



JTACS FEBRUARY TABLE OF CONTENTS

'BEST OF' FEBRUARY ARTICLES

BEST OF TRAUMA ARTICLE

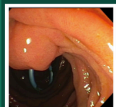

The Inability to Predict Futility in Hemorrhaging Trauma Patients Utilizing 4-Hour Transfusion Volumes and Rates

<p>Is there a transfusion cut-point to predict 100% mortality across diverse trauma population and trauma centers?</p> <p>Prospective, multicenter, observational study at seven trauma centers with a primary outcome of 28-day mortality</p>	  <p>Transfusion volumes in the first four hours and transfusion rates (units/hr) were evaluated for potential futility cut-points</p>	<p>Survival was observed at 4-hr transfusion volumes up to 110 units and rates up to 21 units/hr.</p> <p>Data are limited on volumes above 110 units</p> <p>Until more data are collected, futility <i>should not</i> be declared based on transfusion volumes or rates alone.</p>
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Van Gent J-M et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004541
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THE INABILITY TO PREDICT FUTILITY IN HEMORRHAGING TRAUMA PATIENTS USING 4-HOUR TRANSFUSION VOLUMES AND RATES
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Percutaneous and Endoscopic Transpapillary Cholecystoduodenal Stenting in Acute Cholecystitis - A Viable Long-Term Option in High-Risk Patients?

<p>STUDY POPULATION</p> <p>73 high-risk patients with acute cholecystitis in 2018-2022 across two institutions</p> <p>N = 67 Transpapillary Cholecystoduodenal Stenting (TCDS)</p> <p>ERCp-guided TCDS</p> <p>Fluoroscopy-guided TCDS</p>	<p>RESULTS</p> <p>TCDS was successful in 67 patients among 73 (92%) attempted:</p> <ul style="list-style-type: none"> • Percutaneous in 45/50 (90%) • Endoscopic in 22/23 (96%)  	<p>FOLLOW-UP</p> <p>Median follow-up - 17 months (7, 26)</p> <ul style="list-style-type: none"> • 10 patients (15%) with stent blockage & migration (all but 2 had their stent successfully replaced) • Five patients (7%) with mild, self-limited pancreatitis • Five (7%) patients with interval cholecystectomy at a median time of 7 months.
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Argandykov D et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004468
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PERCUTANEOUS AND ENDOSCOPIC TRANSPAPILLARY CHOLECYSTODUODENAL STENTING IN ACUTE CHOLECYSTITIS—A VIABLE LONG-TERM OPTION IN HIGH-RISK PATIENTS?
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Journal of Trauma and Acute Care Surgery

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WESTERN TRAUMA ASSOCIATION CRITICAL DECISIONS IN TRAUMA: DAMAGE CONTROL RESUSCITATION

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Effect of CPR on Perfusion in a Porcine Model of Severe Hemorrhagic Shock

<p>Adult Female Yorkshire Swine (40kg)</p>  <p>SHOCK: Controlled Hemorrhage to MAP < 30mmHg x 10min</p> <p>Automated CPR vs No CPR</p> <p>Autotransfused to MAP > 60mmHg</p> <p>Recovered x 60min</p>	<p>OUTCOMES (mmHg):</p> <p>Mean Arterial Pressure</p> <p>MAP</p> <p>Systolic and Diastolic Pressures (SBP, DBP)</p> <p>Transcranial probe pB02</p> <p>Transcutaneous probe TCO2</p>	<p>CPR had net nil effect on MAP during shock</p> <p>Raised SBP but lowered DBP</p> <p>Overall negative effect on Brain perfusion (pB02)</p> <p>Skin perfusion (TCO2) (pB02 did not reach statistical significance)</p> <p>CPR lowered TCO2 during shock, this effect persisted during recovery</p>
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Greiffenstein P et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004437
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EFFECT OF CARDIOPULMONARY RESUSCITATION ON PERFUSION IN A PORCINE MODEL OF SEVERE HEMORRHAGIC SHOCK
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WHAT YOU NEED TO KNOW CURRENT MANAGEMENT OF ACUTE APPENDICITIS IN ADULTS

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Factors Affecting the Direct Red Cell Effect on Thrombosis: Hematocrit Dilution and Injury Patterns

Red Blood Cell aggregation acts in a calcium and tissue factor-dependent manner following injury

Mild dilution does not impact RBC aggregation response to Ca/TF

Traumatic Brain Injury may increase RBC aggregation contributing to hypercoagulability

Hemorrhagic shock may decrease RBC aggregation contributing to coagulopathy

Price AD et al., *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004513
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FACTORS AFFECTING THE DIRECT RED CELL EFFECT ON THROMBOSIS: HEMATOCRIT DILUTION AND INJURY PATTERNS
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Impact of Alcohol Policy Repeals on Youthful Driver Mortality, 2010-2022

Methods: Difference-in-Difference analysis comparing state vs national youthful driver mortality rates 3 years pre- vs post- changes in laws suspending licenses of underage alcohol use

Results: All states that revoked their laws between 2010 and 2020 had significant increases in youthful motor vehicle mortality ($p < 0.001$).
 South Dakota: +5.4%
 Georgia: +28.0%
 Indiana: +5.6%
 Oregon: +5.11%
 Delaware: +89.12%
 Pennsylvania: +10.4%
 Illinois: +21.69%

Conclusions: State-level analysis of policy changes offers additional insight on the efficacy of legislation.

Youthful Driver Mortality Rates = Deaths of Youths Ages 15-20 Years in Motor Vehicle Collisions Involving a Young Driver Ages 15-20 Years Per 1,000,000 Persons

Future investigations on state laws should consider measuring their impact individually in each state in consideration of varying governance.

Shin et al., *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004511
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PENALIZING UNDERAGE ALCOHOL USE IS ASSOCIATED WITH LOWER MORTALITY FOR YOUNG DRIVERS: USE/LOSE LAWS AND THEIR ASSOCIATION WITH MOTOR VEHICLE COLLISION MORTALITY
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Impact of the Good Samaritan Law (GSL) on Bystander Intervention Willingness and Perceived Legal Risks in India

Background: 45% of "registered deaths" occurred without any medical attention. 65% of the total trauma-related deaths in India are due to road crashes. 50% of road crash deaths can be averted with timely medical care in the "Golden Hour". 80% of victims do not get access to any care within the "Golden Hour".

Methods: Retrospective Observational Study Design. KBAP Survey n = 1027 (2013), n = 3667 (2018). Impact Assessment through: Difference-in-Difference, Propensity Score Matching, Regression Models.

Results: Probable Change. Outcomes: Baseline Probability, Effect of GSL Implementation. Significant increases in willingness and decreases in perceived legal risks.

Narayan M et al., *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004525
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IMPACT OF THE GOOD SAMARITAN LAW ON BYSTANDER INTERVENTION WILLINGNESS AND PERCEIVED LEGAL RISKS IN INDIA
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Burn-Induced Mitochondrial Dysfunction in Hepatocytes, The Role of MCI Silencing

Methylation-controlled J protein (MCI) is an inner mitochondrial membrane protein that inhibits complex I.

MCI was silenced in AML-12 cells using shRNA against MCI = shMCI

Measure: Mitochondrial function, ROS, Apoptosis.

Serum from burn-injured mice (SBIM) was collected to treat wild-type and MCI KO AML12 cells

MCI KO AML12 cells treated with 10% SBIM, compared to control exhibited:

- ↑ 85% improvement in cell viability
- ↑ Mitochondria respiration
- ↓ ROS ↑ ATP
- ↓ Apoptotic markers

Silencing MCI protects against burn-induced damage in hepatocytes.

It reduces oxidative stress, restores mitochondrial function, and decreases apoptosis.

Highlighting MCI as a potential therapeutic target for burn-induced liver injury.

Pratap A et al., *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004537
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Do Emergency Medicaid Programs Improve Post-discharge Healthcare Access for Trauma Patients? A Statewide Mixed-methods Study

Analysis of California HPE beneficiaries using a claims dataset (2016-2021). Compared healthcare utilization of trauma patients to other HPE patients within two months post-discharge.

Metric	Trauma Patients (%)	Non-Trauma Patients (%)
Accessed outpatient services	40.8	36.6
Returned to ED	18.6	17.2
Readmitted	8.4	10.2
Accessed mental health services	6.8	6.6

Post-Discharge Health Services Utilization. Trauma patients had 1.18x higher odds of accessing specialist services ($p < .001$).

HPE (n=20) patients cited:

- Facilitators: Ease of HPE enrollment, in-hospital support and education
- Barriers: Limited program information recall post-discharge, lack of clarity about where to seek certain care

Knowlton LM et al., *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004519
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DO EMERGENCY MEDICAID PROGRAMS IMPROVE POST-DISCHARGE HEALTH CARE ACCESS FOR TRAUMA PATIENTS? A STATEWIDE MIXED-METHODS STUDY
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The Inability to Predict Futility in Hemorrhaging Trauma Patients Utilizing 4-Hour Transfusion Volumes and Rates

Is there a transfusion cut-point to predict 100% mortality across diverse trauma population and trauma centers?

Transfusion volumes in the first four hours and transfusion rates (units/hr) were evaluated for potential futility cut-points

Survival was observed at 4-hr transfusion volumes up to 110 units and rates up to 21 units/hr.

Data are limited on volumes above 110 units

Until more data are collected, futility *should not* be declared based on transfusion volumes or rates alone.

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THE INABILITY TO PREDICT FUTILITY IN HEMORRHAGING TRAUMA PATIENTS USING 4-HOUR TRANSFUSION VOLUMES AND RATES
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Health-related Social Needs are Common Among Injury Survivors and are Associated with Poor Outcomes

Medical Expenditure Panel Survey 2021

- Population: Injured Patients
 - N= 30,050,864 (weighted)
 - Compared to age- and sex-matched uninjured controls

Centers for Medicaid and Medicare Services Core Health-related social needs

- Food
- Utilities
- Transportation
- Living Situation
- Personal Safety

4 in 10 injured patients, nationally, reported health-related social needs

Injured patients with health-related social needs were more likely to have poor health outcomes and greater healthcare utilization

Across the US, millions of injury survivors have health-related social needs

CMS-mandated screening is an opportunity for trauma centers to optimize recovery after injury

Scott et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000044508

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NATIONAL ANALYSIS OF HEALTH-RELATED SOCIAL NEEDS AMONG ADULT INJURY SURVIVORS
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Effect of CPR on Perfusion in a Porcine Model of Severe Hemorrhagic Shock

Adult Female Yorkshire Swine (40kg)

SHOCK: Controlled Hemorrhage to MAP < 30mmHg x 10min

Automated CPR vs No CPR

Autotransfused to MAP >60mmHg

Recovered x 60min

OUTCOMES (mmHg):
 Mean Arterial Pressure MAP
 Systolic and Diastolic Pressures (SBP, DBP)

Transcranial probe pBO2

Transcutaneous probe TCO2

CPR had net nil effect on MAP during shock
 Raised SBP but lowered DBP

Overall negative effect on Brain perfusion (pBO2)
 Skin perfusion (TCO2) (pBO2 did not reach statistical significance)

CPR lowered TCO2 during shock, this effect persisted during recovery

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Bleeding Control for Kids: A Pediatric Approach to the National Education Campaign - A Pilot Program

5 Rules for Bleeding Control for Children

1. Safety
2. Call 911
3. Identify if bleeding is big or small
4. Stop the bleeding by
 - a. Pushing (pressure)
 - b. Tying (tourniquet)
 - c. Stuffing (wound packing)
5. Clean up (exposure) and tell an adult

Results: Pilot program was tested on 500 children ages 5-13 years. 227 children were retested after one year. Our results indicated a great that 70% retention of skills across all participants for the retesting after one year. The younger age groups did have lower retention after one year, which was expected. The older children, had a higher retention rate

Anderson M et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004454

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BLEEDING CONTROL METHODS FOR KIDS: A PEDIATRIC APPROACH TO THE NATIONAL EDUCATION CAMPAIGN—A PILOT PROGRAM
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Sex-Based Utilization and Outcomes of Cold-Stored Whole Blood for Trauma Resuscitation: Analysis of a Prospective Multicenter Study

Whole Blood (WB) vs Component Therapy (CT)
 1,617 trauma patients; 14 centers

Males
 WB (N=1021) vs CT (N=316)

Females
 WB (N=154) vs CT (N=126)

Conclusions

Males
 WB Associated with Decreased Mortality

Females
 No Mortality Difference by Resuscitation Strategy

WB was Less Utilized in Females & Highly Variable Across Centers

Gallagher S et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004431

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SEX-BASED UTILIZATION AND OUTCOMES OF COLD-STORED WHOLE BLOOD FOR TRAUMA RESUSCITATION: ANALYSIS OF A PROSPECTIVE MULTICENTER STUDY
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CHEST WALL INJURY SOCIETY RECOMMENDATIONS FOR LONG-TERM FOLLOW-UP (CWIS-LOFU) AFTER NON-OPERATIVELY AND OPERATIVELY MANAGED TRAUMATIC RIB AND STERNAL FRACTURES

CHEST WALL INJURY SOCIETY RECOMMENDATIONS FOR LONG-TERM FOLLOW-UP AFTER NONOPERATIVELY AND OPERATIVELY MANAGED TRAUMATIC RIB AND STERNAL FRACTURES

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Whole Blood to Total Transfusion Volume Ratio in Injured Children: A National Database Analysis

Background
 Low titer group O whole blood (LTOWB) is increasingly used in resuscitation for injured children

Methods
 ACS-TQIP 2020-2021
 Age <18 years
 Received any blood within 4 hours of hospital arrival
 Association between 4h/24h mortality and: -Receipt of WB -WB:TTV ratio

Results
 4,324 pediatric patients, 88% received CT only, 12% WB +/- CT
 Any WB transfusion was associated with 42% decreased odds of 4h mortality and 54% decreased odds of 24h mortality
 10% ↑ WB:TTV ⇨ 9% ↓ 24h mortality

Objective = evaluate the relationship between WB:total transfusion volume (TTV) ratio and mortality in children

Leeper CM et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004443

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WHOLE BLOOD TO TOTAL TRANSFUSION VOLUME RATIO IN INJURED CHILDREN: A NATIONAL DATABASE ANALYSIS
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Inter-hospital Variability of Risk-adjusted Mortality and Structural Factors in Emergency Laparotomy

Multi-center retrospective cohort study

N=94,581 patients having emergency laparotomy

173 UK hospitals

Hospitals grouped into quintiles using risk-adjusted 30-day mortality rates

Significant variation in mortality between best and worst quintiles:
 11.4% vs 6.6%

The best outcomes were seen in surgery:
 -Performed in a tertiary surgical center
 -By a Gastro-intestinal specialist

Darbyshire A et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.0000000000004455

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INTERHOSPITAL VARIABILITY OF RISK-ADJUSTED MORTALITY RATES AND ASSOCIATED STRUCTURAL FACTORS IN PATIENTS UNDERGOING EMERGENCY LAPAROTOMY: ENGLAND AND WALES POPULATION-LEVEL ANALYSIS
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Real-Time Attending Trauma Surgeon Assessment of Direct to OR Trauma Resuscitations

Provide earlier resuscitation and perform any indicated life-saving intervention or emergency surgery in Direct to OR (DOR) resuscitation

Assessed important DOR triage criteria and trauma surgeon perception of DOR

ISS > 15 is the only significant independent predictor of perceived DOR benefit

Was DOR beneficial?

- 50% felt DOR allowed faster time to interventions
- 17% reported improved sterility
- 17% reported access to vital staff

Lee H et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000004447
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REAL-TIME ATTENDING TRAUMA SURGEON ASSESSMENT OF DIRECT-TO-OPERATING ROOM TRAUMA RESUSCITATIONS: RESULTS FROM A PROSPECTIVE OBSERVATIONAL STUDY
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Non-Selective Beta Blockade Enhances Gut Microbiome Diversity in a Rodent Model of Trauma, Hemorrhage and Chronic Stress

Lung contusion with Hemorrhagic Shock (LCHS) or LCHS with chronic stress (LCHS/CS)

16S rRNA Sequencing

Diversity and Microbial Composition Analysis

Phylum Family Genus

± Daily Propranolol

Stool collection days 0, 7, 14

α Diversity
Shannon and Chao1 Indices at day 7 in groups receiving propranolol

Microbial Composition
Commensal bacterial in LCHS + propranolol and LCHS/CS + propranolol

Resolution of effects of propranolol on microbiome postinjury by day 14

Munley JA et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000004461
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NONSELECTIVE BETA BLOCKADE ENHANCES GUT MICROBIOME DIVERSITY IN A RODENT MODEL OF TRAUMA, HEMORRHAGE, AND CHRONIC STRESS
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/ABSTRACT/2025/02000/NONSELECTIVE_BETA_BLOCKADE_ENHANCES_GUT_MICROBIOME.18.ASPX](https://journals.lww.com/jtrauma/abstract/2025/02000/nonselective_beta_blockade_enhances_gut_microbiome.18.aspx)

Percutaneous and Endoscopic Transpapillary Cholecystoduodenal Stenting in Acute Cholecystitis - A Viable Long-Term Option in High-Risk Patients?

STUDY POPULATION

73 high-risk patients with acute cholecystitis in 2018-2022 across two institutions

N = 67 Transpapillary Cholecystoduodenal Stenting (TCDS)

- ERCP-guided TCDS
- Fluoroscopy-guided TCDS

RESULTS

TCDS was successful in 67 patients among 73 (92%) attempted:

- Percutaneous in 45/50 (90%)
- Endoscopic in 22/23 (96%)

FOLLOW-UP

Median follow-up - 17 months (7, 26)

- 10 patients (15%) with stent blockage & migration (all but 2 had their stent successfully replaced)
- Five patients (7%) with mild, self-limited pancreatitis
- Five (7%) patients with interval cholecystectomy at a median time of 7 months.

Argandykov D et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000004468
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PERCUTANEOUS AND ENDOSCOPIC TRANSPAPILLARY CHOLECYSTODUODENAL STENTING IN ACUTE CHOLECYSTITIS—A VIABLE LONG-TERM OPTION IN HIGH-RISK PATIENTS?
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/FULLTEXT/2025/02000/PERCUTANEOUS_AND_ENDOSCOPIC_TRANSPAPILLARY.19.ASPX](https://journals.lww.com/jtrauma/fulltext/2025/02000/percutaneous_and_endoscopic_transpapillary.19.aspx)

Comparative Analysis of Cold-stored Apheresis Platelet Units in Additive Solution With or Without Pathogen Reduction: Implications of Cytochrome C Supplementation

RATIONALE

Exploration of platelet function in cold-stored apheresis platelets in additive solution (PAS) versus Pathogen Reduced (PR) platelets w/wo cytochrome c (Cyt c) supplementation

METHODOLOGY

- Groups: PAS, PAS + Cyt c, PR, PR + Cyt c
- Sample Size (N) = 5
- Storage Temp: 4°C
- Storage duration: 15 days

FINDINGS

- PAS & PR platelet aggregation and mitochondrial function decline in function during storage
- PR platelets exhibit higher AA aggregation function.
- Cyt c supplementation had negligible effects.

ANALYSIS

- Platelet aggregation
- Mitochondrial function
- Biochemical analysis

Ekaney ML et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000004502
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COMPARATIVE ANALYSIS OF COLD-STORED APHERESIS PLATELET UNITS IN ADDITIVE SOLUTION WITH OR WITHOUT PATHOGEN REDUCTION: IMPLICATIONS OF CYTOCHROME C SUPPLEMENTATION
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/ABSTRACT/2025/02000/COMPARATIVE_ANALYSIS_OF_COLD_STORED_APHERESIS.20.ASPX](https://journals.lww.com/jtrauma/abstract/2025/02000/comparative_analysis_of_cold_stored_apheresis.20.aspx)

Thoracic Irrigation for Traumatic Hemothorax: A Systematic Review and Meta-Analysis

Retained Hemothorax after traumatic hemothorax is common

1,137 studies screened → 6 studies included

1,319 patients

513 irrigation 837 control

Failure rate 11% < 18%

Length of Stay 10 < 14

Pneumonia 8% < 13%

Readmission 4% = 3%

Mortality 3% = 4%

Hypothesis: patients treated with thoracic irrigation after tube thoracostomy placement will have a lower failure rate

Thoracic irrigation for traumatic hemothorax should be considered at the time of tube thoracostomy placement

Lyons NB et al. *Journal of Trauma and Acute Care Surgery*. DOI: 10.1097/TA.00000000000004479
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THORACIC IRRIGATION FOR TRAUMATIC HEMOTHORAX: A SYSTEMATIC REVIEW AND META-ANALYSIS
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/ABSTRACT/2025/02000/THORACIC_IRRIGATION_FOR_TRAUMATIC_HEMOTHORAX__A.21.ASPX](https://journals.lww.com/jtrauma/abstract/2025/02000/thoracic_irrigation_for_traumatic_hemothorax__a.21.aspx)

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READ THE ARTICLE

LETTER TO THE EDITOR RE: LEICHTLE SW, ET AL., "BLUNT CEREBROVASCULAR INJURY: THE CASE FOR UNIVERSAL SCREENING"

RE: LEICHTLE ET AL. BLUNT CEREBROVASCULAR INJURY: THE CASE FOR UNIVERSAL SCREENING (J TRAUMA ACUTE CARE SURG 2020;89(5):880-886)
[HTTPS://JOURNALS.LWW.COM/JTRAUMA/CITATION/2025/02000/RE_LEICHTLE_ET_AL__BLUNT_CEREBROVASCULAR_INJURY__22.ASPX](https://journals.lww.com/jtrauma/citation/2025/02000/re_leichtle_et_al__blunt_cerebrovascular_injury__22.aspx)

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