

Clinical Practice Management Guidelines

Geriatric Trauma

I. Purpose

To improve the care of the geriatric trauma patient.

II. Guideline

Geriatric patients represent the most rapidly growing number of injured patients. They currently represent 24% of all traumatic injury but are estimated to grow to 40% by 2090. Under triage is a major problem in the geriatric trauma population occurring in 40% to 70% of patients. Geriatric patients do not present like their younger counterparts, as their vital signs and symptoms often do not indicate the real severity of their injury. They often do not complain of pain as significantly as their younger counterparts as they have neuropathy from various sources that masks the significance of the injury. Over 80% of geriatric trauma patients will have at least one pre-existing condition and as many as 50% will have two. It is these pre-existing conditions that will contribute to the morbidity and mortality of the geriatric trauma patient.

A multi-disciplinary approach is associated with the best outcomes and should include a geriatric physician when possible.

III. Vital Signs

A systolic blood pressure less than 110 or a heart rate greater than 90 should be considered for potential "shock" or hypo-perfusion. Between 30% and 70% of geriatric trauma patients will have hypo-perfusion at these levels. Hypo-perfusion has been shown to be as severe as shock in the geriatric trauma patient.

- In the pre-hospital setting elderly patients with abnormal vital signs should be considered for triage to a level 1 or 2 trauma center if possible.
- Temperature: Geriatric trauma patients are much more susceptible to hypothermia and corrective measures should be taken early and often.

It is important to obtain as thorough a list of medications as possible as many of them impact the physiologic response of the trauma patient.

IV. Lactate and Base Deficit Determination

Geriatric patients with a systolic BP < 100 or HR > 90 should have a lactate level or base deficit determined early in their presentation to the hospital.

- A lactate > 2.5 or a base deficit worse than -6 mmol/L are indicative of hypoperfusion and severe trauma. This is associated with mortality rates in the geriatric population of greater than 60%.
- If these patients present to a level III or level IV trauma center, they should be stabilized and transferred ASAP, avoiding unnecessary testing. Transfer should occur within one hour of presentation at level III or IV trauma centers.
- These patients should be transferred to Level I or II centers as improved outcomes are observed in institutions with these resources.

Upon presentation to Level I or II trauma center and identification of lactate or base deficit levels as described, patients should undergo prompt appropriate resuscitation and/or surgical interventions. These patients should be admitted to the ICU and have serial examinations and laboratory evaluations to ensure they are correcting the base deficit and lactate.

V. Rib Fractures

Patients with multiple rib fractures should be admitted to the hospital for pain management and adequate pulmonary toilet. Elderly patients with > 6 rib fractures have a 20% mortality rate and a 30% risk of pneumonia.

- Appropriate pain management may consist of oral pain medications, rib blocks, lidocaine patches, PCA parenteral narcotics, and epidural analgesia.
- Epidural analgesia has been shown to improve outcomes and reduce length of stay in patients where adequate pain control cannot be attained with oral or PCA narcotics.
- In severe, multiple, complex, or flail segment rib fractures, intubation, ventilator support and surgical rib fixation may be required to manage the injury.

VI. Traumatic Brain Injury

All patients with a history of trauma should have a rapid screen for the use of anticoagulants and anti-platelet medications upon arrival. A non-contrast CT scan of the brain should be done within 30 minutes of arrival if the patient is on any anticoagulants or anti-platelet medications, even in the face of trivial mechanism of injury.

CT scan of the brain should be repeated with any change in neurologic status. For those on anticoagulation, CT should be repeated within 6 to 12 hours as delayed bleeds can occur. The geriatric patients are at very high risk for subdural hematomas and subarachnoid hemorrhage but epidurals are relatively rare.

All patients on anticoagulation with a traumatic abnormality identified on CT should be admitted for observation.

Initial GCS should not be used to make triage decisions and aggressive care should be provided, but if the GCS remains 8 for more than 72 hours, the outcomes are dismal.

VII. Geriatric Patients on Anticoagulation

Due to the incidence of geriatric patients taking anticoagulants or anti-platelet medications there should be a rapid history to determine use of these medications. If the patient is on any of these medications urgent evaluation and possible reversal is warranted.

- A coagulation profile should be performed ASAP.
- If the PT or INR are elevated rapid correction with FFP or PCC (Prothrombin Concentrate Complex) should occur.
- If FFP or PCC are not available, the patient should be transferred to a center that is capable of reversal of their anticoagulation.

Correction of coagulopathy to an INR < 1.6 within 2 hours of presentation and complete correction within 4 hours have been shown to improve outcomes.

VIII. Solid Organ Injury

In recent years the role of non-operative management of solid organ injuries has gained acceptance. Geriatric trauma patients with solid organ injury may be managed successfully using non operative techniques but require some additional precautions.

- The geriatric patient should be admitted to ICU for observation.
- The hospital they are admitted to should offer 24 hour surgical and interventional radiology (IR) services.
- Any sign of deterioration should result in surgical or IR intervention.

IX. High Risk Markers

There are specific markers seen in the geriatric population which indicate a high risk for poor outcomes. Attention to identification of these factors and rapid transfer to a Level I or II trauma center and/or rapid intervention to address these issues can improve outcomes in these patients. These markers include:

- Admission GCS <14
- Need for early transfusion of blood products (PRBC/FFP)
- Need for early surgical intervention
- Base Deficit worse than -6 mmol/L
- Lactate > 2.5
- Systolic blood pressure < 100
- INR > 1.6

X. Complications

Complications in the geriatric population occur frequently (>30%) and contribute significantly to poor outcomes. A high index of suspicion, early identification, and prompt care can improve outcomes. Attention to the following list may reduce some of the more common complications and risks in the geriatric population:

- DVT prophylaxis
- Stress ulcer prophylaxis
- Decubitus ulcer prevention - early backboard removal
- Ventilator associated pneumonia protocols, if intubated
- Early nutrition – enteral if possible
- Early deconditioning - early OT/PT/rehab involvement

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