Institute and Faculty of Actuaries

"Frailty – a vulnerability and the funny knee"

Professor Ngaire Kerse
Department of General Practice and Primary Health Care
University of Auckland

15 October 2013

Frailty – a vulnerability

- A syndrome
- A masquerade
- Low reserve
- Low resistance to stressors
- Multisystem impairment
- Phenotype (Fried)
  - Muscle weakness, slow walking speed, exhaustion, low physical activity, and unintentional weight loss
- Accumulation, index of deficits (Rockwood)

Joan, age 82

- Lives in own home
- Widowed last year
- Plays the organ, runs the bridge club
- Walks daily, large garden
- Complains of slowing down
- Heart attack 10 years ago
- Blood pressure medication
- No wt loss, strength good, not fatigued, activity is good, slow (1/5)

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Beryl and George

- Live in supported accommodation
  - ‘retirement village’
- Beryl – 78, well, driving, sore knee
- George – 84, dementia, looked after by Beryl
  - Wanders, more confused in the afternoon
- Beryl usually manages quite well with help from daughters
- Getting tired (fatigue), wt stable, slow, low activity, muscle strength ok. (3/5)

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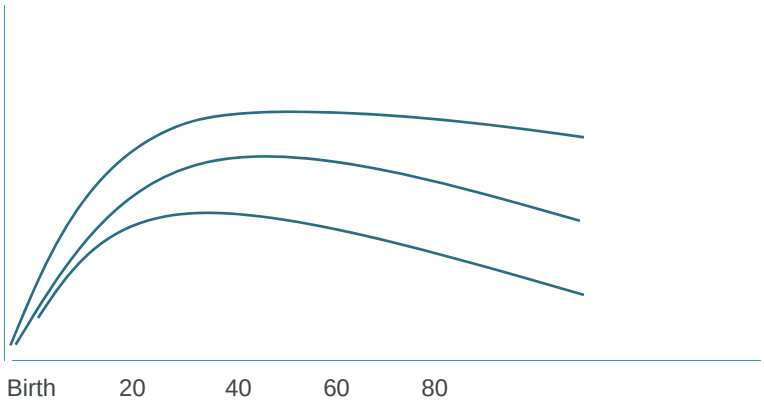
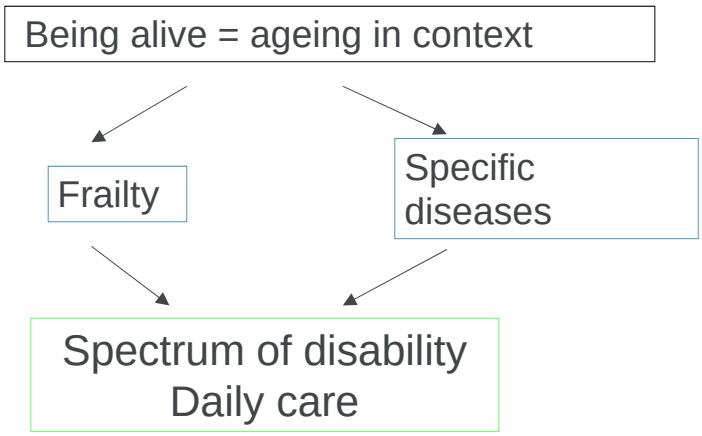
Variability increases with age



Who is frail

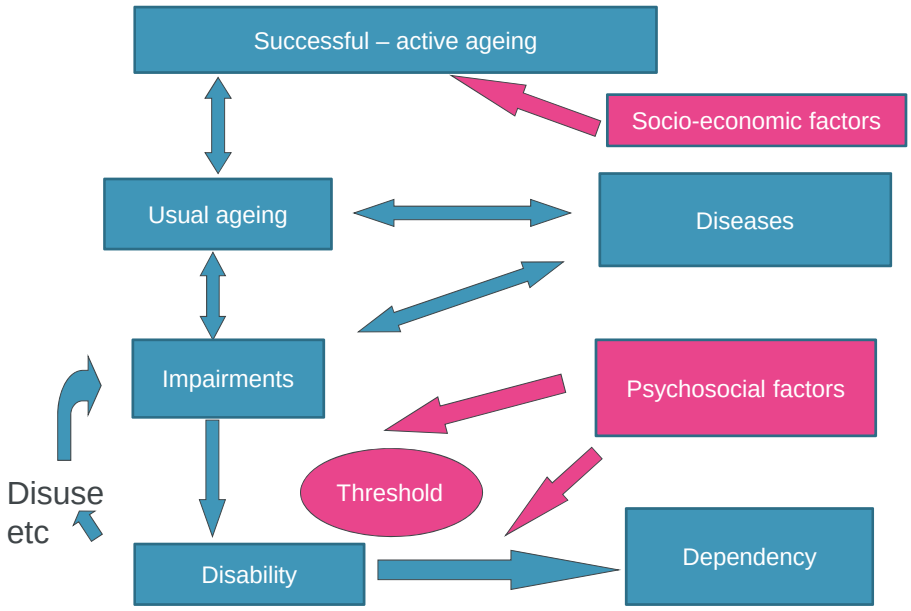
Why do we need to know



How many people need daily care?

The answer:

290, 577, 814 people in 2000
612, 888, 500 people in 2050



How do psychosocial factors affect physical impairments?

- bereavement and relocation effect on
  - immune function
  - hormonal function
- reduced activity and anxiety
  - metabolic changes
  - increased vascular and cardiac problems
- ignore early symptoms etc: late action and worse recovery

Clinical utility of concept of frailty
(or preclinical disability)

- early identification of ***individuals at risk of disability***
- comprehensive assessment enables sum of risk
- indicates areas for remedial action
- identifies high risk group in acute and community settings

Falls and frailty – GLOW, 68,000 women

- Australia, Europe, North America
- Frailty at baseline - phenotype
  - Lowest quarter
  - SF-36 domains and questions
- Falls – self report
- Fracture
- Disability – development of limitation in self care and usual activities

Tom et al; J Am Geriatr Soc 61:327–334, 2013.

Frailty and falls

	prefrail	frail
55-64	32%	14%
65-74	31%	20%
75+	29%	39%

Falls	Prefrail	Frail
Overall	1.57 (1.4, 1.7)	3.35 (3.1, 3.6)
Adjusted	1.23 (1.1, 1.3)	1.68 (1.5, 1.8)

Adjustment for baseline status and all other health, social, regional variables

Tom et.a. GLOW. J AmGeriatr Soc 61:327–334, 2013.

Injury and disability

Fracture		
55-64	-	1.85 (1.4, 2.4)
65-75	1.28 (1.0, 1.6)	1.54 (1.2, 2.0)
75+	1.31 (1.0, 1.7)	-
overall	1.39 (1.2, 1.6)	1.97 (1.7, 2.3)
adjusted	1.23 (1.1, 1.4)	1.46 (1.3, 1.7)

Disability	Prefrail	Frail
55-64	1.90 (1.7, 2.2)	2.84 (2.4, 3.3)
65-75	1.83 (1.6, 2.1)	2.29 (2.0, 2.6)
75+	1.79 (1.5, 2.1)	1.95 (1.7, 2.3)
overall	2.04 (1.9, 2.2)	3.27 (3.0, 3.5)
adjusted	1.85 (1.7, 2.0)	2.29 (2.1, 2.5)

Disability developed in 23% of the frail cw 10% of the non-frail

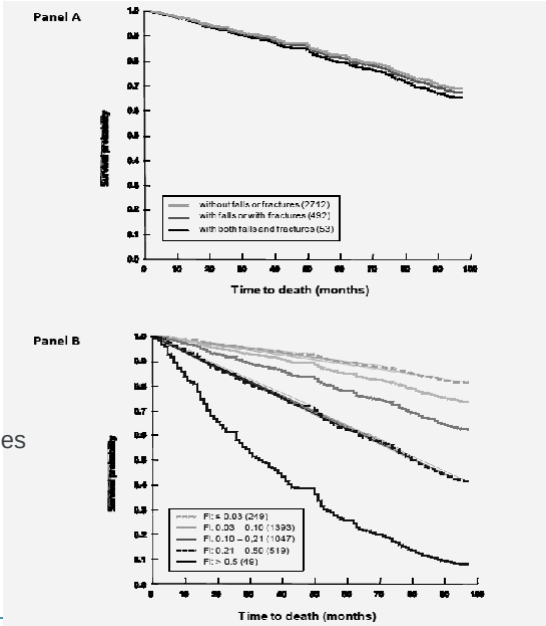
Frailty and mortality

- Beijing Longitudinal Study of Ageing
  - 3,257 Chinese aged 55+ at baseline, 8 years follow up – 35% mortality
- Frailty index
  - Deficits – 5 medical 5 psychological (Falls and fractures excluded)
  - 14 Basic and Instrumental ADLS
  - 8 diseases and MMSE total of 33
  - Eg HTN, DM, sadness, help w shopping = 4/33 = 0.12
- Frailty associated with falls and fractures

Fang et al: J Nutrition, Health & Aging;2012:16,(10):903-910

Falls and fractures
Taking into account frailty
Did not predict mortality

Frailty index in quintiles
Predicts mortality



Treatment of frailty

200 People (75% response, 10% dropout)

- 70+, frail – 3+ phenotype
- Geriatric service, No dementia

Intervention – 12 m duration

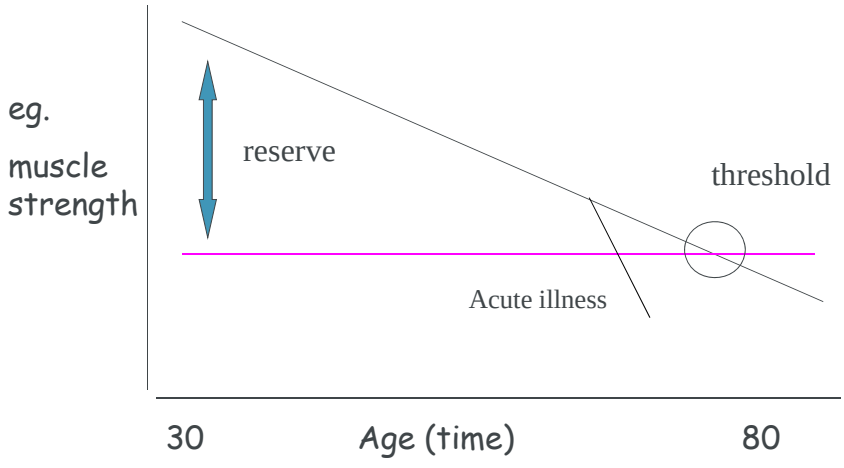
- Individually targetted
  - Wt loss – dietitian & supplements
  - Exhaustion – psychosocial
  - Slow, weak, low energy – home exercise with physio
- Multidisciplinary case management

Effective at 12 m

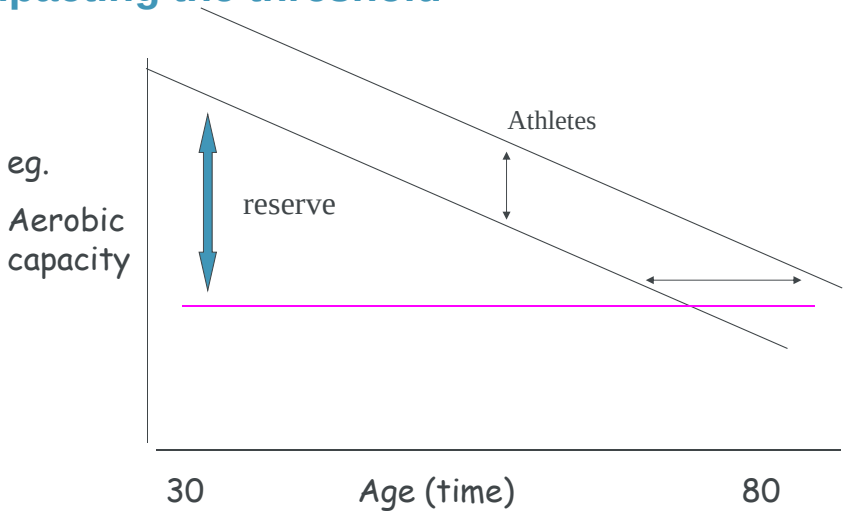
- Frailty and mobility
- 14% lower prevalence frailty
- Reduction in frailty score
  - Int 0.80 (SD = 1.19)
  - Ctrl 0.41 (SD = 1.02)
- NNT 6.8
- Maintained mobility
- Expensive, intensive.

Cameron et al. BMC Medicine 2013, 11:65
http://www.biomedcentral.com/1741-7015/11/65

Functional reserve and thresholds



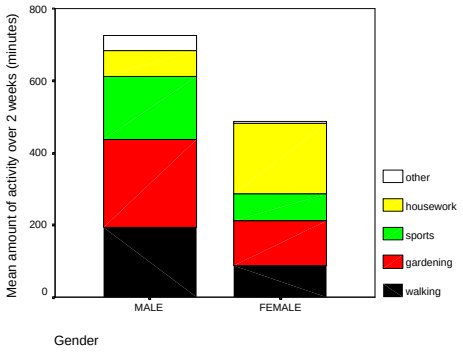
Impacting the threshold



Hodgeson

Physical activity – community

- 164 women, 103 men
- age 73.6 (65-97yrs)
- Walking, (min/ 2 wks) 137min
- Oldest old had similar pattern



Joan, age 82

Encourage activities and walking

Beryl, age 78

Treat Beryl – exercise, nutrition
- health intervention
- respite, carer relief