



Office of the Chief Coroner for Ontario

Drowning Review

**A Review of All Accidental Drowning Deaths in Ontario
From May 1st to September 30th 2010**

Swimming Is A Life Skill

***This report is dedicated to the many Ontarians
that lost their lives due to drowning
during the summer months of 2010.***

June 2011

Dear Ontarians,

We are pleased to submit this report on the review of all accidental drowning deaths which occurred in the Province of Ontario between May 1st and September 30th, 2010. The Review Team makes 12 recommendations in the areas of public safety and drowning prevention.

We encourage all Ontarians to take personal responsibility for ensuring water safety for themselves and their children.

Yours truly,

A handwritten signature in black ink that reads "Bert Lauwers". The signature is written in a cursive style with a horizontal line underneath the name.

Dr. Bert Lauwers
Deputy Chief Coroner, Investigations
Office of the Chief Coroner for Ontario

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Introduction

Definition of Drowning

In 2002, the World Congress on Drowning provided a definition which was then adopted by the World Health Organization (WHO):

Drowning is the process of experiencing respiratory impairment from submersion /immersion in liquid.¹

Basic Drowning Concepts

The WHO identifies drowning as the third leading cause of accidental death with 382,000 deaths in 2002 and 97% occurring in low and middle income countries.² It is acknowledged that not all countries report drowning data.

In countries reporting data, men aged 18-49 had the highest drowning rates, followed by children less than 5 years of age. Swimming and boating were the activities people are most likely engaged in when they drowned.³

Drowning deaths in Canada continue to fall. In 1990 there were approximately 680 deaths. This fell to approximately 410 deaths by 2004. Swimming, power boating and sport fishing are the activities most likely associated with drowning.

In Ontario, in 1988 there were 278 deaths. This had fallen to 132 deaths by 2004. Fewer Ontario drownings likely reflects:

- fewer deaths among all age groups;
- a significant decrease amongst males 18-34 years of age who are historically the most at risk group; and
- a decrease in boating related drowning deaths⁴

Drowning and its Connection to Ontarians

Everybody has a drowning story. Everybody knows someone who has drowned, or someone who had a member of their family drown, or

experienced a near-drowning event themselves or in their families.

When the Office of the Chief Coroner (OCC) announced the Drowning Review, we were surprised by the magnitude of the response by the public and media. Many letters were received by concerned members of the public, who shared their valuable perceptions of issues related to water safety and drowning. Some were harrowing letters from parents who had nearly lost a child. Experts with an interest in water safety and drowning contacted our office and offered their assistance. The outpouring of interest was extraordinary.

In 1992, my family (pictured below), was vacationing in Florida, swimming in an indoor heated pool during the March Break. My daughter was 22 months of age in this picture. You will notice she was not wearing a life jacket, and was busily pointing to something in the water. There was no lifeguard for the pool. We used the pool at our own risk. Each of my three children was within my arms length. It was a happy time.

The following day, I was again in the pool with my daughter, and she was sitting on a step beside me and I was standing. She was close enough that she was almost touching my left knee. She was again, not wearing a life jacket. My wife entered the pool area, and began talking to me. I was looking directly at my wife, and after about 20-30 seconds, looked down to see my daughter floating face down in the water. I quickly picked her up and she was fine, but not before my heart was seized with a moment of terror.



¹ The Drowning Report, 2008 edition, The Lifesaving Society, June 2008.

² Ibid., pg. 5.

³ Ibid., pg. 5.

⁴ Ibid., pg. 7.

Drowning deaths speak to all Ontarians because we live in a populous province with many freshwater lakes, rivers and ponds. We spend our year enduring the rigours of the cold winter waiting for the glorious Ontario summer when we can go swimming and enjoy the waterways boating or family time at the cottage. Drowning is a proximate event for many of us, and so the Drowning Review struck a resonant connection with Ontarians.

The Office of the Chief Coroner conducted the Drowning Review, and presents our findings and recommendations which we and the experts that assisted us believe, will significantly reduce the number of drowning deaths in Ontario and in Canada if implemented in the years to come.

Acknowledgements

The Review Team consisted of Dr. Bert Lauwers as Chair, Dr. David Evans, Dr. Roger Skinner, Ms. Dorothy Zwolakowski and Ms. Emily Coleman. The team would like to acknowledge the following for their invaluable contributions to the Drowning Death Review:

- **Families of the deceased** for providing much needed additional information to inform our report, and for providing their own insights into the reasons their loved ones drowned, as painful as that process must have been.
- **Members of the Public** for providing details of personal experiences with drowning and near-drowning in their communities as well as their suggested recommendations.
- **Lucie Simoes and Tessa Clemens** of the Lifesaving Society for their timely efforts regarding data input and verification.
- **Ms. Barbara Byers** of the Lifesaving Society for graciously offering to partner with the Office of the Chief Coroner for the death review; working with our office to create an appropriate audit tool; providing staff for data input and verification on the completed audits; for participating as a member of the Drowning Review Panel; for providing references and literature that informed the death review; and for reviewing and providing comments and suggested revisions to the final draft.
- **Ms. Gail Botten and Ms. Lorraine Davis** of the Canadian Red Cross for their contributions as members of the Drowning Review Panel; for providing references and literature that informed the death review; and for reviewing and providing comments and suggested revisions to the final draft.
- **Ms. Pamela Fuselli and Ms. Denyse Boxell** of Safe Kids Canada for their contributions as members of the Drowning Review Panel and for reviewing and providing comments and suggested revisions to the final draft.
- **Dr. Christopher Parshuram** from the Hospital for Sick Children and the Director of the Centre for Safety Research for providing the unique perspectives of paediatric intensivists who are often tasked with the duty of caring for drowning and near-drowning victims; for his contribution as a member of the Drowning Review Panel; and for reviewing and providing comments and suggested revisions to the final draft.
- **Ministry of Education**, Province of Ontario for providing staff to sit as members of the Drowning Review Panel; and for reviewing and providing comments and suggested revisions to the final draft.
- **Ministry of Health and Long-Term Care** for providing staff to sit as observers of the Drowning Review Panel; and for providing knowledge regarding relevant legislation.
- **Dr. Andrew McCallum**, Chief Coroner for his support in creating the Drowning Death Review and for his insight and belief that a physician-coroner led death investigation system can and should properly focus on issues of public safety to improve the health, safety, and well-being of the citizens of Ontario.

**“We speak for the dead
to protect the living”**

Executive Summary

The Office of the Chief Coroner conducted a detailed review of accidental drowning deaths in Ontario for the period beginning May 1st, 2010 and ending September 30th, 2010.

- There were 89 deaths examined in this drowning review.
- Drowning is largely a male-related phenomenon. 76 of 89 (85%) deaths were male.
- The total number of drowning deaths in 2010 was similar to previous years.
- There was a 260% increase in drowning deaths in children less than 5 years of age. 13 of the 89 (15%) deaths in this review were in children less than 5 years of age.
- Those aged 20-64 account for 50 of 89 (56%) of the deaths.
- 71 of 89 (80%) of the deaths occurred in persons aged less than 5 and between 15-64 years of age.
- Drowning occurs largely in:
 - those owning or utilizing private pools 19 of 89 (21%); and
 - those using lakes/ponds 51 of 89 (57%) for their aquatic setting.
- Drowning deaths related to boating are not dependent on air temperature.
- 55 of 66 (83%) of the deaths related to swimming occurred when the air temperature was higher than 21°C.
- 22 of 23 (96%) of those operating power boats and unpowered boats that drowned were not wearing life jackets or personal flotation devices.
- There was no alcohol use associated with drowning in individuals under age 14 and over age 65.
- Alcohol was a contributing factor in 39 of 58 (67%) of the drowning deaths between 15-64 years of age. Overall, 39 of 89 (44%) of drowning deaths were alcohol related.
- In 2010, for those in whom the swimming status was known, 24 of 60 (40%) were non-swimmers.
- 20 of 59 (34%) of the drowning victims for whom their heritage was known were not born in Canada.

Our recommendations include:

- Legislative changes directed toward municipalities regarding pool enclosure bylaws
- Amendments to the *Canada Shipping Act* requiring boat operators and passengers of powered and unpowered boats less than 6 metres in length to continuously wear their life jackets or personal flotation devices
- Legislative changes to the *Health Protection and Promotion Act R.R.O. 1990 Regulation 565 Public Pools* to require admission and tracking standards for recreational non-instructional swimming in public pools
- A recommendation to the Ministry of Education making swimming a part of the curriculum so that children graduating from elementary school can swim
- The creation of water safety and swimming public educational programs by the Ministry of Health Promotion and Sport; the Ministry of Health and Long-Term Care; Boards of Health in Ontario through their Public Health Units; and organizations such as Lifesaving Society; the Canadian Red Cross; Safe Communities Canada, Safe Kids Canada; SMARTRISK Canada; and Thinkfirst Canada

Swimming is a Life Skill!

Overview

i) Background Leading Up to the Review

This review was announced in July of 2010. A perception had developed in the Office of the Chief Coroner that there was a surge in drowning deaths that had occurred in a short period of time. One morning in July, coroners and pathologists who meet daily at the Provincial Forensic Pathology Unit, found themselves asking yet again, why a young child had drowned. On July 15, a four year old had drowned and only three days later a two year old drowned. The seed for the Drowning Death Review was planted as the team viewed yet again, another lifeless body of a child. Something had to be done to abate the tragic loss of life due to drowning, which is preventable.

Inquest unnecessary

18. (1) *Where the coroner determines that an inquest is unnecessary, the coroner shall forthwith transmit to the Chief Coroner a signed statement setting forth briefly the results of the investigation, and shall also forthwith transmit to the division registrar a notice of the death in the form prescribed by the Vital Statistics Act, 2009, c. 15, s. 10.*

Recommendations

- (2) *The coroner may make recommendations to the Chief Coroner with respect to the prevention of deaths in circumstances similar to those of the death that was the subject of the coroner's investigation. 2009, c. 15, s. 10.*

Disclosure to the public

- (3) *The Chief Coroner shall bring the findings and recommendations of a coroner's investigation, which may include personal information as defined in the Freedom of Information and Protection of Privacy Act, to the attention of the public, or any segment of the public, if the Chief Coroner reasonably believes that it is necessary in the interests of public safety to do so. 2009, c. 15, s. 10.*

The noted sections of the Coroners Act were used to make the decision to proceed with the *Drowning Death Review*. The purpose of the Review was to identify common factors that may have played a role in the deaths due to drowning and to make recommendations to prevent deaths in similar circumstances in the future.

The Office of the Chief Coroner (OCC) for Ontario serves the living by providing high quality death investigations and inquests to ensure that no death will be overlooked, concealed or ignored. The findings are used to generate recommendations to help improve public safety. Drowning deaths are considered to be almost entirely preventable.

The following will provide an in-depth overview of the data and the recommendations developed in this review. It is our hope that these efforts will result in improved public safety and assist in preventing deaths from similar circumstances in the future.

ii) The Review Team

The Review Team consisted of 3 senior coroners, the Executive Officer of Investigations, and an administrative assistant with extensive forensic experience. Dr. Bert Lauwers is the Deputy Chief Coroner of Investigations and was the Project Manager and chaired the team. Dr. David Evans has recently retired from his position as a Regional Supervising Coroner, and has been the Office's most knowledgeable Coroner with respect to drowning prevention and public safety in the past decade. Dr. Roger Skinner is the Regional Supervising Coroner for Eastern Region, and has extensive knowledge of water safety both as a former certified lifeguard, an avid fisherman, and as an Investigating Coroner. He recently completed the Edine Ilunga Inquest which examined the drowning of a child in a public pool, including admission and supervision standards in pools in Ontario. Ms. Dorothy Zwolakowski is the

Executive Officer of the Paediatric Death Review Committee and Deaths Under Five Committee. She was the Project Leader for this review. Ms. Emily Coleman has undergraduate training in forensic sciences, has been a pathologist's assistant with the Ontario Forensic Pathology Service and is currently an Administrative Assistant with the Office of the Chief Coroner. She was the Project Assistant for this Review. Ms. Coleman, Dr. Lauwers and Ms. Zwolakowski authored the final report.

iii) Project Charter

A project charter was developed. Hypotheses were developed and data specifically examined to test the hypotheses.

Mission	To review the drowning deaths that occurred in the period from May 1 to September 30, 2010.
Scope	<ol style="list-style-type: none"> 1. All drowning deaths that occurred in the period under review will be considered. 2. The review will only consider accidental deaths.
Hypotheses	<ol style="list-style-type: none"> 1. Drowning deaths occur on days when the environmental temperature is high. In the summer months, it is a temperature-related phenomena. 2. There was an excess mortality in children less than five (5) years of age during the study period, above that experienced in other years. 3. There was an excess mortality in non-swimmers born outside of Canada.

It is important to note that our study excluded cases that other drowning reviews may have examined. For example, the British Columbia Office of the Chief Coroner's Child Death Review Unit published a Report on Drowning in 2007. In that report, which is an excellent resource, a section was dedicated to the death of youth due to drowning where the manner of death was suicide. In Ontario, we excluded these cases from the review. In addition, we excluded cases where the cause of death was drowning, but the manner of death was homicide.

The Review - Methodology

The project was evolved in 6 phases.

In **Phase 1**, the OCC identified all drowning-related deaths in Ontario occurring during the study period, which fell within the scope of the review. Deaths were identified using High Profile Case Submission Forms submitted by the Regional Supervising Coroners (RSC), the Pathology Information Management System (PIMS) and the Coroners Information System (CIS). Once completed, the Regional Supervising Coroners were notified of the cases from their regions that were included in the review.

In **Phase 2**, stakeholders who shared an interest and/or expertise in drowning prevention were identified and invited to participate as members of an expert panel. The stakeholders identified included:

- Canadian Red Cross
- Hospital for Sick Children, Department of Critical Care Medicine
- The Lifesaving Society
- Ministry of Health and Long-Term Care
- Ministry of Education
- Safe Kids Canada

These parties self-identified based on e-mails, letters and oral communication. Members of this group were asked to participate in a panel called the *Drowning Review Panel*. In addition, submissions from the public were accepted, compiled and reviewed.

In **Phase 3**, the Office of the Chief Coroner Review Team was developed.

In **Phase 4**, an Audit Tool was developed to review each death. This tool was a modified version of the Canadian Surveillance System for water-related fatalities. The purpose of the audit tool was to compile relevant data for drowning-related deaths.

In **Phase 5**, the data was compiled, the deaths analyzed, and recommendations developed to enhance public safety and prevent drowning-related deaths in the future.

Compilation of data involved the Regional Supervising Coroner reviewing all documents including the police report, the Post Mortem Examination Report and the Coroners Investigation Statement. The file was then forwarded to the Project Leader by the RSC's Office when the case had been closed.

The deaths were analyzed and information was compiled using the Audit Tool. Members of the review team did contact some of the families directly for information that was required and was not in our records. The completed Audit Tool results were forwarded to the Lifesaving Society for compilation and tabulation of results.

Recommendations were developed during a meeting at the Office of the Chief Coroner which took place on April 21st, 2011 and included the Drowning Review Panel team.

The Drowning Review Panel examined individual cases, governing legislation and recommendations and submissions from the public. The compiled data was reviewed, common themes identified, recommendations considered and consolidated recommendations developed. A draft report was developed by the Office of the Chief Coroner, and sent to Panel members for their review and consideration. A final report was then prepared.

In **Phase 6**, the Office of the Chief Coroner Drowning Report was released.

Findings

i) CASE STUDIES

The following cases are presented as examples of some of the drowning deaths that occurred in the review period.

Case #1: **Drowning of an Unsupervised Child in a Backyard Swimming Pool**

Background

This 2 year old boy was with his father in the backyard. He was left unattended for approximately ten minutes.

There was an above ground pool in the backyard however, no protective fencing was in place. Normally, when the pool was not in use, the stairs were removed. On the day of the drowning however, the stairs were still in place. This boy was found in the pool unresponsive by his father.

The temperature high for the day was 36°C.



Issues:

1. There was no fencing around the pool.
2. There was no gate for the stairs leading to the pool.
3. This boy was out of sight and out of reach of his supervisor in the same vicinity as an open body of water.
4. There was no mandatory safety regulation regarding pool enclosure fencing for private pools in the municipality where the death occurred.

Case #2: **Drowning in a Provincial Park**

Background

This 18 year old male went camping for the weekend at Rock Point Provincial Park. As it was warm that day (27°C), he and his group of friends decided to go for a swim at the beach after they had unpacked their campsite. The group had not consumed any alcohol that day. It was known that this individual was not a strong swimmer. The group noted the rough water signs posted at the beach and decided to swim despite them. Furthermore, there had been waves and undertows reported from other campers at the park that day.

While swimming, this man reportedly got into trouble and became overwhelmed by the water. His friends attempted to rescue him and bring him back to shore, however the current was too strong and they were unable to assist the decedent to prevent his drowning.



Rock Point Provincial Park:
Conditions on the day of the drowning

Issues:

1. Signage posted at the Provincial Park about the water conditions was minimally visible.
2. There were two other recorded near-drowning occurrences at the same park in the same time period of this review.
3. There was one other reported death by drowning in this review from the same park, suggesting that swimming may be hazardous in this locale.
4. There was a lack of staff presence on the beach, as there were no lifeguards or staff visible during the daylight hours when the drowning occurred.
5. There was a paucity of markers or signs indicating where the undertows and currents existed.
6. There was an absence of an alarm system for staff or campers at the beach.
7. There was no emergency telephone available at the beach, and rescuers relied on their own cell phones.
8. The beach may have benefited from better signage about the undertow, where it was and how it may be experienced.
9. The beach may have benefited from improved safety equipment available and more visible at more locales.
10. Improved communication with campers about the risks and hazards of swimming at the beach might have provided a more informed choice about swimming that day.

Case #3: Drowning in a New Canadian

Background

This 22 year old female was born and raised in Kuwait. She immigrated to Canada in 1998. She was reportedly a non-swimmer.

On the evening of the drowning, she went with a group of friends to Sand Point Beach at the Detroit River. It had been a warm day with a temperature high of 25°C. The group consumed alcohol before they decided to go swimming. There were caution signs posted at the beach warning of the significant drop-off (1 to 20 metres). Additionally, there were markers in the water to indicate the dangerous drop off and strong undercurrent.

The group went out past the markers and then lost sight of this woman. It was quite dark as it was late at night. The group was unable to regain sight of this young woman.

Issues:

1. The signage posted at the park warning of an undertow and drop-off was noted but not respected.
2. There was recorded alcohol consumption by the group and the decedent.
3. The decedent was a non-swimmer.
4. The decedent was swimming at night.



Case #4: Drowning in an Intoxicated Boater

Background

This 19 year old female had been drinking heavily the night she drowned. She was reportedly a strong swimmer. The temperature high for the day was 24°C. The night of the drowning, she was on a boat with friends and asked to be let off to swim. She was not wearing a life jacket or personal flotation device. The operator of the boat left her in the water to go pick-up another passenger onshore. When the driver glanced back at her, she waved and then she became submerged under the water. When the boat operator circled back to the area, he was unable to assist her because he was unable to swim himself.

Issues:

1. There was heavy alcohol consumption by the decedent.
2. There was no life jacket or personal flotation device worn or available.
3. The decedent was not swimming with a companion and was left alone.
4. The operator of the boat was a non-swimmer.



Case #5: Drowning in a Hotel Pool

Background

This 12 year old boy was visiting Toronto with his soccer team from New York City. The team checked into the hotel and went straight down to the pool with their four chaperones. He had advised the group that he was able to swim. This boy was last seen alive holding the edge of the pool. When friends noticed him at the bottom of the pool, they thought he was playing. One boy swam down and noticed he was unresponsive. Two boys then swam to the bottom to get him. Cardiopulmonary resuscitation was initiated at this time.

The temperature high for the day was 33°C.



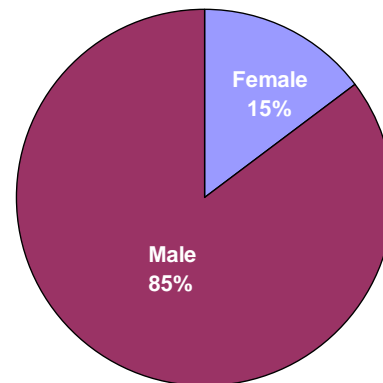
Issues:

1. The decedent told his chaperones that he was able to swim. It was later discovered he only had basic swimming skills.
2. There was no lifeguard at the pool.

ii) DATA AND INTERPRETATION

GENDER AND DROWNING

There were 89 deaths that were examined during this study. As the table and chart below demonstrate, 85% of the deaths that were investigated were male.



Sex	# of Deaths	% of Deaths
Male	76	85
Female	13	15
Total	89	100

Discussion

The Canadian Red Cross' report entitled *Drownings and other water-related injuries in Canada; 10 Years of Research*, in 2006 presented risks and trends for drowning in Canada between 1991-2000, and reported that 5,900 individuals had died.⁵ For the years 1996-2000, the number of males that died was 1,754 and females 354. About 17% of the deaths were in females and 83% in males, approximating the data in our review.

Conclusion:

Drowning is largely a male-related phenomenon. 76 of 89 (85%) deaths were male.

⁵ Drownings and other water-related Injuries in Canada, 1991-2000 Module 1: Overview, The Canadian Red Cross Society, 2006.

DROWNING DEATHS IN SUMMER MONTHS

May, June, July, August, September	
Year	Number of Deaths
2006	111
2007	94
2008	100
2009	94
2010	89

Discussion

According to the Lifesaving Society, two thirds of drowning deaths occur in the months of May, June, July and August, with peaks in the months of July (32%) and August (29%).⁶ Friday, Saturday and Sunday are the days of the week when most of the deaths (56%) occur.⁷ Despite there not actually being a rise in the drowning deaths in the summer of 2010, there was a perception of an increase. It was the belief that this actually occurred because of the large number of highly publicized deaths in children less than 5 years of age, which did experience a dramatic rise.

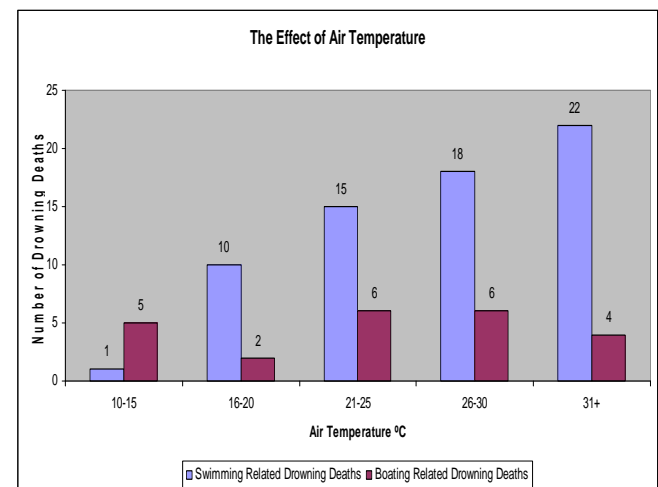
Conclusion:

The total number of drowning deaths in 2010 was similar to previous years.

THE EFFECT OF AIR TEMPERATURE

There is clear evidence that drowning deaths associated with boating are not air temperature dependent, but swimming deaths are. Accordingly, prevention strategies should target days when the air temperature exceeds 21 degrees Celsius.

Air Temperature °C	Number of Swimming Deaths	Number of Boating Deaths
10-15	1	5
16-20	10	2
21-25	15	6
26-30	18	6
31+	22	4
Total	66	23



Conclusion:

Drowning deaths related to boating are not dependent on air temperature.

55 of 66 (83%) of the deaths related to swimming occurred when the air temperature was higher than 21°C.

⁶ The Drowning Report, 2008 edition, The Lifesaving Society, June 2008, pg. 10.

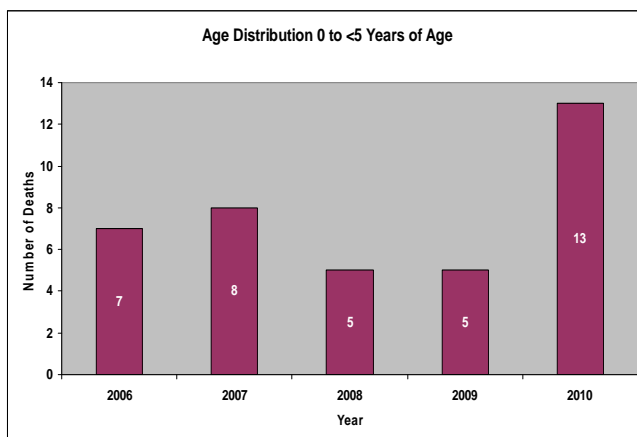
⁷ Ibid.

AGE DISTRIBUTION OF DROWNING DEATHS

Age	Total	%
<1	0	0
1 – 4	13	14.6
5-9	3	3.4
10-14	5	5.6
15-19	8	9.0
20-24	11	12.4
25-34	9	10.1
35-44	11	12.4
45-54	12	13.5
55-64	7	7.9
65+	10	11.2
Total	89	100



As demonstrated in the above chart, there is a disturbing trend in deaths of children less than 5 years of age. In the graph below, a 5 year trend in drowning deaths of children less than 5 years of age can be seen. In the previous 2 years, 5 children had died due to drowning. In 2010, 13 children less than 5 years of age died. This was an increase of 260%.



According to the Canadian Paediatric Society Position Statement on swimming lessons for infants and toddlers:

“...children’s earliest mastery of water confidence and basic aquatic locomotive skills is four years of age, despite the age at which lessons commence. Blanksby et al reported that children achieved the skills necessary to perform the front crawl at 5.5 years of age, regardless whether lessons began at two, three or four years of age. There is evidence that swimming lessons improve swimming ability and deck behaviour in young children (two to four years of age); however, the long term maintenance of these skills has not been reported. There is no evidence that swimming lessons prevent drowning or near drowning in this age group.”⁸

It is important to note that children in this age range are therefore wholly dependant on caregivers for their safety in water. The Lifesaving Society has noted that most drowning under the age of 5 occur in 2-4 year olds (79%). Private backyard pools present the greatest danger accounting for 49% of water-related deaths for children under five.⁹

Additionally, it was noted that those aged 20-64 account for 56% of the deaths. 71% of the deaths occurred in persons aged less than 5, and between 20-64 years of age.

Conclusion:

There was a 260% increase in drowning deaths in children less than 5 years of age. 13 of the 89 (15%) deaths in this review were in children less than 5 years of age.

Those aged 20-64 account for 50 of 89 (56%) of the deaths.

63 of 89 (71%) of the deaths occurred in persons aged less than 5 and between 20-64 years of age.

⁸ Swimming lessons for infants and toddlers, Injury Prevention Committee, Canadian Paediatric Society, Paediatr Child Health 2003;8(2): 113-4. Revision in progress February 2011.

⁹ The Drowning Report, 2008 edition, The Lifesaving Society, June 2008, pg. 17.

Recommendations

Association of Municipalities of Ontario and the Ministry of Municipal Affairs and Housing

1. **All municipalities in the Province of Ontario should pass pool enclosure municipal bylaws that mandate barrier safety requirements for new pools including in-ground, above-ground, portable, inflatable and hydro-massage pools, hot tubs and spas as well as decorative ponds such that when they are installed;**
 - they are surrounded by 4-sided fencing that completely encloses the pool area;
 - the pool enclosure bylaw applies to all structures with a water depth of at least 0.6m (2 feet);
 - they allow entry and exit through a self-closing and self-latching gate only;
 - the 4-sided fencing be a minimum height of 1.22m (4 feet);
 - the bylaw specifies that fence construction should inhibit climbing;
 - the home should never open into a pool area.
2. **All municipalities in the Province of Ontario should pass pool enclosure municipal bylaws that mandate retrofitting for existing pools as defined by 2015 to the standards as in recommendation #1 above.**

The Government of Canada, Health Canada and the Public Health Agency of Canada

3. **The Government of Canada, Health Canada and the Public Health Agency of Canada as a component of their health promotion, health protection and injury prevention mandate should:**
 - develop an evidence-based best practice for pool enclosure safety; and
 - review the federal legislation passed in Australia, New Zealand and France for the purposes of determining whether similar legislation could be proclaimed in

Canada in all provinces and territories by the Government of Canada.

Lifesaving Society Canada, the Canadian Red Cross, Safe Communities Canada, Safe Kids Canada, SMARTRISK Canada, and Thinkfirst Canada

4. (a) **Non-governmental organizations and agencies with expertise in water safety education and drowning prevention such as the Lifesaving Society, the Canadian Red Cross, Safe Communities Canada, Safe Kids Canada, SMARTRISK Canada, and Thinkfirst Canada should meet and develop collaborative public education campaigns with water safety messages detailing prevention strategies.**
 - (b) **The public education campaign should target parents and/or caregivers of infants, toddlers and school age children stressing that:**
 - parents must have *continuous visual contact* with direct supervision of their children when they are in water;
 - parents must exercise direct supervision and be within arms length reach of their children when they are in water;
 - parents should endeavour to take children to beaches and pools with certified lifeguards on duty;
 - infants, toddlers and school aged children should be placed in life jackets before being allowed to enter any area in or around water;
 - although swimming lessons are available for infants younger than 1 year of age, the earliest mastery of basic water locomotive skills does not occur until 4 years of age, irrespective of the age when lessons are started. Parents should be aware that even if their children have completed swimming lessons, they still require direct supervision;
 - **ALL** children should be taught to swim; and
 - parents should develop an action plan in advance should their child develop problems during their swimming adventure

(c) The public education campaign should target non-swimming parents of infants, toddlers and school age children stressing the importance that they themselves learn basic water safety skills in order to effectively respond and react in a time of crisis. Furthermore, they should be educated on how to conduct themselves around water to maintain safety for themselves and others.

(d) The public education campaign should also target men aged 15-64 stressing:

- If they don't know how to swim, they should learn how to swim;
- If they drink alcohol, they should not swim or operate a pleasure craft;
- that life jackets or personal floatation devices should be worn at all times on all pleasure craft less than 6 metres in length when boating;
- that special attention should be paid to posted warnings regarding water safety and conditions; and,
- that they should always swim with a partner who knows how to swim.

Drowning Review Panel's Comments

Internationally, Australia, New Zealand and France have passed legislation requiring most, if not all of the elements outlined in recommendation #1 above. Provincially, Quebec and the municipality of the City of Toronto are jurisdictions who have passed four-sided pool enclosure bylaws. These laws pertain to new construction only and are not retroactive. For clarity, some municipalities have passed bylaws which allow a wall of the house to serve as the fourth side of the enclosure. The Office of the Chief Coroner does not support any bylaw aside from one that mandates four sided fencing.

Safe Kids Canada has published a position statement on *Pool Drowning and the Need for Safer Pool Fencing*. In that statement, they suggest, "Researchers estimate that safer pool fencing could prevent 7 out of 10 drowning incidents for children under five"¹⁰.

In the summer of 2010, 13 children aged 1-4 years drowned in Ontario. This was an increase of 260% over previous years and was a principle motivator for the Office of the Chief Coroner's Drowning Review. Several of these children's deaths would have been prevented had this legislation been in place.

Several organizations are currently engaged in the province and have expertise in drowning prevention and education, engagement of the public, evaluation of best practices and research. The organizations listed at the beginning of this recommendation are provincial leaders in this area, and could play an instrumental role in improving water safety.

SETTING OF DROWNING DEATHS

Aquatic Setting – Natural

Aquatic Setting	Number	% of Total (n=89)
Lake/Pond	51	57%
River/Stream/Creek	11	12%
Ocean	0	0
Total	62	~70%

Aquatic Setting – Artificial

Aquatic Setting	Number	% of Total (n=89)
Bathtub	1	1
Private Pool	19	21
Reservoir	3	3
Hot Tub	2	2
Quarry	1	1
Total	26	~30%

In Ontario, the Canadian Red Cross found that between 1991 and 2000, there were 263 deaths in Ontario. Of these, 49% occurred in lakes,

¹⁰ Safe Kids Canada, Child Safety Good Practice Guide: Good investments in unintentional child injury prevention and safety promotion-Canadian

Edition, www.safekidscanada.ca.

22% in rivers, 17% in swimming pools, and the remainder (12%) in others.¹¹ In 2010 in Ontario, 51% occurred in lakes, 21% occurred in private pools, and 12% occurred in rivers/streams/creeks.

Conclusion:

From this data it can be determined that drowning occurs largely in:

- those owning or utilizing private pools, 19 of 89 (21%) deaths; and
- those using lakes/ponds for their aquatic setting, 51 of 89 (57%) deaths.

The Ministry of Natural Resources

5. **The Ministry of Natural Resources should undertake a review of Provincial Parks that experienced drowning deaths identifying potential root causes for the deaths, and develop evidence-based strategies to prevent further occurrences. Specifically, the deaths that occurred at Rock Point Provincial Park should be reviewed. Once the process is in place to review these deaths, this exercise should be conducted annually for all Provincial Parks. Near-drowning incidents should be tracked and recorded in this annual review.**

Drowning Review Panel's Comments

It was conveyed to the Panel that certain Provincial Parks, by virtue of the bodies of water that were present, pose a greater risk to citizens. For example, Rock Point Provincial Park had 2 drownings in the summer of 2010. The Panel held the opinion that it would be important for the Ministry of Natural Resources to maintain a registry of all drownings and near-drownings that take place each year, and to systematically review these incidents to develop strategies to prevent further occurrences.

The Ministry of Natural Resources, Ontario Parks, the Ministry of Municipal Affairs and Housing and the Association of Municipalities of Ontario.

6. (a) **The Ministry of Natural Resources, Ontario Parks, municipalities operating public beaches and operators of Class A or Class B recreational camps with public swimming areas, and privately owned parks and beaches should ensure that:**
- lifeguards be present at high volume public beaches (e.g. Wasaga, Sandbanks and Rock Point) with clear demarcation defining the swimming area under the surveillance of the lifeguard;
 - clear signage identifies the risk of challenging water conditions such as rough water and waves, strong currents, undertows and off-shore winds;
 - the water/swimming conditions of the day should be provided to all patrons registering to visit the park on that given day;
 - high risk swimming areas that should be avoided are clearly marked;
 - a series of "no-swim" beaches are defined to prohibit swimming in dangerous swimming environments;
 - there is a lifejacket loaner program for children <10 years of age, adult non-swimmers, and boaters; and
 - rescue equipment such as ropes and ring buoys are readily available should rescue attempts be necessary and should be accompanied with the necessary brief pictorial instructions.








¹¹ Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 1: Overview, The Canadian Red Cross Society, 2006, pg. 18.

(b) That clear signage is posted depicting safety measures including:

- how to swim out of a rip current, and how to help someone who is caught in a rip current, should they exist;
- how to utilize safety equipment to effect a rescue; and,
- how to communicate to park staff and emergency medical services (EMS) in the event of a drowning or near-drowning.



7. The Ministry of Natural Resources, Ontario Parks, municipalities operating public beaches and operators of Class A or Class B recreational camps with public swimming areas that employ lifeguards should implement the International Beach Flag System:

-  Red flags with a no swimming symbol indicate that the water is closed to the public.
-  Red flags without a symbol indicate a high hazard from surf and/or currents.
-  Yellow flags indicate a medium hazard from moderate surf and/or currents.
-  Green flags indicate a low hazard with calm conditions. Beachgoers should still exercise caution.
-  Purple flags indicate a hazard from dangerous marine life. These flags are used in conjunction with another coloured flag indicating the current surf/current conditions.

Drowning Review Panel's Comments

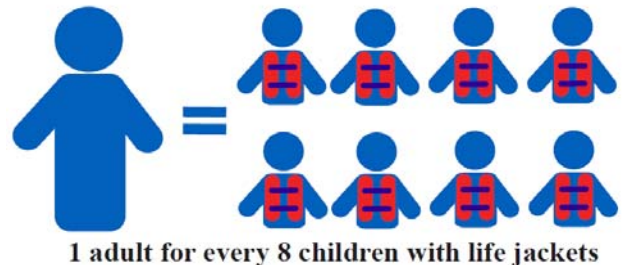
Many of the components contained in recommendations 6+7 actually arose from submissions made to the Office of the Chief

Coroner by the public. They are largely designed to inform the public of risks of swimming within the public swimming area. The **International Beach Flag System** is utilized in South Florida. There, beaches use a uniform flag warning system to advise beachgoers of potential safety risks. These coloured flags indicate the nature of the threat and the action government officials advise for the public. The flag warning system is consistent throughout the state of Florida.¹²

The Ministry of Health and Long-Term Care

8. a) The Health Protection and Promotion Act R.R.O. 1990, Regulation 565 Public Pools should be amended to require the following admission and tracking standard for recreational non-instructional swimming in public pools to improve surveillance over the activities of young children in order to prevent drowning.

- The child or youth is required to take a facility swim test.
- Staff should be trained in the application of this standard and should communicate this to the public.
- Direct supervision means "within arms length".
- This standard should be posted at the pool reception area and on the pool deck.
- Owner/operators must develop a procedure by which the admission standards can be tracked and identified on the bathers to which the standard is applied.



*** A full list of Admission and Tracking Standards for Recreational Non-Instructional Swimming of Children in Public Pools are outlined in the Consolidated Recommendations section on page 26.**

¹² Chapple, Renee. Miami Beach Flag Warning System. <http://miami.about.com/od/weather/a/beachflags.htm>

8. (b) The *Health Protection and Promotion Act R.R.O. 1990, Regulation 565 Public Pools* should be amended to require all operators of public pools where lifeguards or instructors are not present to:

- post signage indicating the high risk associated with being a non-swimmer in a pool;
- require non-swimmers to utilize lifejackets unless receiving direct swimming instruction from an instructor;
- provide lifejackets for non-swimmers; and
- make it a requirement that non-swimmers utilizing the pool area must swim with a partner/buddy who is a swimmer.

Drowning Review Panel's Comments

In 2002, a panel of experts led by the Office of the Chief Coroner reviewed the death of a child at St. Albans Swimming Pool in Toronto and made a recommendation to the Ministry of Health and Long-Term Care for an amendment to Regulation 565 to include a swimming admission standard for children.

In 2009, the Eyobell Emun inquest again recommended an amendment to Regulation 565 to incorporate a swimming admission standard for children.

The OCC completed the Edine Ilunga Inquest on May 20th, 2011. The Inquest Jury brought back recommendations regarding improving surveillance of young children in recreational swimming pools. Swimming admittance and supervision requirements are included above in 8(a). This child died at 8 years of age when swimming in a public pool in 2008.

The Association of Local Public Health Agencies passed a resolution on June 21, 2010 supporting the implementation of admission standards for public swimming pools. The Drowning Review Panel was highly supportive of this initiative.

To date, no changes have been made to Regulation 565.

BOATING RELATED DROWNING

“Powerboating” refers to the recreational use of a powerboat as an activity in itself. “Powered boating” refers to all cases of boating in a powered boat¹³.

According to the Canadian Red Cross, in Canada from 1991-2000, there were 1,362 total recreational boating deaths. Incidents included capsizing (38%), falling or jumping overboard (28%), swamped (13%), collision (5%) and others (16%).¹⁴ In that same study, small powerboat drownings (<5.5 metres) accounted for 38% of deaths; canoes 22%; unspecified powerboats 13%; large powerboats 6% (>5.5 metres); sailboats 4%; rowboats 4%; kayaks 3%; rafts 3%; personal watercraft 2%; and unknown unpowered boats 5%. According to the Lifesaving Society, 53% of boating drownings resulted from powerboats excluding personal watercraft, and 26% involved canoes.¹⁵ This totals 89% and is comparable to 2010, where powerboat operators and those canoeing accounted for 87% of those who drowned while boating.

Furthermore, 22 of 23 deaths were in individuals over 18. Of the 23 total deaths due to boating, 22 of 23 (96%) were not wearing a lifejacket. This compares to data for Canada compiled by the Canadian Red Cross from 1991-2000 which demonstrated that in 28% of deaths, a life jacket or personal flotation device was absent; in 22% they were not worn; in 3% they were worn improperly; in 36% their status was unknown, and in 11%, they were worn properly.

“The most common risk factor for recreational boating drowning during the entire 1990s was not wearing a flotation device.”¹⁶

¹³ Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 3: Boating and Powerboats, The Canadian Red Cross Society, 2006, pg. 7

¹⁴ Ibid

¹⁵ The Drowning Report, 2008 edition, The Lifesaving Society, June 2008, pg. 14.

¹⁶ Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 1: Overview, The Canadian Red Cross Society, 2006, pg. 12.

In a matched cohort analysis of United States Coast Guard data, 1,597 boaters in 625 vessels with 878 drowning deaths, it was estimated that wearing a personal flotation device prevents one in two drowning deaths among recreational boaters.¹⁷ This number appears to under represent the number of drownings in Ontario that may have been prevented by a life jacket or personal flotation device.

Conclusions:

22 of 23 (96%) of those operating power boats and unpowered boats that drowned were not wearing life jackets or personal flotation devices.

The Government of Canada, Transport Canada

9. The Government of Canada, Transport Canada should amend the *Canada Shipping Act, Small Vessel Regulation* to require all pleasure craft operators and passengers to continuously wear life jackets or personal flotation devices when on board vessels (both powered and unpowered) less than 6 metres in length.

Drowning Review Panel's Comments

There were 23 deaths of operators of powered and unpowered boats in the summer of 2010. Of these, only one boater was wearing a life jacket or personal flotation device.

The current *Canada Shipping Act, Small Vessel Regulation* requires that there is a life jacket or personal flotation device on board for all operators and passengers of boats and even requires those who possess inflatable life jackets to wear them continuously. According to the Canadian Red Cross, from 1991-2000, the majority of boating incidents leading to death were caused by capsizing (38%), falling or jumping overboard (28%) or being swamped (13%). The sudden and unexpected nature of these events does not allow for the operator or

passenger of a boat to have the opportunity to find and put on a life jacket or personal flotation device. This could become very difficult if not impossible when swimming or treading water.

The study of *Ergonomic Evaluation of Infant Lifejackets, donning time and donning accuracy*, demonstrates that in 224 attempts at donning, only 19% resulted in a lifejacket being donned correctly in less than 1 minute. This reinforces that operators and passengers should continuously wear lifejackets and personal flotation devices as they may not have the opportunity to put one on successfully if their watercraft capsizes¹⁸.



¹⁷ Cummings, P. et al, Association between wearing a personal flotation device and death by drowning among recreational boaters: a matched cohort analysis of United States Coast Guard data, *Injury Prevention*, October 2010.

¹⁸ Ergonomic Evaluation of Infant Lifejackets: Donning time and donning accuracy, *Journal of Applied Ergonomics* #42, 2011, page 314 – 320, <http://www.ncbi.nlm.nih.gov/pubmed/20813347>

ALCOHOL AND DROWNING

Age	Total	Alcohol	% of Alcohol Involvement of Those Who Drowned
<1	0	0	0
1 – 4	13	0	0
5-9	3	0	0
10-14	5	0	0
15-19	8	5	62.5%
20-24	11	9	81.8%
25-34	9	8	88.9%
35-44	11	5	45.5%
45-54	12	6	50.0%
55-64	7	6	85.7%
65+	10	0	0
Total	89	39	44%

The data demonstrates that the vast majority of those who drown in the age groups of 15-34 and 55-64 had used alcohol. It is noteworthy that there was no alcohol use associated with drowning in individuals under 15 and over 64.

Additionally, 22 of 28 (79%) of those who drowned and were between the ages of 15 and 34 had used alcohol. In the age group of drowning deaths between 55-64 years of age, 6 of the 7 (85.7%) individuals who died had consumed alcohol.

In their study of Canada from 1991-2000, the Canadian Red Cross found that after excluding drowning deaths where alcohol consumption was unknown, alcohol was present or suspected in 57% of the deaths. In Ontario, this figure was 44%, but the ranges were extreme depending on the age of the victim.

Conclusion:

Alcohol was a contributing factor in 39 of 89 (44%) of the drowning deaths between 20-64 years of age. Overall, 39 of 89 (44%) of drowning deaths were alcohol related.

The Ministry of Health Promotion and Sport and the Ministry of Health and Long-Term Care

10. (a) The Ministry of Health Promotion and Sport, the Ministry of Health and Long-Term Care as well as all Boards of Health in Ontario, through their Public Health Units, as a component of their mandate with respect to health promotion, health protection and injury prevention should begin an educational program to prevent drowning in Ontario, specifically targeting men ages 15 to 64.

(b) As drowning is largely preventable, consideration should be given to running educational warnings through media outlets including social media at peak times for water recreation such as July and August when the ambient temperature is greater than 21 °C. These “*drowning alerts*” could be modelled after cold weather alerts and heat alerts which are currently utilized by Public Health Units.

(c) Another suggested warning would target high risk behaviours by high risk populations. Males between the ages of 15-64 could benefit from education displaying information posters which discuss the hazards of combining alcohol with boating and swimming. These posters could be developed and provided by Public Health Units and displayed conspicuously in liquor stores, beer stores and marinas.

Drowning Review Panel’s Comments

This campaign should highlight the extraordinary loss of life in Ontario in 2010 due to drowning in men aged 15-64 who have been using alcohol when swimming and boating. In 2010, 80% of drowning deaths occurred in people less than 5 and between 15-64 years of age. In addition, swimming deaths occurred in

excess on days in which the ambient air temperature was greater than 21°C. Lastly, the use of alcohol probably played a role in 79% of those who drowned between 15-34 years of age. To be effective, prevention strategies should be targeted at populations at risk, and should also be presented utilizing techniques which are visible, informative, and reach target populations.

SWIMMERS VS. NON-SWIMMERS

Swimming Status	Total	%
Swimmer	36	40%
Non-swimmer	24	27%
Irrelevant (hot tub, bathtub)	3	3%
Unknown	26	29%
Total	89	100%

For those drownings in which the swimming status was known, 60% were swimmers and 40% non-swimmers. Families were asked to characterize whether or not their loved one was a weak, average or strong swimmer or a non-swimmer. About one third of the swimmers were identified as having weak swimming skills.

It should be assumed that all children less than 5 years of age are non-swimmers, even if they are involved in swimming lessons. According to the Canadian Red Cross, for children 5-14 years of age, 32% were non-swimmers (n=49) from 1991-2000. For those >15 years of age, 61% had an unknown swimming status. About 19% were non-swimmers.¹⁹

The Drowning Review Panel of the Office of the Chief Coroner commented that the characterization of swimmers as weak, average or strong, is likely not productive. It is almost impossible to draw conclusions from these characterizations. For example, a 50 year old man, previously a lifeguard drowns while swimming under the influence of alcohol.

Although he would have been a superb swimmer as a 20 year old, it is likely he has spent little time in the water since, and his swimming status may well be reported as “strong swimmer.”

Conclusion:

In 2010, for those in whom the swimming status was known, 24 of 60 (40%) were non-swimmers.

The Ministry of Education

11. The Province of Ontario, Ministry of Education should make learning to swim and water safety knowledge a component of the educational curriculum for all children as it is an essential element of building personal safety and injury prevention skills.

12. The Province of Ontario, Ministry of Education should ensure that as many school boards as possible in the province:

- set minimum standards for basic swimming skills and work with expert aquatic agencies to develop a minimum standard to meet their curriculum;
- utilize an instructional program which provides both in-water and in-classroom education for grade 3 students;
- develop advanced programs for children so that they can swim and are knowledgeable about water safety skills before they graduate from elementary school; and
- prioritize this initiative in geographical regions and school boards where there are high numbers of Aboriginal and new Canadian children.

Evidence of the protective effect of swimming lessons has been lacking even in high income countries, such as Canada. It is essential to confirm the relationship between swimming ability and protection from drowning.

¹⁹ Drownings and Other Water-related Injuries in Canada, 1991-2000
Module 1: Overview, The Canadian Red Cross Society, 2006, pg. 6.

In Bangladesh, drowning is the **leading cause of death** in children age 1-17.²⁰ In 2005, 17,000 children died by drowning. There, two thirds of the deaths occur in ponds and ditches, and only 7% of children over 4 years of age who drowned knew how to swim. The chance of drowning is 4.5 times higher among those children who cannot swim in Bangladesh. A five year cohort study of a structured survival swimming program known as SwimSafe was undertaken in Bangladesh.



A SwimSafe venue in Bangladesh

The SwimSafe survival swimming programme for children 4 years of age and older was introduced and consisted of:

- Curriculum and guidelines
- Swimming teaching venue
- Swimming instructor

The results were dramatic. The drowning death rate per 100,000 was reduced from 13.31 to 1.94. Children were taught to swim 25 metres, tread water for 30 seconds and learn rescue techniques. 66,031 SwimSafe participants were study subjects.²¹ Survival swimming confers protection from drowning in children who graduated from the SwimSafe program. Clear evidence exists that children taught to swim will drown less frequently.

In Ontario, the Lifesaving Society offers a similar *Swim to Survive Program* consisting of 3

skills including a roll entry into water, treading water for 1 minute, and swimming 50 metres.

Drowning Review Panel's Comments

In 2010, 40% of those who drowned with known swimming status were non-swimmers. Safety in water is not guaranteed in swimmers. **Swimming is a life skill** and should be taught to all children. Knowledge of water safety and swimming skills in combination are necessary to prevent drowning and are positions held by all members of the Drowning Review Panel.

ETHNICITY

Place of Birth	Number	% of Total
Canada	39	44%
Outside Canada	20	22%
Unknown	30	34%
Total	89	100%

The large number of drowning victims for whom the ethnic background is unknown makes it very difficult to assess whether or not this is a factor. If the percentage is calculated based on known ethnicity, 34% (20/59) were not born in Canada.

Approximately 25% of the population residing within Ontario was not born in Canada.²² Although certainly not conclusive, there is a suggestion that persons born outside of Canada are overrepresented in drowning deaths in Ontario.

Conclusions:

20 of 59 (34%) of the drowning victims for whom their heritage was known were not born in Canada.

²⁰ Rahman, A., et al, Analysis of childhood fatal drowning in Bangladesh: exploring prevention measures for low income countries, *Injury prevention* 2009; 15:75-79.

²¹ Aminur Rahman, Survival swimming-effectiveness of Swimsafe in preventing drowning in mid and late childhood, Centre for Injury Prevention and Research, Bangladesh

²² About Ontario, People and Culture. Government of Ontario. http://www.ontarioimmigration.ca/en/about/OI_ABOUT_PEOPLE.html

Themes

Gender and Drowning

- Drowning is largely a male-related phenomenon. 76 of 89 (85%) deaths were male.

Drowning Deaths in Summer Months

- The total number of drowning deaths in 2010 was similar to previous years.

Air Temperature and Drowning

- Drowning deaths related to boating are not dependant on air temperature.
- 55 of 66 (83%) of drowning deaths related to swimming occurred when the air temperature was higher than 21°C.

Age and Drowning

- There was a 260% increase in drowning deaths in children less than 5 years of age.
- 13 of the 89 (15%) deaths in this review were in children less than 5 years of age.
- Those aged 20-64 account for 50 of 89 (56%) of the deaths.
- 71 of 89 (80%) of the deaths occurred in persons aged less than 5 and between 15-64 years of age.

Aquatic Setting and Drowning

- Drowning occurs largely in:
 - those owning or utilizing private pools (21%); and
 - those using lakes/ponds (57%) for their aquatic setting.

Boating and Drowning

- 22 of 23 (96%) of those operating power boats and unpowered boats that drowned were not wearing life jackets or personal floatation devices.

Alcohol and Drowning

- There was no alcohol use associated with drowning in individuals under the age of 14 and over age 65.
- Alcohol was a contributing factor in 39 of 58 (67%) of drowning deaths between 15 and 64 years of age. Overall, 39 of 89 (44%) of drowning related deaths were alcohol related.

Swimmer Status and Drowning

- In 2010, for those in whom the swimming status was known, 24 of 60 (40%) were non-swimmers.

Ethnicity and Drowning

- 20 of 59 (34%) of the drowning victims for whom their heritage was known were not born in Canada.



Consolidated List of Recommendations

Association of Municipalities of Ontario and the Ministry of Municipal Affairs and Housing

1. All municipalities in the Province of Ontario should pass pool enclosure municipal bylaws that mandate barrier safety requirements for new pools including in-ground, above-ground, portable, inflatable and hydro-massage pools, hot tubs and spas as well as decorative ponds such that when they are installed:

- they are surrounded by 4-sided fencing that completely encloses the pool area;
- the pool enclosure bylaw applies to all structures with a water depth of at least 0.6m (2 feet);
- they allow entry and exit through a self-closing and self-latching gate only;
- the 4-sided fencing be a minimum height of 1.22m (4 feet);
- the bylaw specifies that fence construction should inhibit climbing;
- the home should never open into a pool area.

2. All municipalities in the Province of Ontario should pass pool enclosure municipal bylaws that mandate retrofitting for existing pools as defined by 2015 to the standards as in recommendation #1 above.

The Government of Canada, Health Canada and the Public Health Agency of Canada

3. The Government of Canada, Health Canada and the Public Health Agency of Canada as a component of their health promotion, health protection and injury prevention mandate should;

- develop an evidence-based best practice for pool enclosure safety; and
- review the federal legislation passed in Australia, New Zealand and France for the purposes of determining whether

similar legislation could be proclaimed in Canada in all provinces and territories by the Government of Canada.

Lifesaving Society Canada, the Canadian Red Cross, Safe Communities Canada, Safe Kids Canada, SMARTRISK Canada, and Thinkfirst Canada

4. (a) Non-governmental organizations and agencies with expertise in water safety education and drowning prevention such as the Lifesaving Society, the Canadian Red Cross, Safe Communities Canada, Safe Kids Canada, SMARTRISK Canada, and Thinkfirst Canada should meet and develop collaborative public education campaigns with water safety messages detailing prevention strategies.

(b) The public education campaign should target parents and/or caregivers of infants, toddlers and school age children stressing that:

- parents must have *continuous visual contact* with direct supervision of their children when they are in water;
- parents must exercise direct supervision and be within arms length reach of their children when they are in water;
- parents should endeavour to take children to beaches and pools with certified lifeguards on duty;
- infants, toddlers and school aged children should be placed in life jackets before being allowed to enter any area in or around water;
- although swimming lessons are available for infants younger than 1 year of age, the earliest mastery of basic water locomotive skills does not occur until 4 years of age, irrespective of the age when lessons are started. Parents should be aware that even if their children have completed swimming lessons, they still require direct supervision;

- **ALL** children should be taught to swim; and
- parents should develop an action plan in advance should their child develop problems during their swimming adventure

(c) The public education campaign should target non-swimming parents of infants, toddlers and school age children stressing the importance that they themselves learn basic water safety skills in order to effectively respond and react in a time of crisis. Furthermore, they should be educated on how to conduct themselves around water to maintain safety for themselves and others.

(d) The public education campaign should also target men aged 15-64 stressing:

- if they don't know how to swim, they should learn how to swim;
- if they drink alcohol, they should not swim or operate a pleasure craft;
- that life jackets or personal floatation devices should be worn at all times on all pleasure craft less than 6 metres in length when boating;
- that special attention should be paid to posted warnings regarding water safety and conditions; and
- that they should always swim with a partner that knows how to swim.

The Ministry of Natural Resources

5. The Ministry of Natural Resources should undertake a review of Provincial Parks that experienced drowning deaths identifying potential root causes for the deaths, and develop evidence-based strategies to prevent further occurrences. Specifically, the deaths that occurred at Rock Point Provincial Park should be reviewed. Once the process is in place to review these deaths, this exercise should be conducted annually for all Provincial Parks. Near-drowning incidents should be tracked and recorded in this annual review.

The Ministry of Natural Resources, Ontario Parks, the Ministry of Municipal Affairs and Housing and the Association of Municipalities of Ontario

6. (a) The Ministry of Natural Resources, Ontario Parks, municipalities operating public beaches and operators of Class A or Class B recreational camps with public swimming areas, and privately owned parks and beaches should ensure that;

- lifeguards be present at high volume public beaches (e.g. Wasaga, Sandbanks and Rock Point) with clear demarcation defining the swimming area under the surveillance of the lifeguard;
- clear signage identifies the risk of challenging water conditions such as rough water and waves, strong currents, undertows and off-shore winds;
- the water/swimming conditions of the day should be provided to all patrons registering to visit the park on that given day;
- high risk swimming areas that should be avoided are clearly marked;
- a series of "no-swim" beaches are defined to prohibit swimming in dangerous swimming environments;
- there is a lifejacket loaner program for children <10 years of age, adult non-swimmers, and boaters;
- rescue equipment such as ropes and ring buoys are readily available should rescue attempts be necessary and should be accompanied with the necessary brief pictorial instructions.

(b) That clear signage is posted depicting safety measures including;

- how to swim out of a rip current, and how to help someone who is caught in a rip current, should they exist;
- how to utilize safety equipment to effect a rescue; and
- how to communicate to park staff and emergency medical services (EMS) in the event of a drowning or near-drowning

7. The Ministry of Natural Resources, Ontario Parks, municipalities operating public beaches and operators of Class A or Class B recreational camps with public swimming areas that employ lifeguards should implement the *International Beach Flag System*:



Red flags with a no swimming symbol indicate that the water is closed to the public.



Red flags without a symbol indicate a high hazard from surf and/or currents.



Yellow flags indicate a medium hazard from moderate surf and/or currents.



Green flags indicate a low hazard with calm conditions. Beachgoers should still exercise caution.



Purple flags indicate a hazard from dangerous marine life. These flags are used in conjunction with another coloured flag indicating the current surf/current conditions.

The Ministry of Health and Long-Term Care

8. a) The *Health Protection and Promotion Act R.R.O. 1990, Regulation 565 Public Pools* should be amended to require the following admission and tracking standard for recreational non-instructional swimming in public pools to improve surveillance of the activities of young children in order to prevent drowning.
- The child or youth is required to take a facility swim test.
 - Staff should be trained in the application of this standard and should communicate this to the public.
 - Direct supervision means “within arms length”.
 - This standard should be posted at the pool reception area and on the pool deck.
 - Owner/operators must develop a procedure by which the admission standards can be tracked and identified on the bathers to which the standard is applied (i.e. coloured bracelets).

Tracking Standard for Recreational Non-Instructional Swimming of Children in Public Pools

General Admission

Age (years)	Information	Admission Requirements	Adult: Child Ratio
5 and under	Parents must be within arms reach at all times	Always accompanied (parent/guardian 16+)	1:2 Must wear lifejackets
6 – 7	Parents must be within arms reach at all times	Always accompanied (parent/guardian 16+)	1:4 No lifejacket required
			1:6 Must wear lifejackets
8 – 10	Did not pass facility swimming test	Always accompanied (parent/guardian 16+)	1:4 No lifejacket required
			1:8 Must wear lifejackets
8 – 10	Successfully completed facility swim test	No adult supervision required	N/A

Groups and Camps of 10 or More Participants

Age (years)	Information	Admission Requirements	Adult: Child Ratio
5 and under	Supervisor must be actively participating within arms reach at all times	Always accompanied	1:2 Must wear lifejackets
6 – 7	Supervisor must be actively participating within arms reach at all times	Always accompanied	1:4 No lifejacket required
			1:6 Must wear lifejackets
8 – 10	Did not pass facility swim test	Always accompanied	1:4 No lifejacket required
			1:8 Must wear lifejackets
8 – 10	Successfully completed facility swim test	Always accompanied	1:10
11 – 15	N/A	Always accompanied	1:15

Each ratio indicates the maximum number of children that one responsible person (aged 16 or older) is able to supervise. Parent/guardian must be in proper bathing attire, in the water, actively participating within arms reach at all times. High-risk participants must be in a ratio of 1:1. High-risk participants are defined as those who have a condition or illness that may put them at risk in an aquatic environment (e.g. frequent seizures, fainting conditions, etc) and those who are unable to control behaviour or impulses and require direct supervision.

8. (b) *The Health Protection and Promotion Act R.R.O. 1990, Regulation 565 Public Pools* should be amended to require all operators of public pools where lifeguards or instructors are not present to:

- post signage indicating the high risk associated with being a non-swimmer in a pool;
- require non-swimmers to utilize lifejackets unless receiving direct swimming instruction from an instructor;
- provide lifejackets for non-swimmers; and
- make it a requirement that non-swimmers utilizing the pool area must swim with a partner/buddy who is a swimmer.

The Government of Canada, Transport Canada

9. The Government of Canada, Transport Canada should amend the *Canada Shipping Act, Small Vessel Regulation* to require all pleasure craft operators and passengers to continuously wear life jackets or personal floatation devices when on board vessels (both powered and unpowered) less than 6 metres in length.

The Ministry of Health Promotion and Sport and the Ministry of Health and Long-Term Care

10. (a) The Ministry of Health Promotion and Sport, the Ministry of Health and Long-Term Care as well as all Boards of Health in Ontario, through their Public Health Units, as a component of their mandate with respect to health promotion, health protection and injury prevention should begin an educational program to prevent drowning in Ontario, specifically targeting men ages 15 to 64.

(b) As drowning is largely preventable, consideration should be given to running educational warnings through media outlets including social media at peak times for water recreation such as July and August when the ambient temperature is greater than 21 °C. These “*drowning alerts*” could be modelled after cold weather alerts and heat alerts which are currently utilized by Public Health Units.

(c) Another suggested warning would target high risk behaviours by high risk populations. Males between the ages of 15-64 could benefit from education displaying information posters which discuss the hazards of combining alcohol with boating and swimming. These posters could be developed and provided by Public Health Units and displayed conspicuously in liquor stores, beer stores and marinas.

The Ministry of Education

11. The Province of Ontario, Ministry of Education should make learning to swim and water safety knowledge a component of the educational curriculum for all children as it is an essential element of building personal safety and injury prevention skills.

12. The Province of Ontario, Ministry of Education should ensure that as many school boards as possible in the province:

- set minimum standards for basic swimming skills and work with expert aquatic agencies to develop a minimum standard to meet their curriculum;
- utilize an instructional program which provides both in-water and in-classroom education for grade 3 students;
- develop advanced programs for children so that they can swim and are knowledgeable about water safety skills before they graduate from elementary school; and
- prioritize this initiative in geographical regions and school boards where there are high numbers of Aboriginal and new Canadian children.

References

1. The Drowning Report, 2008 edition, The Livesaving Society, June 2008.
2. Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 1: Overview, The Canadian Red Cross Society, 2006.
3. Swimming lessons for infants and toddlers, Injury Prevention Committee, Canadian Paediatric Society, *Paediatr Child Health* 2003;8(2): 113-4.
4. Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 3: Boating and Powerboats, The Canadian Red Cross Society, 2006.
5. Cummings, P et al, Association between wearing a personal floatation device and death by drowning among recreational boaters: a matched cohort analysis of United States Coast Guard data, *Injury Prevention*, October 2010.
6. Ergonomic Evaluation of Infant Lifejackets: Donning time and donning accuracy, *Journal of Applied Ergonomics* #42, 2011, page 314 – 320, <http://www.ncbi.nlm.nih.gov/pubmed/20813347>
7. British Columbia Office of the Chief Coroner Child Death Review Unit, Report on Drowning, Special Report 2007.
8. Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 4: Unpowered Boating, The Canadian Red Cross Society, 2006.
9. Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 2: Ice and Cold Water, The Canadian Red Cross Society, 2006.
10. Drownings and Other Water-related Injuries in Canada, 1991-2000 Module 5: Fishing, The Canadian Red Cross Society, 2006.
11. Washington State Open Water Drowning Prevention: Policy Strategies for Children and Youth 2011-2016.
12. Raham, A. et al., Analysis of the childhood fatal drowning situation in Bangladesh: exploring prevention measures for low-income countries, *Inj Prev* 2009;15: 75-79.
13. International Open Water drowning Prevention Guidelines, www.seattlechildrens.org/dp.
14. Safe Kids Canada, Child Safety Good Practice Guide: Good investments in unintentional child injury prevention and safety promotion- Canadian Edition, www.safekidsCanada.ca.
15. Safe Kids Canada, Safer Pool Fencing: Key Features, www.safekidsCanada.ca.
16. Backyard Pool Safety Guidelines, Livesaving Society, July 2002.
17. Australian Backyard Swimming Pools, www.bcomnet.net/swimming-pools/pool-fencing.html.
18. Swimming pool and spa safety barriers, Victoria Building Commission, July 2010, www.buildingcommission.co.au
19. Health Protection and Promotion Act, R.R.O. 1990, Regulation 568, RECREATIONAL CAMPS.
20. Health Protection and Promotion Act, R.R.O. 1990, Regulation 565, PUBLIC POOLS.
21. City of Toronto By-Law #447-1.
22. Chapple, Renee. Miami.Beach Flag Warning System. <http://miami.about.com/od/weather/a/beachflags.htm>
23. Aminur Rahman, Survival swimming-effectiveness of Swimsafe in preventing drowning in mid and late childhood, Centre for Injury Prevention and Research, Bangladesh
24. Government of Ontario. About Ontario, People and Culture. http://www.ontarioimmigration.ca/en/about/OI_ABOUT_PEOPLE.html

Review Participants

On April 21st, 2011 the review panel team met and endorsed the findings and recommendations outlined in this report.

Office of the Chief Coroner Review Team

A.E. Lauwers, MD, CCFP, FCFP

Deputy Chief Coroner of Investigations

Dr. Lauwers is currently the Deputy Chief Coroner-Investigations and Chair of the Paediatric Death Review Committee. Dr. Lauwers is a graduate of the University of Toronto Medical School and has a Fellowship in the College of Family Physicians. He is appointed as an Assistant Clinical Professor in the Faculty of Family Medicine at McMaster University. He is a former president of the Ontario Coroners Association.

In 2006, he became the Regional Supervising Coroner for Toronto-West. In January 2008, he was named the Associate Deputy Chief Coroner. He was appointed Deputy Chief Coroner - Investigations in September 2008 and led the Office of the Chief Coroner's project to develop recommendations to the *Inquiry into Paediatric Forensic Pathology (Goudge Inquiry)*. Dr. Lauwers produces annually, with an executive team, the *Report of the Paediatric Death Review Committee and Deaths Under Five Committee*. He has conducted dozens of inquests, most recently the Sara Carlin Inquest examining the use of selective serotonin reuptake inhibitors in youths, and the Jeffrey James Inquest, which reviewed the utilization of physical restraints in psychiatric patients.

Roger Skinner, MD, CCFP(EM)

Regional Supervising Coroner

Dr. Skinner has been the Regional Supervising Coroner for the East Region-Kingston office since December 2008. Prior to becoming a regional coroner, he was an investigating and inquest coroner in the Grey-Bruce region. He initially practiced family medicine, then emergency and hospitalist medicine at Grey Bruce Health Services in Owen Sound. Dr. Skinner is a former lifeguard and an avid fisherman.

David Evans, MD, FRCPC

Investigating Coroner and Former Regional Supervising Coroner

Dr. Evans qualified from Guys Hospital Medical School at the University of London in 1965. After practicing for two years in the National Health

Service he immigrated to Canada in 1967 taking up a teaching position at the University of Toronto Anatomy Department for a year. Dr. Evans was a family doctor in the west end of Toronto and a member of the Staff of St. Joseph's Hospital from 1967-1970. In 1970, he commenced his specialty training in the Gallie Post Graduate Surgical Training Program completing his Certification and Fellowship in Urology in 1976. Dr. Evans then practiced in Brampton from 1977-2002. In 1991, Dr. Evans was appointed as a Coroner for the Province of Ontario. Upon his retirement from his surgical practice in 2002, he was appointed a Regional Supervising Coroner for the Office of the Chief Coroner, a position from which he retired in 2010. Dr. Evans continues to be an Investigating Coroner and an Inquest Coroner for the Province.

Ms. Dorothy Zwolakowski

Executive Officer: Investigations
Office of the Chief Coroner

Ms. Dorothy Zwolakowski is the Executive Officer of Investigations at the Office of the Chief Coroner for Ontario (OCC), and has been with the OCC since 2002. She is a graduate of the University of Toronto with a degree in Sociology and also holds a Certificate in Quality Management from the University of Manitoba. She is the coordinator of two expert review committees at the OCC, the Deaths Under Five Committee and the Paediatric Death Review Committee. These are multidisciplinary committees which review all deaths of children under the age of five and medically complex deaths in the province. Dorothy also provides executive support to the Deputy Chief Coroner of Investigations, who oversees 18,500 death investigations annually in the province.

In 2007 and 2008, Dorothy was the primary liaison between the OCC and the *Inquiry into Pediatric Forensic Pathology (Goudge Inquiry)*. In this capacity she was responsible for locating, reviewing and providing over 50,000 pages of documents to Commission Counsel; assisting counsel with witness preparation, policy roundtables and submissions. Dorothy also coordinated the 2010 investigation of surgical and pathology issues into three Essex County Hospitals where the Investigation Team made 19 recommendations in the areas of pathology, surgery, medical-hospital leadership at Hôtel-Dieu Grace Hospital, as well as quality and safety for the benefit of patients in Essex County and the province as a whole.

Ms. Emily Coleman
Administrative Assistant
Office of the Chief Coroner

Emily Coleman joined the Office of the Chief Coroner in 2004 and has held several different roles within the office since then. Emily has also held a technical role as a Forensic Pathologist's Assistant at the Provincial Forensic Pathology Unit. Additionally, Emily has worked intimately for a number of years coordinating Project *RESOLVE*. This important project works on helping to identify unidentified remains for the province. This team was recently awarded an *Accolade Award for Partnership* by the Ontario Provincial Police.

In her current role, Emily is responsible for providing direct support for ongoing projects and reviews in the Investigations Unit for the Deputy Chief Coroner of Investigations.

Stakeholder Review Panel Team

Ms. Barbara Byers
Public Education Director
Lifesaving Society

Barbara Byers has been with the Lifesaving Society for 18 years. Barbara is the Research Director for the Drowning Prevention Research Centre. Barbara leads the collection, analysis and dissemination of water incident research in Canada. This scientific, evidence-based data guides the development of drowning prevention initiatives.

Barbara is also the Public Education Director for the Lifesaving Society Ontario. She is responsible for the strategic and executional components of the Society's Water Smart[®] campaign directed at changing the at-risk behaviour of Canadians to prevent drowning.

Barbara is past chair of the Canadian Safe Boating Council. She is a current member of the International Life Saving Federation's Child Drowning Committee, a past member of the ILS Drowning Report Committee, and a principal author of the *ILS 2007 World Drowning Report*.

Ms. Gail Botten
Program Advisor for Swimming and Water Safety
Injury Prevention Department
Canadian Red Cross, Ontario Zone

Gail began her career as a Water Safety Instructor/Lifeguard for the City of London. After completing a Recreation Leadership Diploma at Fanshawe College, Gail traveled to Sydney, Australia to work in Aquatics. Returning to Canada, Gail worked for several municipalities including

Etobicoke, Newmarket and Georgina in a management capacity. During this time, Gail also owned her own business as a consultant in the field of Aquatics. Having been a long time volunteer and a Master Instructor Trainer for the Canadian Red Cross, Gail joined the staff team of the organization in 2003 as a First Aid/Water Safety Program Representative. Gail was promoted to the role of Swimming and Water Safety Advisor responsible for providing expert advice and guidance to Training Partners, Instructors/Trainers, partner organizations and other Red Cross divisions. As a trainer, facilitator and mentor, Gail believes a quality instructor development program is key to teaching instructors on how to effectively educate parents, children and adults in water safety knowledge and the importance of learning to swim as a life-long skill.

Ms. Denyse Boxell
Project Leader
Safe Kids Canada

Denyse Boxell is the Project Leader for Safe Kids Canada's annual national Safe Kids Week campaign. Her past work experience includes over 15 years of work experience in the field of injury prevention with both SMARTRISK and the Canadian Red Cross where she focused on drowning prevention research, on social policy issues, as well as project/event management and injury prevention program co-ordination. Denyse obtained her Bachelors of Arts in Psychology at Laurentian University/L'Université Laurentienne in Sudbury.

Ms. Lorraine Davies
Director, First Aid & Water Safety
Injury Prevention Department
Canadian Red Cross, Ontario Zone

Lorraine began her career as a Water Safety Instructor/Lifeguard with the City of Burlington. After receiving a Bachelor of Physical Education degree from McMaster University, Lorraine accepted a position as Aquatic Coordinator with the City of Brantford and then the City of Kitchener. In 1986 Lorraine joined the Canadian Red Cross as a First Aid Coordinator with a mandate to expand the reach of the program to reduce workplace injuries in Hamilton. Over the next 25 years, Lorraine went on to hold various positions such as Water Safety Regional Coordinator (1990), eventually becoming the Provincial Manager of Safety Services (1996). Taking a four year hiatus as a Regional Director in West Central Ontario, Lorraine returned to the program in 2003 as the Provincial Director, First Aid/Water Safety. Lorraine is a passionate advocate of the importance of children learning swimming skills and water safety knowledge to ensure their safety in, on and around water.

Ms. Pamela Fuselli
Executive Director
Safe Kids Canada

Pamela was appointed Executive Director of Safe Kids Canada in 2008. She has built strategic partnerships with key stakeholders at the local, provincial, territorial and national levels, as well as with corporate partners and industry. Pamela serves on a number of national injury prevention committees, including: the Public Health Agency's Public Health Network Injury Prevention & Control Task Group, Canadian Collaborative Centres for Injury Prevention, Canadian Paediatric Society Injury Prevention Committee and the Canadian Injury Prevention and Safety Conference Steering Committee. Pamela has worked in the unintentional injury prevention sector for ten years and holds degrees in Psychology (BSc), Health Administration (BHA) and Creativity & Change Leadership (MS).

Mr. Henry Garcia
Team Lead
Ministry of Health and Long Term Care

Henry joined the Ministry of Health and Long-Term Care in January 2011, as Team Lead for Water and Environments, where he leads a team of professionals responsible for provincial portfolios in Safe Water, Recreational Water and Environmental Health programs.

After 37 year of experience in the field of public and environmental health, Henry, prior to joining the ministry, was the Director of Health Protection and Investigation with Waterloo Public Health and prior to this he was the Director of Environmental Health with the Leeds Grenville and Lanark District Health Unit. He started his carrier as a public health inspector with Halton Region Public Health.

Dr. Christopher Parshuram, MB. ChB D.Phil. FRACP
Department of Critical Care Medicine
Hospital for Sick Children

Dr. Parshuram graduated from Otago University of New Zealand (1990) with prizes in medicine and pharmacology. Following a residency in paediatrics at the Royal Children's Hospital in Melbourne, Australia, he completed specialist fellowship training in paediatric critical care medicine and clinical pharmacology. His Doctoral Studies in Clinical Epidemiology at the University of Toronto were supervised by Drs. Andreas Laupacis and Ross Baker.

Dr. Parshuram joined the Department of Critical Care Medicine at the Hospital for Sick Children in 2003, and he is a scientist in and interim Head of the Child Health Evaluative Sciences Program of the SickKids Research Institute. He has expertise in cardiac arrest prevention, medication safety, and fatigue in healthcare workers. Dr. Parshuram has received peer-reviewed research funding from the Heart and Stroke Foundation of Canada, the Society of Critical Care Medicine, and the Canadian Institutes of Health Research.

Dr. Parshuram was the international member of the US Institute of Medicine's Committee on Optimizing Resident Duty Hours, is chair of the SickKids Foundation National Grants Review Committee, and chair of the CIHR Health Services 1 Panel. He is recipient of an Early Researcher Award from the Ontario Ministry of Research and Innovation and a Career Scientist award from the Ontario Ministry of Health and Long-Term Care.

Water Safety is Everyone's Responsibility!



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