



brain injury AUSTRALIA  
[www.braininjuryaustralia.org.au](http://www.braininjuryaustralia.org.au)

**Australian Association of Gerontology  
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**FALLS-RELATED TRAUMATIC BRAIN  
INJURY IN THE YOUNG-OLD:  
under-recognised, under-diagnosed  
and highly fatal**

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**“...peak of peaks”**



# acquired brain injury (ABI)

any damage to the brain that occurs after birth

- **stroke**
- **brain infection**
- **alcohol or other drug abuse**
- **neurological disease (Huntington's, Parkinson's disease etc.)**
- **accident or trauma**

*(over 500,000 Australians have an ABI)*

# traumatic brain injury (TBI)

## *physical disability:*

- paralysis
- balance
- coordination
- vision, hearing
- speech

## *cognitive disability:*

- memory,
- concentration
- learning
- planning
- solving problems

## *“challenging behaviour”:*

- irritability
- impulsivity
- verbal, physical  
aggression
- disinhibition



# falls...

- the leading cause of *injury hospitalisation* - 1 in every 3 (126,800) injury admissions in 2003-2004
- leading cause of *traumatic brain injury hospitalisations* - 42% of all “Principal Diagnosis” TBI hospitalisations in 2004-2005



# falls injuries in older people 1

- a fall @ 65+ was the external cause in 1 in 6 (2,269) of *Principal Diagnosis* TBI cases (across all age groups and external causes) in 2004-2005...

- ...a fall @ 65+ was the external cause in 1 in 5 (1,003) of *Additional Diagnosis* TBI cases



# severity?

- every 10 years of age increases “odds on poor outcome” by 40% - 50%
- “optimal change points” in age at TBI were 60 years (for mortality) and 29 years (for “unfavourable outcome”)

*“...the probability of survival decreased with age.”*



# outcomes 1

- of all external causes of traumatic brain injury, *falls are the most fatal*; 2 in every 3 resulting in death in 2004 -2005...

# “Deaths due to unintentional fall injury by age and sex, Australia 2004-05”

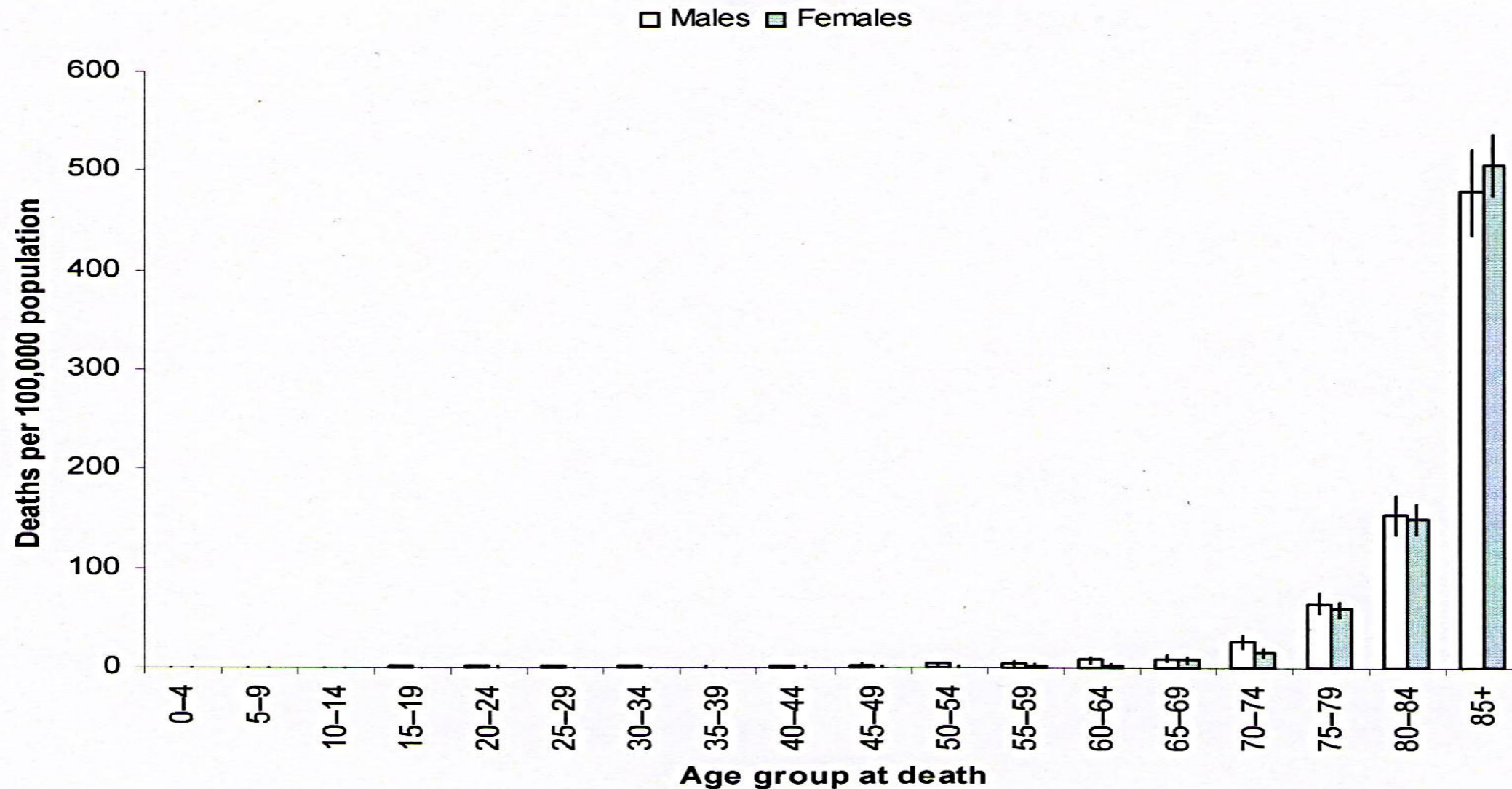


Figure 2.3.1: Deaths due to unintentional fall injury by age and sex, Australia 2004-05

# outcomes 1

- **85+ = highest falls injury, falls deaths, TBI and TBI death rates (“100% mortality”)...**
- **“...18% (517) of falls fatalities in 2004–05 were recorded as having sustained at least one injury to the head.”**
- **“...12% (333) of falls fatalities were recorded as having sustained intracranial injuries.”**



# falls injuries in older people 2

- rates of falls injuries to the hip and thigh ↓ ,head injury ↑ (1 in every 5 admissions);
- “DIY” injury/ falls from heights (“young old”) ↑ 25%, 1999-2005;
- “secondary” TBI / TBI bleed death from anti-coagulants (e.g. warfarin - 820,000 scripts 1998-2008...)



# outcomes 2

- 3X risk intracranial bleeding than younger TBI
- 2X length of hospital stay
- longer periods of post-traumatic amnesia (PTA)
- increased risk of developing Alzheimer's Disease
- only 30%-50% returned directly home
- increased risk of residential aged care placement
- higher incidence of general brain deterioration
- reduced psychosocial and financial support
- "lowered expectations for recovery *by staff* and patient"



**“...you are probably correct in stating that TBI in the elderly [sic] tends to get mixed in with dementia and mild cognitive impairment... Of course a significant proportion of the falls that occur in the elderly [sic] happen in persons with dementia and any added TBI is seen as a *dementia complication...*”**



“...it is worth noting that many TBIs in older people occur among those who *already have* a measure of neurodegenerative disease and especially among those in resicare – the majority *already have* disabling dementia...”



# falls injuries in older people 3

## *United States (2005)*

- **7,946 falls-related TBI deaths among people aged > 65 years**
- **56,423 hospitalisations for non-fatal falls-related TBI among people > 65 (= 8.0% of falls-related hospitalisations)**

***“[TBIs] may be missed or misdiagnosed among older adults”***



# prevention?

- falls prevention programs – no mention?



# Help Seniors Live Better, Longer: Prevent Brain Injury

U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention



# prevention?

**(“perfect [demographic] storm”; ageing + increased life expectancy + activity + survivability = ?)**

- falls “from heights”
- women – (outlive men), home hazards
- “old old” – residential aged care (5X rate at home)
- “hit head” or no? (anti-coagulants?)
- neurological observations (72 hours+?)
- “baby boomers”

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