

# Fragility Fractures, Frailty and Fragmented Care

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Major trauma is traditionally viewed as a disease of young men that occurs due to high-energy mechanisms of injury. The ageing population in the UK means this demographic is rapidly changing. Trauma Audit and Research Network (TARN) data demonstrates this profound change; the elderly are soon set to represent the largest group of patients suffering major trauma with a fall from less than 2m as the causative event<sup>1</sup>.

**F**railty and comorbidity in these patients may mean that they have poorer outcomes than their younger counterparts; but this data also highlights the considerable and unacceptable variation in care that older trauma patients receive. These patients are more likely to be seen by a junior team member in the Emergency Department (ED), are more liable to delayed investigation and surgery, and are ultimately at an increased risk of death<sup>2</sup>.

## Frailty

Frailty is not a new concept and has been described in the literature for over three decades. It is now rightly being widely recognised

as a distinctive health status that underpins how best to manage patients in later life. There is no one accepted definition. Most simplistically, frailty can be viewed as decreased physiological reserve across multiple organ systems<sup>3</sup>. This decrease in reserve puts the person at risk of unpredictable deterioration in their health from what is a relatively minor stressor (Figure 1)<sup>4</sup>.

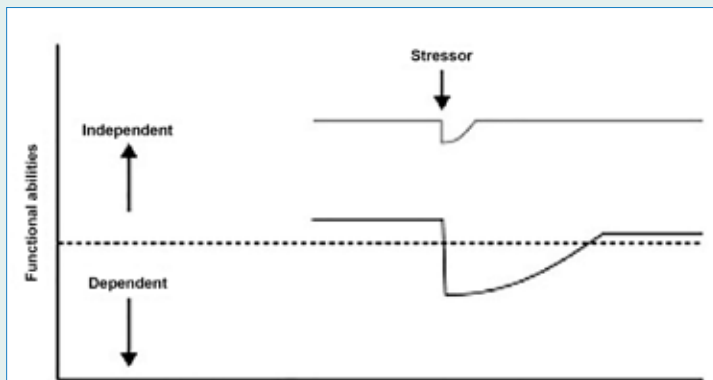


Figure 1: Frail people display low resilience to minor stressors and are less likely to return to independence. Adapted from: Frailty in elderly people, Clegg *et al.* *Lancet*. 2013;381(9868):752-62.

Frailty encompasses physical, cognitive and social domains and remains a complex syndrome that has overlap with sarcopenia, cachexia, disability and comorbidity (Figure 2).

There are several common misconceptions about frailty that deserve special mention. Frailty is associated with ageing but is not synonymous with chronological age. Not all old people are frail; indeed frailty is observed in younger people. Frailty is not just a co-morbidity count; frail people are often co-morbid but fewer multi-morbid people are frail<sup>5</sup>. Furthermore, frailty varies in its severity and is not a static state and can therefore be modified.

Frailty is important in the surgical population and its prevalence is both high and increasing. In fact, frailty in the trauma population has been found to be highest out of all surgical specialties with studies reporting a prevalence of up to 53%<sup>6</sup>. It is essential to recognise as it is an independent risk factor for morbidity, mortality, protracted length of stay and institutional discharge. Once recognised, addressing and modifying the multisystem condition of frailty using comprehensive geriatric assessment (CGA) is increasingly supported in the literature<sup>7,8</sup>. CGA can be defined as a multi-dimensional interdisciplinary process to determine a frail older person's medical, psychological and functional capability in order to develop a co-ordinated and integrated plan for their treatment<sup>9</sup>. It is an iterative, patient-centred, diagnostic, and therapeutic process that lies at the core of the practice of geriatricians, (Figure 3) and evidence has shown that older adults are more likely to be alive and living in their own home if they receive CGA on admission to hospital<sup>10</sup>.

Many measures of frailty exist and their utility depends on the clinical or research context in which they are used. The most common measure in primary care is the modified Frailty Index (mFI); an electronically calculated score derived from data routinely held in the patients GP record. In the hospital setting the Rockwood Clinical Frailty Scale (CFS)<sup>11</sup> and the Edmonton Frail Scale (EFS)<sup>12</sup> are often used. The CFS has been advocated as a screening tool by several national organisations including The Specialist Clinical Frailty Network (SCFN), The Acute Frailty Network (AFN), The National Emergency Laparotomy Audit (NELA) and TARN. It has gained even greater recognition since its use was encouraged during the COVID-19 pandemic to aid decision making around appropriate ceilings of care during a time when unprecedented strain was predicted on health-care systems. A large study by Hewitt et al. in COVID-19 patients found that disease outcomes were better predicted

by frailty than either comorbidity or age alone<sup>13</sup>. The CFS is a simple, pictorial, valid frailty screening tool and is also available as an app (Figure 4). The EFS is more time consuming but has the advantage of identifying domains in which interventions can be targeted to modify frailty and may be more suited to the outpatient setting.

### UK hip fracture care – the frailty success story

Hip fracture care in the UK is an outstanding example of how national initiatives, collaboration between trauma surgeons and geriatricians, continuous feedback through the National Hip Fracture Database (NHFD) and financial incentive via Best Practice Tariff (BPT), has transformed the care of a traditionally neglected group of frail patients. The last decade has seen huge improvements in the quality of care UK hip fracture patients receive. Whilst other factors such as reduced time to surgery will have also contributed to improved outcomes, the rise of routine specialist multidisciplinary care for this vulnerable group is key to the reductions in mortality, length of stay and functional dependency that have been observed. Many would like to see this fantastic progress expand into all fragility fracture care nationally. >>

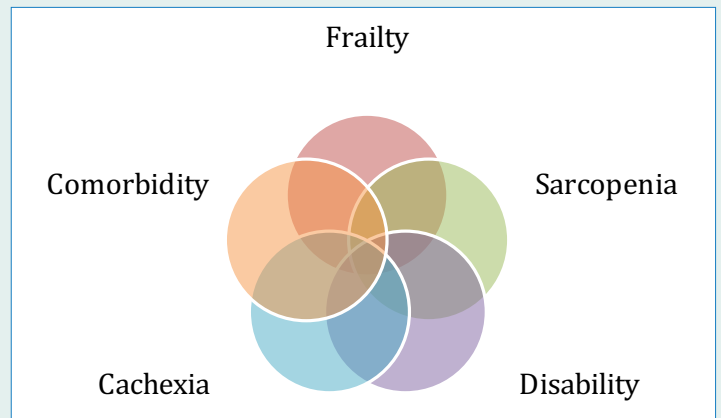


Figure 2: Frailty and its overlap with other geriatric syndromes. Adapted from: Frailty in the older surgical patient: a review, Partridge et al. *Age and Ageing*. 2012;41:142-7.



Figure 3: Components of Comprehensive Geriatric Assessment.

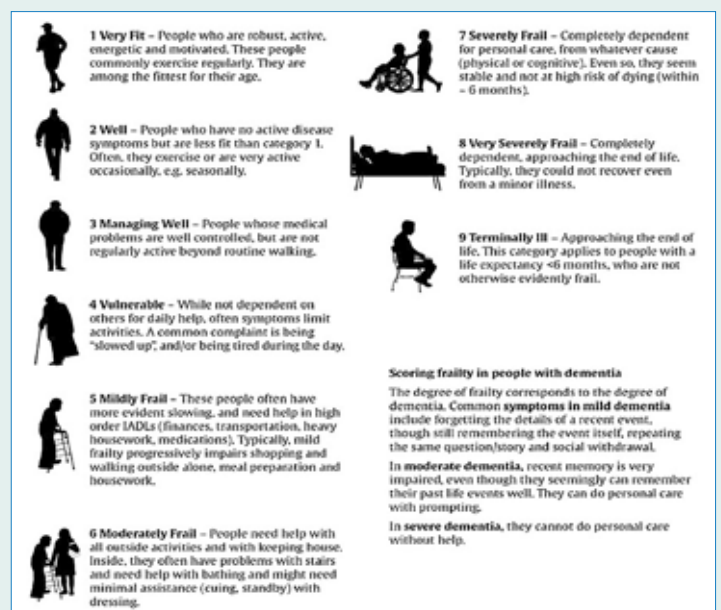


Figure 4: Rockwood Clinical Frailty Score. Adapted from: A global clinical measure of fitness and frailty in elderly people, Rockwood et al. *CMAJ*. 2005;173(5):489-95.



### Recent changes in Best Practice Tariff

In April 2019, new criteria were added to the Major Trauma BPT stating that all patients aged 65 or over with an Injury Severity Score (ISS) of >15 should have a CFS completed by a geriatrician within 72 hours of admission. Although many would argue that a CFS alone in this subset of major trauma patients would add little to their outcomes, many geriatricians viewed this as a 'foot in the door', with the financial incentive providing some welcome impetus to develop services for trauma patients beyond those with hip fractures. In an MTC like ours we see approximately 300 patients above 65 years with an ISS >15 per year. The BPT uplift is £1,401 per patient, which would be an approximate income loss of up to £420,300 per annum, if geriatrician input had not been introduced when the BPT was amended.

Now that the CFS has been incorporated into the Major Trauma BPT we hope that it will evolve and develop over time to drive up quality of care in this patient cohort; much like we have seen in hip fractures.

Subsequent publication of the 'Care of the older or frail orthopaedic trauma patient' BOAST in May 2019 was a welcome addition<sup>14</sup>. It advocated clear standards for all patients admitted with either a fragility fracture or

major trauma with a CFS of five or more; suggesting CGA as well as orthopaedic, anaesthetic and orthogeriatric collaboration. Amongst its 17 standards it highlighted the importance of clear pathways of care for elderly patients with blunt chest wall trauma including early access to regional analgesia (an important group of patients that are discussed in another article in this issue).

In April 2020, NHS England also extended the scope of the current hip fracture BPT to include fractures of the femoral shaft and distal femur. This is a long overdue addition that will hopefully mean that the specific part of the femur that is fractured will no longer dictate the quality of care that a patient receives.

### Fragmented care

The introduction of the new BPTs in trauma has facilitated geriatrician input for a group of patients with a high level of frailty, morbidity and mortality. Arguably, however, they may have created further divisions in care.

The major trauma BPT only includes patients with an ISS over 15. The ISS was developed in the 1980s based on information from young major trauma patients in high-energy transfer injuries. This puts into question its validity in an older trauma population sustaining low

energy fragility fractures. The older trauma population are often under triaged, with delays in imaging and additional injuries being identified late. Therefore, the initial ISS may be inaccurate and underscore the more severely injured who would benefit from the input of a geriatrician.

In our centre, we found that nearly half of our elderly trauma patients with lower injury severity scores would have benefitted from geriatrician review. Key themes identified were frailty, polypharmacy, falls and cognitive impairment. Increasing age was not surprisingly associated with an increasing need for geriatrician input<sup>5</sup>.

A subset of frail older trauma patients who lie outside the remit of the BPTs are only seen by a physician if they deteriorate acutely. In this context, review is reactive rather than preventative, is performed by different medical on call teams and often not by a trained geriatrician. Whilst these patients are deemed to have comparatively less severe injuries they are just as co-morbid and frail. We suggest that frailty assessment and CGA at the point of their index presentation is key in order to reduce falls risk, reduce perioperative risk, manage comorbidities and prevent repeated admissions. We propose that orthogeriatric services will need to expand beyond the BPTs and adapt to meet the growing needs of this population.

### Conclusions

Trauma in the elderly poses a significant and rapidly growing healthcare challenge. Prevalence of frailty in this population is high and as geriatricians we welcome the new BPT changes that give the financial incentives to trusts to hopefully widen practice beyond hip fracture services. Unfortunately however, service development that is mapped to and driven by national tariffs means that further fragmentations in care are now becoming evident.

Management of the older trauma patient requires whole system changes. The combination of a cash strapped NHS post-pandemic and workforce problems in geriatrics means that divisions in care are going to prove hard to overcome. However, changes are vital in ensuring that older trauma patients receive equivocal care regardless of the location of their fracture or the estimated severity of their injury.

### Acknowledgement

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### References

References can be found online at [www.boa.ac.uk/publications/JTO](http://www.boa.ac.uk/publications/JTO).