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### The Geriatric Trauma Team: The Cutting Edge of Elder Trauma Care (R. Barraco)

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In this, our second in a series of articles concerning the impact of the aging population in our ICUs, we address the care of the injured elderly. The elderly pose unique problems for trauma care providers. Elder trauma patients have significantly higher mortality than younger patients, and they have significantly longer ICU and hospital length of stay when stratifying by Injury Severity Score (ISS) (Taylor et al. 2002).

It makes sense that they be treated in a trauma centre. The Eastern Association for the Surgery of Trauma (EAST), in its practice management guideline on geriatric trauma, recommended that advanced patient age should lower the threshold for field triage directly to a trauma centre ([www.east.org](http://www.east.org), 2002, Level II). A 2001 paper by Demetriades et al. even recommended that all patients age 70 and over should be full trauma activations. This is consistent with the level III recommendation from EAST that, with the exception of patients who are moribund on arrival, an initial aggressive treatment approach should be pursued with the elderly trauma patient.

How do we go about making an accurate prognosis in the elder trauma patient? The existing scoring systems do not perform well in the elderly. Both pre-existing medical conditions and complications contribute to the increased mortality. The 2002 EAST guideline states that the presence of pre-existing medical conditions in elderly trauma patients adversely affects outcome. Post-injury complications in the elderly trauma patient also negatively impact survival and contribute to longer lengths of stay in survivors and non-survivors compared to younger trauma patients. The Gubler-Charlson Comorbidity Index seemed to have good correlation with outcome in the elderly (Gubler et al. 1997), but at -tempts at prognostic scores for the geriatric trauma patient have not been successful to date. One score incorporated complications, but this did not have usefulness for early prognostication as one would have to wait till those complications occurred to calculate the score (DeMaria et al. 1987). An aid in estimating prognosis, the EAST guideline contained several level III recommendations. In patients 65 years of age and older a GCS < 8 is associated with a dismal prognosis; therefore, consideration should be given to limiting further aggressive therapeutic interventions if substantial improvement in GCS is not realised within 72 hours of injury. Patients  $\geq 65$  years of age with a trauma score < 7 or an admission respiratory rate < 10 have a 100% mortality rate. Consideration should be given to limiting aggressive therapeutic interventions in these groups as well. In a large National Trauma Data Bank study, patients with severe chest and/or abdominal injury, moderate to severe head injury, admission SBP less than 90 mm Hg, and significant base deficit had mortalities approaching 100% (Nirula et al. 2004). Even older patients with modest shock and mild to moderate head injury admitted with severe chest and/or abdominal injury had a less than 5% chance of survival.

Considering the poorer prognosis in the elderly, The American Trauma Society Leadership Forum called for the integration of palliative care and critical care. They also petitioned the American College of Surgeons Committee on Trauma to require palliative care services at all trauma centres. Recommendations were made for the development of curricula for present and future practitioners as well as the public about palliative care.

So what can we do to improve these poorer outcomes in the elder trauma patient? As mentioned in our previous instalment, the American Geriatrics Society supports the concept of interdisciplinary management. Their position statement clearly establishes the utility of interdisciplinary care in the treatment of the elderly patient. Expanding on this concept, the John A. Hartford Foundation has supported the Geriatric Interdisciplinary Team Training program. Their concept is simple: "Patients with multiple conditions rely on healthcare professionals from a variety of disciplines. This is often the case with elderly patients. Studies show that complex patients manage better when their doctors, nurses, gerontologists, pharmacists—every health professional involved in their care (including the patient!)-work together as a team to develop a smart plan of care." In addition, the use of Geriatric Resource Nurses and Acute Care of the Elderly (ACE) units are recommended ([www.gitprogram.org](http://www.gitprogram.org)).

This support for interdisciplinary management has led to studies of a new paradigm of care for the elder trauma patient. Several studies from the orthopaedic literature examined the use of interdisciplinary management to improve outcomes. Khasraghi et al. (2005) utilised the team approach in their article and found that patients treated as part of a multidisciplinary hip fracture service had fewer medical complications (36%

vs. 51%), more often had surgery within 24 hours (63% vs. 35%), and had shorter hospital stays (mean, 5.7 days vs. 8.1 days) than patients treated before the hip fracture service. Consistent with these findings, a comprehensive ortho geriatric approach was found to improve functional outcomes following hip fracture as compared with the common two-step model of orthopaedic surgery followed by transfer to a geriatric rehabilitation facility (Adunsky et al. 2003). Collaborative care or orthopaedic-geriatric cocare for older patients with hip fracture was found to be associated with significant reductions in morbidity and mortality and increases in optimal postoperative care (Fisher et al. 2006). The use of orthopaedic-geriatric units has gained world - wide acceptance per a recent article from Australia (Chong et al. 2008). This multidisciplinary approach has reduced mortality rates below the stated average for hip fractures at that facility.

The trauma literature is beginning to catch up to that of its orthopaedic colleagues. A recent paper examined utilisation of a geriatric consultation in the care of the injured elderly (Fallon et al. 2006). Though less than half of the eligible patients were seen in consult, geriatricians assisted with advanced care planning, disposition decisions to promote function, made medication changes, decreased inappropriate medications, and assisted with pain management. Trauma surgeons followed 91% of geriatrician recommendations.

At our level I trauma centre in eastern Pennsylvania, we acknowledged these findings and established a Section of Geriatric Trauma. Our Geriatric Interdisciplinary Trauma Team (GITr) meets weekly to discuss patients on the trauma service age 65 and over. Participants include geriatrics, trauma, nursing, pharmacy, physical and occupational therapy, and case management, with pastoral care, nutrition, and other services attending as needed. We also conduct monthly educational conferences on geriatric topics encountered by our practitioners. The curriculum consists of a mixture of lectures, case studies, and journal clubs. Common problems such as dementia, delirium, and constipation are discussed as well as more complex issues relating to cardiac and pulmonary dysfunction and palliative care. Lecturers span the disciplines, with speakers from trauma, geriatrics, orthopaedics, cardiology, respiratory and other subspecialties. Web pages were established with general information on elder trauma and, in the near future, educational content for the community and emergency medical services staff. Routine consultation via protocol with geriatricians or the patient's primary care physician ensures continuity of care (Fig. 1). A look at our out comes before and after the establishment of this service has been favourable as presented at the annual meeting of the American Geriatrics Society in 2007 (Barraco et al. 2007) (Fig. 2), all differences being statistically significant,  $p < 0.05$ . Reductions were exhibited in hospital and ICU length of stay as well as mortality. In order to improve upon these results, we are moving forward with the development of elder trauma care protocols for problems such as syncope.

In summary, elder trauma patients are best treated at trauma centres. There are many factors to take into consideration in addition to age, including pre-existing conditions, complications, severity of injury, and physiologic insult. Early aggressive care is indicated with an interdisciplinary approach unless prognostic factors or patient and/or family wishes indicate otherwise. At that point, a skillful palliative care service can compassionately guide appropriate end-of-life care.

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