Frailty in the peri-operative setting:
the elephant in the operating room

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“an English-language metaphorical idiom for an obvious problem or risk that no one wants to discuss”

Objectives

What I am discussing:
1. Provide background info on demographics
2. Review conceptualisation of frailty & why it is important

What I am not discussing:
1. Management of frailty
2. Pre-habilitation
3. Detail on different frailty measures & their clinical applicability
Increasing Life Expectancy is a Consequence of Success
The Silent Generation: d.o.b. 1928 - 1945

- Grew up during the Great Depression and WWII
- Want to feel needed
- Strive for financial security
- “Waste not want not” attitude

- Conformity. Conservatism. Traditional family values
- Understand the nobility of sacrifice for the common good

- Patriotic. Patient. Team players
The Silent Generation: Alumni
Baby boomers: d.o.b. 1946 - 1964

- Born during a spike in child births after WWII
- Experimental. Individualistic
- Social cause oriented. Free spirited
- Can be less optimistic, cynical, and distrust government
- Believe rules should be obeyed unless they are contrary to what they want; then they’re to be broken
### Demographics

<table>
<thead>
<tr>
<th>Country</th>
<th>Per cent</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>25%</td>
<td>2015</td>
</tr>
<tr>
<td>Philippines</td>
<td>20%</td>
<td>2015</td>
</tr>
<tr>
<td>Indonesia</td>
<td>15%</td>
<td>2015</td>
</tr>
<tr>
<td>Malaysia</td>
<td>15%</td>
<td>2015</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>China</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>Singapore</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>New Zealand</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>United States of America</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>Australia</td>
<td>20%</td>
<td>2015</td>
</tr>
<tr>
<td>Canada</td>
<td>20%</td>
<td>2015</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>15%</td>
<td>2015</td>
</tr>
<tr>
<td>Greece</td>
<td>15%</td>
<td>2015</td>
</tr>
<tr>
<td>Italy</td>
<td>10%</td>
<td>2015</td>
</tr>
<tr>
<td>Japan</td>
<td>5%</td>
<td>2015</td>
</tr>
</tbody>
</table>

**Older Australians**

**AN AGEING POPULATION BY 2050.**

**ARRQUND ONE QUARTER OF AUSTRALIANS WILL BE AGED 65 YEARS AND OVER**

- **Australians aged 65 years and over contribute $74.5 billion each year in unpaid caring and voluntary work.**

**Declining Workforce Ratio**

- **More than 1 in 4 older Australians live in poverty.**

**People aged 65 years and over make up 7% of the homeless population.**
Impact of demographic changes

![Bar chart showing patients by age group from <31 to >90]

![Line chart showing average number of cases per year by age at diagnosis for male and female rates and cases]

CRICOS code 00025B
Average age is increasing. So what?
Age vs ageing

Age = passing of chronological time

Ageing = accelerated risk of failure over time (implies deterioration with time)
Understanding ageing

The human body is a complex system characterized by REDUNDANCY.

In-built redundancy of organs allows the body to compensate for molecular and cellular damage. But over time, as the body accumulates deficits, redundancy is utilized.
Ageing = \uparrow \text{risk of disease and disability}

Cardiovascular disease
Neurodegenerative disease
Cancer
OA

**Sensorium**
Ageing = $\uparrow$ risk of death

**Mortality rate** is a measure of the number of deaths in some population, scaled to the size of that population, per unit time.
Ageing → ↑ risk of death after surgery
Ageing = ↑ frailty

<table>
<thead>
<tr>
<th>Chronological Age</th>
<th>Frailty Phenotype Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>59 – 65 y</td>
<td>4%</td>
</tr>
<tr>
<td>75 – 79 y</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 85 years</td>
<td>26%</td>
</tr>
</tbody>
</table>
What is frailty?

Frailty is defined as

... a state of increased vulnerability to stressors...

A frail individual has reduced physiological reserve, resulting in a reduced ability to maintain homeostasis when facing stressors.
Frailty impacts every stage of a patient’s journey

Figure 1: Vulnerability of frail elderly people to a sudden change in health status after a minor illness
## Frailty → adverse outcomes

<table>
<thead>
<tr>
<th>Adverse Outcome</th>
<th>OR</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay&gt;28 days</td>
<td>1.3</td>
<td>9%</td>
<td>96%</td>
</tr>
<tr>
<td>Newly discharged to RAC</td>
<td>1.3</td>
<td>8%</td>
<td>96%</td>
</tr>
<tr>
<td>Inpatient falls</td>
<td>1.4</td>
<td>9%</td>
<td>95%</td>
</tr>
<tr>
<td>Inpatient delirium</td>
<td>2.3</td>
<td>52%</td>
<td>88%</td>
</tr>
<tr>
<td>Inpatient pressure ulcer</td>
<td>1.5</td>
<td>7%</td>
<td>98%</td>
</tr>
<tr>
<td>Inpatient mortality</td>
<td>2.0</td>
<td>10%</td>
<td>98%</td>
</tr>
</tbody>
</table>

Hubbard et al, Age and Ageing, 2017
Frailty ≠ all adverse outcomes

28 day Readmission

Sensitivity

1 - Specificity

Risk Screener
Frailty Index
Frailty & decision-making

Identify patients who may benefit from a multidisciplinary decision-making approach
• Context-specific frailty thresholds

Facilitate informed consent
• Goals of care versus potential outcomes

*Significant proportion of seriously ill patients would not undergo life-sustaining treatments if they knew the outcome was likely to be survival with cognitive or functional limitations (Glance et al., 2014)*
↑ research interest

Lin et al, Local and Regional Anaesthesia, 2018
No consensus on measurement instrument

- 110 studies between 2007 and 2017

- 37 different measurement tools
  - Modified FI (developed from National Surgical Quality Improvement Program)
  - Clinical Frailty Scale
  - Fried phenotype
  - Frailty index
  - Multidimensional frailty score

Lin et al, Local and Regional Anaesthesia, 2018
Limitations of “eye-balling” frailty

Frailty ≠ age

Frailty ≠ cachexia

Frailty ≠ co-morbidity

Frailty ≠ polypharmacy

Frailty ≠ disability
Changing conceptualisation of frailty
Understanding frailty and ageing
Frailty ≈ ageing

Frailty captures the variability of ageing wrt age

It can help us to understand our patients better:

• ‘invisible’ vulnerability
• ‘very frail but stable’
• ‘old but pretty fit’

And in doing so, it enables us to provide patient-centred care.
Changing attitudes to cancer

Transformation of cancer
Now seen from an objectivist perspective
1. Clear description of clinical features
2. Insights into pathogenesis
3. Development of modifying interventions
“Frailty can affect younger people”

“Frailty can be prevented or reversed”

“It dispels the myth that frailty is an inevitable part of ageing”
Summary

Provide background info on demographics

Average age is increasing
More (and) older people are having surgery

Review conceptualisation of frailty & why it is important
Frailty = ↑ risk of multiple adverse outcomes
Frailty can be identified and quantified
Management of frail older people can be optimised