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COMMENTARY - INVITED

Do we really need *another* risk prediction rule? Yes, we do

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In this issue of *Academic Emergency Medicine*, Rueegg et al. demonstrated that a risk prediction rule using the Clinical Frailty Score (CFS) is superior at predicting 12-month mortality, compared with a risk prediction rule using the Emergency Severity Index (ESI), in a population of 2400 emergency department (ED) patients 65 years and older.[1] This study builds on their prior work, which showed that the CFS was a better predictor of 30-day mortality than the ESI among older ED patients.[2] These results add to the growing evidence in support of the CFS as a strong predictor of the risk of a number of adverse outcomes relevant to ED patients.[3] EDs in the United States are already overextended by increased patient volumes, rising acuity and a boarding crisis, and tasked with screening for domestic violence, suicide risk, and substance use; so why burden our EDs further with another geriatric-specific screening tool?

First, the population of older persons with complex care needs is growing rapidly. Currently, over 55 million persons in the U.S. are 65 years and older, and this figure is projected to reach 72 million by 2030.[4] More importantly, older persons with complex care needs will also increase. For example, the number of persons living with dementia, who are known to have disproportionately higher rates of ED visits, particularly avoidable ED visits, will also rise rapidly from 5.8 million in 2020 to a projected 8.4 million in 2030.[5] Older persons are often beset by multiple chronic medical conditions which together potentially interact to create a synergistically higher risk of adverse outcomes than each individual condition alone.[6] Older persons often present with chief complaints that understate their true complexity and unmet care needs that result from multiple comorbid conditions and poor access to care.[7] Indeed, existing emergency triage tools, such as the ESI, may result in under triage of older adults.[8] As such, some have recommended adding age or frailty into the triage algorithm to improve identification of older adults in need of immediate medical attention.[8]

Second, there is no proven accurate or reliable tool that is widely used in EDs to risk stratify older patients. While a chronological age cutoff (e.g. age 65) can facilitate the implementation of ED protocols, one's biological age or other clinical measures may be better markers of adverse events after an ED visit age.[9] A number of individual risk factors and instruments, most notably the Identification of Seniors at Risk (ISAR) and the Triage Risk Screening Tool, had demonstrated utility in discrete patient populations, but a 2015 systematic review demonstrated their limitations in predicting adverse outcomes (including mortality) up to 12 months after an ED visit, and thus underscoring the lack of accurate and reliable instruments for wider ED use.[10] Frailty, a robust measure of biological aging and deficit accumulation,[11] and specifically the CFS, has emerged as a reliable and effective predictor of adverse outcomes (return ED visits, hospitalizations, and mortality) among older ED patients in the United States and numerous other countries. The CFS has also been shown to predict adverse outcomes across multiple distinct medical and surgical conditions, thus demonstrating its utility across different populations and phenotypes.[3] In addition to predicting short term mortality, Rueegg's study showed that the CFS can accurately predict mortality 12 months after an ED visit.[1] While the lengthy interval from screening to outcome invites the possibility of a change in CFS or intervening events, the lead time also affords the patients and their care team time to identify appropriate interventions or facilitate anticipatory guidance. This demonstration of CFS utility in this northern Swiss community[1] should not raise concern

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for its generalizability, but should instead be interpreted as further evidence of its validity across different populations globally.

Third, ED risk prediction tools for older persons may help optimize ED disposition decisions. Rueegg proposed that the CFS could be used to improve ED triaging of older patients and tailoring ED-to-home care transitions in a more patient-centered manner.[1] Using a hemodynamically stable 75-year-old ED patient with a low frailty score (e.g., CFS of 2) with pneumonia as an example, can we use the CFS, instead of a chronological age-based risk prediction tool such as the CURB-65 tool,[12] to better select patients who can be managed in an outpatient setting? While the reduction of potentially avoidable hospitalization may align with the goals of health systems and health insurance policies, it can also be patient oriented. In fact, it may also be a preferred disposition choice for patients with sufficient social support or who are functionally independent, as hospitalizations are associated with often irreversible functional and cognitive declines[13] that may paradoxically lead to more (unnecessary) ED visits and hospitalizations downstream.

Finally, to reframe the initial question in a more utilitarian perspective: Why should the responsibility for identifying vulnerable older persons belong to the ED? For older persons with established access to outpatient primary care, the responsibility is arguably not primarily the ED's. However, the shrinking pool of fellowship-trained geriatricians and the fragmentation of medical care for a growing number of older Americans often leaves the ED as the sole or predominant source of medical care for many underserved or vulnerable older persons.[7] Even for older persons with access to primary care, the ED also serves its traditional role as a safety net site of care. For these older persons, the accumulation of physiological deficits[14] is slow and insidious, and may only be incidentally identified when the patient is brought to the ED by a concerned family member or friend for a seemingly benign complaint (e.g., "my grandmother hasn't had an appetite for weeks"). That ED encounter now becomes a sentinel event and the discovery of a real functional decline that can be ameliorated with the appropriate care, may hinge on these screening or risk prediction tools. Delegating this assessment to the outpatient setting is tricky, as studies have shown that functionally, and especially cognitively, impaired patients were more likely to not complete recommended outpatient follow-up.[15]

In the past decade, two national initiatives have raised awareness of the special needs of vulnerable older ED patients and catalyzed the expansion of geriatric-focused ED programs to improve ED care for older persons: The 2014 Geriatric Emergency Department Consensus Guidelines[16] and the American College of Emergency Physicians tiered Geriatric ED Accreditation process launched in 2018.[17] Understandably, the adoption and reach of these programs are dependent upon the widely varied distribution of human and economic capital across different EDs. For institutions or health systems with the appropriate resources and commitment, ED-based comprehensive and interdisciplinary geriatric-specific interventions can reduce hospitalizations and lower both 30- and 60-day costs of care for older ED patients.[18] However, these are costly and resource intensive programs. Can frailty screening help to optimize stewardship of such a program to the patients who would reap the most benefit, and in doing so, minimize cost? The next phase of ED-based frailty research needs to follow the lead of Rueegg and evaluate whether and how implementation of frailty screening can improve patient outcomes and/or health care utilization. For example, can frailty screening be linked with innovative observation unit programs where an interdisciplinary team (e.g., geriatrics, physical therapy, occupational therapy, pharmacy, and social work)[19] can assess specific patients under established care protocols and without prolonging the ED length of stay? Finally, we need to address what interventions should be triggered by this screening, and whether these interventions improve patient outcomes, including patient mortality.

CONFLICT OF INTEREST

A.X.L. and M.K. report no conflicts of interest.

AUTHOR CONTRIBUTIONS

Alexander X. Lo and Maura Kennedy were entirely responsible for the concept and preparation of the manuscript.

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