

Trauma Care of the Elderly Patient

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Trauma is the leading cause of death in the United States for individuals aged 1 to 45 years old, but its impact varies across the age spectrum. People age 65 are twice as likely to be hospitalized as a result of a traumatic injury than the general population. The mortality rate in elderly trauma victims has been estimated as 6 times greater than in their younger counterparts when controlling for the degree of injury. These facts will become increasingly important as the elderly population grows. The 2000 US census estimated that the population aged 65 years and older to be over 35 million, a 12% increase since 1990.¹ Elderly patients account for up to one third of all health care expenditures, and one quarter of all hospital expenditures on trauma.²

The combination of chronic diseases in elderly trauma victims, along with their decreased physiologic reserve, account for the increased rates of morbidity and mortality following a traumatic event. Elderly trauma patients exhibit a different, less dramatic physiologic response to injury, which may belie the seriousness of the injury. In dealing with older patients there is less room for errors in judgment than in treating younger patients.

While the elderly experience the same types of injuries as younger people, there are differences in the mechanisms and patterns of injury. Falling is extremely common: 70% of all deaths due to falls occur in the elderly population.³ Approximately one third of elderly individuals living in the community fall each year, increasing to 50% by 80 years of age.⁴ These numbers are even greater in residents of assisted living facilities. Seventy percent of the elderly trauma admissions to our center over the last five years can be attributed falls, which makes it the most common admitting diagnosis to Rhode Island Hospital's Trauma Center.

Falls in the elderly generally occur because of the physiologic changes associated with aging. Declining visual acuity, proprioception, vestibular function, coupled with hearing and memory loss all effect processes controlling balance, maintaining stability and navigating their environment. Systemic disorders frequently contribute to instability and falling as well. Falling, in fact, may be the manifestation of an acute or

chronic occult illness, which should prompt the physician to search for medical causes. Syncope, postural hypotension, venous pooling in the lower extremities, and metabolic derangements like anemia or hypoglycemia are common reasons for falls. Medications may affect the central nervous system, fluid balance, or the cardiovascular system. The number of medications a patient takes along with recent changes in dose should be reviewed. Recently added medications should also be reviewed following a patient fall, not only for side effects associated with factors contributing to falls but for drug-drug interactions due to the new medication or dosing changes. This becomes even more problematic as the patient ages since poly-pharmacy worsens with age. Finally, extrinsic factors like slippery floors, loose carpets and rugs, narrow or cluttered stairs, poorly fitting shoes, and poor lighting can contribute to mechanical falls. Thus, optimizing safety at home can reduce falls, hospitalizations and ultimately death.

Motor vehicle crashes are responsible for approximately 20% of the elderly trauma patient admissions to our center. In 1990, 13% of the total number of drivers were older than age 65.⁵ Despite the tendency to drive shorter distances, drivers over age 75 have the highest rate of fatal crashes of any age group.⁶ After age 80, the fatality rate increases from 1.2 to 4 per 100 crashes.⁷

The high crash and death rates in the elderly can also be attributed the physiologic changes of aging. Subtle changes in memory and judgment impair the ability to recognize and negotiate potentially hazardous road situations. Cognitive, musculoskeletal, hearing, and visual impairments reduce reaction time and affect the elderly driver's ability to control a vehicle. Finally, the elderly have the highest population-based fatality rate for pedestrians struck by a vehicle.⁸ Once again, decreased hearing, loss of visual acuity and peripheral vision, along with reduced reaction time make crossing a busy street a potentially hazardous, even life-threatening event.

In summary, increases in the elderly population are leading to a larger number of elderly trauma patients. While these patients are subject to the same types of trauma as their younger counterparts, they differ in

that falls constitute their leading mechanism of injury. Early identification of injuries, vigilance against being lulled by normal vital signs and a less than dramatic physiologic response to injury is necessary if errors in judgment are to be avoided. Clinicians should be very cautious when adding new medications to the patient's drug regimen and particular attention should be paid to drug interactions, waning metabolic function and decreasing physiological function. Finally, trauma prevention programs should be supported that target "fall proofing" homes and identification of at-risk elderly drivers.

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The authors have no financial interests to disclose.

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