Interface geriatrics: evidence-based care for frail older people with medical crises

Frail older people are at risk of long hospital stays, and there is growing emphasis on identifying alternative care pathways in the community. Rapid decisions to discharge older people may not always serve the patient well. Specialist assessment from geriatricians could improve outcomes.

As a result of the demographic shift and NHS policy, there has been a rapid increase in the number of older people attending emergency departments and acute care services. A significant proportion of this population have complex needs and can be classified as frail (Ferguson et al, 2009) and at increased risk of adverse health outcomes, prolonged hospital stay or readmission (Woodard et al, 2009).

It is challenging to organize health-care services to meet the needs of this vulnerable patient group. To achieve the best outcomes, the management of frail older people should be based on comprehensive geriatric assessment, a multidimensional diagnostic process which outlines an older person's medical, psychological and functional capability and identifies their risk of functional decline and institutionalization (Rubenstein et al, 1991).

There is robust evidence to support in-hospital comprehensive geriatric assessment for frail older people (Ellis and Langhorne, 2005; Baztan et al, 2009) with the literature supporting dedicated geriatric units rather than liaison services (Gray, 2007). Similarly, there is strong evidence to support comprehensive geriatric assessment in the community for frail older people (Stuck et al, 1993; Huss et al, 2008). Only one systematic review has attempted to determine the best model of care for patients at the interface between acute hospital and community care (Parker et al, 2000) ('transitional care'), and the authors were unable to recommend any one particular model of care over another.

In addition to the lack of a clear evidence-based answer as to how best manage transitional care for frail older people, there has been a major change (at least in the UK) over the last 10–15 years in how acute care for frail older people is delivered. Previously acute care and the ongoing rehabilitation of older people were delivered in acute hospital settings. Now, acute care is delivered predominantly in acute medical units, often over short time periods, with ongoing care and rehabilitation being provided in a variety of community settings (e.g. intermediate care, community hospitals). Some older patients with complex needs who would previously been managed in hospitals by geriatricians may not receive a specialist geriatric assessment, even though they may still access other aspects of comprehensive geriatric care (e.g. physiotherapy, occupational therapy). The optimal model of care which brings together acute and community care for frail older people is not well established.

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Why focus on frail older people?

High quality management of frail older people is challenging because they often present non-specifically (e.g. with falls, immobility, delirium) which can make the immediate diagnosis obscure. Junior doctors are usually the 'first receivers' in the emergency department or acute medical unit, and few will have any substantial training in geriatric medicine and the formulation of the non-specific presentation. This may be in part a result of the possible decline in the teaching of geriatric medicine in UK medical schools (Lally and Crome, 2007).

Aside from the knowledge of geriatric syndromes, there is a skill involved in geriatric medicine – history taking is challenging, for example because of sensory impairment, dementia or delirium. Often a collateral history is needed which may not be readily accessible in the emergency setting, and time pressures, not least the 4-hour emergency care target, may place pressure on staff not to focus on anything other than immediate triage. A positive attitude to managing frail older people is the final prerequisite for implementing the appropriate knowledge and skills; health-care professionals' attitudes towards frail older people could be better, and ageism remains a problem in the health system (Oliver, 2009).

Many frail older people have multiple comorbidities which also need to be addressed, and this often complicates management of the immediate problem. Take for example an older person presenting with a fall related to postural hypotension, who is taking several antihypertensive agents and has cerebrovascular disease. The challenge for an emergency doctor is to balance treatment of the comorbidities against treatment of the immediate. This requires a global assessment of the patient, a risk–

benefit assessment, and often an assessment of capacity, which cannot be undertaken quickly.

Multiple comorbidities bring associated polypharmacy. Older people are at higher risk of adverse drug events, drug–drug interactions and drug–disease interactions (Goldberg et al, 1996; Kohler et al, 2000; Juurlink et al, 2003). Adverse drug events may account for up to 30% of hospital admissions in older people (Hanlon et al, 1998). Paradoxically, 11–65% of older people also suffer from lack of appropriate prescribing – under-prescribing for bone protection, anticoagulation and other conditions is well described (Pitkala et al, 2002; Fialova et al, 2005; Spinewine et al, 2007). Managing polypharmacy is also complex.

Finally, the frail older person, perhaps more than any other patient group, will present with a complex interaction of biological, psychological and social factors. They may exhibit 'differential challenge' – the concept that those most in need are least able to access services themselves, either because of illness, poverty or social isolation.

The non-specific presentation, multiple comorbidities, polypharmacy, homeostatic failure and differential challenge may all be present when a frail older person presents with a medical crisis. Resolving these complex, interrelated issues is difficult for specialists, let alone relatively inexperienced front-line staff, and is compounded by the time pressures.

So focusing on older people is in effect a 'stress test' of the health system – if the system can manage such complexities well, then managing of younger, fitter patients will be relatively straightforward.

Evidence of the problem

There is a relative paucity of published evidence documenting the outcomes of frail older people who contact emergency care settings. This is partly a result of the difficulties in identifying and defining frailty, and partly because there has been relatively little interest in this group from the acute service perspective. There is some evidence from North America that older people in general are increasing users of emergency services (Roberts et al, 2008), and that older people from care homes (likely to be frail) make up approximately 2% of all attendees (Jones et al, 1997; Ackermann et al, 1998; Schwebel et al, 2005), but there are no such studies from the UK.

The authors' local data are consistent with the North American findings; in a detailed mapping study, older people aged 70 years and over were assessed for 'frailty' – in this case defined as patients from care homes, patients with delirium or dementia, patients presenting with a fragility fracture who were medically unstable or those scoring ≥25 on the Waterlow score. Using these pragmatic criteria, 2–3% of older patients were frail (Ferguson et al, 2009).

Other data examined the outcomes of hospitalized older people between March 2007 and March 2009. Of patients admitted to the authors' acute medical unit 60% were over the age of 70 years – accounting for 18 004 individual admissions. Their mean age was 82.5 years, 58% were male and 19% had complex health needs (defined as health resource groups containing '99' – indicating older, more complex patients). Complex, as compared to non-complex older patients were less likely to be discharged from the acute medical unit (4% *vs* 19%), had significantly longer hospital stays if admitted (median length of stay of 9 days for complex *vs* 5 days for non-complex; $P<0.0001$), were more likely to be readmitted within 30 days of discharge (30% of complex *vs* 22% for non-complex; $P<0.001$), and had higher overall mortality (31% of complex *vs* 12% of non-complex; $P<0.001$).

Data from other centres in the East Midlands support these findings; in 184 patients discharged from an acute medical unit (length of stay less than 48–72 hours), whose mean age was 82 years and who had at least one geriatric syndrome (fall, immobility, polypharmacy), 102/184 (55%) were readmitted and 48 (26%) died in the following 12 months (Woodard et al, 2009).

While such figures might be of interest to health service planners, they do not reflect the experience of the frail older person attending emergency settings. It might be reasonable to infer that multiple, rapid ward changes, a propensity to lengthy admissions and subsequent readmissions are not a good thing, but there are very few published data to give the patient perspective on acute care in the 21st century.

Potential solutions

Frailty has been defined as 'a complex interplay of health and illness, attitudes, resources and dependence on others, leading to a decreased ability to withstand illness without loss of function' – or more concisely, a state of increased vulnerability to internal and external events. This broad multifactorial definition is difficult to quantify and thus there is a challenge in rapidly identifying frail older people at admission, which might be desirable if we are to address their adverse outcomes early on, e.g. through specialist care pathways or coordinated case management. An additional requirement of any 'frailty identification tool' for use in an emergency setting is that it should be simple, quick and reliable. Most frailty identification tools are designed for use in the research context, and are less useful in the clinical setting (Conroy, 2009).

The frailty criteria used above (fragility fracture in a medically unstable patient, care home resident, confusion (abbreviated mental test score <4) or a Waterlow score over 25) are being used in the authors' emergency department. They can be easily applied, with minimal training needed (Ferguson et al, 2009). The criteria are incorporated into an emergency department tracking form, along with other important information, such as vital signs or investigations. Bed managers use the criteria to filter frail older patients being admitted into a dedicated 'acute frailty unit' embedded within the acute medical unit. Patients in the acute frailty unit have a slightly increased nurse to patient ratio, usual access to therapy and discharge planning, and also receive a specialist geriatric medical opinion when

available (approximately 3 days per week at this early stage). The aim in future is to develop short-term geriatric outreach care for frail older patients at high risk of adverse outcomes, identified using the Identification of Seniors at Risk tool (McCusker et al, 1999), within the context of a National Institute for Health Research programme on medical crises in older people.

Initial outcomes for patients managed on the acute frailty unit are promising, but it is too early to be sure if this scheme is effective. Based on the first 257 patients going through the unit, the discharge rate for complex older people is 22/257 (9%) – higher than for other complex older people not managed in acute frailty unit, and higher than historical controls (discharge rate 88/1413; 5%). The 30-day readmission rates (patients discharged from acute frailty unit) were 4/22 (18%; 95% confidence interval 15–34%), not significantly worse than historical controls (11/74 (15%), 95% confidence interval 14–23%).

However, an acute frailty unit, or any variation on the theme, in isolation is insufficient to bring about the system changes required to meet the needs of complex older people. *Figure 1* outlines a whole systems approach to improving care for frail older people.

This scheme describes some of the activities in primary care that can promote health and potentially reduce crises. However, it acknowledges that crises will occur and that frail older people will still need to access acute care. The Identification of Seniors at Risk tool (McCusker et al, 1999) can be used to identify people at risk of adverse outcome being sent home from the emergency department, so that they can access long-term conditions services, such as case managers. For those people requiring admission, there is the acute frailty unit, described above. Ongoing inpatient management should be in keeping with the evidence base for comprehensive geriatric assessment (Stuck et al, 1993; Ellis and Langhorne, 2005; Baztan et al, 2009).

One of the challenges is delivering specialist geriatric care to patients in acute care settings only (i.e. those in hospital for no more than 72 hours). Most of these patients will be managed on an acute medical unit, with variable geriatric input. Even if there is a geriatrician on duty as the acute physician, it is practically impossible to deliver a specialist geriatric assessment when also undertaking an acute ward round. This would be the same for any specialist service, although perhaps is more of an issue in geriatric medicine, where adequate time for the assessment is critical.

The role of the geriatrician could be extended further. There is reasonable evidence that a specialist geriatric assessment could lead to different decisions in acute care settings – for example, suggesting that patients could be safely and perhaps more appropriately managed in primary care rather than being admitted (McNamara et al, 1992). One randomized controlled trial examining the role of comprehensive geriatric assessment for patients being discharged from the emergency department found a subsequent reduction in emergency readmissions over 18 months (44% *vs* 54%; *P*=0.007) compared to usual care (Caplan et al, 2004). In practical terms, a geriatrician who worked from both the emergency department or acute frailty unit and also the community would be able to deliver comprehensive geriatric assessment over time, working with both hospital and community multidisciplinary service or case managers. This also ensures continuity of care, a key aspect of effective care for frail older people (Haggerty et al, 2003; Johri et al, 2003; McCormack, 2004; Crilly and Chaboyer, 2006). For such a scheme to be fully effective, a team of geriatricians would be required to cover different units at different times, and also to cover different community localities (*Figure 2*).

While at present there is a relative lack of evidence for such a scheme, the theoretical basis is sound and is supported indirectly by high quality systematic reviews. Trials are underway to assess the clinical and cost effectiveness of such a scheme in the UK.

Figure 1. Whole system approach to managing frail older people. CGA = comprehensive geriatric assessment.

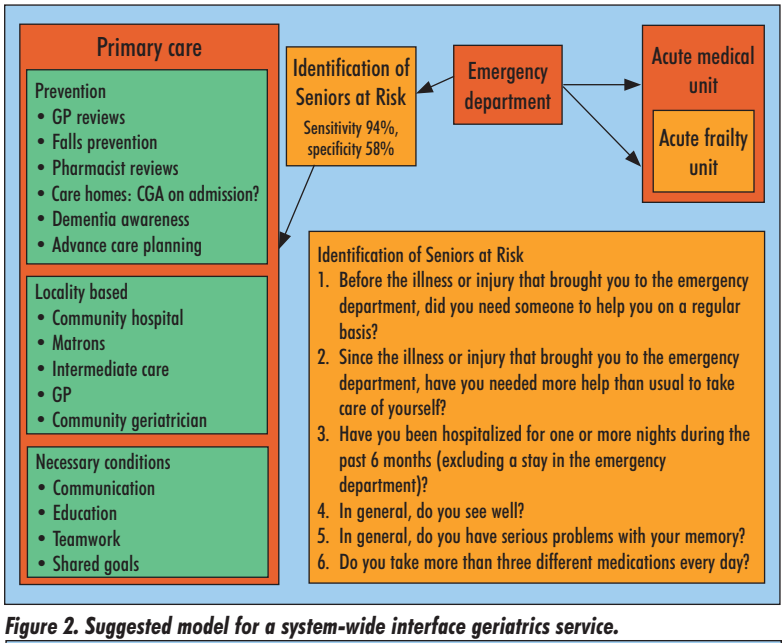

Figure 2. Suggested model for a system-wide interface geriatrics service.

	Geriatrician 1	Geriatrician 2	Geriatrician 3	Geriatrician 4
AM	Emergency department	Community	Acute medical unit/ acute frailty unit	Community
PM	Community	Emergency department	Community	Acute medical unit/ acute frailty unit

Conclusions

There is clear evidence for the benefit of comprehensive geriatric assessment in discrete geriatric units for hospitalized frail older people, but the evidence for liaison and outreach services is less compelling. Effective services aimed at improving outcomes for frail older people in contact with acute hospitals include comprehensive geriatric assessment, continuity of care and an element of case management.

Many of the evidence-based approaches to improve care for older people are already part of NHS practice, at least in principle. For example, a strength of the NHS is continuity of care delivered by GPs and/or community matrons (although it is noteworthy that a trial of community matrons did not show evidence of a reduction in hospital admissions, even though there may well be other benefits; Gravelle et al, 2007). Communication between primary and secondary care providers remains a major barrier, although there is hope that the National Programme for Information Technology may (eventually) assist in sharing of information. While there has been a growth in community multidisciplinary teams, such as intermediate care services, few of these services include geriatricians or GPs with a special interest in older peoples' care (Gladman et al, 2007), and evidence of effectiveness is lacking (Shepperd et al, 2009).

Drawing from the evidence and applying it to the UK health service, the interface geriatrician scheme could be an integral part of care for frail older people. **BJHM**

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KEY POINTS

- Frail older people are major users of the NHS.
- Even with appropriate primary care medical crises will still occur.
- Acute medical units are not well designed to provide care for frail, complex older patients with multiple comorbidities, polypharmacy and functional decline.
- Frail older patients treated in the acute medical unit setting are less likely to be discharged and more likely to be readmitted once discharged than their non-frail counterparts.
- There is clear evidence for the benefit of comprehensive geriatric assessment in discrete geriatric units for hospitalized frail older people, but the optimum model for care of frail older people at the interface between hospital and the community needs to be established.
- One such model could involve specialist assessment from geriatricians based across both acute hospital and community settings, enabling coordination between hospital and community-based multidisciplinary teams and continuity of care.