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Frailty and the electronic frailty index

April 2019

Improvement Hub

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NHS SCOTLAND

April 2019

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Contents

Introduction

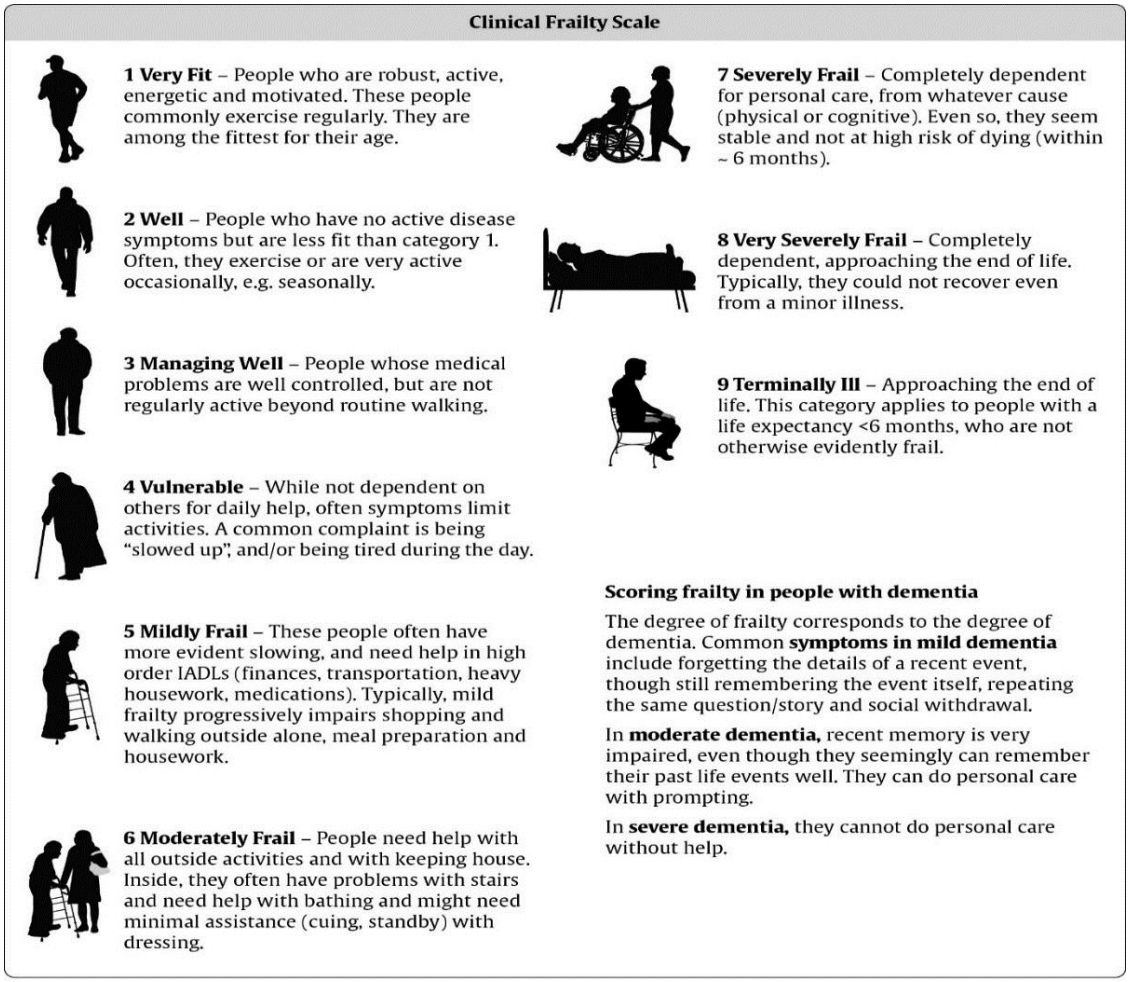
The purpose of this document is to provide health and social care organisations with information on frailty and the electronic frailty index.

What is frailty?

Although there is no universally agreed definition of frailty, most definitions consider frailty a form of complexity, associated with developing multiple long-term conditions over time leading to low resilience to physical and emotional crisis and functional loss leading to gradual dependence on care. In many ways it is progressive like a long-term condition and tools such as the Lifecurve help to explain the decline associated with frailty.

In addition to health related problems, several social factors, such as social isolation and deprivation, can increase the likelihood of someone becoming frail. Although frailty is most commonly associated with older people, it is not defined by age; people living in areas of deprivation are more likely to become frail at a younger age compared to people living in less deprived areas.

The Dalhousie University clinical frailty scale explains the different stages of frailty that people experience



The electronic frailty index (eFI), which is explored in greater detail later in this document, segments the population into the categories of fit, mild, moderate and severe frailty, which align with the Rockwood Clinical Frailty scale.

e-Frailty Index	Rockwood clinical frailty scale
Fit	**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 **3. Managing well** – People whose medical problems are well controlled, but are not regularly active beyond routine walking
Mild frailty	**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.
Moderate frailty	**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.
Severe frailty	**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.

Why is it important?

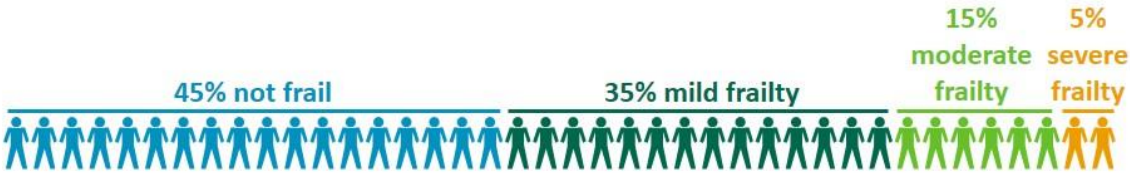
"Frailty is the most problematic expression of population ageing." (Clegg et al, 2013, p. 752)

"The frailty state for an individual is not static; it can be made better and worse."

"Frailty is not an inevitable part of ageing." (British Geriatric Society, 2014, p.7)

Frailty is progressive, and as expected, there is an increase in service use as people become frailer. In Scotland, approximately 35% of the population over 65 years of age are mildly frail, 15% are moderately frail and 5% severely frail.

Midlothian Health and Social Care Partnership have used the eFrailty Index to identify their frailty population. Data from the Partnership demonstrates that as frailty increases in severity, so too does the average length of stay in hospital, the number of GP contacts and the number of medications, resulting in higher costs per person. The medication costs for the general population is £255 per person.



Average length of stay per unplanned admission	13.5	23.4	36.4
Average number of GP contacts	10	14	18
Average number of different prescriptions	9	12	15
Average prescription cost per person	£650	£900	£1.2k
Average cost of unplanned admission cost per person per year	£1,119	£3,175	£5,800
Extrapolated cost of unplanned bed days across Scotland per year	£396m	£482m	£293m

Further data from Midlothian Health and Social Care Partnership and projected to the whole of Scotland shows the total cost of unplanned bed days for the frail population over 65 equates to £1.7 billion per year.

Data from the Kent Integrated Dataset for 2017-2018 (cited in *The Electronic Frailty Index*) demonstrate that, while adjusting for age, gender and deprivation:

- If 10% of the severely frail population had remained moderately frail, the gross savings in Kent would be **£1.6m over 10 months**.
- If 10% of those individuals identified as mildly frail had remained fit, gross savings would be **almost £9m** (due to greater patient numbers).

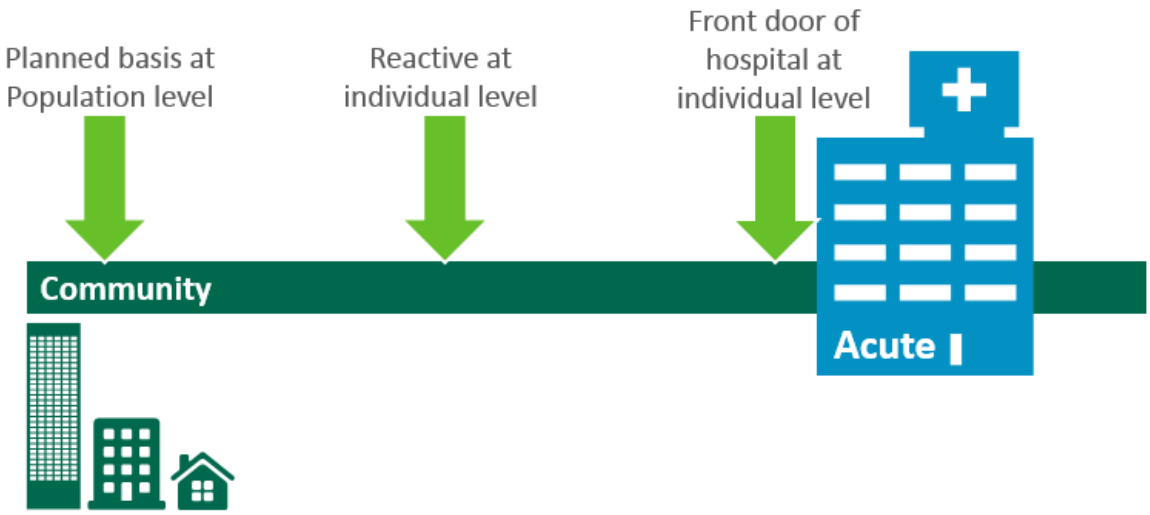
If frailty is identified at an early stage and individuals are targeted with evidence-based interventions that can manage frailty, or reverse it, this can improve people's quality of life and wellbeing. This reduces the likelihood that they will need to access unplanned services due to a crisis, which, in turn, reduces the use of expensive, unscheduled care.

How do you identify people with frailty?

There are a number of ways to identify people with frailty. Broadly speaking these can be divided into two categories:

- Individual assessments
- Population-level assessments

Examples of these different methods for identification include individual assessments of frailty on admission to hospital, reactive individual assessments of function in the community, and planned population-level assessments using existing data.



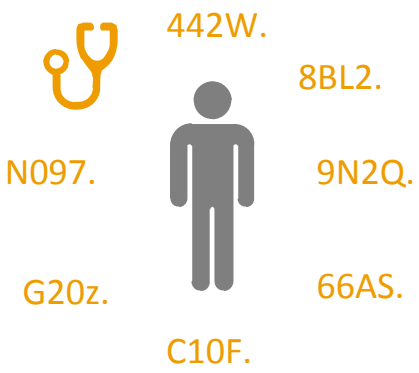
There are benefits to both forms of identification, however a population-level assessment of frailty enables organisations to proactively understand and plan services at scale in response to need. A review of the tools that can be used to identify people with frailty can be accessed on our website.

Of the options for population-level assessments in Scotland, the benefit of the eFrailty Index is that it uses existing primary care data, as opposed to acute data, and is therefore more likely to identify people earlier in their progression of frailty before they experience an acute crisis. The eFrailty Index is based upon a person's needs rather than their service use.

Other prediction tools used in Scotland include the Scottish Patients at Risk of Readmission and Admission (SPARRA) tool and the High Health Gain (HHG) tool, which use predominately acute data to judge level of risk, such as accident and emergency attendances, outpatient appointments, and prescribing information.

What is the eFI?

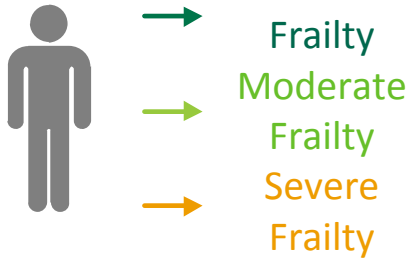
The electronic frailty index (eFI) is a clinically validated tool that can identify people with frailty on a population basis using routinely collected primary care data. The eFI, which uses a cumulative deficit model for frailty, was developed in England using GP data and was validated against a population of over 900,000 people aged 65 years and over.



As individuals interact with GPs, their GP records accumulate a list of read codes and community prescriptions.

The eFI uses a subset of these read codes to interpret any number of up to 36 potential deficits.

The number of deficits that an individual is considered to have is then divided by the total (36) to produce a score.



The score determines whether a person is considered fit (a score below 0.12), mildly frail (0.12 to 0.24), moderately frail (0.24 to 0.36), or severely frail (0.36 and above). This can be calculated for an individual or for a whole GP practice population.

For the eFI to be effective, people need to have interactions with their GP so that read codes can be recorded.

Why use the eFI?

Evidence shows that timely identification of frailty followed by appropriate evidence-based interventions, can help to reduce the likelihood of progression of frailty and support the long-term management of people's health and wellbeing.

Unlike other risk prediction tools that use a person's interactions with secondary care to evaluate risk, the eFI assesses an individual's condition using existing data from primary care systems. This increases the likelihood of identifying individuals most at risk before they experience a crisis.

Why use the eFI through SPIRE?

The eFI is available through GP systems such as Vision and EMIS, however, the benefit of using the eFI through SPIRE is that it includes additional reports which enable practices to identify people who have experienced significant change in their frailty risk over a six-month period. These definitions of change were developed with GP practices following feedback that being presented with simply total frailty numbers produced too great a list to consider and act on.

When using SPIRE to produce an eFI report, you may also notice different results than if you used Vision or EMIS alone. Following small scale testing in Scotland it was recognised that not all codes were being picked up. An independent group of GPs from the Scottish Clinical Information Management in Practice reviewed, added and tailored these codes for the Scottish context. As a result, the frailty scores are more accurate and thorough, taking into account variation in coding across Scotland.

The report is free to use and performs all of the required calculations automatically, providing a list of people in each frailty category which can be further refined at the click of a button.

The eFI report should be accessed via the SPIRE local homepage. If you select the reports display tab, the eFI report will appear on the list on the left of the screen:

The status of SPIRE by NHS Board area can be viewed on their website, along with a frequently asked questions page.

What will my report show?

The eFI will present a report detailing your population that is living with frailty. Those identified are separated into four categories: Fit, Mild, Moderate or Severely frail.

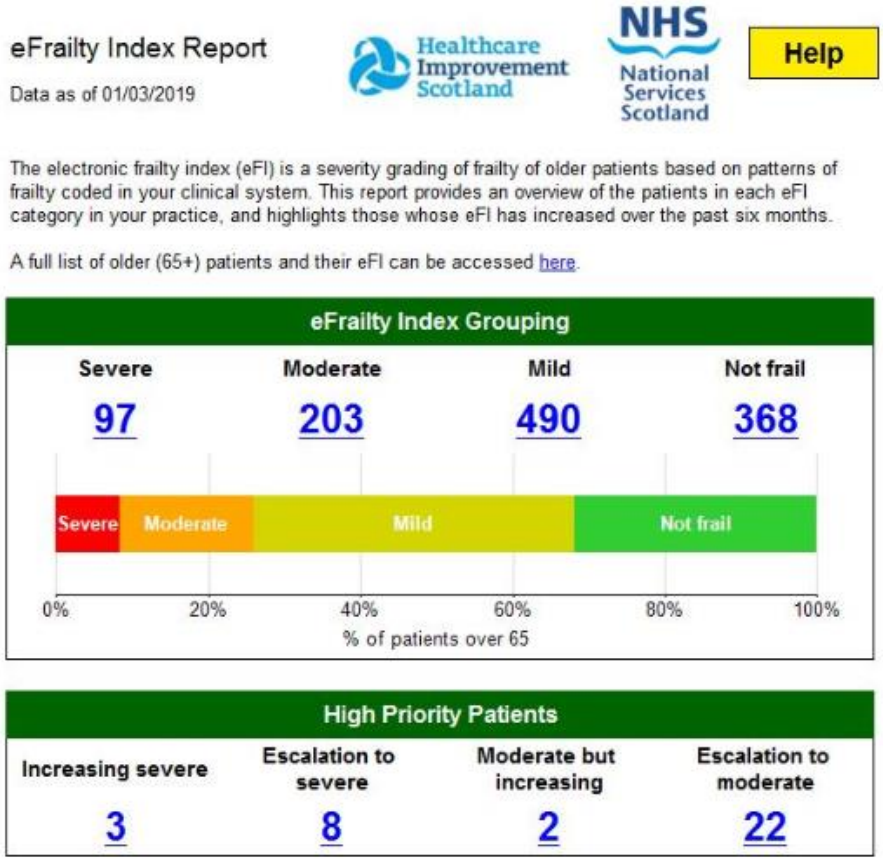


Figure 1: GP dashboard you will see within the report

As mentioned previously it is recognised that simply numbers of people identified as frail may be unmanageable to meaningfully review and act on, therefore when used through SPIRE, the report further refines this population to focus on high priority individuals. The high priority groups include people who:

- escalate to being moderately frail;
- are moderately frail and have experienced significant change; and
- escalate to being severely frail.

Selecting the numbers underneath the category will display a list of individuals within that category.

eFrailty Report

Patient list: Escalation to severe

Data as of 01/01/2016

18 records found

Help

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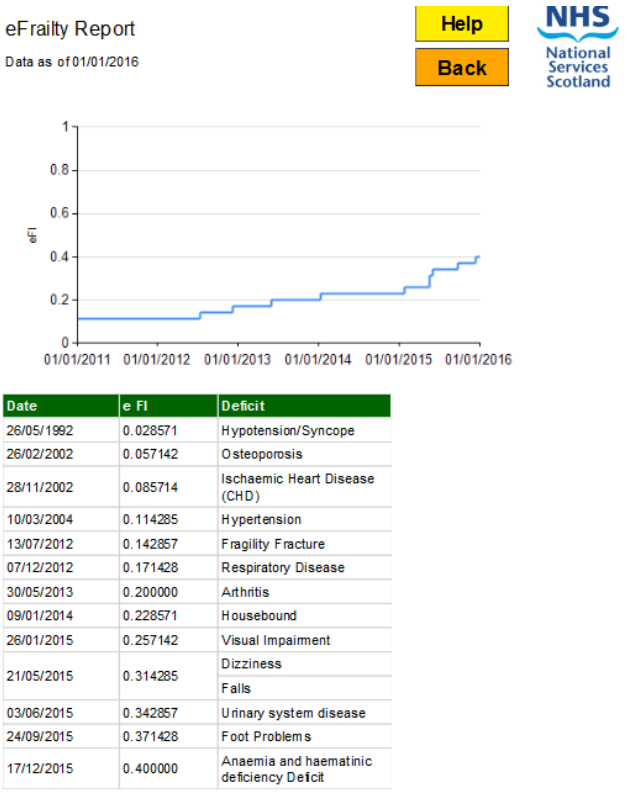
NHS National Services Scotland

CHI Number	Clinical System ID	Surname	Forenames	Age	Gender	Frailty group	Current eFI	Priority group	Change last 6 months
7770005056	ClinicalSystem ID_5056	Surname_5056	Forenames_5056	76	M	Severe	0.40	Escalation to severe	0.06
7770009965	ClinicalSystem ID_9965	Surname_9965	Forenames_9965	67	F	Severe	0.40	Escalation to severe	0.06
7770001060	ClinicalSystem ID_1060	Surname_1060	Forenames_1060	65	M	Severe	0.37	Escalation to severe	0.03
7770001223	ClinicalSystem ID_1223	Surname_1223	Forenames_1223	68	M	Severe	0.37	Escalation to severe	0.09
7770001824	ClinicalSystem ID_1824	Surname_1824	Forenames_1824	71	M	Severe	0.37	Escalation to severe	0.06
7770003540	ClinicalSystem ID_3540	Surname_3540	Forenames_3540	81	M	Severe	0.37	Escalation to severe	0.03
7770005906	ClinicalSystem ID_5906	Surname_5906	Forenames_5906	77	M	Severe	0.37	Escalation to severe	0.03
7770006842	ClinicalSystem ID_6842	Surname_6842	Forenames_6842	78	F	Severe	0.37	Escalation to severe	0.03
7770006846	ClinicalSystem ID_6846	Surname_6846	Forenames_6846	77	F	Severe	0.37	Escalation to severe	0.03
7770008154	ClinicalSystem ID_8154	Surname_8154	Forenames_8154	83	F	Severe	0.37	Escalation to severe	0.03
7770008189	ClinicalSystem	Surname_8189	Forenames_81	78	M	Severe	0.37	Escalation to	0.03

Figure 2: List of individual people who have moved from moderate frailty to severe frailty over the last six months

Teams can then access individual level data on each patient, allowing health and social care partnerships to make the best use of existing resource in the community by targeting their services to the individuals most at risk.



Date	e FI	Deficit
26/05/1992	0.028571	Hypotension/Syncope
26/02/2002	0.057142	Osteoporosis
28/11/2002	0.085714	Ischaemic Heart Disease (CHD)
10/03/2004	0.114285	Hypertension
13/07/2012	0.142857	Fragility Fracture
07/12/2012	0.171428	Respiratory Disease
30/05/2013	0.200000	Arthritis
09/01/2014	0.228571	Housebound
26/01/2015	0.257142	Visual Impairment
21/05/2015	0.314285	Dizziness
		Falls
03/06/2015	0.342857	Urinary system disease
24/09/2015	0.371428	Foot Problems
17/12/2015	0.400000	Anaemia and haematinic deficiency Deficit

Figure 3: Individual report for the person showing the deficits recorded for them, when they first applied to the individual and a chart to show the increase in frailty score over time

Additional information

If you would like more information on frailty prediction or would like to get in touch to hear about the different ways the e Frailty Index is being used to focus support for people with frailty, please contact hcis.livingwell@nhs.net. To support ideas on how to use existing services to support people identified with frailty, an evidence summary of community-based interventions can be accessed on Healthcare Improvement Scotland's website.

April 2019

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or email contactpublicinvolvement.his@nhs.net