OBSTACLES IN CREATING AND APPLYING TRAUMA PROGNOSTICATION TOOLS FOR OLDER ADULTS TO SUPPORT SHARED DECISION-MAKING

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Introduction

Older trauma patients (aged 65 and above) face a higher mortality risk compared to their younger counterparts. However, more than 50% survive to discharge, and up to 85% of these individuals return to their prehospital or independent functional status. The remaining 15%, who do not fully recover to their baseline, pose a significant challenge to the medical community. These patients exhibit distinct anatomical and physiological characteristics, as well as a reduced capacity for recovery following traumatic events. Today's older adults place a high value on autonomy, engagement, and control over their lives. Traumatic injuries threaten these values and their overall quality of life. An initially aggressive treatment approach is warranted when a patient presents in extremis and patient history is still being gathered. However, transitioning to alternative strategies becomes challenging once a poor prognosis is determined.

Barriers to Shared Decision-Making

Medical providers often lack awareness of the expectations patients and their families have when engaging with healthcare systems, especially in emergency settings. Effective communication with patients and their families is crucial for determining care goals and understanding what outcomes are meaningful to them. Trauma surgeons typically aim to restore normalcy for patients and struggle when returning to baseline function is not feasible. Alarmingly, one in ten older patients undergoes surgery in the last week of life, highlighting the difficulty in predicting mortality, morbidity, and complications post-surgery. Invasive procedures and prolonged ICU stays can lead to a decline in baseline function and quality of life. Goals of care discussions aim to align treatment strategies with patient values and preferences. However, surgeon specialists often hesitate to consult palliative care, even when recovery chances are uncertain, to avoid the perception of "giving up." Implementing policy-driven goals of care processes, such as guidelines for palliative care consultation, can improve communication with patients and families but has not been widely adopted.

When an older trauma patient arrives at the hospital, the trauma team and patient/family face significant disadvantages. Providers have no prior relationship with the patient, and difficult conversations must occur during an unexpected and critical moment. There is limited time to understand complex family dynamics and psychosocial factors, which traumatic events can exacerbate. Families are often not fully aware of their loved one’s current medical status or the decline following trauma, representing years of vitality loss. Only 15-25% of adults complete advance directives in general, and patients prefer to discuss these directives when healthy with a long-term doctor, rather than during an acute illness with a new medical team.

Patients typically expect their primary care physician to initiate advance directive discussions, rather than bringing up the difficult topic themselves. The most successful advance directive programs target high-risk patients (recently hospitalized, older, already receiving specialty care) and involve intensive physician training. While primary care

physicians traditionally had limited time for these conversations, COVID-19 restrictions demonstrated that many discussions can be effectively conducted via virtual visits. Trauma surgeons, faced with delivering life or death prognoses with limited data, could benefit from a cohesive team approach. If clinical urgency permits, communication between the primary care physician and the trauma surgeon can help facilitate goal-concordant care.

Shared Decision-Making Tools

Numerous studies have aimed to develop comprehensive tools for shared decision-making to improve communication with older adult trauma patients. Shared decision making is defined as “an approach where clinicians and patients share the best available evidence when faced with the task of making decisions, and where patients are supported to consider options, to achieve informed preferences.” Structured conversations utilizing clinical decision support systems can facilitate this process.

Previously, we developed the Elderly Mortality after Trauma (EMAT) predictive model for in-hospital mortality, based on data from 1.2 million patients in the National Trauma Databank (NTDB). This model is available as a free downloadable mobile application to assist with bedside counseling of patients and their families. In the EMAT predictive model, a pre-hospital do not resuscitate (DNR) advance directive was the strongest predictor of in-hospital death. However, like other predictive models, EMAT only predicts in-hospital mortality and excludes critical variables such as frailty and pre-hospital medications. Currently, EMAT does not predict in-hospital complications, discharge disposition, long-term patient-reported outcome measures (PROMs), or 1-year mortality.

Future Directions

Weekly morbidity and mortality conferences often grapple with questions about non-beneficial treatments and their associated poor outcomes. Despite this, practice changes are slow, and similar cases tend to recur in cycles of weeks to months. Outcomes that seem obvious in hindsight are extremely challenging to predict in real time. In the U.S., the prevailing approach is often to "do everything and ask questions later." Some intensivists, however, may present a generally pessimistic prognosis based on advanced age, recommending a shift from life-prolonging treatment to comfort-based care due to their own biases or experiences. Families are left to rely heavily on the physician’s recommendation or to make independent, uninformed decisions with minimal understanding of the medical facts, resulting in a lack of mutual understanding and consensus.

More comprehensive models are needed to facilitate shared decision-making conversations as the number of older patients experiencing trauma increases. Creating accurate and clinically useful models for this population requires data from thousands of patients, including variables not typically available in most trauma registries, such as six-month mortality and baseline functional status. Current databases, like the National Trauma Databank (NTDB) and the Trauma Quality Improvement Program (TQIP), lack the necessary long-term variables to develop meaningful models. Traditional variables, such as systolic blood pressure and Injury Severity Score (ISS), lack sensitivity in older adults due to differences in baseline physiology. Large-scale, multi-center studies are needed to refine and validate these prognostic models.

The medical community has a responsibility to address barriers to shared decision-making from both research and clinical perspectives. From a research standpoint, a qualitative mixed-methods approach is needed (Fig. 1). We propose a stepwise process to first develop elderly-

specific national databases that track long-term outcomes and patient-reported outcome measures. Next, predictive models should be created to forecast these measures and integrate them into shared decision-making conversations. Existing trauma-specific measurement tools need prospective validation and adaptation for the geriatric population. Collaborative research involving palliative care, geriatrics, and internal medicine specialists is essential to develop better predictive models using variables specific to older adults and to translate these models into meaningful conversations with patients and families. In the geriatric burn literature, a high cutoff for the Baux score has been established, which correlates with low return-to-home rates and aids in setting goals of care. Similar cutoffs could be used for the older adult trauma population to trigger palliative care consultations and facilitate shared decision-making conversations.

Clinical Implementation

On the clinical side, the development and implementation of evidence-based guidelines are essential to guide the care of older trauma patients. Building on the research described, goal-directed solutions must be created, implemented, and tracked at a national level. For instance, shared decision-making conversations should be tracked and required, potentially taking place during routine trauma care, such as during the tertiary survey. Similar to other risk-adjusted complications monitored by TQIP, such as pulmonary embolism or wound infections, we recommend that trauma centers individually track geriatric medicine consultations, goals of care conversations, palliative care consultations, unfavorable discharges, intensive care days, deaths, and complications. These standards for older trauma care could be established under the American College of Surgeons Geriatric Surgery Verification Program.

Additionally, events representing discordant care, such as performing invasive surgery followed by a rapid transition from a life-prolonging approach to comfort-based care, should be tracked and studied. Strategies must then be developed to prevent such occurrences, ensuring a consistent and patient-centered approach to trauma care for older adults.

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