## 827 RISK MANAGEMENT FOR SWIMSAFE – HELPING CHILDREN WITHOUT HARMING THEM

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**Background** Child drowning in LMICs has become a major new public health issue. Drowning is the leading cause of death in children 1–17 yrs in Bangladesh. The lifecycle approach addresses child drowning for each age group. For children aged 4–14 years one primary intervention component involves teaching survival swimming using the SwimSafe curriculum. Risk management protocols have been developed to safely train children younger than 6 yrs old and older children with conditions that place them at risk.
**Methods** Community-based Participatory Research is ongoing in a rural community under injury surveillance. The partners in the research are UBC, CIPRB, TASC and RLSSA. SwimSafe is one of a suite of interventions. Children have been classified in 4 risk categories: Normal risk, increased risk, high risk and extreme risk. Different protocols that address each level of risk are being tested. Evidence of safety and training effectiveness is accumulating that will allow increased scale without increased risk to participating children.
**Results** Risk management is a very important for the SwimSafe intervention. About 1 out of 3 children under 6 yrs of age are in the increased risk category. For those 6 years and older, about 1 in 8–10 are in the increased risk categories. Protocols are being tested that vary the instructor-child ratio, water depth, type of water body and presence of caretaker in the water with the child according to the level of increased risk for the child. Increased training for the swimming instructors, increased venue safety criteria, increased supervision and monitoring are being examined.
**Conclusions** Given the large proportion of the child population that is at increased risk when learning to swim, establishing risk management protocols that have evidence of safety is a priority for drowning prevention in Bangladesh and similar LMIC's. The goal is to safely teach these children basic swimming as most of them are at increased risk of drowning in their daily lives.

## 828 NON-WEARING OF FLOTATION DEVICES AND SWIMMING ABILITY OF BOATING IMMERSION VICTIMS IN CANADA

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**Background** Boating is the most frequent activity for water-related immersion deaths in Canada. Central in immersion/drowning is non-wearing of personal flotation devices (PFDs). Anecdotal observation of frequent non-wearing among victims led to quantitive assessment using negative binomial and Poisson regression models.
**Methods** Annual Red Cross collection of 1991–2010 Canadian coroner data was by structured questionnaire. Analysis included ten variables in the final model.
**Results** There were 2678 recreational and daily living boating immersion deaths during 1991–2010. Certain variables significantly increased the odds of properly wearing a PFD and others decreased them. Controlling for all other variables, victims with average swimming ability had 1.93 times the odds of wearing compared with non and weak swimmers combined (95% CI: 1.29–2.87). Strong swimmers had 1.90 times the odds of wearing compared with non/weak swimmers (95% CI: 1.06–3.40).
**Conclusion** It was surprising that boating victims with low swimming ability were less likely than swimmers to have worn a flotation device. It is possible, but remains to be established, that poor swimmers were less likely to have participated in a swimming course, which included the main elements of water safety for boating and other activities.

## 829 REVIEW OF RECREATIONAL AND OCCUPATIONAL PFD WEARING LEGISLATION AT PROVINCIAL, STATE, AND MUNICIPAL LEVELS IN CANADA AND INTERNATIONALLY

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**Background** With a few notable exceptions, national legislation requiring wearing of a personal flotation device or lifejacket by boaters is uncommon. As a result some municipalities and provinces or states have introduced their own regulations.
**Methods** Information was obtained by searching of Safety Lit and other sources, including by contacting instigators of national legislation
**Results** Regulations for recreational and occupational boating were obtained for all 13 Canadian provinces and territories as well as one city. Canadian laws were diverse and are relatively weak, with the notable exception of the city of Calgary. Information was also obtained for Australia, Ireland, New Zealand, and the United States. In the United States, state laws supersede the national law, which appears mainly oriented towards children. The Irish legislation is more comprehensive than most. The most comprehensive state law in Australia is in Victoria State and has had remarkable success in improving outcomes as measured by boating drowning fatalities. In New Zealand, 18 regions and cities have regulations, some of which were comprehensive in requiring mandatory wearing. Many regulation featured opt out clauses at the discretion of the operator.
**Conclusions** Current legislation on wearing of flotation devices is variable. If the weak regulations in many jurisdictions were to be replaced by those such as in Victoria, Ireland and certain regions and cities in New Zealand, it is probable that many boating fatalities could be averted. Since children are uncommon victims of boating immersion in many high income countries, legislation targeting children will not be expected to be effective in such countries, with certain exceptions such as indigenous peoples. Rather the focus should be adult males

## 830 DROWNING FROM THE VIEWPOINT OF THE NEAR-DROWNED

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**Background** The Finnish Swimming Teaching and Lifesaving Federation (FSL) is an educational and information-providing

organisation which guides nationwide swimming instruction and lifesaving issues. FSL co-operates actively with public authorities in water safety issues.

**Methods** The Master's Degree thesis examined, through 160 near-drowning experiences, what happens to people in drowning situations. The gathered information was then compared to the water safety instructions given by FSL. Thus, the main aim of the study was to utilise the gathered information in the future water safety instructions given by FSL. Another aim was to search for effective ways to enhance drowning-prevention interventions.

**Results** Even when instructions for water safety are essentially good, people find it difficult to follow them. In a drowning situation there is often an absence of rational thinking when one's life is in danger. This means that it is extremely important to avoid being alone both when in and by the water. Both, the concept of parental responsibility and the constant monitoring of one's own children in and near water, vary greatly and are lacking.

**Conclusions** Water safety education is challenging. The drowning experience is always tied to a situation, where many things and coincidences affect it. People are not able to follow water safety instructions, neither in a preventative sense nor in the actual emergency situation. People trust their own "common sense" and this isn`t always a good thing. Even though the water safety tips are simple, they are not always put into practice in water.

## 831 ESTABLISHING AN EVIDENCE BASE FOR DROWNING INTERVENTIONS IN THE REPUBLIC OF IRELAND

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**Background** Drowning fatalities are a significant global health problem, with close to 400,000 people drowning each year worldwide. In the Republic of Ireland (ROI), approximately 135 people drown per annum, the majority of which are preventable incidents. International best practice calls for the use of evidence-based interventions to prevent drowning deaths. This research project aimed to improve the current scope and quality of drowning fatalities data available in Ireland, to facilitate optimal intervention design, and ultimately reduce drowning deaths.

**Methods** This project consisted of three main stages. The first involved a scoping exercise designed to identify the extent of missing drowning fatality data, achieved by comparing source records for 2012–2013 held by the statutory body Irish Water Safety with official Irish death statistics. Means of increasing fatalities coverage were then investigated, including assessing media reports. Second, new drowning data taxonomies to enhance the detail of the data captured following a fatality were designed, and evaluated during an expert stakeholder workshop. Third, a novel Irish drowning fatalities database using these taxonomies was created for future use.

**Results** Findings from the first stage indicated that records for 62% of drowning fatalities that occurred in Ireland during 2012–2013 were missing. The use of additional drowning data sources, including access to complimentary fatality records and media reports increased coverage considerably for this period. The proposed taxonomies were evaluated favourably during the workshop, and database uptake has been promising.

**Conclusions** Drowning fatality data quality and coverage in the ROI can be improved. The new database and taxonomies will serve as valuable future resources, with the potential to reliably inform prevention strategies and intervention design.

## 832 EXAMINING COASTAL DROWNING FATALITIES IN THE REPUBLIC OF IRELAND, 2010–2013

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**Background** On average, 135 people drown in the Republic of Ireland (ROI) every year. There is growing recognition that coastal drowning fatalities in particular are a significant health concern.

In order to inform the design of targeted prevention strategies for coastal areas in the ROI, this research study sought to enhance and augment current coastal drowning fatality records, and produce detailed statistical estimates in relation to these deaths.

**Methods** A coastal drowning dataset was compiled. To enhance data records, complimentary sources were investigated, including data from the Royal National Lifeboat Institution (RNLI) and media reports. Unique coastal fatality cases were identified by location, name of victim (where possible), date of incident, and/or other identifiers as needed (such as age, gender). The fatality cause was then classified (e.g. due to accident, suspected self-harm etc.), and data analysed.

**Results** Complimentary data sources improved the scope of initial records from documenting 70 coastal drowning fatalities, to records for 198 that occurred during this time period. Overall, coastal drowning deaths accounted for approximately 39% of all drowning fatalities that occurred in the ROI during 2010–2013. The majority of these were accidental deaths (48%), unspecified incidents (26.3%), due to suspected self-harm (24.7%), natural causes (0.5%) or assault (0.5%). Where gender and age were documented, it was found that males comprised 82% of fatalities ($n$ = 124), and that those aged between 30–69 years accounted for 81% ($n$ = 104) of coastal drowning deaths.

**Conclusions** Coastal drowning fatalities accounted for approximately 40% of all drownings that occurred in the ROI during 2010–2013. Findings suggest that coastal drowning interventions should focus on targeting males, and those above 30 years of age.

## 833 DROWNING PREVENTION AND LIFE SAVING PROGRAM 2012 THAILAND

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**Background** Worldwide, drowning is the third leading cause of death among children. In Asia it is the first leading cause of death and a major public health threat. The objective of this paper was to develop a drowning prevention program including swimming training, CPR and lifesaving methods for children and to evaluate it. This intervention was provided and evaluated in Thailand where drowning is the first leading cause of death among children.

**Methods** Thailand where drowning is the first leading cause of death among children. The study used observations, quantitative and qualitative methods. In total 20 children in the age of seven