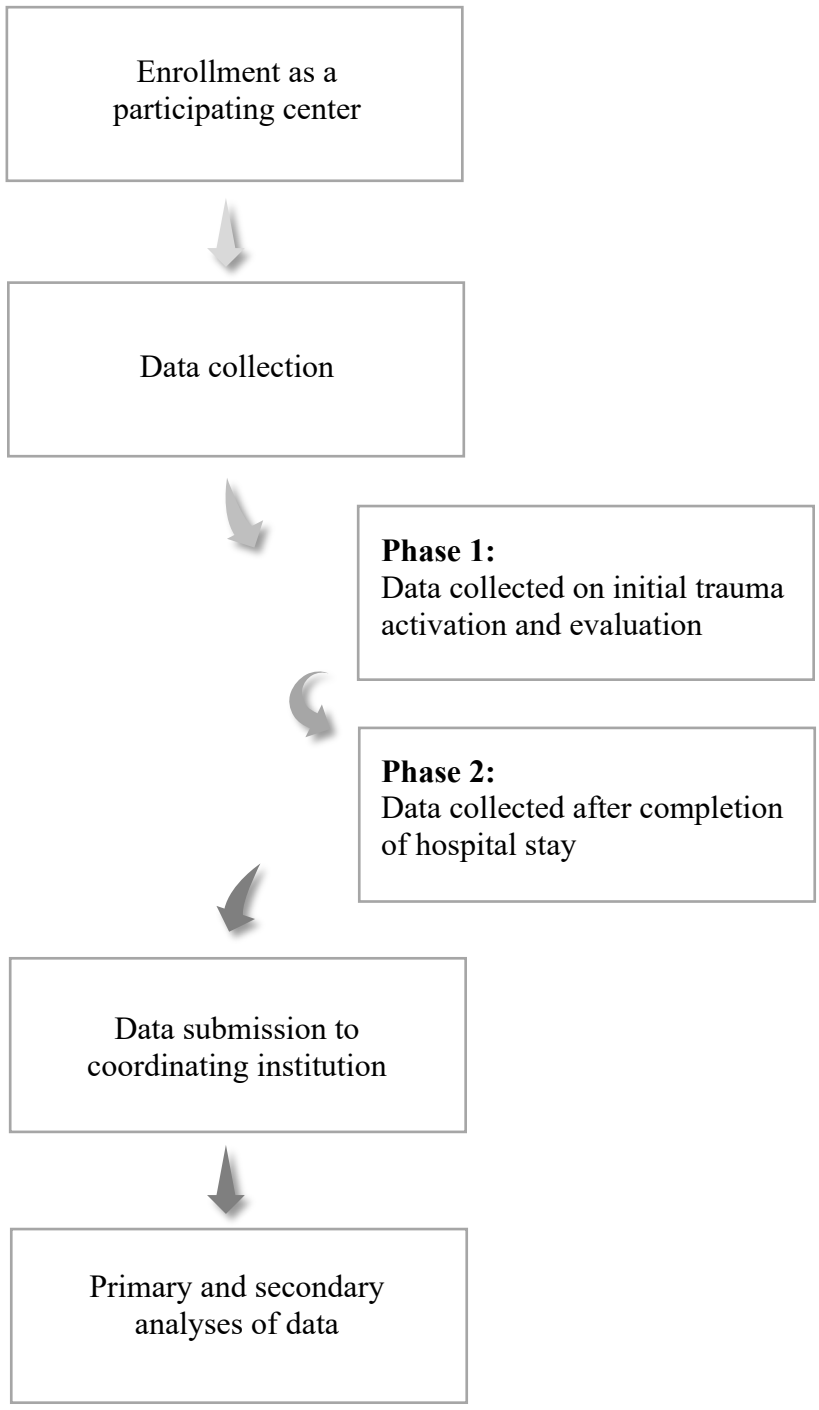
SCANNING THE AGED TO MINIMIZE MISSED INJURY

EAST MULTICENTER PROSPECTIVE OBSERVATIONAL STUDY

OVERVIEW OF STUDY LOGISTICS



SUBJECT ID: _____ MRN: _____

Patient hospital sticker

SCANNING THE AGED TO MINIMIZE MISSED INJURY: EAST MCT
Phase 1: Data collected on INITIAL activation and evaluation

PATIENT PRESENTATION

Age: _____ **Gender:** ☐ Male ☐ Female

Activation level: ☐ Full (e.g. Category 1, Red, etc.) ☐ Limited (e.g. Category 2, Yellow, etc.) ☐ Trauma consult

Time since injury: _____ hours

Patient origin: ☐ Scene ☐ Transfer

Mechanism:
☐ Penetrating* ☐ Burn*
☐ MVC <30 mph (low energy) ☐ Fall: height
☐ MVC 30+ mph (high energy) ☐ Fall: ground level
☐ Pedestrian struck by vehicle ☐ Found down/unknown
☐ Assault ☐ Other: _____
**** Excluded from study.***

Loss of consciousness: ☐ Yes ☐ No ☐ Unknown

Initial interventions (check all that apply):
☐ None ***—or—***

☐ Central line or I/O placement ☐ Intubation
☐ Needle/tube thoracostomy ☐ Pelvic binder
☐ TXA or other reversal agent ☐ Transfusion
☐ Fracture reduction ☐ Other: _____

Hemodynamic status in ED (check all that apply):
☐ None ***—or—***

☐ Hypotensive (SBP <90) ☐ New onset hypoxia
☐ Tachycardic (>100 bpm) ☐ Bradycardic (<60 bpm)
☐ Hypothermic (<35 C) ☐ Hyperthermic (>40 C)

MEDICAL HISTORY

Language: ☐ English ☐ Spanish ☐ _____ ☐ Unknown

Living status: ☐ Home ☐ Assisted living ☐ Nursing facility ☐ Homeless ☐ _____ ☐ Unknown

Function: ☐ Independent ☐ Partly dependent ☐ Fully dependent ☐ Unknown

Impairments (check all that apply):
☐ Unknown ***—or—***

☐ Hearing loss ☐ Vision loss ☐ Impaired mobility
☐ Dementia ☐ Other: _____

Chronic kidney disease or end-stage renal disease:
☐ Yes ☐ No ☐ Unknown

Anti-platelet and/or anti-coagulant use:
☐ Yes: Name(s): _____
Date(s) of last use: _____
☐ No
☐ Unknown

PHYSICAL EXAMINATION

☐ Concern for intoxication ☐ Altered mental status
☐ Ungroomed or unkempt ☐ Abnormal bruising

GCS: Eye: ____ Verbal: ____ Motor: ____ TOTAL: _____

Distracting Injury: ☐ Yes ☐ No

Region	None	Superficial Injury	Tender to Palpation	Gross Deformity
Head	☐	☐	☐	☐
Cervical Spine	☐	☐	☐	☐
Chest	☐	☐	☐	☐
Abdomen	☐	☐	☐	☐
Pelvis	☐	☐	☐	☐
T/L-Spine	☐	☐	☐	☐
Upper Extremity	☐	☐	☐	☐
Lower Extremity	☐	☐	☐	☐
New Neuro Deficit	☐	☐ Sensory		☐ Motor

Abnormal Chest XR: ☐ Yes ☐ No ☐ Not obtained

Abnormal Pelvis XR: ☐ Yes ☐ No ☐ Not obtained

CT IMAGING AND TIMING

Study	IV Contrast	Ordering Team: Pre-arrival	Ordering Team: ED	Ordering Team: Trauma	Injury Found?
☐ CT Head	☐	☐	☐	☐	Y or N
☐ CT C-Spine	☐	☐	☐	☐	Y or N
☐ CT Chest	☐	☐	☐	☐	Y or N
☐ CT Abd/Pel	☐	☐	☐	☐	Y or N
☐ CT T/L-Spine	☐	☐	☐	☐	Y or N
☐ CTA Neck	☐	☐	☐	☐	Y or N

ED DISPOSITION

☐ OR ☐ ICU ☐ SDU ☐ Floor ☐ Discharge ☐ Morgue

SUBJECT ID: _____ MRN: _____

Patient hospital sticker

SCANNING THE AGED TO MINIMIZE MISSED INJURY: EAST MCT
Phase 2: Data collected AFTER completion of hospital stay

DEMOGRAPHICS

Home zip code: _____ **Injury zip code:** _____

Living status:
☐ Home ☐ Assisted living
☐ Nursing facility ☐ Homeless

Language:
☐ English ☐ Spanish ☐ Other: _____

Insurance:
☐ Private insurance ☐ Medicare ☐ Medicaid
☐ Self-pay ☐ Other

LAB DATA

Admission height (cm): _____ and **weight (kg):** _____
Admission Cr: _____ **Highest hospital Cr:** _____
Drug screen: ☐ Positive: _____ ☐ Negative
EtOH level on arrival: _____

Medical comorbidities (check all that apply):
☐ None ***—or—***

☐ Myocardial infarction, prior ☐ Congestive heart failure
☐ Peripheral vascular disease ☐ Chronic pulmonary disease
☐ Cerebrovascular disease ☐ Dementia
☐ Renal disease ☐ Peptic ulcer disease
☐ Diabetes without chronic complication
☐ Diabetes with chronic complication
☐ Mild liver disease ☐ Mod. or severe liver disease
☐ Hemiplegia or paraplegia ☐ Rheumatic disease
☐ Leukemia ☐ Lymphoma
☐ Any malignancy without metastasis
☐ Metastatic solid tumor
☐ AIDS (excluding asymptomatic infection)
☐ Other: _____

DELAYED DIAGNOSTIC CT IMAGING

Was diagnostic CT imaging performed after the initial evaluation? If so, what hospital day (HD#) did imaging occur?

☐ CT Head	☐ CT C-Spine	☐ CTA Neck	☐ CT Chest ☐ with IV contrast	☐ CT Abdomen/Pelvis ☐ with IV contrast
HD# _____	HD# _____	HD# _____	HD# _____	HD# _____

Why was additional diagnostic imaging needed? ☐ Completion study ☐ Clinical change ☐ No delayed imaging

Delayed Injuries Identified	AIS Score	Management
		☐ Surgery or non-OR procedure ☐ Higher level of care ☐ Outpatient follow-up ☐ None
		☐ Surgery or non-OR procedure ☐ Higher level of care ☐ Outpatient follow-up ☐ None
		☐ Surgery or non-OR procedure ☐ Higher level of care ☐ Outpatient follow-up ☐ None

FINAL INJURIES IDENTIFIED

Region	Highest AIS of Body Region	Intervention (Select all that apply)		
		None	OR	Procedure
Head		☐	☐	☐
Neck		☐	☐	☐
C-Spine		☐	☐	☐
T/L Spine		☐	☐	☐
Chest		☐	☐	☐
Abd/Pel		☐	☐	☐

OUTCOMES AND DISPOSITION

Overall highest level of care: ☐ ICU ☐ SDU ☐ Floor

Elevations in level of care? ☐ Yes ☐ No

Were any serious non-traumatic incidentals identified?
If **yes**, describe: _____

Total ICU days: _____ **Total vent days:** _____
Total hospital days: _____ **ISS:** _____

DNR: ☐ No DNR ordered ☐ New DNR ☐ Prior DNR

Discharge to:
☐ Home ☐ Acute rehab ☐ Skilled nursing
☐ Transfer ☐ Hospice ☐ Morgue (deceased)
Discharge GCS: _____

SUBJECT ID: _____ MRN: _____

Patient hospital sticker

SCANNING THE AGED TO MINIMIZE MISSED INJURY: EAST MCT
Participating Site Enrollment Survey

FACILITY INFORMATION

Level of trauma center:
☐ Level 1 ☐ Level 2 ☐ Level 3

Designating body:
☐ ACS ☐ State ☐ Both

Site region:
☐ Northeast ☐ Midwest ☐ South ☐ West

Annual number of activations:
☐ 0-499 ☐ 500-999 ☐ 1000-1499 ☐ 1500-1999
☐ 2000-2499 ☐ 2500-2999 ☐ 3000-3499 ☐ 3500+

Geriatric-specific activation criteria:
_____
_____
_____
_____

Upload a copy of the institution's trauma triage form or protocol.

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DATA DICTIONARY

INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria:

1. Patients age 65 or greater, included in the trauma center's registry
2. Blunt trauma mechanism
3. Trauma team activations (triggering full or limited trauma surgery team response)
4. Trauma consults (triggering evaluation by trauma surgery team)

Exclusion criteria:

1. Patients age 64 or less
2. Penetrating trauma mechanism
3. Burn trauma mechanism
4. Lower trauma activations (that do not, at any point, trigger trauma surgery team evaluation)

SCANNING THE AGED TO MINIMIZE MISSED INJURY

EAST MULTICENTER PROSPECTIVE OBSERVATIONAL STUDY

DATA DICTIONARY

PHASE 1: DATA COLLECTED ON INITIAL ACTIVATION AND EVALUATION

PATIENT PRESENTATION

Age	Age of enrolled patient at time of arrival to ED. Patients under 65 years of age (i.e. 64 years or less) are excluded from this study.
Gender	Patient gender
Activation level	Choose the response that best highlights the activation level for this patient. **Full activations** are those that require the full trauma team. **Limited activations** are those that are lesser in acuity but still require trauma team evaluation. **Trauma consults** are those that request evaluation by a trauma team after initial evaluation by a non-trauma team. Trauma activations that do not trigger evaluation by the trauma surgery team and are managed entirely by emergency medicine staff are excluded from this study.
Time since injury	The number of hours since the injury occurred. Patients presenting greater than 24 hours after injury are excluded from this study.
Patient origin	Indicate location patient was brought from. **Scene** refers to the accident scene or environment where the traumatic incident occurred. **Transfer** refers to patients who initially presented to an outside medical facility for triage or initial management.
Mechanism	Choose the single best description of the traumatic incident. If none adequately describe the mechanism, choose **Other** and provide a brief description. If **penetrating** or **burn**, the patient is excluded from the study.
Loss of consciousness	Indicate if the patient experienced loss of consciousness during or after the traumatic incident.
Initial interventions	Indicate interventions performed prior to CT scan. These include interventions performed at a transferring facility, during transportation by EMS staff, in the emergency room prior to CT scans, or, if applicable, transport to OR before any imaging is obtained. If no interventions were performed, mark **None**.
Hemodynamic status in ED	Check all applicable hemodynamic abnormalities that occur at any point during the trauma activation. If no significant hemodynamic changes occurred, mark **None**.

MEDICAL HISTORY

Language	Primary language spoken by patient. If not English or Spanish, indicate the language in the blank space. If not known at time of initial evaluation, mark **Unknown**.
Living status	Choose the response that best characterizes the patient's living situation immediately prior to the traumatic incident. **Home** indicates the patient lives in their own home, regardless of whether or not they require assistance from family caretakers, home health aides, or other assistants. **Assisted living** refers to a community, such a group home, in which the patient lives where support is offered but is generally not provided around-the-clock. **Nursing facility** refers to a dedicated facility that provides nursing care around-the-clock. **Homeless** indicates the patient does not have a home or address. If a patient's living status is not adequately described by the given options, describe it in the blank space. If **unknown**, mark the appropriate box and proceed to the next data point.
Function	Function refers to the patient's functional status. **Independent** means the patient is capable of performing activities of daily living without assistance. **Partly dependent** indicates the patient requires some degree of assistance to perform activities of daily living. **Fully dependent** indicates the patient is fully reliant on assistance from others to complete activities of daily living. If **unknown**, mark the appropriate box and proceed to the next data point.
Impairments	Check all applicable baseline impairments. If not known at time of initial evaluation, mark **Unknown**. **Hearing loss** refers to baseline difficulty with hearing, including but not limited to dependence on hearing aids. **Vision loss** refers to baseline impairments in vision, such as dependence on corrective lenses or presence of significant cataracts. **Impaired mobility** refers to any dependence on an ambulatory assist device, such as a walker, cane, or motorized scooter. If the patient has other notable impairments, please list those under **Other**. These impairments reflect baseline impairments and should not be marked if they are new changes as a result of this traumatic incident.
Chronic kidney disease or end-stage renal disease	Mark **Yes** if the patient has known CKD or ESRD. If not, mark **No**. If unknown, mark **Unknown**.
Anti-platelet and/or anti-coagulant use	Choose the box that best reflects the patient's use of anti-platelet and/or anti-coagulant medications. Examples of anti-platelet medicatiosn include aspirin, clopidogrel (Plavix), ticagrelor (Brilinta), and prasugrel (Effient). Examples of anti-coagulant medications include warfarin (Coumadin), enoxaparin (Lovenox), rivaroxaban (Xarelto), apixaban (Eliquis), and dabigatran (Pradaxa), among others. If the patient takes anti-platelet or anti-coagulant medications, list the names of the agents and the date(s) of last use, if known. If not known at the time of initial evaluation, mark **Unknown**.

PHYSICAL EXAMINATION

Concern for intoxication	Check this box if there is concern for intoxication upon initial evaluation, regardless of presence of EtOH level.
Altered mental status	Check this box if the patient is exhibiting signs of altered mental status.
Ungroomed or unkempt	Check this box if the there is concern for neglect of personal hygiene, imposed by self or others. Examples include disheveled appearance or malodor of feces or urine.
Abnormal bruising	Check this box if there is concern for abnormal bruising, such as multiple bruises at various stages of healing.
GCS	Provide the total Glasgow Coma Scale score as well as its individual components. Total GCS should be no more than 15 and no less than 3.
Distracting Injury	Distracting injury refers to an extremity fracture, crush injury, large laceration, or other severe injury acutely impairing the patient or compromising the integrity of the physical exam at large.
Physical exam table	Check all the boxes that apply to best characterize physical exam findings. Examples of **Superficial Injuries** include lacerations, abrasions, and bruises. **Tender to Palpation** reflects pain or discomfort elicited on physical exam. **Gross Deformities** include gross skeletal deformities or major wounds. If the patient presents with no significant or notable physical exam findings in a specific body region, mark **None** for that corresponding region. For the neurologic exam, **Sensory** deficits refer to <u>new</u> problems or difficulties with the patient's main senses, and **Motor** deficits refer to <u>new</u> problems or difficulties with motor movements, actions, and activities. These are new changes compared to baseline. If there are no new neurologic deficits, mark **None**.
Abnormal Chest XR	If a chest X-ray was obtained in the trauma bay, indicate if there were abnormal findings or suspicious irregularities. If one was not obtained, check the corresponding box.
Abnormal Pelvis XR	If a pelvic X-ray was obtained in the trauma bay, indicate if there were abnormal findings or suspicious irregularities. If one was not obtained, check the corresponding box.

CT IMAGING AND TIMING

Imaging table	Select the boxes for all imaging studies that were obtained <u>prior to determining the patient's final disposition status</u>. Mark the appropriate box if IV contrast was used for any of the selected studies.

	Indicate which teams were responsible for each ordered imaging study. **Pre-arrival** indicates the study was obtained at an outside facility prior to transfer to the enrolling center. **ED order** refers to studies that were obtained prior to evaluation by a trauma team, such as CT imaging studies that were ordered and that subsequently triggered a trauma consult. **Trauma team** refers to studies that were ordered by the trauma surgery team after evaluation of the patient. If a clinically significant injury was identified through these imaging studies, circle **Y** for yes. If no injury was identified (i.e. a negative study), circle **N** for No. **IMPORTANT** This table refers to imaging studies obtained <u>prior</u> to determining the patient's final disposition status. A **clinically significant injury** is defined as an injury that leads to a management decision, such as observation on the floor, admission to the ICU or any care therein (including serial exams, serial labs, or bedside procedures in the ICU setting), intervention such as surgery or a procedure by an interventionist, or outpatient follow-up. If the patient did not undergo any CT imaging studies, leave this section blank and proceed to the next data point.
ED DISPOSITION	
Disposition	Select the disposition status of the patient upon completion of the trauma workup. **OR** indicates patient was taken directly to surgery. **ICU** indicates admission to an intensive care unit. **SDU** indicates admission to a step-down unit with active monitoring. **Floor** indicates admission to a general or regular nursing floor. **Discharge** indicates patient was discharged from the emergency department. **Morgue** indicates patient was declared dead and was transferred to the morgue.

SCANNING THE AGED TO MINIMIZE MISSED INJURY

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DATA DICTIONARY

PHASE 2: DATA COLLECTED AFTER COMPLETION OF HOSPITAL STAY

DEMOGRAPHICS

Patient home zip code	Indicate the zip code where the patient lives. This refers to the location the patient resides. If the patient is homeless, leave blank and proceed to next data point.
Injury zip code	Indicate the zip code in which the traumatic incident occurred.
Living status (if not known at presentation)	Choose the response that best characterizes the patient's living situation immediately prior to the traumatic incident. **Home** indicates the patient lives in their own home, regardless of whether or not they require assistance from family caretakers, home health aides, or other assistants. **Assisted living** refers to a community, such a group home, in which the patient lives where support is offered but is generally not provided around-the-clock. **Nursing facility** refers to a dedicated facility that provides skilled nursing care around-the-clock. **Homeless** indicates the patient does not have a home or address.
Language (if not known at presentation)	If this was unknown at initial presentation, select the primary language spoken by patient.
Insurance	Select the insurance status of the patient at the time of their admission.

LAB DATA

Admission height	Indicate the patient's admission height in centimeters
Admission weight	Indicate the patient's admission weight in kilograms
Admission Cr	Indicate the patient's admission creatinine level
Highest hospital Cr	Indicate the maximum creatinine level during the patient's hospital stay
Drug screen	Indicate if drug screen at admission was positive or negative. If **Positive**, specify the illicit substance. If no drug screen was obtained, leave blank and proceed to the next data point.
EtOH level	Indicate the patient's EtOH level at admission
Known medical comorbidities	Mark all documented or known medical comorbidities. Mark **None** if the patient has no documented or known medical comorbidities.

DELAYED DIAGNOSTIC CT IMAGING

Delayed imaging	Select the CT imaging studies that were obtained after the initial disposition status of the patient was determined. If there were multiple or repeat delayed imaging studies, base responses only on the first study. Mark the appropriate box if IV contrast was used for CT Chest or CT Abdomen/Pelvis. Indicate the hospital day (HD#) when this study was obtained. Day of admission is considered hospital day 1, not 0. **IMPORTANT** This study is designed to analyze admission imaging studies as well as initial delayed imaging studies. For example, if a patient underwent CT Head on hospital days 2, 3, 5, and 6, base your response on the CT Head obtained on hospital day 2. This applies to all images.
Indication, or why additional diagnostic imaging was needed	Select the indication for the study or studies. Mark all the indications that apply. **Completion study** refers to an imaging study that was obtained to complete a whole-body CT scan or to supplement imaging obtained during the initial trauma evaluation. **Clinical change** refers to a study that was obtained due to a decline or change in a patient's clinical status. These studies can be ordered by the primary trauma surgery team or requested by a consulting service. **No delayed imaging** means the patient did not undergo any new CT scans after the ones obtained during presentation and initial trauma surgery evaluation (i.e. first phase of data collection). Again, mark all the indications that apply.
Delayed injuries identified	List any delayed injuries identified during the patient's hospital stay, including those that were identified with repeat delayed diagnostic imaging. Delayed injuries are those that can be attributed to the traumatic incidence. Examples include, but are not limited to, bony fractures, solid organ injuries, hollow viscus injuries, or soft tissue injuries that were not identified on imaging studies obtained in the trauma bay or that were identified on delayed diagnostic imaging.
AIS Score	AIS stands for Abbreviated Injury Scale. This scale describes various aspects of an injury. Commonly, they are presented in the following formats: 123456.7 or 12(34)(56).7. The seventh and final number, after the period, indicates the severity of the score. This number falls on a scale from 1-6, with 1 being the most minor to 6 being the most severe and maximal injury. If a delayed traumatic injury is identified, indicate the associated AIS score. This information can be found in your institution's trauma registry.
Management	Indicate the change in management prompted by delayed discovery of an injury. **Surgery** indicates surgical intervention, and **non-OR**

	procedure refers to invasive interventions performed outside of the operating room, such as a drainage or embolization procedure by Interventional Radiology or a bedside bronchoscopy. **Higher level of care** refers to escalations of care, such as transfers from the regular nursing floor to step-down unit, regular nursing floor to ICU, or step-down unit to ICU. **Outpatient follow-up** refers to delayed findings that warrant outpatient management rather than inpatient management. If delayed identification of injury did not prompt any management change, mark **None**.

FINAL INJURIES IDENTIFIED

Injury and management table	This table is designed to consolidate all of the patient's injuries and specify how the patient was managed.
Highest AIS Severity	AIS stands for Abbreviated Injury Scale. This scale describes various aspects of an injury. Commonly, they are presented in the following formats: 123456.7 or 12(34)(56).7. The seventh and final number, after the period, indicates the severity of the score. This number falls on a scale from 1-6, with 1 being the most minor to 6 being the most severe and maximal injury. Indicate the highest AIS severity score in each of the listed body regions. Consider not only the AIS scores for delayed injuries but for all injuries identified during this patient's trauma admission. For multiple injuries in the same body region, list the highest AIS severity score. For example, if the patient has multiple head injuries with AIS severity scores of 4, 2, and 1, and delayed diagnosis of a head injury with a severity score of 3, select 4. If a patient did not have an injury in a specific body region, leave the entry field blank.
Interventions	Based on the injuries in each body region, indicate which interventions were performed, such as surgery or a non-operative procedure. If no intervention was performed, regardless of the presence of a clinically significant injury in that particular body region, mark **None**. For example, in a patient with multiple abdominal injuries who underwent embolization of a hepatic vessel with Interventional Radiology, mark Procedure for the Abdomen/Pelvis body region. For a patient with an isolated rib fracture and who did not require any inpatient intervention, mark None for the Chest body region.

OUTCOMES AND DISPOSITION

Overall highest level of care	Based on the injuries in each body region, indicate the highest level of care necessitated during the patient's entire hospital stay. For example, in a patient with multiple abdominal injuries who underwent embolization of a hepatic vessel and was later admitted to the step-down unit for monitoring before being transferred to the regular nursing floor, mark SDU. For a patient with an isolated rib fracture who was initially admitted to the regular nursing floor but

	developed respiratory complications requiring a short stay in the intensive care unit, mark ICU.
Were any serious non-traumatic incidentals identified?	Indicate if any serious non-traumatic incidentals were identified during this patient's admission. Describe in detail those that were found.
Total ICU days	Total days patient spent in the intensive care unit
Total vent days	Total days patient spent on a mechanical ventilator
Total hospital days	Total length of hospital admission in number of days
ISS	Injury Severity Score
DNR	Indicate Do Not Resuscitate orders or updates during the patient's admission.
Discharge	Disposition status of patient after hospital admission. If deceased, mark **Morgue**.
Discharge GCS	Indicate the total Glasgow Coma Scale score of the patient on hospital discharge. If deceased, leave blank.

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EAST MULTICENTER PROSPECTIVE OBSERVATIONAL STUDY

DATA DICTIONARY

PARTICIPATING SITE ENROLLMENT SURVEY

GENERAL INFORMATION

Level of trauma center	Indicate the participating site's designated trauma level
Designating body	Indicate the body or bodies that designate the participating center's trauma level. **ACS** is the American College of Surgeons. **State** is the state-level governing body responsible for these designations. Select **both** if both bodies designate the participating site's trauma level.
Site region	Choose the region in which the participating site is located
Annual number of activations	Select the range that best describes the annual number of trauma activations of all levels that occur at the participating site.
Geriatric-specific activation criteria	Document the participating center's geriatric-specific trauma activation criteria