Future eFI developments

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I believe that the more you know about the past, the better you are prepared for the future
Theodore Roosevelt

Evidence base for community-based frailty interventions

Intervention	Outcome
Comprehensive geriatric assessment of older people	14% reduction in nursing home admission
Comprehensive geriatric assessment of 'frail' older people	10% reduction in hospital admissions
Community-based post discharge care	12% reduction in nursing home admission 10% reduction in hospital admission
Group-based education (supported self-management)	40% more likely to be living at home
Falls prevention	8% reduction in falls
Exercise interventions	Improved function

We were stuck

We had an idea

Use routine data in the primary care EHR

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Beswick Lancet 2008

Original aims

1. To develop, validate and implement an eFI to help primary care clinicians identify frailty in the older population, based on the cumulative deficit model as an internationally established standard

2. To make the eFI widely and freely available to providers of EHR systems and risk stratification software

eFI development and validation

Development cohort 250,000

Internal validation cohort 250,000 ----> External validation cohort 500,000

Clegg Age Ageing 2016 (open access)

- Activity limitation
- Anaemia & haematinic deficiency
- Arthritis
- Atrial fibrillation
- Cerebrovascular disease
- Chronic kidney disease
- Diabetes
- Dizziness
- Dyspnoea
- Falls
- Foot problems
- Fragility fracture
- Hearing impairment
- Heart failure
- Heart valve disease
- Housebound
- Hypertension
- Hypotension/syncope
- Ischaemic heart disease
- Memory & cognitive problems
- Mobility and transfer problems
- Osteoporosis
- Parkinsonism & tremor
- Peptic ulcer
- Peripheral vascular disease
- Polypharmacy
- Requirement for care
- Respiratory disease
- Skin ulcer
- Sleep disturbance
- Social vulnerability
- Thyroid disease
- Urinary incontinence
- Urinary system disease
- Visual impairment
- Weight loss & anorexia

Outcomes

Outcome	Mild frailty (HR, 95% CI)	Moderate frailty (HR, 95% CI)	Severe frailty (HR, 95% CI)
1 yr care home admission	**2.00 (1.68 to 2.39)**	**2.70 (2.41 to 3.04)**	**5.94 (4.61 to 7.64)**
3 yr care home admission	1.52 (1.37 to 1.69)	2.70 (2.41 to 3.04)	3.42 (2.84 to 4.12)
5 yr care home admission	1.56 (1.43 to 1.70)	2.34 (2.10 to 2.61)	3.00 (2.42 to 3.70)
1 yr hospitalisation	**1.85 (1.81 to 1.88)**	**2.96 (2.90 to 3.02)**	**4.62 (4.50 to 4.74)**
3 yr hospitalisation	1.71 (1.69 to 1.73)	2.54 (2.51 to 2.58)	3.64 (3.57 to 3.70)
5 yr hospitalisation	1.63 (1.61 to 1.64)	2.43 (2.40 to 2.46)	3.59 (3.54 to 3.65)
1 yr mortality	**1.91 (1.78 to 2.04)**	**3.39 (3.15 to 3.65)**	**5.23 (4.73 to 5.79)**
3 yr mortality	1.74 (1.68 to 1.81)	3.02 (2.90 to 3.14)	4.56 (4.29 to 4.84)
5 yr mortality	1.66 (1.62 to 1.71)	2.73 (2.64 to 2.81)	3.88 (3.68 to 4.09)

Clegg Age Ageing 2016 (open access)

National implementation & dissemination

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Future eFI developments

1. Resolvable deficits/time constraints
2. Weighting of deficits
3. Mapping to frailty domains
4. Refinement of cutpoints & language
5. Refining target populations for interventions
6. Current and future cost of frailty to health and care (Kristin Bash)

1. Resolvable deficits

- Many of eFI deficits are long-term conditions, but some may resolve, e.g.
    - Anaemia
    - Dizziness
    - Dyspnoea
    - Peptic ulcer
    - Respiratory problems
- Currently working on next iteration with colleagues in Manchester (David Reeves/Stephen Pye), to incorporate time constraints
- Need to continuously consider wider implementation

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2. Weighting of deficits

- Cumulative deficit model & underpinning theory (improper linear modelling) aligned with equally weighted deficit approach
- With very large datasets may be more appropriate to assign weights to individual deficits
- Potential to improve both performance and face validity
- Avoid including age!
- Need to continuously consider wider implementation

3. Mapping to frailty domains

- Comprehensive geriatric assessment is an evidence-based approach for the assessment & management of frailty
- Typically structured around medical, functional, social, psychological, pharmacological domains
- PFISH project (David Reeves/Stephen Pye, University of Manchester) currently investigating mapping eFI to these frailty domains
- Could help inform new care pathways for people living with frailty

4. Refinement of cutpoints & language

eFI cutpoints (fit, mild, moderate, severe) derived using population quartiles

FIT 50% MILD 35% MOD 12% SEV 3%

Frailty Index

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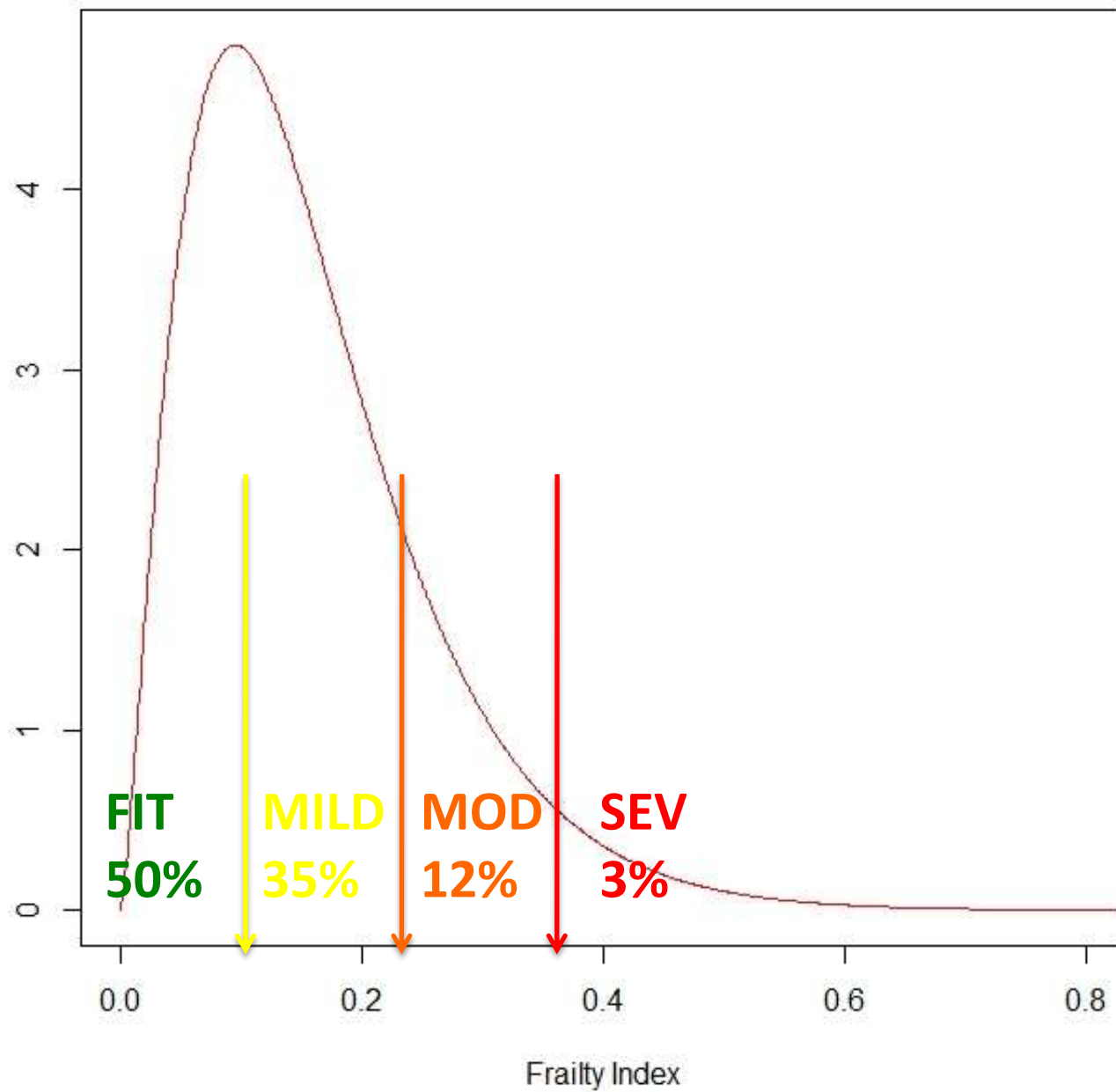
4. Refinement of cutpoints & language

- Opportunity to refine cutpoints by assessing performance of eFI against research standard assessments

- Opportunity to refine language of frailty, including incorporating concept of pre-frailty

- May help improve both predictive validity and clinical face validity

- We have the capability to do this as have established the CARE 75+ cohort study & currently cross-walking eFI to ELSA FI

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Clinical Frailty Scale*

1   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 Ill - 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.

DALHOUSIE UNIVERSITY
Inspiring Minds

5. Refining target populations for interventions

Personalised care planning to improve quality of life for older people with frailty

Clegg A, Young J, Bower P, Cundill B, Farrin A, Foster M, Foy R, Hartley S, Hawkins R, Holmes J, Hulme C, Humphrey S, Lawton R, Pendleton N, West R, Bates C, Nazroo J

NIHR PGfAR

£2.7M (October 2017 to February 2023)

Personalised Care Planning for Older People with Frailty

Aim

To establish whether PCP for older people with frailty improves quality of life (SF36) and reduces health and social care resource use at 12 months

Work Package 1

Refining the target population by exploring QoL & health/social care resource use in frailty, using the eFI (ResearchOne; CARE 75+; ELSA)

Work Package 2

Optimising the Age UK integrated care service to deliver PCP for older people with frailty

Work Package 3

Feasibility study (cluster RCT, 8 general practices, 400 participants) - Yorkshire

Work Package 4

Definitive cluster RCT, 40 general practices, 2,000 participants – Yorkshire & Greater Manchester

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Other research projects

1. Declining blood pressure & intensification of management among people over 80 years (KCL – published J Hypertension 2017)
2. Inception & deprescribing of statins in people aged over 80 years (KCL – published Age Ageing 2017)
3. Frailty as a predictor of hospital admission in heart failure (Imperial)
4. Frailty, acute coronary syndromes and outcomes (University of Leeds)
5. Refining blood pressure targets for older people with frailty (University of Leeds)
6. Future possibilities (there are many, and we are very open to ideas!!!)

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Thank You!