Back to Baseline: Job Done?

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A snapshot of the older population

- OK at home
- Acute illness
- Supported at home
- “vulnerable” at home
- in care homes
A snapshot of the older population

- OK at home
- Acute illness
- Supported at home
- "vulnerable" at home in care homes
Putting panic aside, what is the general shape of our health and social care effort?
• Low and relatively reducing institutional care
• Reducing social care support, especially light
• Increasing admissions rates but variable
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..which is regarded as a problem
• Low and relatively reducing institutional care
• Reducing social care support, especially light
• Increasing admissions rates but variable

..which is regarded as a problem

...and which is partly explained by readmissions especially for non-specific causes
This includes increased use of health care (and social care) during last year of life

....which is not really age related so much as death related
Costs by age and type in last year of life (Nuffield Trust 2012)
General proposition

We do acute care quite well, and quicker
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... but we don’t focus so much on what happens next.
General proposition

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... but we don’t focus so much on what happens next
.. or perhaps what should happen next
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.....and it’s possible that not getting it right is causing a lot of problems – like readmissions etc
General proposition

We do acute care quite well, and quicker
... but we don’t focus so much on what happens next
.. or perhaps what should happen next
.....and it’s possible that not getting it right is causing
a lot of problems
.... that so far have prompted structural or system
type responses (policy led)
We do acute care quite well, and quicker
... but we don’t know much about what happens next
.. or perhaps what should happen next
.....and it’s possible that not getting it right is causing a lot of problems
.... that so far have prompted structural or system type responses (policy led)
.... But not sure this has worked!
Outline

• Trajectories through acute illness
• What factors influence outcomes?
• Can we predict to prevent—usefully?
• What might be things we can change?
• With what interventions?
• Do we do these things?
• Do we know how to and when to do them?
Trajectories through illness for the sort of older people we work with

- Decline during 2-4 weeks before admission in ~50%
- Decline during admission in over 50%
- Recovery (ADL) by 4 weeks in about 50% of these
What factors predict outcomes after an acute admission (death and functional decline etc)

**Inconsistent:**
- Age becomes less important with severe illness etc
- Gender
- Co-morbidities - but COPD, CCF often

**Consistent:**
- Cognition at admission
- Functional level *change* before
- Frailty

Multiple sources
What factors predict readmission?
SR of 12 observational studies (Garcia-Perez L QJM 2011)

- Socio-demographic factors explanatory in few models
- Prior admissions and LOS were frequently relevant
- Morbidity and functional disability were the most common risk factors.

- Clinical experience suggests that whilst most are associated with progression of illness, ....

............. the variability between individuals is to do with something else, more like resilience
Can we use prediction tools to help target post admission interventions?

- Numerous studies show sensitivities and specificities which are inadequate for any individual patient clinical decision making

  (eg Wou F et al, Age Ageing 2013)

Perhaps because.................
For older patients as a group, severity of illness and previous functional ability are equally predictive

But for individuals
The balance is highly variable
Predicting the course of events in individuals is a complex task

- A clear trajectory pattern only if death from dementia and sudden death
- Of the rest, only 1/3 had one of these patterns  Gill T et al, NEJM 2010
Hospital admissions disrupt trajectories of disability in the last year of life: prospective cohort study of older people

(Gill T et al, BMJ May 2015)

- Trajectories of disability in last year of life for 552 who died from 754 initially non disabled people
- 6 trajectories of disability in the last year
- Most trajectory patterns were accelerated by a hospital admission
- Related to the illness + the hospital effect
So, unlike in sport..............if it doesn’t kill you, it doesn’t make you stronger
What potentially reversible factors produce the longer term destabilisation (including the hospital effect)

- Low mobility during illness
- Poor nutritional state and low intake
- LOS ill or in hospital
- Persistent delirium

- Functional change before and during each are predictive of later outcomes
- Gait speed at discharge as good as any predictor

Multiple sources
Story so far

• Illness etc is destabilising and variable
• It is desirable to maximise recovery and QoL after any acute illness or injury
• If we do, then it will probably reduce readmissions
• We (or an algorithm or manager or the Kings Fund) can identify populations at risk
• But that does not help us with individuals

So what can be usefully done?
What measures at or after discharge might help? - some examples

• RCT - comprehensive medication review, education on self-management of disease, and detailed communication with outpatient health professionals. *(Legrain S et al, JAGS 2011)*
  ➢ Helpful at 3 months, but not 6 months

• SR – CGA at time of short admission *(Conroy et al, AAgeing 2011)*
  ➢ No evidence THEN of effect on readmissions etc

• RCT - exercise and home visits +telephone follow-up for 24m
  ➢ Impact on ADL etc at 4 weeks, did not sustain

*(Courteney MD J Eval Clin Pract. 2012)*
And CGA during the admission has lasting effects

**SR** (Ellis G et al, Cochrane Review 2011)

- More likely to be living at home at 6 months
RCT of specialist geriatric medical assessment for patients discharged from hospital acute assessment units

- CGA at around admission,
- plus CGA orientated clinics + advice to primary care

- No significant impact on days at home, mortality, institutionalisation, dependency, mental wellbeing, quality of life, and health and social care resource use in next 90

- And any differences were not cost effective

Interventions to reduce unplanned hospital admission:
2012
a series of systematic reviews

Funded by National Institute for Health Research
Research for Patient Benefit no. PB-PG-1208-18013
Summary findings on Readmissions relevant to our patient population

• Exercise + Rehabilitation (Cochrane)
  ➢ COPD, HF, effective
  ➢ Stroke, Older people not effective

...but we know that some are!

• Telemedicine (SR and meta-analyses in UK)
  ➢ Diabetes, Hypertension, IHD, Older people – some effect

• ED intervention inadequate evidence
• Continuity of care pathways inadequate evidence
Summary findings on Readmissions

- Case management (+ in heart failure only)
- Nurses’ home visits - weak generally negative evidence
- Pharmacy medication reviews – 2 negatives
- Hospital at home – *increased readmissions*

*(but what about supported discharge teams as part of intermediate care?)*
What has been the DH policy approach?

Prevention projects (POPP) 2006-2008

• 29 local projects aimed to “shift resources and culture away from institutional and hospital-based crisis care for older people towards earlier, targeted interventions within their own homes and communities.”

• Nuffield Trust 2011 Evaluation of 8 – “when compared to matched control patients, we did not find evidence of a reduction in emergency hospital admissions. In some instances, there were more admissions..”
Next came the 16 Integration pilots

- risk profiling tools to identify older people at risk of emergency hospital admission, ...... combined with intensive case management for people at risk
- Interventions focused mainly on delivery system redesign and improved clinical information systems

- DH funded quantitative evaluation of 6 of the 16
  - 7% increase in admissions
  - (but reduced OPD and costs)
So these targeted approaches based on some sort of risk profiling and some sort of intervention, don’t seem to help
So these targeted approaches based on some sort of risk profiling and some sort of intervention, don’t seem to help

Issues (i) Who (ii) What
Reducing emergency admissions: are we on the right track?

Most attempts to reduce emergency hospital admissions are focused on people at high risk. Martin Roland and Gary Abel highlight the misconceptions behind this approach and suggest what to do about them.

Martin Roland professor of health services research, Gary Abel research associate

Cambridge Centre for Health Services Research, University of Cambridge, CB2 2BN, UK
Who should we target?

To achieve a total 10% reduction, we need a success rate of

- 107% of the very high risk (highest 0.5% risk)
- 39% success for the moderate risk (highest 20% risk)
- 25% success rate for the lower risk (remaining 80%)
Story so far

• Targeting based on management data is theoretically unlikely ever to work at scale
• System approaches based on “integration” with ill-defined interventions don’t work

( just like improving medicines adherence for the wrong patient or with the wrong medicine does not help)
What about Intermediate Care?
Safety, timely hospital discharge and ongoing function orientated rehabilitation

Time from onset of disabling illness

(intensity)

nursing

medicine

physio

occupational therapy

social care

(adapted from HAS Thematic review 1997)

- Slight rise in short term readmission rates for elderly patients with a mix of conditions (adjusted HR 1.57; 95% CI 1.10 to 2.24; N = 705).
- Fewer people in residential care at follow up (RR 0.63; 95% CI 0.40 to 0.98)
- Patients had increased satisfaction
- Evidence on cost savings was mixed.

But in fact this was a mix of early substitution and later post acute support
Is current IC likely to be a sufficient service response to the optimisation of recovery so as to improve outcomes?
National Audit of Intermediate Care
2014 (12,022 people)

Service user data: Change in total Modified Barthel score against length of stay (bed based)
National Audit of Intermediate Care
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Service user data: Change in total Modified Barthel score against length of stay (bed based)

Mean change from 55 to 74 (11 to 15), change 19 (about 4 on the 0-20 Index)
National Audit of Intermediate Care
2014 (12,022 people)

Service user data: Change in total Modified Barthel score against length of stay (bed based)

72% of home based users improved Barthel
But does functional recovery (spontaneous or rehab induced) provide the improvements we need?
What contributes to reduced rates of readmissions or care home admission?

- RCT of a supported discharge team (1994)

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>P</th>
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<tbody>
<tr>
<td>Outcomes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Readmissions 6 weeks</td>
<td>14%</td>
<td>38%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>No readmissions by one year</td>
<td>40%</td>
<td>16%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Care home at one year</td>
<td>8%</td>
<td>40%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Clinical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barthel IQ range at 6 weeks</td>
<td>11-19</td>
<td>8-18</td>
<td>NS</td>
</tr>
<tr>
<td>Barthel IQ range at 12 weeks</td>
<td>10-19</td>
<td>9-18</td>
<td>NS</td>
</tr>
<tr>
<td>Morale (0-21, better) at 12</td>
<td>9-20</td>
<td>4-15</td>
<td>NS</td>
</tr>
<tr>
<td>aMTS change over 12 weeks</td>
<td>4.5-9.5 to 7-10</td>
<td>4-9 to 5-10</td>
<td>NS</td>
</tr>
<tr>
<td>Any clinically significant change from baseline to 12 weeks</td>
<td>20%</td>
<td>25%</td>
<td>NS</td>
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</table>
So it looks like “back to baseline” (functional ADL) might not be necessary or sufficient
So what else is going on and might need our attention?
What domains might we wish to address?
(based on WHO ICF model)

Usual ageing

Disease

Lifestyle

Health related behaviours

Strength, balance, cognition

Activity

ADL capacity

Social networks

Dependency

Social Role Participation

Self-efficacy

Autonomy
How are these factors impacted by the acute admission?
Protein-Calorie Malnutrition and Recovery from Illness

- immune response
- impaired muscle and respiratory function,
- overall increased susceptibility to relapse  
  (Kelly 1984; Potter 1995; Robinson 1987; Sullivan 1990; Windsor 1988).

**Associated with**

- Apathy, depression, fatigue and a loss of will to recover
Sedentariness

- Ten days of bed rest in stable older person
  - $\downarrow$ 1 kg muscle mass
  - $\downarrow$ 16% muscle strength
  - But this does not necessarily lead to $\downarrow$ physical performance

But will impact an unstable ill person

- Time upright and time weight-bearing in hospital is variable but generally less than one hour for older people during acute admissions.
  - Impact greater at catabolic and less reserve
Delirium

- This lasts months in many people
- Long term impact on executive function (Hall et al)
- Looks like some of our presidents pet hates
  - No rehab potential
  - Poor motivation
  - etc
What does it feel like acutely admitted frail elderly patients 1 week after discharge home

Qualitative study to identify factors affecting well-being

- contact with health care system created frustrations + worries,
- physical disability, loneliness, and inactivity

Therefore, in this transition phase, a multidimensional and bio-psycho-social perspective needed

So what is he actually banging on about?
To restore resilience we need a multiple domain (CGA) approach

- Disease modification
- Rebuild lost reserve in nutrition, strength, endurance,
- Restore functional capacities if possible
- Restore some autonomy in social role

Overall, build resilience
So what additional interventions might we need, and when might they work?
Structured exercise improves mobility after hip fracture: a meta-analysis with meta-regression

Joanna Diong,¹ Natalie Allen,² Catherine Sherrington³

BJSM 2015
Meta-analysis: post-acute exercise RCTs

Structured exercise improves mobility after hip fracture: a meta-analysis with meta-regression

Joanna Diong,¹ Natalie Allen,² Catherine Sherrington³ BJS M 2015

• 13 trials, 1903 participants
• Pooled SMD for overall mobility 0.35 (95% CI 0.12 to 0.58, p=0.002) in favour of exercise

But you need about 6 months
Time course of endurance training and deconditioning on skeletal muscle
## Adding protein improves exercise effect on muscle-related outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Key findings</th>
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<tr>
<td>Kim et al 2012¹</td>
<td>Exercise and amino acid supplements (high-leucine) together result in improvements in:</td>
</tr>
<tr>
<td>RCT of community-</td>
<td>• muscle strength</td>
</tr>
<tr>
<td>dwelling elderly</td>
<td>• walking speed</td>
</tr>
<tr>
<td>women with sarcopenia</td>
<td></td>
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<tr>
<td>+ 6gm protein</td>
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| Yang et al 2012²      | Exercised muscles of older adults respond to higher protein doses (20 and 40 g protein) than younger adults, whose post-exercise rates of muscle protein synthesis are maximized with 20 g of protein |
| Dose-response design  |                                                                               |
| to determine protein  |                                                                               |
| synthesis in healthy, |                                                                               |
| older adults after    |                                                                               |
| exercise              |                                                                               |

These two studies provide supporting evidence that high protein supplementation enhanced exercise effects, but further research is needed to confirm.

Which behaviour change techniques are most effective at increasing older adults' self-efficacy and physical activity behaviour? A systematic review.

French DP et al, Ann Behav Med 2014

- 24 eligible studies reporting change in self-efficacy for physical activity following an intervention.
- Overall, interventions increased self-efficacy and activity.
- But some of the techniques such as setting behavioural goals, prompting self-monitoring, planning for relapses, were associated with lower levels of both self-efficacy and physical activity.
- Thus proven techniques effective for older adults still need working out.
Next steps
• Identify the post acute period as a phase with its own science and practice

• When is the optimum time to assess and intervene?

• What is the clinical nature of the work?

• What are the competencies?

• Whose job is it?

➢ maybe locality MD teams with geriatricians
Pending any better evidence we could start with

BGS/RCGP/AgeUK
Fit for Frailty
Assuming you’re still alive, thanks