chaperoned away from male company and who wash whilst clothed at the well or beach, there are few opportunities for women to learn to swim, whereas boys grow up in a world of agility; girls do not swim or climb trees (2). In the tsunami, some women who survived the first wave, drowned through fears of immodesty, not leaving the water when its force had removed their outer garments (3).

Discussion

The focus on teaching children first is laudable but introduces a decade of delay before any can be trained as swimming teachers; moreover, even without a man in the house, women, not children are the keystone holding the family together. Overall, then, the drowning survival odds are stacked against women by culture and couture, as evidenced by the last tsunami. The critical paths are the shortage of female swimming teachers, the need to teach women out of sight of men and the unsuitability of western teaching methods geared to competition rather than survival.

The SLWSP has adopted the following four point policy to reduce drowning:

- Teach women and teenage girls first
- Teach people to float-and-breathe first, then how to swim
- Qualify female teachers to international standards which include rescue and CPR
- Embed the project in a rural coastal community

Implementation of Swimming Methods

Current research (4, 5) indicates that floating and breathing should be the immediate reaction to sudden unexpected immersion in water. This fits with the International Federation of Swimming Teachers Association 2010 definition of 'Can Swim Safely' as a 10 minute float and 100 metre uninterrupted swim (6), the benchmark used by the project. When fatigued, such a swimmer can always float as required. Initial instruction takes place on a one-to-one basis, which guarantees a near 100% success rate in achieving a balanced float in the first or second lesson. Swimming on the back is then developed into bilateral front crawl using the Total Immersion Method (7). Each student has to bring a friend and then teach the newcomer what they have learned; this reinforces the instruction, lays the foundation of what a mother will teach her children and identifies future potential swimming teachers.

Conclusion

The SLWSP has addressed the need to reduce death by drowning by placing the skill of teaching swimming in the hands of 1,700 mothers or future mothers, so they can teach their children, thus immediately addressing the interests of the two greatest identifiable groups at risk from drowning: women and children.

Acknowledgements

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The Nile Swimmers Project: Reducing the burden of drowning on the River Nile, and building peace

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Nile Swimmers[1], Centre for Injury Prevention and Research Bangladesh[2], Rescue 3 (UK)[3]

Background

The project was successfully run in Sudan in 2007 and 2008 by the British Council, and is now being coordinated by a collaboration between The Royal Life Saving Society Commonwealth, Rights and Humanity, and the Sudanese Sea Scouts. The project is directed by experienced lifesavers and public health advocates from the UK and Africa.

Geographical Scope & Aims of the Project

The Nile Swimmers Project is a unique and innovative program aimed at reducing rates of drowning on the River Nile and the surrounding area. The program also aims to promote peace by bringing together people from different backgrounds, often previously engaged in or affected by conflict, and providing a grass-roots voice for users of the river.

Reducing Drowning, Building Peace

Whilst there has been little research on the rate of drowning along the River Nile, drowning is frequently acknowledged by villagers who live on the banks of the river to be a common cause of death. Many people are aware of friends or family members who have drowned. The Nile Swimmers Project is run on a desert island on the Blue Nile outside the Sudanese capital Khartoum. It comprises of approximately twenty five participants from communities spread along the length of the River Nile. Each 'course' lasts for approximately three weeks.

We teach swimming and lifesaving skills, and facilitate wider discussion on innovative drowning prevention methods. We also use the leadership skills and comradeship developed by the participants to foster peace and friendship between groups previously engaged in conflict; the River Nile runs across boundaries that continue to see conflict stemming from ethnic, religious, and economic tension between tribes and political groups.

Our participants come from varying backgrounds and areas; from refugees to fishermen. However all have one thing in common, the importance of the river to their livelihoods and the common threat of drowning.

Empowerment, Scope, and Legacy

The Nile Swimmers Project is not solely a teaching project. Participants leave the courses empowered to return to their communities and engage with local leaders and community members. Our aim is to give participants the skills they need to identify and implement locally applicable drowning prevention strategies. Participants are expected to take part in the facilitation and teaching, and run their own courses for members of their communities when they return home. Trainees that show the most promise are invited to help run and evaluate future courses so that the project will become self sustaining in the coming years.

Conclusion/ Evaluation

A follow-up of participants by the British Council showed that hundreds of people have since been trained in lifesaving in rural villages throughout Sudan and Northern Uganda. The project gained significant media interest in both Africa and Europe, and we anticipate that this will grow as the project expands to include other countries. In the near future, the project will be expanded to include participants from all the countries within the River Nile basin, and will act as a grass-roots platform to feed into the Nile Basin Initiative; a high level initiative bringing together representatives from all ten Nile Basin states. This will offer an excellent opportunity for advocacy, and enable our participants to highlight the burden of drowning as a common problem between countries along the river.

Project Website: www.nileswimmers.com

Supported by

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The 'Can You Swim?' Project: An international feasibility study of real and perceived swimming competency in the context of drowning prevention

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The University of Auckland, New Zealand[1], Norwegian School of Sports Sciences, Norway[2], University of Ballarat, Australia[3], Aichi University of Education, Japan[4]

Background

The role of swimming ability in drowning prevention is arguably one of the most persistently problematic relationships in water safety education. While many argue that the value of swimming in preventing death by drowning is axiomatic, others suggest that the protective effect of being able to swim might be offset by the increased exposure to aquatic risk inherent in utilising that skill. Defining exactly what is meant by being able to swim in the context of drowning prevention has proven to be equally as elusive. Furthermore, overestimation of swimming ability and underestimation of risk of drowning has been well reported in the literature, especially among males. This international collaborative feasibility study set out to explore 'real' swimming competencies and compare results obtained in practical tests with participants 'perceived' ideas of their swimming competency.

Method

Prior to the start of academic studies, students enrolled in Physical Education programmes completed a questionnaire seeking self-estimates of their competency in seven water-based activities (such as floating and distance swimming competency). Subjects were then physically tested in the seven water-based activities. After initial discussion about test protocols, the first phase of the study was implemented in the University of Auckland, New Zealand (n=68) in February, 2008. The second phase of the study was implemented at the Norwegian School of Sports Science in Oslo, Norway (n=81), in September 2008. The third phase of the study took place at University of Ballarat, Australia (n=111) in March 2009. The fourth phase of the study took place in three institutions in Japan (n=113) during June – July 2009. A combined total of 373 young adult students of Physical Education took part in the study.

Results

As was to be expected, most of the students demonstrated good swimming skills with most being able to swim >400meters non-stop (n=282; 76.4%) and swim 100m on their backs (n=237;66.2%). Proportionally fewer students could float for 15 minutes (n=144; 39.9%) and more than one third could not stay afloat for more than two minutes (n=127; 35.2%). Correlations between these skills and student self-estimates of their competency, while statistically significant at the 1% level (2-tailed), (swimming, $p = .369$; floating, $p = .583$ and back stroke swim, $p = .191$), were not as strong as had been expected with students tending to underestimate their swimming competencies. No significant gender differences in either real or perceived swimming competency were found. Some significant gender differences were evident when students were asked to describe their level of confidence in being able to do the activities in open water with more females than males likely to have concerns about diving headfirst into the deep end of a pool ($p = .029$), perform a surface dive to a depth of 2 m ($p = .058$), and perform a rescue tow ($p = .002$).

Discussion

As was to be expected from a cohort selected for programmes where aquatic activities were an ongoing part of their professional development, most students had a sound aquatic skill base. Overall, student tended to underestimate their swimming competency and perform better than expected in the actual tests, though national differences were evident. No significant gender differences were found in self-estimated or actual swimming competencies. The implications of these findings on drowning prevention and the need for further investigation are discussed.

Conclusion

This is the first study of its kind that attempts to relate perceived swimming competency with real swimming competency among an age group that are generally identified as at high risk of drowning. Further investigation using similar methodology is required to determine whether these findings would be replicated in other populations (without a background in physical education).

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Real and perceived swimming competence among young adults in Australia: The Can You Swim? Project

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University of Ballarat[1], University of Auckland[2]

Background

Much of Australia enjoys a warm climate and most Australians have easy access to aquatic environments. The consequent high level of participation in aquatic recreation activities, particularly among youth, results in increased exposure to drowning risk. In Australia, during the 12 months July 2008 –June 2009, 84 people in the 15–34 year age group died in unintentional drowning incidents, accounting for 28% of all drowning deaths (RLSSA, 2009). Males comprised 87% of these drowning deaths.

While water safety stakeholders typically advocate for the development of swimming and water safety skills as a way of reducing drowning risk (e.g. RLSSA, 2009), little is known of the actual swimming skills among youth. To date, no published studies have compared self-report and actual swimming ability and our understanding of the protective role of swimming ability in drowning prevention is speculative. This paper presents the Australian findings from a larger international project, 'Can You Swim'. The 'Can You Swim' project is unique as, for the first time, it allows direct comparisons between self-report and actual swimming ability of participants, providing evidence of the accuracy of self-report of swimming skills.

Method

To examine perceived and actual swimming ability, 112 first year Bachelor of Education (Physical Education) students completed a self-report questionnaire and practical swimming testing. Participants completed the self-report survey prior to the practical test, unaware that the skills included in the practical swimming test replicated those in the survey. The questionnaire addressed perceived swimming ability, survival skills and rescue ability, all considered fundamental to swimming and water safety programs, and therefore relevant to drowning prevention. Practical swimming skills matched questionnaire items enabling the relationship between self-reported and actual swimming ability to be determined. All data were analysed using PASW (Version 18.0). In line with the studies international partners, Spearman Rho statistics were used to determine relationships between perceived and actual ability and Mann Whitney U tests were conducted to establish gender differences for practical items.

Results

Most participants reported that they could easily/very easily complete the dive (n=86, 78.2%); surface dive (n=72, 72%); underwater swim (n=77, 70%); swim on back (n=63, 57.3%); and float (n=73, 65.2%). Conversely, 56.9% (n=54) reported that they would have difficulty/great difficulty performing a rescue. Good/very good was the most frequently reported response for swimming ability (n=44, 40.3%), with very few (n=3, 2.8%) considering themselves to have excellent swimming ability. However, 87.3% of participants completed more than 400m on the practical swim test. The Spearman Correlation Coefficient between perceived and actual swimming ability was significant, but low (r_s=0.263, p=0.006). Similar results were found for the comparison of float competency (r_s=0.238, p=0.013). All other comparisons were also found to be significant but low (r_s<0.39, p <0.05). The only gender differences were that females were significantly better at swimming 100m on back (p=0.005), whereas males were significantly more proficient in completing the surface dive (p=0.02).

Discussion

Results suggest that this age group of young adults were unable to accurately predict their actual competence in swimming ability and fundamental survival skills, with low correlations for all self-report and actual performance comparisons. Interestingly, no differences were found in self-reported swimming abilities by gender however, males completed the surface dive practical to a higher standard, whilst females were more efficient in the 100m swim on back.

Conclusion

Further research using a more diverse sample will provide greater clarification on the accuracy of self reported swimming ability and determine if gender differences are apparent in specific swimming/survival skills.

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Real and perceived swimming ability, perceptions of drowning risk among Japanese university students

Dr & Prof Toshiaki Goya[1], **Associate Prof Atsunori Matsui**[2], **Associate Prof Keisuke Teramoto**[1], **Associate Prof Shuji Shimonagata**[3] and **Principal Lecturer Dr Kevin Moran**[4]

Aichi University of Education[1], Naruto University of Education[2], Chiba University[3], University of Auckland[4]

Introduction

Japan has one of the highest rates of drowning in OECD countries (4.8 per 100, with most (88%) occurring in open water. Two thirds (64%) of the victims drowned during swimming, fishing, and recreation-related activities (Community Police Affair Division, Community Safety Bureau Japan 2009). While, swimming ability has been promoted by water safety organizations as a critical asset in drowning prevention, little is known about the protective value of swimming in relation to drowning prevention and the true extent of the risk of drowning in society (Moran, 2009). The causes of drowning must dictate especially what we teach, content, and to a lesser degree, how we teach (Stallman et al., 2008). Therefore, an international project entitled the Can You Swim Project? was conducted among Japanese university students in order to explore the relationship between swimming competency, students estimates of their competency, and their perception of the risk of drowning.

Method

One hundred thirteen (n=113, 65 males and 48 females) university physical education students enrolled at three institutions were the subjects of the study. They firstly completed a questionnaire containing 20 questions and then performed practical tests of swimming ability. The questionnaire consisted of a) perception of their ability, b) perception of their ability to perform these in open water and c) their perception of risk in five specific scenarios. Practical tests consist of seven aquatic skill including: 1) Distance swimming, 2) 100 m swim on back, 3) Floating in deep-water, 4) Dive into 2m depth, 5) Swim 25m underwater, 6) Surface dive to 2m depth, and 7) Contact rescue tow 25 meters. Data from the completed questionnaires were statistically analyzed by using SPSS Version 16.0 in Windows. Mann-Whitney U tests and Spearman RHO correlations were used to compare the swimming abilities and gender differences.

Results and Discussion

Most students could swim more than 300m (70%); one quarter (24%) could swim less than 200m. One half of the students could float for less than two minutes and one quarter (25%) completed the 100m swim on their backs. No significant differences were found in actual swimming-related abilities between male and female students, although more females than males did not complete the tests of: dive entry into pool (female 23%; male 11%), surface dive to 2m (female 33%; male 19%), and 100m swim on back (female 28%; male 9%). Similarly, no differences were found in self-estimated swimming abilities by gender. Spearman rank order correlations were moderately strong between actual and self-estimated swimming ability ($p = .577$) and floating ability ($p = .640$), significant at the 1% (two-tailed). This suggests that both of male and female students estimated their own swimming abilities with accuracy.

More females than males estimated higher risk of drowning for each of the five drowning scenarios that students were asked to estimate the personal degree of risk. When all risk estimates were aggregated, significant differences in risk of drowning perceptions were found between males and females ($p =.013$, significant at the 1% level, 2-tailed). The most significant gender difference ($p =<.001$, significant at the 1% level, 2-tailed) in risk perceptions related to falling into the river when fully clothed, with only 57% of males compared with 79% of females estimating the risk of drowning to be high/extreme.

Conclusion

This present study found no significant gender differences in real and perceived swimming abilities as tested but further research is required to determine how these findings apply to other groups. This study found that male students tend to underestimate the potential dangers in the risk of drowning.

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Perceived versus real aquatic competence: The 'Can You Swim' project

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Norwegian Life Saving Society[1], Norwegian School of Sport Science[2], Alta Univ. College, Norway[3], Auckland Univ. New Zealand[4], Vestfold Univ. College, Norway[5]

Introduction

These are the Norwegian findings in a larger international project, the 'Can You Swim' project. It is an attempt to answer the question, why do so many known as swimmers get into trouble? Do they over estimate their ability? How well do we perceive our own ability? Of course many who are known as good swimmers are, in fact, poor swimmers and 'known swimmers' are often 'non' swimmers. Aquatic educators have long agreed that the teaching of swimming must include knowledge, attitudes and judgement, as well as skills. What more important knowledge is there than to know our own limits?

Methods

Eighty one university physical education students participated in the study. At the start of their first year, they first answered a questionnaire which included questions about how they perceived what they could do on seven practical swimming skills (e.g. How far can you swim?) They then performed those skills. The perception of ability was scored on a five point scale. The practical skills were then scored. The two data points for all subjects on these two parameters were correlated using the Spearman correlation coefficient. Gender differences were analyzed using the Mann-Whitnet U test.

Results

On the practical tests themselves, the female students out-performed the men significantly on four of the seven tests. The Mann-Whitnet U p-scores for these were a) p=0.03 for floating in deep water, p=0.03 for diving into deep water, p= 0.001 for surface diving, and p=0.001 for rescue towing. On both distance swum and swimming on the back, the women also scored better though not significantly. The men performed best on only distance swum underwater though not significantly.

On perception of ability, there was little if any gender difference. The men perceived themselves to be better overall (they were not) and to be better at surface diving (they were not), neither significant. The only correct perception of the men was that they were poor at floating in deep water. For all subjects, the Spearman correlation coefficient between perceived and real ability was was significant but low.

Discussion

It was not expected that the women would out-perform the men as significantly as they did. It was suspected that the men would perceive themselves to be better than the women. This was not the case as there were few if any gender differences. Lastley, both the men and the women performed more poorly than they themselves thought, and not at a level to be desired in a drowning prevention context.

Conclusions

The subjects in this study were unable to predict their swimming competence as accurately as would be consistent with their needs.

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A graded approach to a definition of 'Can Swim'

Robert Keig Stallman[1,2,3]

The Norwegian Life Saving Society[1], The Tanzanian Life Saving Society[2], The Norwegian School of Sport Science[3]

Introduction

The search for a universal definition of 'can swim' has gone on for some time (3). Wide disparity in what we teach confirms that such a definition still does not have wide consensus. Defining 'can swim' has also recently been related to the causes of drowning (4). Notions about what it really entails are usually rooted in a certain distance (2), usually from 25m–200m. A conceptual model does exist which identifies other elements than simply stroking over a certain distance (1). It may be more productive to define 'can swim' as a developmental zone rather than a single sharp demarcation. The aim of this paper is to describe how the existing model can be expanded to a 'zone' while retaining all of the critical elements.

Methods

The model cited above was accepted as a valid construct of a definition of 'can swim'. A new model is presented integrating essential elements into a 'zone', from a pedagogical - philosophical view point.

Results

The developmental zone is described as between 25m–200m. At any given distance, the model includes a balance of essential elements, for example:

1. At 25m the learner should also be able to:
- jump or dive into deep water, surface, level off
- swim two strokes, at least 12.5m on the front, and 12.5m on the back
- turn 180°, left and right, front and back
- roll over, front to back and vise versa
- stop and rest, ca 30 sec., minimal movement

2. At 100m the learner should also be able to:
- fall into deep water
- swim three strokes including 50m on the front and 50m on the back
- stop and rest ca 90 sec, both on front and back
- surface dive and swim 3–4 body lengths underwater
- jump or dive into deep water, surface, level off
- swim two strokes, at least 12.5m on the front, and 12.5m on the back
- turn 180°, left and right, front and back
- roll over, front to back and vise versa
- stop and rest, ca 30 sec., minimal movement
- fall into deep water
- swim three strokes including 50m on the front and 50m on the back
- stop and rest ca 90 sec, both on front and back
- surface dive and swim 3–4 body lengths underwater

3. At 200m the learner should also be able to:
- roll into deep water
- swim 4 strokes, including 2 on front, 2 on back (100m on front, 100 on back)
- stop and rest ca 3 min, both on front and back
- surface dive and swim 5-6 body lengths under water

For 1, 2 & 3; accomplish the above wearing a) shirt, b) long armed shirt or trousers, c) shirt and trousers, respectively; Climb out over side of pool.

Discussion and Conclusions

It is possible to think of a zone describing 'can swim', rather than a sharp dividing line. However, at any given distance, a balanced development should be achieved. It is possible that the higher criterion (200m comb) corresponds roughly to the lower, when translated to an open water situation.

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Incorporation home pool safety into mainstream lesson programming

Tracey Ayton[1,2,3,4,5]

YMCA[1], Swim Australia[2], SwimSAFER[3], Austswim[4], Rainbow Club[5]

Background/Introduction

- Program based at YMCA Cook and Phillip Park and Ian Thorpe Aquatic Centres.
- Introduced as the under 5 year old drowning statistics increased in Australia.
- Wanted to heighten caregivers awareness of safety issues in and around home pools or when visiting a home with a pool.
- Aim to provide material and information to the 5,000 students parents and caregivers, who would then potentially pass on this information throughout the community.

Methods

- Strong connection with Austswim, Royal Life Saving Society and Swim Australia.
- Attend bi monthly talks at the Birthing Rites Centre in Bondi , and other preschools in the area supplying information re home pool safety issues including baths and wading pools.
- Implemented Home Pool Safety talk into ouir swimSAFER weeks and mainstream lessons.
- Parent information sheets distributed.
- Information provided includes supervision, barriers, swim lessons,flotation devices, how to react if your child is missing around waterie have an emergency action plan.
- When teaching a fall in and recovery exercise always included the statement'Your baby should never fall into a pool as your will always be watching then and within' arms reach'.
- Educate and empower our Teachers so they are confident teaching and educating about home pool safety
- Providing support and positive reinforcement to families that have had 'near drowning incidents' and helping to get these chldren back into swimming lessons.

Results/Evaluation

- Slow process with some parents thinking our SwimSAFER week and information was not sufficient replacement for a structured lesson.
- Constantly handing our information-parents now want their children and themselves to learn more about home pool safety and heighten their awareness.
- Parents now approach staff and ask questions.
- From feedback received we know we have raised awareness and lowered the 'it cant happen to me mentality'.

Discussion

- Rated a success by staff and parents so plan is to continue coverage of home pool safety in the lessons and handouts.
- Future goal is to see all YMCA centres implementing this program and other swim schools to follow.This is now happening at more centres and growing.
- Challenges were educating staff and caregivers-once the reasons were explained and examples given they were easier to convert.
- Children and caregivers have much more awareness than 12 months ago before the program was implemented.
- Happy to assist other swim schools to implement. All swim schools should implement.

Conclusion

- Caregivers very enthusiastic for receiving knowledge on water and home pool safety.
- Teachers more educasted and confident teaching pool and water safety.
- Program is more expansive and includes a Stop/Go Policy A Too Far Policy etc.
- Parents now coming forward and seeking out advice from our teachers if an incident in the home pool or holiday period has led to a child losing their confidence in the water.

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A behavioral approach to pediatric drowning prevention

Dr Harvey Barnett PhD[1]

Infant Swimming Resource[1]

Introduction

The mortality rate for drowning among infants and young children is a grim testimony to the failure of the traditional prevention strategies. Certainly, appropriate adult supervision and effective physical barriers are helpful, yet they are subject to human error. CPR, the last line of defense is, at best, an emergency management procedure with a highly uncertain outcome. Of victims who do survive near-drowning incidents, thousands suffer severe and permanent neurological damage. The need for an effective defense, after adult supervision and pool barriers have failed, is self-evident.

Objective

Infant Swimming Resource works to promote a clear distinction between swimming lessons and effective self-rescue training for infants and young children. A baby or toddler who has the physical strength and motor skills to escape adult supervision, defeat a pool barrier, and independently enter the water can, with Infant Swimming Resource instruction, be trained to survive.

Target

Infant Swimming Resource (ISR) has successfully trained over 225,000 infants and young children ages six months to six years to survive an aquatic accident. Over 7,000,000 lessons have been safely delivered throughout the United States and nine other countries. No former ISR student has drowned and to date, including 790 documented cases in which children have used their ISR training to survive an un-witnessed submersion incident. The success of this program is a result of a consistent focus on safety evolving from 45 years of professional guidance, extensive academic preparation, and research-based development by behavioral scientist, Harvey Barnett, Ph.D. When adult supervision and pool enclosures have failed, ISR Self-Rescue survival training provides the child a chance to protect him/herself until help arrives.

Methods

ISR has used its proprietary application of the specialized behavioral techniques and processes with over 225,000 infants and young children and educated their parents with the ISR Parent Resource Book. Instructors are trained and then licensed to utilize the system.

Results

In approximately 20 lessons of 10–minute duration, infants 6–12 months are taught to attain a backfloat posture in the water to breathe, rest and survive even fully clothed. In about 30 lessons, students 13–36 months can demonstrate a swim-float-swim survival sequence fully clothed. Parents of these students demonstrate increased knowledge of water safety and effective supervision where their infants and young children are concerned.

Evaluation

Each student's registration information has been recorded and stored since 1966. Parents are surveyed and the information provides an extensive database upon which to continually evaluate the program. ISR students return for additional instruction to adjust to their ever-changing bodies. ISR enjoys an international media presence and well-known worldwide web presence. The program objective was and remains to save children from drowning. ISR has succeeded but continues to refine all aspects of the system from our constant evaluation of every facet of the program.

Discussion & Conclusion

Worldwide more than 600,000 children drown every year. Consistently experts have recommended, 'supervision' 'fencing' and 'CPR' as the basis for drowning prevention initiatives and most have not endorsed swimming instruction for infants and toddlers as a viable adjunct. The literature documents both an 88% protective effect of formal swimming instruction in the 1–4 age group, as well as the ability of infants and toddlers to learn aquatic survival skills. ISR evaluations and documentation evidence effective Self-Rescue skills learned by the students and an effective parent education effort: after lessons, parents felt compelled to be 'more vigilant' with their children around water and they properly identified appropriate supervision, not swimming ability, as the most important aspect of drowning prevention.

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Swim For Life – The full scale promotion and coordination of swim and survive in New Zealand

Matt Claridge[1]

Water Safety New Zealand[1]

Background

Swim for Life is the Water Safety New Zealand (WSNZ) Learn to Swim and Survive project. Recent research conducted by Water Safety New Zealand has shown that the swimming ability of our children is in a downward spiral.

Of further concern is the failure of the New Zealand education system to provide quality learn to swim outcomes and a greater reliance on private enterprise to support the development of fundamental learn to swim skills in school children. The barriers to learning to swim and survival in New Zealand are evident across all geographic and demographic categories. The Swim For Life initiative focuses on creating awareness and mobilising parents, communities, individuals and schools to not only understand the importance of learning to swim in a relevant context but to act upon the need. Failure to do so will inevitably lead to a nation of non-swimmers and a subsequent increase in drownings.

Aims/Objectives

The objective is to ensure that every child in New Zealand has the opportunity to learn the core life skills of swimming and surviving.

Target

- Give all children quality opportunities to learn to swim and survive
- Facilitate the delivery of swim and survive programmes in primary schools
- Provide the foundations for the development of a culture that produces generations of New Zealand families that are water safe

Methods/Implementation

WSNZ's approach is multi-faceted.
At a national level, WSNZ will act as a catalyst for change by:

- taking ownership of a national strategy that establishes sustainable and effective learn to swim initiatives in all regions
- work with Regional Sports Trusts in a collaborative way to achieve mutual goals
- prioritise resources to high need areas, and
- monitoring and evaluating to ensure long-term sustainability

At a regional level, WSNZ will effect change with its regional partners and enable by:

- catering to the needs and capabilities of each region
- galvanising stakeholders
- using a range of skills and tools to identify barriers and find solutions to them
- establishing business plans for each region

National Media Campaign – continued communication highlighting the issue of drowning.
Public Relations – activity aims to continue and further the momentum of the initiative across all communities and key audiences.
Advocacy – The Advocacy programme aims to build awareness among politicians and officials of the low number of New Zealand children who can swim and survive, and in so doing secure commitment to reintroduce swimming into the curriculum (a long term work programme).

Results/Evaluation

- Swim ability measurements pre and post lessons
- Professional Development outputs and efficiency
- Media evaluation
- Funding generation

Discussion

For all New Zealand children to have the opportunity to develop swim and survival skills, some significant obstacles must be overcome. To effect positive change there is a real need to reassert that the ability to swim and survive is a core-life skill for all New Zealand children and ensure opportunities are available to all to develop these skills.

Conclusion

The Swim For Life objective is for all New Zealand children to be provided with the opportunity to develop learn to swim and survive skills. An increase in the number of New Zealanders learning to swim will impact positively on the number of aquatic based incidents and drownings.

Acknowledgements

Water Safety New Zealand, New Zealand Recreation Association, New Zealand Swim Coaches and Teachers, Ministry of Education, Regional Sports Trusts, Territorial Authorities.

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uswim.com - Free online swimming lessons from a world leading swim school

Ben Douglas[1], **Nick Folley**[1] and Neil Douglas[1]

USwim Pty Ltd[1]

Aquatic Achievers swim schools, created and developed uswim.com. Ben Douglas and Nick Foley adapted the Aquatic Achievers Solo-1 swim program into a website where parents and teachers can learn teaching methods and techniques from.

Background

Most people around the world cannot afford to pay professionals to teach their children to swim. The best way to educate people in 2011 is through the internet, as it can reach a vast audience.
Learning to swim is a life skill all children should learn. Often parents do not have the knowhow or resources to teach them safely. uSwim allows all parents with access to the internet free information and lesson plans so they can teach their children with confidence.

Aims

To allow more families to teach their children to swim, in a fun, safe environment, especially in poor or underdeveloped countries. We also would like to help out physical education teachers or community leaders who are in charge of teaching children to swim but have no access to formal education courses. This we hope will not only prevent drowning but also provide children with better health, more recreational activities and less restrictions on travel to school etc.

Target

We are targeting all children. The uswim program shows parents how to teach babies from 6 months, right up to teenagers. Of course those who actually learn the content from the website are parents, teachers and carers. However children and communities are the ones who benefit.

Methods

uSwim breaks down the learning process into simple steps. Once a child can do one skill, they simply move onto the harder skill/step. We show through professional underwater footage how to teach each skill. We also provide printable lesson plans so people can remember what they viewed.
The actual teaching methods come directly from Aquatic Achievers, a swim school organization who teach over 400,000 lessons per year. Aquatic Achievers have been teaching lessons for 40 years and operate 5 state of the art swim schools in Brisbane, Australia.
uSwim.com has taken 3.5 years to develop and cost over $150,000 to produce. The website became available for free in September 2010 .

Results

After being available only 8 months, uSwim is being visited by 3000 new people each month in almost every country on the planet. We have had hundreds of emails thanking us for the service and relaying feedback about the program. While its not perfect, we are learning every day and making improvements.
In may uSwim is heading to an orphanage in Mauritius in conjunction with project Dovetail. Here we will be showing the teachers and house mothers how to teach swimming using the website as a reference whenever there is a problem.

Discussion

uSwim has the potential to reach more people than traditional programs because it does not need continual manpower or financial support. Once people are shown how to use it, they can continually use the website as a reference and guide.

Conclusion

We are only getting started, however the feedback so far has been amazing.

Acknowledgements

Aquatic Achievers has funded the entire project.
Nick Folley and Ben Douglas and Neil Douglas are the sole creators and contributors of content.

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Swim Australia's SwimSAFER program: Two years on...

Ross Gage[1]

ASCTA / Swim Australia[1]

Organisation

Swim Australia is the Learn to Swim and Water Safety Division of the Australian Swimming Coaches and Teachers Association (ASCTA). Through ASCTA's affiliations, Swim Australia is linked with the Australian Water Safety Council, RLSSAs Guidelines for Safe Pool Operations Committee, the International Federation of Swimming Teachers Associations and Swimming Australia (the sport). Swim Australia was an integral member of the Federal Government's Reference Committee for the development of the Kids Alive Living With Water DVD.
Swim Australia registers swim schools and then works with these 'members' to enhance the learn to swim and water safety experience. Swim Australia has over 570 registered Swim Schools which, over the course of a year, deal with over 400,000 families and deliver over 15 million lessons.

Background and Aims

With childhood drowning statistics in Australia at an extremely distressing high, Swim Australia concurs with the AWSC in the value of raising awareness and education as key drowning prevention measures. Swim Australia also recognised that member swim schools had the opportunity, ability and desire to do this.
A special interest group was formed, lead by Swim Australia CEO, Ross Gage, a leadership team of Siria Thomas (Convenor), Dave Dubois, Tracey Ayton and Cameron Speechley along with individuals from member swim schools, and the SwimSAFER Drowning Prevention Program was developed.
The SwimSAFER aim is to encourage and support member swim schools to increase their 'drowning prevention' campaigns and strives to help Swim Schools 'live the water safety message'.
The SwimSAFER program was officially launched in May 2009 at the ASCTA Convention, and interest in the program from member swim schools surpassed any previous project undertaken by Swim Australia. Members are engaged, readily seeing the benefits for themselves and their clientele.

Methods/Implementation

SwimSAFER features a 'layers of protection' concept that encompasses the common themes in water safety messages used by various authorities:

1. Supervision
2. Barriers
3. Swimming and Water Safety Skills
4. Emergency Action Plan

Our goal is to help swim schools to educate parents and carers that no one of these layers will protect their children from drowning; but to have in place as many of these layers as possible will provide the greatest protection from drowning – if one layers fails, another behind it may save their child's life.
The program seeks to package these messages in such a way that swim schools can readily use and disseminate them. The SwimSAFER Leadership Team has driven the development of a range of collateral for Swim Australia to provide to its member swim schools. These include SwimSAFER booklets, lanyards, and online resources. Current SwimSAFER projects include:

- SwimSAFER posters – after a successful photo shoot, this series of posters for swim schools to display at their venues has proven very effective in highlighting each of the layers of protection; the images and text are simple but powerful.
- SwimSAFER weeks – SwimSAFER Week (water safety). Packs are now available to swim schools to support this week. Packs include a range of resources and materials.

Conclusion

SwimSAFER's leadership team and special interest group continue to work together to devise new ideas and concepts, and are currently prioritising and strategising future projects.
Through SwimSAFER, Swim Australia is assisting its member swim schools to live and spread the vital water safety messages. As a consequence, member swim schools will achieve a better balance between teaching swimming and water safety skills and disseminating water safety messages. Our goal is to reduce childhood drowning in this country and to help Australia's children to Swim SAFER.

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SwimSafer, Have fun, Swim Safe

Cory Gambardella[1,2]

NWSC–National Water Safety Council (Singapore)[1], Singapore Sports Council[2]

Background/Introduction

Program

In 2009 it was determined that an integrated program assimilating the merits of the learn to swim and the National Survival Swimming award (NASSA) into a single national framework.

SwimSafer comprises a progressive six-stage program structure incorporating elements of swimming, water survival and rescue skills progressively in each stage.

SwimSafer programme was kicked off on 5 July 2010 in 24 SSC pools.

Objectives

SwimSafer programme was designed with the intention of imparting water survival skills as a safeguard against aquatic accidents, such as drowning.

Target

SwimSafer is a National Program aimed at all ages, especially children ages 7–12.

Implementation

Singapore Sports Council, SwimSafer department is tasked to champion and drive the key deliverables of imparting personal water safety knowledge and skills through the SwimSafer programme. SwimSafer is a six stage progressive personal survival and water safety programme.

Since March 2010, SwimSafer has certified 779 instructors in the SwimSafer programme. Officially the program began on 5 July 2010, with over 25,000 children to date participating in the programme.

Each stage 1,2,3 and Bronze, Silver and Gold has an achievement award as well as badge for Stage 1,2,3 and achievement award and badge and pin for bronze, silver and gold.

Results

To evaluate the effectiveness of SwimSafer we have set Key Performance Indicator. The introduction of a knowledge component, personal survival skills and a ratio of 1–10, the quality of instruction will be raised and improve the standard of participants significantly from its predecessor programmes. In terms of results, we expected students who have undergone SwimSafer to be better equipped with the right sets of skills to handle unexpected and adverse situations in water.

We have analyzed the programme every three months for changes, improvements or challenges. We will be conducting a post-implentation review (PIR) one year after implementation to evaluate programme's effectiveness.

Discussion

SwimSafer being the National personal water safety and survival programme will continue with continual improvements.

Conclusion

SwimSafer has had its challenges during the five months of implementation. With continual improvements, instructor training and professional development the quality of the programme will be sustainable.

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Good swimmers drown more often than non-swimmers: How openwater swimming could feature in beginner swimming

Torill Hindmarch[1] and **Mats Melbye**[1]

Norwegian Life Saving Society[1]

If we look at drowning statistics and relate them to the population we discover that Norway has a high incidence of drowning, twice that of the USA and four times as many as in Britain and Holland (ILS World Drowning Report for 2003).

It is commonly said, "The best insurance against drowning is learning to swim". But the figures tell us something else. While approximately two-thirds of those who drowned where considered 'good swimmers' (2), almost all drowning accidents take place closer than 15 meters from possible rescue and more 50% closer than three meters from possible rescue. Why couldn't they swim to safety?

One might assume that good swimmers to a greater degree engage in water related activities, equally, the figures say nothing about how many survive due to good aquatic skills. Figures from a Survey made by Norwegian Swimming Federation indicate that only a half of the Norwegian population can be classed as 'competent' swimmers. Combining these figures one can conclude that learning to swim in fact doubles the risk of drowning.

Research shows that certain age groups and genders have a higher incidence of drowning. It also shows that although it is no significant difference between the self estimated aquatic skills and the real aquatic skills, in the exposed group there was a low estimation of the risk in specific situations (3).

In Norway, swimming education mainly takes place at indoor pools with a balanced air and water temperature (water temperature is 28°C). Contrast this with outdoor conditions where open water temperatures in Norway are between 0–15 degrees, rising in the summer but seldom above 20°C. Wind and waves add another dimension to swimming and survival skills, necessitating the need for a Personal Floating Device (PFD). Seldom do school swimming lessons include anything about environmental parameters or human limitations associated to swimming in open water. A common supposition is 'You don't need a PFD when you can swim'.

Looking at research about immersion, swimming and survival in cold water they all point to the human physiological limitations in cold water and underline the importance of wearing a PDF (4) (1), (5). Therefore, assessment of environmental challenges and taking appropriate measures should be a part of beginner swimming education. The Norwegian Life Saving Society can, through its many courses in baby and toddler courses, impact a large number of families to see swimming from a drowning preventative perspective. Many of these children progress into our lifesaving clubs where we wish to create an awareness of water safety including environmental factors and human limitations. Will experience and mastery of the outdoor challenges from an early age help to develop the ability to judge risk potential more accurately? This will be an interesting line of enquiry.

In addition, the NLS is engaging in a project funded by the government to introduce outdoor swimming education in schools. The experiences from a project started two years ago with 55 primary school children, participating in open water swimming lessons, form the basis for this undertaking. The project revealed that these children were learning much more than normal swimming education.

This presentation looks at the learning process that occurred in the pilot project and how we plan to educate the families in all levels of our education program to focus on water safety. We hope this will provide grounds for discussion at the conference and some may find they can develop these ideas further in their own country.

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Study into the Swimming abilities of ACT primary school students

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Royal Life Saving Society – ACT[1], Royal Life Saving Society – Australia[2]

Background/Introduction

In 2008 Royal Life Saving ACT conducted the ACT Primary Schools Swim and Survive program involving nearly 3000 students from across 24 ACT schools. This program provided Royal Life Saving with an opportunity to analyse the swimming abilities of ACT students and compare these results to the National Swimming and Water Safety Framework.

Methods

Data was collected during the 2008/09 ACT Primary Schools Swim and Survive Program. This information was used to identify, for current ACT public primary school students participants of the program, swimming and water safety skills and abilities. The information was entered into a Microsoft Access Database and analysed in SPSS version 15.0.

Results/Evaluation

The research identified that the current level of swimming and water safety skills of ACT public primary school students is well below the national benchmark set in the Australian Water Safety Strategy 2008–2011. The research also showed a clear gap in swimming abilities between ACT private school students and ACT public school students, with the latter achieving standards significantly lower.

Discussion

To help the ACT Government is being asked to increase its funding of swimming and water safety programs for ACT children to help improve the swimming abilities of ACT Children.

Conclusion

Key Findings

- Only 28% of students in years 3–6 achieved the minimum benchmark
- The average participation rate for public schools was 34% compared to private schools of 93%
- Private school students achieve the minimum national benchmarks three times more than public school students
- The poor outcomes are particularly evident in schools within the lower socio economic areas of Canberra

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Near drowning detection system based on swimmer's physiological information analysis

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Identifying a person facing drowning accident remains challenging even for experienced lifeguards, especially among non-swimmers who tend to be silent when they face such a situation (1).

With the recent advancement in electronic and material science, wearable biomedical devices are emerging. Two wearable drowning detection systems have already been commercialized: 1) SenTAG (2) is a wrist band based system which triggers an alarm when the swimmer is motionless for twenty seconds; 2) WAHOOO (3) a head band based system which sends alarms if the swimmer spends a long period under water. However, these systems are not considering advanced physiological features of the swimmer in near drowning situation leading to a delay triggering alarm. Besides, a video based drowning detection system can be another alternative (4), but it mainly suffers from occlusion problems when the pool is crowded.

In this work we aim at designing a swimming cap that detects near drowning situation as early as possible by analyzing the swimmer's physiological states. Surveys on wearable computing (5) have shown that the user is demanding regarding the device design and comfort. A design based on a swimming cap is convenient since most public swimming pools require swimmers to wear one. Panic reaction has been observed among persons facing near drowning situation (1). It results in a sudden increase of autonomous nervous activity leading to a rise of the heart rate. However, such a feature does not necessarily imply that the person is in danger, as it could result from swimming activity. Additionally, we make use of the observation that a person near drowning tends to have a vertical body posture while struggling at the same location to ensure that the swimmer is in danger (1).

The heart rate activity can be analyzed from ECG or PPG signals. However, we have tried to use piezofilm polymer sensor which is particularly thin, light-weight and flexible so that it can be sandwiched between the layers of a swimming cap at the level of the superficial temporal artery. For the body posture estimation, the vertical position can be detected using an accelerometer or gyroscope. The information will be processed in the cap and an alarm will be triggered if an abnormal behavior is detected. Primary laboratory experiments with the piezofilm sensor have been conducted and have shown that the measured heart activity signal suffers especially from electromagnetic, baseline wander and motion noises. We applied a method we previously developed, Weight Factor Mode (WFM) (6), based on EEMD(7), and were successful in removing the first two types of noises. In the future, we consider using motion information measured from accelerometer to reduce the motion noise and designing a prototype of the system to be tested in the swimming pool.

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The validity of a 1000m distance test as a predictor of swimming competence

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Lillehammer Community School District, Norway[1], The Norwegian Life Saving Society[2], The Norwegian School of Sport Science[3]

Introduction

Distance is probably the most common criterion used to assess the ability to swim. Most place this distance at between 25m and 200m. 'How far – is usually considered more important than 'how'. The importance of all around skill development is usually under-estimated. Being able to swim 1000m continuously would probably be accepted by most as proof of being 'able to swim'.

The idea of all-around development is not new (1). However, only in the last 20 years have efforts been made to conceptualize it and later to quantify it. A model exists to measure swimming competence (3). The model is operationalized in a combined test of 200m.

Methods

Grade 4 pupils (n=339), attempted two tests, within 10 days: 1000m continuously and a 200m combined test. The distance completed was recorded or they stopped at 1000m on the distance test. The combined test was scored for each element as well as a total score (max 12pts). Each element failed was registered. The combined test consisted of: a) jump or dive into deep water, surface and level off, b) swim 100m on the front, c) stop and rest 90 sec. on front, and 90 sec.on back, d) swim 100m on back. (3 pts. pr. element). Seventy-four percent (n=251) succeeded in swimming 1000m. Randomly, half (169) swam the 1000m first and half (170) swam the combined test first. The 200m combined test was accepted as the conceptual criterion of 'can swim'. Total score on the combined test was correlated with the number of meters achieved on the 1000m test using the Spearman r.

Results

Of those who successfully swam 1000m, 11% failed to jump or dive into deep water; all succeeded in swimming 100m on the front; 59% failed to stop and rest 3 min.; 29% failed to swim 100m on the back and only 37% received a total score of 11 or 12 pts (can swim) on the combined 200m test. The Spearman r for total score vs meters achieved was r = 0.57.

Discussion

When making decisions about teaching content, setting goals and evaluating progress, one thought should guide us; to what extent are our pupils able to cope with an unexpected and involuntary fall into deep water. An 'aquatic episode' can take many forms and might require one or more of many solutions. The ability only to achieve a certain distance may fail to preserve life if the 'episode' should require e.g. the ability to stop and rest, re-orient ones self, catch the breath, a quick submersion, rolling over and changing strokes, turning around, etc.

Conclusions

The ability to swim even 1000m is a poor predictor of the total score on the 200m combined test and thus not a good predictor of swimming competence.

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The validity of swimming speed as a predictor of swimming competence

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Introduction

If distance achieved is a common criterion for assessing swimming competence (2), another is swimming speed. In the school setting, time trials are sometimes used to appoint marks to pupils. Within the competetive swimming world, it is often simply assumed that children and youth who swim systematically and achieve improving times, become somehow, even safer as they swim faster. But is faster better? The aim of this study was to examine the degree to which time achieved on a 200m swim could predict performance on a 200m combined test.

Methods

The conceptual 200m combined test described elsewhere (2) was used as the criterion test. Grade 6 school pupils (n=89), from three different schools, participated in the study. All pupils from the classes involved swam two tests, within 10 days. Randomly, one half of the subjects swam the 200m time trial first and the other half swam the 200m combined test first. The times recorded were correlated with the total score on the combined test using the Spearman correlation coefficient.

Results

This is a study in progress which will be completed in Sept/Oct 2010. From plots of data pairs already gathered, it is expected that the correlation will be low.

Discussion

Swimming speed is considered to reflect technique, strength, muscular endurance, physiological endurance, flexibility, etc. Among Grade 6 school pupils, most are at the threshhold of puberty, of course with wide variation, some nearly finished, some not yet started. For such youth, the two most probable contributors to swimming speed are strength or lack there of (depending on the stage of puberty) and technique. The latter need not be related to pubertal development. Those who are advanced may swim faster simply because of strength yet not exhibit economic movement nor possess a broader reportoir of skills. Those with better technique may also lack a broader base of skill. As discussed elsewhere (4, 1) an aquatic accident may take many forms, requiring one or more of many possible solutions. Langendorfer and Bruya (1995) (3) describe this as 'aquatic competence'. The need for all around development in a drowning prevention context is obvious.

Conclusions

If the criterion test represents a desired level of competence, a low correlation to swimming speed indicates that swimming speed alone is a poor predictor of aquatic competence.

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Predictors of swimming ability of primary school children in rural communities in Thailand

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Drowning is a leading cause of childhood deaths in Asian countries. Children in primary school have a higher rate of fatal drowning; these commonly occur in natural water bodies near their residences. The Thai National Injury Survey in 2004 reported a higher rate of drowning death in rural settings. Swimming ability is recommended to decrease drowning risk. There is a lack of information on factors contributing to a child's swimming ability.

This study aims to ascertain the swimming ability of primary school children and to identify potential factors associated with greater swimming ability. A cross-sectional household survey was conducted during August–September 2009 in a rural school district of Chiang Rai province. The questions consisted of demographic data of guardians and their children, and swimming ability was defined as being able to move at least 25 meters in open water without assistance. A total of 633 questionnaires obtained from guardians of primary school children were analyzed.

The results revealed that less than one-fifth (18%) of the school children (age 6–12 years old) could swim. Multiple logistic regression showed that children who can swim are more likely to have attended swimming lessons (OR=23.95; 95%CI=12.21-46.98); be 10–12 years of age (OR=4.15; 95%CI=2.35-7.30); be male (OR=2.82; 95%CI=1.67-4.77); have experienced a nonfatal drowning (OR=2.14; 95%CI=1.10-4.12); or be the child of a guardian who can swim (OR=2.10; 95%CI=1.25-3.44). The results highlight the need to provide swimming lessons targeting all children beginning in the younger age groups. Local resources in natural water sites may provide a place for safe swimming lessons in rural areas.

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30 Years of Australian Swimming and Water Safety Education

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AUSTSWIM – The Australian Council For The Teaching of Swimming and Water Safety[1]

Background/Introduction

To provide an overview of the changes to AUSTSWIM as an organisation over recent years including future directions AUSTSWIM is a not for profit organization whose mission is for every Australian will be taught to swim by an accredited AUSTSWIM teacher, enabling them to safely enjoy aquatic environments and activities.

AUSTSWIM has a strong philosophy that is founded on the belief that all Australians should have appropriate and relevant swimming and water safety skills and understand the principles and practices of water safety.

AUSTSWIM is a member of the National Water Safety Council and works in partnership with RLSSA, SLSA & Swimming Australia Ltd.

Overview

AUSTSWIM has been responsible for training swimming and water safety teachers in Australia for over 30 years. During that time there has been an evolution of programs, operations and course development. In the last decade AUSTSWIM has concentrated on consolidating the efforts and achievements to ensure it remains at the forefront of the field and has clear plans and directions for the future.

The past decade has seen the organisation go through a series of strategic planning sessions which have clarified its objectives and directions and highlighted the need to concentrate on core business. This has resulted in a much stronger, vibrant organisation, which is more focused on customer service and the development of the highest standards of resource development. This decision was rewarded with AUSTSWIM recently winning the TAFE and Vocational Education – Single Title Category in the 2009 Australian Education Publishing Awards for its new text Teaching Swimming and Water Safety. During this time of change, AUSTSWIM has learnt many lessons and inevitably modified its approach to change management.

This presentation will explain how the organisation has learnt from mistakes and evolved. This information will benefit organisations currently undertaking change or considering change in the near future.

AUSTSWIM is also continually looking at future direction and this session will also provide an insight into further developments as an organisation that will assist in strengthening the industry in the area of teaching swimming and water safety.

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The international language of swimming

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During the past three decades we have been teaching swimming and water safety to many throughout the world. The most common language used for education and training is often English and as such when information is presented often key points are lost in the translation and also in the interpretation. Even when we use translators at the courses we still have issues with the language and what the interpreter thinks that the presenter said, so even greater confusion occurs.

Luckily as a result of teaching the very young and many who do not speak any English, we have learned that language is not required to get people swimming and safer in the water. We will explore this and look at examples of how gestures and set imagery can overcome any language barrier.

It is important that we use demonstration, participation and physical manipulation to ensure that the learner has the necessary information to practice the skills and ultimately learn the skills so they become competent and safer.

In many situations we see "language" being used as a barrier and with recent developments in the "key learning sequences" we have been able to overcome this barrier and teach effectively on all continents in a host of different languages.

The session will provide insight into this and establish key parameters and explore the sequences that allow us to introduce complex motor skills to the learner whether they are a child or adult and regardless of race or language.

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History of swimming education at school in Japan which influenced Japanese swimming ability

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Background

Most elementary and junior high schools in Japan have their own swimming pool, and swimming education is carried out there. Rates of public school pool establishment are 86.7% at elementary school, 73.0% at junior high school, 64.5% at high school. (Stats from Statistic Bureau, Ministry of Internal Affairs and Communications 2010.) From an international point of view, they are very high, and they are the characteristic of the country. 'Can You Swim?' Project would be helpful to make the problem in each country on water safety clear and would lead to solution. When we examine a Japanese problem, we must mention process of the past swimming education.

Historic Process

In the Middle Ages or later Japan, swimming training has been performed as military arts of the samurais, as well as traditional fishing. When the times of the samurai were over, and, by a process to build modern education system, Jigoro Kano who was the founder of Judo insisted on importance of the swimming education and made it with a compulsory subject in a teacher training school.

The submergence accident of the passenger boat Shiunmaru occurred in 1955 and 100 children were drowned beside a lifeboat because they could not swim. With this accident, the Diet and the government made action to spend a budget on the construction of the school swimming pool with the promotion for all the people should able to swim (1961). The Tokyo Olympics were held at the same period (1964), and the swimming race as competitive sports became popular, too. The contents of the swimming class at school were prescribed by the Ministry of Education, which aimed to develop the skills of the crawl and the breast stroke mainly, and it has been revised every ten years (1961, 1971, 1980, 1992, 2002, 2011). However, the vertical movement as like diving into the water, surface dive, and underwater swimming were not dealt with. The reason is that a regular swimming pool in school has very shallow depth (80cm–120cm in elementary schools).

Problem and Prospects

Japan has succeeded in decreasing the number of deaths by drowning by making a swimming pool in school (Matsui, 2009), although still have the highest rates of drowning in OECD countries. According to the interim report of `Can You Swim?' Project, Japanese can swim with crawl and breast stroke to some extent, but not good at staying afloat, backstroke, dive into, and underwater swim. This result is related to contents of skill in swimming class at school.

It is necessary to reexamine a swimming skill standard and assessment for human education, and to rebuild the appropriate swimming curriculum to fit the purpose of the water safety.

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Safer facilities or using facilities safely

Roger Millward[1,2] and Garry Seghers[1,2]

Swimming Teachers' Association[1], International Federation of Swimming Teachers' Association[2]

The Swimming Teachers' Association (founder members of the International Federation of Swimming Teachers' Associations) are researching British holiday makers on their perception of the safety facilities and environment of the swimming pool or beach when holidaying abroad. This is following the Royal Society for the Prevention of Accidents (RoSPA) recent research that showed more children from the UK were drowning on foreign holidays than ever before.

The research will start with the RoSPA statistics covering the drowning of UK citizens whilst holidaying overseas to highlight the countries where we are more at risk.

The Research will seek to

Gain information from British holiday makers on their perception of the safety facilities and environment of the swimming pool or beach when holidaying abroad by an online survey. This will be targeted at the countries highlighted from the RoSPA research.

Establish contributory factors such as breakdown in supervision, facility features, reliance on safety being provided rather than being safe, unsafe activities, alcohol etc.

Objectives

From an analysis of the information gathered it is hoped to be able to suggest actions that can be taken to reduce deaths by drowning in these or similar circumstances.

Make this information available to the public and the tourist industry.

Consider the implications for citizens of other countries.

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Swimming to a safe place

Sue Pryor[1]

Sue Pryor Swimming[1]

After 20 years of observation, conferences and listening to parents, Sue Pryor Swimming has evolved a strategy of 'Swim To A Safe Place' to be taught at all levels throughout the year. This is in addition to the obvious recreational and health benefits regular swimming lessons provide.

We live in a farming area near beaches and rivers, and the main reason our parents start their children in swimming lessons is to make them safer near these water sources.

From this evolved a greater emphasis on safer swimming where we teach safer practices not only to the child when near and in the water but also to the parents – after all they are with the children most of the time and preferably all the time when they are near water.

Our first levels are all based on the development of:

- Comfort
- Trust
- Feeling
- Buoyancy
- Developing Independence
- Safety Awareness

These skills are then continued and developed through all our other levels and culminate in 'Swim Safer Week' activities where their skills of swimming to a safe place are tested under simulated conditions (dams, rivers, beach, lakes, boats).

All our swimmers are taught to swim in deep water as we feel that this is a vital part of being a safer swimmer. Games are developed which teach them to think about where to swim in case of an accidental fall in. 'Where is your nearest safe place?' is the question heard in most lessons. The children are encouraged to think for themselves in various simulated scenarios.

Our parents are very pleased with this strategy and are recommending our lessons to others. They thank us for making them aware of possible dangers and, more importantly, giving them skills to help should an emergency occur.

Aims/ Objectives

To give children of all ages and their parents skills to make them safer swimmers. We make them aware of potential dangers in a variety of water areas and give them skills and thought processes to make them safer if they are ever in trouble in water.

We educate the parents to be more aware when near water.

We teach the children to 'swim to a safe place' (this is anything that they may fall from or the nearest stable surface to swim to).

Some of the skills which we teach to all levels include:

I can pull myself to safety
I can be pulled to safety with a variety of equipment
Land at a safe place hands first, not feet
I can enter and exit the pool safely
I can open my eyes under water
Front and back balances
I trust buoyancy in all depths of the pool (no flotation aids)
I can be thrown away and return to a safe place
I can swim to a flotation aid, hold on and swim to a safe place
I can fall in from a variety of surfaces and return – includes slides
I can climb out by myself I can wait
I can roll to my back as a safe place

Conclusion

By teaching to swim to safe place we have met the criteria set by our parents. We have created safer swimmers and parents who are more aware of potential dangers in and around water and have given them skills to cope if they ever fall into water.

Acknowledgements

Swim Australia Presentations.
Talking to parents who have been in drowning or near drowning situations themselves or with their children.
By observation of swimmers and developing games and processes from potential dangers.

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Portable pools and the SwimSafe Thailand experience

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Background

In a middle income country where more than 2,600 children die annually from drowning, very few Thai children ever learn how to swim (1). Based on the knowledge that survival swimming skills and knowledge enable children to protect themselves and their peers from drowning (2), SwimSafe Thailand is trialling the use of portable pools as a means of bringing survival swimming lessons to children aged 6–12 years in both urban and rural Thailand. SwimSafe Thailand is a partnership between The Alliance for Safe Children, the College of Public Health Sciences at Chulalongkorn University, Royal Life Saving Society – Australia and the Thai Life Saving Society. It is supported by the Australia–Thailand Institute and fundraising with the Bangkok Pattana School Tiger sharks swim team.

SwimSafe Thailand joins programs in Bangladesh and Vietnam in forming a regional SwimSafe network with diverse experience in implementing child drowning interventions in Asia. The aims are: 1) To determine the effectiveness of portable swimming pools as a strategy to provide survival swimming training to Thai children aged 6–12; 2) To trial the SwimSafe Thailand curriculum developed to fit the geographic environment and cultural needs of Thailand; 3) To train Thai nationals as survival swimming instructors; 4) To ensure both the portable pools model and the curriculum meet the needs of urban and rural environments; 5) To foster communities' awareness of the drowning issue and improve capacity to deliver survival swimming programs; and 6) To consider the SwimSafe Thailand model as a component of a regional approach to child drowning prevention

Implementation

SwimSafe Thailand works at the community level to engage individual communities in the delivery of a program which develops their own awareness, skills and capacity to address the problem of child drowning. SwimSafe currently works with seven schools across three provinces in Thailand; in Samut Prakan in urban Bangkok and rural Chiang Rai and Ayuthaya provinces. Portable pools have been installed at primary schools in each location. Teachers are trained as survival swimming instructors to deliver classes using a curriculum adapted from SwimSafe programs in Bangladesh and Vietnam. The portable pools provide a low-technology facility for swim training in a clean and safe environment – important for gaining family and community support in Thailand. Fostering community ownership of the program and the pool resource is an ongoing priority.

The program has trained 15 instructors and reached more than 400 children in Thailand to date. Close monitoring of swim classes, water quality and the durability of the portable pool structure is ongoing and data is collected on test results from each component of the curricula.

A series of lessons have been learnt to date about the complexities of accessing Thai communities; cultural attitudes towards teaching Thai children to swim; identifying appropriate local staff and providing them support to deliver the program, as well as use of the portable pools themselves.

As an operational research project using a community participatory approach, SwimSafe Thailand is providing valuable evidence and insights to assess the appropriateness of this survival swimming intervention as a means of preventing drowning in the Thai context. The effectiveness of portable swimming pools in providing survival swimming training to Thai children continues to be explored.

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Spread of survival technique ‘chakuiei’ in Japan

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A survival technique for sudden water accidents has kept children alive during this decade. The survival technique is called chakuiei in Japan and taught at the elementary school before summer vacation. Water Rescue Forum in Japan has trained more than 1000 chakuiei instructors in this decade. In this research, the degree of spread of chakuiei is described and discussed.

According to the National Police Agency, more than 800 persons were killed by water accident, including many victims with clothing in 2009. In Japan, approximately 80% victims fall into water during fishing, walking playing nearby sea and river. Approximately 400 children experienced water-related accidents in 2009. The children include citizens younger than middle school student, usually 15 years old or less.

The chakuiei instructor includes mainly firefighter, coast guard personnel and others. They are invited as instructor who teaches survival technique from sudden water accident by mainly elementary school. They teach to children how to float with clothing until rescue activity starting by the fire department and the coast guard office. In 2009, more than 30,000 students experienced floating fully clothed programmed by the Water Rescue Forum at the swimming pool in Japan, implying 0.5% of all elementary school children of 6 million.

A survival rate R% is defined by equation, R%=(Na-Nd)/Na x100, where Nd is number of death by the water accident and Na is number of person who experienced water accident. In 2005, the survival rate of children was 74%. It increased to 84% in 2009 according to an annual report of the National Police Agency, suggesting that the survival technique from sudden water accident is beginning to spread among children.

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Delivering Professional Development in a technological age

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AUSTSWIM – The Australian Council for the Teaching of Swimming and Water Safety[1]

AUSTSWIM is the Australian Council for the Teaching of Swimming and Water Safety who deliver quality training and licensing for teachers in the aquatics industry.

The AUSTSWIM Teacher Licence is the current industry standard for swimming and water safety teachers and is recognised as the optimum training of Learn to Swim Teachers in each state and territory of Australia and many countries overseas.

To maintain their licence AUSTSWIM teachers must complete a minimum of 40 hours practical teaching and a minimum of 10 hours professional development over a three year period. Approximately 4000 AUSTSWIM Teachers renew their licence annually.

As a peak industry body we have identified a need to provide opportunities for teacher's access to relevant and quality training as part of their ongoing professional development.

In 2010 AUSTSWIM launched its new AUSTSWIM Teacher of Infant and Preschool Aquatic course, a shift from face-to-face delivery to a blended learning strategy has been a great success for AUSTSWIM with an increase of 40% attendance over six months.

Since developing this new online platform it has opened up numerous on-line opportunities for our organisation including professional development workshops, Skype training, webinars and the ability to resource share. With on-going development, this technology will assist us in providing all AUSTSWIM licensed teachers particularly those in rural and remote areas with the opportunity to access AUSTSWIM Professional Development workshops via their computer.

Benefits include:

- Convenience and portability
- Cost
- Flexibility
- Higher retention
- Global opportunities

Common barriers we have overcome include:

- Bandwidth/browser limitations may restrict instructional methodologies
- Time required for downloading applications
- Managing learning software can involve a learning curve
- Student assessment and feedback is limited
- Are computers replacing human contact? – The Net is not right for all training

Whilst we acknowledge the fact that some traditional hands-on courses can be difficult to simulate in an online portal AUSTSWIM's vision is that every Australian will be taught to swim by an AUSTSWIM licensed teacher, enabling them to safely enjoy aquatic environments and activities. The only way we can continue to succeed at achieving this vision is by opening up varied learning opportunities for our AUSTSWIM Teachers and we can continue to achieve this by understanding that: 'Good teaching is good teaching, no matter how it's done.'

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Learn to swim with DLRG and Nivea – A pre-school swimming education project of DLRG in cooperation with the support of the company Beiersdorf (Nivea)

Ludger Schulte-Huelsmann[1]

German Lifesaving Society (DLRG)[1]

Background

Drowning in Germany came up in 2009 with 474 cases according to a media analysis based statistics of DLRG. Included in these figures we find 32 children up to the age of 15, respective 24 children up to the age of five.
At the same time we did a research on the ability of swimming of children leaving primary school. About 25% are still non-swimmers and additional 20% unsecure swimmers (just beginner's award).
As a consequence of economical problems of communities in Germany we are loosing just over some years more than 300 public pools. 20% of the primary schools have no pool available in their area.
Also the private organisations providing swimming education, e.g. DLRG as the biggest provider on the market, suffer from the lack of public pools. DLRG already improved the cooperation with the school system by providing additional voluntary swimming teachers and by qualifying school teachers in the field of swimming education and lifesaving.

Description

To increase the number of partners caring about swimming education DLRG now developed a project which is related to the public pre school system, to the kindergartens.
On the first hand the educators are qualified as a lifesaver (silver level, including first aid). This ability is the basis to be allowed to accompany a group of children at a pool visit. The qualification is organised by the local clubs of DLRG and their instructors. Thanks to the support of NIVEA the local clubs are granted a certain amount of money for every qualified educator.
On the second hand the educators are invited to a central two days education at DLRG Headquarters in Bad Nenndorf. Experts teach them how to get children accustomed to water in a playful manner, to build up water awareness and to guide children to become a swimmer. At the end of the course the educators get the permission to test the official beginner's award for their groups.
Again, thanks to the support of NIVEA, these courses are free of charge for the participants and the authorities accept them as part of the educators' further education.

Aims

- Reduce drowning in the age group of pre school children
- Get children in the age group of 3–6 accustomed to water and teach them water awareness
- Provide pre school swimming education
- Qualify educators in Kindergartens as lifesaver and swimming teacher
- Increase numbers of beginner's swimming and lifesaving awards
- Swimming and lifesaving as a wellness sport program for educators
- Get new members for DLRG

Realisation

- Development of a project concept by DLRG and negotiations with a sponsor
- Information and promotion for the project within DLRG nationwide
- Declaration of interest by a local club of DLRG to take part in the project
- Acceptance by the Headquarters if the conditions are fulfilled and money is still available in the budget
- The local club promotes the project in its area by media information and direct contacts to Kindergarten. Information media for participating clubs are provided by the Headquarters. All media activities have to be documented by the club
- The local club qualifies the interested educators as lifesavers
- The local club provides all information about its activities and the participants to the Headquarters
- Every educator with a passed silver award is granted by €50 (for the club),
- Now the qualified educators are invited to the course at the Headquarters. Every participant is granted further €50 for the club related to the person.
- The qualified educators provide swimming education for their Kindergarten groups in cooperation with the local DLRG club.

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Whanau Nui – Free family swimming and water safety lessons

Teresa Stanley[1] and Harry Aonga[1]

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Whanau Nui is a successful 'learn to swim' and water safety programme which has be run in Counties Manukau since 2002. The programme has been coordinated and funded by Injury Free Counties Manukau region of Auckland and WaterSafe Auckland. The success of the programme has seen it replicated in Auckland City locations.

The programme offers five free 30 minute swimming and water safety lessons delivered by swim school instructors at local aquatic facilities. A criteria for entry into the programme is that at least one parent/caregiver is in the water with their child during each of the five lessons. The programme has a significant focus on parent/caregiver supervision and basic water safety messages and skills. Swim schools have supported the programme by agreeing to teach a greater level of water safety, having differing ability levels in their classes and drastically reducing their lesson charges.

To supplement the water safety messages that parents and children receive in the water, water safety educational resources are also given to participants at the conclusion of each day. Where required, resources are distributed in Te Reo Maori Pacific, Mandarin and Korean languages.

The aims and objectives of the Whanau Nui Programme are to:

- Give children an opportunity to learn basic water safety skills and increase their confidence in water
- Teach parents/caregivers water safety skills which they can continue to reinforce with their children once the free lessons have finished
- Deliver water safety messages to parents/caregivers focusing on active child supervision when in, on or near water
- Deliver the programme in such a way that the water safety skills are fun and enjoyable for both the parent/caregiver and the children
- Target at risk population groups including Maori and Pasefika

Historically, Whanau Nui was designed to target Maori and Pasefika families due to the high drowning statistics of these two ethnic groups. Unfortunately many of these families are of a low socio-economic status and thus cannot afford to put their children through paid swimming tuition. This programme is targeted towards families who are not currently enrolled in paid swimming tuition.

Unique to the programme is the criteria that a parent/caregiver must accompany their children in the water during the lessons. This criterion is included so parents/caregivers learn the importance of close supervision when their children are near water, and to also teach parents simple swimming and water safety skills they can then teach to their children once the free lessons are completed.

Approximately 600 children and 350 parents participate in the Whanau Nui programme each year in the Counties Manukau and Auckland areas. Around 25% of these families enrolled in paid lessons on completion.

The evaluation revealed several key findings which are important for the future planning of the programme and have informed recommendations for the programme.

- Learning new skills and being in the water were what children identified as being the most enjoyable aspects of the programme, with water safety third
- Being in the water with their children was what parents identified as the most enjoyable aspect of the programme for them, providing justification for this criteria for participation
- Parents cited learning how to teach their children and learning about water safety as the two things they learnt most
- 87% of parents now feel confident in their ability to teach swimming and water safety skills, with 97% of parents indicating they will take their children to the pools more often

Findings on the skill learnings of the participants will be presented.
The success of Whanau Nui has led to this project being replicated across the whole Auckland region.

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AUSTSWIM – Providing quality training in any language and culture

Carolyn Veldhuyzen[1]

AUSTSWIM – The Australian Council for the Teaching of Swimming and Water Safety[1]

Introduction

- Modify and deliver teacher training in a format that would develop high quality licenced AUSTSWIM Teachers in CALD communities
- The AUSTSWIM teacher of swimming and water safety training course that leads to AUSTSWIM Teacher License
- AUSTSWIM is a not for profit organisation whose mission is for every Australian to be taught to swim by an accredited AUSTSWIM teacher, enabling them to safely enjoy aquatic environments and activities
- AUSTSWIM has a strong philosophy that is founded on the belief that all Australians should have appropriate and relevant swimming and water safety skills and understand the principles and practices of water safety
- AUSTSWIM is a member of the National Water Safety Council and works in partnership with RLSSA, SLSA & Swimming Australia Ltd.

Objectives

The program was developed originally in South Australia to cater for the needs of Indigenous communities and differences in learning styles, English as another language and to provide autonomy for communities to develop swimming and water safety classes for their own communities. It was developed from a partnership between AUSTSWIM, the Indigenous Sport and Recreation Officer and community Elder, Active Communities and technical & Further Education.

Target

Community participation in the SA Indigenous focus group.
A flow-on effect with interest from a variety of CALD Australian communities.
Possible partnerships with Water Safety New Zealand for the Maori communities.
AUSTSWIM continues to also work in other international countries which will also benefit from this modified delivery model.

Methods

Consultation with South Australian Vocational Education Providers at the regional Technical & further Education Campus, Sport and Recreation Indigenous Field officers, Active Community Field Officers, and AUSTSWIM representatives a working group was formed to modify the theory component of the course for practical delivery while maintaining the accreditation guidelines.
The program has been modified to allow for practical delivery and competency assessment providing communities with AUSTSWIM Licenced Teachers while maintaining the integrity of the training and AUSTSWIM name.
The program has been over 12 months in development and implementation with resources as the final developmental stage.
Originally designed to aid Australian Indigenous Communities the training can be delivered to any CALD groups.
The first group of Indigenous trainee AUSTSWIM teachers has taught a group of Indigenous primary students over an eight week term with promising results including the positive interaction between students and cultural trainee AUSTSWIM teachers, finalising their practical teaching with the remote Yalata Community on the Nullabor Plains.

Results/Evaluation

The process has been one of continual development, assessment, evaluation of the program and the students understanding of the material. The research focus group has developed as swimming and water safety teachers and instructional styles used, their personal safety competencies and stroke development, and aerobic fitness has also been a measurable benefit of the training. A higher level of understanding of how the development of swimming skills benefits their general health and fitness, ability to improve other sports participation and more importantly how swimming ability and fitness can improve their personal safety in aquatic environments.
The interest from other CALD communities and the ability of the practical delivery to be replicated by other water safety groups and other sports has been an added benefit of the course modification and the trial group.

Conclusion

The practical delivery is an achievable delivery method that can be adapted for any community locally or globally.
It relies on a process of visual and learning skills then micro teaching skills along with supervised teaching experience.
There is no foreseeable reason why other courses cannot be delivered or adapted to a similar format, infants, adults, advanced stroke development, rescue awards, first aid, CPR.
AUSTSWIM adapting programs for individual communities and cultures.

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POSTER PRESENTATION

ID: 1286 / Paper: 395

New design for sign showing how to prevent drowning at sudden water accident

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Asahi Ocean Development[1], Morioka Shirayuri Gakuen High School[2], Nagaoka University of Technology[3]

There are signs used to indicate safe areas for swimming in all the world. The signs which show a posture indicating how to survive sudden water accident is here proposed in addition to signs already used. A design concept of the proposed signs indicates how to open the airway quickly and surely when a person falls into sudden water accident or a person is tired during swimming. For example, the signs initially break up a chain of events from stumble at wading during flood occurred by typhoon or tsumani to drowning. In this presentation, new signs which indicate how to float and wait rescue on the water surface are to be a universal design will be proposed and discussed.

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Qualitative findings from a 3-year baby/preschool swimming training: A two-year case study

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Leeds Metropolitan University[1], Hellenic Centre for Disease Control and Prevention[2], Lifesaving Foundation[3], University of Athens[4]

Research in the field of baby/preschool swimming teaching is scarce. The aim of the present study was to identify the components that might enhance or interrupt swimming teaching for this young and vulnerable age group. A brother (aged 3 years old) and sister (aged 2 years old) were trained for a 3–year period by two swimming teachers and a detailed video and written diary of the training sessions was kept about their daily progress. The frequency of the swimming lessons was 180 per year and the duration of each lesson ranged from 40 minutes to 2 hours. Qualitative content analysis of the videos and the diary confirmed that the use of songs, music, mimicking of cartoon heroes, the incorporation of fairytales in the lesson and parental participation are effective means for achieving progress and skill development. On the other hand, low water temperature, sun exposure in outdoor pools, presence of others (animals or people) doing other things outside the swimming setting are distracters from the aims of the lessons and should be avoided.

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Basic Aquatic Water Skill

Shayne Baker[1]

Royal Life Saving Society – Australia[1]

The International Life Saving Federation (ILS) is cognisant of the high representation of infants and toddlers in the drowning statistics around the world. In fact, it is the leading cause of death in this age group.

In recent years the ILS International Task Force was formed from representative organisations and tasked with developing Open Water Drowning Prevention Guidelines. There has also been some significant work undertaken in Bangladesh, Thailand, and Vietnam with the Centre for Injury Prevention and Research in collaboration with the Royal Life Saving Society, The Alliance for Safe Children and UNICEF.

The research findings and strategies have been instrumental in the formulation of the ILS draft Position Statement on Basic Water Aquatic Skill and the conference provides an opportunity to share the draft statement and more importantly to gather additional feedback before the document is submitted for final endorsement.

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Water safety education is more than teaching swimming skills: Comprehensive drowning prevention education

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Vestfold University College[1], Norwegian Life Saving Society[2], Norwegian School of Sport Science[3]

Introduction

The phrase 'Water Safety' is used in various ways. Some focus primarily on cautious behaviour on, in or around the water. Others focus on rescue or self rescue. Many who teach swimming skills, assume that this is water safety and is somehow protective. We have argued elsewhere for a more comprehensive, i.e. all-around aquatic skill development; 'watermanship' or aquatic competence. However comprehensive water safety also goes even further. Even excellent all-around skills may not suffice if pertinant knowledge of local conditions is not present. Skill and knowledge may not suffice if one has insufficient respect for the powers of nature and the chance of random risk. And finally, one can still make a fatal judgement.

Methods

A literature search identified many definitions of 'water safety'. By combining the elements most frequently cited and identifying the contents of the more comprehensive definitions, a synthesis was arrived at which forms a conceptual definition of water safety.

Results

The 'conceptual' model of a definition of water safety includes four elements, a) all-around aquatic skill, b) knowledge of general and local conditions, c) an attitude of healthy respect for the elements and for human frailty and human error, d) the ability to make correct judgements in risk situations.

Discussion

Many varieties of aquatic education are practiced in the name of water safety. Not all are equally oriented to drowning prevention. Not all address elements other than skill. As we have seen, skill is often not enough. This is one explanation for why some known as good swimmers, still drown. Perhaps the other most frequent missing link is local knowledge. The complex of elements described here are often neglected and may be the key to high drowning statistics. When these elements are combined they form a rather solid defence. When one or more of the elements is missing, the results can be fatal. Some may find teaching swimming skills very enjoyable but that teaching the other elements is less enjoyable and more difficult. This needs to be addressed. The knowledge that other elements than skill are a critical part of the causative picture, needs to be imparted to all aquatic educators. And techniques for presenting the other elements, even to children, must be developed and disseminated. One aspect which really touches knowledge, attitude and judgement, is one's ability to correctly perceive their own competence. The combination of overestimating ones ability and underestimating the risk has been called the 'deadly duo'.

Conclusions

Water safety education is a comprehensive challenge and requires reflection, innovative teaching and team work.

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Swim to Survive – Supporting rural aboriginal and farming communities

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Introduction

Over a two year period, the Lifesaving Society, Alberta & Northwest Territories provided a Swim to Survive School Grant to community schools to support their access to the Lifesaving Society's Swim to Survive program.

The Swim to Survive program focuses on achieving a single skill sequence (roll into deep water, tread water for one minute and swim 50 meters). Any method that allows the learner to get to safety is acceptable, there is no one right solution.

Rural schools were targeted. Drowning is the leading cause of non-machine related fatalities in farming communities (1), while it is the second highest cause of death in Aboriginal communities in Canada. The drowning rate in the Aboriginal population is six times higher than that of the Canadian average(2).

Objectives

1. Children would get swimming lessons that will improve their swim survival skills
2. Teachers and school administrators would view Swim to Survive as a viable and cost effective
3. Communities with unique cultural needs could provide valuable swim survival skills to their children

Target

Primary: School-aged children attending reserve or colony schools in rural Alberta
Secondary: Individuals that had the capacity to deliver the program and decision makers in the school or community

Methods

The Swim to Survive School Grant involved:

- Grant funds defrayed costs of: transportation, instruction, or rental costs
- Schools were required to provide a Swim to Survive experience of a minimum of three in-water swim lessons and three in-classroom water safety lessons
- Results were collected using a pre- and post-skill assessment sheet and survey information from children, teachers and pool supervisors
- Swimming instructors were provided the Swim to Survive Activity Guide and school teachers were given Water Smart In-class Lesson Plans

Results/Evaluation

We had an overwhelming positive response to the program. Feedback included:

- From the description of the program and the funding, the colony agreed, for the first time, to allow kids to participate
- It was amazing, students who were afraid of the water, told me that after the first one (lesson) they weren't scared anymore
- This was one of the most positive swim programs, that has been offered by our school
- 90% of the teachers stated that they would like to see the Swim to Survive program become a permanent part of the Grade 3 curriculum

Over two years, 18 colonies and 10 reserve schools completed the program, resulting in 1310 students who attended Reserve schools and 493 students attending colony schools being trained in Swim to Survive.

Discussion

Teachers reported that the Swim to Survive School Grant was critical in providing funding for swim lessons as 77% of the schools had no other outside funding sources. There is a clear demonstration that further funding will be required for them to do this again.

Conclusion

Essentially, the project unfolded as planned. Feedback from students confirmed that this program achieved its goals to teach children new skills and improve confidence levels. The responses from schools exceeded our expectations and available funding. School teachers really understood the value of the program, especially for introducing in a short amount of time vital swim survival skills.

Acknowledgements

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Observation skills in water competence learning processes – A didactic challenge

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University Of Copenhagen[1]

Students of exercise and sport and outdoors instructors need to be qualified to develop and lead activities in and on the water with different target groups. This makes it necessary to achieve observable 'concrete competences' in the water, including the attainment of knowledge about oneself and others while being active in water under a variety of conditions. In a global context teaching in swimming for all with specific focus on open water competences needs a broad variation of experiences combined with special observation and communication skills to develop quality in the Learning Process of Basic Swimming and Lifesaving Competences. The relationship between the 'non swimmer', 'water activities' and 'child development' aspects are crucial. This is explored by asking questions such as: Who – is the non-swimmer? What – characteristics do you observe about the non-swimmer's behaviour in the water? Why – do you think this appears so? And Where – is the possible 'space' for communication/ exchange of knowledge between the new-swimmer and the teacher, and last, When– is the right time to activate the specific child's learning process.

The main focus is on the intensive use of observation skills and IT-video to support communication and motivate reflection on particular behaviour of practice. Some simple methods to use observation skills between swimmers arouse their curiosity and encourage understanding of the relationship between the child and the water. Examples from learning processes using simple video analyzes and integration of stills in reflection and feedback training are presented. Hopefully this project will inspire useful practical tools to help future swimming teachers in achieving relevant competences and motivate them to be curious about the experiences of the individual non-swimmer. The project offers solutions to the question of how a study process can be organized to achieve this necessary practical knowledge (the desired and necessary competences).

The project is connected to TIES – Technology and Innovation of Educating swimmers. Leonardo da Vinci – Life Long Learning program. The poster will present brief examples from specific parts of the student's course work processes with well known problematic challenges regarding basic competences in the water.

The project looks at observations skills integrated in the learning process from different perspectives, different target groups (children with special needs – a new chance to take part in a learning process), specific concepts and environments.

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Hari's World/Hari at the Beach

Tristan McGee[1] and **Diane Standley**[1]

The Royal Life Saving Society UK[1]

Background/Introduction

Water safety can be a difficult subject to get people to think about and discuss. RLSS UK wanted a product that encouraged people of all ages to think about the subject without it feeling too formal. The programme is a 'first reader' format.

Water safety is a difficult subject to introduce at a young age, the reader presents the subject aided by Hari, a fun character for parents and children to engage with and discuss safety in a light format. Parents and children were involved in the development of Hari.

Aims/Objectives

- To get parents and children talking about water safety
- Better awareness of water safety
- The target audiences include; young children, their parents and their first schools/play groups
- Targeted at a UK audience the book has potential to reach a wider International audience

Methods

Many accidents can be avoided if children are equipped with the basic skills required to identify and avoid hazards. Hari's World is a colourful series of books parents and teachers can effortlessly engage children in exciting adventures with a cast of loveable characters and subtle messages as they learn important life saving skills. Hari's World has been developed by Tristan McGee and covers a wide range of subjects.

The product works best where Hari is introduced to children at school and reinforced by readings at home. RLSS UK has been working with Hari's World to develop water safety messages and launch the product to schools and other suitable outlets.

Hari at the Beach has been released and will feature in the RLSS UK Water Safety Week.

Results

The Hari Schools' Outreach Programme is gathering pace as the good news spreads about the fun children have interacting with the readers. These are memorable events for children and many of them go on to become members of Hari's World. Teachers welcome the readings because these bring out confidence in the children and serve to reinforce the safety messages being taught at their schools as part of the school's curriculum.

Discussion

- It is early days for Hari at the Beach, but schools and children like the format
- There is scope to re-visit water safety in future publications
- Hari and friends has the capacity to be developed further into a cartoon series or other media formats
- There is capacity to develop the product for other markets
- That presented in the right format, young children can engage with and learn water safety messages
- RLSS UK would not have the resources to develop such a high quality resource. Working in partnership with a commercial partner means we can get the best from our input.

Conclusion

By working alongside a commercial partner with an existing concept, RLSS UK has been able to deliver a new product that expands into an area where we had no resources.

Acknowledgements

Hari's World is a unique product that RLSS UK has been able to endorse and support the development of.

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Proposed new warning graphical symbols for buoyancy aids

Garry Seghers[1,2,3,5], Adam Farrall[4,5], Andrew Ebben[3,5] and Guenther Cornelissen[5]

STA[1], IFSTA[2], RLSS[3], Esprit Group[4], CEN TC162 WG10[5]

Introduction

CEN TC162 Working Group 10 are proposing new warning and advice symbols for learn-to-swim buoyancy aids to be used in Europe.

Graphical symbols related to safety issues are linked to standard geometric shapes and a colour.

A series of ISO standard sets strict rules for the design and pictorial element of graphical symbols.

Graphical symbols are related to the product and its wider use, place of use etc. to which they are attached. Therefore the information content does not need necessarily to contain this product as an pictorial element. It is even better to keep the design free of particular products in order to ensure universal application as far as the risk, behaviour, place of use etc. is concerned.

Graphical Symbols can be combined but each symbol has to be meaningful and spontaneously comprehensible by itself. The pictorial elements have to be as simple as possible. Rough lines are to be preferred. Dense pictures can not be spontaneously recognised. Furthermore the size (restricted space for attachment) has to be considered.

Taking this into consideration a poster is being produced to raise awareness of the new warning symbols and feedback is required from the Conference on the suitability of the graphical symbol designs.

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A Norwegian model of swimming competency

Robert Keig Stallman[1,4], Per Ludvik Kjendlie[2,3], Kjell Haugen[1], Mats Melby[1], Tore de Faveri[3] and Reidar Nesheim[1,4]

Norwegian Life Saving Society[1], Vestfold University College[2], Norwegian Swimming Federation[3], Norwegian School of Sport Science[4]

Introduction

The search for a definition of swimming ability has been long. However, identifying protective elements is necessary for planning quality water safety programs. Drowning prevention must be the primary goal of all aquatic educational programs. If one learns in a pool, the challenge of open water situations requires a variety of skills to raise the level of protection. Drawing from both research and long experience a model has been created. The essence of the model is that all-around skill development is in focus. A variety of elements which have been demonstrated to relate to the causes of drowning are included (2).

Methods

The model includes equal emphasis on swimming competence on the front and the back as well as equal emphasis on competence both at the surface and underwater. It also includes emphasis on stop and rest by floating, both safe and challenging entry and exit, and swimming with clothes. Lastly, we favor the philosophy of evaluating all elements individually and in combination. The elements included form the framework of a teaching program.

In the first phase of this project, the above model was operationalized to a combined test. This combined test is not the same as a (the) definition but is as close an approximation as possible. The value of a combined test is that it can be administered efficiently in a teaching situation, is reasonably accurate relative to the model, and can provide information essential for both program planning and program evaluation. The second phase of the project was to negotiate with the Directory of Education regarding inclusion in the schools. While the model has been in limited use in Norway for 20–25 yrs, this was the first opportunity to include it in the school system.

Results

The existing national curriculum for primary schools contains two relevant clauses. The first is that by the end of Grade 4, all children should be able to swim. The second is that the achievement of competency goals will be evaluated for all subjects after Grades 4, 7 and 10. For swimming at the end of Grade 4, two competency goals were established. A lower goal is a combined test derived from the model described above, with a total distance of 25m. The higher goal is a similar combined test over 200m. These goals were published in 2008. They are elsewhere described as a 'zone' for defining 'can swim'.

Discussion

The national curriculum is compulsory. Regarding swimming, it is not precise enough to guide teachers. The published supplimentary materials for teachers are precise regarding goals though not compulsory. The consequences however, are goals so strongly recommended and in reference to the national curriculum, that it is hoped they will be considered 'compulsory'. The three organizations whose representatives have negotiated with the school authorities have agreed to promote these goals as a nation wide Norwegian model. The final goal is of course, broad public acceptance.

Conclusions

The model describing desired swimming competency goals after Grade 4, has been incorporated into the school system. Compliance will be tested in a follow up study in 2011.

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Bridging the gap – The transition between pool and open water: A pedagogical drowning prevention approach

Robert Keig Stallman[1,3], Per Ludvik Kjendlie[2,3] and Bjorn Harald Olstad[1,3]

Norwegian Life Saving Society[1], Vestfold University College[2], Norwegian School of Sport Science[3]

Introduction

Many people learn to swim in quiet water, often a pool. Most drownings occur in open water . Many do not manage the transition. The aim of this paper is to present some pedagogical tools on: a) how to simulate open water in a pool, and, b) how to simulate certain open water risk situations.

Simulation

Any simulation is pre-planned. An accident is rarely forseen. Simulations can however, serve a valuable purpose, giving the learner a 'what if' experience. Such experiences can be integrated into the learning process at a very early stage. The following examples are but a few which can help to bridge the gap between pool and open water.

Open Water

1. Wave Machine: Pupils line up facing the wall, shoulder to shoulder, gripping the side or gutter. On signal, push back and pull in, repeatedly and synchronized. Waves are created. Walk, run, float, swim in the waves.
2. Carrosel: Pupils hold hands in a circle. Running in a circle creates a kind of whirl pool. Release hands and float or swim in the whirl pool.
3. Stream Machine: Pupils line up in two lines facing each other. They push the water with both hands, synchronized, in same direction, creating a channel or stream. Float, swim in the stream.
4. Magic Carpet: Pupils line up in two lines facing each other and grip hands across, just below the surface. Another(s) lies up on the arms of the first pairs and is progressively rolled along a carpet of waves as the pupils alternately raise and drop their arms, in synchronization.
5. Freight Train: Pupils line up in two lines facing each other, forming a kind of track. The others, one at a time, push off in a prone glide along (between) the tracks. The pupils consecutively grasp the hands of the glider and progressively pull and push on the feet as she/he passes.
6. Tunnel: The old under the legs of a partner game is now several partners after one another, forming a tunnel. The 'diver' dives under the legs of the first and is progressively pushed by the tunnel guards under until they have travelled the length of the tunnel.

Risk Simulation

1. Use of clothing: Start early. T-shirt in the beginning. Add clothing as comfort increases. Simply go on with the day's plan, with clothes.
2. Fall into the water: Simulated in a game. Generally, jumping and diving are excellent. Warning! Choose safe depth! Delay diving until they are ready otherwise for water 11/2 – 2 body lengths deep.
3. Log roll: Learner rolls out into the water from side. Rotation about the long axis of the body.
4. Tuck sit & roll: Roll into the water from tuck position. Hold knees, toes over edge. Roll forwards. Aim for no splash.
5. As above: backward
6. Jump: over a cane, up to a flag, up and catch ball, with a half twist, like a spike, like a duck, jump and glide, jump and level off, jump and kick glide, jump and bob, jump and swim, jump and float up, jump and sink, jump and pick objects from bottom.

Summary

All of the above can initiate the learner into the 'unexpected'. Grade to learners level. Organize with safety in mind. Watch for equipment or facility hazards. Have fun!

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Sea survival training carried out at the Tokyo University of Marine Science and Technology

Yuji Tamura[1], Jun Abe[2] and Dr Hidetoshi Saitoh[3]

Tokyo University of Marine Science and Technology[1], Asahi Ocean Development[2], Nagaoka University of Technology[3]

The Tokyo University of Marine Science and Technology provides a sailor training course. The sailor and the student who take the course must always learn the sea survival technique to prevent drowning in a sudden sea disaster. We provide the sea survival training program in a swimming pool and sea for 130 freshmen of the sailor course. They receive the lecture in the sea survival technique prior to the skill program. The skill program composes of several techniques such as long-distance swimming, floating survival technique with fully clothed from sudden water fall accident, use of the personal flotation device and staying in the marine-style life raft.

In the long-distance swimming skill, they swim with swimming suit by the breast stroke for 120 minutes to enforce swim ability. The floating survival technique on their back with fully clothed is so-called 'chakuiei' in Japan. According to this technique, the victim floats on the water surface with fully clothed to avoid excess energy consumption and waits for rescue with breathing. In addition, they learn to float with personal flotation device in H.E.L.P position and group huddle position to retrain body heat. They also experience practice to board the marine-style life raft in a group.

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Manual for the prevention of drowning and water accidents in Mexico

Belin Villasante[1]
NADOSEGURO[1]

Introduction

Recreational water activities are very common in Mexico; its climate and many water resources (rivers, beaches, dams, lakes, hot springs, etc) are conducive to this leisurely and recreational activity, available in rural zones, big cities and especially in tourist areas.

Nevertheless, there is a lack of awareness regarding preventive measures that should be applied with appropriate behavior when frequenting these water sites; drowning is the second major cause of accidental death among children in Mexico.

Schools that teach swimming lessons are an ideal setting for the promotion and dissemination of preventive measures, conduct, and awareness education.

Our experience as swimming instructors who practice this discipline and our awareness of the needs in this field have taught us valuable disciplinary elements that have motivated us to design and produce a manual to complement and enhance the teaching process of swimming and water safety.

Methodology

The methodological foundations of this manual are theoretical and practical, backed by my own experience as a swimmer and my professional experience as a swimming instructor, as well as my knowledge of the various bodies of water in our country. I documented, researched and trained in water security, health education, and how to incorporate them into teaching swimming in Mexico. The main difference and contribution of this manual is that it is directed towards the population that suffers most from these events, namely children, while most of the other manuals are geared towards rescue and safety professionals.

The manual is an educational tool presented in a simple and graphic format, so that young children, teenagers and the entire family can learn the preventive measures corresponding to the different bodies of water in Mexico, with the goal of reducing and/or preventing not only the great number of water-related deaths, but also the many disabilities, both temporary and lifelong, caused by water-related accidents.

The manual has various sections:

Disseminate and promote the teaching of swimming as the best defense to stay safe in the water.
Teach safety and prevention measures.
Explain how one should behave in, on or around water.
Create awareness of the diverse types of bodies of water present in our home and in nature, in addition to artificial bodies of water.
Present the main risk factors that should be considered for each type of body of water.
What to do? How to act? In case of danger. A section for parents giving examples of the most common risk situations that cause accidents.

Today, it is used as basic educational material in certain public and private swimming schools in Mexico.

To date, this manual has been well accepted and has had a positive impact, with encouraging results as a tool to promote prevention education, directly influencing a change in the population's behavior, which would result in fewer accidents. This encourages and motivates us to double our efforts and continue working on the promotion and dissemination of strategies to prevent drowning and water accidents, as well as on creating an awareness of the need to increase water safety measures, as it is a topic that receives very little attention in our country at present.

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Car in water

Mr Rik Voorhelst[1] and **Dr Harald Vervaecke**[2]

Flemish Lifesaving Federation[1], International Life Saving Federation – Headquarters[2]

Since 1965 I study and investigate 'Car in Water' accidents and the survival possibilities of the passengers. About this subject I made already two instruction films. The last one in 2003. I gave Power Point lectures and demonstrations in France, Spain, the Netherlands, Germany and Belgium. I think that 'Survival Chances by Car in Water Accidents' would be a very interesting subject in the congress, because as far as I know, this never has been studied profoundly before. In annexe you'll find my folder on wich my lessons are based. Co-operating in this congress would be a great pleasure.

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Jabari – Balancing joy and safety in the water for children

Rebecca Wear Robinson[1] and Kerry Grier[1]

Jabari LLC[1]

Background/Introduction

Programs to raise awareness on water safety and drowning awareness exist around the world, yet childhood drowning deaths continue unabated. We believe that drowning rates will drop permanently if we focus on teaching water safety to children – consistently, repetitively, age-appropriately, in a non-threatening manner. After careful study of existing programs and looking at how children are best engaged to learn, we have developed a new approach to deliver important water safety messages in a positive way that is understood and internalized by children.

We have created a character, Jabari, that we believe will engage children and their parents in a responsible and proactive manner. Jabari is the Swahili word for 'brave' and our Jabari is a captivating lion cub who would like to do the right thing, but like all children, needs guidance and reminders of how to stay safe. We selected a lion cub because we believe that a fascination with lions, and a recognition that they are leaders, cuts across cultural and geographic lines. We believe that by positively introducing basic concepts of water safety using a lovable character, children are more likely to remember and model the desired behavior. We have also developed a simple, easy-to-understand slogan that will form the basis for all water safety messages.

Teach. Watch. Protect.

Aims/Objectives

We are social entrepreneurs – addressing a social issue with a business approach. We are committed to donating ten percent of our revenues to global organizations which provide swimming lessons to at-risk children.

Our goal is to introduce a character to engage children and teach them basic water safety messages appropriate to their geographic and cultural circumstances. If children engage with a character they will want to emulate his behavior and we can teach them basic water safety messages appropriate for their geographic and cultural circumstances.

Target

Our goal is to permanently reduce the drowning rate for children across the globe. Although currently based in the U.S. and Canada, both Rebecca and Kerry have spent a number of years in Europe. Kerry was born and raised in Zimbabwe and has worked extensively across Africa. We have a strong understanding of the challenges involved in reaching children in both developed and developing nations.

Methods/Implementation

We work with organizations globally to both identify new solutions to existing water safety issues and reach local at-risk populations. We will use the character of Jabari to deliver important safety messages in a positive way with the highest integrity, to become a high-profile, trusted, and lovable source of accurate water safety information. Jabari has been introduced in a book aimed at 1–5 year olds. Next, we will 'age' Jabari to appeal to children ages 6–10 and will pursue a broad range of media through self-funding, outside investment and licensing including: books, DVDs, children's television, movies, YouTube, internet, text messaging, and appropriate consumer products.

Results/Evaluation

Jabari is new. Preliminary readings of the book to preschool groups have shown that Jabari has engaged the children enough to change their behavior at the pool immediately after hearing the book.

Discussion

Jabari and his cross-cultural band of friends have the potential to be one of few internationally-recognized symbols – positively associated with life-saving messages.

Conclusion

Jabari was introduced in May 2010.

Acknowledgements

Self-funded initiative

References

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Photo: REUTERS/Sivaram V

Partnerships and Programs

This theme focuses on the growing recognition that reducing drowning requires multi-sector interdisciplinary collaboration. Examples stretch from a community level all the way up to global partnerships.

This stream includes a number of papers that focus on national drowning prevention plans, as well as program partnerships. This includes the issue of development collaborations between high resource lifesaving agencies and those emerging in low income parts of the world.

The Partnerships and Programs theme is proudly sponsored by Commonwealth Lifesaving – The Royal Life Saving Society.

One size does not fit all: Rethinking pediatric water safety and drowning prevention in high income countries (HICs)

Dr Rose Jones[1], Kristen Beckworth[1], Jennifer Pewitt[2], Medora Jackson[1], Jesus Alderete[1] and **Claudia Romo**[1]

Children's Medical Center[1], YMCA of Greater Dallas[2], Safe Kids Dallas Area[3], International Pool Spa & Safety Association[4], Vickery Meadow Improvement District[5]

Background

Drowning is a significant cause of mortality and morbidity for children, particularly in high income countries (HIC) where a disproportionate number of drowning occur within minority populations. Although pediatric drowning has consistently been higher in African-American, Hispanic and Native American populations, prevention efforts have failed to address cultural diversity. Accordingly, drowning prevention efforts tend to be homogenous in approach, generic in scope and acultural in focus. The result is a 'one size fits all' approach to drowning prevention that is grossly inadequate for meeting the water safety needs of children in multicultural, low resource communities.

Objectives

The primary objective of this research was to identify, document and assess the various ways in which social, cultural, economic and political factors interface with pediatric drowning prevention education and outreach.

Target

Research was conducted at ten inner city, low income apartment complex swimming pools in Dallas, Texas, USA. Residents in the apartment complexes came from culturally and linguistically diverse backgrounds and include refugees, immigrants and native born Americans who have roots in a diverse array of communities, including Mexico, Eretria, Nepal, Burma, Iraq, Thailand, Cameron, Bhutan and the United States.

Methods

Ethnographic methodologies, including participant-observation, informal interviews, surveys and focus groups were used to collect data during the period of June–August 2010. Each apartment complex was targeted for three hours of aquatic instruction/education; twice a week for four week sessions by a traveling group of YMCA trained lifeguards who were ethnically and linguistically diverse. The research generated approximately 250 hours of observations, scores of informal interviews, three focus groups and water skills assessment on approximately 300 children.

Results

This research demonstrates that political, social, economic and cultural factors are inextricably linked to drowning prevention education and outreach; no singular approach or uniform message is sufficient to meet the needs of children in multicultural HICs. Barriers to teaching children water safety skills included not owning swimming attire, misconceptions about the acquisition of water borne diseases, modesty linked to gender and sexuality, grooming rituals, fear and semantic/conceptual misinformation from prevention campaigns. Children and family members often had a different understanding of the key concepts associated with water safety and swimming than did the life guards and the conventional aquatic curriculum they utilized.

Discussion

The public health response to drowning in HICs has largely been limited to developing and supporting research, education, and policies that comprise a 'one size fits all' paradigm. All children, regardless of cultural background, social environment or economic resources are taught how to swim in virtually the same manner; namely in small group settings with an adult instructor and several peers. The notion that peer-to-peer aquatic instruction, same sex swim lessons or parent-child lessons may be more effective and relevant in some communities has not been explored. Similarly, parents are taught how to keep their children safe in the water by imparting the same exact public health message; one that typically does not take into account variations in culture, environment, economic resources or social dynamics.

Conclusion

This research suggests that greater attention needs to be extended to understanding the precise ways in which social, cultural, economic and political factors converge to create community specific needs for pediatric drowning prevention. We cannot continue to develop and apply water safety education that fails to recognize and address issues related to poverty, cultural beliefs and traditions, familial dynamics and political processes.

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The influence of ethnicity on aquatic participation and drowning in Canada

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Lifesaving Society – Canada[1]

The Lifesaving Society has been researching and reporting on drowning and preventable water-related deaths in Canada since 1989. Data is collected from provincial coroner's offices annually and evaluated. This data enables the Society to profile victims of aquatic incidents including the circumstances and contributing factors under which these incidents occurred. This drowning data does not include information about ethnicity and length of time in Canada for new immigrants and does not provide a comparison of the drowning rate for new Canadians versus those born in Canada. The Lifesaving Society initiated a research project to identify the drowning risk of new Canadians.

Immigration trends have shaped the demographic profile of Canada. Statistics Canada (1) projects that the proportion of the Canadian population consisting of foreign-born persons will continue to rise, and could reach as high as between 25 percent and 28 percent in 2031 (2).

The Lifesaving Society commissioned IPSOS Public Affairs (3) to undertake a study that will identify the attitudes and behaviours of new Canadian towards swimming and their knowledge of water safety practices. Several issues around water safety were investigated, including:

- Likelihood of participation in swimming and other water activities
- Correlation between the length of time a person is settled in Canada and their knowledge, attitudes and experiences around water safety
- Effectiveness of certain water safety education programming and programs including in-language materials as a way of reaching out to groups of new Canadians

An online methodology was used and the sample included 1032 adults, between 18 and 60 years old. Approximately half of the sample was born in Canada and the other half were new Canadians (Chinese, South Asian, Southeast Asian and Muslim). All data collection occurred between 20 April and 6 May 2010.

The research confirmed that new Canadians have a higher drowning risk and the need for water safety education targeted for each new immigrant especially those who have been living in Canada for less than five years. In particular, new Canadians need information about the importance of being able to swim and the benefits of formal swimming lessons.

The study confirmed the importance of offering Swim to Survive, a survival swimming program, to be taught during school time to ensure that all Canadian children receive training. The research indicated that translated materials are desired by new Canadians to encourage more people to learn to swim.

The interest in this study was extremely high as it confirmed the hypothesis of new Canadians having a higher risk of drowning in Canada. The hypothesis was based on feedback from new Canadians regarding the lack of knowledge and skills from their home country, combined with the abundance of water in Canada and the fact that the acquisition of swimming skills appears to be deceptively easy.

The study was acknowledged in Canadian newspaper editorials and the study results were published in newspapers, radio and television as well as online publications. The audience reach of over 60 million (double the Canadian population) supports the high interest in the study. Further research is planned for 2011 and the preliminary impact of the study will be reported in July 2011.

Research Partners

Graham Loughton – IPSOS Public Affairs
Tom McCullough – McCullough Associates

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Keeping new settlers safer in and around water

Stacey Willcox[1] and Teresa Stanley[1]
WaterSafe Auckland Inc[1]

Drowning continues to be a major cause of death for new settler populations in New Zealand. From 2005–2009 there were a total of 110 drownings in the Auckland region, 14 of these were Asian (13%) and 27 were Pacific Peoples (24.5%). The Auckland region, known as the 'City of Sails', is a predominantly aquatic region with three harbours, two coastlines, and three major rivers.

The proportion of Asians and other Non-European immigrants has increased during the last decade. The Changing Face of Auckland:

- 50–80 new permanent residents each day
- 1.4 million people live in Auckland, an increase of 12.4 percent, since the 2001 Census
- Auckland Region has 32.4% of New Zealand's population
- 39.9% residents not born in NZ
- 69% Pacific People live in Auckland, 40% are under 14 years
- 6% Asian people live in Auckland, 31% between 15–29 years. A total of 18% of Auckland population

In order to ensure our new settlers are safer in and around water, a number of specific projects and initiatives have been implemented targeting specific ethnic groups or specific aquatic activities.

A New Settler Reference Group has been established. This oversees the new settler water safety strategy.

Asian New Settlers

- Resources – Be Water Safe resource available in eight Asian languages
- New Settler Water Safety DVD
- Water safety workshops presented in the Chinese, Korean or international community groups
- Youth-Leadership water safety programmes in youth community groups
- Geographic – Project in locations of high Asian population on early childhood, swimming and water safety and VHF radioSchool – Practical and theoretical programme for schools with high Asian and Pacific roles. International Students – Provide professional development and deliver comprehensive teaching resource package to 150 international schools.

Refugees

- New Zealand Olympic Committee (NZOC) Holiday Programme NZOC – Refugee Swimming and Water Safety holiday programme
- Ongoing water safety workshops at each intake at the Refugee Centre
- Adult refugee education – annual workshops (Selwyn College)

Promotion

- Implement a media and promotion campaign on prevention of water-related injuries and drowning for Korean and Chinese community in the Auckland region.
- Water safety promotion at events such as the Lantern Festival, Chinese Autumn Festival, New Year festival, Taiwanese Festival, Migrant Expo

Muslim Swimming – Promote and deliver weekly learn to swim and water safety aquatics within Muslim women community.

Rock fishing – targeting Asian (Korean) and Pacific Island rock fishers
The West Coast Rock Fishing Project was set up in response to a spate of rock fishing fatalities on Auckland's rugged west coast (five fatalities in four months). The campaign provides a fishing safety education programme to help fishers identify and manage the risks associated with fishing on Auckland's west coast, and conducts a survey of fishers in order to enhance understanding of their fishing safety knowledge, beliefs and behaviours. The project is unique in that the programme was conducted on-site at high-risk fishing locations.

Whanau Nui – targeting Maori, Pacific Island and Asian families
Whanau Nui is a successful free family 'learn to swim' and water safety programme. The programme offers five free 30 minute swimming and water safety lessons delivered by swim schools at local aquatic facilities. At least one parent/caregiver is in the water with their child during each of the five lessons. The programme has a significant focus on parent/caregiver supervision and basic water safety messages and skills.

A brief summary and evaluation of each of the initiatives will be presented.

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Tidal policy: A wave of reform for Maori drowning prevention in Aotearoa/New Zealand

Mark Haimona[1]

Te Ripo[1]

New Zealand's Drowning Prevention Strategy (DPS) 2005–2015 represents a commitment to delivering outcomes that reduce drowning and water related injury. Developed by the government's Accident Compensation Commission (ACC) in association with key stakeholders from the water safety sector, the strategy's aim is for 'a Water Safe New Zealand, Free from Drowning'. This presentation looks at a study in relation to Maori participation and implementation of policy outcomes. Over recent years, appropriate ways to deliver water safety initiatives with Maori and within Maori communities have evolved. Drownbase (Water Safety New Zealand, 2007) data still shows Maori are disproportionately represented in drowning and on average make up 22 percent of New Zealand's drowning total.

Tidal policy is an attempt to 'retrieve some space' (Smith, 1999) and provide an analysis of Maori participation in drowning prevention and policy. Emergent themes from the study indicate several factors most likely to influence a positive change including: new research related to Maori drowning, participation of Maori as a key stakeholder in policy development and delivery; effective interventions that engage Maori; potential cultural and health impacts to Maori. Through this wave of reform arise opportunities to determine the impact of the DPS on 'Whanau Ora', the health of Maori families and communities as specified in polices that target Maori. It is also useful in predicting any unanticipated negative effects that could potentially increase disparities. These factors need to be brought to the surface now for progress in the core social, physical, cultural and institutional contexts in which drowning prevention operates in New Zealand.

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Survey of Islamic Republic of Iran Lifesaving performance during the years 2005–2010

Seyed Mostafa Aghamirsalim[1], Dr.Hossein Abednatanzi[1] and Behrooz Esfandiari[1,2]

Islamic Republic of Iran–Life Saving and Diving Federation[1], Science & Research Branch, Islamic Azad University, Tehran, Iran[2].

The purpose of this study was analyze and describe of the situation Islamic Republic of Iran Lifesaving in the years 1384 to 1389 (2005–2010). The present study focused on the human resources situation, the number and ratio of tourists, rescued persons, lifesavers, drowned people and training programs and facilities. The other purposes of this study were to survey the main factors of drowning and propose of basic and effective strategies in drowning prevention.

Method

This descriptive study was performed using questionnaires and field studies of blind areas of the North Sea coast of Iran (Guilan, Mazandaran and Golestan). Data were analyzed by descriptive statistics (frequency, mean and standard deviation) and non parametric statistics (Correlation coefficient and (x2)).

Results

The results showed that with increasing number of teachers and lifesavers the number of drowned persons decreased. The results also showed the growth of expert human resources, lifeguards and instructors have been considerable, but the ratio to number of drowned do not seem enough. The result also showed that the ratio of the number of tourists and the number lifesavers, number of rescued persons improved and positive correlation was observed. However, these results suggest that despite increasing the number of tourists in the years 84 to 89 (2005–2010) the number of the drowned is reduced and there was a negative correlation between them. The review also showed that lack of knowledge and understanding about swimming and drowning and hazardous areas and lack proper culture can be the important factors on drowning.

Discussion

Finally, based on the results of this study it can be deduced that the performance of the Islamic Republic of Iran-Lifesaving and diving federation on development of trained instructors and lifesavers was positive and effective. And it seems ratio and number of drowned is significantly reduced. Results can be applicable and used for designing and planning of other lifesaving federations.

Keywords

Lifesaver, lifeguard, life saving Federation, training programs, rescued persons.

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Changing policy to save lives

Alistair Baird[1] and **David Place**[1]

South Australian Fire and Emergency Services Commission[1]

The South Australian Water Safety Committee SAWSC includes government and non-government agencies that collectively promote, guide and provide services relating to all aspects of water safety. These agencies include:

- Government
- Office for Recreation and Sport (ORS)
- Department of Education and Children's Services (DECS)
- Department of Justice (SA Fire and Emergency Services Commission)
- SA Police (SAPOL)
- Department for Transport, Energy and Infrastructure (DTEI)
- Industry Organisations
- Boating Industry Association of SA
- SA Farmers Federation
- Kidsafe SA Inc
- Local Government Association of SA
- Royal Life Saving Society of Australia (SA Branch)
- Surf Life Saving South Australia Inc (SLSSA)
- Swimming SA
- Aquatic Recreation Institute (SA Branch)
- Volunteer Marine Rescue (VMR)

The South Australian Water Safety Committee was established in 2006 to guide South Australia's response to water safety and encourage communication across the industry. This has been a successful initiative and the ommittee is to be commended for developing the State Water Safety Plan 2008–2010 and working together so effectively.

The State Water Safety Plan 2008–2010 (SWSP) will guide government and industry organisations to minimise the risk of water-related injury and drowning deaths through coordinated approaches, education, prevention initiatives and ongoing commitment. This will involve government and non-government organisations working together, sharing resources and continuing their commitment to water safety programs and other initiatives.

The top priorities of the SWSP are those strategies and actions that relate to:
1. coordination in the provision of, and approach to, water safety programs and services across industry organisations. This includes government and non-government organisations and involves communication and coordinated responses.

Collaboration and Consultation

A key result area and strategy within the SWSP related to a need to review existing legislation. Given that the incidence of persons drowning or near drowning in swimming pools was over represented in national statistics, the SAWSC saw this area as a priority for review.

In February, 2009 a subcommittee of the SAWSC was formed to review existing legislation surrounding pool safety fencing in South Australia, with a view to validating those arrangements and/or making recommendation to government for amendment(s).

Aims and Objectives

The SAWSC sub-committee considered the issue of swimming pool enclosures in two main areas:

1. Existing pool fencing enclosure technical requirements, and
2. Existing pool fencing inspection and compliance policies.

Sub Committee Representation

Alistair Baird – Executive Officer, SA Water Safety Committee (Chair)
Aileen Dwyer – Royal Life Saving SA
Helen Noblett – Kidsafe
Craig Hobart – Swimming SA
Noel Mensforth – Department of Local Government and Planning
Dawn Thomas – City of Tea Tree Gully
Jim Daniels – Swimming Pool and Spa Association SA

Between February 2009 and June 2010, the sub-committee met on a number of occasions and in addition to the input provided by delegates, sought information and liaised with other relevant agencies including state and interstate organisations.

The oral presentation will guide delegates in how a collaborative approach of stakeholders can influence legislative change and how to affect research on high risk demographics and present evidence based studies to support safety measures against drowning in private swimming pools. Regards Alistair Baird Executive Officer South Australian Water Safety Committee.

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Collaboration & partnering: Pang habam-buhay ito – Philippine Life Saving Society and Royal Life Saving Society - Australia

Shayne Baker[1] and Arne Navara[2]

Royal Life Saving Society – Australia[1], Philippine Life Saving Society[2]

The Republic of the Philippines is an archipelago of 7107 islands in Southeast Asia with an estimated population of 92,000,000 people. The World Health Organisation estimates child drowning in the region is 6,000 each year.

Australia by contrast has a massive coastline of 37000 kilometres with 11011 beaches and 85% of the population living within an hours drive of the coastline. Add to this demographics the inland water ways, backyard swimming pools and the effort involved in protecting the relatively small population (compared with the Philippines) from drowning and we have two partners with different challenges, though the goal is the exactly the same – drowning prevention.

The other significant difference is that Australia has a world renowned history in lifesaving, dating back to the 19th century with the establishment of the Royal Life Saving Society and the Philippines has a lifesaving organisation that is four years young.

Politicians and community leaders are often heard to utter that the solution can be resolved through a collaborative approach, especially when it requires development of funding initiatives with government, private agencies and the wider community.

In many applications it reflects the desire to encourage shared learning, knowledge and problem solving to achieve common goals between organisations. In this particular case there has been no specific grants or funding sponsors to support the work, it has come from the will of the people who represent both organisations and demonstrates what can be achieved through a shared objective.

This presentation will provide an insight to a collaborative approach that has been effectively operating for the last four years at an international level between volunteers of the Royal life Saving Society – Australia and the Philippine Life Saving Society working as equal partners to develop a strategy to address the critical drowning statistics. impacting on this nation.

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Barriers to aquatic participation for English as second language speakers: An Australian profile: The exploration of a preventative drowning strategy that's working

Sarah Blaubaum[1] and **Julia Dixon**[1]

The Aqua English Project[1]

The Aqua English Project is a leading Australian organisation undertaking all research, development and program commercialisation for English as second language speakers in the water. It is a dynamic social enterprise that aims to link cultural and communicative English language acquisition and water safety skills in a real aquatic environment. It works with international visitors and students, refugees, new arrivals and migrants in Australia, and began research and development of strategic programs because of the over-representation of English as Second Language (ESL) speaker drowning fatalities in Australia with a particular focus on Queensland. The Aqua English Project is a preventative drowning strategy that works.

It has engaged with over 10,000 ESL speakers from different countries including Vietnam, China, South Korea, Malaysia, Japan, Indonesia, India, Afghanistan, Iran, Somalia, Sudan, Brazil, Ethiopia and Eritrea. Its research findings are a result of actively engaging ESL speakers in its two major programs: The Aussie Lifeguard for a Day (cultural and communicative English, water safety at the pool and beach), and S'women: Swimming for Women of all Cultures. The S'women program has also extended to the design and production of culturally sensitive swimwear for the Islamic population as another means of overcoming barriers to entry. Through The Aussie Lifeguard for a Day and S'women, participants were taken away from their traditional classrooms and learning methods to real aquatic environments that require actual engagement. Evaluation of the results has been made by the organisations, councils, government bodies and schools who engage their students/patrons in the programs.

The Aqua English Project and its programs use ESL teachers and/or bi-lingual instructors of targeted populations and are now working in conjunction with a leading Australian University to validate the benefits of this form of education. Traditionally the education and aquatic industries have worked in isolation and opposition to one another. The process of amalgamation of both is fragmented and difficult. The Aqua English Project is lobbying for major changes in three key areas:

- That compulsory water safety lessons are provided to refugees and new arrivals receiving 510 free hours of English language lessons funded by the federal government. Two to three of these 510 hours at least should be allocated to cultural and communicative English language acquisition in a real aquatic environment. The Aqua English Project has asked that a trial program on the Gold Coast and Brisbane be undertaken to spearhead the rise in ESL related drowning fatalities;

- That pool operators and multicultural communities are able to identify with an organisation/enterprise or logo that assists with breaking down cultural barriers to aquatic participation. This will be done through participation with pool operators who are willing to increase their patron base and train their staff in cross cultural communication and cultural diversity;

- That support for a campaign called The Aussie Beach Passport Program is increased at a federal, state and local level in Australia. This program is an initiative that aims to engage with all ESL speakers including refugees, new arrivals, migrants, international students and tourists. It has been designed for all ages, swimming and English levels and is a unique way of engaging the aquatics industry with CALD clientele. The Aussie Beach Passport is a program that will engage all ESL speakers in the water and enhance their aquatic safety and cultural communicative English skills.

Cooperation and partnerships with new industry bodies, organisations and enterprises is a key objective for The Aqua English Project. Research, development and commercialisation of its programs will continue until appropriate regulatory, policy and curriculum changes are made. The needs of ESL speakers in the Australian aquatic environment can no longer be ignored. Initiatives that move away from brochures, DVD's, t-shirt's and related campaigns need to be explored, and consistent funding streams need to be established to ensure program longevity.

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Evaluation of an 11 week water safety program for young adults

Assoc Prof Jennifer Blitvich[1], Lauren Petrass[1] and Keith McElroy[1]

University of Ballarat[1]

Background

It is well known that young adults are over-represented in drowning statistics in Australia and in other developed countries, however until very recently, little was known of the swimming and water safety skills of this age group. This study extends recent investigations (also to be presented at this conference) that examined the swimming and water safety skills and perceptions of young adults in Australia, New Zealand, Japan and Norway. Water safety stakeholders have long advocated for the development of swimming and water safety skills as a way of reducing drowning risk, but to date, the effectiveness of such programs has not been evaluated. To our knowledge, this study is the first to examine skills, knowledge, attitudes and behaviours of young adults before and after a water safety intervention program.

Methods

Participants in this study were 140 first year Exercise and Sport Science students at the University of Ballarat, who were undertaking compulsory studies in swimming and water safety. Prior to commencement of the water safety course, participants completed a self-report survey followed by a practical skills test. The questionnaire addressed perceived swimming ability, survival skills and rescue ability, as well as water safety knowledge, attitudes and behaviours. The practical skills test corresponded to the questionnaire items regarding perceived aquatic skills, and enabled us to determine participants' pre-intervention aquatics skills and the accuracy of their skills perception.

Participants then took part in the intervention– an 11 week program of twice weekly (one hour each) practical sessions and a once a week, one–hour theory class. The intervention was a component of the Bachelor of Exercise and Sport Science degree course, and was comprehensive in nature, addressing swimming, survival and rescue skills. Competitive swimming skills were also included. At the conclusion of the intervention, the questionnaire and the practical skills assessment were repeated.

PASW (Version 18.0) were used for all data analysis. Statistical analysis involved standard descriptive statistics with proportions, percentages and mean scores. As both measures included categorical measurement scales, non-parametric Wilcoxon signed-rank statistics were used to compare (i) pre survey and pre practical testing; (ii) pre- and post-survey; (iii) pre- and post-practical results; and (iv) post-survey and post-practical results.

Results

Comparison of pre- and post-intervention data indicated that the intervention was successful in improving in-water practical skills and theoretical water safety knowledge. Water safety knowledge was particularly poor prior to the intervention, and showed significant improvement following the intervention program. While all practical skills improved, the greatest improvement was found in rescue skills, which were at a very low standard in pre-testing. Attitudes also showed improvement, based on survey responses.

Conclusion

This study was the first to provide empirical evidence of the effectiveness of a water safety intervention targeted to the young adult age group. It showed that the young adults in the study were able to improve their practical skills and theoretical knowledge base and as such should be better prepared as safe participants in aquatic environments. It also demonstrated that these young adults reported positive attitudes and appropriate behaviours towards aquatic activities. It can only be hoped that these will actually transfer to real life attitudes and behaviours.

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ORAL PRESENTATION

ID: 1022 / Paper: 374

Case study and analysis: 100th Anniversary celebration of the Lifesaving Society in Ontario

Robert (Bob) Clark[1]
Royal Life Saving Society Canada[1]

The Royal Life Saving Society, (Ontario Branch) celebrated 100 years in 2008. As Ontario was the first Canadian Branch, 1908 also represented the inception of the Society in Canada.

The Society undertook a one year celebration which included over 30 events and initiatives. There was a two year planning phase.

The presenter was the Chair of the celebration project.

This presentation will provide an overview and analysis of the project with the following learning outcomes:

1. Rationale, goals and benefits of this project to the Society. The presenter will describe the above and why such a project is worth doing, given that it is unlike most initiatives undertaken by a lifesaving organization and could be perceived as diverting financial and human resources from other more conventional drowning prevention activities.
2. Project Business Model and Leadership techniques. The project used a specific business model and business processes. This was key to success. The presentation will include a description of same.
3. Overview of the 100th Anniversary celebration program. The presenter will provide a brief summary of events and activities.

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Drowning risk of immigrants versus non-immigrants in the province of Ontario: A cross-sectional retrospective study

Zane Gallinger[1], **Michael Fralick**[1], Dr Rosane Nisenbaum[1,2] and Dr Stephen Hwang[1,2,3]

University of Toronto[1], The Keenan Research Centre[2], St. Michael's Hospital[3]

Objective

The objective of this study was to determine if immigrants to Canada are at increased risk of drowning compared to Canadian-born individuals.

Background

Drowning is a leading cause of unintentional death among North Americans under the age of 65 (1) Studies in the U.S. and the Netherlands have found that immigrants have a greater risk of drowning compared to long-term residents (3,4). In Ontario, Canada's largest province, approximately 140 people drown each year (1) Ontario is home to 3.4M foreign-born individuals, representing 28% of the province's population, making Ontario one of the most ethnically diverse places in the world (2). The majority of these newcomers (64.6%) come from Asia, often from landlocked areas or from areas where swimming skills are not routinely taught (2). Recent data from a survey conducted by the Lifesaving Society of Canada suggests that immigrants to Canada lack water safety skills and may be at an increased risk of drowning. The aim of our study is to determine if immigrants are truly at an increased risk of drowning.

Methods

All accidental drowning deaths in Ontario, Canada, between 2004 and 2008 were reviewed. Drowning victims were identified using data from the Office of the Chief Coroner of Ontario. Demographic information, as well as medical co-morbidities, presence of alcohol or drugs, and activity at the time of drowning were recorded. Drownings that occurred in a bathtub were excluded. Because the coroner's database did not include the ethnicity of each drowning victim, the last name of each decedent was entered into a validated computerized ethnicity classifier to provide the most likely ethnicity of the individual. Population data for Ontario were obtained from the 2006 Census. Standardized mortality rates (SMRs) for drowning were calculated for immigrants and non-immigrants.

Results

During the study period, 499 residents of Ontario drowned. Eighty-eight percent were male, 79.7% were classified as greater European, 8.6% as Asian, 6.8% as Greater African, and 4.8% as Hispanic. Of all drowning victims, 71% lived in an urban setting and 27% lived in a rural setting. Standardized mortality rates for each ethnic group, controlling for age, gender and place of residence (urban versus rural) are pending customized tables from Statistics Canada. The majority of drowning deaths in the province of Ontario occurred in open water (85%); private pools (9%) were the second most common site.

Discussion

Our study will be the first Canadian scientific study to determine if immigrants are at an increased risk of drowning. Since drowning is a preventable injury, data from our study can be utilized to inform decision-making around aquatic-policy with the ultimate goal of decreasing the number of drowning deaths.

Conclusions

Results from this study may help inform decision-making regarding policies and programs to prevent drowning deaths in Ontario and Canada as a whole.

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Fight of German Red Cross Life Saving against drowning

Prof Stefan Gossner[1]

German Red Cross[1]

The Life Saving Community (called 'Wasserwacht') of the German Red Cross (GRC) fights against drowning in various ways.

As a preventive measure against drowning 'Wasserwacht' trains persons, especially children, in swimming and lifesaving. Every year 1600 swimming instructors give swimming lessons to about 50,000 people (about 17,000 beginners) and 2500 instructors educate about 11,000 persons in lifesaving. They cooperate with schools and youth organisations. In addition schoolmasters are qualified to teach swimming.

'Wasserwacht' has the greatest manpower in Life Saving in Germany. 51,000 voluntary members of Wasserwacht provide more than 1.2 million hours of regular guard duty in spare hours, on weekends and during holidays in bathing-establishments, at lakes and rivers as well as on the North and Baltic Sea. 250 rapid intervention units are kept in readyness 24 hours a day out of regular guard duty and for accidents on places not watched over. They were put in action about 1700 times a year. Even extreme situations such as canyoning or floods are among the scenarios. In case of canyoning accidents lifeguard personal cooperate with the mountain rescue department of the GRC. In case of floods specially trained disaster teams evacuate people surrounded by water and help to secure dikes.

Hundreds of guardhouses, vehicles, boats and thousands of wireless communication units are used. These equipment and facilities take a lot of money which comes from contributors, donations, givers and partially from government grants.

Volunteers are trained for actions in still and flowing waters, in summer and in winter conditions, swimming or with lifeboats, in normal or catastrophic situations, as lifeboat driver, rescue diver or air rescuer. Detailed training manuals are prepared for every scenario. More than 1 Million hours a year are spent for education and advanced training of the Wasserwacht voluteers.

The Lifesaving service of Wasserwacht, rescue service and emergency medical system, volunteers and full time personnel of the German Red Cross form a complex emergency response system and guarantee an optimized managment of rescue and medical care for people in any form of catastrophic situations. This is also true for danger of drowning during catastrophic floods.

The Life Saving department of German Red Cross has supported the implementation of an effective system of water rescue in several countries of the world, e.g. Crete, Serbia, Monte Negro, Albania and Armenia. Further activities were undertaken in the Malidives and Indonesia. Lifeguard personnel were educated, lifeguard instructors were qualified and organisational basics were established.

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Acqua (Water)

Admiral Romano Grandi[1]

Società Nazionale di Salvamento – Italy[1]

Background/Introduction

The Società Nazionale di Salvamento (SNS) is a voluntary service association, IMRF Full Member, recognized by the Italian Government for the professional training and the legal certification of the Italian lifeguards, and also devoted to the intervention and relief in general water emergencies.

Considering the really awful statistics on the number of children that every year die for drowning especially in the low income nations (Lake Victoria in Africa, for instance – and Asia) the SNS has prepared a cartoon for children to be screened worldwide, easily understandable because it is without dialogue, only with images and soundtrack, in such away to avoid language troubles.

Aim

To create awareness for children on the possible risks that can be met at water.
To suggest and support virtuous behaviors, not only in swimming or playing at water, but also in the relationship with the water during everyday life, because water may be a risk, especially for children that often don't perceive dangerous situations.

To achieve the aim, the cartoon script leads through various musical episodes, lasting four minutes each. Every episode runs through a situation of the everyday life of a child in different parts of the world, with his own family and friends. Towards the water and its conditions (waves, stream, depth, etc.), every child of every episode decides and shows his own behavior: if it will be safe, OK, if not, he will be aware of the possible consequences.

The cartoon is accompanied by music only, so its language is universal.

Target

All children all around the world of any language and any ethnicity, through schools, public safety agencies, government institutions, voluntary service associations, wherever they work and assist children, etc… available for all these bodies, free of charges. The only condition is that it is clearly appointed that the cartoon is an idea and initiative of the Società Nazionale di Salvamento (National Rescue Society), Genoa, Italy.

Implementation

Each cartoon episode lasts four minutes and we wish to show in advance two or three episodes.

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Understanding lifesaving service in South Korea and its future development

DaeYoung Kang[1]

Lifesaving Society Korea[1]

Background

Traditionally, translated North American lifesaving training material has been used in South Korea. But the beach environment and user characteristics in South Korea are quite different from North America's. Also there is no such national standard or guideline for beach safety management. So systemic analysis of Korean beaches and bathers characteristics need to be conducted to develop regional appropriate lifesaving program and beach safety guideline.

Objectives

The objectives are:

1. To identify geological features of the beaches in South Korea
2. To identify user characteristics
3. To assess safety management system
4. To drive future consideration for safety management system
5. To provide data to develop new lifesaving program and beach safety management guideline

Targets

The research is conducted at national scope including beaches along the coast line – west, south and east. Seven beaches were selected for site visit. Two or three beaches from west, south, and east coast are finally nominated based on the usage rate. All visitors to the beaches are considered target group. All local agencies providing lifesaving service are included in this study.

Methods

Basic information such as length of the beach, lifesaving service hours, starting and closing dates of the sites is collected by sending a questionnaire to the National Maritime Police Agency which is central governing body taking care of all the beaches in South Korea. And actual site visit and interview with local safety manager are conducted to collect practical and qualitative information. To assess the hazard, Australian coast guidelines and North American regulations are applied. To evaluate safety management, purposely designed check list and questionnaire are used. Actual observation is conducted to analyze bathers' characteristics. Site visits are conducted between late July and early august when it is the typical summer holiday season.

Results

We are able to find out the beaches in South Korea have very distinctive feature depending on where they are located – west, south, and east coast. Beaches in the west coast have high tidal range and underwater slope is very gentle. In the south coast medium tidal range and gentle moderate depth are shown. There is a medium tidal range and underwater slope in the south. Sites in the east shows little tidal difference and steep underwater slope. Regardless of the location, most bathers are from areas at least one hour driving away. Visitors have relatively weak swimming skills and the number of recreational activities is very limited. It is hard to find SOP (Standard Operation Procedure) and EAP (Emergency Action Plan) in the facility. Different agencies are participating in safety management in beaches.

Discussion

Site visits were conducted at only the top two or three beaches among the most populated ones. Non guarded beaches and other sites with less visitation need to be assessed in the future to get more objective data. Counting the number of bathers was a challenge for some beaches due to the length of the beach and high volume of visitation. To attain the practical number of usage, scientific tools need to be developed in the future. GPS is strongly recommended to get accurate numbers such as distance between guard tower or guarding chair, and distance between shore line and guarding tower.

Conclusion

Beaches along each coast lines are geologically distinctive. To create a safer environment, site specific operating procedures need to be applied. Also developing national SOP and EAP is urgent issue for South Korea.

Acknowledgement

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Reference

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An investigation into lifesaving organisation capacity – Implications for development of lifesaving organisations in low resource settings

Francene Leaversuch[1]

Commonwealth Lifesaving – The Royal Life Saving Society[1]

Issues Addressed

Capacity of Lifesaving Organisations in high, medium and low resources settings.

Abstract

A core function of Commonwealth Lifesaving is to support the development of the capacity of its member branches, particularly those in low resource/developing countries.

Lifesaving Organisations are not only faced with the task of implementing lifesaving and drowning initiatives within their respective nations, but also the challenge of financing these initiatives, administering a legal and sustainable charity, and generating revenue to support core costs, project work and development initiatives.

Throughout 2010 Commonwealth Lifesaving is undertaking a review of all of its member branches to assess their current capacity as sustainable lifesaving organisations. The assessment includes:

- Governance
- Strategic Planning
- Finance and Fundraising
- Networks and Partnerships
- Lifesaving Programmes and Training
- Community Initiatives
- Business/Corporate Development

Upon completion of the review, Commonwealth Lifesaving will use the information to design a matrix of support for its member branches.

The matrix of support will aim to assist member branches in becoming self-sustaining through identified targeted training areas. Commonwealth Lifesaving will utilise this matrix to establish training, development and mentoring opportunities for member branches within identified areas.

Once completed, the assessment tool and matrix of support will provide an invaluable tool for Commonwealth Lifesaving in providing ongoing support to its member branches. The outcomes of this review and planning process may also prove valuable for other organisations in assessing and reviewing their needs.

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The changing face of The Royal Life Saving Society

Francene Leaversuch[1] and **John Barwick**[1]

Commonwealth Lifesaving – The Royal Life Saving Society[1]

Issues Addressed

Role and function of International Lifesaving organisations.

With over 100 years of lifesaving history as an organisation, Commonwealth Lifesaving took the opportunity over 2009/2010 to review its position as the leading organisation for lifesaving and drowning prevention in the Commonwealth.

Over the 120 years that The Royal Life Saving Society has been in existence, there have been a wealth of political, social, economic and climate changes that have affected the role and function of the organisation. Some of the significant changes throughout this period have included:

- The establishment of the Commonwealth
- The establishment of the International Life Saving Federation
- Colonisation of the world, then moving to independent self governing states
- A public health focus change from the treatment of injury and disease to the prevention of injury and disease
- A public health focus shift from communicable disease to injury prevention
- Globalisation of companies, products and services
- Rising effects of climate change and the political and economic ramifications

The question for Commonwealth Lifesaving was how to adapt to these changes and refocus the organisation to respond to the needs of a 21st century world and our 21st century member branches.

In 2009, Commonwealth Lifesaving undertook a consultation with member branches, partners and other key stakeholders on the positioning and function of the organisation, currently and where it should be.

This process culminated in the inaugural Commonwealth Council of Presidents meeting in Toronto, Canada – January 2010. Commonwealth Lifesaving utilised this forum to review the information and feedback obtained through the above consultation process and, together with our member branches, devise a new strategic framework and organisational structure which reflected the needs of our member branches, and our key role as one of the lead organisations in the global fight to reduce drowning.

This consultation process has significantly reshaped the role and function of Commonwealth Lifesaving and assisted us in positioning ourselves as an integral pattern in modern lifesaving and drowning prevention.

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Taking a human rights approach to engaging governments in drowning prevention

Francene Leaversuch[1]

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Issues Addressed

Lack of government engagement in drowning prevention and with lifesaving organisations in developing and low resources countries.

Lifesaving organisations in developing and low resourced countries have historically struggled to engage governments on drowning prevention and the pursuits of the lifesaving organisation. With quantitative evidence of drowning figures in developing nations still being under reported and difficult to access, lifesaving organisation need to employ additional strategies to engage governments in the drowning prevention agenda.

RLSS Ghana has successfully engaged the Department of Tourism within the Ghanian Government, and RLSS Ghana has worked in partnership with the Department of Tourism to establish a lifeguarding programme on tourist beaches. However, the highest rates of drowning in Ghana are amongst children and fishermen. RLSS Ghana has struggled to engage other government departments in Ghana regarding drowning prevention.

Through our partnership with Rights and Humanity, Commonwealth Lifesaving has been informed of the advocacy work Rights and Humanity does with governments across the world on human rights issues. As a result of this work Rights and Humanity has developed a model for utilising human rights to engage governments. The model has been published by the United Nations (United Nations, 2006).

Throughout 2010 Commonwealth Lifesaving and RLSS Ghana are piloting the human rights model for engaging governments. The pilot is specifically targeting Ghana government departments in addressing the high drowning rates amongst children and fishing people.

The project will be qualitatively evaluated using an action research framework. Success indicators are government engagement with RLSS Ghana and RLSS Commonwealth, identification of drowning prevention is an area of concern, prioritisation of drowning prevention as a health and workforce issue.

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The National Water Safety Quiz: An interactive approach to evaluating Australian children's water safety knowledge

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Background

The Australian Water Safety Strategy 2008–2011 identified the need to extend the drowning prevention evidence base as a means of producing effective drowning prevention interventions. The strategy also identified effective swimming and water safety skills and knowledge as a drowning prevention pillar.

To improve children's water safety skills and knowledge levels it is first necessary to understand current baseline ability. To gain an understanding of children's swimming and water safety knowledge, the Royal Life Saving Society – Australia (RLSSA) conducted a research project into the water safety knowledge levels of children aged 10–11 years via an online National Water Safety Quiz (NWSQ).

The NWSQ forms part of a comprehensive national study which aims to map the swimming and water safety skills of children across Australia. The findings of this research will be used to inform Royal Life Saving's decision making across areas of policy, practice and further research.

Concept

The NWSQ is an interactive online quiz with a range of questions on a variety of topics. The quiz is highly engaging with bright, vibrant illustrations and a variety of interactive formats such as click and drag, multiple choice and image based questions.

Aims

The aims of the NWSQ are to:

- Gather national data on knowledge levels of children aged 10–11 years in water safety
- Conduct an analysis of data to gain a baseline of achievement levels of children aged 10–11 years in water safety knowledge
- Identify gaps in current knowledge
- Develop classroom based curriculum and support materials to address identified knowledge gaps
- Conduct the quiz yearly and identify increases/decreases in knowledge as compared to the baseline.

Methods

The NWSQ content (question type and format) was developed by Royal Life Saving. It is highly visual and an illustrator was employed to produce the images used in the quiz. An Australian based web design and development agency was used to build the quiz.

Once developed, the website was pilot tested in eight primary schools across five Australian states and territories. Based on feedback gained during the pilot process, minor changes to the content of the website were made.

The Quiz was launched nationally in late 2010 and will be available for children to access for several months.

Results

The quiz features 27 questions on: CPR, rescues, swimming, water safety signs, boating and aquatic environments. Questions are asked randomly from a bank of questions allowing content to vary each time the quiz is taken. The data collection tool built into the website allows results to be analysed on the basis of school, age, sex, grade, postcode and state. Data can also be analysed by school type (public, private or independent) and rural and remote classifications.

Conclusion

This paper will discuss the development, national implementation, results and lessons learnt from the first NWSQ.

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The road to water safety in Switzerland

Christoph Müller[1] and Othmar Brügger[1]

bfu – Swiss Council for Accident Prevention[1]

Background

Until now, Switzerland has not had a national water-safety policy. Motivated by its participation at WWS in Porto, Portugal, 2007, the bfu decided to put water safety on its agenda and to involve national partners and key players.

Objectives

Based on a 10-year survey on drowning rates among the Swiss resident population (1) the bfu sets out to identify for Switzerland:the main risk factors involved with drowning, the target groups most concerned, possible measures of prevention, a way to coordinate the development of a national water-safety policy.

Target

The focus is the national level; the main organisations involved are:

- The Swiss Lifesaving Association
- The Association of the Swiss Swim Sports Federations (www.swimsports.ch)
- Public schools

Methods

- analysing the 10-year survey on drowning, 2000–2009
- establishing a national workshop for key players on drowning prevention
- generating a long-list of potential intervention measures based on risk factors involved with drowning
- defining a short-list of recommended interventions

Results

Main risk factors among others are:

- gender (young males)
- lack of water competence
- lack of risk competence
- lack of life-saving competence
- lack of adult supervision
- swimming alone in unsupervised bodies of water

The target groups most concerned are males – particularly young males and males over the age of 65. But in Switzerland the highest attention is given to child drownings; the bfu considers children up to nine years of age as not being responsible for their own water safety. As a consequence child water safety is a main focus for accident prevention.

The bfu set up three work groups covering three ‘water settings’:

- School & Education
- Baths & Services
- Provider & Adventure

Each setting was represented by its key stakeholders. Risk factors leading to drowning were discussed and specified. Possible measures of prevention related to the main risk factors of drowning were identified. As a result, the bfu and its partners decided to start a water-safety campaign to prevent child drowning, to be implemented from 2011 to 2013.

Discussion

With a national workshop on drowning prevention and a three-year campaign on child water safety, the bfu aims to raise awareness of water safety in general and make it a national issue. The bfu learned that risky (even risk-seeking) behaviour of the young is not easily influenced. The bfu is convinced that children need to be closely supervised and their self-rescue ability improved. The bfu actively encourages public schools in establishing a minimum water-safety standard.

Conclusion

For the first time, national key players participated actively in a workshop on drowning prevention. There is agreement that gaining water competence should start at an early age and training should be continued systematically through adulthood. Following this initiation of a Road to Water Safety the bfu will publish, together with the Swiss Lifesaving Association (SLRG) and the Swiss Accident Insurance Fund (Suva), its first report on drowning prevention.

Acknowledgements

The bfu would like to thank all the participants of the 2008 and 2010 workshops for their contributions on drowning prevention.

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bfu water safety campaign

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Introduction

Drowning is the second leading cause of death due to injury for children in Switzerland. A fall into water is the most common type of accident leading to drowning for 0–9 year olds, followed by sudden immersion in second place. Lack of or insufficient supervision of children is the main risk factor (1). Parents and caregivers should be aware that continuous high-quality supervision of children is one of the most effective measures to prevent drowning.

Objectives

The aim is vision zero: No drownings among 0–9 year olds. With a three-year campaign starting in 2011 the bfu and its partners aim to achieve high awareness and compliance levels among caregivers for continuous high-quality supervision of children. Additionally, primary schools shall support the effort by implementing a self-rescue training programme for 6–9 year olds. The aim of the campaign is a significant increase of high-quality child supervision and a significant increase of numbers of children passing a test of self-rescue ability.

Target

The target group of the campaign are the caregivers of 0–9 year olds:

- The 0–5 year olds will be reached through their parents
- The 6–9 year olds will be reached through their parents, schools, pool supervisors and directly
- The parents of children with diverse ethnicity shall also be reached by the campaign

The campaign will be located in public pools and schools nationwide and is designed in German, French and Italian. Key partners are pool supervisors, the Pool Owners Association, communities, the Association of Swiss Swim Sports Federations (www.swimsports.ch), the Swiss Lifesaving Association, schools and parent organisations.

Methods

Based on a specified concept, the bfu, together with a public relations agency, developed a plan of appropriate interventions to be implemented from 2011 to 2013:

- Posters with the campaign slogan: Kids always in sight! Toddlers in reach! in nearly 700 public pools and 6,000 public schools
- Campaign t-shirts and caps for pool supervisors
- Social platforms for parents (apps, Facebook, Twitter)
- Water-safety colour stories for kids (at display in pools and at paediatricians')
- A water-safety kit for schools to accomplish the 'water-safety check'
- Media coverage –Website: www.water-safety.ch

Evaluation

To evaluate the impact of the campaign a baseline measure of the quality of supervision of 0–5 year olds is to be ascertained. A before and after survey of the quality of supervision at toddler pools will be made. There will also be a before and after assessment of the number of children passing a test of self-rescue ability.

Discussion

The bfu intends to use the public impact of the campaign to promote water safety in the future. An important achievement would be to implement a water-safety standard at public schools. In addition, public awareness campaigns for water safety shall be used to promote the wearing of personal floating devices (PFD) and the separation of alcohol and water recreational activities.

Conclusion

It is believed that a water-safety campaign must focus on one goal by using a variety of means. To be successful, mutual understanding and close collaboration with the relevant key stakeholders is crucial. With this campaign, the quality of child supervision around, on and in water should increase considerably from 2011 to 2013.

Acknowledgement

We express our thanks to the bfu board of management who gave the 'go ahead' for this water-safety campaign.

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Strategies to promote new water safety organizations in Angola, Cape Verde, Mozambique and São Tomé and Principe a case study of AsNaSA Portugal's cooperation for Africa

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EPES, Escola Profissional de Economia Social Academia José Moreira da Silva, Porto, Portugal[1], AsNaSA, Associação de Nadadores Salvadores Patrão de Salva Vidas Ezequiel da Silva Seabra, Matosinhos, Portugal[2], AsNaSA Portugal, Associação Nacional de Salvamento Aquático, Matosinhos, Portugal[3], GISA, Gabinete de Investigação em Salvamento Aquático da ASNASA Portugal[4], AsNaSA Cabo Verde, Associação Nacional de Salvamento Aquático, Tarrafal, Santiago, Cabo Verde[5], AsNaSA Moçambique, Associação Nacional de Salvamento Aquático, Maputo, Moçambique[6]

Founded in 1977, AsNaSA – Associação de Nadadores Salvadores Patrão Salva-Vidas Ezequiel Silva Seabra (Matosinhos, Portugal) brought a new vision to the water life saving panorama in Portugal. Later, in 2003, a new structure was founded to provide a national dimension to the lifesaving movement in Portugal. Named AsNaSA Portugal (Portuguese National Association for Water Safety), this structure has since engaged many organizations and lifesaving experts in the promotion of all aspects of water safety in Portugal and worldwide.

Ever since its foundation, AsNaSA Portugal has paid a special attention to the establishment of cooperation efforts between Portugal and other Portuguese-speaking nations, namely on the themes of Education and Training. As a result, AsNaSA Portugal provided crucial assistance that led to the creation of the National Association for Water Safety in Cape Verde. In addition, substantial developments have been attained in Mozambique, Angola and São Tomé and Principe, with Guinea-Bissau being the only country where efforts have yet to become more effective.

In order to successfully and lastingly promote water safety in Portuguese-speaking nations AsNaSA Portugal adopted a strategy based on empowerment. Hence, AsNaSA Portugal has encouraged and supported young students from these countries to attend the officially approved Water Safety (WS) professional courses (level II and level III, European Qualifications Framework) designed by AsNaSA Portugal's members (AsNaSA, UniNorte, asnaSAcoop and epESaJMS). These courses are being run by epESaJMS, with ESF (European Social Fund) support.

As expected, the results from the implementation of any strategy based on education cannot be measured immediately after the implementation start. Therefore, only now the results become more evident, and can be summarized as follows:

1. From Guinea-Bissau only one trainee has been received by epESaJMS to attend the WS professional course, in 2003. Political developments have raised numerous obstacles to the establishment of an effective cooperation, though recent contacts have brought back hope that a more stable partnership could be established during 2010–2011. Additionally, new trainees are expected in 2011.
2. A small yet significant number of trainees have been received from Angola to attend the WS professional course. A larger group of trainees is expected in 2010. Contacts are being made to consolidate the Water Safety Quality Standards in Angola.
3. In São Tomé and Principe, developments are being made, with the Fish Ministry and Fishermen Association Group having already voiced their interests in supporting trainees to attend the WS professional course. AsNaSA Portugal is also preparing debates and training sessions to be held at São Tomé and Principe from 2010–2012.
4. Four trainees have been received from Mozambique, some of which have proved crucial in the establishment of a good set of contacts. The plans to found 'AsNaSA Moçambique' have already been put into motion, with a target date for completion during 2010–2011.
5. Up to now, Cape Verde has been the case where the most significant improvements have been achieved. In this country a very active partnership has been developed that led to numerous participations of Cape-Verdean members in international events. Some key moments of this partnership were: AsNaSA's Seminar in Matosinhos (Portugal, 2001); Water Safety Seminar in Tarrafal (Cape Verde, 2002); Water Safety Seminar at S. Vicente (Cape Verde, 2005); WWS 2007 (Portugal, 2007); Water Safety Seminar in Tarrafal (Cape Verde, 2010), which culminated in the legal foundation of 'AsNaSA Cabo Verde'. AsNaSA Portugal is also providing the necessary assistance for the application of AsNaSA Cabo Verde to become an ILS Full Member, and for the application for ILS cooperation development support, and to participate in ILS Africa and in 'CPLP-AsNaSA' Working Group.

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Australian volunteers in Asia: A unique perspective on international collaborations in drowning prevention

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The Alliance for Safe Children (TASC)[1], Royal Life Saving Society – Australia (RLSSA)[2], Center for Injury Prevention and Research, Bangladesh (CIPRB)[3]

Background

The Australian Youth Ambassadors for Development (AYAD) and Volunteering for International Development from Australia (VIDA) are AusAID funded programs that place volunteers on assignments across the Asia-Pacific in an initiative aimed at strengthening mutual understanding and making positive contributions to development. As volunteers with TASC, Amy Peden and Tarina Rubin assisted the establishment of the SwimSafe survival swimming program in Vietnam and Thailand. Danyel Walker has worked in communications with CIPRB. Each brings a unique perspective to the harnessing of international and local expertise to implement and communicate about appropriate, effective and collaborative child drowning interventions.

The program

Australian Government Volunteer Programs are inherently based on mutually supportive partnerships and collaborations. Assignments are developed together with in-country Host Organisations and Australian Partner Organisations and align with AusAID's development priorities and the Millennium Development Goals (MDGs). Since 2007, TASC, CIPRB and RLSSA have supported volunteer placements targeting child drowning in the region. These assignments align with MDG 4 – reducing child mortality.

The experience

The premise behind volunteer placements is one of exchange. Intercultural exchange and skills/knowledge exchange, between the volunteer, the organisations and the communities we work in, and the people we work with. With this comes a wealth of opportunity and significant challenges for volunteers. As young Australians working in development in Asia, we are tasked with bringing our skills and technical expertise to new cultural and operating environments, and to identify what we can offer as well as what we can learn.

The drowning prevention activities of RLSSA, TASC and CIPRB are themselves an amalgamation of partnerships, but our role as Australian volunteers is often a point at which many partnerships converge; as a visible and present link between international and local organisations. The Australian connection is strong in regard to SwimSafe and the International Drowning Research Centre, Bangladesh, with principal funding support from AusAID and the Australia-Thailand Institute. As volunteers we often provide a face to these connections and facilitate links between the Australian community, partners and donors and the local community and colleagues in-country.

This is a challenging role which requires managing expectations sometimes in competition with realities in-country. These include differing cultural attitudes towards swimming and being in the water and different approaches to safety. The experience involves navigating new cultural and organisational structures. It is apparent that no amount of international expertise or funding can be applied effectively without local knowledge, knowhow and understanding of how to get things done in each context. Though the Vietnamese, Thai and Bangladeshi contexts are very different, in each, successful engagement involves committing time to building strong relationships and developing mutual understanding.

As volunteers in development, we are ideal agents to raise awareness in international development/aid circles around child drowning and the need for action. The issue of drowning crosses many fields, from reducing child mortality to disaster preparedness. The network of volunteers and associated development organisations is strong and wide, and individual volunteers have great capacity to share insights in drowning issues throughout that network.

Volunteer placements are a unique opportunity to deepen partnerships and collaborations in drowning prevention. Volunteers have both time and eagerness to invest in building relationships, and to absorb as much from their in-country colleagues and communities as possible, while providing international perspectives to any intervention. It is an opportunity for enormous personal and professional development and placements have great potential to strengthen international partnerships and drowning prevention initiatives. But more than insight into volunteering alone, the authors provide a unique perspective on community-based child drowning interventions from the experience of having been embedded in implementing organisations.

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Drowning prevention in Finland

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Finland has over 188,000 lakes, most of them with a rugged shoreline, and around half a million summer cottages. As most beaches are not supervised and with the nearest neighbours often far away, the ability to swim is a necessity in Finland.

The drowning rate in Finland has decreased from several hundred per year in the early 20th century to around 150 in the past years. FSL has achieved this through several simultaneously running programs:

a. Baby Swimming is offered nationwide.

b. Swimming instruction is incorporated into school curricula.

c. FSL produces and publishes material for the parents of first graders to help and encourage them to acquire basic swimming skills.

d. FSL promotes swimming skills and water safety.

Aims

The mission of FSL is to promote swimming skills and water safety so that every Finn can swim and so that nobody drowns due to a lack of swimming skills. In 1996 the Nordic countries agreed on a common definition of swimming skill: 'One is able to swim when one, after being immersed in water, can swim continuously for 200 meters, of which at least 50 meters may be swum backstroke.'

Methods

Baby Swimming

Baby and Family Swimming (as it is called at FSL) began 30 years ago and quickly became one of FSL's core activities with consistently high standards. Increasingly popular, 11 % of all babies born each year participate in Baby Swimming. FSL also promotes Family Swimming as a continuous endeavour and as the step to be taken before attending children's swimming schools.

Swimming Instruction in Schools

FSL actively communicates with the National Board of Education to increase the amount of swimming lessons, as the school curriculum is currently being revised. Swimming is taught in 90% of Finnish schools although the actual hours spent at swimming vary greatly.

DVD for First Graders

FSL has been distributing leaflets on basic swimming skills to all children starting primary school and their parents since 2003. In 2010 the leaflet was replaced by a DVD. The population of non-Finnish speakers in Finland is increasing, and in 2011 an English version (in addition to Finnish and Swedish, the official languages) will be added to the DVD.

Water Safety

First FSL promoted water safety in co-operation with Alko, the Finnish alcohol monopoly, then with the Maritime Services, and currently with several national authorities. The 'Wisely in Water' campaign celebrated its 20th anniversary in 2010 and the campaign is now part of the Internal Safety program aiming at making Finland the safest country in Europe in 2015. The campaign wishes to positively influence the attitudes and behaviour of young Finnish people in order to have a new generation with a better awareness of water safety. FSL organises summer and winter tours to demonstrate water and ice safety in real-life situations.

Safety issues have also been dealt with regard to safety instructions for swimming pools and the beach safety guide, both produced in co-operation with authorities and distributed nationwide.

Results

FSL's tasks regarding education and the providing of information are ongoing. Reducing the number of drownings, especially among children, is the number one goal. Currently, about 80% of children in Grade 6 can swim. There is a significant increase from the figures in 2004 (78%) and 2000 (67%). The new swimming ability study, to be published in October 2011, will reveal how well FSL's efforts have been thus far realised.

Acknowledgements

The activities of FSL are partly financed by the Ministry of Education and Culture, with special grants awarded to produce material promoting swimming skills and swimming ability study.

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Having difficulties raising funds for a drowning prevention campaign? Build yourself a tool to atrract government support!

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Abstract

Everyone is greatly impacted by media daily; hearing, seeing or reading about some aquatic tragedy. Using the media to convey the seriousness of the problem and the need for prevention is how we convince our government to support drowning prevention projects. Has this been working for you? Would you like some new ideas? Prevention is the most powerful tool to reduce aquatic incidents (1) and probably the least expensive. So why is so difficult to convince the government to invest in prevention? First there is little information on how many people are at risk, how many drowning incidents (fatal and nonfatal) occur, what costs, what it takes to prevent, and if the benefits outweigh the costs. Second, a Governor's main seems to be to please as many voters as possible, especially just before an election, and any drowning prevention campaign proposal needs to address those needs. Third, only some politicians will be interested, so the proposed project must reach, at the right time, the right politician and in the right way to get approval. Our purpose is to identify and evaluate the most important economic variables to consider building a tool that will convince the government that a drowning prevention campaign has attractive cost/benefits.

Methods

All ICD W16 and W65-74 from January 2003 to December 2007, in Brazil, were considered based on Health Ministry-DATASUS<www.datasus.gov.br>. The framework of five years was chosen, as the project must fit inside the governance period. We split cost into family and government losses. For all death incidents we included funeral services and related expenses, government taxes, and the victim's productivity loss for five years, using an average estimate and national per-capita income. Rescues were not available, so the pre-hospital costs considered were from victims who died or were transported to the hospital. All hospital costs were estimated in accordance with the fees charged by the health system. The expenses converted to US$.

Results

46,095 incidents were evaluated, from which 94% were W65-74. There were a total of 31,053 deaths (67%) of which 99% were in the pre-hospital setting (lower (67%) for W16). 15.361 patients were hospitalized (82%-W65-74), consuming 75,377 days (average time of 4.91 days), with a cost of US$ 7,001,586.10. Hospital average mortality was 2.08% (4%-W16 and 1.68%-W65-74). The average risk of injury in the aquatic setting was 5/100,000 inhabitants (4.7-W65-74 and 0.3-W16) and the average risk of death was 3.4/100,000 (3.4-W65-74 and 0.04-W16). Pre-hospital costs were (lifeguards – $73.86 and ambulance – $181.82 per one incident) estimate at $3,927,528.41. Per-capita income (gross) was US$7,209.24 (2006) and government taxes loss in five years was $335,802,995.72. Total family losses were $801,184,073.34 (funeral – $17,643,750.00 ($568.18/death) and income –$783,540,323.34) and Government losses were $339,730,524.13 over a five year time frame.

Discussion

In Brazil the risk to be injured in the aquatic setting is estimated to be 5.03/100.000 inhabitants but does not include rescues, but only those who died or need to be hospitalized. Many less serious injuries are therefore not counted and the estimate is therefore extremely conservative. As the great majority (99%) of seriously injured victims die before reaching the hospital, we have been wasting extensive resources by being reactive, attending to the patient at the hospital, or following to the morgue, instead of pro-active and investing in prevention. Government is often too concerned with short term results, rather than viewing prevention in a more comprehensive manner. We must provide them with good quality information that would make a difference in decision-making. Strategies should focus on increasing the appeal of prevention projects, but recognize that local strategies can have more impact. Although personal and capital family losses are much higher than those of government, any national prevention campaign (1) can run extremely well with much less than $339,730,524.13.

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A professional way to multiply our drowning prevention message by enlisting the help of non-lifeguards

Dr David Szpilman MD[1]

Brazilian Lifesaving Society – SOBRASA [1]

Since 2000, the Brazilian Lifesaving Society has been teaching a first aid course for the aquatic environment called Basic Water Life Support(BWLS)(1,2), addressing the information and skills necessary to understand drowning and water related accident management. In 2007, a reevaluation of the program was conducted (2) with a total of 13,260 people trained. Much was accomplished, but our 'voices were too low' to reach and spread the knowledge to many distant Brazilian cities. This new program is based on the theory that 'multiplying the knowledge reaches the corners'.

Material/Methods

This new drowning preventive education program targets three different types of professionals as instructors: surfing instructors, aquatic sports coaches and medical students. Each of these three disciplines is related to drowning in different ways: surfing instructors spread the word directly to surfers who are on the beaches every day. Aquatic sports coaches have a lot of impact spreading the message. Medical students (both physician and nurse) have a great opportunity to spread the word to their patients and to interest more medical professionals in drowning life support. This group was given a BWLS course classified as 'Advanced Lay B' (1,2) (13h duration (five hourstheory & eight hours pool and beach practice). The first class in the program was composed of medical students who were selected based on the minimum requirement (swim 100 meters<2minutes and experience in any aquatic sport) from five medical universities in Rio de Janeiro. The students were tested before and after the course was taken.

Results

Twenty four medical students took the course: 58% male; median age of 23.7 years; and 86% living on the coast. Of these students, 39% swam 100m<90seconds and all of them in <2minutes; 65% reported that they are regular swimmers and 20% participate in more than two aquatic sports. An evaluation before course showed: 83% of the students have completed a BLS course; their lifesaving knowledge was considered scarce or weak by 71% of students; 39% were afraid to drown; 33% had personally experienced drowning and of those, 75% had escaped drowning on their own. Some students (29%) reported that they had rescued another person in distress in the water, 42% of which were considered risky.

Outcome

100% of the course content was accomplished, with 95% stating it was very good/excellent; 90% stated that the practical training was the most rewarding part; 10% said the practical training should involve more challenging physical workouts, and 5% suggested there should be less theory; 85% felt more capable of avoiding their own drowning and that of others, but 43% felt it would be risky to rescue someone; and 100% felt confident to spread the preventive message to other students and family.

Discussion

Brazil has one of the highest levels of participation in aquatic recreation in the world, and this fact, among others, makes it harder to spread the ILS message on drowning prevention, because so many people need this information. Each year 7,000 (3.78/100,000) people die from drowning in Brazil (3). There was an overall decrease of 30.2% from 1979–2003, but mainly after 1995, when SOBRASA began helping to promote communication and exchange of information among lifeguard services around the country. BWLS education is one of the strongest prevention and intervention programs offered by SOBRASA.It can be best implemented by using professionals—but not lifeguards—who are young, have intimacy with water sports, easily learn new things, and are highly motivated to help others. In conclusion, training people who are not lifeguards, but care about aquatic safety, seems a very good way to spread the word of drowning prevention in a very broad way around the country, a 'Way to Multiply Our Drowning Preventive Message' to every corner of our country and to those who are far away from our voice.

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Sea Angel's Brazil boating & water safety program

Msc Marcelo Ulyssea[1]

Sea Angel's Brazil Institute[1]

The focus of this presentation is to show participants how the process of boating and water safety educational programs is slowly trying to change the perspective of South Americans toward boating accidents and fatalities in their country. The presentation discussed how far they have come and how much is left to do.

Marcelo Ulyssea will share his experiences working in the United States from 2002 to 2004 as an instructor for life guards, law enforcement, fire fighters, and marine personnel for personal watercraft rescue programs through the K-38 Water Safety organization. He also worked as a boat operator in different high risk water situations. Ulyssea took this experience back to Brazil and developed the Sea Angel's Brazil Institute.

Nowadays The Sea Angel's Brazil Institute offers programs which emphasize search and rescue and life guarding in high risk water situations and in the other hand free classes direct for fisherman about safety at work, sea survival and environmental concerns. In addition they provide programs which teach children and teenagers boating and water safety procedures.

The presentation also point out that underdeveloped search and rescue teams, poor life guarding programs, lack of funding in prevention/education, lack of boating enforcement and bathing/boating under the influence are major causes for the huge number of deaths from drowning and boating accidents in Brazil and other South American countries.

Ulyssea will conclude his presentation with an overview of the current boating and water safety problems Brazil and other South American countries are facing and the strategies and goals for solving those problems. The goal is to develop a real boating and water safety program that will educate the people instead of just having an emergency system in place.

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Working together for water safety: Exploring the challenges and success of the collaborative approaches within the UK National Water Safety Forum

David Walker[1]

The Royal Society for the Prevention of Accidents[1]

This presentation explores the challenges and achievements over the last five years within the UK National Water Safety Forum (NWSF), and in particular those presented by the development of the Water Incident Database (WAID). A 2003 Government review considered roles and responsibilities for inland water safety in the UK. It offered two key recommendations: (i) that a joined up approach to water safety involving non government organisations, utilities and the leisure industry, key at risk groups and the Government be established, and (ii) that accurate, timely and agreed data pertaining to water related incidents is developed.

The NWSF is an voluntary association of organisations that have a wide variety of interests and responsibilities for water safety including sports governing bodies, rescue services, regulators ,navigational and harbour authorities, local government , entities and other representative bodies.

At its inception there were a number of key challenges to address, inherent with the broad membership. A key example of this would include multiple committees operating in a disjointed manner contributing to overlapping effort and, sometimes producing contrary outputs.

The development of WAID was been the critical task for the NWSF. In the UK, agreed and detailed information pertaining to drowning and other water related incidents has traditionally been disjointed – due to the numerous organisations that have developed systems to provide their own operational reports. Agreeing upon national figures with some 50 approaches in place was difficult.

The challenge was and still is to combine the best of these systems whilst not hindering the original purpose of the operational data; this is in addition to meeting WHO guidance on injury surveillance systems. Managing the demands and conflicting requirement both technically and politically tested the relationships and goodwill within the UK water safety community. Key successes in this journey have been the development of a single, agreed incident record taxonomy, developing a shared platform for storing and uploading data and efficient approaches for transferring large volumes of incident data.

An indication of the success to date can be seen most simply in the volume of records within the system; in April 10, WAID held some 40,000 valid, good quality records form multiple sources – the previous best comparable water related incident dataset managed circa 10,000 as a result of a one-off exercise.

The NWSF is driving an increasingly shared and agreed vision for water safety in the UK, based upon the shared principles and evidence base. There will always be discourse on how we get there, but there is agreement within the community that we need to continue to work together for water safety.

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Utilising a national water safety partnership to develop and deliver an effective awareness campaign case study – United Kingdom tombstoning safety campaign

Steve Wills[1] and Peter Dawes[1]

Royal National Lifeboat Institution[1]

Introduction

During the past five years, there have been 139 (1) tombstoning incidents needing an emergency response, with (2) 13 resulting in fatalities and many more resulting in spinal and limb injuries. With the growing popularity of this high-risk activity, tombstoning incidents have doubled in the past four years.

It is widely believed that, in part, the increase is due to social media sites such as YouTube, which have seen an unprecedented rise of young people uploading film clips of dangerous tombstoning events.

The UK has a wide range of Government agencies and organisations with responsibility for water safety. In the past, this has resulted in duplication of important safety messages, especially while addressing specific and targeted awareness concerns such as tombstoning.

In 2005, the (3) NWSF (National Water Safety Forum) was formed; an umbrella group in which organisations involved in water safety participate in order to have a strong voice with Government on water safety issues. Working with NWSF members, the RNLI has been able to deliver an effective campaign to reduce tombstoning accidents.

Objectives

Working in collaboration with the NWSF the RNLI has developed and delivered the following:

- formed an NWSF working group
- commissioned research
- agreed a safety message
- delivered a national safety campaign, targeting young males about the risks associated with tombstoning
- produced 'impact' films
- used social networking sites to promote the campaign.

Target

- young males (14–25)
- persons likely to be engaged and interacted with via social media sites
- persons likely to be influenced by peers
- persons likely to consume alcohol

Methods/implementation

The RNLI invited members of the NWSF to form a working group to investigate and develop a specific campaign to tackle tombstoning. The group commissioned research to help highlight and better understand key target groups, locations and develop campaign materials.

The RNLI took the lead to produce two 'impact' films based on the research and disseminated them to the target audience [young males]. The films were uploaded to sites such as YouTube with click-through advertising placed on sites such as Facebook to members fitting a high-risk profile.

Results/evaluation

- one message agreed nationally
- (4) six national TV features, and 33 regional TV and radio reports
- (4) 22,345 unique views of campaign films – model to be used for future safety campaigns.

Discussion

This form of collaboration, designed to tackle safety issues in the UK, has become an effective method to reduce the causation of water-related accidents. Water safety organisations had become too sensitive in sharing intelligence and specialist knowledge resulting in competition rather than in collaboration – these are national issues requiring national solutions.

Conclusion

Working in collaboration to tackle specific safety issues reduces the duplication of time and resources. Having a national forum such as the NWSF provides a sound platform for developing standard messages and delivering national campaigns.

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ORAL PRESENTATION

ID: 412 / Paper: 192

New education and prevention program

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Swiss Lifeguard Association (SLRG)[1]

The Swiss Lifesaving Society (Schweizerischen Lebensrettungs–Gesellschaft SLRG) is a member of ILS. In 2011 we introduce a new education program in our country. Drowning prevention is a very important part of it. A survey in 2009 showed that the biggest part of drowning accidents in Switzerland take place in our lakes and rivers. So the new education and prevention program plays a lot of attention to the open water.

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Hollywood stars involvement in lifesaving, lifeguarding, swimming and drowning incidents

Dr Stathis Avramidis[1,2,3] and **John Connolly**[3]

Leeds Metropolitan University[1], Hellenic Centre for Disease Control and Prevention[2], The Lifesaving Foundation[3]

Introduction

Despite the plethora of literature evidence on the topic of aquatics and drowning, no published work has reviewed the aquatic sporting activity, water safety or drowning-related incidents associated with Hollywood film stars or other celebrities.

Aim

The aim of this review was to identify cases of Hollywood stars who have been involved in aquatics.

Method

A literature search was conducted using the terms 'drowning', 'Hollywood', 'actor', 'rescue', 'aquatics', 'swimming' and 'lifeguard'.

Results

It was found that several Hollywood film stars (n=33; males=20, females=13) have worked as lifeguards (n=12), performed lifeguard rescues (n=2), or lifesaving rescues (n=4), were competitive swimmers (n=6), or suffered drowning-related incidents (n=9).

Conclusions

The present literature review revealed that a number of Hollywood film stars had been involved in aquatic sports and lifeguarding as well as aquatic emergencies. Some of them were national or Olympic level swimmers, who later in their lives became actors or actresses. Others worked as professional lifeguards before they started acting. Some performed drowning rescues either working as professional lifeguards or as amateur lifesavers. Finally, a few of them experienced fatal or non-fatal drowning incidents during filming or in their personal lives. While the sample is too small to make adequate comparisons with the general populace, I can conclude that celebrity sometimes comes from having achieved fame in aquatic activities, but that same celebrity does not prevent one from suffering the tragedy of drowning (1, 2).

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The Declaration of Lifesaving

Dr Stathis Avramidis[1,2,3] and **John Connolly**[3]

Leeds Metropolitan University[1], Hellenic Centre for Disease Control and Prevention[2], The Lifesaving Foundation[3]

Introduction

In a world that faces ethical issues in all aspects of life, the most challenging ethical question in the water safety industry is possibly 'to co-operate with others or not for saving a life?'

Aim/Objective

To suggest a lifesaving declaration that should be followed by everyone involved in water safety.

Results

The Declaration of Lifesaving should apply to governments, lifesaving organizations and parents.

First, governments should have the following responsibilities:

a. To consider water safety not as luxury, but as a right for every human being, regardless of age, sex, race, religion, political right, and affiliation.

b. To encourage and support profit and non-profit making organizations and their staff members whose aim is to reduce deaths by drowning.

c. To include water safety education within their national curriculum as part of physical education.

d. To encourage and reward research at national and international levels on aspects related to aquatic safety and education.

Second, lifesaving organizations should have the following responsibilities (1):

a. To give clear guidance on what is expected moral behaviour and attitudes in all aspects of lifesaving (e.g. child protection policy, environmental protection etc.) establishing punishments and rewarding behaviour accordingly.

b. To produce 'goodwill spirit' with educational programs, awards and educational materials even with organizations that do not belong directly with their allies.

c. To support and encourage through the media the development of such behaviour.

d. To set up safety measures, in order to avoid injuries during training and education.

e. To adapt the rules of sports lifesaving or water safety education in a way that will enable all people, even the disabled, to have equal access to the knowledge and skills.

f. To ensure that all people responsible for teaching or training children and adults have the necessary education, at an appropriate level, based on the biological, psychological, and other needs of each age group.

g. To set safety standards for every aspect of education, either theoretical or practical.

h. To assist everyone involved in lifesaving from educational, scientific, social, humanitarian, and sport without barriers.

i. To support international initiatives with a spirit of goodwill.

Third, parents should have the following responsibilities (1):

a. Parents should avoid forcing their children into anti-sporting behaviour in sports lifesaving, where the result of a competition might lead to a medallion or other achievement.

b. Parents should accept the result of the examinations in lifesaving, first aid, or lifeguarding, regardless of the outcome for their child, and should not try to influence the examiner.

c. Parents should posses a healthy engagement (parents encourage the child to understand what success in water safety or sports lifesaving means; encourage the child to develop their own personality in a spirit that will emphasise the importance of participation, personal development, pleasure and enjoyment; maintain a close communication and co-operation with the trainer/assessors and the coach; discuss openly with their child, the successes and the failures and the lifesaving experiences; understand the importance of their roles as prototypes for their child by showing self-control and a spirit of goodwill).

Conclusions

In the aquatic safety industry, lack of co-operation is not an option in prevention, rescue, treatment and sport lifesaving. Last century's lifesaving motto was – whomsoever you see in distress see a fellow man. Today the lifesaving motto should be – whomsoever is saving a person in distress see a fellow man and the lifesaving declaration is the written explanation of it!

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Drowning scenes in Hollywood films depicting swimming and aquatic activities: A pilot study

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Introduction

Entertainment Education through Hollywood films might affect the people's beliefs and attitudes in aspects of aquatic behaviour and safety when engaged in swimming activities.

Aim

This study aimed to assess whether there are films in the Hollywood industry containing drowning scenes.

Method

A search in the Internet Movie Database with the key word 'drowning' identified a sample of 780 films depicting drownings.

Results

Drowning episodes appeared in 23 out of 26 film genres of the database (e.g. drama, 421, 54%; documentary, 8, 1%; action, 82, 10.5%; family, 20, 2.6%; thriller, 278, 35.6%; music, 15, 19.2%; western, 7, 0.9%; musical, 8, 0.1%; science fiction, 37, 4.7%; sport, 2, 0.3%; history, 27, 3.5%; comedy, 86, 11%; animation, 14, 1.8%; romance, 117, 15%; crime, 125, 16%; adventure, 56, 7.2%; horror, 194, 24.9%; fantasy, 51, 6.5%; mystery, 139, 17.8%; war, 29, 3.7%; biography; 26, 3.3%; reality-TV, 1, 0.1%; and film-noir, 6, 0.8%). Refined by keywords, drowning was also linked with suicide attempts (136, 17.4%). Finally, the number of reported drowning rescues (21, 2.7%) and the consequent drowning deaths (25, 3.2%) was almost identical.

Discussion

According to some experts in filmography, Hollywood depicts the real life. Therefore, because drowning is a leading cause of death worldwide, it is not surprising that such emergency aquatic episodes were identified presently in films that fuel their content from life.

Conclusions

Almost all film genres contained drowning episodes. Suicide was the only emerged risk factor related to drowning. This pilot study was limited in scope and should be followed by more diverse quantitative and qualitative research in terms of identification of drowning risk factors and evaluation of the messages arising from Hollywood films.

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POSTER PRESENTATION

ID: 1093 / Paper: 321

Drowning in the Outback – Alice Springs Police – Australia

David Chalker[1]

Royal Life Saving Society – Northern Territory Branch[1]

The paradox of the dry outback – 'off the beaten track', is that drowning still claims lives.

Flash flooding occurring perhaps once every one or two years (sometimes more, sometimes less frequently) in the otherwise rainless parts of Australia. Lives lost in such flooding follows one of several patterns.

Misjudgement of water flow and power, alcohol, unfamiliarity with the threat and altruistic efforts to help others are some of the causes of these tragic events.

This paper describes personal experiences with such fatalities and non-fatalities with guidelines for their prevention.

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The 'Buddy System' – Hands around the globe: Improving communication and cooperation between ILS member nations

Robert Keig Stallman[1,2,4], Stewart Kiluswa[2,3], Rama Namkoveka[2], Najat Ahmed[2], Juma Massudi[3], Sabini Temba[2], John Belela[2], Toni Ongala[2] and Alex Mwaipasi[2]

Norwegian Life Saving Society[1], Tanzanian Life Saving Society[2], Tanzanian Scout Association[3], Norwegian School of Sport Science[4]

Introduction

The 'buddy system' is an historical concept in the world of water safety and life saving. The first documented records of the concept seem to have appeared in early literature from the Scouting movement. Generally it is used in reference to a means of organizing group aquatic recreational activity, especially in an open water setting. You remember it, don't you? All participants are paired with a 'buddy' of the same swimming ability. They are instructed that they have responsibility for each other and are not to be more than a few meters away from their buddy. Randomly and periodically, one of the leaders gives a prearranged whistle signal. On this signal, all swimmers must immediately join hands with their 'buddy' and the hands are raised in the air signifying 'we are OK'.

Methods

The notion of applying a similar principle to coooperative efforts within the ILS is a natural and logical step. Whether within or across the geographical zones of ILS, low-middle income countries and higher income countries could pair themselves as 'buddies' in a mutual effort to improve communication and cooperation in the global war against drowning. In many cases there is already some form of contact between nations which could easily be adopted by the Life Saving Associations of the two buddy countries. In other cases it may involve one buddy assisting the other to create a national organization where it had not existed before. This is a conceptual idea which could be promoted by ILS.

Results

In a certain sense, the Royal Life Saving Society, Commonwealth, already practices this. Almost every Commonwealth member country has its own national life saving organization. Both the Commonwealth Office and Commonwealth member countries have a history of cooperation. Some national organizations are strong and have existed for over a century, others are relatively new and struggling. That we 'buddy up' and assist each other is only natural. Australia and New Zealand have a history of cooperation with OECD countries. The RLSS Australia is a co-organizer of this conference. Both Sweden and the Netherlands have cooperated with the Ugandan National Lake Rescue Institute. The Irish Life Saving Foundation has assisted programs in 6–8 countries, including Sri Lanka and Tanzania which are reported here in Danang. The Norwegian Life Saving Society has a two year record of 'buddying up' with the Tanzanian Life Saving Society.

Discussion

This presentation is an appeal for cooperation at the national level, within the life saving world. Other levels of cooperation exist and could be exploited in the interest of drowning prevention. The World Conference for Drowning Prevention 2011 in Danang is the perfect place to form such partnerships. So – Lets Go Out And Find A Buddy!

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To whom should we target a drowning prevention campaign in Brazil?

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Abstract

Brazil, at 8.5 million square kilometers, is the fifth largest country in the world, and also the fifth most populous nation, with 190 million inhabitants (2007). Water is everywhere and exposes most of the inhabitants to potential aquatic accidents every day. Drowning became a significant public health problem in Brazil starting in 1910, when the population began to increase the use of water for leisure. The first organized lifesaving service was founded in 1918, in Rio de Janeiro. Since then, many other lifeguard programs have been created around the country, and from 1984, firefighters employed by the military took over the responsibility for lifesaving in each state of the Brazil, which proved to be a critical measure in dramatically reducing the incidence of drowning. Certainly, prevention is the most effective and inexpensive way to reduce drowning, but public education resources are limited and the country seems to have unlimited risks of water accidents. A decision of where and how to spend our limited financial resources must to be based on determining which are the target groups at greatest risk of drowning. Those groups must be given priority to accomplish ideal cost/benefits. Our purpose is to determine where and who are our target risk drowning groups in Brazil.

Methods

Drowning rates and profiles among Brazilian residents were calculated from death certificates (2007) based on DATASUS – Mortality System Information <www.datasus.gov.br> using the International Classification of Disease (ICD10).

Results

In 2007, one million people died from different causes. Trauma ranks third among all causes of death (13%) and is the primary cause for those between five and 39 years old. Drowning was responsible for 7,009 (3.7/100,000 inhabitants) deaths and was the second leading cause of death for all causes among ages five to nine years, the third leading cause for those from one to four years of age and from 10 to 19 years of age, and the fifth leading cause for those 20 to 29 years of age. The incidence of death was: Accidental – 87% (3.2/100,000) (watercraft–1.16%); intentional–2% (homicide–0.8% and suicide–1.41%), and unknown–11%. Among primary drowning (excludes boats and intentional) 47% occur in natural bodies of water (beaches, rivers, channels and lakes), 2% in pools (65% residential) and 0.26% in bath tubs (72% residential). Drowning rates related to 20–29 year-old individuals were the most frequent (19.9%), followed by 30–39 (15,8%), 40–49 (13.5%), 15–19 (12.6%), 10–14 (7.8%), 1–4 (7.3%) and 5–9 (6%). Considering all ages, males die six times more often than females. There is no sex distinction under one year of age, but males drown 10 times more in the age ranging from 20 to 39. The states with the highest numbers of drowning deaths, in relation to population, have no ocean coastline, so these deaths are occurring in fresh water.

Discussion

Brazil has one of the largest populations exposed to aquatic areas in the world, and a warm temperature which contributes to a high participation in aquatic activities. Drowning is a major public health problem in Brazil accounting for 7,000 deaths each year. Preventive education on drowning is the most effective action that can be taken to reduce those numbers(1) but resources are limited and should be directly target the groups mostly affected or at highest risk. In Brazil, the preventive education campaign should focus on young males among age 15 to 39 (61,8% of drowning death), with special attention to natural bodies of water, in the north and northwest regions. This target group needs a particular project on drowning prevention which may combine physical activities related to lifesaving, with a few tips on prevention from drowning, but related to their local reality.

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NOTES

Photo: REUTERS/Hugh Gentry

Activities and Occupations

This stream focuses on research, policy and practice which are targeted at a specific aquatic activity or occupation to reduce or prevent drowning. There is a range of aquatic activities, both recreational and occupational, which increase a person's exposure to water and, where not undertaken safely, can lead to drowning.

This stream includes a key session that focuses on drowning research and boating-related activity where issues such as research into prevention measures including the use of PFD's features. A second session looks at the emerging issue of recreational fishing.

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The association between wearing a personal floatation device and death by drowning among recreational boaters; a matched cohort analysis of United States Coast Guard data

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Personal flotation devices (life jackets, life vests) were devised to float persons thereby preventing drowning. Descriptive studies from Canada and US show very low PFD use (15%) in fatal boat related drowning. However, scientific evidence for their ability to prevent drowning death has been missing. Randomized controlled studies that could show causation are lacking. Case control studies cannot prove causation but could evaluate the association between PFD use and survival.

To estimate the association between wearing a PFD and drowning death among recreational boaters, we conducted a matched cohort study analysis of U.S. Coast Guard (USCG) data. Matched cohort analysis has been used to assess the efficacy of seatbelts and airbags in motor vehicles. It compares persons from the same vessel, who can be considered a matched set, has the advantage of comparing people at the same time of day, water and weather conditions, distance to shore, and proximity to help. The USCG collects boating accident reports of fatalities. From these we studied recreational boaters during 2000–2006 who were with others in a boat that capsized or sunk and where at least one person died of drowning.

We evaluated each boaters' age, gender, and whether they were wearing a PFD, whether they died or survived. The main outcome measure we assessed was the risk ratio [RR] for drowning death of boaters who were wearing a PFD compared to those not wearing a PFD. We excluded boaters who died of causes other than drowning, those who would have died regardless of PFD use, and those with missing records.

Approximately 4915 boater records from 1809 vessels may have been eligible for our study, but due to missing records and other problems we restricted our analysis to 1597 boaters in 625 vessels with 878 drowning deaths. We used multiple imputation for missing data on age and sex. When we compared persons from the same vessel, the unadjusted RR was 0.50 (95% CI 0.34 to 0.71); when we adjusted for sex and age, it was 0.51 (95% CI 0.35 to 0.74) When we omitted the 120 boaters in 50 vessels with a person who entered the water for rescue or to swim to safety, the adjusted RR was 0.53 (95% CI 0.36 to 0.77). When we analyzed only the 201 vessels with complete data for their 497 boaters and accounted for matching, the adjusted RR was 0.49 (95% CI 0.31 to 0.78).

Our RR estimate might have differed if we could have analyzed data from all vessels that met our study criteria. The direction and severity of any bias is unknown, but it could be substantial. While we adjusted for age and sex, we could not adjust for some variables that may be important such as alcohol use and swimming ability because that information was not available.

Conclusions: If the estimated association is causal, wearing a PFD may potentially prevent 1 in 2 drowning deaths among recreational boaters. But this estimate may be biased because we had to exclude many vessels from the analysis.

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Personal Flotation Devices (PFDs) and commercial fishermen: Preconceptions and evaluations in actual use

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Introduction

In many countries, including the United States, commercial fishing has the highest fatality rate of any occupation. Most of these fatalities are due to drowning after a vessel loss or from a fall overboard. Preventing vessel losses and falls overboard are the most certain way to prevent these fatalities, but this is not always possible. During 2000–2009, 155 commercial fishermen drowned after falling overboard in the United States. None of the victims were wearing a Personal Flotation Device (PFD).

Aims/Objectives

The purpose of this study was to examine commercial fishermen's perceptions of the risk of falling overboard, experiences with falls overboard, and preconceptions about PFDs regarding efficacy and comfort. Also, the study engaged fishermen in evaluating a variety of PFDs for comfort while working.

Methods

The study consisted of a cross sectional survey and a PFD evaluation. The cross-sectional survey measured fishermen's perceptions of the risk of falling overboard, experiences with falls overboard, and preconceptions about PFDs regarding efficacy and comfort. Fishermen who completed the cross sectional survey were invited to evaluate a PFD during their fishing season. Fishermen were randomly assigned one of six PFD models, and asked to wear it each time they went on deck. They were asked to rate the PFD comfort and satisfaction after the first day and again after one month of wear. Analyses were performed using SPSS ver.15.

Results

When asked 'How much do you worry about falling overboard?' 24% (96) selected 'very much'. Only 5% (19) responded 'not at all'. Fishermen believed that their career chance of ever falling overboard was 36%. Most respondents (258, 63%) believed that there was 'a lot'that an individual fisherman could do to prevent dying from a fall overboard. One half (200, 49%) stated that PFDs were 'very effective' for surviving a fall overboard. Overall, 19% (79) reported that they 'always' wore a PFD while working on deck, but there were major differences between gear types (crabbers, trawlers, gillnetters, longliners).

Of the 214 fishermen who participated in the PFD evaluation, 190 (89%) completed the first evaluation form and 146 (68%) completed the second. Overall comfort of the PFDs was rated on a scale of one to ten, with one being the least comfortable and ten being the most comfortable. On the first (day one) evaluation, the PFDs were rated: Hydrostatic Inflation Technology (HIT) suspenders (8.0), secumatic suspenders (7.0), foam bibs (6.9), nylon suspender bibs (6.5), foam vest (5.6), and neoprene suspender bibs (5.1). Overall satisfaction with the PFDs varied widely across gear types. The HIT suspenders PFD was most often the highest rated, both on the first (day one) evaluation and the second (one month) evaluation. The foam bibs PFD was most often rated second highest for overall satisfaction, while the foam vest and neoprene suspender bibs PFDs were rated lowest.

Discussion

This study revealed that fishermen working on different types of fishing vessels with different equipment and in different environments have varying perceptions of risk, attitudes and beliefs about PFDs, and preferences for PFDs. As a result, a 'one size fits all' approach to increasing PFD usage in the fishing industry will not likely be effective. PFDs and messages about PFDs must be tailored to individual gear types. This study found two specific PFDs that seemed to be comfortable and acceptable to a high percentage of fishermen in all gear types. Manufacturers may have more success supplying PFDs to the fishing industry if they engage fishermen early in design and testing.

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3000 lives, 6 Billion dollars lost, 18 years of surveillance – What have we learned about safe boating in Canada?

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Background

Boating accounts for about 40% of all immersion deaths in Canada. However, boating is under-researched since most victims do not survive long enough to reach a hospital and incidents have not been tabulated with other drownings by the World Health Organisation.

Methods

A national surveillance system for boating and other water-related injury deaths was developed as a basis for prevention in Canada in 1991 by a multisectorial collaboration of Red Cross, Transport Canada, Lifesaving, Coast Guard, National Association of Coroners, and Public Health. As of 2008, activity, purpose, and risk factors for about 3000 boating deaths had been abstracted from coroners' reports using a structured questionnaire. Each death file was reviewed and corrected, doubly entered with compare, and the final database analysed using statistical software.

Results

Recreational incidents accounted for 85% of deaths. Capsizing, falling overboard, and swamping were the main incidents. Fishing, powerboating, and canoeing were the most frequent activities. Immersions accounted for 95% of deaths and trauma the remainder. About 90% of victims were adult males of all ages; children were rarely involved. Alcohol was associated with 50% of incidents. Many victims were weak or non-swimmers. Two thirds involved powerboats, mainly small open aluminum boats, and the remainder unpowered, mainly canoes. Only 12% of victims were properly wearing a flotation device. Mainly non-swimmers were not wearing flotation. Lakes accounted for 60% of deaths, rivers 23%, and oceans 16%. Moving water was a factor in two-thirds of deaths in rivers. Cold water, mainly below 10°C, played a role in 36% of fatalities. Trauma deaths were dominated by personal watercraft and large powerboats, with personal watercraft accounting for only 2% of powerboat immersion but 29% of collision fatalities. Trends were positive during the first decade of national surveillance, with a 27% (95% confidence intervals 17, 31) decline from 0.71 per 100,000 person years to 0.54 between the first and second 5-year periods.

Conclusions

While there has been some improvement in boating immersion death rates, the proportion of dead boaters wearing a flotation device has remained unchanged for 18 years at one in 10. Hence, the most effective intervention would be mandatory wearing of appropriate flotation by all boaters at all times, with operators accountable for wearing by all passengers. This could prevent up to 90% of boating deaths in Canada, with annual cost savings of at least $330 million. Shops should stock flotation devices for active and inactive boating and cold and warm water conditions. Small open powerboats and motors require mandatory improved safety features to increase survival after capsizing, swamping and falling overboard. Helmets and safety design features are essential for personal and other high speed watercraft.

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Snorkelling fatalities in Australia: Pathophysiological considerations

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Snorkelling is an exhilarating aquatic pastime which is enjoyed extensively in Australian and Pacific waters. Snorkelling is enjoyed by both professional divers and scientists and by hundreds of thousands of both Australians and international tourists as an aquatic adventure and leisure experience. There is an often unacknowledged risk in snorkelling. We have identified an associated mortality in both experienced and inexperienced snorkelers. From our professional experience, it is known that snorkelling deaths may result from drowning, cardiac-related incidents, trauma and other factors. Many snorkelling deaths occur in senior swimmers who appear to die silently without any obvious cause. This paper summarises identified causes and discusses possible patho-physiological cascades which may lead to unexplained death in this tragic syndrome.

We report a 13-year total population study from Australia, which has identified every known snorkelling death from 1994–2006 inclusive. Case finding has been undertaken through the Divers Alert Network (DAN) files and associated coronial summaries; and has included detailed summaries from the National Coroners Information System (NCIS) from 2003.

This study has identified 140 snorkelling-related fatalities over this period in Australian waters. The syndromic profile is: 81% males; average age 50 years; cardiac factors identified as contributory in 46%; 40% of snorkelling deaths were diagnosed as drowning on coronial and DAN analysis, without a cardiac precipitant; 6% of deaths due to trauma. The average age of snorkelling victims, not identified with cardiac pathology was 38 years. One in three victims (37%) had a prior history of significant medical problems and 28% had a specific history of antecedent cardiac complications.

In this paper, we report also a "silent snorkelling syndrome" (20–25% of snorkelling deaths) in which individuals die but in whom there are no antecedent symptoms of disease and no definitive diagnosis at the subsequent forensic autopsy. The snorkelling domain comprises an environment in which physical exertion, diving-reflex changes, cold, bronchial aspiration and other factors may be present. All are hypothetically potentially associated with cardio-physiological changes. We discuss various possible pathogenic mechanisms which may lead to cardiac dysrrhythmias in the context of snorkelling and its concomitants in the aquatic environment. This epidemiological and patho-physiological study report enables targeted preventive messages to be directed at those who enrich their lives by this otherwise exhilarating recreational activity.

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Preventing commercial fishing deaths in the United States

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Background/Introduction

In the United States, as in other countries, commercial fishing has the highest fatality rate of any occupation. Most of these fatalities are due to drowning. During 1992–2008, an annual average of 58 reported deaths occurred (128 deaths/100,000), compared with an average of 5,894 deaths (four/100,000) among all U.S. workers.

Aims/Objectives

The purpose of this report is to identify the drowning hazards and risk factors for all causes of occupational mortality in the U.S. commercial fishing industry, and to explore how those hazards and risk factors differ among fisheries and locations.

Methods/Implementation

The National Institute for Occupational Safety and Health (NIOSH) developed the Commercial Fishing Incident Database (CFID) to collect data on hazards and risk factors for drowning mortality in the U.S. commercial fishing industry, and to explore how hazards and risk factors differ among fisheries and locations. Data were collected and analyzed on each fatality during 2000–2009 from multiple sources in each state, including reports from the U.S. Coast Guard (USCG), local law enforcement agencies, and media; death certificates; and state-based occupational fatality surveillance programs. Causes of death are collected from either death certificates or from investigative reports.

Results/Evaluation

From 2000–2009, there were 504 U.S. commercial fishing deaths. Most were caused by drowning (431, 86%), blunt force trauma (39, 8%), poisoning (12, 2%), and other causes (22, 4%). The majority of these fatalities occurred following a vessel disaster (capsize, fire, or sinking resulting in the crew abandoning the vessel) (261, 52%) or a fall overboard (155, 31%). By region, 133 (26%) deaths occurred off the coast of Alaska, 124 (25%) in the Northeast, 116 (23%) in the Gulf of Mexico, 83 (16%) off the West Coast, and 41 (8%) in the Mid and South Atlantic. By type of fishing, deaths most commonly occurred while fishing for shellfish (226, 45%), groundfish (144, 29%), or pelagic fish (97, 19%).

Discussion

Drownings due to vessel disasters and falls overboard were the main incidents leading to fatalities. Current safety regulations require that vessels carry various pieces of emergency equipment depending on vessel size and the operating area. This equipment has been shown to save lives by keeping crew warm and afloat until rescued, thus focusing on survival rather than prevention of vessel disasters, falls overboard, or deck injuries. In addition, crew members are not required by law to wear a personal flotation device (PFD) while working on deck.

None of the 155 workers who died from falls overboard during 2000–2009 were wearing PFDs. Increasing industry awareness and use of PFDs (including new styles that are integrated into work clothes) and fall overboard alarms likely would reduce the risk for death. Persons fishing alone should use safety devices that can stop the engine if they fall overboard and all vessel operators and crew should have a plan that will allow them to reenter the vessel. PFD use also would increase survival rates in incidents in which the vessel rapidly capsizes or where immersion suits are not accessible (i.e., when in a skiff).

To reduce drowning fatalities in this industry, additional drowning prevention measures tailored to specific high-risk fisheries and focusing on prevention of vessel disasters and falls overboard are needed. Safety improvements in the commercial fishing industry in Alaska occurred as a result of several interventions, including safety regulations, marine safety training, and fishery-specific interventions focusing on unique hazards of those particular fisheries. Additional efforts also are needed to help prevent falls overboard and increase PFD usage among crew members.

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Rock fisher safety in Auckland, New Zealand: Five years on

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Background

Rock fishing is one of New Zealand's most dangerous pastimes with 11 fatalities on Auckland's west coast from 1999–2005. In response to this, the Auckland Regional Council, Watersafe Auckland, and Surf Life Saving Northern, established a collaborative, on-site fishing safety project in 2006, employing part-time safety officers to promote safety at high-risk sites during the summer months from November–April. The purpose of the campaign was twofold. Firstly, it piloted a fishing safety education programme that would help fishers identify and manage the risks associated with fishing on Auckland's west coast. Secondly, fishers were surveyed at the end of each summer in order to enhance understanding of fisher demographics and their safety knowledge, beliefs, and behaviours. A major focus of the safety promotion was the use of inflatable lifejackets.

Method

During each of the five years since its inception, the project has annually surveyed fishers using a brief questionnaire that sought to elicit data on fisher perceptions of risk of drowning, and their knowledge and practice of fishing safety. Because of the ethnic diversity and recent residency of many of the fishers, the self-complete questionnaire was available in English, Mandarin, and Korean.

Results

Results over the five-year period show that the fishing population is consistently predominantly male (80–89%), of Asian origin (64–68%), and of recent residency (31–33%, less than four years). Results also show that the population is transient, with less than one third (31%) of respondents each year having taken part in previous surveys. In each year, two thirds (67%) of the fishers had fished less than five times at the site where they were interviewed. Among the key findings, fewer fishers reported never wearing a life-jacket/buoyancy aid (2010, 35%; 2006, 72%) and more reported wearing them sometimes (2010, 35%; 2006, 23%) or often (2010, 31%; 2006, 4%). Consistently over the five-year period, one third of fishers sometimes or often consumed alcohol when fishing at these high-risk sites.

In 2006, one third of the fishers (32%) surveyed disagreed/strongly disagreed that drowning was a constant threat to their life, yet five years later only 15% were of that opinion. In addition the proportion of fishers who had agreed / strongly agreed with that statement had increased from half (50%) in 2006 to two-thirds (66%) in 2010.

Discussion

The most significant behavioural change reported by fishers during the five years of the intervention was the more frequent use of lifejackets. While this is encouraging to water safety promoters, several other risky behaviours such as alcohol consumption and going down the rock face to retrieve snagged lines appear to be more resistant to change. Fishers's perception of the danger associated with fishing from rocks also changed over the five years with a more realistic appreciation of the severity of drowning risk. However, little change was noted in perception of their ability to manage the risk of drowning and, given their infrequent visits to the sites where surveyed, many held overly optimistic views in the protective value of their local knowledge.

Conclusion

Changing behaviours among such a difficult-to-reach sub-population has been a challenge in Auckland's west coast fisher drowning prevention initiatives but these results over five-year period suggest that the education intervention has shifted some traditionally intransigent behaviours. Promoting fisher safety on Auckland's dangerous west coast is problematic because the population is transient, culturally and linguistically diverse, and not familiar with the high-risk sites where they fish. However, the results suggest that some unsafe practices persist and warrant further discouragement through continued safety promotion.

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Don't put your life on the line – A strategy to reduce rock fishing fatalities

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Rock fishing related fatalities have continued and refuse to subside despite intervention measures tried over the past few decades. Each year they represent approximately 10% of coastal drowning fatalities which over time amounts to a significant number of tragedies. The 2009 National Coastal Safety Report produced by Surf Life Saving Australia found that of the 94 people who died by drowning around the coast during the twelve months to 30 June 2009, 12 (13%) were fishing on rocks or beaches at the time (1). Disturbingly the trend has continued into 2010, with 19 confirmed rock fishing related deaths including a quintuple drowning incident in New South Wales (NSW) at an unpatrolled location (2). The number and severity of non-fatal rockfishing injuries is unknown.

In 2010, people from Asian ethnicities made up 83% of fatalities. In particular, people from China, Korea, Vietnam and Hong Kong were over represented. The methods of wording and presenting safety messages to these target audiences are challenged by the difficulty of accessing the communities at risk and of overcoming cultural and language barriers.

A study was conducted by SLSA in early 2010 focussed on high risk demographic groups and rock fishing behaviour. In a startling indicator of how poorly prepared many rock fishers are, it revealed 75% of respondents interviewed admitted to never wearing a lifejacket, 42% don't always wear non-slip shoes, 38% don't always check the weather and despite all the deaths involving rock fishing during the past two decades, 41% still aren't convinced that being swept into the ocean is likely to result in drowning (3).

Over the past 18 months, Surf Life Saving has been developing a national rock fishing safety strategy to address the ongoing fatalities in conjunction with partners including the Australian National Sportfishing Association (ANSA) and the Australian Recreational and Sport Fishing Confederation (RECFISH) including their affiliated bodies.

The strategy attempts to address the cultural and language barriers, and safety attitudes of high risk demographics at high risk locations through interventions including the launch of a new safety program with an over-arching message 'always wear a lifejacket and don't put your life on the line'. The program consists of multi-lingual educational resources, community workshops and additional 'angel rings' (Public Rescue Equipment installed at popular or dangerous ocean rock fishing spots). The strategy also includes the first ever national review of rock fishing deaths and non-fatal rock fishing injury, as well as the development of a rock fishing specific coastal audit methodology for high risk locations and enhancement of hazardous rock fishing condition forecasting.

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Drowning prevention strategies for fishers wearing waders

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Background

The use of waders in recreational fishing, especially fly fishing, is widely adopted by participants. However, there is considerable speculation within the grey literature as to the role of waders as a contributing factor to fishing related drowning deaths. Anecdotally, some fishers voice concern about their capacity to remain afloat if they are submerged following a slip or fall while fishing. Following the drowning death of a local fisher, the University of Ballarat was approached by a Ballarat fishing group whose members were interested in fishing safety, particularly in light of their use of waders.

This study used an exploratory design in a controlled swimming pool environment to gain an understanding of the circumstances that occur when (i) a fisher wearing waders slips and the waders gradually fill with water, and (ii) a fisher suddenly falls into the water (e.g. simulation of slipping off a rock). It also explored strategies for fishers to remain afloat following submersion when wearing waders, and the potential for fishers in waders to reach safety following sudden unexpected submersion.

Methods

Part 1: In the first instance, an experienced recreational fisher (who was also experienced in the use of waders) attended the University of Ballarat pool for a pilot investigation. The fisher wore his usual fly fishing attire, including warm clothing and waders. For risk management, the fisher was first instructed in survival sculling skills in shallow water. Upon demonstration of sound survival sculling in shallow water (1.2m), the fisher gently entered deep water (2m). Under instruction, the fisher experimented with various strategies for remaining afloat, including survival sculling, sculling for movement and survival swimming. Finally, the fisher entered deep water (2m) simulating a fall in, and trialled various methods to achieve a safe survival sculling position. All activity in deep water was video recorded.

Part 2: Following completion of pilot testing, the researchers developed a short skill based education program which will be implemented with a small group of interested fishers in December, 2010. Fishers, wearing full fishing attire, will be instructed in survival strategies. This intervention session will also be video recorded.

Results

The pilot testing session illustrated that with minimal in-water instruction, a fisher could acquire the necessary survival skills to manage unintentional submersion when attired in fishing clothing, including waders. Contrary to the concerns of some fishers, the waders, although cumbersome, do not in fact cause a fisher to sink. When waders fill with water, the additional water is neutrally buoyant and therefore does not contribute to sinking. However, it is vitally important that a fisher who is unexpectedly submerged remains calm, and does not panic. With appropriate instruction, so that fishers are comfortable with their survival skills, they will find that it is not difficult to adopt a survival sculling position. The fisher can then use sculling skills to reach a point of safety. They may also be able to make use of currents to assist them to reach an exit point.

Further results will be reported, following the implementation of the intervention session with the group of fishers.

Conclusion

The development of an easily implemented drowning prevention intervention is a positive outcome of this study. The involvement of a fishing club as stakeholder in the project will facilitate the adoption of the intervention program and therefore contribute to drowning prevention.

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A survey of hotels in Langkawi Island, Malaysia, on the need for lifeguards

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As no legislation exists in Malaysia regarding the compulsory employment of lifeguards in public beaches or pools, quite often the initiative to provide lifeguards lies with the local authority or private enterprise.

Langkawi island is a popular tourist destination for local and overseas visitors. Via the phone, 34 hotels/motels in Langkawi were contacted in 2003 and ninesimple questions were posed to the Human Resource Manager/General Manager or the Guest Relations Officer.

The results show that 60% of the hotels/motels had swimmimg pools. 80% of these 60% were less than 100 meters from the beach. Only 38% of the pools had lifeguards. All of them had as minimum qualification the Bronze Medallion certificate and were CPR trained. Only two hotels had both pool and beach lifeguards. All responders agreed that beach lifeguards were needed in Langkawi. On a ranking of 1 (least needed) to 10 (definitely needed), all hotels ranked 7–10 for the need for beach lifeguards, and 1–10 for pool lifeguards. 50% of the hotels were of the opinion that they themselves should provide beach lifeguards, whereas 32% felt that the local council should be responsible, and 18% felt that the Ministry of Tourism should be responsible. Two hotel General Managers said 'no lifeguards are required for pools less than 1.4m deep'.

The survey highlights a degree of ignorance of the risks of drowning among hotels in Langkawi. Providing correct information to those involved is crucial. As most of drownings in Malaysia occur in the rural areas as well as in the sea, well trained beach lifeguards are a reassuring sight for tourists and locals alike. One way of improving this situation is to collaborate with the National Hotel Association to disseminate information to their members. Local government councils should also be approached regarding beach safety as the beaches in Malaysia are under their authority. Proper training of lifeguards are important. The paper will discuss some of the remedial steps taken by the Life Saving Society Malaysia. Many of the lifesaving societies in the nations of South East Asia may be encountering similar problems.

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Reducing the risk of drowning after helicopter ditching: An assessment of the performance of three emergency breathing systems

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Introduction

When a helicopter ditches in water it commonly capsizes and floats inverted (3) and crew and passengers must make an underwater escape while breath-holding. If the water is cold it is likely that the 'cold-shock' response (5) will be triggered and breath hold time will be reduced (1). The inability to maintain a breath-hold on cold water submersion after helicopter ditching contributes to the 20–50% mortality rate in otherwise survivable accidents (2). The potential time to escape a ditched and inverted helicopter may vary between ideal (28s) and rough sea-state conditions (92s; 4). In order to reduce the risk of drowning, Emergency Breathing Systems (EBS) are carried in helicopters for passengers regularly flying over cold water (e.g. oil platform workers). This study compared three types of EUBS commercially available at the time of testing (a compressed gas system (CG); a rebreather system (RB); and a hybrid system (H)) with a secondary aim of providing guidelines on the future testing of EBS.

Methods

Eight healthy, non-smoking participants (5 male, 3 female) volunteered for the experiment (mean [s.d]; age 25 [4.5] yrs; height 1.74 [0.11] m; mass 70.12 [8.73] kg). They were non-habituated and were competent swimmers with limited or no prior experience of using EBS. Each EBS was examined during water deployment (Wdep) and over 90 s in cool (25°C) and cold water (12°C) immersion to the neck (Imm), and submersion (Subm). Participants wore standardized clothing, including jeans, t-shirt, cotton shirt, woollen jumper and an immersion dry suit. Measures taken were Wdep time, stay time ([Imm] and [Subm]), and dyspnoea rating on a 10 cm visual analogue scale ranging from (0 cm) – not at all breathless to 10 cm – extremely breathless 10cm) and rated the ease of each device use; comfort of device, ease of breathing, comfort of breathing and overall confidence in the device (Likert scale ranging from 1 (negative rating) to 5 (positive rating).

Results

Mean [SD] data show Wdep was slower in the H (17.7 s) than the RB (10.0 s) and CG (8.1 s). Stay time was greatest in the H (90.0 s) compared to the RB (68.3 s) and CG (87.0 s); stay time in CG was also greater than with the RB. Dyspnoea ratings were greater in the RB (6.5 cm) compared to the CG (2.4 cm) and H (1.9 cm). Across devices, stay time in cold water was shorter ($P<0.05$) during submersion than immersion (85.9 s vs. 70.1 s); all $P<0.05$. During submersion stay time was shorter ($P<0.05$) in cold compared to cool water (12°C: 62.8 s; 25°C: 77.5 s). On average across all subjective responses, H was most highly rated (3.9 [0.6]) followed by CG (3.8 [0.4]) and RB (2.9 [0.4]).

Discussion

All of the devices tested enabled the participants to extend underwater stay time beyond that which has been reported to occur during breath-holding whilst submersed in cold water (5°C) (10 s; 6). It is likely that the use of these EBS would reduce the risk of drowning in a helicopter ditching and inversion. The data suggest that the CG and H devices outperformed the RB device but the H device required longer to deploy. The difference in the performances of each EBS was most discernable during cold-water submersion and it is recommended that this test condition is included in future standards for testing EBS.

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Responding to the Mangatepopo canyoning tragedy that claimed seven lives in 2008

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Water Safety New Zealand[1]

Background

Canyoning is an outdoor activity where people traverse canyons by using a variety of techniques such as abseiling, swimming, walking, climbing etc. It is an activity that combines rushing water, steep sides and has limited exit opportunities once a group has commenced. Currently in New Zealand no national qualifications standards or legislation exist for this activity.

On 15 April 2008 six students from East Auckland's Elim Christian College and a teacher died in the Mangatepopo gorge whilst canyoning. This tragic event thrust drowning and the activity of canyoning into the national spotlight. As a result of this incident several reports were completed by the New Zealand Police, the Department of Labour and by the Sir Edmund Hillary Outdoor Pursuits Centre. Despite the validity of these reports it was evident to WSNZ and the New Zealand Outdoor Instructors Association (NZOIA) that canyoning was a relatively new activity to New Zealand that had a rising participation base but no set national qualifications or standards. As such it was critical to learn more about this activity with a view to assisting the industry make steps to ensure that incidents were less likely to take place in the future.

Methods / Implementation

WSNZ and NZOIA commissioned research to establish:

- What the level of canyoning activity in NZ was?
- Who was leading canyoning trips (schools, outdoor centers, operators)?
- What the environmental / terrain conditions that groups were active in?
- Where canyoning activity was occurring geographically and if distinct levels of activity were taking place?
- What qualifications and standards had been implemented by other countries?
- Did the scope of overseas qualifications (environment/terrain/activity level) have parallels with NZ?
- Is there sufficient activity to enable / justify the establishment of national standards in New Zealand with consideration given to if other solutions existed and if current qualifications should be adapted or supplemented by endorsements?

Both qualitative and quantitative research methodology was used along with interviewing major operators in the field. The research recommended:

- A canyoners' swiftwater workshop was supported;
- The forming of a national entity was supported;
- Daniel Clearwater was supported to produce a guidebook;
- The canyon web group was encouraged to become a member of Water Safety New Zealand (WSNZ);
- A web-based canyoning resource is established on a national outdoors organisation's website, eg WSNZ, Outdoors New Zealand;
- Early warning system information was collated for canyons;
- As part of training, a decision-making tool for recreationalists is developed along the lines of those being trailed in the avalanche-training field.

Following completion of the research stage a public consultation round was initiated to invite interested parties to make submissions on the report and refine the recommendations. As result of the submissions several recommendations will be accepted and completed prior to the Conference, with others rejected. Unfortunately at the time of writing this abstract it is not possible to provide this detail. However it will be available at the time of the Conference.

Acknowledgments

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Foreign holiday drowning deaths

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Introduction

The European Child Safety Alliance 2008 report Protecting Children and Youths in Water Recreation: Safety Guidelines for Service Providers states that 70% of European tourists spend their holidays at a waterside location and that tourists have a higher rate of injury and death than the standard population (1). Ireland's Department of Foreign Affairs reported that 130 Irish citizens died while abroad in 2007, including at least 10 persons who drowned (2). This is neither an Irish or European problem alone, RoSPA reports that in the period 2000 to 2005, 475 British tourists drowned on holiday (3). In Australia, 4.7% of non-boat drowning deaths occur among international tourists and drowning causes 15% of injury deaths among US citizens travelling abroad annually (4).

Objectives

The author analysed how and why Irish residents appear to drown while on holiday abroad and based on his conclusions devised a set of holiday water safety guidelines for public use.

Methods

General literature on holiday deaths was collected via an online search using the keywords 'holiday death' and 'holiday drowning'. Articles and reports were printed off and assessed for their relevance to the questions being studied. Using a news cutting service Irish newspapers, especially local papers, from 2000 to 2008 were sifted for relevant news reports and specific details isolated and recorded. Lifesaving websites were scanned for holiday water safety advice.

Discussion

The study arrived at 10 general conclusions including tourists are 15 times more likely to drown than local residents; children under 15 years of age are likely to drown in a swimming pool; individuals over 15 years of age are likely to drown in open water and many of those who died did so within a short time of arriving at their holiday destination. It was concluded that the majority of young deaths arise from parents or the youths themselves holding false safety assumptions. Eight 'Dangerous Assumptions' are listed including being able to swim protects children from drowning and the presence of a lifeguard removes the need for the careful supervision of children. As there are no EU wide safety laws parents must accept full responsibility for their children's safety. Under the title of 'Take The Time To Check It Out', 40 safety guidelines for parents were identified for four specific areas – pool, beach, people and equipment. An Irish Lifesaving Foundation water safety leaflet, based on this study, and titled Water Safety Holiday Advice is available for download on its website www.lifesavingfoundation.ie.

Conclusion

When people go on holiday, along with their luggage, they also bring with them a set of safety assumptions. The only way members of the public can be certain about their own safety and the safety of their children is to check out the swimming pool, the beach, the people who appear to have a safety role and the play equipment used beforehand.

Acknowledgements

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An analysis of water-related fatalities and injuries suffered by Canadian tourists in the Dominican Republic

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Background

The Dominican Republic has become one of the most frequently visited sun destinations for Canadian tourists, with more than 690,000 Canadians travelling to the Dominican Republic in 2007 [Foreign Affairs & International Trade Canada, personal communication, June 19, 2009]. There have been media reports surrounding the issue of Canadian tourists who have suffered water-related fatalities, or injuries while visiting the Dominican Republic. Despite the noted public concerns, the issue surrounding these water-related incidents has not been examined closely, and remains an open area of research.

Preliminary research conducted by the Lifesaving Society indicated that the incidence of water-related fatalities and injuries in the Dominican Republic involving Canadian tourists is unknown, and that water-related incidents of Canadian tourists have not been well documented.

Objective

To determine the incidence rate, circumstances, and contributing factors of water-related fatalities and injuries suffered by Canadian tourists visiting the Dominican Republic for the period of 2004–2009.

Methods

The Lifesaving Society received permission from the Water Incident Research Alliance (WIRA) to modify an existing, validated data collection form from the Canadian surveillance system for water-related fatalities for use in this research. WIRA is dedicated to delivering research data regarding water-related incidents, injuries, and fatalities occurring across Canada. Following modification of the data collection tool, we elicited the assistance of the research and analysis service of Foreign Affairs & International Trade Canada to review the CAMANT database, and complete data collection forms for all reported unintentional water-related fatalities and injuries (N=16) involving Canadian tourists in the Dominican Republic between 2004–2009. Once data collection was complete, consular staff reviewed the completed forms for accuracy, and completeness. A scan of media reports was conducted to determine if there were any incidents that had not been captured by the CAMANT database. In the final stages of this analysis, the Lifesaving Society reviewed the collected data and prepared a final report comparing the results to the trends for water-related fatalities and injuries documented in Canada.

Results

In the period of 2004–2009, 13 Canadian tourists visiting the Dominican Republic suffered an unintentional water-related fatality, and three sustained water-related injuries. The majority of these incidents occurred in unsupervised areas, and involved a recreational activity where the decedents had intended on entering the water. 92% of these water-related fatalities were males with an average age of 46. There was insufficient data available to determine whether alcohol was a contributing factor in any of these water-related fatalities.

Conclusions

The incidence rate for water-related fatalities involving Canadian tourists in the Dominican Republic is low with only 13 fatalities occurring over a period of five years. In 2004, 245 water-related fatalities and 1103 water-related injuries occurred in Canada (1). Given these trends, and the fact that incidents are not well documented, it is likely the incidence of water-related injuries for Canadians in the Dominican Republic are significantly underreported. To develop prevention strategies, it is vital to improve the tracking system used to record the water-related incidents involving Canadian tourists in the Dominican Republic.

Further research should examine the surveillance and reporting systems currently used to track water-related incidents worldwide, and should also investigate how water-related incidents involving Canadians compare with other nationalities visiting the Dominican Republic, as well as the trends worldwide.

Acknowledgements: Foreign Affairs and Industry Canada, Water Incident Research Alliance.

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Beach safety for visitors to Australian beaches – Tourist and immigrant drowning prevention in Australia

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Surf Life Saving Australia[1]

Each year there are over 5.6 million tourist visitations (1) to Australia and coupled with over 543,000 permanent and temporary visas (2) that are granted annually, new arrivals continue to flow in and out of Australian society. As a consequence there are large transient populations cycling through popular tourist locations and the constant arrival of persons unfamiliar with Australia's unique hazards. Unfortunately, the result of these trends is a continuing over-representation of persons with foreign nationality or birthplace in drowning data, accounting for 20% of coastal drowning fatalities each year (3).

Nationalities featuring prominently in this fatality cohort include the United Kingdom, China, Korea and Japan (4) presenting a diverse blend of cultures, which is of further concern particularly considering visitations of these groups is projected not to decrease significantly.

These high risk groups may lack the water safety knowledge, skills and awareness required to use Australian beaches safely. Additional challenges presented by these high risk groups include limited English ability, often limited or over rating of swimming ability, unfamiliarity with the coastal environment and in the case of tourists, short duration of stay, a lack of regard for water safety and high beach exposure during that time.

In 2009, SLSA commenced development of an initiative to target tourists and immigrants in collaboration with industry, experts on 'All Cultures' and Tourism Australia. This initiative envisages to achieve the effective communication of essential beach safety messages given limited opportunities. It provides a balance of providing informative messaging and imagery that can be used by water safety practitioners, but is also acceptable to tourism providers and facilitators of immigration.

The initiative utilises multiple distribution streams across government, transport, tourism and education in high risk areas and will be exposed to the target groups on multiple occasions throughout their temporary and permanent stays. An insight into the resources, their development and delivery will be provided and results regarding the success of these methods through stakeholder feedback and short-term impact on the rate of drowning.

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Diving deaths downunder – An analysis of 34 years of scuba diving deaths in Australia

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A sequential analysis was conducted of all compressed gas diving fatalities that occurred between 1972 and 2005 as recorded on the DAN Asia–Pacific database. This included 351 cases, of which 283 involved scuba, 62 surface-supplied breathing apparatus (SSBA), five rebreather and one with which the breathing apparatus was unknown. Each incident was examined and an attempt was made to determine the trigger, disabling agent, disabling injury and cause of death. Equipment problems, breathing gas management, rough water, anxiety and exertion were common triggers to fatal dive accidents in this series. Problems with gas supply were thought to have been the disabling agent in almost one quarter of incidents, and ascent issues in almost 20%. Cardiovascular disease was believed to be the disabling agent in 14% of cases. The predominant disabling injury was asphyxia from the inhalation of water although there is an increasing rate of cardiac-related disabling injuries.

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Collaboration with resort owners and the community – A leading advantage in the fight against tourists drowning in the Philippines

Arne Navarra[1]

Philippine Life Saving Society[1]

The Archipelagic Philippines – the summer capital of the world, known for its rich natural resources, biodiversity and smiling people – has 7,100 numerous islands and a total coastline of about 36,289 km (22,549 mi) with many bays, gulfs and inlets where tourists (foreign and local) flock for vacation and feel the waters for recreation.

Tourists would enjoy the different aquatic experiences every time. Unfortunately to some, exposure to the different water environments resulted in their injury or death because of drowning.

Initial efforts for drowning surveillance showed that 35 out of 49 drowning deaths in year 2009–2010 were tourists in resort pools and beaches. Out of the 35 occurrences, 45.71% are local tourists while 54.29% involved foreigners. The magnitude comes in varied age groups categorically those 5–14 years old children at 14.29%, 15–35 years age grouper at 68.57%, and those above 35 years old are rated at 17.14%. On gender, majority were males at 68.86% while females got only 37.14%.

A tripartite collaboration between resort owners, local government units and Philippine Life Saving Society was started in 2009 in Boracay Island to pilot the formulation of initiatives in the prevention of tourists drowning in the Philippines. The approach includes the cooperative planning and implementation of drowning prevention strategies for the community, the creation of in-house water safety training facility at various resorts and the introduction of best practices to focus on lifeguarding and risk management operation based on the standards recommended by the International Life Saving (ILS) and the Royal Life Saving Society – Australia (RLSSA).

The threefold collaboration is a key equipper in developing the attitudes of the people, in and out of any resort, to participate and be able to contribute in the realization of a drown-free coastal and resort community. In addition, the trust would also effectively teach resort personnel and civilians within the community certain techniques in the scanning of potential danger aside from their adeptness in water safety and lifesaving. In that way, the risk of drowning can be addressed preventively.

The scheme will be replicated in other high-density tourism communities such as that in Cebu, Palawan Island, Siargao Island, La Union and Calamba Resorts. It is hoped that in 2015, a significant reduction of tourists drowning in the Philippines is achieved.

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ORAL PRESENTATION

ID: 541 / Paper: 221

The use of Personal Flotation Devices to prevent drowning

Richard M K Tan[1]

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All over the world and in Singapore, many deaths by drowning that occur during boating happen to people who do not wear a lifejacket or personal flotation device (PFD). There are examples from a number of high profile drowning deaths of Singapore citizens during boating activities both in local waters and overseas in recent years. There are also many examples from other countries including recreation boating drownings in Canada during the 10–year period 1992–2001 where the omission to wear a PFD was said to be the biggest contributing factor.

While there is evidence to show that the odds of survival increase if PFDs are worn, most authorities do not mandate the wearing of PFDs by law even though they usually mandate the presence of PFDs on board boats and watercraft. This paper presents the highlights of the author's research into the wearing of PFDs to prevent drowning and also gives the author's suggestions as to what can be done to have people put on PFDs when they are boating so as to reduce the overall incidents of death by drowning.

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Photo: REUTERS/Arko Datta

Disasters and Climate Change

Disasters, particularly natural disasters such as hurricanes, severe flooding and storm surges, affect millions of people annually. Drowning is a common, yet under-reported consequence during these events.

Transportation disasters are also a common occurrence, with ageing inter-island ferry systems across developing countries posing the greatest concern. Preventing these drowning deaths poses many policy, economic and education challenges.

The Disaster and Climate Change stream will focus on: Tsunami, flooding and the role of lifesavers and lifesaving organisations in disaster risk reduction.

The Disaster and Climate Change theme is proudly sponsored by Maatschappij tot Redding van Drenkelingen.

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Drowning mortality in the Asian Tsunami and correlates of survival

Soewarta Kosen[1], Michael Linnan[2], Tracie Reinten-Reynolds[2], Ibu Ingan[1] and Ibu Endang[1]

National Institute for Training and Research Development, Ministry of Health, Indonesia[1], The Alliance for Safe Children (TASC)[2]

Introduction

On the morning of December 26th, 2004, an undersea earthquake occurred 30 km off the western coast of northern Sumatra, Indonesia. It registered a magnitude of 9.2 on the modified Richter scale and triggered tsunami waves up to 30 meters high that inundated coastlines of countries bordering the Indian Ocean, and killed more than 225,000 people in 11 countries. In Indonesia, the closest country to the fault line, the tsunami caused an estimated 140,000 deaths in the northern areas of Sumatra, Indonesia.

Methods

An epidemiological study was conducted in January and February 2006, 13 months after the tsunami, using a retrospective cohort design. The cohort was composed of survivors living in temporary housing near where their pre-tsunami household had been in two areas of northern Sumatra: Banda Aceh, and Aceh Besar. The survivors provided information on their households at the time of the tsunami. A crude analysis was done looking at mortality and the odds ratio for death by distance from the beach. Statistically significant factors were included in a logistic regression model to control for confounding.

Results

The results show a positive association between survival and a number of factors: age, sex, location at exposure, height of water experienced, distance from the shore and swimming ability all having significant associations. Details will be presented at WCDP.

Conclusions

Despite the cataclysmic nature of the tsunami it was survivable. Mortality was highest in the oldest and youngest age groups, in those closest to the beach, in those who were inside a building, and in females, compared to males. The factor associated with the highest odds-ratio for survival was the ability to swim.

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Protective effect of swimming in a tsunami disaster and its protection of caretakers and children

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Introduction

On the morning of December 26th, 2004, an undersea earthquake occurred 30 km off the western coast of northern Sumatra, Indonesia which triggered tsunami waves up to 30 meters high that inundated coastlines of countries bordering the Indian Ocean. In Indonesia, the closest country to the fault line, the tsunami caused an estimated 140,000 deaths in the northern areas of Sumatra, Indonesia. The majority of these deaths were in women and children. The event provided an opportunity to understand the impact on a particularly vulnerable population, women and the children they cared for.

Methods

A retrospective cohort study was conducted 13 months after the tsunami. The cohort was composed of survivors living in temporary housing near where their pre-tsunami household had been. The survivors provided information on their households at the time of the tsunami. The primary caretaker for each child under 10 years of age was identified. The swimming ability, outcome and behavior of the caretaker were correlated with the individual child being cared for. A crude analysis was done looking at mortality and the odds ratio for death for children and caretakers. Statistically significant factors were included in a logistic regression model to control for confounding. A multivariate logistic regression analysis was done for age, sex, swimming ability, distance from the coast, location at time of tsunami, survival behavior used, and whether the child's caretaker was present and if that caretaker was able to swim.

Results

For infants and children with caretakers (those under 10 years) there was a very strong association between their survival and the survival of the caretaker. For the youngest children (infants and those 1–4), odds of survival were about twenty times those whose caretakers did not survive, and for the less dependent children (aged 5–9 years) their odds of survival were about 15 times higher if their caretaker survived. The main factor associated with caretaker survival was swimming ability, which increased the odds of survival between 2.3 and 3.7 times depending on age of child cared for.

Conclusions

There are simple skills that can be taught to all adults to enhance their survival in a catastrophic aquatic disaster such as a tsunami. The skill of survival swimming confers a major protective effect on the caretaker, which results in greatly enhanced survival of the infant and child in their care. This provides a very powerful tool for pre-disaster preparation for protecting women and the children they care for in disaster situations related to water.

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Disaster mitigation, preparedness and response: City focused Community Based Disaster Risk Reduction

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The Community Based Disaster Risk Management (CBDRM) gained prominence in the Hyogo Framework for Action (HFA) 2005, adopted at the World Conference on Disaster Reduction in 2005. A strategic goal of "development and strengthening of institutions, mechanisms and capacities at all levels, in particular at community level, that can systematically contribute to building resilience to hazards" promotes community participation at all the stages of the disaster cycle.

Asian Disaster Preparedness Center (ADPC) is working towards building safer communities in the Asia and Pacific with the mission to reduce impact of disasters by raising awareness, helping to establish and strengthen sustainable institutional mechanism and enhancing knowledge and exchange of information and expertise. Successes attributed with the involvement of communities in project implementation, gained specific accomplishments on community based disaster risk reduction (DRR). It includes drawing the local people together to plan and prepare for disasters systematically, working together to establish an appropriate emergency warning system (EWS), prepare community evacuation plans and define priority action plans for mitigation.

Urban disaster risk management is one of the areas where ADPC is closely working with community during the last fifteen years. The latest program of such nature is the Program for Hydro-meteorological Disaster Mitigation in Secondary cities in Asia (PROMISE 2005–2010) which was concluded last December. It was implemented in nine cities in six countries; namely: Bangladesh, Indonesia, Pakistan, Philippines, Sri Lanka and Vietnam. Floods and cyclones are common for all cities where storm surges are specific for some of them. Many of such instances are directly connected with the growing impact of climate change.

PROMISE was implemented under four main components. The City Demonstration projects largely involved the local community in project planning, designing, implementation, monitoring and evaluation. The program promoted the basic concepts of local level community-based approach with participation of other stakeholders. The city approaches were similar, but based on the indigenous culture, practice and to help on-going disaster related activities in the city. The basic activities were: i) Hazard, Vulnerability, Risk and Capacity Assessment (HVRC) and developing community based city & community level risk maps and action plans; ii) Mitigation and Preparedness measures using the HVRC assessment to identify the extent of vulnerability, actions and priorities, and develop participatory action plans. The focus was on establishing community based EWS, strengthening emergency operations centres (EOC) and community based structural and non structural mitigation; iii) Training and Public Awareness such as Community based Emergency Response, CBDRR, flood drills, simulations, school safety programs and city specific awareness initiatives.

Other components were: Regional and National level Capacity Building, Advocacy for Mainstreaming DRR in local governance and Regional Networking and Information Dissemination.

During the implementation in nine cities, ADPC identified the potentials of the local community, commitment of them, leadership and officials, available resources and utilization, and planned activities accordingly. The local knowledge and indigenous practices in disasters, cultural, social, legal, political and administrative backgrounds were carefully assessed. In some occasions, community based products were updated and upgraded with technical inputs. Selected mitigation activities were implemented with community participation. From the community of Jamalpur city (Bangladesh) with a mix of urban–rural nature to the more developed urban communities of Pasig and Dagupan (The Philippines), it was a challenge to develop strategies and to implement the same on the basis of common concepts of CBDRR. Social differences were no more barriers when actions are taken partnering with the local people.

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The role of lifesaving organizations in disaster management

Dr Georgios-Marios Karagiannis[1]

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The purpose of this paper is to present the role of national lifesaving organizations and the International Lifesaving Federation (ILS) in disaster management.

Drowning in aquatic disasters takes a significant human death toll upon the world. Climate change will almost certainly increase both the frequency of occurrence and the severity of hydro-meteorological hazards, such as floods and hurricanes. However, most of these deaths are preventable.

The Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters sets the global objectives for disaster risk management, with an emphasis on local and national resilience.

In this paper, the activities of lifesaving organizations in disaster mitigation, preparedness, response and recovery are analyzed in light of the priorities for action set in the Hyogo Framework.

The strategy of ILS with regard to aquatic disaster management, as illustrated in the ILS Position Statement in Aquatic Disasters, suggest an orientation toward prevention of drowning in disasters with a focus on at risk population and water safety education. This orientation matches the Hyogo Framework priorities of community involvement, resilience building at the local and national levels and risk reduction. Finally, the perspectives of the work of ILS and lifesaving organizations in aquatic disaster management are presented.

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ORAL PRESENTATION

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The 2004 Boxing Day tsunami – Policy, planning and deployment

Colonel Vlas Efstathis OAM[1,2,3] and Professor John Pearn[4]

St John Ambulance[1], QLD 2004 Tsunami Emergency Response Team[2], Ipswich Health[3], Royal Life Saving Society – Australia[4]

On 26 December 2004, a massive submarine earthquake disrupted the sea floor west of the north-western tip of Sumatra. The resulting tsunami raced centrifugally from its epicentre, lensed about the tip of Sumatra and planed clean one-third of the littoral city of Banda Aceh, a major Indonesian metropolis of more than 300,000 people. In addition to the kinetic destruction of the wave, another third of Banda Aceh was inundated by a surging flood. More than 90,000 lives were lost in the city over a period as short as 30 minutes.

More than 30 international medical teams, both civilian and military, were deployed to the stricken city. The Queensland Government raised an emergency team led by one of us (VE), with another as the intensivist and physician (JP). This paper discussed policy development, planning for the medical role, deployment and the experience of living in and serving a devastated city with its municipal and medical infrastructure destroyed.

A particular challenge was the tasking of the emergency response team, and formal delineation of roles. To raise a balanced team required emergency decisions about matching skills with the anticipated tasks. Deployment of personnel necessitated attention to such factors as preventive medicine, matching compatible personalities who need work under prolonged stressful conditions and managing the disappointment of those not chosen to be deployed. In addition to the technical aspects of clinical medicine, issues of both prior immunization and physical fitness were important. In-country success of the mission depended on the co-ordination of resources supplied by supporting national contingents, both military and civilian, with whom all emergency responders had to work.

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Impacts of extreme weather events and climate change on coastal recreation and public safety

Norman Farmer[1]

Surf Life Saving Australia[1]

In many countries of the world people have settled by the coast. In Australia more than 85% of the population live near the coast and our tourist beaches alone receive in excess of 100 million visitations every year. The beaches of Australia are favoured by locals and tourists alike for recreation whether for bathing, swimming, surfing, boating and a range of other activities resulting in significant social and economical value to Australia.

There are more than 11,900 beaches along the 56,000km coastline of Australia (incl. islands). While the coast attracts many visitors and residents, it also has inherent and largely unpredictable risk. The coastal processes are dynamic and the affects of extreme weather events continue to shape and change the coast and its beaches. To date, Australians have adapted to the changes (e.g. the development of the surf lifesaver) and have been resilient in the face of the extreme forces of nature (e.g. beach renourishment) that impact our coasts.

The science of climate change has predicted the impacts of climate change that include sea level rise and increases in severity of storm events. These will further impact the coast including changes to access to and size, shape and safety of our beaches. The loss of or adverse changes to Australian beaches through environmental infleunces could adversely impact Australia's 'beach culture'.

In the past 103 years Surf Life Saving has saved over 550,000 lives at our beaches across Australia and continues to rescue more than 12,000 people every year. The science of climate change is so relatively new when compared with the age of surf lifesaving facility construction. Climate change issues were unknown when decisions about where to place facilities were made. As a consequence, coastal environmental processes and government policies are impacting the maintenance, refurbishment and replacement of these facilities. This is likely to impact both economically and socially the provision of vital beach safety services.

Australia's coastal managers and lifesaving organisations will need to continually adapt to the environmental, social, economic and political changes by modifying its service provision techniques, and through greater inclusiveness in coastal policy and planning.

Summary

The key points to be raised in this presentation include the following:

1. Australian beaches are well known across Australia and many parts of the world as being integral to Australia's outdoor lifestyle;
2. The impacts of extreme weather events continue to shape the coast and beaches often presenting hazardous conditions that create risks for beach users;
3. The impacts of climate change will put further pressure on the coastal communities and visitors to the beaches thereby influencing adaptation measures chosen by those communities or imposed upon them by governments;
4. Risk management, vulnerability mapping, preparedness and response planning methodologies will provide coastal dwellers and planners with a greater understanding of the actions that should be taken to protect the social and economic attributes of Australia's beaches;
5. Surf lifesavers and lifeguards have played an important role in beach safety for over 100 years, a role that is likely to increase as the impacts on our coast become greater;
6. Ongoing studies into vulnerability of beaches and changing community and tourism leisure needs resulting from the impacts of climate change will enable coastal managers to better understand the continual modifications to beach-based recreation and safety services to ensure Australians and tourists continue to receive the broad benefits provided through the use of the beach.

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Participation of voluntary organisations in a national program of disaster prevention against flooding

Ortwin Kreft[1]

DLRG German Life Saving Society[1]

Background/Introduction

To minimize the loss of life and goods by maximum effects and minimum costs.
To create, educate and train a minimum part of the population to act as efficient voluntaries in prevention and in defending disaster situations of flooding.
This is a cooperation program of national authorities, governmental and voluntary non governmental organisations.
No community can afford to hold a greater number of qualified personal available only in stand by for occasions that are often unexpected and occur in not foreseen sequences.
Participation between communities and voluntary organisations is vitally needed.

Aims / Objectives

The work aims to the target, that by minimum costs and maximum effect, necessary help is available at any time in areas of distress.

Target

Target group is the whole population of a nation between 18 and 60 years of age.
The work is located in local groups at community level, these groups are connected in platoons at regional levels, which have the possibility to act together with other platoons on a over regional, national or even international base.

Methods / Implementation

DLRG is, beside other voluntary organisation, part of the program.
The program works on the basis of national agreed principle of education for disaster management.
The policy works in good cooperation of all units involved.
DLRG is the most experienced organisation in Germany on the scene of accidents in relation to water.
The program is created in agreed conjunction with governmental and non governmental organisations.
The policy covers the whole area of the nation, it has been implemented by the government.
The regional authorities are responsible for the practical execution.
Research has been made empiric and scientific over a period of more than 50 years.
This is an on going program since more than 50 years.
Techniques are established by operating specific types of groups such as:
Evacuation Groups, Rescue Diver Groups, Work Groups for deich defence, First Aid Groups and other specialist, such as dogs for the recovery of persons.

Results / Evaluation

Monitoring the work is an on going process.
Evidence of the work is on hand during every incident that needs action.
Benefits for the population is safety as far as possible.
Continuous work has to be done to achieve safety further on.
Effects of nature, bringing danger to people, are often unexpected.
The work has the ability to be replicated in other areas.
The main challenges in implementing the work is to motivate a sufficient and qualified amount of people to spend time and efforts into a job without payment.
Same efforts, on continuous high standard, are needed to continue the work in future.
At least in Europe, some of the countries have similar organisation structures.

Conclusion

Voluntary work is often a basis for safety, which can not be provided by government to such an extend.

Acknowledgements

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Tsunami preparedness & planning in Australia – The road since 2004

Peter George[1] and Matthew Thompson[1]

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Since the 2004 Boxing Day tsunami that devastated Aceh and resulted in the loss of over 200,000 lives, the Australian Government has been working with State Emergency Authorities and Surf Life Saving Australia (SLSA) to better prepare the Australian community for a similar event should it occur.

SLSA is Australia's major water safety and rescue authority and is the largest volunteer organisations of its kind in the country. At a national and state level over 140,000 members involved in 420 surf life saving services, including around 40,000 active patrolling lifesavers and 900 paid lifeguards (1).

As a member of the Australian Tsunami Working Group (ATWG), SLSA has developed policies and procedures for its services and educational resources to better inform its members, employees and the general public about the risk of tsunami and addressing the elements of the 'drowning chain'(2). These factors include:

1. Lack of knowledge, disregard or misjudgment of the hazard;
2. Uninformed, unprotected or unrestricted access to the hazard;
3. Lack of supervision or surveillance;
4. An inability to cope once in difficulty.

SLSA has integrated itself into early warning systems and emergency management plans due to the proximity of its operations to potentially affected areas. Lifesaving services on the coast have the ability to save critical time through monitoring, surveillance, the evacuation of coastal users, the relocation of lifesaving equipment and resources for recovery following tsunami impact if required.

With Australian Government assistance, SLSA has also developed an educational resource regarding tsunami including information about the potential hazard, how tsunami work, how they are caused and Australian case studies including the Aceh event abovementioned. The resources also includes details about the warning framework, what the different levels of warning mean and what the role of SLSA has in responding through each stage of warning and threat.

Distribution of emergency management plan information to SLS and other lifesaving services is ongoing and education of members and the public is continuing through promotion of the resource which is now available online at www.beachsafe.org.au. Once the ISO standard is finalised, SLSA will also be working with authorities to introduce appropriate signage on the coast through its coastal risk management processes.

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Aquatic disaster – An ILS challenge in developing countries

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Flood, Tsunami and Cyclone – these aquatic disasters have taken away more lives than any other form of disaster in the recent past. The level of preparedness and knowledge among the affected was always found to be extremely poor or non-existent. The government / state agencies who are supposed to react to such catastrophes are always found to be ill-trained and ill-equipped. There is hardly any coordination among the various state agencies NGOs working in such situations. Data regarding the ongoing disaster is unavailable to the agencies that need it most; resulting in the rescue agencies not having enough information to prioritize their work. Basic relief materials never reach the rescuers who plunge into operations and reach the most affected regions but fail to bring in any relief for the marooned.

It has been observed that working manuals and standard equipment register for executing a relief & rescue operation is either non-existent or poor in quality. Standard working manuals from the angle of saving lives in aquatic disasters are non-existent. Most manuals prepared by large international organizations concentrate more on relief work than rescue operations.

A standard set of training manuals are also required for training of grass root population in hazardous zones. They should be trained in tandem with the Standard Operation Procedure to be followed by the relief & rescue teams. This will help in lessening the number of deaths due to lack of survival knowledge.

ILS should collect information on various disasters from affected countries, analyze them, develop specific precautions and practices from such cases in addition to the Standard Operating Procedures and try to get it implemented through the country organization or the state authorities.

In India, after the devastating tsunami in 2004, National Disaster Management Authority of India came into existence. The author of this article designed a 'Flood Relief & Rescue Management Course' which was given national accreditation instantly and asked to train the entire National Disaster Response Force, a force drawn out of four Indian para-military forces. Till date from 2005, RLSS(I) has trained more than 5,000 NDRF personnel and as a result there is reduction in number of deaths. Though, not all that we suggested in terms of equipments and others have been fully implemented by the authority to date, this training has built a tremendous amount of confidence among the force since now they individually know what to do, when they face a disaster. In addition, they can now assess the level of safety required both for them and also for the marooned. This has uniquely decreased the number of deaths among the personnel who themselves became victims during their course of work.

ILS needs to play a proactive role in collection of data, research of such data, come out with standard procedures and help train people who will expose themselves to work in such disasters including the Lifeguard volunteers, implement such training by impressing upon the state authorities. ILS should also urge each member country to train, equip and raise a sizable volunteer force to be mobilized within a maximum of 24 hours to reach the disaster spot and start its relief & rescue work. ILS must hold hands with other international or large national 'relief' agencies to work together so that the basic relief materials are at hand to be distributed while a rescue procedure is launched. If a 'rescuer man' holds hand with a 'relief man' then it becomes a very potent service. Hence, practice 'Relief & Rescue Together'.

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Climate change policies and practices in Bangladesh: An investigation on climate change and urban management

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Increasing population living in urban areas is reflected by both the functions and city forms create a distinct climate has a contribution into GHG emission in urban areas. Conversely, changes in climate are likely to have impact on cities situated along rivers, at lower elevations and close to coast are vulnerable to changing rainfall regimes, sea-level rises and storm surges. Two-thirds of Bangladesh, a country of 150 million population density, is less than five meters above sea level and is vulnerable to river and rainwater flooding and tidal flooding during storms. Consequently, most of the cities and towns located along rivers like Dhaka; cities like Khulna, Barisal, Chittagong located at coastal areas and another city like Rajshahi located at severe drought prone area are vulnerable and going to be worst affected with rapid and unplanned urbanization. Although a set of regulatory measures have been developed to manage cities and towns over the years, there is little evidence that climate change issue is incorporated into urban planning and design practice. However, international treaties and pressure make Bangladesh to prepare climate change policies and action plans to address the vulnerability.

This paper focuses the Bangladesh Climate Change Strategies and Action plans, 2009 (BCCSAP) in order to observe that what kinds of adaptation and mitigation strategies are undertaken especially for urban management and what is the current situation in the name practice. Essentially, this objective assesses how these agendas translated to projects/programs in the ground by NGOs/CSOs/government experts, how well each organization facilitates adaption, mitigation and awareness capacities with availability of development fund and its effectiveness. Finally, it draws a conclusion on how NGOs/CSOs/government experts ensure urban management negotiating international treaties on climate change, international pressures, domestic needs and politics. Qualitative research approach is applied for this study using some selected techniques such as: secondary data analysis/ documentary review, and case study analysis.

Keywords:
Climate Change policy, adaptation, Mitigation, Urban management, Planning and design, Bangladesh.

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A framework for a considered and appropriate response to the impact of climate change on water safety and lifesaving organisations

Greg McLennan[1,2]

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Background/introduction

Water safety and lifesaving organisations must have the necessary planning framework/reference points to effectively deal with the impacts of climate change. In this presentation, Greg McLennan, Principal Policy Officer with the Department of Sport and Recreation, Western Australian Government, will introduce and explore the framework his organization, in partnership with the sport and recreation industry in Western Australia, has constructed to address the impact climate change has on sport and recreation provision. He will outline the potential impact on the services and products you, as water safety and lifesaving organizations use, how this framework, 'Adaptive Scenario Planning' is applicable to you and some of the results since its introduction and implementation in the industry.

Aims/Objectives Learning Objectives:

- The findings and learning's from the project
- The recommended future policy approach for government and service deliverers
- An exposure to and an understanding and knowledge of the 'framework'entitled Adaptive Scenario Planning
- Some practical examples emanating from the project

Target

Planners and decision makers in water safety and lifesaving organizations.

Methods/Implementation

Full analysis of potential impacts and potential adaptations that need to be considered to make informed decisions regarding climate change and its impacts.

Results/Evaluation

A fully developed framework has been developed that water safety and lifesaving organisations can utilise at the strategic through to the local level when considering the impact of climate change on their operations.

Discussion

The project has led to the development of some comprehensive analysis of various scenarios in and on the impact of climate change in Western Australia. The framework is 'transferable' to any geographical location in the world as the scenarios are developed based on local impacts and adaptations.

Conclusion

The project has led to many sport and recreation, Local Government and Water Safety and Lifesaving organisations developing comprehensive planning regimes in regards to the perceived impacts of climate change. This has equiped them to be able to deal effectively internally and externally within and to their operations.

Acknowledgements

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The Sepik Tsunami 1998 – Death-reduction strategems

Professor John Pearn[1]

Royal Life Saving Society – Australia[1]

'NO GAT MAMA, NO GAT PAPA, NO GAT PIKININIOLGERA I LUS PINIS LONG SO LWARA' .
'MOTHER, FATHER, CHILDREN – ALL LOST FOREVER IN THE SALT WATER'.
A survivor's lament – Sepik Tsunami in 1998.

Tsunamis are catastrophic to littoral communities. They are a significant cause of drowning in equatorial nations of the Indian and Pacific Oceans. Responses to tsunami threats and audits after devastating waves may reduce drowning deaths in the inevitable disasters of the future.

A little-publicised tsunami struck the Sissano Peninsula of the Sepik (north-west) coast of Papua New Guinea on the night of 17 July 1998. Sixteen villages were planed flat and some 8,000 citizens were drowned in the devastating wave.

Many who survived were carried by the wave several kilometres inland. As Surgeon General of the Australian Defence Force at the time, I was privileged to have a role in the emergency response; and subsequently in some aspects of the strategic rehabilitation over the ensuing year. Beside the success of the emergency international military and non-government organisation (NGO) response, family cohesion and post-disaster adoption of hundreds of surviving orphaned children were important in preventing secondary illness and death.

Rotary Australia provided resources for train-the-trainer programs for first aid. In the ensuing two years after the tsunami, St John Ambulance Papua New Guinea instituted programs of Emergency First Aid, for civilians at other Sepik coast villages, undertaken at village level. Although tsunamis cannot be prevented, and tsunami warning systems will remain an unobtainable goal in many high-risk communities for the foreseeable future – swimming, survival skills, life saving and first aid drills and skills it is predicted will reduce mortality; and will reduce morbidity among the survivors of the future.

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Pakistan Floods – And what we can learn from it

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In late July 2010, heavy rains started causing record flooding in Pakistan. PALS went to assist in rescue efforts in the rural areas of the country. Pakistan was not equipped to manage floods of this magnitude and 20 million people were affected as a result. PALS is now training people to manage disasters better and has engaged the local communities in its efforts of training the rural villages in managing themselves in times of disaster. This way, everyone knows who to turn to.

Aims

Our objective is to provide rescue, first aid, CPR and disaster management training to the rural masses, so that they can manage themselves better in times of crisis. Our training program sets out to achieve a better educated and prepared public, so as to minimize loss of life and asset.

We are targeting the rural communities in Pakistan, who are the most impoverished and who lose the most. The typical profile is male and female between the ages of 15–40. The ethnic background of our current focus group is Sindhi, Punjabi and Baluchi and our work is located in villages across Sindh, Punjab and Baluchistan – making it a national level project.

Methods

We provide a three day training workshop, which includes verbal instructions, demos and hands-on exercises – followed with video clips and finally a verbal/MCQ test. We implement these training sessions through our trained lifeguards.

Results

We have monitored outcomes by test results:

- The fact that so many people appear in classes and pass the test means that the sessions are a success
- We feel that people are now more aware of what can happen and how to prevent what can be prevented
- We feel our small training sessions have achieved what we set out to do
- There has been a call for supplying equipment, insurance, medical facilities, etc., which we cannot provide at present due to limited resources

Discussion

Depending on receiving financing for the training program, we would like to expand the training areas to include more villages and towns covering a wider geographic footprint. The training can be replicated in many more areas across Pakistan. That is the need. We learnt that simple training can go a long way to better prepare the masses deal with managing themselves and others in times of disaster. Challenges have been funding, logistics management and equipment. We would like to leave equipment with the participants after the training sessions for them to train and use when the time warrants. Our advice for anyone venturing in this direction would be to get: (1) requisite training, (2) funding, (3) government support (if possible), and (4) refreshers.

Conclusion

People are ignorant to the dangers and solutions that are out there.

Acknowledgements

We worked alongside the Pakistan Armed Forces and International NGOs and would like to acknowledge their work in the affected areas. Our work, however, was carried out by the PALS initiative alone.

Reza Samad, President PALS; Haroon Mama, PALS Board Member & Village Councillor, Mubarak Village; Asad Rezzvi, PALS Board Member & Contributor; Faisal Paracha, PALS Board Member & Contributor.

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Photo: RLSSA

Lifesaving Sport and Development

This section focuses on the role of Lifesaving Sport in drowning prevention and organisational development. It has been developed under the leadership of the ILS Sport Commission and looks at new research and thinking about the benefits of lifesaving sport, its ongoing development, including coaches and officials, and support systems for athletes.

Lifesaving sport and athletes with disabilities

Giuseppe Andreana[1,2,3], Dr Valter Magini[3] and Dr Pietro Robert[3]

FISDIR – CIP (Federazione Italiana Sport Disabilità Intellettiva e Relazionale)[1], FINP – CIP (Federazione Italiana Nuoto Paralimpico)[2], Università degli Studi di Roma[3]

Introduction

People with physical and mental disabilities can be envolved in sport programs included lifesaving accordind to their level of disability. This concept supported by the experience acquired in lifesaving activities since 2003 and untill 2007 at University of Study of Rome 'Foro Italico' – at that time IUSM. During these four years, athletes with different level of physical and mental disabilities belonged to two relevant Italian national organizations involved in sport activities (swimming) – the CIP (Italian Paralympc Committee) and SOI (Special Olympics – Italian branch). Different specific events were proposed.

Material and Methods

50 athletes with physical and mental disabilities belonging to CIP (Department n.2 Aquatic Sport, now FINP – CIP and Department n.9 Sports for Athletes with Mental Disability) and SOI were involved in the study(1)(2).
30 athletes showing different levels of physical disability, classified from S2 to S10 in according to IPC 'International Paralympic Committee' parameters. The events proposed in according with the 'Competition Manual of FIN Lifesaving Section' (3) were:
25 meters swimming with obstacles (2m – horizontal)
50 meters swimming with obstacles (2m – horizontal)
25 meters small heavy bag (1kg) carry – 50 meters small heavy bag (3kg) carry

Results

All the athletes completed succssfully the 25 and 50 meters swimming with obstacles.
Not all the athletes with phisycal disabily classified IPC Swimming from S2 to S5 could completed the 25 meters small heavy bag (1kg).

Discussion and Conclusion

The study showed how all the athletes involved in this project had reacted with extreme interest to the lifesaving sport activities and it has been really useful for its social impact: as a matter of fact, it increased water self confidence for all the athletes involved.

The introduction of lifesaving sport in connection with athletes with physical disabilities needs specific and different parameters from IPC Swimming physical parameters.

About Athletes with Mental Disabilities

Since 2007/2008 CIP (Department n.9 Sports for Athletes with Mental Disability) now FISDIR – CIP has recognised Lifesaving as experimental sport discipline and organized several pool regional championship and the annual pool national championship.
FISDIR Athletes take part to the competitions in two differents categories: basis and advanced (4). The events for basis category are:

- 25 meters swimming with obstacles (2m – horizontal)
- 25 meters small heavy bag (1kg) carry
- 4x25 meters swimming with obstacles (2m – horizontal) relay
- 4x25 meters small heavy bag (1kg) carry

The events for advanced category are:

- 50 meters swimming with obstacles (2m – horizontal)
- 50 meters small heavy bag (3kg) carry
- 4x50 meters swimming with obstacles (2m – horizontal)
- 4x25 meters small heavy bag (3kg) carry

This study develops and should move the concept of Lifesaving as 'Lifesavers' Sport' (in according with ILS rules)(5) in 'Water Safety Sport'.

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Junior Development Resource – Educating and developing our youth

Vanessa Brown[1]

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Surf Life Saving Australia (SLSA) has over 150,000 members of which approximately 40% are Junior Activity Members (Nippers) between the ages of 5–12 years. This membership category continues to experience ongoing substantial growth. The Junior Development Resource designed to ensure that children from the ages of 5–12 have fun at the beach while participating in lessons that will pathway them to becoming a lifesaver. It was developed by SLSA and has been implemented nationally over the past two seasons for the use in the delivery of nipper activities.

The Objectives of the Junior Development Resource are to:

- To provide the best possible lifesaving experience for all juniors with the view to encouraging long-term active participation
- To provide opportunities for juniors to participate in and enjoy lifesaving and competition in an aquatic environment by offering a wide variety of activities suited to the skill and maturation levels of all juniors
- To ensure the juniors are safe on Australia's beaches through the provision of surf safety education programs
- To develop a team based philosophy encompassing leadership, camaraderie, teamwork, and fun
- To promote social, emotional and physical growth and development in a healthy and safe environment

The Junior Development Resource pathways knowledge and skills learning outcomes through lessons that are tailored to each of the age groups; ensuring the content is relevant, in line with lifesaving and surf sports most up to date training standards and most of all, is exciting! The program is based on participatory evaluation and not assessed on competence; this means participants must only be actively involved in each of the lessons to be eligible for the award for their age group. This introduces juniors to surf life saving where fun takes priority over being 'tested'. It covers a variety of topics and activities from surf safety, sun safety, personal safety, first aid, communication, preventative actions, patrolling to the board paddling, surf swimming, beach sprinting, beach flags and a variety of surf sports skills.

The Junior Development Resource comprises of a number of resources for the effective delivery of activities, these include an Age Managers Guide (for those delivering the program), Age Guides (one stop shop for the delivery of activities), Recordsheets, Worksheets, Certificates and a Passport.

The resource has been well adopted due to its flexibility and ease of use particularly for those new to Surf Life Saving. It is currently being expanded with a range of additional resources to assist age managers in the delivery of skill development (swimming, paddling etc), these include photographic flipcharts showing various stages and aspects of each skill and a DVD demonstrating the skills.

This session will explore and share the development, content, implementation and importance of the Junior Development Resource. It will address and demonstrate the delivery of lifesaving sport and development in youth.

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Simulated emergency rescue competition for beginners – A retrospective case study of Monkstown Lifesaving Club during 1990–2010

Brendan Donohoe[1] and Patricia Cullen

The Lifesaving Foundation[1]

Introduction

Competition is a useful educational aid to develop lifesaving skills and promote enthusiasm among competitors. The Simulated Emergency Rescue Competition (SERC) in this format offers an introductory format for competitors and officials that provide a structure that is usable, entertaining, simple and robust.

Aims/Objectives

To provide an overview of the implementation of SERC in Monkstown Lifesaving Club over a 20–years period and list the benefits that have resulted.

Methods

The Monkstown Lifesaving Club has used the SERC between 1990–2010 to train through competition 45–60 children annually. Participants formed a cross-section of the local community in Dun Laoghaire, a coastal urban community of Dublin in Ireland. SERC competition focused on entry-level capabilities of all elements and individuals involved: (1) Competition format: Teams of three individuals performed an un-revealed rescue scenario within a short time frame. Teams were required to rescue two casualties. The third individual's task was to summon aid, traditionally in the form of a simulated phone call to the emergency services. (2) Age: The children were aged between 5–10 years old. Size and age were not viewed as a constraint to participation and gender did not affect physical ability. (3) Sex: Lifesaving was viewed as an equality activity and teams were consisted of members of either single or mixed gender. (4) Depth of lifesaving knowledge: The syllabus of skills focused on the dry land rescues, shout, reach, throw and wade. The skill element increased by the inclusion of various rescue aids (e.g. extend reach). These skills were utilised as all children should be familiar with them even after a few week of involvement in the club. (5) First aid knowledge: The skill set centres on summoning emergency services by a simulate phone call where a judge simulated the phone operator. Treatment for shock was the other skill required of competitors that was tested in conjunction with lifesaving skill. (6) Swimming ability: The focus of the competition was on basic skills so the ability to swim was not necessary.

Conclusion

Collectively, four main benefits have resulted from this competition. First, the club was benefited as parents appreciated the efforts of teachers and the club. They saw evidence of their children's ability so continued with the child's involvement in the club resulting in gaining more skills. Second, children show increased confidence and pride in their ability. This resulted in them telling, their friends and teachers when they attended school, about participation in the competition resulting in advertising and recruitment to the club improving. Third, in later life they had a 'safe' attitude when they got involved in other aquatic activities. Finally, the community benefited from the annual group of those 45–60 children who had the ability to perform first aid as evidenced by past pupils dealing with numerous minor and major first aid incidents. It was also benefited from the service ethos and volunteer culture that comes from lifesaving training.

Acknowledgements

Author would like to thank Monkstown Lifesaving Club and Patricia Cullen for implementing the SERC.

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Development of officials – Sport of Pool Lifesaving

Anni Gardiner[1]

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Royal Life Saving Society – Australia, National Sport Committee submission for a workshop presentation:
RLSSA works to prevent drowning and facilitate healthy, active lifestyles by equipping all Australians with water safety skills. They are the leading water safety organisation in the Sport of Pool Lifesaving in Australia.

Background

The sport of pool lifesaving tests a lifesaver's skills in rescue, accident prevention and emergency care. The Royal Life Saving has an established sport participation pathway that provides regular opportunities for participants from officials, coaches and athletes from community level to the elite.

Aims and objectives of workshop

To provide participants with a framework for the development of high quality officials to conduct competitions at a local or elite level and an understanding of how to implement. Overall focus of getting people involved in the sport of pool lifesaving.

Target

Anyone who conducts; participates in, or would like to, pool lifesaving competitions.

Methods / implementation

Practical workshop with discussion on developing officials (a pathway); how to develop rules; demonstration of the application of rules and how to interpret and implement them; and modifying a competition to suit the local environment and participants.

This will include utilising the RLSSA as a case study in how they implemented a development pathway for their officials and the associated infrastructure whilst working with State and Territory Branches

References

RLSSA Competition Handbook
RLSSA Officials Training Program
International Competition Manual 2009 (ILS)

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ID: 1258 / Paper: 315

Lifesaving sport development plans

David Thompson[1], **Rick Wright**[1] and Paul Taylor[1]
Surf Life Saving Australia[1]

SLSA has introduced a system of Sport Development Plans with the State Centres which act as service level agreements in terms of states committing to locally delivering national initiatives. For example, as part of the National Pool Rescue strategy, states receive funding to deliver a State Pool Championships through the Sport Development Plan.

This ensures a uniform approach to the national delivery of lifesaving sport key focus areas. The plan includes key measurables against each initiative and these are linked to SLSA's agreement with the Australian Sports Commission which greatly assists with reporting to government.

This paper will present the key measurable outcomes of the Sport Development Plans and discuss how these are linked to SLSA's agreement with the Australian Sports Commission. The paper will also discuss how this new system has improved SLSA's development of sport and streamlined delivery of services both nationally and at the state level.

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ORAL PRESENTATION

ID: 1258 / Paper: 313

Accredited officials and coaches programs

David Thompson[1], **Rick Wright**[1] and Paul Taylor[1]
Surf Life Saving Australia[1]

SLSA's Level 1 Coaches and Officials courses have recently been endorsed by the Australian Sports Commission (ASC) as accredited courses. This not only provides a reassurance that the SLSA courses have attained pre-determined levels of quality in content and delivery, but also enhances SLSA's standing within Australian sport.

ASC endorsement also means that Federal government agencies such as the Department of Foreign Affairs and Trade are satisfied with use of these courses in international outreach sport development programs.

SLSA is now working with the ASC to gain similar endorsement of the Level 2 and Level 3 Coaches and Officials accreditation programs. This paper will present the results of the peer review of the courses, together with an overview of the strengths and weaknesses of each of the courses.

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An evaluation of introductory courses for officials and coaches

David Thompson[1], **Rick Wright**[1] and Paul Taylor[1]

Surf Life Saving Australia[1]

SLSA published a Junior Coaching Manual in mid 2009 which was issued to every club and branch in Australia. The response to the resource was fantastic with the 1,000 copies that were printed being sold within two months. This indicated to SLSA the need to do more for coach education at this level and to also offer similar opportunities in the area of officiating.

Until now it has been hard to convince individuals to commit to undertaking a Level 1 coaches or officials course to work with junior athletes (U16) due to perceptions of the theory intensive nature and duration of these courses. SLSA has developed a Junior Surf Coach course that will underpin the Level 1 coaching course and become the introduction to the coach accreditation pathway. The course runs for six hours, contains four theory modules and four practical modules, and can be delivered at any club by an experienced Level 1 coach. Participants will receive the Junior Coaching manual and a Junior Coaching DVD, and will gain recognition of prior learning towards the Age Managers award and the Level 1 coaching accreditation. A similar course and resources are currently being developed for a Junior Surf Officials Course.

This paper will present the results of an evaluation of the courses (Coaches and Officials). The evaluation will consist of a survey of all of those who participated in the course to determine course strengths as well as areas of weakness which can be improved.

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Swimming and lifesaving for juniors – Important start for a lifetime sport for all

Dr Klaus Wilkens[1]

International Life Saving Federation Of Europe (ILSE)[1]

Introduction

Swimming and lifesaving are important kinds of sport – in the fight against drowning and to reduce the number of drownings (world-wide 500,000 to 1 000,000 per year) – for improving the health of young and elder people.

Method

1st Step:
It is recommended to start as early as possible with swimming lessons and train the risk prevention and self rescue methods with the young children.

After the babies and infants became familiar with the water, a basic knowledge can be taught in:

- Kindergardens
- Schools
- Clubs
- Holiday resorts, etc

2nd Step:
After this first education, it is very important to make swimming attractive for these children. This can be done by:

- A systematic further education in swimming, jumping and diving in conjunction with an award system
- Demonstration and training of various self rescue techniques
- Offer of swimming competitions as individual and team disciplines

3rd Step:
At the age of 10 to 11 years first elements of lifesaving should be added (aim: 'Junior Lifesaver'):

- Diving and simple searching under water
- Towing and transport techniques
- Techniques for leaving the water

4th Step
At the age of 12 to 13 years the education as (basic) Lifesaver * can start. At the same time the further education and training in swimming must be continued.
Additional disciplines could be:

- Swimming with obstacles
- Towing of victims at different distances
- Simulated rescue cases
- First Aid and CPR

Also in this phase competitions are a popular incentive.

5th Step
A specific swimming training and the education as Lifesaver / Lifeguard should follow. This training includes attractive elements as:

- Skin diving
- Scuba diving (rescue diving)
- Simulated rescue case in pools, lakes, rivers and at the beach
- Paramedical education
- Rescue management
- Participation and practical experiences in the voluntary lifeguard service

Varied training and competitions complete the programme and make it attractive. Special awards are an additional incentive.

Result

Swimming and lifesaving is a very attractive sport for juniors and can be age-based varied. New incentives can be involved at all time. Swimming and Lifesaving for Juniors is the start for an important lifetime sport for all. With such programmes the infants, children and adolescents are introduced in the humanitarian engagement by the means of sport, which they can practise lifelong.

Swimming and especially lifesaving sport for all with its attractive programmes for all ages offers the chance to:

- reduce the rate of drownings;
- health support; and,
- integration of different human groups.

Swimming and lifesaving is one of the best and most relevant lifetime sports for all.

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Guidelines for the risk assessment and management of event water safety – Interim results

Adam Wooler[1], Connor Moss[2], David Walker[3] and John Clark[1]

Surf Life Saving GB[1], University of Derby[2], RoSPA[3]

Background

In the UK, most national governing bodies for sport have their own risk assessment and safety management practices but there are no national guidelines. Independent event organisers only need to satisfy the requirements of the local authority where their event takes place – normally a self-certified risk assessment. This often leads to highly variable levels of event water safety provision, with no regulatory body responsible for ensuring event water safety provision is suitable, appropriate or to a recognised standard. Where companies and organisations are requested to provide a risk assessment, there is no national guidance document to refer to which could leave their risk assessment open to challenge if things go wrong. The increase in popularity of open water events, especially triathlons and long distance swims, often used as charity events, as well as the general increase in aquatic water sports and associated sporting events, has meant that this unregulated event water safety provision could be putting lives at risk.

Aims

The project, which will have largely been completed by the conference, will result in the publication of Guidelines for the Risk Assessment and Management of Event Water Safety. The guidelines will be one of the first documents to incorporate the new ISO risk management and risk assessment standards. The University of Derby will use the guidelines to design an accredited course in Event Water Safety and include it in their University Diploma in Events Safety Management. In addition, with the advent of the London 2012 Olympic and Paralympic Games and its associated open water events, the provision of event water safety to a common high standard through the adoption of UK National Guidelines is paramount and when in place, will leave a lasting legacy.

Methods

The research team conducted desk-based research to ascertain current UK and International legislation, guidance and advice in relation to Water Safety at events or similar recreational activities. The team then hosted a roundtable event of the relevant stakeholders to discuss the key issues and share best practice. An in-depth study using questionnaires, observations at events, case studies, interviews and/or focus groups was also conducted.

Results

By the date of the conference, draft guidelines for consultation will be available.

Acknowledgements

The project is funded by Sportscover Insurance, University of Derby and RoSPA as well as SLSGB.

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Pool Lifesaving – Sport, Participation and Leadership Skills for Life

Emma MacMillan[1]

Royal Life Saving Society – Australia[1]

Royal Life Saving Society – Australia has an established sport participation pathway that provides regular opportunities for pool lifesavers from community level to elite.

The sport of Pool Lifesaving tests a lifesaver's skills in rescue, accident prevention and emergency care.

A key activity is the 'Simulated Emergency' which pits an individual or team of lifesavers against a staged emergency. Variations of this activity are used in all Royal Life Saving Programs including Swim and Survive and Bronze Rescue.

Pool Lifesaving also provides an opportunity to learn or refresh resuscitation and rescue skills.

Royal Life Saving provides opportunities for communities and clubs to host sport development programs. The skills of Pool Lifesaving can be learnt in a dynamic and fun environment for participants of all ages – participants can be as young as five, but you are never too old to start.

Royal Life Saving is committed to developing the sport of Pool Lifesaving from the grassroots level through to elite national and international competition. Royal Life Saving also provides development programs and workshops for coaches and officials of Pool Lifesaving.

Pool Lifesaving development can begin as part of school participation, with a local Pool Lifesaving club or through regional, state, national and international competitions. The annual Australian Pool Life Saving Championships assist in the development of athletes from age of 11, as part of the Under 14's competition, through to Under 16's, Under 19's, Opens and Masters (30+ years) competition.

Royal Life Saving athletes have seen great successes in Australia and worldwide, representing Royal Life Saving at international competitions including World Lifesaving Championships, World Games, Commonwealth Lifesaving Championships, Asia Pacific Lifesaving Championships, Australian Masters Games and the Arafura Games.

The poster will discuss Royal Life Saving's development of Pool Lifesaving as a sport in Australia at the grassroots level through to the elite level and the importance of encouraging both young and old participants to learn the skills and knowledge of Pool Lifesaving that could one day save a life.

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National surf to kayak talent identification and development program

David Thompson[1], **Rick Wright**[1] and Paul Taylor[1]

Surf Life Saving Australia[1]

SLS has a long and proud tradition of developing quality athletes which have represented Australia at Olympic Games level, with over 230 SLSA members having crossed-over to Olympic Games representation with other sports. This includes 20 athletes who have represented Australia in Sprint Kayaking, claiming two gold, six silver, and six bronze medals at Olympic Games level.

A talent transfer initiative between SLSA and Australian Canoeing is an obvious partnership. The Australian Sports Commission has financially backed the initiative and is also supporting it through the National Talent Identification and Development (NTID) unit which has assisted with anthropometric testing to identify potential kayak squad members.

Squad members participate in a structured coaching program which is designed to complement their SLS training. The SLS clubs are able to access a reciprocal benefits program which includes sport science testing and coach education seminars.

This program has not only formalised SLSA's place within the pathway of an Olympic sport but has also reinforced SLSA's place in the priorities of the Australian Sports Commission.

This paper will present the NTID determined protocols for identifying talented kayak athletes. One key protocol is a 2km kayaking time trial. SLSA members that are new to kayaking have difficulty sitting upright in a kayak and therefore don't always post realistic times in the time trial. Research into the correlation between times posted across a 2km course on a surf ski against those in a kayak will be used to validate the time trials of SLSA members in kayaking.

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Surf boat coaching DVD

David Thompson[1], **Rick Wright**[1] and Paul Taylor[1]

Surf Life Saving Australia[1]

Approximately two years ago SLSA made it mandatory that all Surf Boat sweeps become a minimum of a Level 1 accredited coach to ensure that they had a standard amount of training and were covered by insurance whilst sweeping a boat. Anecdotal evidence suggests that this has had a positive effect on the knowledge and safety of boat sweeps, however it has been identified that the existing resources within the Level 1 course are lacking in content in several key areas.

In conjunction with SLS New Zealand and the Australian Surf Rowers League, SLSA committed to creating a boat sweep DVD resource. This paper will discuss the development of the training resource and present aspects of the DVD. The entire DVD runs for approximately 20 minutes and includes aspects such as the duty of care, physical preparation, equipment, modern training aids, and how to run an efficient training session, in addition to boat sweep specific detail. Highly experienced sweeps from across Australia and New Zealand were used in the filming of this resource to ensure the transfer of a broad base of knowledge.

This resource has been supplied to every club in Australia, will be supplied to all participants in Level 1 coach accreditation courses, and will be the key resource in the delivery of the Boat Sweep practical module of the Level 1 coaching course.

This paper will present the results of an evaluation of the DVD. The evaluation will consist of a peer review of the first cut of the DVD to determine strengths as well as areas of weakness which can be improved.

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Tradeshow and Exhibitors

International Life Saving Federation (ILS)

The International Life Saving Federation (ILS) is a global, nonprofit federation of over 100 national lifesaving organisations.

The Federation leads the worldwide effort to reduce the global burden of drowning. ILS is the world authority for drowning prevention and lifesaving sport. ILS leads, supports and collaborates with national and international organisations engaged in drowning prevention, water safety, water rescue, lifesaving, lifeguarding and lifesaving sport.

Through its work, and that of its Member Federations, ILS leads the global effort to reduce injury and death in, on, or around the water. ILS accomplishes this by assisting existing national lifesaving organisations; facilitating and developing a global exchange of lifesaving information and of best lifesaving practices; helping establish lifesaving organisations in areas of the world where they are needed, but do not exist; acting as the International Federation for lifesaving sport; and cooperating with other international bodies with shared goals.

Further Information
Website: www.ilsf.org

Royal Life Saving Society — Australia

Royal Life Saving Society – Australia (RLSSA) was established in 1894 and has been the leading water safety, swimming and lifesaving education organisation in Australia for 117 years. Royal Life Saving aims to prevent loss of life and injury in the community with an emphasis on the aquatic environment. Royal Life Saving is dedicated to turning everyday people into everyday community lifesavers through education; training; health promotion; aquatic risk management; community development; sport and participation; advocacy; research; and international networks.

Royal Life Saving has branches in every State and Territory in Australia.

Royal Life Saving also has an international commitment to drowning prevention in the Asia-Pacific region. Royal Life Saving's skills and expertise are increasingly being utilised to assist international communities in most need. Royal Life Saving has worked with emerging lifesaving agencies or individuals in developing countries, providing equipment and capacity building support.

Royal Life Saving is active all over Australia. Its branches, members, volunteers, trainers, employees and lifesavers are found in almost all communities. Royal Life Saving's approach is inclusive and some of their biggest achievements occur away from large capital cities. Royal Life Saving programs, products and services are underpinned by research and a commitment to continual improvement.

They are constantly evaluated, improved and benchmarked against world's best practice.

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Ministry of Labour, Invalids and Social Affairs (MoLISA)

The Ministry of Labour, Invalids and Social Affairs is the Government of Vietnam's governmental body that performs the State management function in areas including employment, vocational training, labour, salary, occupational safety, social protection, children protection & care, and gender equality.

Government of Vietnam
Ministry of Labour, Invalids and Social Affairs

United Nations – Viet Nam

The United Nations in Viet Nam is proud to support this important injury prevention conference, to be organised for the first time in a lower and middle income country. In Viet Nam, United Nations' support to the Government on drowning prevention is primarily done through the work of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), working collaboratively with relevant national agencies to advocate for and provide technical and financial assistance to the implementation of evidence based good practice.

With the support to this conference, the United Nations would like to highlight issues related to both the burden as well as key actions for drowning prevention in Viet Nam. Organizing this conference on drowning prevention in a country like Viet Nam, where the problem is most urgent, is very significant and timely.

International Drowning Research Centre – Bangladesh (IDRC-B)

The International Drowning Research Centre, Bangladesh (IDRC-B) was established as a result of the shocking statistics that revealed drowning to be the leading cause of child death post-infancy.

In Asia alone an estimated 300,000 children die each year – a rate 20 times higher than in developed countries. Of these 300,000 children, almost half are aged between one and four.

Due to lack of adequate data, awareness and information, drowning prevention programs have not been adopted comprehensively and management remains almost non-existent especially in low income developing countries such as Bangladesh.

Given the scenario, the Centre for Injury Prevention and Research, Bangladesh (CIPRB) with its partners Royal Life Saving Society – Australia, The Alliance for Safe Children and AusAID established the International Drowning Research Centre, Bangladesh to combat fatal and non-fatal drowning incidents.

IDRC-B also acts as a centre of excellence in drowning research at the national and international levels by building networks with government institutions, sector stakeholders, reputed researchers, thinkers and professionals, in order to exchange ideas and experiences.

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International Drowning Research Centre
BANGLADESH

AUSTSWIM

AUSTSWIM as the national organisation for the teachers of swimming and water safety is setting the national standard for the training and licencing of AUSTSWIM teachers. AUSTSWIM was established over 30 years ago by as a result of national and state based aquatics organisations identifying the need to have a national body to oversee the training and accreditation of swimming and water safety teachers. Since inception over 30 years ago, AUSTSWIM has continued to grow and develop to the changing needs of the aquatic industry and the wider community.

AUSTSWIM has a strong philosophy that is founded on the belief that all Australians should have appropriate and relevant swimming and water safety skills and understand the principles and practices of water safety.

AUSTSWIM is a member of the National Water Safety Council and works in partnership with RLSSA, SLSA & Swimming Australia Ltd. AUSTSWIM is also working with international organisation to introduce the AUSTSWIM training and licensing systems into counties including Hong Kong, Singapore, Dubai, New Zealand, Sri Lanka, Vietnam and others.

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INTERNATIONAL FEDERATION SWIMMING TEACHERS ASSOCIATION (IFSTA)

The IFSTA is a non-profit making organisation that was set up by the UK's Swimming Teachers' Association (STA) to provide a platform for international swimming bodies to share and disseminate the principles of best practice.

The International Federation of Swimming Teachers' Associations Limited (IFSTA) represents and unites the world's largest swimming teaching bodies in the common goal of reducing deaths by drowning, by improving standards in teaching swimming and other survival techniques.

All members work together to achieve the IFSTA's objective:

"To promote internationally, the highest standards in the teaching of swimming and other survival techniques."

Within the member associations of the IFSTA there are over 1.3 million individual members worldwide.

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TYR

TYR engineers technical apparel and equipment for swimmers and triathletes. Named for "TYR", the Norse god of warriors, we're a company started by athletes and populated by athletes. The cultures and communities of competitive swimming and triathlon pervade our offices. We are dedicated to re-imagining technologies that help athletes attain peak performance. Like athletes, we work with an intense spirit of competition. We aim to create the fastest, most advanced technologies and products. Always.

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NOTES

Photo: Getty

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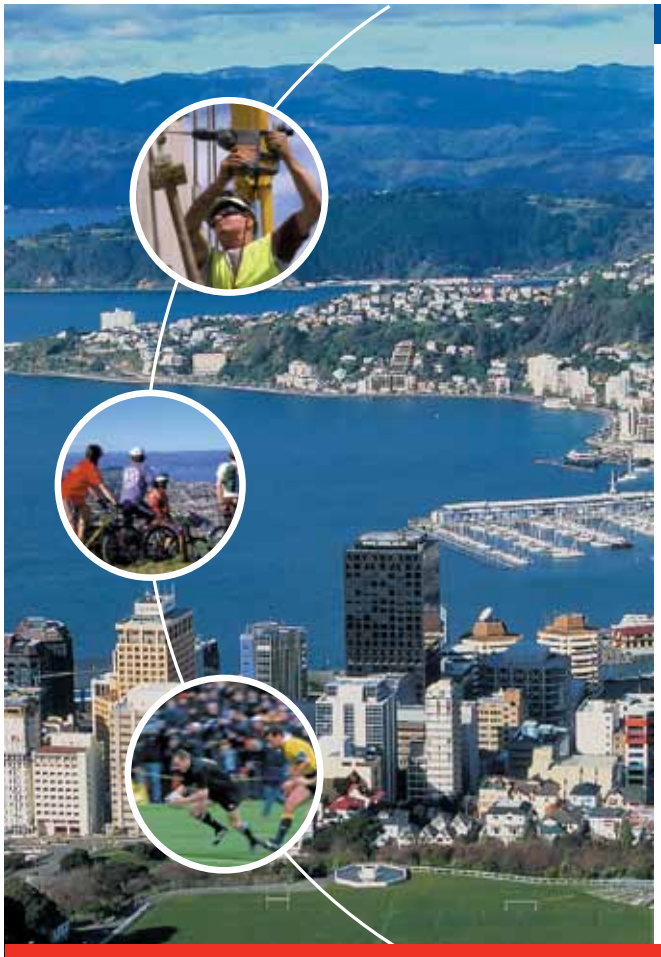

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