

PUBLIC HEALTH AGENCY *of* CANADA
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Emergency Department Surveillance

**Injuries Associated With
Water Tubing and Water Skiing**

The Canadian Hospitals Injury Reporting and Prevention Program
(CHIRPP), All ages, 1990-2008

**Injury and Child Maltreatment Section
Health Surveillance and Epidemiology Division**



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Background and Methods

- Water tubing and water skiing are popular summertime activities in Canada ^{1,2}
- Water tubing (or “Sea biscuit” riding) is somewhat analogous to water skiing but with much less control by the rider ³
- Both activities carry the small, but potentially devastating, hazard of propeller injuries ^{5,6}
- The CHIRPP emergency department injury surveillance database was searched for cases involving water tubing and water skiing (1990-2008, all ages). All identified cases were reviewed manually for relevance
 - *Water tubing cases were identified using the CHIRPP factor code for water tubing (1182) and the following text strings (including minor variations and combinations): “WATER TUB”, “SEA BISCUIT”, “PULLED BEHIND BOAT”, “TUBING”*
 - *Water skiing cases were identified using the CHIRPP factor code for water skiing (1181) and the following text strings (including minor variations and combinations): “WATER SKI”, “SKI NAUTIQUE”, “WAKEBOARD”*

Overview

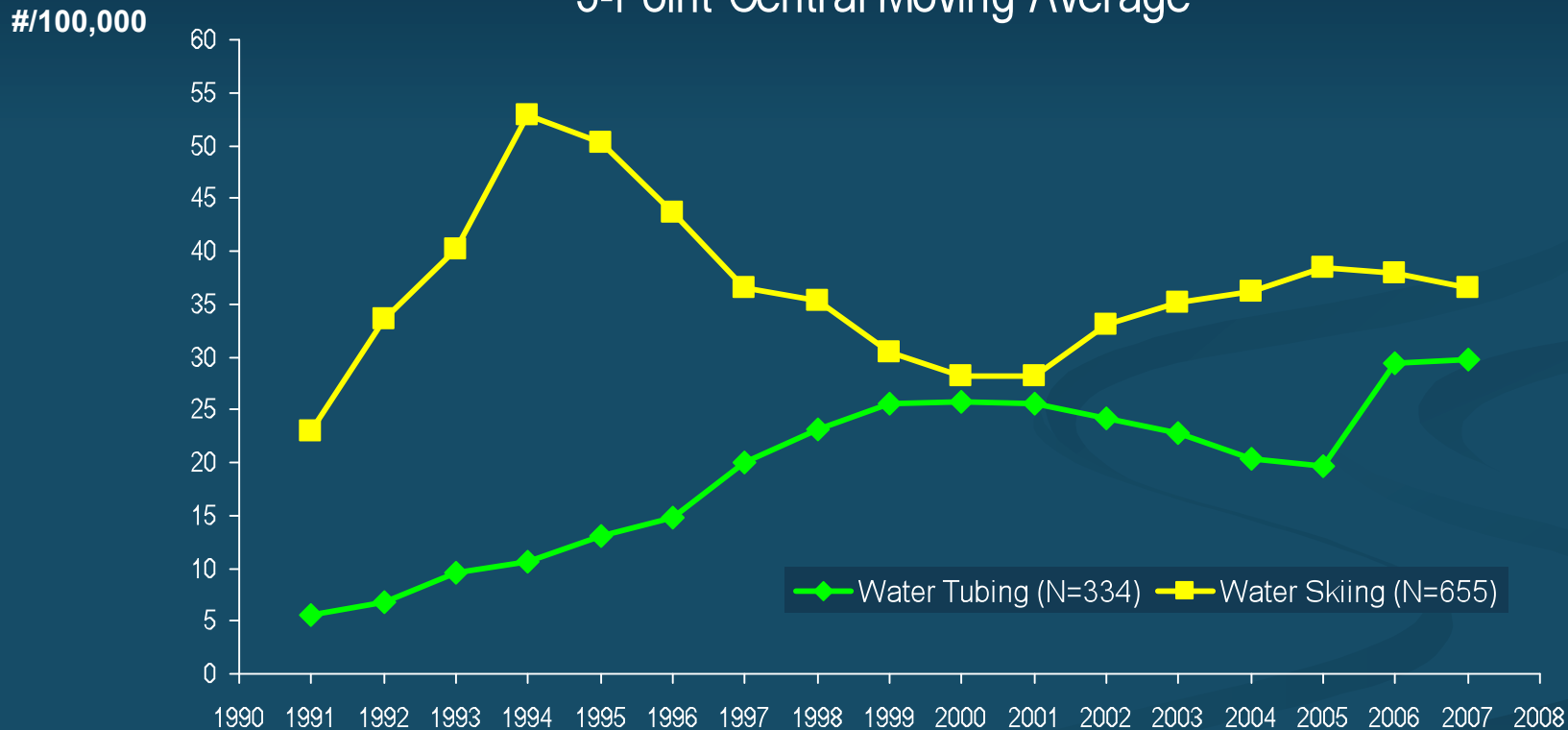
- Figure 1 shows the adjusted proportion by year, as a moving average. Figure 2 depicts the age distribution and Table 1 displays the proportions of various injury characteristics
 - water skiing-related injuries were twice as frequent as water tubing injuries
 - patients injured while water tubing were younger (median age 15.5 years versus 23.6 for water skiing)
 - the sex distribution for water tubing was relatively equal whereas water skiing-related injuries involved a preponderance of males
 - water tubing involved more collisions with fixed structures, shorelines and watercraft
 - for cases where safety device use was reported (for both activities), PFD use was high (~80%) whereas helmet use was < 1%

Other results

- Traumatic amputations
 - n=2 related to water skiing – both to the fingers, caused by the tow line
 - n=1 related to water tubing - propeller strike, at the level of the upper arm
- Propeller strikes
 - n=4 related to water skiing – 3 lacerations (thigh, knee, foot); 1 fracture (tibia/fibula)
 - n=5 related to water tubing - 2 lacerations (hip, shin); 1 fracture (ankle); 1 amputation (upper arm); 1 intracranial
- Internal injuries
 - n=9 related to water skiing – 7 tympanic membrane (ear drum); 1 fractured larynx; 1 thoracic
 - n=5 related to water tubing - 3 tympanic membrane; 1 thoracic; 1 abdominal
- Of the 393 water skiers who fell, 19.3% were injured by their own skis
- Injuries to spotters (not included in main analysis)
 - n=8 related to water skiing, most were struck by broken tow line/handle, one admitted to hospital
 - n=4 related to water tubing, all struck by broken tow line/handle, 2 admitted to hospital

Emergency Department Surveillance Injuries associated with water tubing and water skiing CHIRPP, 1990-2008*, all ages

Proportion of cases per 100,000 CHIRPP cases in the given year
3-Point Central Moving Average



* 2008 is about 80% complete. Extraction date: Jan 15, 2010

Figure 1. Emergency department presentations for injuries due to water tubing and water skiing, annual trend represented by a 3-point central moving average, CHIRPP, 1990-2008, all ages

Emergency Department Surveillance Injuries associated with water tubing and water skiing CHIRPP, 1990-2008, all ages

Proportion of cases per 100,000 CHIRPP cases in the given age group

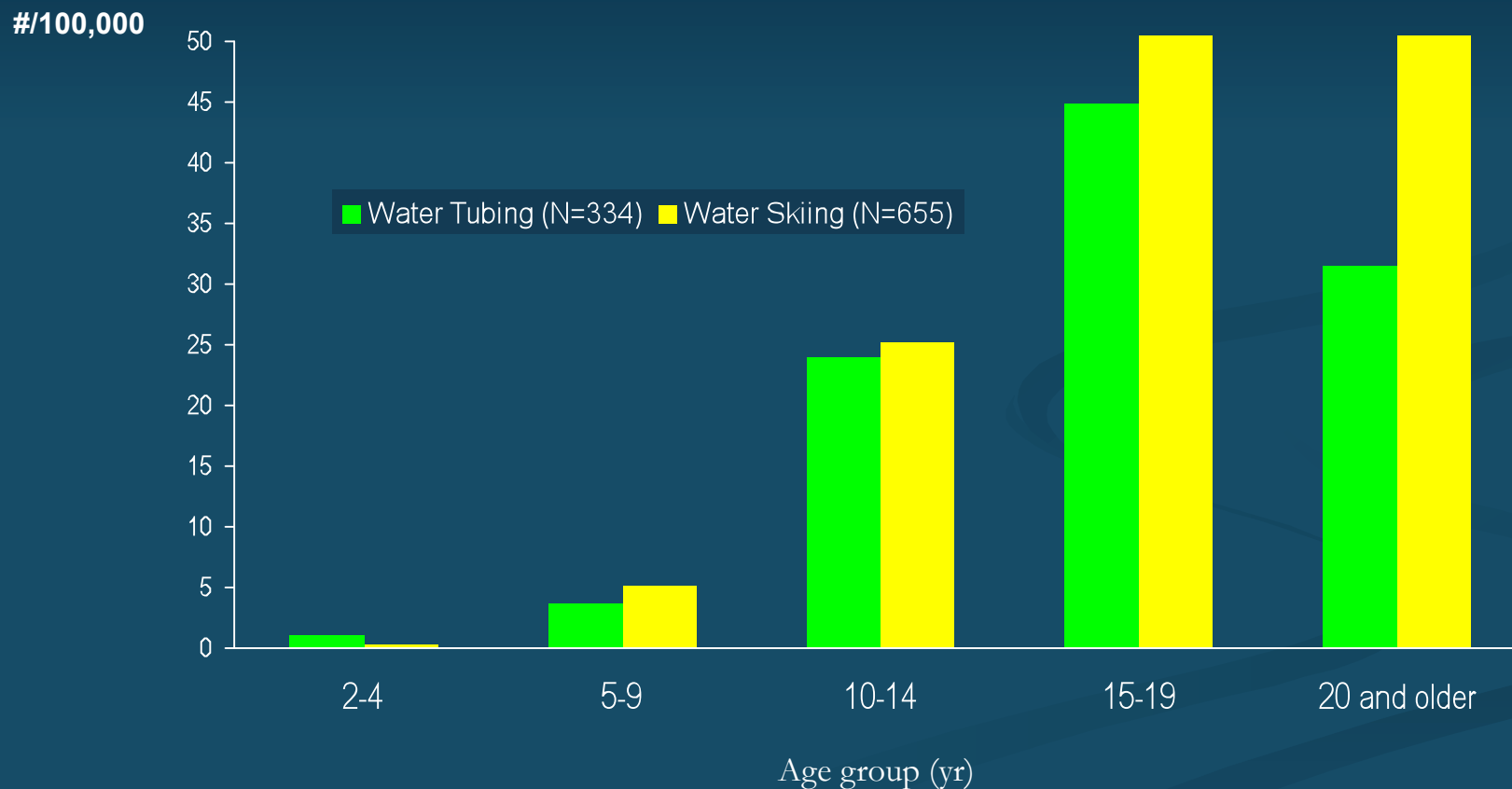


Figure 2. Age distribution of patients presenting to emergency departments for injuries related to water tubing and water skiing, CHIRPP, 1990-2008

Table 1. Emergency department surveillance of presentations due to injuries associated with water tubing and water skiing, CHIRPP database, 1990-2008, all ages

Characteristic	Activity	
	Water Tubing ^A	Water Skiing ^B
N	334	655
Median age (yr)	15.5	23.6
IQR ³	12.9 - 22.1	15.2 – 34.8
% males	49.7	72.1
% CHI ⁴	12.6	4.7
% Fractures ⁵	23.1	17.4
% Internal injury ⁶	1.5	1.4
% Traumatic amputation ⁷	0.3	0.3
% Admitted ⁸	8.7	9.0
% Eject/Fall ⁹	48.5	60.0
% Strike ¹⁰	11.7	4.0
Tow line/handle ¹¹	12.0	11.9
% PFD, helmet use ¹²	84.4, 0.6	79.5, 0.2
% reporting (n)	47.9 (160)	44.0 (288)

^A Being towed in water on an inflatable tube by a powered watercraft (motorboat or jet-ski); ^B Includes wakeboarding ; ³ Interquartile range: 25th to 75th percentiles

⁴ Percentage of all cases where the primary injury was a Closed Head Injury (minor closed head injury, concussion, intracranial); overall in the CHIRPP database, 7.7% of all primary injuries are CHIs

⁵ Percentage of all cases where the primary injury was a fracture; overall in the CHIRPP database, 19.9% of all primary injuries are fractures

⁶ Percentage of all cases where the primary injury was an injury to an internal organ; overall in the CHIRPP database, 0.3% of all primary injuries were internal

⁷ Percentage of all cases where the primary injury was a traumatic amputation; overall in the CHIRPP database, 0.2% of all primary injuries were traumatic amputations

⁸ Percentage of all cases where the patient was admitted to hospital; overall in CHIRPP, 6.5% of all patients were admitted to hospital

⁹ Percentage of all cases where the main injury mechanism was an ejection (water tubing) or a fall (water skiing)

¹⁰ Percentage of all cases where the main injury mechanism was striking an object or the shoreline, including **propeller strikes**

¹¹ Percentage of all cases where the main injury mechanism was getting caught in the tow line or handle

¹² Percentage of patients wearing a Personal Flotation Device (PFD) and helmet (where safety device status was reported - % reporting)

References

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