Michigan Trauma Coalition

Geriatric Intensive Care Unit Admission Scoring Tool

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Objectives

- Use of a tool to guide placement of geriatric trauma patients
- Define the steps taken to implement a tool to affect change
- How to measure effectiveness and compliance to a change in process post implementation
- Demonstration of using existing information and tools to improve your own processes

MTC Scholarship Committee

- THANK YOU!
- TCAA 2024 Conference in Nashville
- Conference Highlights
  - Separate Injury Prevention Tract
  - Succession Planning
  - Breaking Down the Silos
  - ACS 2022 Standards
    - Mental Health Screening
    - Timing for Interventional Radiology Cases
    - Panel Discussion from TMDs/TPMs with recent site visits

Geriatric Trauma Patient

- Age
  - 65
- Increasing Elderly Population
  - 2023 18% of US Population approximately, 49,000,000
  - 2050 Projections 22% of US Population, approximately 82,000,000
- Key Considerations for Geriatric Trauma Patients
  - Injury Pattern and Severity
  - Decreased Physiologic Reserve
  - Pre-existing conditions
  - Frailty
  - Atypical Presentations
  - Higher Morbidity and Mortality

American College of Surgeons Info

- Recognition that geriatric patients need specialty care
- ACS Geriatric Trauma Management Guidelines 2013
- ACS Geriatric Trauma Management Guidelines 2023
  - Identification of Seniors at Risk (ISAR) Screening Tool: Aids in identifying patients at higher risk of adverse outcomes, guiding decisions regarding ICU admissions and resource allocation
- Key Points from Guidelines
  - Fall Prevention
  - Tailored Criteria
  - Interdisciplinary Approach
  - Emphasis on Gentle Care

American College of Surgeons 2022 Standard 4.5

4.5 Specialty Liaisons to the Trauma Service—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

The trauma program must have the following designated liaisons:

LI, LII, PTCI, PTCII:

- Board-certified or board-eligible emergency medicine physician
- Board-certified or board-eligible orthopaedic surgeon
- Board-certified or board-eligible anesthesiologist
- Board-certified or board-eligible neurosurgeon
- Board-certified or board-eligible radiologist
- Board-certified or board-eligible intensive care unit (ICU) physician
- Geriatric provider (applies only to LI and LII)

Geriatric Provider Liaison
In Level I and II trauma centers, the geriatric liaison may be a geriatrician, or a physician with expertise and a focus in geriatrics, or an APP with certification, expertise, and a focus in geriatrics. The role of the liaison is to assist in the development and implementation of geriatric protocols and to be available for patient consultation.

Measures of Compliance

Documentation of individuals assigned to specific liaison roles and evidence of board certification, board eligibility, or Alternate Pathway approval

New ACS Cohort

Low Injury Severity Frail Trauma

- ≥75 yrs
- ISS<16
- At least two of (mFI-5):
  - Hypertension
  - CHF
  - COPD
  - Functionally Dependent
  - Diabetes Mellitus

	Patients	Mortality			
Cohort	N	Observed Events	Observed (%)	Expected (%)	TQIP Average (%)
All Patients	2,785	164	5.9	8.4	7.5
Blunt Multisystem	859	82	9.5	13.8	14.6
Penetrating	70	4	5.7	8.9	10.7
Shock	112	30	26.8	32.0	26.4
Severe TBI	261	90	34.5	45.3	46.9
Elderly	906	84	9.3	13.8	9.8
Elderly Blunt Multisystem	236	35	14.8	23.6	20.4
LIFT	139	5	3.6	4.7	5.9
IHF	119	2	1.7	2.6	3.4

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Pros and Cons to Geriatric ICU Admission

- Pros
  - Better Outcomes due to closer monitoring, aggressive resuscitation & multidisciplinary care
  - Increase survival in patients that require critical interventions such as mechanical ventilation, vasopressor support, or post-surgical care
- Cons
  - Prolonged ICU stay risk
  - Poor functional recovery
- Considerations
  - Intermediate Care
  - Palliative Care

Informed Decision for Implementation

- Studies
- Data
- Tools

1. **Vanderbilt University Medical Center's Geriatric Trauma Patient Management Guidelines:**
   1. **ICU Admission Criteria:** Patients should be considered for ICU admission if they present with:
      1. Four or more rib fractures accompanied by an increased oxygen requirement exceeding 6 liters via nasal cannula.
      2. Multiple long bone fractures.
      3. Severe pelvic fractures.
      4. Hypotension, defined as a systolic blood pressure (SBP) less than 110 mmHg.
   2. **Frailty Assessment:** Utilization of a frailty score upon admission to evaluate the patient's physiological reserve and potential risks. vumc.org

1. **Eastern Association for the Surgery of Trauma (EAST) Guidelines:**
    1. **ICU Admission Recommendations:** Suggests that patients aged 65 and older with an initial base deficit greater than -6 mmol/L should be considered for ICU admission due to the increased risk of complications. east.org

- **Implementation in Clinical Practice:**

- **Comprehensive Assessment:** Beyond chronological age, evaluating factors such as frailty, comorbidities, and injury severity is crucial in decision-making.
- **Multidisciplinary Approach:** Collaboration among trauma surgeons, geriatricians, critical care specialists, and other healthcare professionals ensures holistic care tailored to the needs of elderly trauma patients.
- **Continuous Monitoring and Reassessment:** Regular evaluation of the patient's clinical status and response to treatment is essential, with adjustments to the level of care as needed.

- By integrating these guidelines and tools into practice, healthcare providers can enhance the quality of care for geriatric trauma patients, optimizing outcomes and resource utilization.

Advantages of Using Existing Tools

- Faster Implementation
- Proof of effectiveness exists
- Networking
- Reduced costs
- Ensures consistency of use

Identified Opportunity For Improvement

- Geriatric Trauma Patients were largest population of Unplanned Admission to ICU
- Mortality rate for Geriatric Trauma Patients admitted from Emergency Care Center to ICU was lower than Geriatric Trauma Patients with Unplanned Admission to ICU
- No policy or guideline in place regarding geriatric trauma ICU admissions

Steps to Implementation

- Gather Data
- Create Tool
  - Atrium Health North Carolina
- Key stakeholder involvement
  - Trauma Team
  - ECC
  - ICU
  - Trauma Surgeons/Advanced Practice Providers
- Present Information to TPOPP Committee
- Education and Implementation

The Data Does Not Lie

All Unplanned to ICU by Age	
Age	**# of Pts**
Age ≥65	24
Age >65	4
Total Unplanned to ICU	28
% Geriatric Patients Unplanned ICU	**86%**

Injury	# of Pts	% Pts
Hip	5	21%
TBI on Anticoagulants	3	13%
Rib	2	8%
Other	14	58%
Total	**24**	**100%**

Geriatric ECC to ICU Admits Mortality	
Outcome	**# Pts**
Died	4
Alive	55
Total Geriatric Patients	59
% Mortality	**7%**

Geriatric Unplanned ICU Mortality	
Outcome	**# Pts**
Died	6
Alive	18
Total Geriatric Patients	24
% Geriatric Mortality	**25%**

Geriatric ICU Admission Scoring Tool

*Pre-Existing Condition Score from table below
*Use highest score in each cateogry
*Hemoperitoneum spaces: Peri-hepatic, Peri-splenic, Pelvic, Inter-loop

Pre-Exisiting Condition Score					
	1 Point for Each Condition	2	3	5	
	MI___ CHF___PVD___	Hemiplegia	Moderate or Severe Liver Disease (cirrhosis with portal HTN)	Metastic solid tumor	
	Dementia___ COPD___ DM with Meds___	Moderate or Severe Renal Disease (serum creatinine		AIDS	
	Mild Liver Disease (cirrhosis without portal HTN)	Diabetes with end organ damage			
	Connective Tissue Disease	Any Cancer (treated in the last 5 years)			
	Cerebrovascular Disease	Leukemia			
	Ulcer Disease	Lymphoma			Total Score
Score					

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Geriatric ICU Admission Scoring Tool (Score of ≥6 Consider ICU Admission)

Circle Injuries in Table	0	1	2	3	4	5	Score*
Age	≤ 55	56-60	61-65	66-70	71-75	≥ 75	
Chest Wall Injury	None	1-3 Rib Fracutes **OR** Clavicle Fracture	4-6 Rib Fractures **OR** Sternal Fracture	7-9 Rib Fractures **OR** Scapula Fracture	10-12 Ribs Total	≥ 12 Ribs Total	
Abdominal Solid Organ Injury (Liver, Spleen, Kidney) OR Hemoperitoneum*	None	Grade I or II (or total of I or II) **OR** Minimal Hemoperitoneum	Grade III (or total of III) **OR** 1-space Hemoperitoneum	Grade IV (or total of IV) **OR** 2-space Hemoperitoneum	Grade V (or total of V) **OR** 3-space Hemoperitoneum	Total ≥6 **OR** 4-space Hemoperitoneum	
Pelvic Fracture	None	Chip Fractures	Pubic Rami, Ring Intact	Pelvic Ring **OR** Acetabular Fracutre	Ring Fracture with Vertical Shear	Open Pelvic Ring Fractures	
Femur Fracture	None	Closed Mid-shaft or Hip Fracture	Comminuted Femur Fracture	Femur Fracture, with associated Vascular Injury	Bilateral Femur Fracture	Near **OR** Complete Thigh Amuptation	
Pre-Existing Condition Score*	Sum of All Points from Mortality Score Below in Pre-Existing Condition Table						
						Total Score	

Roadblocks to Implementation

- Combined ICU post COVID-19
- Staffing
- Bed capacity
- Increased trauma volumes
- Pushback
- Score vs Clinical Judgement

Measuring the Change

- Establish time frames for date for data comparison
- Identify real time OFIs
- Solicit feedback from key players
- Modify tool if data supports doing so
- Continue to seek new information from original sources

References

- American College of Surgeons Best Practice Guidelines, Geriatric Trauma Management, November 2023 and November 2013
- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, WISQARS (online)
- Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 1999-2021 on CDC WONDER Online Database
- https://www.vumc.org/trauma-and-scc/sites/default/files/public_files/Protocols/Geriatric%20Trauma%20PMG_2022.pdf
- Geriatric Trauma (Update) - Practice Management Guideline, Eastern Association for the Surgery of Trauma

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Questions?

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Thank you