



Ontario Non-Fatal Drowning Report

Prepared for the Lifesaving Society Ontario by the Drowning Prevention Research Centre Canada

Drowning is often thought of as fatal, when in fact there are many more non-fatal drownings than drowning deaths each year. People who experience a non-fatal drowning may face serious health issues as a result, often for the rest of their lives. For every fatal drowning in Ontario, there are nearly four non-fatal drownings that are serious enough to require an emergency department visit.

152

Average number of drowning deaths each year*

98

Average hospitalizations due to non-fatal drowning each year

555

Average emergency department visits due to non-fatal drowning each year

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

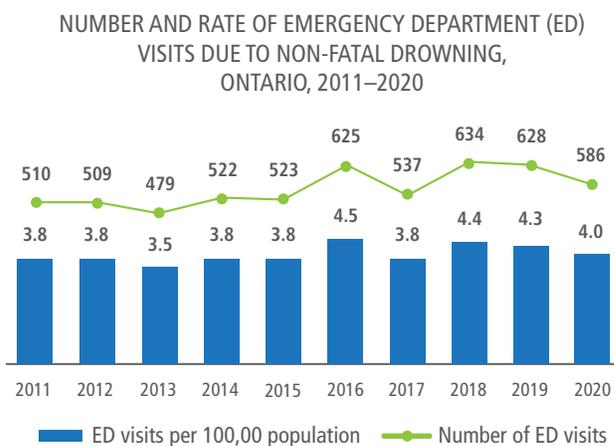
Drowning can be fatal or non-fatal. In non-fatal drowning, the respiratory impairment is stopped before death. Non-fatal drowning can result in a range of outcomes, from no injuries to serious injuries or permanent disability.

This report is a first step towards describing the true burden of drowning in Ontario by focusing on non-fatal drowning. The data were made available by Public Health Ontario, based on the Canadian Institute for Health Information (CIHI) National Ambulatory Care Reporting System (NACRS).^{1,2}

The full burden of non-fatal drowning is unknown. This report does not include non-fatal drowning incidents where the person was treated at the scene of the drowning and did not seek further medical attention, those who attended a family physician or clinic, and those who did not receive any treatment at all. If data from these sources were available, the number of non-fatal drownings included in this report would be even higher.

Emergency department visits and hospitalizations due to non-fatal drowning

During 2011–2020, there were 5,553 emergency department visits due to non-fatal drowning, an average of 555 per year. The rate† of visits decreased to 4.0 per 100,000 population in 2020 (586 visits), compared to 4.3 per 100,000 in 2019 (628 visits). This could reflect impacts of the Covid-19 pandemic that resulted in decreased emergency department visits for non-Covid related emergencies in 2020, or unrelated variability in annual drowning rates.

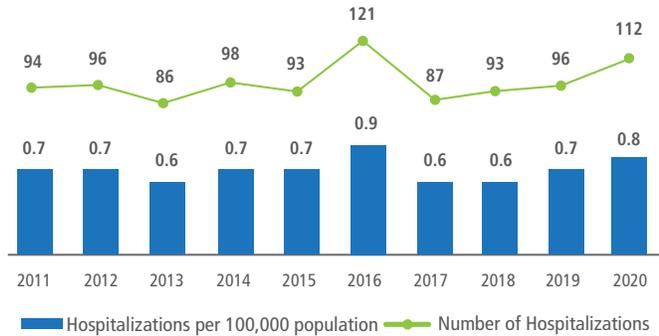


*Average number of water-related fatalities per year where drowning was a primary or contributory cause of death in Ontario, during the most recent 10 years for which data were available, 2008–2017.

† All rates in this report are crude annual rates per 100,000 population.

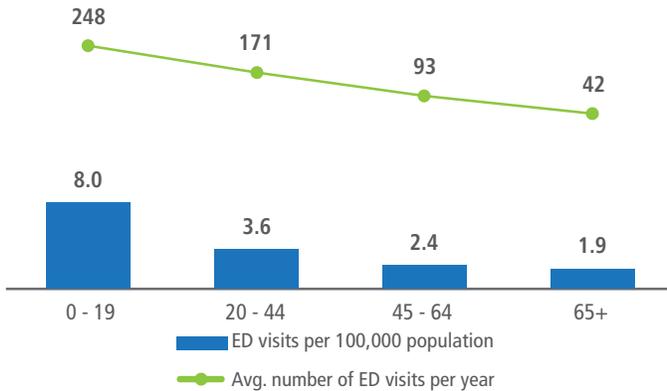
During 2011–2020, 976 patients were hospitalized after being transferred from an emergency department due to non-fatal drowning, an average of 98 per year. Although emergency department visits for non-fatal drowning were lower in 2020 than 2019, the number (112) and rate (0.8) of hospitalizations due to non-fatal drowning in 2020 were the highest in four years, indicating that emergency department visits due to non-fatal drowning in 2020 may have been more likely to be severe cases.

NUMBER AND RATE OF HOSPITALIZATIONS DUE TO NON-FATAL DROWNING, ONTARIO, 2011–2020



When compared to fatal drowning, there were 3.6 times the number of non-fatal drowning incidents serious enough to require an emergency department visit.

NUMBER AND RATE OF EMERGENCY DEPARTMENT (ED) VISITS DUE TO NON-FATAL DROWNING BY AGE GROUP, ONTARIO, 2011–2020



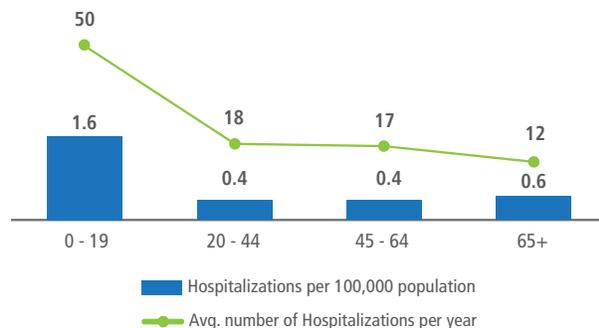
Age

Children and youth (aged less than 20 years) had the highest number and rate of emergency department visits for non-fatal drowning (8.0 per 100,000). During 2011–2020, 2,484 0–19-year-olds attended an emergency department for non-fatal drowning, an average of 248 per year. Rates declined as age group increased, ranging from 3.6 per 100,000 among 20–44-year-olds to 1.9 per 100,000 for older adults aged 65+ years.

The number and rate of hospitalizations for non-fatal drowning were also highest among children and youth; 501 0–19-year-olds were hospitalized due to non-fatal drowning during 2011–2020, an average of 50 per year.

By comparison, the highest fatal drowning rates in Ontario occur among older adults 65+ (1.9 per 100,000 population) followed by 50–64-year-olds (1.3 per 100,000).³

NUMBER AND RATE OF HOSPITALIZATIONS DUE TO NON-FATAL DROWNING BY AGE GROUP, ONTARIO, 2011–2020



Sex

Approximately 6 out of 10 non-fatal drownings occurred among males. By comparison, almost 8 out of 10 fatal drownings in Ontario occur among males.³ Less than two thirds (62%) of emergency department visits due to non-fatal drowning during 2011–2020 occurred among males, accounting for an average of 347 visits per year (5.0 per 100,000 population). The rate of emergency department visits due to non-fatal drowning for females was 3.0 per 100,000, with an average of 209 visits per year. Similarly, 65% of hospitalizations for non-fatal drowning were male, contributing to an average of 64 hospitalizations per year (0.9 per 100,000). The rate of hospitalizations due to non-fatal drowning among females was 0.5 per 100,000, with an average of 34 per year.

Non-fatal



Fatal



Males accounted for approximately two-thirds of non-fatal drownings, this differs from fatal drowning where males account for close to 80%.

More work is needed. This report provides a brief overview of non-fatal drowning in Ontario based on emergency department and hospitalization data. Further research is needed to estimate the full burden of non-fatal drowning, including incidents that are not captured in these sources; and to obtain more details about the circumstances of non-fatal drowning incidents, and how and why these differ from fatal drowning. The Drowning Prevention Research Centre Canada acknowledges that fatal drowning is only one part of the problem and is building on its work in fatal drowning research and prevention to conduct more detailed research into non-fatal drowning and its impacts.

Did you know?

The Drowning Prevention Research Centre Canada is working with global experts on a categorization framework for non-fatal drowning. This will enable more comprehensive reporting on non-fatal drowning and contribute to a better understanding of the full burden of drowning. With this framework, the severity of non-fatal drowning can be categorized based on the degree of respiratory impairment, and morbidity (decline from previous functional capacity) caused by the non-fatal drowning. The following draft framework is currently being tested and refined.

Draft Non-Fatal Drowning Categorization Framework (NDCF)⁴

Severity of respiratory impairment after the drowning process stopped.		
Mild impairment	Moderate impairment	Severe impairment
<ul style="list-style-type: none"> Involuntary distressed coughing AND Fully alert 	<ul style="list-style-type: none"> Sustained difficulty breathing AND/OR Disoriented but conscious 	<ul style="list-style-type: none"> Not breathing AND/OR Unconscious
Morbidity category (based upon any decline from previous functional capacity) at the time of measurement.		
No morbidity	Some morbidity	Severe morbidity
<ul style="list-style-type: none"> No decline 	<ul style="list-style-type: none"> Some decline 	<ul style="list-style-type: none"> Severe decline

Summary

- Drowning can be fatal or non-fatal; non-fatal drowning can result in serious lifelong disability.
- Between January 1, 2011 and December 31, 2020 there were 5,553 emergency department visits and 976 hospitalizations due to non-fatal drowning.
- There were fewer emergency department visits due to non-fatal drowning in 2020 compared to 2019; however, 2020 saw the highest number of hospitalizations for non-fatal drowning in the last four years.
- Non-fatal drowning rates are highest among children and youth; this differs from fatal drowning where rates are highest among older people.
- Males accounted for approximately two-thirds of non-fatal drownings; this differs from fatal drowning where males account for close to 80%.

For every one fatal drowning, there are nearly four non-fatal drownings that require a visit to an emergency department. Non-fatal drowning is a serious problem in Ontario that can have lifelong consequences for individuals and families.



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References

¹ Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Emergency Department Visits for injuries Snapshot: Emergency department visits for injuries due to near-drowning or submersion. Toronto, ON: Queen's Printer for Ontario; c2022 [updated 2022 Jan 29; cited 2022 May]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/injuries-data/injury-er-visits>

² Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: Hospitalizations for injuries Snapshot: Hospitalizations for injuries due to near-drowning or submersion. Toronto, ON: Queen's Printer for Ontario; c2022 [updated 2022 Jan 29; cited 2022 May]. Available from: <https://www.publichealthontario.ca/en/data-and-analysis/injuries-data/injury-hospitalization>

³ Lifesaving Society. Ontario Drowning Report, 2020 Edition. Toronto, ON: Drowning Prevention Research Center Canada; c2020. Available from: https://www.lifesavingsociety.com/media/327287/lifesaving_drowning-2020_on_en_2020-06-13.pdf

⁴ Beerman, S. Bierens, J.J.L.M., Clemens, T., Meddings, D., Rahman, A., Szpilman, D. Clarification and Categorization of Non-fatal Drowning: A draft Position Statement; c2019. Available from: https://www.who.int/docs/default-source/documents/drowning/non-fatal-drowning-categorization.pdf?sfvrsn=44d18cc1_2&download=true