Facing the future: addressing frailty and dementia

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Disclosures

- Involvement in dementia drug trials with: Astra-Zeneca, Anavex, Axovant, Buck, Forum, Glaxo Smith Kline, Johnson & Johnson, Lilly, Lundbeck, Medivation, Merck, Novartis, Pfizer, Roche, Sanofi-Aventis, Servier, Tau Therapeutics, Wyeth
- Frailty work supported by NHMRC TCR Frailty Grant 1177847 (2020 to 2023)

Life expectancy in Australia Men: 81.5 years Women: 85.4 years



Australian Life Expectancy (projected)

Year of Birth	Males	Females
2016	87.1	90.5
2020	87.5	90.9
2030	88.4	91.6
2040	89.2	92.2
2050	89.9	92.8
2060	90.5	93.3

Examples of successful ageing



What do these people have in common?

- They are all over 85 years of age
- They have all exceeded their life expectancy
- They are all outside and being active and engaged in activities outside "normal" daily activities
- They have not let age, frailty or dementia get in the way of doing what they want to do
- They are therefore very fortunate

Madame Jeanne Calment





- Took up fencing , aged 85
- Rode bicycle till 100
- Lived alone till 110
- Port wine, 2 cigs/ day, 1kg dark chocolate every week
- Gave up smoking at 120
- Poured olive oil on food and rubbed onto her skin
- Outlived husband, child and grandchildren
- Died 122, frail, visually impaired and deaf, but without dementia

The University of Sydney

So, as a geriatrician, what do I see in my clinical practice on a daily basis?



Dementia



Dementia

- "de mens" without mind
- progressive irreversible syndrome of impaired memory, intellectual function, personality and behaviour, causing significant impairment in function
- DSM 5: Major neurocognitive disorder

Dementia in Australia

- 2022: 460,000 plus people with dementia
- 2050: 900,000 people with dementia
- approx 1900 new cases per week diagnosed
- at age 65: 1 in 12 people have dementia
- at age 80: 1 in 4 people have dementia
- at age 90: 1 in 2 people have dementia
- leading cause of death for women, 2nd highest for men after heart disease
- highest cause of disability in >65 years group
- approx 26,000 people under age 65 with dementia

Causes of dementia

- Alzheimer's Disease
- Vascular Dementia
- "Mixed" Dementia (Alzheimer's Disease and Vascular Dementia)
- Dementia with Lewy Bodies
- Frontotemporal Dementia (aka Frontotemporal Lobar Degeneration)
- Parkinson's Disease with Dementia
- Others alcohol related brain damage, chronic traumatic encephalopathy (footballers brain), prion disease.....

Day to day effects of dementia

- Memory loss and confusion, poor judgement, limited social skills
- Word finding difficulties and language loss
- Personality changes
- Inability to plan
- Wandering
- Confabulation
- Inability to recognise people, objects
- Inability to carry out simple tasks like dressing
- Anxiety, mood swings, depression, agitation
- Hallucinations and delusions
- Having to stop work, stop driving, stop managing affairs, stop cooking, stop sporting activities
- Final destination is usually residential care

Common physical comorbidities in dementia

- Conditions that are significantly more common in people with dementia than in people of same age without dementia:
 - Epilepsy 7 times as common
 - Falls 3 times as common
 - Delirium 5 times as common
 - Malnutrition 2 times as common
 - Dental disease 2 times as common
 - Incontinence 3 times as common
 - Visual problems 3 times as common
 - Sleep problems 2 times as common



Evidence based care for people with dementia: Clinical Practice Guidelines for People with Dementia



COGNITIVE

DECLINE PARTNERSHIP

- First evidence based guidelines developed in Australia
- Approved by NHMRC so considered "gold standard"
- 109 recommendations covering dementia from diagnosis to death, in all settings
- Released March 2016



In the absence of a cure, what can we do about preventing dementia?



Risk factors that can be modified to reduce dementia risk Lancet 2020





Dementia prevention – reduce these risk factors



Source: Livingston et al. A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission

www.alzint.org







What is frailty?



Frailty

 Frailty is an age associated decline in functioning across multiple physiological systems resulting in an increased vulnerability to stressors, and an increased chance of poor health outcomes

• But what actually is frailty?













How do we recognise frailty?



Definition of Frailty 1: Physical phenotype: 'physical frailty'

Operationally defined as:

"A clinical syndrome in which **three or more** of the following are present:

- unintentional weight loss (>4.5kgs in last year)
- self-reported exhaustion
- weakness (grip strength)
- slow walking speed
- Iow physical activity"

FRAIL Scale

	Question	Scoring	Result
F	Fatigue		
	How much of the time during the past 4 weeks did you feel tired?		
	A = All or most of the time	A= 1	
	B = Some, a little or none of the time	B = 0	
R	Resistance	Yes = 1	
	In the last 4 weeks by yourself and not using aids, do you have any difficulty walking up 10 steps without resting?	No = 0	
Α	Ambulation		
	In the last 4 weeks by yourself and not using aids, do you have any difficulty walking 300 meters?	Yes = 1	
		No = 0	
1	Illness		
	Did your Doctor ever tell you that you have?		
	□ Hypertension	0-4	
	Diabetes	answer	
	Cancer (not a minor skin cancer)	s √ = 0	
	Chronic lung disease		
	Heart Attack	5 – 11	
	Congestive heart failure	answer	
		$c\sqrt{-1}$	
	Asthma	3 7 - 1	
L	Loss of weight		
	Have you lost more than 5kg or 5% of your body weight in the past year?	Yes = 1	
		No = 0	
	T	otal Score	
	Scoring: Robust = 0, Pre-frail = 1-2, Frail = >3		

Definition of Frailty 2: Accumulated deficits model: 'deficit accumulation frailty'

- Biological process
- "Accumulated deficits"
- Gender specific
- Clearly related to mortality
- Expressed as an "index" (> 0.2 likely to be pre-frail,
 > 0.25 likely to be frail)

Frailty Index

Appendix 1: List of variables used by the Canadian Study of Health and Aging to construct the 70-item CSHA Frailty Index.

- · Changes in everyday activities
- Head and neck problems
- Poor muscle tone in neck.
- Bradykinesia, facial
- Problems geeing dressed
- Problems with bathing
- · Problems cattying out personal grooming
- Urinary incontinence
- Tolleting problems
- Buik difficulties
- Recal problems
- Caseroinessinal problems
- Problems cooking
- Sucking problems
- Problems going out alone
- Impaired mobility
- Musculoskeletal problems
- · Bradykinesia of the limbs
- Poor muscle tone in limbs
- Poor limb coordination
- · Poor coordination, trunk
- Poor sanding possure
- Irregular galt powern
- Falls

- Mood problems
- · Feeling sad, blue, depressed
- · History of depressed mood
- Tiredness all the time
- Depression (clinical impression)
- Sleep changes
- Restletaneta
- Memory changes
- Shors-term memory impairment.
- · Long-term memory impairment
- · Changes in general menual functioning
- · Onset of cognitive symptoms
- Clouding or delinium
- Paranoid features
- History relevant to cognitive impairment or loss
- Family history relevant to cognitive impairment or loss
- Impaired vibration
- Tremorisk rest
- Possural termor
- Invention service
- · History of Parkinson's disease
- · Family history of degenerative disease

- Seizures, pareiai complex.
- Seizures, generalized
- Syncope or blackous
- Headache
- · Cerebrovascular problems
- History of seroks
- History of diabetes mellikus
- Americal hypervension
- Peripheral pulses
- Cardiac problems
- Myocardial Infarction
- Anhyshmia
- · Congessive hears failure
- Lung problems
- Respiratory problems
- · History of thyroid disease
- Thyroid problems
- Skin problems
- Malignant disease
- Breast problems
- Abdominal problems
- Presence of shour reflex.
- Presence of the pairmomental reflex.
- Other medical history

Clinical Frailty Scale*

t

I Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3 Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.



4 Vulnerable – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being "slowed up", and/or being tired during the day.



5 Mildly Frail – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



6 Moderately Frail – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.



7 Severely Frail – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



9.Terminally III - Approaching the end of life.This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In severe dementia, they cannot do personal care without help.

I. Canadian Study on Health & Aging, Revised 2008.

 K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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Lancet Series on Frailty Oct 2019

Frailty 1



Frailty: implications for clinical practice and public health

Emiel O Hoogendijk, Jonathan Afilalo, Kristine E Ensrud, Paul Kowal, Graziano Onder, Linda P Fried

Frailty is an emerging global health burden, with major implications for clinical practice and public health. The Lancet 2019; 394: 1365-75



Management of frailty: opportunities, challenges, and future directions

Elsa Dent, Finbarr C Martin, Howard Bergman, Jean Woo, Roman Romero-Ortuno, Jeremy D Walston

Lancet 2019; 394: 1376-86 Frailty is a complex age-related clinical condition characterised by a decline in physiological capacity across several

Prevalence of frailty

- Australian community over 65 yo: **21%** frail, 48% pre-frail
- NZ acute hospital adult inpatients: **49**%
- Australian acute hospital medical inpatients over 75 yo: 55%
- European community over 65 yo: 17%
- International systematic review and meta-analysis over 50 yo:
 12% physical frailty model, 24% accumulated deficits model
- Despite being a concept for more than 20 years, frailty is only just entering clinical practice with screening and intervention occurring in both primary care and hospital based care

An operational model of frailty



Fried et al. Frailty in older adults: evidence for a phenotype. J Geront 2001;56:M146-M156

Consequences of frailty

- Frailty is associated with:
 - increased likelihood of hospitalisation and longer LOS
 - Increased risk of post op complications after general surgery, vascular surgery, neurosurgery, trauma surgery
 - Increased risk of urinary tract infection, pneumonia, DVT
 - Increased risk of developing COVID-19 pneumonia, and 2 to 3 times chance of dying from COVID-19 infection
 - increased risk of institutionalisation
 - increased risk of falls and fractures
 - increased likelihood of developing Alzheimer's disease
 - Triple the risk of death with 5/5 Frailty criteria vs 0/5

Frailty and emergency surgery

Age and Ageing 2019; **48:** 388–394 doi: 10.1093/ageing/afy217 Published electronically 19 February 2019 © The Author(s) 2019. Published by Oxford University Press on behalf of the British Geriatrics Society. All rights reserved. For permissions, please email: journals.permissions@oup.com

Frailty predicts mortality in all emergency surgical admissions regardless of age. An observational study

- Multicentre prospective cohort study of 2279 emergency surgical patients in UK
- Frailty predicted poorer patient outcomes and mortality irrespective of age

So what can we do about frailty?



Frailty Clinical Practice Guidelines

The Asia-Pacific Clinical Practice Guidelines for the Management of Frailty

Recommendations:

- Strong:
 - Use a validated measurement tool to identify frailty
 - Prescribe physical activity with a resistance training component
 - Address polypharmacy

– Conditional

- Screen for, and address, fatigue
- Address weight loss with protein/calorie supplementation if appropriate
- Prescribe Vit D if Vit D deficient

Frailty Intervention Trial (FIT): Sydney 2011

- RCT of 241 community dwelling people aged 70yrs and over, assessed as physically frail using Fried Frailty criteria (3 or more criteria)
- Randomised to intervention (mainly exercise and nutritional advice) or control (normal care)
- Blinded follow-up at 3 and 12 months looking at physical frailty and physical performance (SPPB)



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FIT Program Results



Current frailty study: FORTRESS (Frailty in Older people: Treatment Research Examining Separate Settings)

- 3 year stepped wedge trial identifying frailty using FRAIL Scale in patients 75 years and over in acute hospital wards, developing an intervention using the Clinical Practice Guidelines, and following up the patient in the community post discharge with GP input
- 12 month outcomes are hospital readmissions, frailty status, and quality of life
- Occurring in South Australia (Flinders) and in NSW (Hornsby)
- Pilot data indicate about 55% of admitted medical inpatients are frail
- Delay due to COVID, but well underway now

Intergenerational programs as an intervention for frailty



ABC Old People's Home for 4 Year Olds Series 1

- A pre-post intervention study of frail and pre-frail older people living in a retirement village in independent or supported accommodation in late 2018
- Intervention over 7 weeks: interaction with ten 4 year-olds
- N = 11, mean age 87.3 years (range 78-95)
- Primary outcomes: walking speed, handgrip strength, tandem stance (balance), depression screen (Geriatric Depression Scale)





ABC Old People's Home for 4 Year Olds Series 1: Results

- Overall clinically and statistically significant improvement in all primary outcome measures, with all participants improving
- Effect sustained over 12 months in many participants
- Interactions between children and older people have continued
- International Emmy 2020



ABC Old People's Home for 4 Year Olds Series 2

- A pre-post intervention study of frail and pre-frail older people living alone in the community in late 2020
- Intervention over 6 weeks: interaction with ten 4 year-olds
- N = 11, mean age 85.5 years (range 76-94)
- Primary outcomes: frailty including walking speed, handgrip strength, tandem stance (balance), depression screen (Geriatric Depression Scale - Brief), QoL (Visual Analogue)



ABC Old People's Home for 4 Year Olds Series 2: Results

- Overall improvement in all primary outcome measures
- Participants improved particularly in components of frailty (6 improving significantly from frail to pre-frail or robust) and quality of life (all rating 7 out of 10 or higher) with average improvement from 6.3 to 8.5
- Effect sustained 6 months later
- Interactions between children and older people continue
- New York Film and Television Festival Grand Award Winner for Best Documentary – April 2022





Thank you

