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BEST OF TRAUMA ARTICLES

The Journal of Trauma and Acute Care Surgery
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DAMAGE CONTROL RESUSCITATION IN ADULT TRAUMA PATIENTS: WHAT YOU NEED TO KNOW

DAMAGE CONTROL RESUSCITATION IN ADULT TRAUMA PATIENTS: WHAT YOU NEED TO KNOW
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/DAMAGE_CONTROL_RESUSCITATION_IN_ADULT_TRAUMA.3.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/damage_control_resuscitation_in_adult_trauma.3.aspx)

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INJURY-INDUCED ENDOTHELIOPATHY: WHAT YOU NEED TO KNOW

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<https://qr.page/g/4R6BogVCYzd>

BEST OF BASIC SCIENCES ARTICLE

Reclaiming the Management of Common Duct Stones in Acute Care Surgery

<p>Acute Care Surgeons are perfectly positioned to surgically manage common bile duct stones</p> <p>FRONTLINE OF THE BILIARY CONSULTS IN ED</p> <p>ACUTE CARE SURGEONS</p> <p>OPERATES AT ALL HOURS</p> <p>CATHETER SKILLS SELLINGER TECHNIQUE</p>	<p>PURPOSE</p> <p>Determine efficacy and safety of our ACS driven approach for definitive choledocholithiasis management</p> <p>Single institution ACS service</p> <p>4 Yr Retrospective Review</p> <p>LC + LCBDE VS LC + pre/post-op ERCP</p>	<p>LCBDE n=71</p> <p>ERCP n=109</p> <p>LCBDE 70%</p> <p>ERCP 100%</p> <p>Median LOS</p> <p>LCBDE 48 hrs</p> <p>ERCP 82 hrs</p> <p>Complications</p> <p>LCBDE n=0</p> <p>ERCP n=1</p>
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Bosley ME et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004102

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RECLAIMING THE MANAGEMENT OF COMMON DUCT STONES IN ACUTE CARE SURGERY
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/RECLAIMING_THE_MANAGEMENT_OF_COMMON_DUCT_STONES_IN.11.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/reclaiming_the_management_of_common_duct_stones_in.11.aspx)

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AAS/ACS COMMITTEE ON TRAUMA CLINICAL PROTOCOL FOR MANAGEMENT OF ACUTE RESPIRATORY DISTRESS SYNDROME AND SEVERE HYPOXEMIA

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA/ AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA CLINICAL PROTOCOL FOR MANAGEMENT OF ACUTE RESPIRATORY DISTRESS SYNDROME AND SEVERE HYPOXEMIA
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/AMERICAN_ASSOCIATION_FOR_THE_SURGERY_OF.21.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/american_association_for_the_surgery_of.21.aspx)

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BEST OF SCC ARTICLES

Impact of Traumatic Hemorrhagic Injury on the Myocardium

3h murine model of trauma hemorrhagic shock (THS)-induced cardiac dysfunction

Results

Increased cardiomyocyte oxidative stress

Naive control vs. THS-Injured
15% vs. 33% $p=0.0476$
(Nuclei expressing 8-OHdG)

Impaired metabolism

↑ lysine $p=0.022$ ↓ Glutamate $p=0.016$ ↓ Acconitate $p=0.047$

Conclusion

Putative mechanism for development of cardiogenic shock in patients undergoing trauma and severe hemorrhage

Simpson R et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000003987
@JTraumaAcuteSurg

MYOCARDIAL ALTERATIONS FOLLOWING TRAUMATIC HAEMORRHAGIC INJURY

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/MYOCARDIAL-ALTERATIONS_FOLLOWING_TRAUMATIC.5.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/myocardial-alterations_following_traumatic.5.aspx)

Anticoagulation in Emergency General Surgery: Who Bleeds More? The EAST Multicenter Trials ACES study

Warfarin/Antiplatelet vs DOAC

413 EGS patients undergoing urgent/emergent procedures within 24 hours of taking anticoagulation/antiplatelet

Warfarin/AP: n = 261
DOAC: n = 152

Perioperative bleeding
In-hospital Mortality

PMH of Chemotherapy & Indication for Operation: Mesenteric Ischemia & Diverticulitis were associated with increased perioperative bleeding

No difference in perioperative bleeding/In-hospital mortality between Warfarin/AP and DOAC patients

Severity of illness was associated with an increased In-hospital mortality

O'Meara L et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004042
@JTraumaAcuteSurg

ANTICOAGULATION IN EMERGENCY GENERAL SURGERY: WHO BLEEDS MORE? THE EAST MULTICENTER TRIALS ACES STUDY

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/ANTICOAGULATION_IN_EMERGENCY_GENERAL_SURGERY_WHO.9.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/anticoagulation_in_emergency_general_surgery_who_bleeds_more.9.aspx)

INTO THE FUTURE: PRECISION AUTOMATED CRITICAL CARE MANAGEMENT (PACC-MAN) FOR CLOSED-LOOP CRITICAL CARE

N = 12

25% Blood Vol Transfusion + REBOA Removal

30% Blood Vol Hemorrhage

30 min Zone 1 REBOA to Induce Ischemia-Reperfusion Injury

Randomization

4.25 hrs of Standardized Critical Care (SCC) Algorithm or Enhanced Algorithm (SCC+)

SCC Algorithm vs. SCC+ Algorithm

Crystalloid Micro Boluses, Norepinephrine Titration vs. Crystalloid Micro Boluses, Norepinephrine Titration, UOP & Lactate Inputs, Vasopressin Infusion

RESULTS

Wt. Based Fluid Bolus Vol. ↓
SCC $p = 0.02$ SCC+
67mL/Kg vs. 27mL/Kg

Cumulative Norepinephrine Requirement
SCC $p = 0.24$ SCC+
Time Spent in Target MAP Zone (60-70 mmHg)
SCC $p = 0.09$ SCC+
Terminal Cr and Lactate
SCC $p = 0.26$ & $p = 0.30$

Ganapathy AS et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004054
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PRECISION AUTOMATED CRITICAL CARE MANAGEMENT (PACC-MAN): CLOSED-LOOP CRITICAL CARE FOR THE TREATMENT OF DISTRIBUTIVE SHOCK IN A SWINE MODEL OF ISCHEMIA-REPERFUSION

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/PRECISION_AUTOMATED_CRITICAL_CARE_MANAGEMENT.6.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/precision_automated_critical_care_management.6.aspx)

Does Lower Extremity Fracture Fixation Technique Influence Neurologic Outcomes in Patients with Traumatic Brain Injury? The EAST Brain vs. Bone Multicenter Trial

30 level 1&2 Trauma Centers

n=358

Determine the Influence of fracture fixation Technique & Timing

Ex-Fix vs. IMN (OR 1.03, 95% CI 0.4-2.2)
Ex-Fix vs. ORIF (OR 0.85, 95% CI 0.3-2.1)
ORIF vs. IMN (OR 0.8, 95% CI 0.5-1.5)

Timing (OR 0.86, 95% CI 0.5-1.5)

Neurologic Outcome: Lower Discharge Rancho Los Amigos Revised Scale (R-RLAS) Score = (1-5)

Head AIS (OR 2.37, 95% CI 1.8-3.2)
Age (OR 1.02, 95% CI 1.002-1.03)
Admission motor GCS score (OR 0.84, 95% CI 0.73-0.97)

Ex-Fix vs. IMN vs. ORIF ≤ 24 vs. > 24 hours

Ghneim M et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004055
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DOES LOWER EXTREMITY FRACTURE FIXATION TECHNIQUE INFLUENCE NEUROLOGIC OUTCOMES IN PATIENTS WITH TRAUMATIC BRAIN INJURY? THE EAST BRAIN VS. BONE MULTICENTER TRIAL

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/DOES_LOWER_EXTREMITY_FRACTURE_FIXATION_TECHNIQUE.10.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/does_lower_extremity_fracture_fixation_technique.10.aspx)

An assessment of the safety, hemostatic efficacy, and clinical impact of low-titer group O whole blood in children and adolescents

Background

Low titer group O whole blood is associated with improved outcomes in adult patients

Is LTO-WB safe in pediatric patients and is it effective?

Design

1. Level 1 traumas receiving emergency release blood <18 years old

2. Whole blood recipients (N=78) versus component therapy only (N=91)

LTO-WB Group

1. More likely to have shock

2. Increased penetrating trauma

3. Higher AIS scores

Conclusion

1. No difference in transfusion reactions

2. Using Low-Titer Group O whole blood (Anti-A and Anti-B Titers < 1:200) appears safe in pediatric patients

3. LTO-WB with improved mortality on multivariate analysis consistent with findings in adults

Gerard J et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004035
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AN ASSESSMENT OF THE SAFETY, HEMOSTATIC EFFICACY, AND CLINICAL IMPACT OF LOW-TITER GROUP O WHOLE BLOOD IN CHILDREN AND ADOLESCENTS

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/AN_ASSESSMENT_OF_THE_SAFETY_HEMOSTATIC_EFFICACY.7.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/an_assessment_of_the_safety_hemostatic_efficacy.7.aspx)

Immediate Use Cryoprecipitate Products Provide Lasting Organ Protection in a Rodent Model of Trauma/Hemorrhagic Shock and Prolonged Hypotensive Resuscitation

Cryoprecipitate products: 5 day post-thaw, lyophilized and conventional

RESULTS

Cryo products and FFP had lower lung and gut injury compared to LR

LR vs FFP vs cryo products

Blood, gut, lungs harvested after 3 days

CONCLUSION

All cryo products equivalent to FFP in lung and gut lasting protection

Availability of these new products allow investigation into clinical use

Zeinuddin A et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000003981
@JTraumaAcuteSurg

IMMEDIATE USE CRYOPRECIPITATE PRODUCTS PROVIDE LASTING ORGAN PROTECTION IN A RODENT MODEL OF TRAUMA/HEMORRHAGIC SHOCK AND PROLONGED HYPOTENSIVE RESUSCITATION

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/IMMEDIATE_USE_CRYOPRECIPITATE_PRODUCTS_PROVIDE.12.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/immediate_use_cryoprecipitate_products_provide.12.aspx)

INCIDENCE, OUTCOMES AND COSTS OF SEVERE SEPSIS AND SEPTIC SHOCK IN GERIATRIC TRAUMA PATIENTS: ANALYSIS OF 2,563,463 HOSPITALIZATIONS AT 3,284 HOSPITALS

Trauma patients >65 years experience a disproportionate burden of total trauma, yet little research exists on Severe Sepsis/Septic Shock (SS/SS) incidence and risk factors in this population

Study Goals

In trauma patients >65 years, identify the incidence, outcomes and costs of SS/SS, and the relative risk of mortality in patients with SS/SS compared to non-SS/SS inpatients.

Study Sample: CMS-Inpatient Standard Analytical Files for 2017-19, age >65, with ≥1 injury ICD-10

Results

SS/SS occurred in 2.1% of the sample, and compared to patients without SS/SS:

CMS payments = 1.5 times higher

Risk of ICU use = 2.16 times greater

Risk of Mortality = 3.58 times greater

Risk of ventilator use = 5.93 times greater

Conclusion

SS/SS occurs infrequently, but is associated with increased mortality and resource utilization

Pre-existing comorbidities influence SS/SS occurrence more than ISS or age

Fakhry SM et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004025
@JTraumaAcuteSurg

INCIDENCE, OUTCOMES AND COSTS OF SEVERE SEPSIS AND SEPTIC SHOCK IN GERIATRIC TRAUMA PATIENTS: ANALYSIS OF 2,563,463 HOSPITALIZATIONS AT 3,284 HOSPITALS

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/INCIDENCE_OUTCOMES_AND_COSTS_OF_SEVERE_SEPSIS_AND.8.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/incidence_outcomes_and_costs_of_severe_sepsis_and.8.aspx)

Stress Cytokine Changes Correlate to Life Trauma

Participant Preparation

63 Firefighter Recruits

LEC-5 Survey

Baseline saliva

Test and Collection Day

Pre-stress saliva

Stress saliva

Acute Stress Test Administered

Post stress saliva

Analysis and Results

Tested concentrations of 48 cytokines and hormones in saliva

Results: multiple acute stress markers found (+) correlated to life trauma and PTSD

(some include: IL8, IL10, IL1B, GCSF, IL1RA, Groa, IFNa2, PDGFAa, and VEGF)

Speakman S et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004006
@JTraumaAcuteSurg

CYTOKINE FLUCTUATION DURING ACUTE STRESS IS CORRELATED TO LIFE TRAUMA

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/CYTOKINE_FLUCTUATION_DURING_ACUTE_STRESS_IS.13.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/cytokine_fluctuation_during_acute_stress_is.13.aspx)

αMT IMPROVES OUTCOMES AFTER TBI

HEAD INJURY INCREASES THE SYNTHESIS OF "FIGHT OR FLIGHT" HORMONES

RODENTS WITH HEAD INJURY GIVEN ALPHA-METHYLTYROSINE (α MT) TO BLOCK CATECHOLAMINE SYNTHESIS

↓ BLOOD PRESSURE
↓ HEART RATE
↓ CARDIAC REACTIVITY
↓ CEREBRAL EDEMA
↓ ANXIETY

Woodman R et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000004323

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ALPHA-METHYLTYROSINE REDUCES THE ACUTE CARDIOVASCULAR AND BEHAVIORAL SEQUELAE IN A MURINE MODEL OF TRAUMATIC BRAIN INJURY

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/ALPHA_METHYLTYROSINE_REDUCES_THE_ACUTE.14.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/alpha_methyltyrosine_reduces_the_acute.14.aspx)

Pediatric Emergency Resuscitative Thoracotomy: A Western Trauma Association, Pediatric Trauma Society, and Eastern Association for the Surgery of Trauma Collaborative Critical Decisions Algorithm

Patient Population	Intervention	Recommendations
Traumatic injury Age < 15	Emergency resuscitative thoracotomy (ERT)	ERT Indicated: signs of life + truncal trauma
OR	Subgroups traumatic arrest, profound shock, Trunk, Head, Extremity	ERT Not Indicated: no signs of life or primary head or extremity trauma

Martin MJ et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000004055

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PEDIATRIC EMERGENCY RESUSCITATIVE THORACOTOMY: A WESTERN TRAUMA ASSOCIATION, PEDIATRIC TRAUMA SOCIETY, AND EASTERN ASSOCIATION FOR THE SURGERY OF TRAUMA COLLABORATIVE CRITICAL DECISIONS ALGORITHM

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/PEDIATRIC_EMERGENCY_RESUSCITATIVE_THORACOTOMY_A.20.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/pediatric_emergency_resuscitative_thoracotomy_a.20.aspx)

The Utah Pediatric Trauma Network, a statewide pediatric trauma collaborative can safely help non-pediatric hospitals admit children with mild traumatic brain injury

Utah has one ACS verified pediatric trauma center. The state has a large geography with different hospitals of various pediatric experience.

UTAH PEDIATRIC

Created to help injured kids get the right care at the right place and at the right time. TBI guideline implemented with frequent data collection and analysis.

Purpose: to review the effectiveness of the UPTN TBI guideline at keeping kids closer to home. Retrospective review of UPTN database 2019 (pre-UPTN) to 2020–2021 (post-UPTN). Comparing kids admitted with low severity TBI at:

Pediatric Trauma Center	Non-pediatric hospitals
-------------------------	-------------------------

Admissions of kids with low severity TBI to non-pediatric hospitals. Kids admitted were younger and more like those admitted to the pediatric trauma center. Admissions of kids with very mild TBI to pediatric trauma center after initiation of UPTN. A statewide pediatric trauma network can help non-pediatric hospitals keep kids with low severity TBI closer to home.

Fenton SJ et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000003871

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ARTIFICIAL INTELLIGENCE VERSUS SURGEON GESTALT IN PREDICTING RISK OF EMERGENCY GENERAL SURGERY

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/ARTIFICIAL_INTELLIGENCE_VERSUS_SURGEON_GESTALT_IN.17.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/artificial_intelligence_versus_surgeon_gestalt_in.17.aspx)

Duration of Antimicrobial Treatment for Complicated Intra-Abdominal Infections after Definitive Source Control

A Systematic Review, Meta-Analysis, and Practice Management Guideline from the Eastern Association for the Surgery of Trauma

What is the most appropriate antimicrobial duration in adult patients who have undergone definitive source control for cIAI?

4 days = 8 days

No significant difference in outcomes between short and long duration of antibiotics.

Therefore, we recommend a shorter, 4 or less days, versus longer duration, 8 or more days. Although the overall quality of evidence was low, there were 6 RCTs.

Ra I et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000003998

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DURATION OF ANTIMICROBIAL TREATMENT FOR COMPLICATED INTRA-ABDOMINAL INFECTIONS AFTER DEFINITIVE SOURCE CONTROL. A SYSTEMATIC REVIEW, META-ANALYSIS, AND PRACTICE MANAGEMENT GUIDELINE FROM THE EASTERN ASSOCIATION FOR THE SURGERY OF TRAUMA

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/DURATION_OF_ANTIMICROBIAL_TREATMENT_FOR.22.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/duration_of_antimicrobial_treatment_for.22.aspx)

Evaluation of Phenobarbital Therapy for Prevention of Alcohol Withdrawal in Trauma Patients

Can phenobarbital treatment prevent alcohol withdrawal syndrome (AWS) in adult trauma patients?

55 patients managed with phenobarbital were case-matched to patients managed with standard care of symptom-triggered treatment.

Patients who received phenobarbital required less rescue therapy compared to the control group (n=9 vs n=34; p<0.0001) with no increased incidence of adverse effects.

Kip LM et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000004039

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EVALUATION OF PHENOBARBITAL FOR PREVENTION OF ALCOHOL WITHDRAWAL IN TRAUMA PATIENTS

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/EVALUATION_OF_PHENOBARBITAL_FOR_PREVENTION_OF.18.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/evaluation_of_phenobarbital_for_prevention_of.18.aspx)

NO VISUAL ABSTRACT REQUIRED

TRANSCRIPTOME ANALYSIS OF HEPATIC INJURY CAUSED BY DELAYED RESUSCITATION FOLLOWING SEVERE BURNS IN RATS

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/TRANSCRIPTOME_ANALYSIS_OF_HEPATIC_INJURY_CAUSED_BY.15.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/transcriptome_analysis_of_hepatic_injury_caused_by.15.aspx)

NO VISUAL ABSTRACT REQUIRED

BRADYKININ RELEASE FOLLOWING TRAUMA AND HEMORRHAGIC SHOCK CAUSES PULMONARY ALVEOLAR LEAK IN A RODENT MODEL

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/BRADYKININ_RELEASE_FOLLOWING_TRAUMA_AND.16.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/bradykinin_release_following_trauma_and.16.aspx)

The Futility of Closed Chest Compressions after Trauma: A Multi-Institutional Study

247 patients with ISS ≥16 who underwent closed chest compressions after traumatic cardiac arrest from 2015–2020.

Four large, urban, academic, Level 1 trauma centers.

Patients compared by decade. Patients aged 70 years and older compared to younger patients.

Conclusions: Closed chest compressions after traumatic cardiac arrest are futile in patients ≥70 years. Resuscitation might instead focus on measures such as intubation, cardioversion, and vasopressors. Further research is needed to understand survival rates when compressions are withheld.

Fierro NM et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/JA.0000000000004070

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THE FUTILITY OF CLOSED CHEST COMPRESSIONS AFTER TRAUMA: A MULTI-INSTITUTIONAL STUDY

[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2023/10000/THE_FUTILITY_OF_CLOSED_CHEST_COMPRESSIONS_AFTER.19.ASPX](https://journals.lww.com/jtrauma/fulltext/2023/10000/the_futility_of_closed_chest_compressions_after.19.aspx)