

TRAUMA IN THE ELDERLY

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ISSUES FOR INJURY IN OLDER PEOPLE

- Increasing numbers in UMIC
- Multiple co-morbidities
- Finite resources / cost
- Manage patient / family expectations
- ? Predict outcomes

TSUNAMI (HARBOUR WAVE)



FALLS



MOTOR VEHICLE CRASHES

2nd Leading cause of injury in trauma patients > 75 Years

- Nationwide and at RMH



ELDERLY TRAUMA



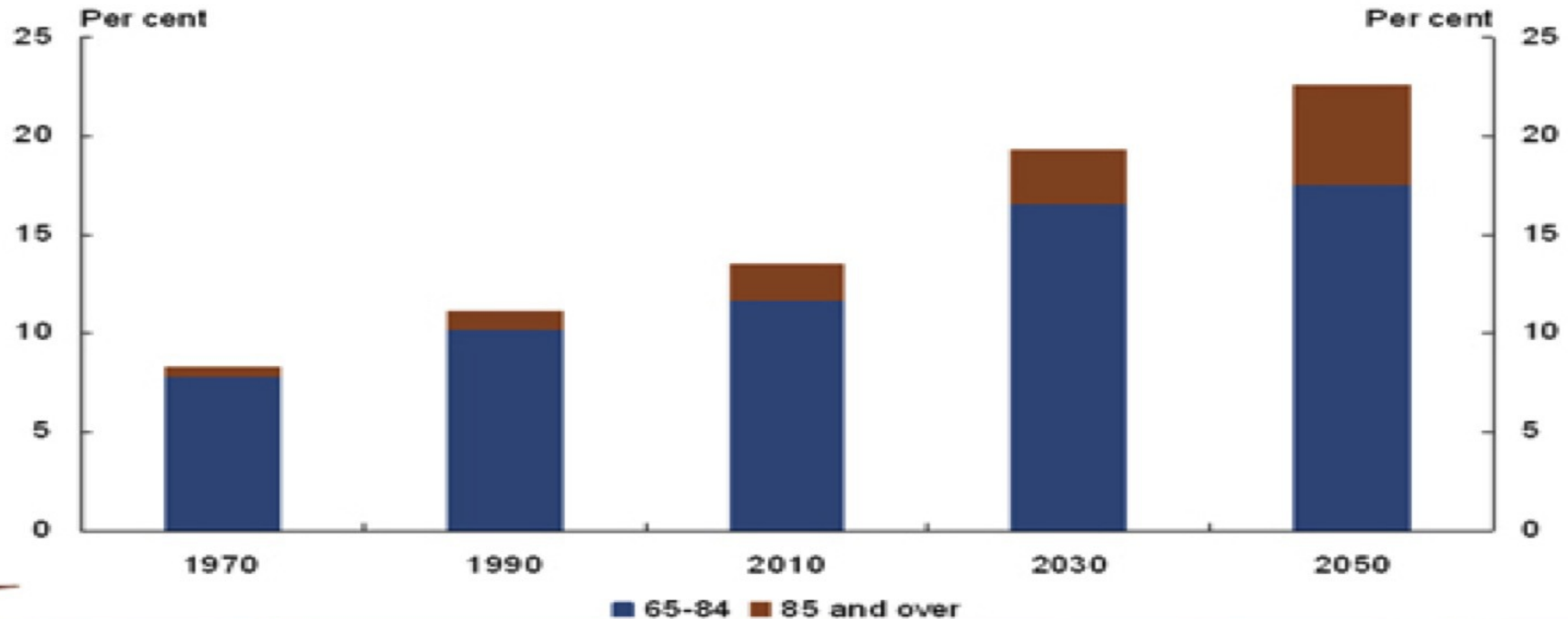
HEATHER DAVIS ACNS TRAUMA



IS ELDERLY TRAUMA A PROBLEM FOR TRAUMA CLINICIANS ?

PROPORTION OF THE AUSTRALIAN POPULATION AGED 65 AND OVER FROM 1970 – FUTURE PREDICTION

Proportion of the population
aged 65 and over



AUSTRALIAN GOVT INTERGENERATIONAL REPORT 2015

- **Age 65-84 yrs**
 - 2014-15: 3.1 million (13% pop)
 - 2054-55: 7 million (18% pop)
- **Age > 84 yrs**
 - 2014-15: 500,000 (2%)
 - 2054-55: 2 million (5%)
- **Av Life expectancy (yrs) if born in 2054-5**
 - 95.1 men / 96.6 for women
 - 40,000 people > 100 yrs (122 only today)

SIGNIFICANT TRAUMA LOAD > 65 YRS

USA DATA

- **14% total pop in 2014**
- **21% by 2050**
- **Accidental injury 5th most common cause of death in 2009/10**
- **40% of trauma admissions by 2050**

Banks et al Anaesthesiology Clinics 2013

AUSTRALIAN TRAUMA REGISTRY DATA 2010-2012

- Total injuries ISS > 12 or died: **20,435**
- Total deaths: **2051** (10%)

Deaths due to injury in elderly

- 65-74 yrs : 16%
- 75- 84 yrs : 23%
- **> 85 yrs : 28%**

Caring for the Severely injured in Australia. AusTQIP 2014

AIHW REPORT 2014

2009-10

- Injury → 10,668 deaths (7.6% total deaths)
 - 1/3 Male deaths > 64 yrs
 - 2/3 female deaths > 64 yrs
- Cause of deaths
 - Falls (32%)
 - Intentional self harm (21%)
 - Transport related (14%)

NSW ITIM REPORT 2013 > 64 YRS

36% - TOTAL TRAUMA LOAD

Age group	No injured (%)	Case fatality rate %
65-69	191 (6%)	7.9%
70-74	194 (6%)	15.5%
75-79	210 (7%)	20.5 %
80-84	199 (6%)	21.6%
85 and over	345 (11%)	34.5%

RNSH AGE COMPARISON FOR 2013 (672 TRAUMA ADMISSIONS)

	Age > 64	Age < 65
Number	286 (43%)	386 (57%)
M:F	56: 44 %	78: 22 %
Av Age (yrs)	79	38
Av ISS	17	18
ICU Admit	58%	64%
Fall	78% (224)	30%
Road trauma	15%	44%
Av LOS (days)	13	21
Died	20%	7%

RNSH ELDERLY TRAUMA 2013

- Increasing no. and increasing age
 - 92/270 (34%) > 84 yrs
- Multiple medical co-morbidities
- Discharge destination:
 - 123 (45%) Rehab / NH
 - 86 (32%) Home
 - 61 (23%) Died

Major trauma: the unseen financial burden to trauma centres, a descriptive multicentre analysis

Kate Curtis^{1,2,3,7} BNurs, GDipCritCare, MN(Hons), PhD, Associate Professor,
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AV COST : \$10,705

AV LOS : 6.5 DAYS

COULD WE HAVE DONE BETTER ?

- Can the trauma literature provide any guidance?

Predictors of mortality in geriatric trauma patients: A systematic review and meta-analysis

**Ammar Hashmi, MD, Irada Ibrahim-Zada, MD, PhD, Peter Rhee, MD, Hassan Aziz, MD,
Mindy J. Fain, MD, Randall S. Friese, MD, and Bellal Joseph, MD, Tucson, Arizona**

- Overall mortality (15%) in injured geriatric trauma patients > among adult trauma population (6.5% in 18-64 yrs)
- Patients > 74 yrs at higher risk of dying than 65-74 yrs
- Trauma mortality remains same after 74 yrs
- Severe injury ISS > 15 , Mortality rate 26.5% (Odds ratio 9.5)
- Extremely severe ISS > 24, OR death 52.34 (98.1% probability)
- Low SBP OR 2.16 for mortality

Long-term Survival of Elderly Trauma Patients

K. Dean Gubler, DO, MPH; Robert Davis, MD, MPH; Thomas Koepsell, MD, MPH; Robert Soderberg; Ronald V. Maier, MD; Frederick P. Rivara, MD, MPH

- Injured older patients > 66 yrs
 - Risk of death at 5 yrs = 1.7 relative to uninjured cohort
- Risk of death increased with comorbidities
- Increased risk of death immediate and 5 years after injury
- Further study required

Arch Surgery 1997

HEAD INJURY IN THE ELDERLY

- All Head injuries have worse outcomes
 - Assoc with higher ISS
 - Lower GCS
 - Anticoagulation Rx
- One study mod-severe brain injury
 - Overall in-hosp mortality 30%
 - Any pt with GCS < 9 – mortality 80%

Utomo et al Injury 2011

CAN WE PREDICT OUTCOMES IN ELDERLY TRAUMA ?

- Age
- ISS
- Comorbidities
 - All NOT predictive (except head injury)

Duvall et al J Pall Med 2015

AGING AND FRAILTY

- By 2050, the proportion of the global population aged > 64 years is projected to reach 20%
- The estimated average prevalence of frailty among older people in the community is 10%
 - Range of 4–59% due to variability in definition used and studied population

◀ Collard *et al.*, 2012.

WHAT IS “FRAILTY”

- A state of vulnerability to minor homeostatic stressors due to an age-related **decline in physiological reserve**
- Frail people are at greater risk of adverse outcomes
 - Falls, increasing disability, hospitalisation, transfer to higher level of care, and mortality
- Considerable heterogeneity

Freid et al J Gerontology 2001

Joyce et al Current Opin Anaesth 2015

The background is a dark blue gradient with a subtle pattern of small white dots. Overlaid on the left side are several concentric circles and a large circular scale with degree markings from 140 to 260. Some circles have arrows indicating a clockwise direction. The text 'HOW TO ASSESS FRAILTY ?' is centered in a bold, yellow, sans-serif font.

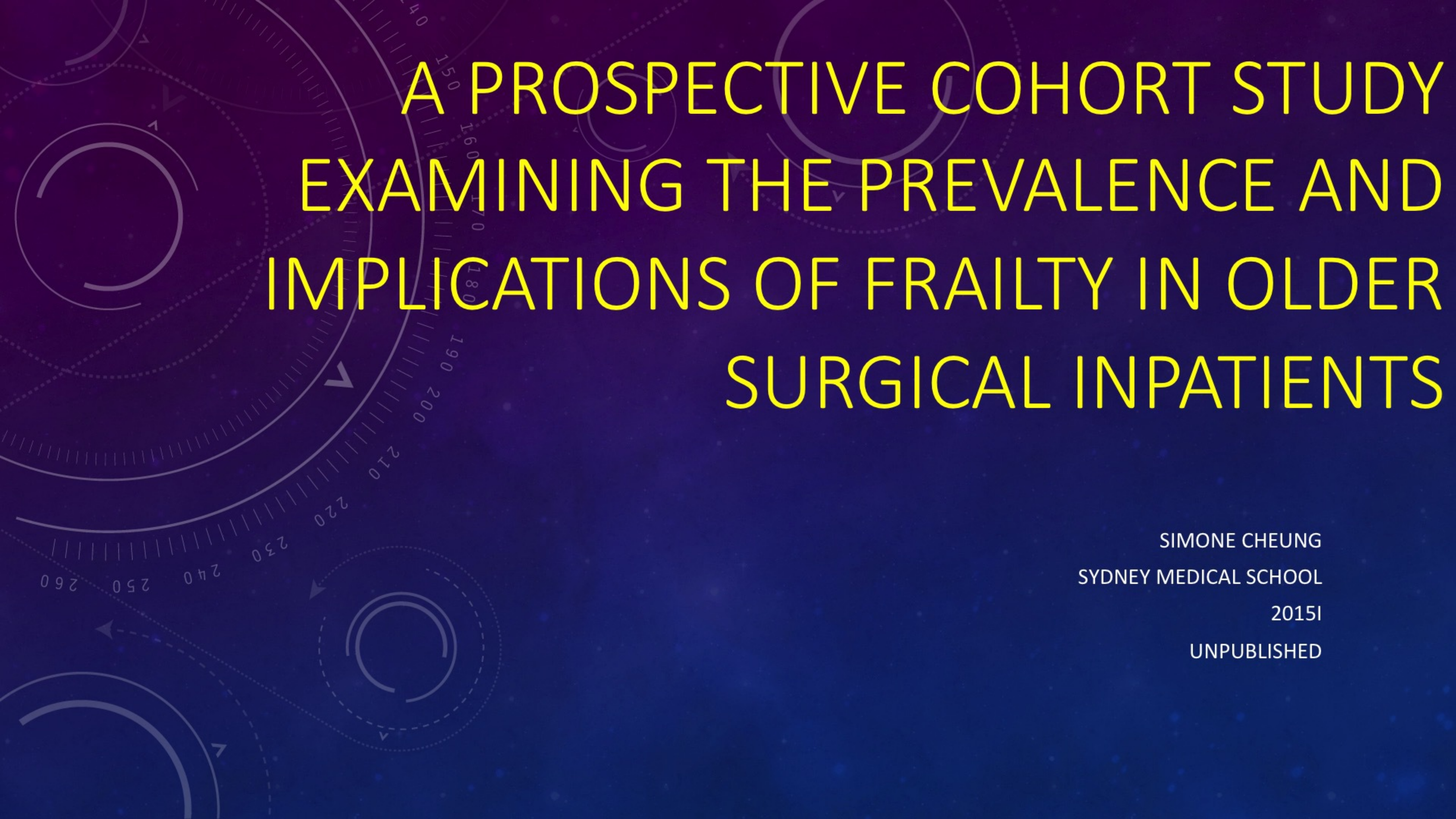
HOW TO ASSESS FRAILTY ?

REPORTED EDMONTON FRAIL SCALE

Hilmer Aust J Aging 2009

Cognition
General Health Status
Functional independence
Social support
Medication use
Nutrition
Mood
Continence
Self reported performance

- **Non frail: 0-7**
- **Frail: 8-18**



A PROSPECTIVE COHORT STUDY EXAMINING THE PREVALENCE AND IMPLICATIONS OF FRAILITY IN OLDER SURGICAL INPATIENTS

SIMONE CHEUNG
SYDNEY MEDICAL SCHOOL
2015I
UNPUBLISHED

100 PATIENTS ADMITTED TO RNSH SURGICAL SERVICES

- 33% Frail
 - In hospital
 - Increased falls
 - At 3/12
 - ↑ Transfer to a high level NH facility
 - ↑ Falls post-discharge
 - ↑ ADL disability
- No relationship between frailty and hospital readmission, confusion or death

FRAILITY INDEX IN ELDERLY TRAUMA POPULATION

- Frailty index FI (50 pre-admission variables)
 - Co-morbidities (IHD)
 - Daily activities (shopping)
 - Health attitude (lonely)
 - Function (exercise)
 - Nutrition (recent wt loss)

Joseph et al. J Trauma ACS 2013

Joseph et al. JAMA Surg 2014

FRAILTY INDEX

- High FI = Worse outcome
 - > 0.25
- Increased susceptibility to disability due to
 - Physical loss
 - Cognitive impairment
 - Social isolation
 - Psychological distress

Searle et al BMC Geriatric 2008

OUTCOMES

- In-hospital complications
 - Cardiac, lung, infections, renal, re-operate
- Adverse D/C
 - NH or death

Favourable v Unfavourable Outcome

250 pts over 24 months

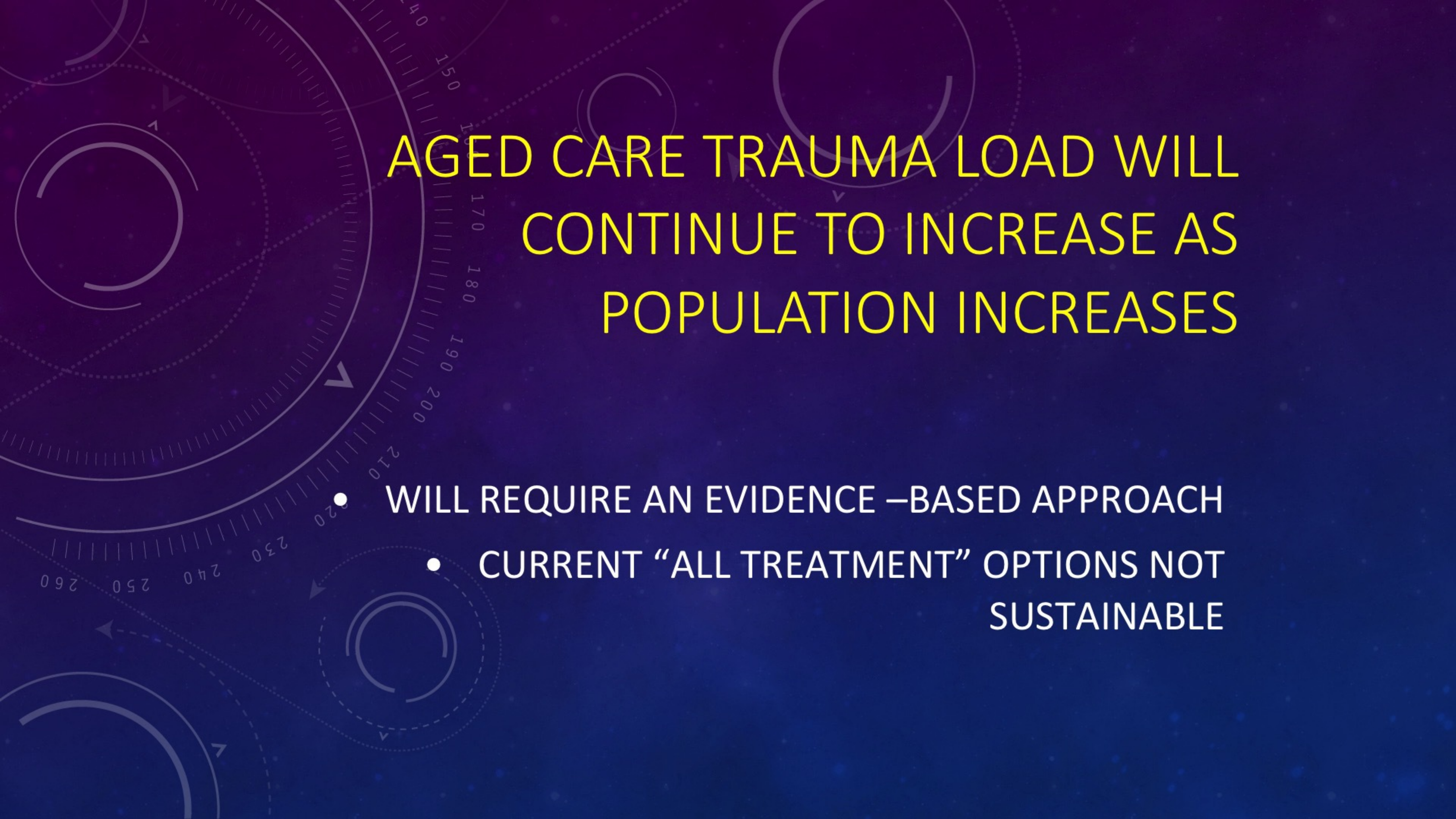
- **Favourable Outcome (FO)**
 - Mean Frailty Index 0.19
 - D/C to Home or Rehab facility
- **Unfavourable Outcome (UFO)**
 - Mean Frailty Index 0.30
 - D/C to Skilled Nursing Facility (NH) or Death

RESULTS

- 110 (44%) FI > 0.25
 - Higher in-hospital complications (OR 2.5)
 - Adverse D/C disposition (OR 1.6)
- High FI independent predictor of UFO
- Age, ISS, GCS, Head AIS score
 - NOT assoc with discharge disposition

SUMMARY: FRAIL ELDERLY PATIENTS

- Increased LOS
- Increased adverse events
- Increased costs
- **Frailty Assessment** allows :
 - Better prediction of potential outcome
 - Informed communication with family
 - Better allocation of resources



AGED CARE TRAUMA LOAD WILL CONTINUE TO INCREASE AS POPULATION INCREASES

- WILL REQUIRE AN EVIDENCE –BASED APPROACH
- CURRENT “ALL TREATMENT” OPTIONS NOT
SUSTAINABLE

RECOMMENDATIONS

- Early Frailty Assessment for all elderly patients
 - Allows realistic and appropriate care
 - Early discussion with family re goals of care
 - Assist with discharge planning
 - End of life issues
 - Mod- severe Head Injury bad outcome
 - Avoid ICU if high FI due to likely poor outcome

Injury, Int. J. Care Injured 46 (2015) 1701–1702



ELSEVIER

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury



Editorial

Trauma in the elderly: Burden or opportunity?





“ The necessity of nature’s final victory was expected and accepted in generations before our own.

Doctors were far more willing to to recognise the signs of defeat and far less arrogant about denying them.”

Sherwin Nuland “ How we die”

In Atul Gawande’s *Being Mortal*



Perspectives

Time to shut down the acute care conveyor belt?

Kenneth M Hillman, Gordon D Rubenfeld and Jeffrey Braithwaite

Med J Aust 2015; 203 (11): 429-430.

doi: 10.5694/mja14.01432

Article

Authors

References

A rapid response system may be an appropriate model for meeting the urgent need for more suitable care for patients at the end of life

Hospitals can be dangerous places where people can unexpectedly die. Hospitals can also be dangerous places because people are not allowed to die. When they eventually die, it can be a prolonged and demeaning experience.^{1,2}

**SURVIVE INJURY TO LIVE A PRODUCTIVE AND
INDEPENDENT OLD AGE BY KEEPING ACTIVE ?**



MY FATHER -FRAILTY INDEX 0.36



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