Trauma Clinical Guideline:
Geriatric Trauma Care Guideline

The Trauma Medical Directors' Workgroup is an open forum for the directors of designated trauma services in Washington State to share ideas and concerns regarding the provision of trauma care. The workgroup meets twice a year to encourage communication between services so that they may share information and improve the quality of care that they provide to patients. On occasion, at the request of the Governor's Steering Committee on EMS and Trauma Care, the group discusses the value of specific guidelines for trauma care procedures.

The Geriatric Trauma Care Guideline is distributed by the Washington State Department of Health on behalf of the Governor-Appointed Steering Committee on Emergency Medical Services and Trauma Care to assist trauma care services with the development of their trauma patient care guidelines. Toward this goal, the Trauma Medical Directors have categorized the type of guideline, the sponsoring organization, how it was developed, and whether it has been tested or validated. It is hoped that this information will assist the physician in evaluating the content of this guideline and its potential benefits for their practice or any particular patient.

The Department of Health does not mandate the use of this guideline. The Department recognizes the varying resources of different services and that approaches that work for one trauma service may not be suitable for others. The decision to use this guideline depends on the independent medical judgment of the physician. It is recommended that trauma services and physicians who choose to use this guideline consult with the Department on a regular basis for any updates to its content. The Department appreciates receiving any information regarding practitioners' experiences with this guideline. Please direct comments to Mary Rotert RN, 360 236-2874 or mary.rotert@doh.wa.gov.

This is a trauma assessment and management guideline. It was adapted from the professional literature. The trauma medical directors group reviewed the guideline, sought input from trauma care physicians throughout Washington State, and used that input to make changes. The guideline was then endorsed by the Steering Committee and by the DOH Office of EMS/TS. This guideline has not been tested or validated.

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THE PROBLEM

The elderly population in the United States is steadily increasing and, as a result, so too are the number of elderly trauma victims. Elderly trauma patients account for 25% of injury fatalities per year and consume 33% of the health care resources spent on trauma care. Several studies have demonstrated increased morbidity and mortality for geriatric trauma patients compared to younger cohorts. Elderly patients can sustain a significant injury with even a minor mechanism such as a fall from standing and thus the heath care provider may be prone to underestimate the severity of injury. In addition, elderly patients are commonly hypertensive and thus a "normal" blood pressure may represent a relative hypotension that may be under appreciated. Elderly patients often have medical co-morbidities that complicate their care, and may take medications such as beta blockers, which impair their ability to respond to a hypotensive event. The high rate of coumadin and anti-platelet agent use in this population can also increase the risk of either systemic or intracranial hemorrhage. This guideline has been devised to alert the health care provider of the special considerations surrounding the care of geriatric patients following injury. The definition of the "geriatric" age group varies throughout the literature but for the purposes of this guideline, we will use the most commonly accepted age range of greater than or equal to 65 years.

TRIAGE OF ELDERLY PATIENTS

Early aggressive trauma care has been shown to improve outcomes for geriatric patients with survivable injuries, yet elderly patients are more likely to remain in their community and receive care at a non-trauma center. Recognition of the increased risk of poor outcome in this population should prompt consideration of early transfer to a higher level of trauma care unless the family or patient has decided not to pursue aggressive resuscitation efforts. Advanced age alone should not be used as the sole criterion for denying or limiting care in this patient population. With the exception of patients who are moribund on arrival, an initial aggressive approach should be pursued as the majority will return home and up to 85% will return to independent function.

CHANGES IN PHYSIOLOGIC RESPONSE

The following factors should be considered when evaluating a geriatric patient after injury:

1. By age 65, 50% of the population has coronary artery stenosis.
2. Cardiac index declines linearly with age and the maximal heart rate begins to decline after age 40. Significant blood volume loss may be masked by the absence of early tachycardia. This can be further compromised by pre-injury beta blocker therapy.
3. Systolic blood pressure generally increases with age such that a systolic blood pressure of 120 mm Hg may represent hypotension in an elderly patient whose pre-injury blood pressure was 170 to 180 mmHg.
4. The kidney begins to lose nephron units after age 50 resulting in a decline in glomerular filtration rate and creatinine clearance. The aged kidney is thus more susceptible to hypovolemia.
5. Elderly patients are at increased risk for hypothermia due to decline in thermoregulatory ability.

As a result of this loss of physiologic reserve and the fact that early shock can be underappreciated in the elderly, several authors have advocated early monitoring of the cardiovascular system to optimize resuscitation after injury. Measurements of the base deficit are also thought to be useful in determining the status of the resuscitation.

SPECIFIC INJURY PATTERNS

A. Management of Rib fractures

Chest wall injuries are a particular problem in the elderly patient population and are not well tolerated. Several studies have demonstrated increased morbidity and mortality for elderly patients when compared to younger patients with similar injuries. Elderly patients with $\geq$ 6 rib fractures have been shown to have a 20% mortality and a 31% risk of nosocomial pneumonia. The presence of three or more rib fractures has been associated with increased mortality and duration of ICU and hospital care. Underlying pulmonary contusions may also cause significant pulmonary morbidity and may not become evident until 24 to 48 hours after injury.

The pain associated with rib fractures impairs ventilatory function and increases pulmonary morbidity. Management of these patients is therefore focused on achieving adequate analgesia and clearance of pulmonary secretions. Recent studies have suggested improved outcome with the use of epidural analgesia following rib fractures to obtain adequate pain relief.

It is important to recognize the potential severity of even minimal rib fractures in the elderly population and to have a low threshold for hospitalization and adoption of an aggressive pain management strategy.

B. Traumatic Brain Injury

Elderly patients are at increased risk for TBI even following what appears to be a minor mechanism such as a fall from standing. Elderly patients are at higher risk of intracranial hemorrhage with a 3-fold higher risk of subdural hematomas when compared to younger patients. A subdural hematoma can result in a gradual neurologic decline that may not be appreciated by the clinician. In addition, the high rate of anticoagulant (coumadin) and anti-platelet agent use in the elderly population can lead to rapid progression of an intracranial hemorrhage once initiated.

Although it is clear that elderly patients with TBI have a higher mortality than the younger population, triage decisions cannot be made based solely on the Glasgow coma score at admission. The EAST guidelines recommend "to adopt an initial course of aggressive treatment (with the possible exception of the patient who is moribund upon arrival), followed by a re-evaluation of the patient's neurologic status at 72 hours post admission. The intensity of the subsequent care provided can then be based on the initial response to therapy."

Early "aggressive" care should include rapid reversal of anticoagulants including transfusion of fresh frozen plasma for patients on coumadin. Patients presenting with a GCS < 8 will usually require endotracheal intubation for airway protection. As with all TBI patients, resuscitation should seek to avoid episodes of hypoxia and/or hypotension.

ELDER ABUSE

Elder abuse is a term referring to any knowing, intentional, or negligent act by a caregiver or any other person that causes harm or a serious risk of harm to a vulnerable adult. This includes physical, emotional, or sexual abuse, exploitation, neglect, or abandonment. Findings from the National Elder Abuse Incidence Study suggest that more than 500,000 Americans aged 60 and over were victims of domestic abuse in 1996. This study also found that only 16% of the abusive situations are referred for help -- 84% remain hidden. The circumstances surrounding the injury should be examined to detect this often unrecognized situation. For more information see: http://www.elderabusecenter.org.

REFERENCES

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