Are emergency departments responding to the ageing demography?

Emergency departments are by definition fast paced, dynamic and responsive care settings. They are also a barometer for system wide pressures – the canaries in the mines of health and social care systems world-wide. But are they responding to the changing nature of the population presenting for emergency care?

Historically, emergency departments have been designed to care for people with single-problem presentations and emergencies including major trauma or other life-threatening scenarios. But increasingly, the population presenting to emergency care are older, typically presenting with sub-acute and in particular, non-specific presentations on a background of multimorbiditys[1]. This 'new' emergency care population challenges historical care models. This is exemplified by the paper from Nissen et al, which shows that existing early warning scores are not especially sensitive nor specific for in-hospital mortality – their primary purpose. However the addition of age into the early warning score did improve discrimination.

What does this tell us? Well, it points to the physiology of ageing, which differs from the cohorts typically studied in the development and validation of early warning scores. For example, older adults are less likely to exhibit hypotension or tachycardia, the principal signs of shock[2-4]. Presenting features may also be masked, or risks exacerbated for serious illness, by common prescriptions such as beta blockers, sedatives, and anticoagulants.

Recognising the multiple, complex, and interacting factors that might predict the risk of in-hospital mortality in older people, there is increasing attention being paid to the use of global risk assessment scales, notably the frailty construct. Frailty is defined as *a physiological syndrome characterised by decreased reserve and diminished resistance to stressors, resulting from cumulative decline across multiple physiological systems, and causing vulnerability to adverse outcomes*[5]. Frailty is also a key discriminating factor in older people's health outcomes. Constructs have been validated in numerous community and hospital settings[6-8] and consistently identify increased risk for adverse outcomes, even after adjusting for age. In the emergency setting, studies have shown that frailty interacts synergistically with early warning scores to predict the risk of adverse events[9-11].

UK hospitals use (NHS) Early Warning Scores (NEWS)to trigger an urgent clinical response for people identified as having 6% or greater risk of in-hospital mortality. Scores are typically calculated automatically when healthcare workers use apps or software to record patients' vital signs and level of consciousness. Emergency departments often display NEWS scores on dashboard software screens, so that patients with higher scores can be prioritised for clinical review or moved into resuscitation areas. For inpatients with high NEWS scores, most hospitals now have electronic mechanisms to prompt or automatically alert clinicians or even critical care outreach teams. It would be unusual, though, for hospitals to prioritise people 'scored' as having higher frailty burden for urgent review, despite those with Clinical Frailty Score 6 ('moderate frailty') also having 6% risk of in-hospital mortality. For those with CFS 8, the risk is 24%[9]. The CFS can be completed in less than one minute[12] – faster than it takes to record a set of vital signs.

If emergency services were to move towards using frailty as part of their risk assessment (already policy in England[13]), the next questions are what difference does it make and how can emergency services better respond to frailty? While older people without frailty can often be treated in just the

same way as younger people (typically using protocols and guidelines) those living with frailty are often better served by an early holistic, person-centred approach to care. Undoubtedly, a unifactorial response to frailty is inadequate – a more multifaceted solution is required. Within acute hospital settings, there is robust evidence to support the role of Comprehensive Geriatric Assessment (CGA) to reduce mortality and institutionalisation for older people with acute illness[14]. Typically, CGA involves a team undertaking a multidimensional assessment which should include:

- Diagnoses (there will usually be multiple interacting comorbidities with associated polypharmacy)
- Physical function (activities of daily living)
- Psychological function (especially confusion and mood)
- Environment in which the individual functions
- Social support networks present or required to maintain on-going function

There is now a growing body of evidence to support the role for commencing CGA in emergency settings, although the mechanism of delivering this will vary according to the local context and resources[15-17]. Early identification of people with frailty could direct multidisciplinary resources to provide CGA for those with greatest potential benefit.

And what about outcomes for those people who have higher NEWS+Age and also have higher frailty scores? Whilst saving lives has historically been the primary function of emergency care, there is growing awareness now that other outcomes might be as - if not more - important. Emergency care settings report their effectiveness most commonly using service metrics such as waiting time targets or readmission rates. Service metrics lack meaning for older people, who may be more concerned about knowing the trajectory of their illness than about changing it[18 19]. Until patient-reported outcome and experience measures are routinely considered in clinical practice, there will always be discordance between clinicians' interpretation of data and that which is considered important by patients.

The standard NEWS is usefully applied in younger populations to identify people who need urgent interventions directed towards saving their lives. Oldest-old patients included in these databases died when their NEWS scores were lower, and therefore clinicians must absolutely be cognisant of the greater risks faced by the older people in their care. Shortcomings among older people with the standard NEWS may be addressed using NEWS+Age, but the appropriate response to be triggered must also be questioned. Software systems could incorporate an Age variable into NEWS with no impact on the burden of recording vital signs, but the opportunity cost on clinical resources may be substantial as large numbers of older people could be identified for urgent clinical response. Many of these people require person-centred, multidisciplinary care rather than the urgent escalation and interventions for which NEWS was designed. In the continued absence of proven immortality, relentless prevention of death for older people with frailty is an unrealistic and perhaps undesirable outcome. In the meantime, early personalised management plans based upon individuals' preferences and outcome goals are the ambrosia of geriatric emergency medicine.

References

1. Nemec M, Koller M, Nickel C. Patients presenting to the emergency department with non-specific complaints: the Basel Non-specific Complaints (BANC) study. *Acad Emerg Med* 2010 17(3):284-92. doi: 10.1111/j.1553-2712.2009.00658.x.
2. Ferrari AU, Radaelli A, Centola M. Invited review: aging and the cardiovascular system. *Journal of Applied Physiology* 2003;95(6):2591-97.

3. Gribbin B, Pickering TG, Sleight P, et al. Effect of age and high blood pressure on barorefiex sensitivity in man. *Circulation Research* 1971;29(4):424-31.
4. Pinto E. Blood pressure and ageing. *Postgraduate medical journal* 2007;83(976):109-14.
5. Ferrucci L, Guralnik JM, Studenski S, et al. Designing randomized, controlled trials aimed at preventing or delaying functional decline and disability in frail, older persons: a consensus report. *Journal of the American Geriatrics Society* 2004;52(4):625-34.
6. Clegg A, Bates C, Young J, et al. Development and validation of an electronic frailty index using routine primary care electronic health record data. *Age Ageing* 2016;45(3):353-60. doi: 10.1093/ageing/afw039
7. Mousa A, Savva GM, Mitnitski A, et al. Is frailty a stable predictor of mortality across time? Evidence from the Cognitive Function and Ageing Studies. *Age and Ageing* 2018;47(5):721-27. doi: 10.1093/ageing/afy077
8. Keeble E, Roberts HC, Williams CD, et al. Outcomes of hospital admissions among frail older people: a 2-year cohort study. *British Journal of General Practice* 2019;69(685):e555-e60. doi: 10.3399/bjgp19X704621
9. Elliott A, Taub N, Banerjee J, et al. Does the Clinical Frailty Scale at Triage Predict Outcomes From Emergency Care for Older People? *Annals of emergency medicine* 2020 doi: https://doi.org/10.1016/j.annemergmed.2020.09.006
10. Kaeppeli T, Rueegg M, Dreher-Hummel T, et al. Validation of the Clinical Frailty Scale for Prediction of Thirty-Day Mortality in the Emergency Department. *Annals of Emergency Medicine* doi: 10.1016/j.annemergmed.2020.03.028
11. Romero-Ortuno R, Wallis S, Biram R, et al. Clinical frailty adds to acute illness severity in predicting mortality in hospitalized older adults: An observational study. *Eur J Intern Med* 2016;35:24-34. doi: 10.1016/j.ejim.2016.08.033 [published Online First: 2016/09/07]
12. Elliott A, Phelps K, Regen E, et al. Identifying frailty in the Emergency Department-feasibility study. *Age Ageing* 2017;46(5):840-45. doi: 10.1093/ageing/afx089 [published Online First: 2017/05/26]
13. NHS Improvement. Ambulatory emergency care guide: same day acute frailty services: same day acute frailty services, 2018.
14. Ellis G, Gardner M, Tsiachristas A, et al. Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database of Systematic Reviews* 2017(9):CD006211. doi: 10.1002/14651858.CD006211.pub3.
15. Preston L, van Oppen JD, Conroy SP, et al. Improving outcomes for older people in the emergency department: a review of reviews. *Emergency Medicine Journal* 2020:emermed-2020-209514. doi: 10.1136/emermed-2020-209514
16. Carpenter CR, Bromley M, Caterino JM, et al. Optimal Older Adult Emergency Care: Introducing Multidisciplinary Geriatric Emergency Department Guidelines from the American College of Emergency Physicians, American Geriatrics Society, Emergency Nurses Association, and Society for Academic Emergency Medicine. *Journal of the American Geriatrics Society* 2014:n/a-n/a. doi: 10.1111/jgs.12883
17. Various. Silver Book II British Geriatrics Society2021 [Available from: https://www.bgs.org.uk/resources/resource-series/silver-book-ii accessed 28/10/21.
18. Considine J, Berry D, Rasmussen B, et al. Impact of emergency department length of stay on anxiety and comfort in older people. *International Emergency Nursing* 2021;56:100974. doi: https://doi.org/10.1016/j.ienj.2021.100974
19. van Oppen JD, Keillor L, Mitchell A, et al. What older people want from emergency care: a systematic review. *Emerg Med J* 2019;36(12):754-61. doi: 10.1136/emermed-2019-208589 [published Online First: 2019/10/28]