Healthy Ageing Collaborative: Electronic Frailty Index

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Development and validation of an electronic frailty index using routine primary care electronic health record data

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Figure 1. Five-year Kaplan–Meier survival curve for the outcome of mortality for categories of fit, mild frailty, moderate frailty and severe frailty (internal validation cohort).
Figure 2. Relationship between age, electronic frailty index score and mortality (internal validation cohort).
eFI Engagement Map

http://www.improvementacademy.org/improving-quality/efi-engagement.html
Leeds Identifying Care Management Cohorts: eFI/CPM/LTCs

- Top 2% (CPM): 1,668 (25.7%)
- Top 2% (eFI): 818 (12.6%)
- Top 2% (Count LTCs): 1,154 (17.8%)

Other values:
- 1,461 (22.5%)
- 1,461 (22.5%)
- 575 (8.9%)
- 643 (9.9%)
- 175 (2.7%)
Leeds Integrated Dashboard:
Pts with >7 deficits (eFl > 0.19)
Secondary & Social Care

Unplanned A&E

Hospital Admissions

Re-admissions

New Social Care Referrals

Social Care Need
Proactive Falls Prevention

Practice-Based Falls Prevention Interventions:

- A lying and standing blood pressure measurement
- A GP led mini medication review
- Health promotion related to falls prevention
- Onward referral to Falls Clinic/Community Services/Voluntary Sector/Social Care
Proactive Falls Prevention

97 patient records with an eFI score of 0.25 aged >65 (mean 77)

20 patients invited in for falls prevention interventions (n= 9 accepted)

100% patients were on at least one medication that could contribute to falls. The mean number of medications per patient was 10 (range 3-24)

26 patients had a fracture aged ≥50 yrs (27%)
Intervention Results

- 61% telephone screened for falls risk
- 65% (n=39) had fallen or stumbled in the last 12 months; Only 22 patients had a fall documented in their records (22%)
- Of patients attending, 27% had evidence of a significant lying/standing BP drop
- 90% required interventions to reduce their falls risk - such as medication changes, or referrals to secondary care

Case Study

- 86 year old diabetic man on insulin; lives on his own; ex journalist
- Telephone screen no falls but unsteady when standing / walking
- Low mood on depression screen when seen
- Found to have significant orthostatic hypotension but also blood pressures high
- BP medication was increased
- Referred into social prescribing service
NHS HaRD CCG: 
S1 STOPP & de-prescribing in care homes

22 residents nursing home registered with East Parade GP Practice
All residents diagnoses with frailty

Results

• STOPP alerts were generated in 15/22 patients
• No concerns in remaining 7 pts
• Overall, 5 drugs stopped completely; dose reductions for another 8 drugs; review further 3 of these
• 7 drugs were reviewed but continued
• Follow up audit 2 months after the initial review to understand if there were any adverse outcomes:
  - All relevant patients reviewed
  - No adverse outcomes reported on the reduced medication regimes.
  - None of the agents stopped restarted, nor returned to original dose.
  - In at least 3 cases, a dose reduction was made, or medicine stopped.
  - At least 2 patients report symptom improvement since stopping medication
## STOPP Alert Examples

<table>
<thead>
<tr>
<th>Alert</th>
<th>Number of patients</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review use of PPI for uncomplicated peptic ulcer disease or erosive peptic oesophagitis at full therapeutic dosage for &gt; 8 weeks (dose reduction or earlier discontinuation indicated)</td>
<td>4 patients</td>
<td>Stopped completely for one patient as no clear indication. Dose reduced to maintenance level for the 3 other patients who were all on concurrent anti-coagulation (NICE CKS recommends low dose PPI in patients at high risk of GI side effects <a href="http://cks.nice.org.uk/antiplatelet-treatment#iscenariorecommendation">http://cks.nice.org.uk/antiplatelet-treatment#iscenariorecommendation</a>)</td>
</tr>
<tr>
<td>5 Alerts: Loop diuretics and incontinence</td>
<td>1 patient</td>
<td>Continue furosemide 40mg as HF symptoms better with this dose. Continue prn codeine as cannot tolerate other pain relief. Try lower dose amitriptyline with a view to stopping. Reduce lansoprazole to 30 mg od initially, with a view to cutting down to 15mg. Reduce dose bisoprolol as BP tends to be low</td>
</tr>
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Patients with severe & moderate frailty
Practice Nurse led home based frailty screen
PNs supported by Community Matrons
Individualised care & support plans
PN LTC clinics backfilled by HCA

Frailty Ax incorporates:
What is important for the patient (& their carers)
Gait assessment (using TUAG)
Routine bloods (FBC)
Sight & hearing tests
Dementia screening
Long-term condition management (not in isolation)
Medication review with support from a CCG funded community pharmacist

Measures

Patient level:
• Improved Patient Satisfaction & Quality of Life (SF-36)

Process:
• Improved recognition & diagnosis of frailty
• Number patients with medication review/evidence of de-prescribing

Service level:
• Reduction in Primary Care Consultations
• Reduction in Out of Hours Consultations
• Reduction in Disease Specific Secondary Care referrals
• Increase in Social Care, VCS referrals
Mr A Case Study

62 year old male
eFI 0.25 (moderate frailty)

History:
Acute MI 2002
Heart failure 2006
AF 2010
Type 2 diabetes 2015
Sarcoidosis May 2006

Medications:
Atorvastatin 80mg ON
Clopidogrel 75mg OD
Salbutamol Inhaler PRN
GTN spray
Ramipril 10mg ON
Indacaterol 150mg OD
Furosemind 40mg OD
Bisoprolo 10mg OD
Metformin 500mg TDS

Ax Findings:
- Assessment of daily living activities
- Grip strength: 51.7 Kg (8 st 2 lb)
- Exhaustion: yes frailty score 1
- Limited walking ability outdoors with or without aid: yes frailty score 1
- Difficulty in walking: 24 seconds frailty score 1
- 0 falls
- Wife reports can’t hear
- Patient struggles to sleep - not restored upon waking
- GP assessment of cognition patient examination: 7/informant interview: 4
- PHQ9:19

Interventions:
- Examined ears: wax +++- syringing arranged
- Declined Social Services referral
- Referral to Elderly Medicine Clinic
- Sleep diary provided
- PHQ9 score discussed by GP with patient. Decision made not to start medication.
- GP reviewed pts main problems of concerns with breathing- under Respiratory consultant who is arranging pulmonary rehab.
- Unplanned admissions care plan completed
- Stopp/Start protocol run for patient- B blocker reviewed. Decision made to continue; awaiting review by Clinical Pharmacist
NHS NWL CCG: Whole Systems Care > 65 year olds

50 GP Practices across the CCG each with an average of 512 patients > 65 years old
Aim: shared decision-making plus simpler access & shared care plan for all patients
  • Primary care accountable & hold a central role
  • eFl alongside GP knowledge of patient used to risk stratify entire CCG cohort >65
Tiered care with discrete care pathways per tier: tiers 2 (moderately frail) and 3 (severe frailty) patients are offered a minimum of two extended care planning sessions per year with their GP & Case Manager; exploring self-care component for mildly frail
Model supported by a number of local operational Whole Systems ‘hubs’; co-location at hubs to ensure MDT input
Interfaces with community services, mental health, out-of-hours care, social care & the VCS are key enablers
1. **People have a high quality of life**
- Number of days in hospital. This will evolve into ‘Days at Home’ depending on availability of data.
- % of service users responding ‘very confident/fairly confident’ to the survey question: How confident are you that you can manage your own health?
- % of service users responding ‘yes’ to the survey question: Did you help put your written care plan together?
- Social care-related quality of life

1. **Care is safe, effective and people have a good experience**
- % of service users responding ‘yes’ to the survey question: In the last 6 months, have you had enough support from local services, or organisations to help you manage your long term condition?
- % of service users with all of the following: care plan/goals set/crisis care guidance in previous 12 months
- A&E activity for ambulatory sensitive conditions

1. **Professionals experience an effective integrated environment**
- % of WSIC staff responding ‘strongly agree/agree’ to:
  - Professionals who agree they are working in an integrated way to support service users and carers.
  - Professionals able to deliver the patient care they aspire to.
  - Professionals who would recommend their integrated care partnership as a place to work.

1. **Care is financially sustainable**
- Spend within set capitated budgets for target population
- Shift in spend from acute to out of hospital

1. **Care delivery is efficient**
- Emergency readmissions within 30 days of discharge from hospital
- Weekend discharge rate
- Non-elective admissions
Integrated Care Exeter (ICE) Foxhayes Practice eFI Analysis

Severe Frailty
16 (0.5%)
eFI Score 0.36 and over 13 or more deficits

Moderate Frailty
51 (1.5%)
eFI Score 0.24 to 0.36 9 to 12 deficits

Mild Frailty
203 (5.9%)
eFI Score 0.12 to 0.24 5 to 8 deficits

Well or Mostly Well
3,174 (92.2%)
eFI Score <0.12 0 to 4 deficits
Foxhayes eFI
MOSAIC Risk Map

Highest age standardised EFI scores in:

private rental and social housing area for older people
social housing for older people and bungalows
Living alone associated with frailty
eFI Frailty Categories

**Fit** (eFI score 0 - 0.12): People who have no or few long-term conditions that are usually well controlled. This group would mainly be independent in day to day living activities.

**Mild frailty** (eFI score 0.13 - 0.24): People who are slowing up in older age and may need help with personal activities of daily living such as finances, shopping, transportation.

**Moderate Frailty** (eFI score 0.25 - 0.36): People who have difficulties with outdoor activities and may have mobility problems 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. Some of this group may be medically stable but others can be unstable and at risk of dying within 6 - 12 months.
National Frailty Community of Practice

Online community to enable sharing of learning & exploration challenges with others who are implementing new models of care for people with frailty nationally

To join:

• Register with the Co-Creation Network (CCN) at:
  • http://iacocreationnetwork.com/register/

• Once membership is approved, log in to CCN site & request membership of ‘National Frailty Community of Practice’ at:
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