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The ABCs of Geriatric Trauma

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INTRODUCTION

Geriatric trauma is a major cause of death and disability and results in three million annual ED visits.[1] By 2050, over 40% of all trauma cases will be geriatric.[2] Injury severity in these patients is high and disproportionate to mechanism.[3] Ground-level falls are the principal cause of geriatric trauma resulting in 80% of geriatric trauma admissions.[4] Worldwide, falls are the second leading cause of death.[5] Age alone is a weak predictor of mortality.[6] Yet age over 70 years is associated with worse outcomes.[7,8] The vast numbers of older patients with major traumatic injuries demand every emergency department optimize the complex delivery of care required for these patients.

Improved geriatric polytrauma survival indicates the need for early aggressive treatment.[9] Geriatric trauma mortality is less at trauma centers.[10] Centers with higher geriatric trauma volumes provide improved outcomes.[11,12] Specialized geriatric trauma care improves independence and preserves social function even in octogenarian patients.[13] Up to 66% of older adult patients are discharged home after the trauma hospitalization.[14] After a stay in acute care facilities, 90% of elder trauma patients go home.[15] Do not use age alone to limit care.[16]

This chart uses the familiar ABC structure for emergency evaluation and resuscitation to incorporate the special skills, knowledge, and critical actions needed for geriatric trauma management. It is intended to help front-line providers better care for trauma patients. Following this template can help ED staff address the important factors often overlooked in the care of older adult trauma patients.

THE ABCs OF EMERGENCY DEPARTMENT GERIATRIC TRAUMA EVALUATION		
AIRWAY		
Older Adult Issue	**Topic**	**Action**
Airway Changes	Atrophy, skin changes, dry tissues, limited mouth opening	Geriatric-focused airway management[17]
Arthritis: C-Spine	Fracture, Ligament Ossification	Limits motion = Difficult Airway[18]
Dentition changes	Ventilation seal	•Dentures in for bag-valve-mask ventilation •Edentulous patients may need supraglottic airway[19]
	Vocal Cord Visualization	Dentures out for intubation
Friable Tissues	Hemorrhage w nasal/oral airway manipulation	Use topical Tranexamic Acid[20]
BREATHING		
Older Adult Issue	**Topic**	**Action**
Hypoxia	Aging physiology	Provide early supplemental oxygen

Hypercapnia	Aging physiology	•CO2 Monitoring and respiratory support
RSI Pharmacology	Medication Management	•Note 20-40% decreases in usual medication doses[21] •Note avoidance of many drugs
Rib Fractures and Pulmonary Contusions	Poor physiologic reserve	•Higher mortality from less injury •Obtain FVC% to optimize resource use[22]
CIRCULATION		
Older Adult Issue	**Topic**	**Action**
Atypical Vital Signs	Blunted Tachycardia	Drugs and disease block tachycardia from hypovolemia
	Predicted Maximum heart rate calculation: 208 - 0.7 x age[23]	Masks volume loss and shock identification
Occult Hypoperfusion[24]	Masked Hypotension increases w age causing poor outcomes[25]	•Early invasive monitoring •Get a lactate and base deficit[26]
Anticoagulation	Hemorrhage	•Added testing INR, TT, TEG[27] •Significant in Brain Injury[28] •Reversal agents
Fluids and Blood	Critical Care Ultrasound use decreases IVF[29]	•Limited volume resuscitation safe in hypotensive older adults[30] •High plasma-to-RBC ratio benefit uncertain[31]
DISABILITY		
Older Adult Issue	**Topic**	**Action**
Dementia High Occurrence	•Falsely diminishes GSC •History unreliable	•Chronic orientation changes may falsely present as acute •Special pain scales should be used (PAINAD) •Determine decisional capacity
Delirium High Risk	Common difficulty to detect Implement prevention and treatment strategies[32]	•Follow steps of ADEPT Tool[33] a. Nonpharmacologic care followed by… b. Pain control followed by… c. Pharmacologic control of agitation
GCS Errors	Chronic Eye Findings	Glaucoma, Cataract Surgery, Eye Drops
Brain Atrophy	Physical findings of Intra crania hemorrhage (ICH) decreased	Need more imaging to find ICH[34]
EXPOSURE		
Older Adult Issue	**Topic**	**Action**
Hypothermia from regulatory loss	Causes dysthymia, coagulopathy, and Chronic Critical Illness[35]	•Use Bair Hugger Rewarming System •Warm blankets/room/IVF
Skin Breakdown	•Early removal of cervical collars and backboards • Pressure ulcers = morbidity •Medicare Never-event	•Use padding, Egg Foam Mattress, •Early c-collar removal safe if CT negative and no neuro deficits[36] •Early CT prioritization/readings
EMS/Pre-Hospital Care		
Older Adult Issue	**Topic**	**Action**
Under-triage	•Ageism, •Poor recognition of low mechanisms harms[37]	•Education and Communication •Use Geriatric trauma triage guidelines[38]
Vital Signs	Are falsely "normal"[39]	Systolic BP <110 positive identifies risk[40]
Trauma Activation	•From outside (the community)	Communication and protocols need to exist in your ED
	•From inside (the ED)	

FRAILTY & FIND MEDICAL ISSUES		
Older Adult Issue	**Topic**	**Action**
Frailty increases morbidity and mortality	Screening suggested[41]	• Mobilize Added Resources • May change disposition • Outcomes better predicted w screening
Many falls, MVCs caused by medical issues = Intrinsic Falls Medications precipitate falls[42]	Syncope	• Look beyond the injury for syncope[43] • Find the cause of intrinsic falls[44] • Consider PT evaluation of fallen patients[45]
GOALS OF CARE		
Older Adult Issue	**Topic**	**Action**
Preserve autonomy limit unwanted care	• Identify Goals Early • Establish prior to intubation or surgery • Revise with Trajectory Changes[46]	• Know good and poor prognostic markers • Learn palliative care principles/resources
HOME		
Older Adult Issue	**Topic**	**Action**
Dangers of Hospitalization	• Soon: Discharge as early as possible • Safe: Ensure safe Transitions of Care and safety of discharge	• Carefully construct systematic referrals for multiple common dischargeable diagnosis • Inpatient transitions of care important[47] • Social admits have long hospital stays[48]
INTERDISCIPLINARY CARE TEAMS		
Older Adult Issue	**Topic**	**Action**
Pharmacy, Social Service, Physical Therapy, and Geriatrics Consults improve care	Use interdisciplinary assist in stable patient evaluation, once secondary survey is complete[49]	• Bringing added expertise to the ED bedside provides best practice in older adult care. • Geriatric consult reduces adverse outcomes[50,51] and increases discharge to home[52] • Use of hospitalist is NOT supported[53]

CONCLUSION

In summary, early interventions are mandatory in geriatric trauma.[6] Expedite care using geriatric trauma principles to improve outcomes.[54] Be aware of false normal vital signs, and check serum lactate to find occult hypoperfusion. Use critical care ultrasound to guide fluid administration. Carefully evaluate anticoagulation status and the need for reversal. Look for medical and intrinsic cause of all falls. Use interdisciplinary care teams, especially geriatric consults to improve outcomes. A multidisciplinary dedicated trauma service is associated with increased trauma team activation rate and better survival in geriatric trauma patients.[55] If such a service is not available, it is more important for each provider to develop better knowledge and apply the above skills. CME education "Major Trauma in the Older ED Patient" is available at: https://gedcollaborative.com/course/major-trauma/.

KEYWORDS

Geriatric Trauma Evaluation

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