Integrated Care Exeter Risk Stratification Model, June 2017

Integrated Care Exeter (ICE) is a strategic alliance of public and voluntary sector bodies with a commitment to developing a model of population health and wellbeing with a focus on early intervention and prevention. Within this we have developed an approach to getting a better understanding of need to see if we could create a systemic way to identify people who could benefit from early interventions that could be used in future to improve outcomes and reduce overall system costs. Our objectives were to:

- Develop a risk stratification model to identify at-risk individuals and use model to identify patterns of need, risk factors and protective factors, and develop whole system cost methodologies.
- Identify how to use the model for proactive identification; personal care, support and escalation plans; social prescribing and preventative work.
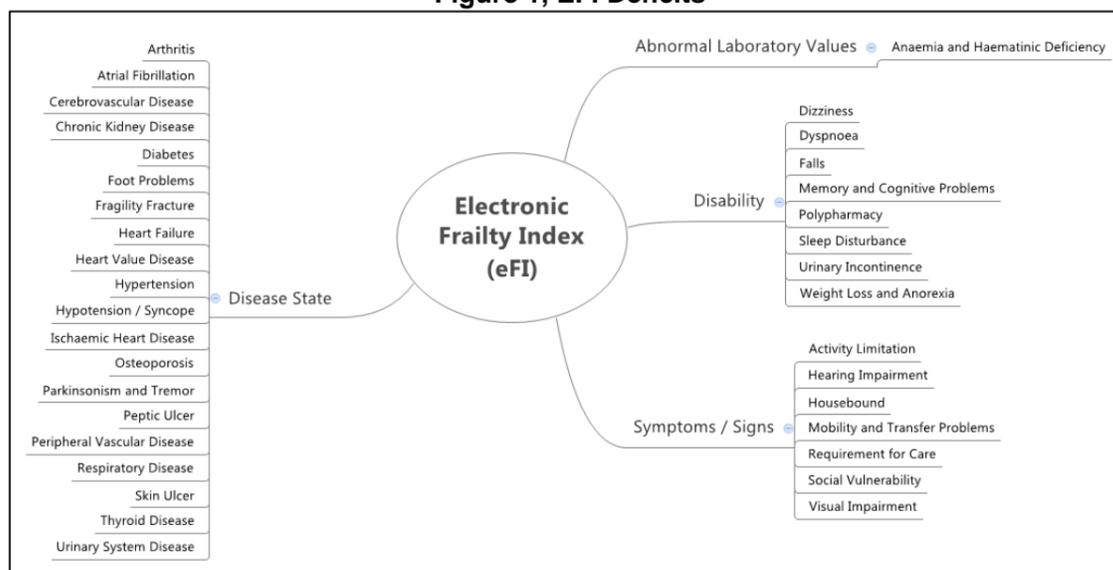
We have created a risk stratification model with four components: the frailty based stratification of the population using GP records, the integration of segmentation data (Mosaic) to gain an understanding of behaviours and attitudes, system-wide linked data on spend and activity, and JSNA data on wider health needs.

The Electronic Frailty Index

The electronic frailty index (EFI) helps identify and predict adverse outcomes for patients in primary care and is used to plan care at an individual and whole system level. The EFI uses a 'cumulative deficit' model, which measures frailty on the basis of the accumulation of a range of deficits, which can be clinical signs and symptoms, diseases, disabilities and abnormal test values (figure 1). These are detected in primary care using a module available on the main GP practice IT systems. The score is strongly predictive of adverse outcomes and has been validated in large international studies. Higher frailty scores are associated with a greater risk of adverse outcomes such as admission to care homes and mortality. We have used the EFI to score to the following frailty categories:

- **Well / Mostly Well (EFI score 0 - 0.12)** – People who have no or few long-term conditions that are usually well controlled. Independent in day to day living activities
- **Mild or pre-frailty (EFI score 0.13 – 0.24)** – People who are slowing up in older age and may need help with personal daily activities e.g. shopping and transport
- **Moderate Frailty (EFI score 0.25 – 0.36)** – People who have difficulties with outdoor activities/mobility, or require help with activities such as washing and dressing
- **Severe Frailty (EFI score > 0.36)** – People who are often dependent for personal cares and have a range of long-term conditions/multi-morbidity.

Figure 1, EFI Deficits

Data Definitions (whole model)

Electronic Frailty Index (EFI) Local Extract	**Base Data Source for Risk Stratification Model (pseudonymised at source)** Pseudonym, Age, and Sex; Area Identifiers (LSOA, IMD, Park Home, Care Home); Activity measures (GP events, unique prescriptions, condition count); EFI Score, Deficit Count and Frailty Category (Well/Mostly Well, Mild, Moderate, Severe); Y/N Fields for 36 frailty risk factors in figure above (known in EFI as deficits); Y/N GP disease registers (Coronary Heart Disease, Stroke, Hypertension, Diabetes, Chronic Obstructive Pulmonary Disease, Epilepsy, Hypothyroidism, Cancer, Serious Mental Illness, Asthma, Heart Failure, Dementia, Depression, Chronic Kidney Disease)
Mosaic	**Matched at source to EFI local extract** Mosaic Group (15 groups based on social and behavioural characteristics attributable at postcode and household level); Mosaic Type (66 types within these groups with more specific characteristics); Overviews and Data (covering characteristics, attitudes, behaviour and communications)
Pathway Costing	**Matched to EFI Local Extract and Mosaic using common pseudonym** Secondary Care (inpatient, outpatient and urgent care activity and spend); Social Care (activity and costs by care settings and direct payments)
Health Needs Mapping	**Analysed and compared at LSOA level** Measures on population, health status, disease prevalence, health and care activity, morbidity, and mortality from the Devon JSNA)

Findings to date

1. **Frailty is not an inevitable part of ageing** – Frailty is not an inevitable consequence of ageing. Many people live to an advanced age while maintaining physical and cognitive function, functional independence and a full and active life, with ill health and disability compressed into a relatively short period before death.
2. **There is a considerable window of opportunity to intervene when signs of pre-frailty first appear** – Analysis reveals a slow progression from mild to severe frailty with great scope for intervention. Those identified as severely frail today were typically only just entering the pre-frail group 10 years ago. This supports national research which indicates a 10 to 20 year period between exhibiting the first signs of frailty and severe frailty. As a risk stratification approach, the electronic frailty index identifies these early signs and can be used to enable and direct early preventive action.
3. **Resource use increases with frailty** – Frailty is associated with an increased risk of adverse health outcomes, which can be mitigated or prevented with appropriate multidisciplinary interventions. Frailty in older people negatively impacts on their quality of life and causes ill-health and premature mortality. Older people who are frail have an increased risk of falls, disability, long-term care and death.
4. **Disabilities and signs and symptoms deficits (including social and psychological influences) contribute to the pattern of frailty as much as long-term conditions** – Factors relating to activity limitation, social factors, mental health issues and other related factors can have just as much impact on frailty and quality of life as specific medical conditions. Issues such as polypharmacy, sensory impairment, dizziness, sleep disturbance and being housebound figure prominently.
5. **Male frailty is under-recorded, indicating a greater reluctance to seek help and highlighting challenges in relation to early identification** – Rates of male frailty and pre-frailty detected in primary care are lower than females even when you control for age. However, this does not necessarily indicate less frailty, but rather that males may be less likely to visit their GP with early signs and symptoms, and are more likely to end up with a health crisis later in life, leading to higher levels of emergency care, ill health, and premature death.
6. **Whilst frailty increases with age, a fairly small proportion of people in their nineties and over are severely frail** – The proportion of people with severe frailty in their nineties and older (16.5%) is still broadly similar to those in the well or mostly well category (13.4%), with frailty when present more likely to be mild or moderate. Almost half of persons aged 65 and over (45.7%) are in the well / mostly well category. The earliest onsets of mild frailty are typically seen in people in their twenties and thirties, with moderate frailty emerging in people in their forties and fifties, and severe frailty emerging in people in their fifties and sixties, highlighting considerable variations.
7. **People living in more socially deprived are more likely to be frail** – People living in socially deprived areas are more likely to be frail. Age–standardised percentages show levels of mild frailty up to 32% higher in the most deprived areas compared with the least deprived, with even greater differences for moderate (83%) and severe (147%) frailty.
8. **The onset of frailty and pre-frailty in more deprived areas is 10 to 15 years earlier** – The pattern of frailty by deprivation is marked by an earlier onset of frailty and pre-frailty in more deprived areas, with people experiencing frailty 10 to 15 years earlier than those in the least deprived areas.
9. **Where you live and the type of house you live in can be a predictor of** frailty – People living in certain household types are more likely to experience frailty. This includes park / mobile homes, social housing (especially units designed for older people), owner occupied bungalows, people in privately rented accommodation on public transport routes and in multiple occupation, and people living in care homes.
10. **Identification of risk factors and accurate recording is vitally important**

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