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NISU Briefing

Drowning and other injuries related to aquatic activities at ages 55 years and older in Australia

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Key findings

Drowning deaths

- About 100 people aged 55 years or older died annually by drowning each year in Australia over the period 1997 to 2005, equating to 28% of all drowning deaths at all ages.
- Males are more likely to die by drowning than females in all age categories over 55 years.
- Of the drowning deaths, an annual average of 62 were unintentional (excluding those associated with water transport). On average, 24 deaths per year were suicides. Smaller numbers each year are of undetermined intent and homicides.
- The annual average of 75 accidental drowning deaths (which includes those associated with water transport and other unintentional deaths) in this age group per annum comprises deaths in natural bodies of water ($n = 26$), swimming pools ($n = 6$), bath-tubs ($n = 5$), events related to water transport ($n = 11$), storms and floods ($n = 1$) and miscellaneous and unspecified cases ($n = 26$).

Drowning hospitalisations

- Over the period 1999–00 to 2003–04 there was an annual average of 75 hospitalisations in Australia due to non-fatal drowning among people aged 55 years and over. This equated to 12% of all non-fatal drowning hospitalisations at all ages.
- About one-third of these cases have characteristics that suggest that they had severe and often long-lasting outcomes.
- Falls were a common mechanism of injury for people aged 55 years and older hospitalised due to events at aquatic places. Falls accounted for 40% of all cases occurring at places identifiable as aquatic, 67% of those at swimming centres and 57% at beaches.
- Hence, while prevention of drowning remains the primary issue for aquatic safety, attention to the prevention of other types of injuries that occur in aquatic settings is also warranted.

Executive Summary

About 100 people aged 55 years or older die by drowning each year in Australia.

About another 75 per year are admitted to hospital following non-fatal drowning. About one-third of these cases have characteristics that suggest that they were severe.

Of the drowning deaths, about 72% are unintentional, 24% are suicides, 3% are of undetermined intent and 1% are homicides.

The annual average of 75 unintentional drowning deaths per annum in this age group comprises deaths in natural bodies of water ($n = 26$), swimming pools ($n = 6$), bath-tubs ($n = 5$), events related to water transport ($n = 11$), storms and floods ($n = 1$) and miscellaneous and unspecified cases ($n = 26$).

Drowning accounts for only a small proportion of the hospitalised cases recorded as occurring at places and during activities that can be regarded as 'aquatic'. This is so for persons aged 55 years and older and for persons of all ages. For persons aged 55 years and older, the annual average count of cases at aquatic places was 788, of which 52 (7%) involved non-fatal drowning. Equivalent annual average case counts for Activities identifiable as aquatic were 534 (total) and 57 (non-fatal drowning, 11%).

Falls were a common mechanism of injury for people aged 55 years and older hospitalised due to events at aquatic places. Falls accounted for 40% of all cases occurring at places identifiable as aquatic, 67% of those at swimming centres and 57% of those at beaches.

Hence, while prevention of drowning remains the primary issue for aquatic safety (because of the potential for fatalities and serious persisting morbidity) attention to the prevention of other types of injuries that occur in aquatic settings is also warranted.

This Briefing is based on a preliminary investigation of this topic. Further investigation is feasible on the basis of the data sources presently available.

Introduction

This briefing gives a statistical overview of drowning and other injury related to aquatic activities among people in Australia aged 55 years and older.

Terms and concepts

Drowning and near drowning

Increasingly, the term 'drowning' is used to refer to 'the process of experiencing respiratory impairment from submersion/immersion in liquid' (van Beeck et al. 2005). Framed this way, drowning can have various outcomes: death, survival with lasting consequences of greater or lesser severity, survival with transient morbidity or survival with no detectable consequences.

'Near drowning' is less well defined. It can refer to survived episodes of respiratory impairment from submersion/immersion in liquid. It can also refer to episodes in which a person nearly, but not quite, experiences respiratory impairment from submersion/immersion in liquid (e.g. a person who becomes exhausted while swimming, but manages to reach a shore, perhaps with assistance).

This briefing provides data on fatal drowning in Australia and on episodes of non-fatal drowning that resulted in admission to a hospital.

Water (or aquatic) safety

This concept typically includes safety from drowning and often includes safety from other risks that may be experienced in relation to water or water-based activities. The range of risks and activities included can vary considerably. Topics that might or might not be included include:

- work-related activities (e.g. maritime sector; commercial fishing).
- risks that arise in facilities providing aquatic sport and recreation activities (e.g. falls at public swimming pool facilities) or at beaches, etc.
- Intentional self harm by drowning.

This briefing focuses on drowning. The readily available data sources provide some potential to analyse types of water-related harm other than drowning. We have provided summary information on drowning and other conditions among hospitalised injuries reported as occurring at places where aquatic activities occur (e.g. swimming pools) and while engaged in aquatic sport and recreation, and among those assigned external cause codes commonly associated with drowning.

Drowning at ages 55 years and older in Australia

Details of data selection criteria used for this briefing are given in the Data Issues section, at the end of the document. Annual drowning case numbers are fairly low, and are subject to statistical fluctuations. In order to reduce this, most of the results presented here are for several years, and these case counts are presented as annual average numbers. Results are also presented as annual average population-based rates (per 100,000 population).

Deaths by drowning

For reasons related to the short time available to prepare this briefing, two different reporting periods have been used for parts of this section: the nine calendar years 1997 to 2005; and the five years to 30 June from 1999–00 to 2003–04.

Over the period 1999–00 to 2003–04 there was an annual average of 103 drowning deaths among people aged 55 years and over, accounting for 28% of all drowning deaths at all ages (Table 1). This is equivalent to an age-adjusted rate of 2.4 deaths per 100,000 population per year.

Male cases were more numerous than female cases in each of the age groups shown in Table 1. Rates rose with age for males from age group 65–69 years. Rates did not show a clear pattern of variation with age for females.

Table 1: Annual average counts and age specific rates of total drowning deaths by age (55 years and older) and sex, Australia 1999–00 to 2003–04

	Males		Females		Persons	
	Count	Rate	Count	Rate	Count	Rate
55–59	17	3.3	6	1.2	24	2.2
60–64	13	3.1	7	1.6	20	2.4
65–69	10	2.9	4	1.0	14	1.9
70–74	10	3.3	5	1.4	15	2.3
75–79	10	4.3	7	2.3	17	3.2
80–84	6	4.2	2	1.0	8	2.2
85+	4	5.3	2	1.1	6	2.4
Total	71		32		103	

Due to rounding, some totals of annual average counts are not exactly equal to the sum of the tabulated values.

Table 1 includes all deaths at ages 55 years and older that are identifiable as involving drowning. Table 2 presents deaths data grouped according to types of circumstance of occurrence (table columns) and year of death registration (rows).

This table has been specified in much the same way as Table 1 in the Older Australians Aquatic Safety (OAAS) report.¹ The main difference is that Table 2 in this Briefing is restricted to the age group 55 years and older (the subject of the OAAS report). A second difference is that we present data for the period 1997 to 2005, while the similar table in OAAS covers 1992 to 2002 (Franklin & Mathieu 2006).

Table 2: Drowning deaths registered in Australia 1997 to 2005 by underlying cause of death (UCoD) and year of death registration (number of deaths)

Year	Accidental drowning W65-W74	Water transport V90, V92	Suicide X71	Homicide X92	Undetermined intent Y21	Storms & floods X37, X38	Other UCoD	Total identifiable drowning deaths
1997	49	11	35	*	*	*	7	105
1998	56	11	30	*	*	*	7	108
1999	60	15	13	*	*	*	12	102
2000	50	10	29	*	*	*	14	105
2001	53	7	32	*	*	*	8	106
2002	50	12	19	*	5	*	15	101
2003	53	21	20	*	5	*	12	113
2004	45	10	21	*	8	*	11	96
2005	53	*	19	*	*	*	11	90
9 year total	469	101	218	5	30	6	97	926

* = annual count of 1-4.

The annual number of deaths shown in Table 2 was a little over 100 for the first six years shown, higher in 2003 and lower in the last two years. We caution against interpreting the lower numbers for recent years as indicating a true decline in drowning deaths at ages 55 and older. There are reasons to believe that some under-counting and misclassification of external causes deaths has occurred in recent years, including drowning deaths. We are undertaking investigations designed to measure this problem and to enable provision of corrected values. Based on work to date, we think that a likely impact on this table is assignment of some suicide cases to 'accidental drowning'. The ABS (which provides the statistics) is undertaking changes designed to avoid the problem for future data years. Pending the completion of this work, we advise caution in interpreting the data.

Just over half (51%) of the drowning deaths at ages 55 shown in Table 2 are in the column headed 'Accidental drowning'. This is a widely used category, but not very informative (we used it here for comparison with Table 1 in the OAAS report). First,

¹ We also produced a table similar to Table 2 for all ages, and compared the case counts with those in Table 1 of the OAAS report for the six years that are in both tables (i.e. 1997 to 2002). Most values are identical. Some differences are evident for 1997 and 1998. This may be due to the fact that the ABS produced two versions of the data for these years, one coded according to ICD-9 and the other according to ICD-10. We used the latter; it is possible that the authors of the table in the OAAS report used the former. There are differences, mostly small, for all values in the Other Underlying Cause column (the largest difference is for the 1997 value in this column: OAAS: 0; our value: 37). These might be related to a difference in inclusion criteria that we were obliged to use in order to extend the table to years after the ABS ceased providing the 'drowning flag' data item, in 2002: we used the presence of code T75.1 to identify deaths as being by drowning (Franklin & Mathieu 2006).

quite a lot of unintentional drowning deaths are not included in it (nb those occurring in the context of water transport). Second, the title does not give much idea of what is included. Table 3 provides a summary of this group. Just over half of the 'Accidental drowning' deaths (that is, about one quarter of all drowning death at ages 55 and older) occurred while in or following a fall into a natural body of water (e.g. a lake, the open sea, a river). Drowning in these types of place accounted for two-thirds of all 'Accidental drowning' deaths at ages 55–59. This proportion tended to decline with age, to 30% of 'Accidental drowning' deaths at ages 85 and older.

Twelve per cent of the 'Accidental drowning' cases occurred in a swimming pool. Rates of drowning in swimming pools are much higher for toddlers and young children (ages 1–3 or 4 years) than at any other age.

About 9% of the 'Accidental drowning' cases occurred in a bath-tub. Swimming competence is unlikely to influence the risk of drowning in this setting.

Table 3: 'Accidental Drowning deaths'¹ registered in Australia 1997 to 2005 by underlying cause of death and year of death registration (annual average number of deaths)

Age group (years)	Drowning and submersion while in or following a fall into:				Total
	a bath-tub	a swimming pool	a natural body of water	other specified or unspecified circumstance	
55–59	0.7	0.4	6.8	2.4	10.3
60–64	1.2	1.0	5.4	2.4	10.1
65–69	0.4	0.8	3.8	2.6	7.6
70–74	0.8	1.4	3.4	2.2	7.9
75–79	1.0	1.1	4.3	2.1	8.6
80–84	0.2	1.1	1.6	1.0	3.9
85+	0.4	0.4	1.0	1.4	3.3
55+	4.8	6.3	26.4	14.6	52.1

1. Underlying Cause of Death Code = W65–W74

Due to rounding, some totals of annual average counts are not exactly equal to the sum of the tabulated values.

Place and activity at the time of fatal drowning not specified in a large proportion of cases.

Hospitalisation due to non-fatal drowning

This section presents summary data on cases of non-fatal drowning admitted to hospitals in Australia during the period 1999–00 to 2003–04. We have omitted hospitalised drowning cases that ended with death in hospital to reduce multiple counting, since these deaths should be included in the data reported in the previous section.

Over the period 1999–00 to 2003–04 there was an annual average of 75 hospitalisations in Australia due to non-fatal drowning among people aged 55 years and over. This accounted for 12% of non-fatal drowning hospitalisations at all ages. The age-adjusted rate for persons aged 55 years and older was 1.7 hospital separations per 100,000 population per year.

Table 4: Total hospitalised non-fatal drowning by age and sex, Australia 1999–00 to 2003–04 (Annual average case counts and age specific rates)

	Males		Females		Persons	
	Count	Rate	Count	Rate	Count	Rate
55–59	11	2.1	6	1.2	18	1.7
60–64	12	2.9	4	1.0	16	2.0
65–69	9	2.6	4	1.2	13	1.9
70–74	8	2.7	3	1.0	11	1.8
75–79	5	2.2	3	1.0	8	1.5
80–84	2	1.5	1	0.7	3	1.0
85+	3	3.3	2	1.2	5	1.9
Total	50		25		75	

Due to rounding, some totals of annual average counts are not exactly equal to the sum of the tabulated values.

Non-fatal drowning at ages 55 years and older is thus an uncommon reason for hospital admission in Australia.

The consequences of non-fatal drowning range from trivial (e.g. coughing and spluttering for a short while) to devastating (e.g. survival with severe hypoxic brain damage). The hospital morbidity data collection does not provide a direct way to identify the latter type of case. However, it is possible to identify cases that have characteristics that suggest the likelihood of serious and long-lasting consequences of non-fatal drowning (see Data Issues). Table 5 shows the same cases as Table 4, divided according to this criterion. Overall, 36% of the cases satisfied the criteria for being severe (males 39%; females 28%).

Of the severe cases, 41% occurred in a natural body of water, 15% in a swimming pool, 15% in a water transport setting and 30% in other contexts. The rate of severe cases appears to have risen for males, though not for females (Figure 1).

Table 5: Hospitalised non-fatal drowning by severity, Australia 1999–00 to 2003–04

Indicator	Hospitalisations (severe)			Hospitalisations (not severe)		
	Males	Females	Persons	Males	Females	Persons
Cases (annual average number)	20	7	27	31	18	48
Percentage of all drowning deaths	20%	18%	19%	10%	10%	10%
Crude rate / 100,000 population	1.0	0.3	0.6	1.5	0.8	1.1
Adj rate (direct)	1.0	0.3	0.6	1.5	0.8	1.1
Rate ratio*	1.58	0.49		1.34	0.70	

* Rate ratios are standardised rate for male or female / standardised rate for persons.

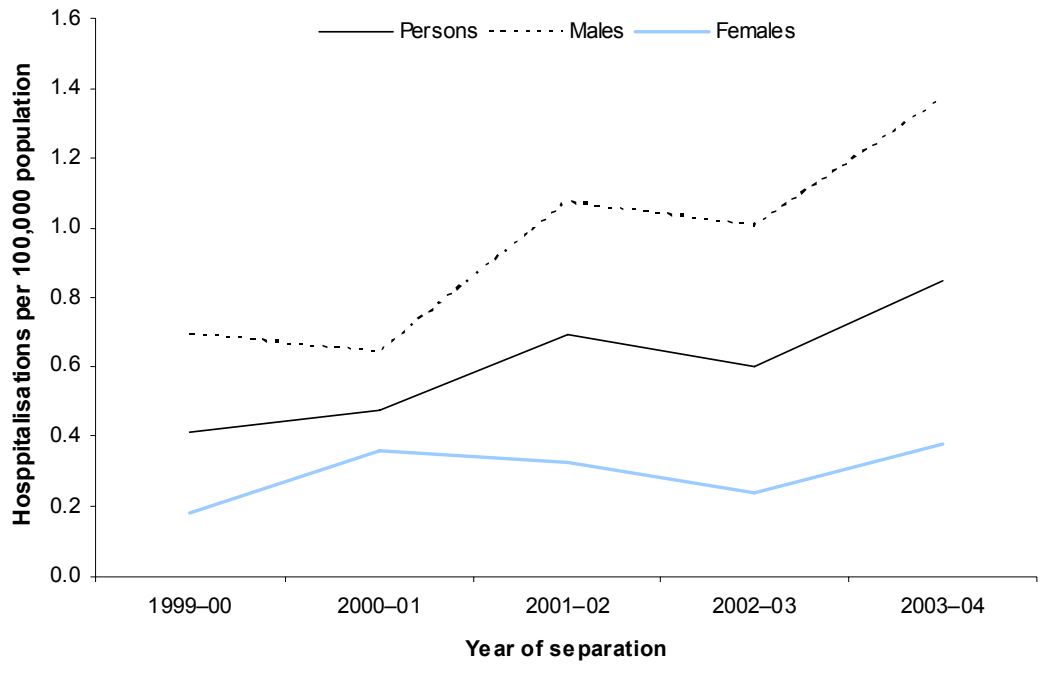


Figure 1: Hospitalisations due to total submersions (severe cases), Australia 1999-00 to 2003-04: Age standardised rates

Drowning and other injury related to aquatic activities and places

‘Aquatic’ can be defined variously, in terms of locations (such as swimming pools and beaches), activities (such as swimming, fishing or scuba diving), and in other ways. The National Hospital Morbidity Database used for this Briefing enables identification of some ‘aquatic’ places and activities, and external causes of injury.

The aspects of the ICD-10-AM classifications of place and activity used for this section were introduced for cases that left hospital from 1 July 2002, which restricts the period that can be analysed.

Note that the following provides three ways of looking at the same set of data. Many of the cases that occurred at ‘aquatic places’ (Table 6) also occurred during ‘aquatic activities’ (Table 7) and were assigned ‘aquatic’ external cause codes (Table 8).

Aquatic places of occurrence

Five types of place distinguishable by means of the ICD-10-AM Place sub-classification can be regarded as ‘aquatic’ (Table 6). In only 4% of hospitalised cases recorded as occurring at these places was a diagnosis code for drowning or non-fatal submersion (ICD-10-AM code T75.1) present anywhere in the record. This proportion was only a little higher for the subset of cases where the person was aged 55 years or older (7%) and was highest for persons 55 years or older where the event occurred in an area of still water (e.g. pond, dam, reservoir).

For persons aged 55 years and older, the annual average number of hospitalisations following events at one of these ‘aquatic’ places was 52 cases with a drowning diagnosis code, and 736 records with no drowning diagnosis code.

Table 6: Hospitalised cases recorded as occurring at aquatic places: whether any diagnosis code is drowning (T75.1) by age group and places of occurrence, Australia 2002–03 to 2005–06 (annual average case counts)

Place of occurrence	Age 55 and over		All ages	
	Drown	Other	Drown	Other
Swimming centre	3	50	37	297
Area of still water	9	39	28	320
Stream of water	5	85	24	690
Large area of water	25	269	88	2,048
Beach	11	294	60	1,813

For people aged 55 years and older, more than half of the hospitalised non-drowning injuries sustained at aquatic places were fractures (38%), open wounds (9%) or dislocations (5%). The most frequent specific type of fracture in this group (3.9%) was Colles fracture of the wrist (S52.51), typically the result of a fall onto outstretched hands.

The most common specific diagnosis code for the all-ages group was T70.3 (8.2%), which includes the Bends, and other effects of decompression associated with underwater diving. This was less frequent in the 55 years and older group (2.2%).

Few of the cases with a drowning code were recorded as involving an unintentional fall (ages 55 and older: 2%; all ages: 1%). However, unintentional falls were common among the other hospitalised cases that occurred at aquatic places: ages 55 and older: 43%; all ages: 27%. Among people aged 55 years and older, unintentional falls were reported for the following proportions of cases (drowning or not) at the specified

aquatic places: Swimming centre 67%; Area of still water 39%; Stream of water 48%; Large area of water 15%; Beach 57%; all aquatic places combined 40%.

Aquatic activities when injury occurred

Some of the sport and recreational activity categories introduced with the third edition of ICD-10-AM have an obviously aquatic character. The main ones are ‘Team water sports’, ‘Boating sports’ and ‘Individual water sports’. Case counts for these categories are shown in Table 7, along with the more frequently occurring specific ‘Individual water sports’ categories.

Table 7: Hospitalised cases recorded as occurring while the person was engaged in an aquatic activity: whether any diagnosis code is drowning (T75.1) by age group and activity, Australia 2002–03 to 2005–06 (annual average case counts)

Activity	Age 55 and over		All ages	
	Drown	Other	Drown	Other
Team water sports	0	*	*	12
Boating sports	3	58	8	324
Individual water sports	27	210	138	2,445
<i>Diving</i>	0	8	3	133
<i>Scuba diving</i>	2	15	7	363
<i>Snorkelling</i>	4	2	7	16
<i>Surfing/boogie boarding</i>	2	34	12	615
<i>Water skiing</i>	0	6	2	326
<i>Windsurfing</i>	0	*	*	37
<i>Other specified water sport</i>	0	2	*	63
<i>Rock fishing</i>	*	21	2	60
<i>Other specified fishing</i>	1	13	3	60
<i>Unspecified fishing</i>	2	58	3	253
<i>Competitive swimming</i>	*	0	2	5
<i>Recreational swimming</i>	12	30	68	287
<i>Unspecified swimming</i>	4	21	28	225

* = total count for four years of 1–4.

The proportion of cases in these activities that have ‘drowning or non-fatal submersion’ (T75.1) as any diagnosis code varies widely. For example, considering the cases at ages 55 years and older, drowning was a diagnosis for 65% of cases that occurred while snorkelling, 5% of cases while surfing or boogie boarding and 0% of cases while water skiing, wind surfing or diving into water (i.e. not scuba).

For persons aged 55 years and older, the annual average number of hospitalisations related to one of these ‘aquatic’ activities was 57 cases with a drowning diagnosis code, and 477 records with no drowning diagnosis code.

Among the ‘aquatic activity’ cases at ages 55 years and older without a drowning diagnosis code, the profile of Principal Diagnosis codes was similar to that for aquatic places. Fractures (31%), open wounds (11%) and dislocations (7%) accounted for almost half of the cases.

The most frequently occurring specific principal diagnosis code for ‘aquatic activity’ cases was T70.3, *Other effects of decompression and barotrauma* (including the Bends, etc.), both for the 55 years and older group (4.5%) and at all ages (12.9%).

Aquatic external causes of injury

Table 8 includes the hospitalised cases that include any of the ICD-10-AM External Cause of Injury codes that refer to drowning or immersion. (These are the same codes as those used for Table 1 in the OAAS report, though that is for deaths and this is for hospitalised cases.) As in the two tables above, the cases have been tabulated according to age, and according to whether any diagnosis code in the record was ‘drowning or non-fatal submersion’ (T75.1).

Table 8: Hospitalised cases assigned an aquatic external cause category: whether any diagnosis code is drowning (T75.1) by age group and places of occurrence, Australia 2002–03 to 2005–06 (annual average case counts)

External cause	Age 55 and over		All ages	
	Drown	Other	Drown	Other
<i>Water transport accidents:</i>				
Accident to watercraft (V90)	4	2	8	10
Watercraft without accident (V92)	2	12	6	54
<i>Accidental drowning or submersion:</i>				
While in bathtub (W65)	1	*	37	4
Fall into bathtub (W66)	*	*	6	3
While in swimming pool (W67)	18	*	127	5
Fall into swimming pool (W68)	3	2	83	9
While in natural water (W69)	17	2	79	18
Fall into natural water (W70)	7	4	41	33
Other specified (W73)	4	1	28	8
Unspecified (W74)	4	7	41	24
Intentional self-harm (X71)	6	7	16	24
Assault (X92)	0	*	1	2
Undetermined intent (Y21)	0	*	6	3

* = total count for four years of 1–4.

The proportions of these cases that have ‘drowning or non-fatal submersion’ as a diagnosis (62% of the cases at 55 years and older) is much higher than for the cases specified in terms of occurrence at aquatic places (7%) or during aquatic activities (10%), but it is still well under 100%.

Further information from NISU on this topic

Information on fatal drowning is provided in all of NISU’s periodic reports on injury mortality in Australia (e.g. Henley et al. 2007). Similar information on hospitalised non-fatal drowning is provided in NISU’s periodic reports on injury morbidity in Australia (e.g. Berry & Harrison, 2007).

NISU personnel have also produced several reports focusing on drowning:

Stenkamp M 2002. Persisting morbidity among hospitalisations for near drowning, Australia 1997–98.

Driscoll T, Stenkamp M, Harrison JE 2003. Alcohol and water safety.

Kreisfeld R & Henley G 2008. Deaths and hospitalisations due to drowning, Australia 1999–00 to 2003–04.

Data Issues

Case selection criteria

Deaths data

Analysis is based on Cause of Death unit record data files provided by the ABS.

Table 1 and associated text: Cases were included if date of death was 1 July 1999 to 30 June 2004 and any of the following set of ICD-10 codes was present any where in the record (i.e. as Underlying or Multiple cause of death): T75.1, V90, V92, W65–W74, X71, X92 or Y21.

Tables 2 and 3 and associated text: Cases were included if date of death registration was 1 January 1997 to 31 December 2005 and any of the following set of ICD-10 codes was present any where in the record (i.e. as Underlying or Multiple cause of death): T75.1, V90, V92, W65–W74, X71, X92 or Y21.

Note that the authors of the RLSA report made use of the ABS ‘drowning flag’ item, probably for case selection and certainly for part of their analysis. They also presented analysis in terms of the ABS ‘drug and alcohol flag item’. The ABS ceased providing these items in 2002. For the purpose of selecting deaths due to drowning, the closest equivalent to the ‘drowning flag’ available for deaths registered since 2002 is the presence of ICD-10 code T75.1 in a death record. We used this criterion.

Hospitalisations data

Analysis is based on the AIHW National Hospital Morbidity Database unit record data file.

Tables 4 and 5 and associated text:

Deaths in hospital were omitted to exclude double counting of cases between deaths and hospitalisations data. Records of inward transfer from another acute care hospital were omitted to reduce multiple counting of cases involving more than one episode in hospital.

Cases were included if date of separation from hospital was 1 July 1999 to 30 June 2004 and ICD-10 code T75.1 was present in any diagnosis field OR any of the following set of codes was present in any external cause field: V90, V92, W65–W74, X71, X92 or Y21.

Table 5 and associated text:

The method used for this section is described in AIHW: Kreisfeld & Henley (2008). Hospitalised non-fatal drowning cases were designated ‘severe’ if any of the following procedure or diagnosis codes was present in the record:

Procedure	Description
90179, 92035, 92038, 92039, 92040, 92041, 92046, 92047	Airway management
13857, 13879, 13882	Continuous ventilatory support
56001, 56007	Computerised tomography of brain

Diagnosis	Description
G931	Anoxic brain damage, not elsewhere classified
R402	Coma, unspecified
S02.0	Fracture of vault of skull
S02.1	Fracture of base of skull
S06.xx	Intracranial injury
S14.0, S14.1, S14.7	Injury of spinal cord at neck level
S24.0, S24.1, S24.7	Injury of spinal cord at thorax level
S34.0, S34.1, S34.7	Injury of lumbar spinal cord at abdomen, lower back and pelvis level
S12, S22, S32	Fracture of spine at neck, thoracic and lumbar levels
S48, S58, S68, S78, S88, S98	Traumatic amputation of shoulder and upper arm, forearm, wrist and hand, hip and thigh, lower leg, ankle and foot
S04, S44, S54, S64, S74, S84, S94	Injury of cranial nerves, nerves of shoulder and upper arm, forearm, wrist and hand, hip and thigh, lower leg, ankle and foot
S14.2–S14.6	Injury of nerves at neck level
S24.2–S24.6	Injury of nerves at thoracic level
S34.2–S34.6	Injury of nerves at abdomen, lower back and pelvis level
T05	Traumatic amputations involving multiple body regions
T06.0	Injuries of brain and cranial nerves with injuries of nerves and spinal cord at neck level
T06.1	Injuries of nerves and spinal cord involving other multiple body regions
T06.2	Injuries of nerves involving multiple body regions
T08	Fracture of spine, level unspecified
T09.3	Injury of spinal cord, level unspecified
T14.4	Injury of nerves of unspecified body region
T68	Hypothermia

Tables 6–8 and associated text:

Cases were included if date of separation from hospital was 1 July 2002 to 30 June 2006 and certain Place (Table 6), Activity (Table 7) or External Cause (Table 8) codes were present.

Table 6. The following Places of occurrence were designated ‘Aquatic’:

Category	ICD-10-AM code
Swimming centre	Y92.32
Area of still water	Y92.80
Stream of water	Y92.81
Large area of water	Y92.82
Beach	Y92.83

Table 7. The following Activities when injured were designated ‘Aquatic’:

Category	ICD-10-AM code
Team water sports	U52
Boating sports	U53
Individual water sports	U54

Note: Rafting (river & white water) was also considered for inclusion, but no cases were found with these codes.

Table 8:

The following External Cause codes were designated ‘Aquatic’:

V90, V92, W65–W70, W73, W74, X71, X92, Y21.

(This is the same range as used to specify columns in Table 1 of the OAAS report.)

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