Indiana State Trauma Care Committee

June 21, 2019



Introductions & approval of meeting minutes



Updates

Katie Hokanson, Director of Trauma and Injury Prevention



Congratulations!!!

- Elkhart General Hospital
 - Verified Level III Trauma Center



Division staffing updates

- Keifer Taylor
 - Records Consultant
- Cassidy Johnson
 - Transitioned to Naloxone
 Program Manager
- Paul Nijjar
 - Records Consultant for the summer
- Audrey Rehberg
 - Transitioned to offsite Resources & Records Consultant (Texas)
- Camry Hess
 - Transitioned to offsitecontractor position (Texas)

- Division interns:
 - Joey Peeters
 - INVDRS
 - Conner Tiffany
 - PDO
 - Taylor Goodman
 - Naloxone
 - Kyra Kofodimos
 - Injury Prevention



Stroke center list

- IC 16-31-2-9.5
 - Compile & maintain a list of Indiana hospitals that are stroke certified.
 - https://www.in.gov/isdh/27849.htm
 - Transfer agreements must be stroke specific.



Evidence based falls prevention

Stepping On Stepping On



Population – Older adults who want to reduce falls and increase confidence

Sessions – Seven 2 hour sessions and home visit. Booster session after 3 months

Program - home safety, fall risks, medication, etc. Exercises are emphasized.

Group size – 10 to 12

Leader - Health professional including guest lecturers.

Materials - Handouts, binder, information poster board, weights

Cost – Leader plus guest speakers, materials

Outcomes – Falls decreased by 31%

Wisconsin Institute of Healthy Aging. Originated in Australia

Upcoming classes

Stepping On Leader training course







Stepping On

Leader Training Workshop

September 16th-18th 2019

Nasser Simulation Center at St. Vincent 11801 W. 86th Street Indianapolis, IN 46260

Questions? Contact Pravy Nijjar, pnijjar@isdh.in.gov For more info about Stepping On visit https://wihealthyaging.org/stepping-on





Stepping On

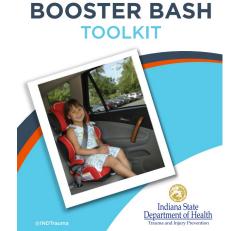
- For more information please contact
 - Pravy Nijjar

pnijjar@isdh.in.gov

317-234-1304

Upcoming Booster Bashes

- Lake County:
 - Merrillville:
 - **Date:** June 26th 2019
 - Number of Seats Ordered: 76
 - **Location:** Chateau Banquets, 530 W. 61st Ave. Merrillville
- Vermillion County:
 - Clinton:
 - Date: August 2nd 2019
 - Number of Seats Ordered: 60
 - Location: Sportland Park, Clinton



Black & Minority Health Fair

Dates: July 18, 19, 20, and 21

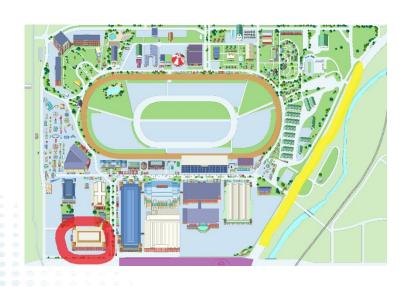
Location: Indiana Convention Center, Halls J& K



Indiana State Fair

Dates for division: August 5, 9, 12, 13, and 14

Location: Indiana State Fairgrounds, Expo Hall





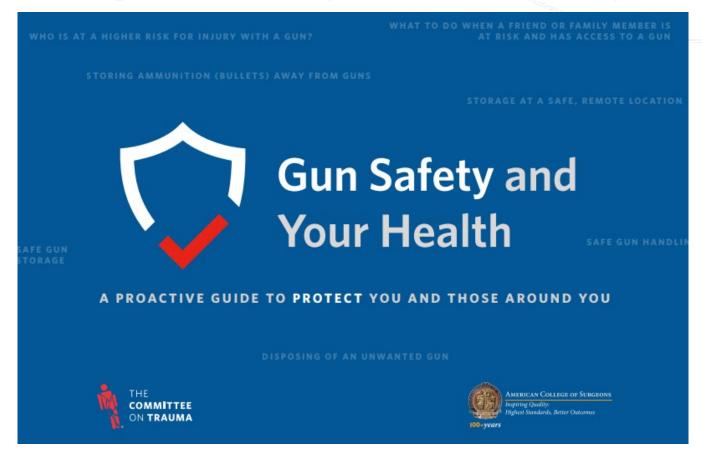
NASEMSO Meeting - ACS updates

- Follow up with patient 6 & 12 months after injury focus on long-term outcomes.
- Updating trauma system consultation program.
- Injury prevention areas of focus: firearm, interpersonal violence, falls, distracted driving, burns, PTSD/suicide.
- New committee: trauma research.
- International programs.
- Military-civilian integration.
- Revising orange book (2020).

NASEMSO Meeting - ACS updates (continued)

- TQIP collaborative 12 states participating.
- Creating a TQIP collaborative toolkit.
- NEMSIS & NTDB will have a unique identifier field available 2021.
- New "Stop the Bleed" course launched May 1. Geared for the general public.
 - Looking to expand instructor program to non-medical personnel.

NASEMSO Meeting - ACS updates (continued)



INSPECT Integration with EMRs



INSPECT Integration Initiative - Integration Request Form

INSPECT STATEWIDE INTEGRATION ANNOUNCEMENT

Effective August 24, 2017 Indiana will begin steps to implement a statewide, comprehensive platform for healthcare professionals to review patients' controlled-substance prescription history more quickly and efficiently. This platform supports Indiana's Prescription Drug Monitoring Program (INSPECT) and transfers data into electronic health records (EHR) and pharmacy management systems. Statewide integration of the INSPECT platform is a key component of Indiana's ongoing efforts to address the opioid crisis.

Integration Process:

- Follow the instructions and complete ALL of the following (only authorized decision makers at the healthcare entity should fill out these forms):
 - Integration Request Form (located on the right of this page)
 - End User License Agreement (will be emailed to you within 24 hours)
 - PMP Gateway Licensee Questionnaire (will open in a new window)

Primary Point of Contact

First Name*	Last Name*	
Primary Point of Contact	Email Address*	
Job Title		
Phone Number*		

Regional Updates



Regional updates

- District 1
- District 2
- District 3
- District 4
- District 5
- District 6
- District 7
- District 8
- District 9
- District 10



Emergency Preparedness update

Billy Brewer, *Director* ISDH



ASPR Hospital Preparedness Program

Overview of Indiana

James "Billy" Brewer

Division Director

Division of Emergency Preparedness, ISDH

Megan Lytle

Director District & Local Readiness

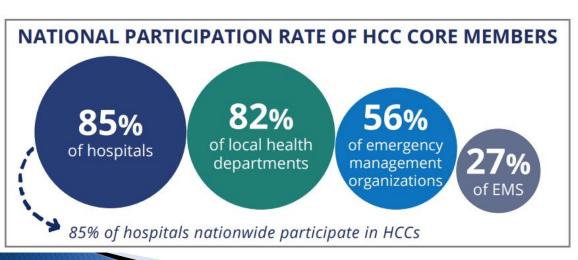
Division of Emergency Preparedness, ISDH



What is a Coalition?

ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

- ASPR HPP Healthcare Coalition
- HCCs are groups of health care and response organizations that collaborate to prepare for and respond to medical surge events. HCCs incentivize diverse and often competitive health care organizations to work together.





- 2002 2011 Hospital Preparedness Program
 - Program awarded to each State for providing funds and initiatives to individual hospitals
 - Intent for Hospitals to purchase tangible resources like ventilators, mobile medical units, and pharmaceutical caches
 - 2007 2008 Formation of 10 District Hospital Preparedness Planning Committee (501c3)





- 2012 2016 Hospital Preparedness Program
 - Program award to each State for providing funds and initiatives to Healthcare Coalitions to promote the development of healthcare capabilities
 - Shifting focus towards developing and formalizing regional healthcare coalitions
 - Indiana funds directly to each 10 District Hospital Corporation, sub award funds to primarily hospitals
- 2015 HPP Ebola Preparedness and Response Activities
 - Ebola Assessment Centers and Healthcare System Preparedness funding

Indiana State Department of Health

- 2017-2019 Hospital Preparedness Program
 - Program award to each State for providing funds and initiatives to Healthcare Coalitions on operationalizing coalitions for response through optimizing membership and geographic coverage
 - Updated healthcare capability guidance and focus
 - Formal minimum membership requirements:
 - Acute care hospitals (2)
 - Emergency Management Organization (1)
 - Public Health Department (1)
 - Emergency Medial Services (1)



- 2017-2019 Hospital Preparedness Program (Cont.)
 - 10 District Healthcare Coalitions Developed (unincorporated)
 - Fiscal Agent District Hospital Corporations (501c3)
 - Funding project based with no direct allocations to members
 - Funding restrictions on CMS required activities



ASPR HPP Today

- Grant Budget Period July 1st June 30th
- Hospital Preparedness Program Grant (ASPR)
 - \$3.1M awarded to Coalitions
 - 10 Healthcare Coalitions
 - Membership includes hospitals, local health depts., emergency management agencies, emergency medical services, long term care facilities, dialysis, mental health, outpatient healthcare delivery, and many others



ASPR HPP Today

- Single Facility/Agency funding is not permitted
- Funding activities to meet CMS Rule is not permitted
- All funds must be associated with HCC Work Plan Activity or Identified Gap through planning, exercise or real-world event



HCC Annual Activities

- Annual Hazards & Vulnerability Assessment
- Coalition Surge Test
- Annual Training & Exercise Plan
- Host multiple training opportunities
- Plan and Share Information
- Annual Workplan Development



Current Requirements

- HCC Core Members
 - Acute Care Hospitals (2)
 - Public Health
 - EMS (Emergency Medical Services)
 - EMA (Emergency Management Agency)
- Should be Led or Co-Led by Hospital
- 2 Employees equaling 1.0 FTE
 - HCC Readiness & Response Manager
 - Clinical Advisor



Clinical Advisor

Clinical Advisor Requirements

- Must be Registered Nurse, Nurse Practitioner/Physician Assistant or Physician
- Should be currently employed with Lead or Co-Lead hospital
- Currently seeking 8 hours per month minimum
- Must be in place by 7/30/2019

Role/ Duties

- Provide clinical leadership to the HCC and serve as liaison to healthcare medical directors & leadership
- Engage healthcare delivery system leaders in HCC Strategic & Operational roles in acute medical surge planning



Clinical Advisor (continued)

- Role/ Duties (continued)
 - Assure HCC Mass Casualty/Surge plans align with trauma center capability & capacity
 - Engage subject matter experts on specialty surge planning (i.e. burn, pediatric)
 - General HCC participation and engagement



Current Initiatives and Projects

- Information Sharing Annex (to Response Plan)
 - Essential Elements of Information
- Pediatric Surge Annex (to Response Plan)
- Emergency System: EMResources/ eICS
 - Resource (Facility) Status
 - Sub-Resource Inventory & Availability
 - Manage your own facility emergency plans and incidents
 - Situational Awareness



Trauma Center Best Practices

- Knowing your Hospital Preparedness Coordinator and/or Hospital HCC representative
- Trauma Rep attending HCC Meeting and vice versa
- Agenda item on Trauma/HCC meetings for report outs
- Sharing upcoming events and/or requirements

Quick Links

- ISDH Division of Emergency Preparedness website:
 - https://www.in.gov/isdh/17855.htm
 - Healthcare Coalition Contact List
 - ISDH DEP Newsletter Signup
- ASPR Technical Resource, Assistance Center and Information Exchange (ASPR TRACIE):
 - https://asprtracie.hhs.gov/
- Indiana Health Alert Network (IHAN):
 - https://ihan-in.org/



OPEN DISCUSSION/ QUESTIONS?

James "Billy" Brewer

Division Director

Division of Emergency Preparedness, ISDH

jambrewer@isdh.in.gov

Megan Lytle

Director District & Local Readiness

Division of Emergency Preparedness, ISDH

mlytle@isdh.in.gov



Progress Update: Risk factors for inter-facility transfer patients

Dr. Peter Jenkins, *General Surgery* IU Health Methodist Hospital



Association of urban influence and transfer patterns of trauma patients treated at non-trauma hospitals (& other project updates)

Peter C. Jenkins MD, MSc K12 Emergency Care Research Scholar National Heart, Lung, and Blood Institute

June 20, 2019



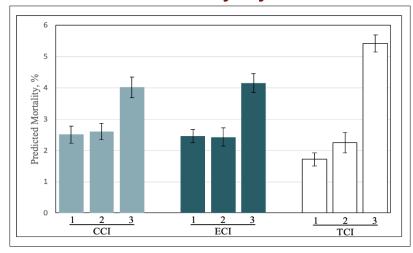
Outline

- 1. Trauma comorbidity index update
- 2. Urban influence project
- 3. Extended Trauma Quality Improvement Project (E-TQIP) proposal

1. Trauma Comorbidity Index

- AAST 2019 Accepted for quickshot podium presentation, Dallas, TX
- Manuscript submission to Journal of Trauma and Acute Care Surgery

Predicted mortality by tertile



CCI - Charlson comorbidity index

ECI – Elixhauser comorbidity index

TCI - Trauma comorbidity index

Introduction: To examine the association between the urbanicity of non-trauma hospitals and the likelihood to transfer injured patients to an acute care facility.

Methods:

- IN state trauma registry data (2013-2015)
- AHA hospital data
- Urban influence codes (UIC)
 - Developed by the U.S. Department of Agriculture
 - Measures county-level access to goods and services (1-12)
- Multivariable logistic regression



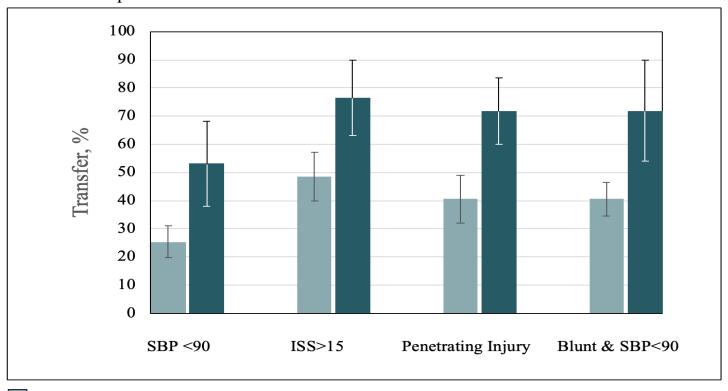
Results:

- 30,507 patients treated at 92 non-trauma hospitals
- 62 hospitals (67.4%) were urban and accounted for 80.3% of the patients.
- Urban hospitals were significantly less likely to transfer injured patients to tertiary referral centers than non-urban hospitals (odds ratio, 0.4 [95% confidence interval, 0.21-0.77])

Results:

- 30,507 patients treated at 92 non-trauma hospitals
- 62 hospitals (67.4%) were urban and accounted for 80.3% of the patients.
- Urban hospitals were significantly less likely to transfer injured patients to tertiary referral centers than non-urban hospitals (odds ratio, 0.4 [95% confidence interval, 0.21-0.77])

Comparison of predicted probability of transfer of injured patients between urban and non-urban non-trauma hospitals with 95% confidence intervals





- Non-urban

Future directions:

- Examine mortality at hospitals (urban v. non-urban)
- Use UIC to identify "high-risk" hospitals
- Submit to EAST Annual Conference

Acknowledgements:

Pat Murphy, MD Mark Hemmila, MD

Elisa Sarmiento, MS Lava Timsina, PhD

Aaron Carroll, MD, MPH

"Development of a regionalized quality improvement program for injured patients treated at non-trauma hospitals"

- Submitted to AHRQ (K08) as a 3-year proposal
- Timeline:

	Year 1	Year 2	Year 3	
Research				
Engage stakeholders to identify				
key outcomes for E-TQIP (Aim 1)				
Develop E-TQIP dissemination &				
implementation toolkit (Aim 2)				
Pilot E-TQIP to evaluate				
acceptability and feasibility (Aim 3)			7	

- Aim 1: Engage stakeholders to identify key outcomes associated with optimal trauma care at non-trauma hospitals that will inform a modified TQIP process.
- Methods:

Phase I: Interviews with Patients and Non-trauma Hospital Personnel and 3 non-trauma hospitals

Phase II: Stakeholder Panel Sessions

Outcome: E-TQIP hospital performance report design



- Aim 2: Develop a D&I toolkit to facilitate E-TQIPdirected quality improvement initiatives that promote optimal trauma care at non-trauma hospitals.
- Methods:

<u>Key Informant Interviews</u> – Organizational and Cultural Barriers/Facilitators

Provider Surveys – Individual-level Barriers/Facilitators

- Outcomes:
 - 1. Identify barriers and facilitators to participation in the E-TQIP-directed QI initiatives
 - 2. Identify the optimal format for E-TQIP conferences



- Aim 3: Pilot E-TQIP to evaluate the acceptability and feasibility (IUH West and Johnson Memorial Hospitals)
- E-TQIP Conference will include:
- 1. Hospital Performance Report (Aim 1)
 - a) <u>Facility information</u> (i.e., resources and organizational processes that can impact patient outcomes)
 - b) Patient demographic information and injury characteristics
 - c) <u>Clinical outcome measures</u> (e.g., rates of mortality and inter-facility transfer and time-to-transfer)
 - d) <u>Process measures</u> (e.g., missingness of data, data validity, timeliness of data submission to the state)
- 2. Planning hospital-based QI projects



 Aim 3: Pilot E-TQIP to evaluate the acceptability and feasibility (IUH West and Johnson Memorial Hospitals)

Outcomes – Refined E-TQIP process intended for broader statewide implementation under the auspices of the Indiana Chapter of the ACS-COT

Acknowledgements

ISDH – Dr. Box and Mrs. Hokanson

ACS-COT – Dr. Thomas

IUH – Mrs. Castor and Dr. Bearden

Johnson Memorial Hospital – Mrs. McKinney

Mentorship Team

Dr. Aaron Carroll

Dr. Robin Newhouse

Dr. Malaz Boustani

Dr. Mark Hemmila



Thank you!



Trauma system planning subcommittee update

Dr. Scott Thomas, Trauma Medical Director

Memorial Hospital of South Bend

Dr. Matt Vassy, Trauma Medical Director

Deaconess Hospital

Indiana State

EMS Medical Director Updates

Dr. Michael Kaufmann, EMS Medical Director

Indiana Department of Homeland Security

Indiana State

<u>Department of Health</u>

EMS Update June 2019

Michael A. Kaufmann, MD, FACEP, FAEMS

EMS Medical Director
Indiana Department of Homeland Security





EMS
Certifications/Licensure

Training Institutions - 117
Supervising Hospitals - 91
Provider Agencies - 833
Vehicles - 2,600

Personnel
EMR – 5,055
EMT - 14,416
Advanced EMT - 605
Paramedic - 4,490
Primary Instructor - 584





EMS System Metrics

- EMS provider agencies reporting as of 6/21/2019
- 11/332 not reporting!

97%

332 Provider Agencies required to report into ImageTrend

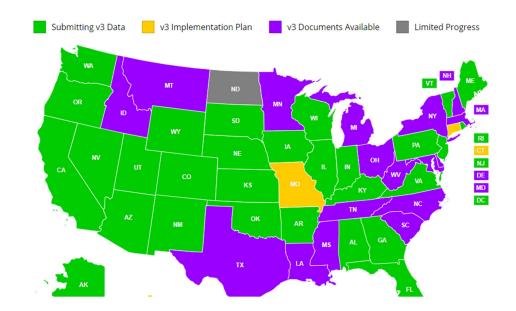


Facilities Code List

- Facility List with Destination Codes.
- Developed in coordination with ISDH.
- There is a list now of 3,117 Facilities that an EMS provider can drop a patient off for either non-emergency or emergency transports.
- Destinations for landing zones/strips, intercepts, morgue, and private residence all have a destination code.
- This will go a long way to better understanding where EMS patients are taken.

NEMSIS NEMSIS Submission Summary 6/3/2019 - 6/16/2019 Failed Submissions¹ Active Agencies² PCR Warnings³ 0.00% 66.8% 82.1% Patient Care Reports (PCR)4 8/9 119 **Current Composition Summary** Total Percent EMS Agencies Accepted To Date⁶ Total Patient Care Reports Accepted, Year To Date7 795,550









Naloxone Sustainability

Currently working with FSSA to establish a reimbursement mechanism for naloxone administration!

Reported Naloxone Administrations

Last EMS Incident in Data: 10/31/2018



Year to Date

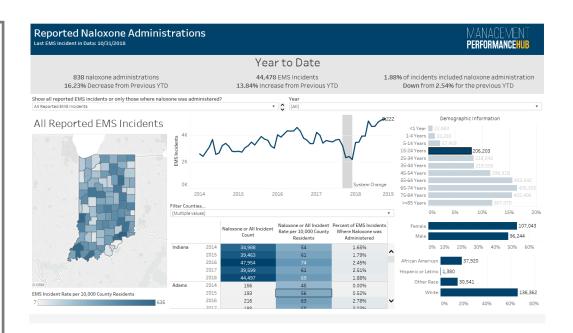
22 naloxone administrations
72.73% Decrease from Previous YTD

1,433 EMS Incidents
10.75% Increase from Previous YTD

1.54% of incidents included naloxone administration Down from 2.97% for the previous YTD

Show all reported EMS incidents or only those where naloxone was administered? Year All Reported EMS Incidents (AII) Demographic Information All Reported EMS Incidents 200 <1 Year 838 1-4 Years 1,356 EMS Incidents 5-14 Years 15-24 Years 7,038 25-34 Years 35-44 Years 45-54 Years 55-64 Years 11,450 System Change 65-74 Years 2014 2015 2016 2017 2018 2019 75-84 Years >=85 Years Filter Counties... Hamilton 5% 10% 20% Naloxone or All Incident Percent of EMS Incidents 3,657 Female Naloxone or All Incident Rate per 10,000 County Where Naloxone was Count 3,289 Residents Administered Hamilton 2014 1,204 44 20% 30% 50% 60% 2015 1.308 48 African American 2016 1,793 65 2017 1,300 47 2.92% Hispanic or Latino 49 52 2018 1.433 1.54% Other Race 5,391 EMS Incident Rate per 10,000 County Residents 635 20% 40% 80%

Naloxone Dashboard



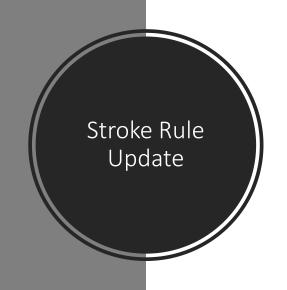


Stroke Rules Draft

- Upon EMS arrival at the scene of a patient with suspected stroke, a provider must perform and document
 - An initial Stroke Screening Tool (i.e. CPSS, FAST, LA Stroke Severity Scale, NIH, or other appropriate scale approved by the agencies medical director
 - Obtain a blood glucose if available
 - Identify and document time last known well and time of symptom discovery.
- If the patient screens positive the provider may then perform an evidence based nationally recognized Large Vessel Occlusion (LVO) Stroke Scale
- Patients determined to need stroke center care by virtue of their stroke screening tool, shall be transported to an appropriate stroke hospital.

Stroke Rules Draft

- To meet the below standards, local EMS medical directors shall develop protocols based on an assessment of local and regional hospital stroke capabilities. The appropriate stroke hospital destination shall be based on local and regional protocols which shall consider;
 - Capability to administer TPA (alteplase) accurately, promptly, and safely
 - Nationally recognized evidence based science
 - Nationally recognized guidelines
 - The list of available certified stroke centers and network participating hospitals published by ISDH.
- Emergency medical services personnel shall provide early advance notification to the receiving hospital or stroke center whenever possible to allow appropriate activation of resources prior to patient arrival.



Public Hearing*				
Public hearing information: July 17, 201	9			
10 a.m.				
Indiana Gov	vernment Center South			
302 W. Wa	shington Street			
Conference	Center Room			
Indianapolis	s, Indiana 46204			
Relevant Scientific and Technical Findings				
None				
T'				
Timetable For Action*				
Anticipated date of publishing of	June 14, 2019			
proposed rule				
Anticipated date of public hearing	July 17, 2019			
Anticipated date of final adoption by	September 18, 2019			
the Commission				
Anticipated date of submitting with the	September 19, 2019			
Office of the				
Attorney General				
Anticipated date of review by the	November 4, 2019			
Governor				
Anticipated effective date	December 20, 2019			

Rule Making Update

- 836 IAC Re-write currently underway
- EMS rules las updated more than a decade ago.
 - ARTICLE 1. EMERGENCY MEDICAL SERVICES
 - ARTICLE 2. ADVANCED LIFE SUPPORT
 - ARTICLE 3. AIR AMBULANCES
 - ARTICLE 4. TRAINING AND CERTIFICATION
- Adopted by the EMS Commission 2019
- Currently undergoing fiscal impact review





Clinical Data



Update of
State of
Indiana First
EVER CQI
Report
started

State of Indiana EMS System Quality Improvement Report July 2018



Michael A. Kaufmann, MD, FACEP, FAEMS

State EMS Medical Director

Dimitri Georgakopoulos

Indiana EMS Quality Improvement Program

- Started 3/2018
- EMS Registry
- EMS Compass Indicators
 - Hypoglycemia
 - Med Error
 - Peds Respiracty
 - Seizure
 - Stroke
 - Trauma
 - Pain
 - Safety

EMS Compass

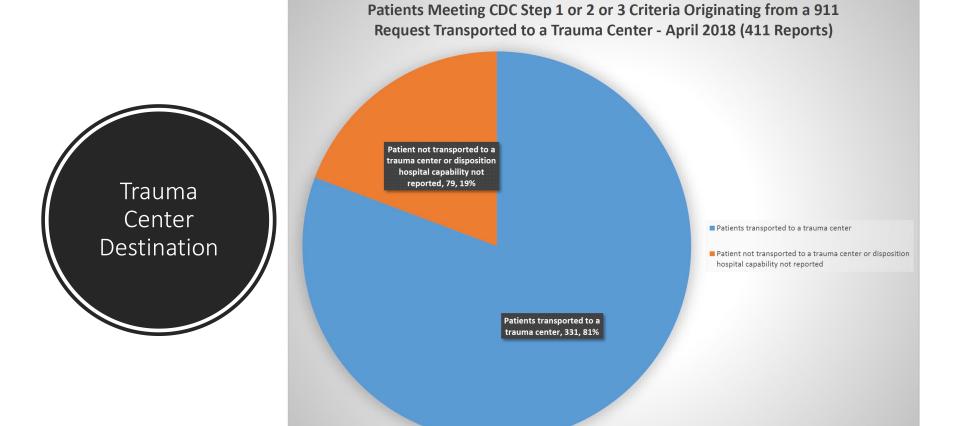


About EMS Compass | About Performance Measures | EMS Compass Measures | Webinars | Contact



Using Data to Make a Difference

The EMS Compass initiative is not simply about designing performance measures for the present. EMS Compass will create a process for the continual design, testing and evaluation of performance measures—and guidance for how local systems can use those measures to improve—so EMS can continue to provide the highest quality care to patients and communities in the future.





Hospital Hub

- Working within IDHS to obtain funding for ImageTrend add on feature called "Hospital Hub"
- Would allow ePCR exchange between EMS and healthcare facilities
- "Fix" for lack of printed ePCR.
- More info at
 - https://www.imagetrend.com/so lutions-trauma-and-hospitalregistries/hospitalhub/#EMSAnchor









- Meeting with IHIE leadership
- Discussions are underway to integrate EMS data
- Exploratory team looking at EMS data for a CCD
- Integration would allow EMS data to be accessible from CareWeb
- Funding may be an obstacle
- More details to come in 2019

IHIE Integration



data.IN.gov

What is the Indiana Authenticated Access Hub?

The **Indiana Authenticated Access Hub** is a web-based portal that provides a secure sharing mechanism for sensitive datasets, allowing the state to leverage the expertise of external researchers and entities while maintaining appropriate levels of privacy and security.

Maintained by the Indiana Management Performance Hub and similar to the Indiana Data Hub in look, the Authenticated Access Hub enhances functionality by enabling access to detailed datasets that hold greater value for researchers. After successful completion of a vetting and authentication process, users will be granted access to one of four distinct tiers that provide differing levels of data granularity to inform their research initiative. Within those tiers, specific use cases will be assigned to rooms with room access granted based on the vetting and authentication result. The MPH Team will coordinate dataset tier classification with approval of the agency data owner.

Indiana Authenticated Access Portal

- Indiana EMS Data is now accessible via the AAH.
- Public data set can be downloaded directly
- https://hub.mph.in.gov/dat aset
- Other tiers of data can be requested at
- https://www.in.gov/mph/93 5.htm

Model Guidelines

- Developed by NASEMSO in November 2017
- Evidence Based
- EMS Compass Quality Indicators
- NEMSIS Database Referenced
- Complete Protocol Manual
- Available for use
- Suspected Overdose
- Stroke
- IFT Stroke
- Anaphylaxis/Allergic Reaction
- Chest Pain

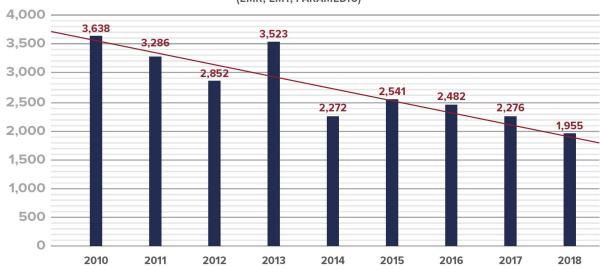




Workforce Development

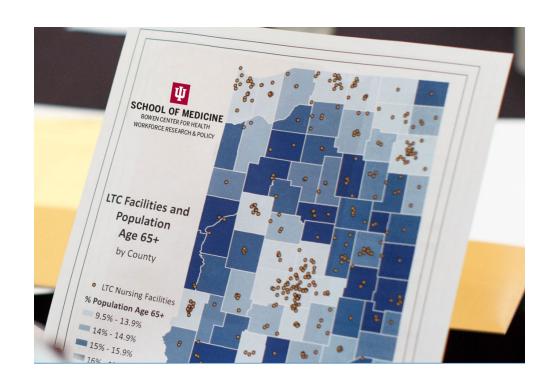
NEW EMS CERTIFICATIONS ISSUED SINCE 2010

(EMR, EMT, PARAMEDIC)

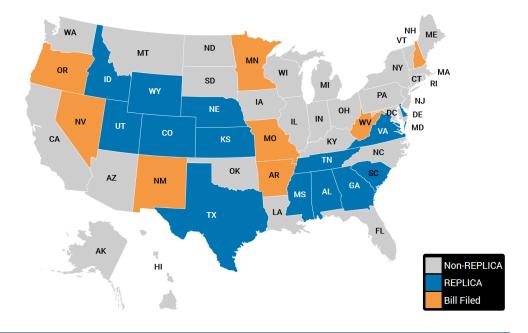


Workforce Development

- Working to identify barriers restricting EMTs and Paramedics from entering the workforce in Indiana.
- Looking at licensing and certification process to remove obstacles.
- Looking for ways to align Indiana with other organizations such as NREMT to simply the continuing education and certification/licensure process.
- REPLICA







Multi-State Privilege To Practice

REPLICA extends a multi-state privilege to practice to qualified EMS personnel.

REPLICA

- The Recognition of EMS
 Personnel Licensure Interstate
 CompAct (REPLICA) is the
 nation's first and only multi-state
 compact for the Emergency
 Medical Services profession.
- REPLICA provides qualified EMS professionals licensed in a "Home State" a legal "Privilege To Practice" in "Remote States".
- Home States are simply a state where an EMT or Paramedic is licensed;
- Remote States are other states that have adopted the REPLICA legislation

REPLICA Next Steps

- Learning Lab took place on December 11th
 - National Governors Association
 - National Conference of State Legislatures
 - Council of State Governments
- · Compacts discussed
 - REPLICA Nursing
 - Medical Licensing
- Was introduced as SB 510
- · Dead in committee
- Continued efforts needed now for next session













Patient Safety Focus



Patient Safety Proposal

- Indiana EMS Statewide Assessment \$7500
- Indiana Regional Workshops

\$6000

• Indiana Just Culture Training

\$6000

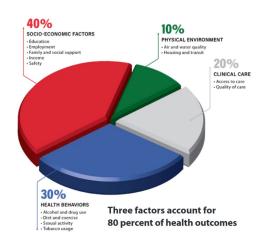
Indiana Follow Up Assessment \$6000



FSSA SDH Assessment Pilot

- Working with FSSA Office of Social Determinants of Health
- Pilot program for EMS collection of SDH question answers
- Information will be integrated with FSSA data

Question	Yes / No / NA
In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?	
In the last 12 months, has your utility company shut off your service for not paying your bills?	
Are you worried that in the next 2 months, you may not have stable housing?	
Do problems getting child care make it difficult for you to work or study? (leave blank if you do not have children)	
In the last 12 months, have you needed to see a doctor but could not because of cost?	
In the last 12 months, have you ever had to go without health care because you didn't have a way to get there?	
Do you ever need help reading hospital materials?	
Are you afraid you might be hurt in your apartment building or house?	
During the last 4 weeks, have you been actively looking for work?	
In the last 12 months, other than household activities or work, do you engage in moderate exercise (walking fast, jogging, swimming, biking or weight lifting) at least three times per week?	



Expanding Acadis Training

- LMS coordinator approved
- POST course in beta testing
- Dementia Friends course now in production
- DOSE course update started



Indiana Public Safety Personnel Portal

INDIANA PHYSICIAN ORDERS FOR SCOPE OF TREATMENT (POST)
State Form SSST (702 / 12-10)
State Town SSST (702 / 12-10)
State Town SSST (102 / 12-10)
State Town

INSTRUCTIONS: This form is a physician's order for scope of treatment based on the patient's current medical condition and preferences. The POST should be reviewed whenever the patient's condition changes. A POST from is voluntary. A patient is not required to complete a POST form. A patient with capacity or their legal representative may void a POST form at any time by communicating that itent to the health acep rovider. Any section not completed does not invalidate the form and implies full treatment for that section. HIPAA permits disclosured not propriet of control in the propriet form to provide a procession of the patient of the control in the provider of the patient. A facisimile, paper, or electronic copy of this form.

Patient L	Last Name	Patient First Name	Middle Initial	
Birth Date (mm/dd/yyyy)		Medical Record Number	Date Prepared (mm/dd/yyyy)	
	DESIGNATION OF PATIENT'S PREFERE preferences for scope of treatment.	NCES: The following sections (A	through D) are the patient's current	
A Check One	CARDIOPULMONARY RESUSCITATION (CPR): Patient has no pulse AND is not breathing Altempt Resuscitation/CPR Do Not Attempt Resuscitation/DNR When not in cardiopulmonary arrest, follow orders in B, C and D			
B Check One	MEDICAL INTERVENTIONS: If patient has pulse AND is breathing OR has pulse and is NOT breathing Conflot Measures (Allow) Adapta(Dealth): Treatment Goal: Maximize conflot through symptom management Relieve pain and suffering through the use of any medication by any route, positioning, wound care and othe measures. Los oxygen, suction and manual treatment of airway obstruction as needed for comfort. Patient prefers no transfer to hospital for life-ustaining treatments. Transfer to hospital only if comfort needs cannot be mel in current location. Limited Additional inferentions: Treatment Goal. Stabilization of medical condition. In addition to early cardiac monoting as indicated to stabilize medical condition. My use basic airway management forchingues and non-invasive positive-airway pressure. Do not infulbate. Transfer to hospital if indicated to manage medical needs or comfort. Avoid intensive care of possible. Limited to cardiac monotion of the condition of the support measures in the intensive care unit. In addition to care described in Comfort Measures and Limited Additional Interventions above, use intubation			
C Check One	advanced airway interventions, and mechanical ventilation as indicated. Transfer to hospital and/or intensive care unit if indicated to meet medical needs. ANTIBIOTICS: Use antibiotics for infection only if comfort cannot be achieved fully through other means. Use antibiotics consistent with treatment goals.			
D Check One	ARTIFICIALLY ADMINISTERED NUTRITI No artificial nutrition. Defined trial period of artificial nutriti Long-term artificial nutrition.	5. 14. 1565 M.		
	OPTIONAL ADDITIONAL ORDERS:			

Page 1 of



- Controlled Substance Issues
- DEA 222 Forms
- EMS Medical Directors
- Public Law No: 115-83 (11/17/2017)

DEA

Planning for DEA/CSR for EMS Providers

- This law amends the Controlled Substances Act.
- Specifies that EMS agencies are permitted to have one DEA registration, rather than having separate registrations for each EMS location.
- Ongoing discussions with the DEA
- Ongoing discussions with the Indiana Board of Pharmacy
- BOP rule must change for EMS Provider Agency CSR



Stop The Bleed







SAVE A LIFE

The Indiana Department of Homeland Security is proud to be a supporting partner of the Stop the Bleed Program.

Stop the Bleed is a national campaign with two main goals:

- Inform and empower the general public to become trained on basic trauma care.
- Increase bystander access to bleeding control kits.



2019

Suicide Prevention

For first responders

Indiana Department of Homeland Security Michael A. Kaufmann, MD, FACEP, FAEMS State EMS Medical Director

- Satisfies HEA 1430/SB 230
- Peer Reviewed
- Fully narrated
- Available via Acadis

• >13,500 course completions

Suicide Prevention Training





First Kesponder Fact Gard

Information course now available online via Acadis

Community Paramedicine/MIH

- The time is now to plan and develop the infrastructure for Mobile Integrated Health/Community Paramedicine
 - 836 Rule re-write is pending
 - Alternate reimbursement models are being developed
 - EMS Registry is improving in quantity and quality
 - Local data has proven the benefits of this program
 - Increased medical director involvement
 - Community Health Worker status



- With the passage of SEA498 work has begun to lay the foundation for MIHP programs.
- Currently working on a meta-analysis of other states
- Hope to have recommendations to the EMS Commission by Q3 2019

DELIVER TRANSFER FORM TO HOSPITAL EMERGENCY DEPARTMENT SKILLED NURSING FACILITY TO HOSPITAL TRANSFER FORM Resident Name (last, first, middle initial) Resident is: SNF / Rehab Long-term Language: D English D Other Date Admitted (most recent) Primary Diagnosis(es) for admission: (name of nursing facility) (name of hospital) CODE STATUS: □ Full Code □ DNR □ DNI □ DNH □ POST Who to Call at the Skilled Nursing Facility to Get Questions Answered: Does Primary Care Clinician in Skilled Nursing Facility want a call back? 🗆 Yes 🗆 No Primary Care Clinician in Skilled Nursing Facility: □ MD □ NP □ PA CAREGIVER / FAMILY / POA CONTACT: BASELINE MENTAL STATUS ☐ Alert, oriented, follows instructions □ NKA □ Yes Alert, disoriented, but can follow simple instructions □ Alert, disoriented, but cannot follow simple instructions □ Not Alert Form Completed by (name/title) Date _____/____ Time (am/pm)

Universal Transfer Form

- Developed by collaborative committee made of up representation from Ascension St. Vincent, Franciscan, IU Health, SNFs, Emergency Department.
- Intended to improve communication when sending patients to hospitals.
- Garnering support and educating stakeholders



Biospatial

- National Collaborative for Bio-preparedness
 - NCBP provides operational and clinical insight to state and local data owners to help improve operations and patient outcomes.
 - NCBP provides alerts to anomalous health events, visualization of syndromic events and trends, and clinical and operational dashboards.
 - The collaborative data network widens the context of events by enabling sharing of data and syndromic trends with neighboring jurisdictions.
 - NCBP also enables new health- and safety-related insights through multi-agency collaboration, such as linking motor vehicle crash records with injury severity derived from the EMS Revised Trauma Score.





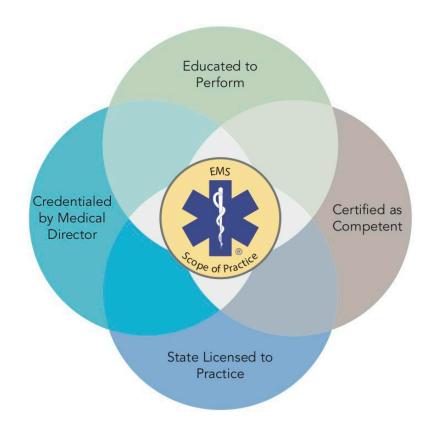
AED Registry





2018 National Scope of Practice for EMS Providers

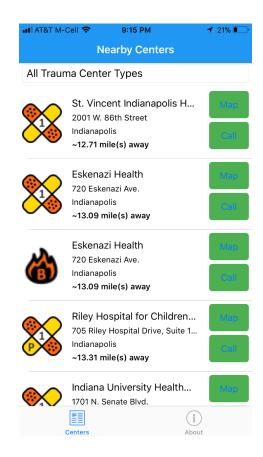
- The National EMS Scope of Practice Model is the floor or the minimum for EMS provider skills, knowledge and procedures. States can add to the scope of practice or even continue previous practices.
- The draft document, proposed by the expert panel, represents the final recommended revision to the 2018 National EMS Scope of Practice Model submitted to the National Highway Traffic Safety Administration. View the draft document, which is pending final federal review, below or download a prepublication PDF version.
- Each state, following its legislative mandates or administrative rules, will follow those processes to adopt or update the scope for their state. The rate of adoption or revision is state specific.



EMS Field Guide (App Version 1.0)

Beta version being updated. First year funded!

Hospital locator with capabilities
Helicopter locator
Easy call links!



IDHS/EMS Division 2018-2019 Goals

- Rewrite of the 836 IAC Articles 1 through 4
- Obtain 90% data reporting compliance of the Indiana certified ambulance service providers
- Develop a statewide quality improvement program for EMS utilizing patient data submitted to the EMS registry.
- In cooperation with the public safety training academy expand the executive leadership course to include EMS specific topics
- Develop the automated electronic interface between Acadis and National Registry database to facilitate a more efficient certification process.
- Develop rule language clarifying the EMS training institution's responsibilities for improving student outcomes.
- Promote and encourage expanded practice opportunities for EMS providers with a focus on integrated health care, public health and chronic care management.
- Further develop education and training for both patient and EMS provider mental health awareness.
- Explore additional or alternative mechanisms of reimbursement for EMS provider care based on care rendered not miles transported.
- Promote recruitment and retention of EMS and other public safety professions.
- Continue the development of the online application process for EMS provider and institutional organization certifications.
- Implement the recognition of EMS personnel interstate licensure compact act (REPLICA).
- Continue to encourage and promote EMS planning and participation in disaster preparedness.

Thank you!

- Your input and participation in the Indiana EMS System is vitally important.
- Mkaufmann@dhs.in.gov
- 317-514-6985

Indiana Government Center South 302 W. Washington St. Room E241 Indianapolis, Indiana 46204



Trauma Registry

Katie Hokanson, Director



Quarter 1 2019

• Initial submission date was June 30th but hospitals will have until July 12th to submit their Q1 2019. Ramzi is currently working with vendors and ImageTrend to resolve importing issues.

Summary of Hospitals Reporting Status- Q4 2018

New to Reporting / Started Reporting Again

- Goshen Health
- IU Health Jay
- St Vincent Salem Hospital

Did not Report

- Green County General Hospital
- Major Hospital
- Reid health
- St Joseph Hospital (Fort Wayne)
- Woodlawn Hospital

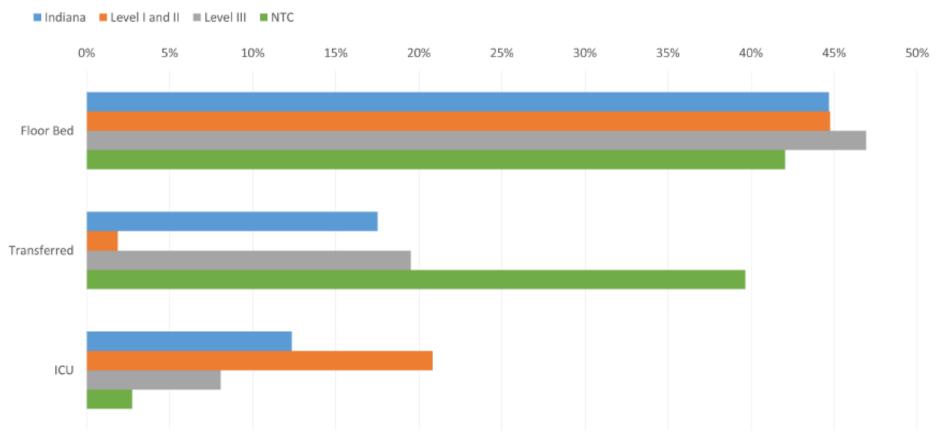
Quarter 4 2018 Statewide Report

- 9,218 incidents
- October 1 2018 December 31, 2018
- 105 total hospitals reporting
 - 10 Level I and II Trauma Centers
 - 12 Level III Trauma Centers
 - 83 Non-Trauma Hospitals



ED Disposition - Page 2



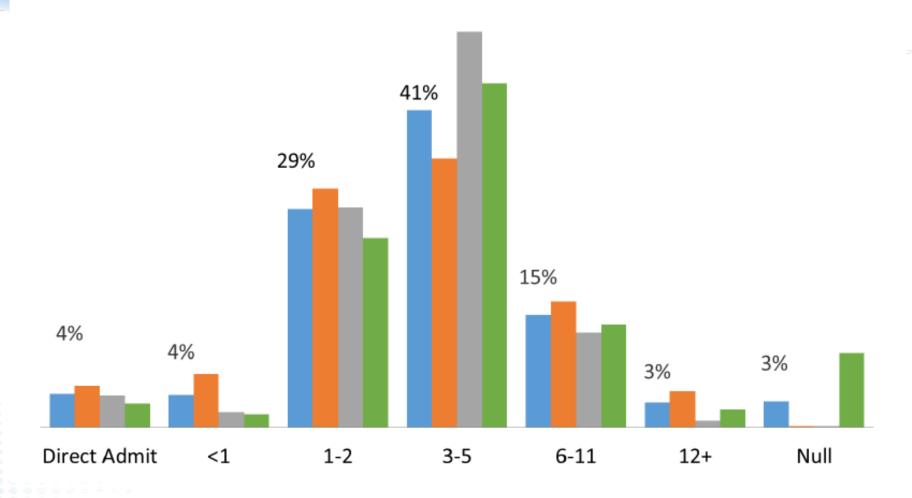


Statewide categoreis <10% include: OR, home w/o services, observation, step-down, expired, and NK/NR/NA.

ED LOS - Page 3

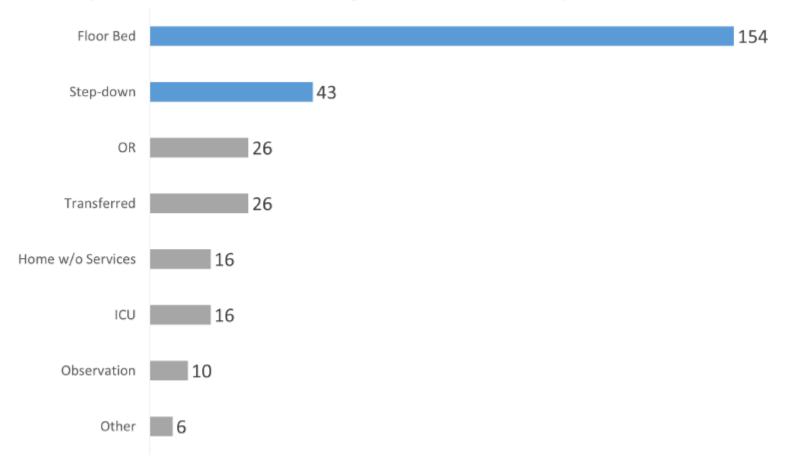
The majority of patients in the ED stay for 1-5 hours.





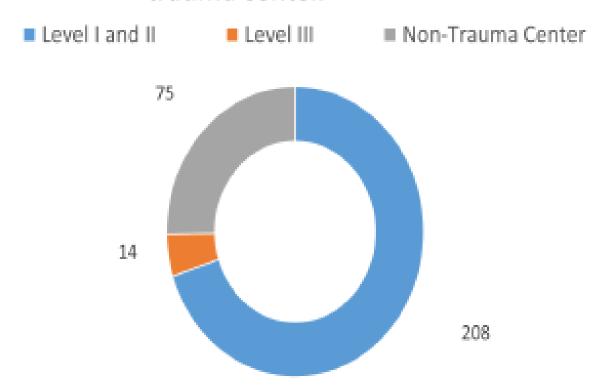
Email questions to: indianatrauma@isdh.in.gov

Most patients in the ED>12 hours go to a floor bed or step-down unit.



None of these patients died or had a disposition of AMA, Other, Home with Services or a Null value.

The majority of patients were at a level I or II trauma center.

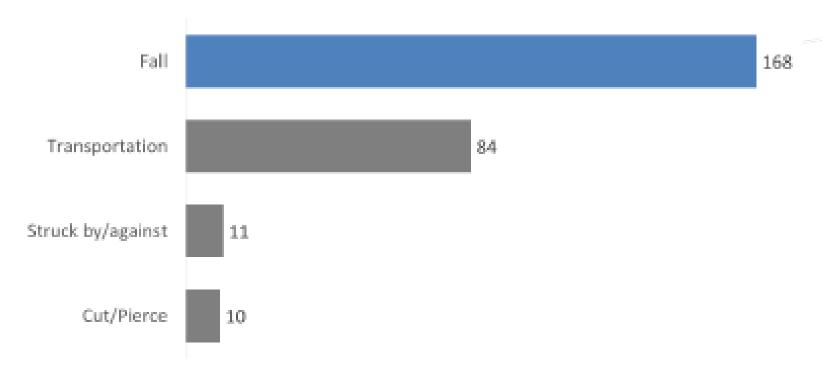


The average patient age was 19 years.



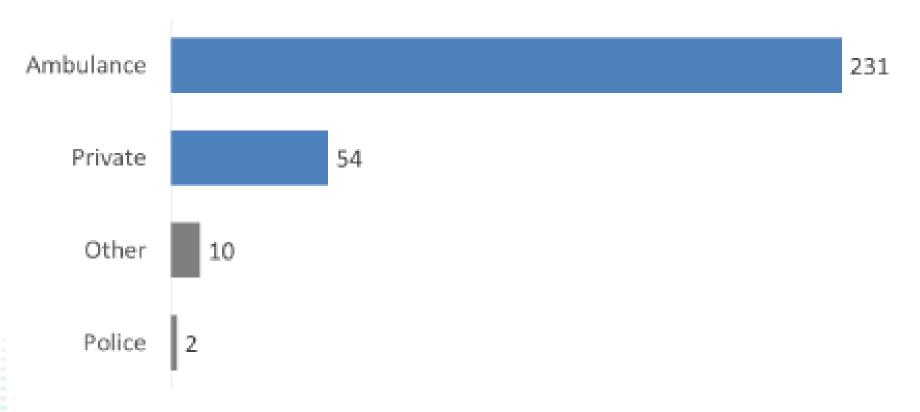


Falls were the most common cause of injury.



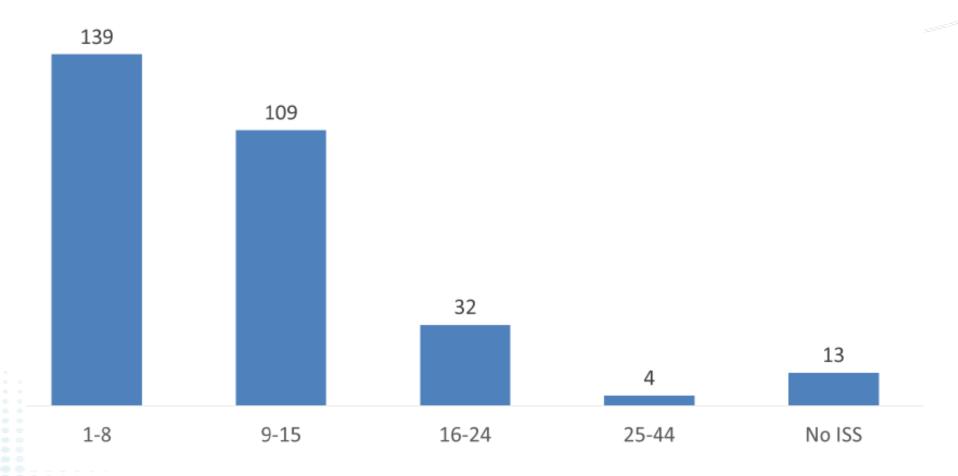
Counts <10 include: Fire/burn, firearm, machinery, natural, overexertion, suffocation, other specified, and other.

The majority of patients are transported by ambulance or private vehicle.



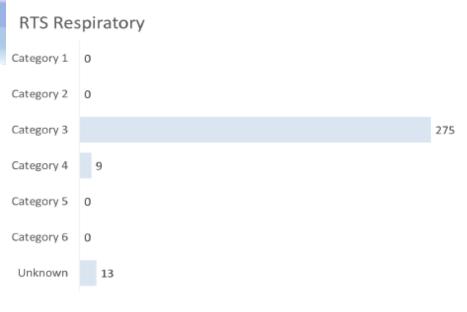
ED LOS > 12 Hours, N=297

The majority of patients have an ISS score of 1-15.



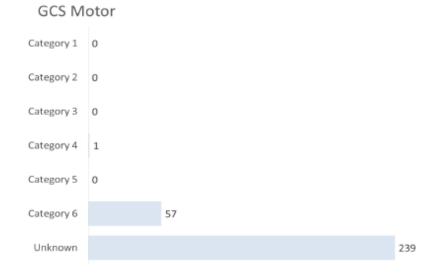
Email questions to: indianatrauma@isdh.in.gov

ED LOS > 12 Hours, N=297

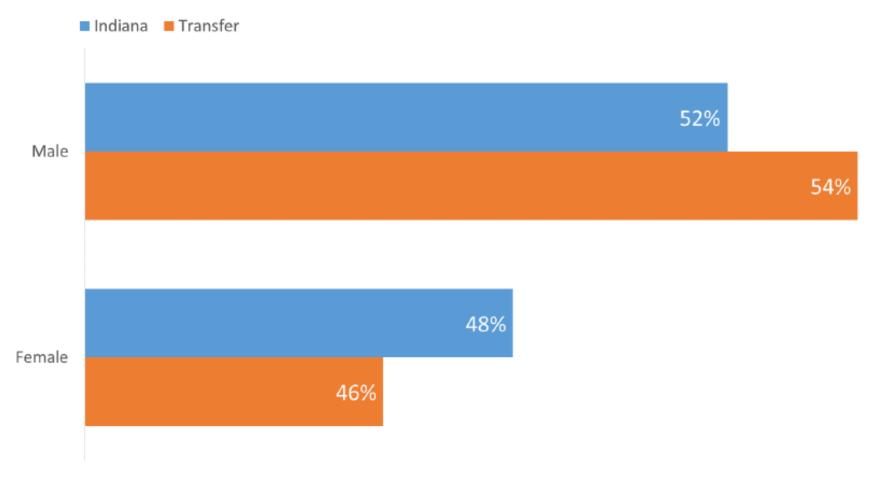


Interpretation: revised trauma scores (RTS) are based on the patient's severity of injury. Higher categories indicate a lower chance of mortality. The majority of patients had a moderate RTS respiratory category, a moderate systolic blood pressure, and an unknown GCS motor score.

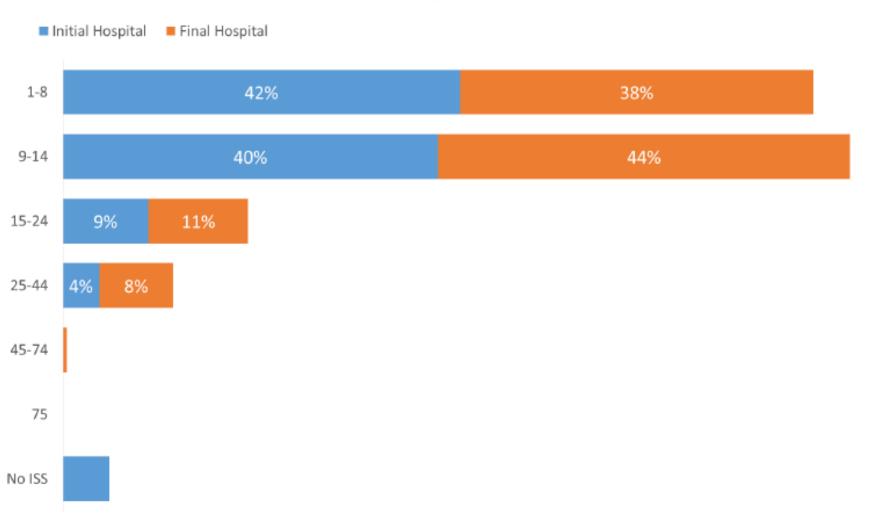




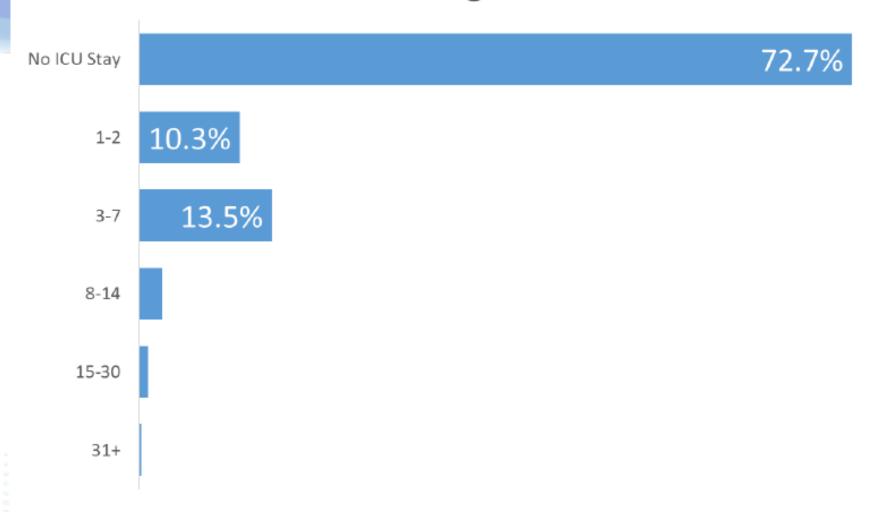
Transfers have a higher percent of male patients than Indiana.



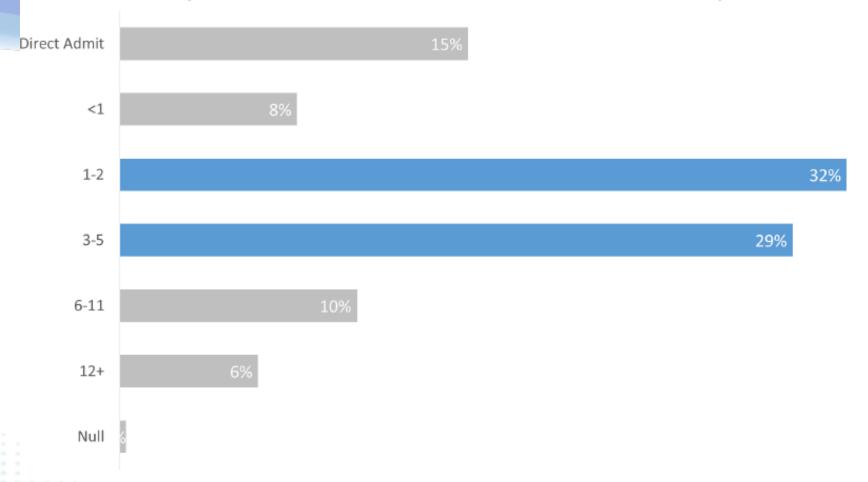
The final hospital has patients with higher injury severity score than the initial hospital.



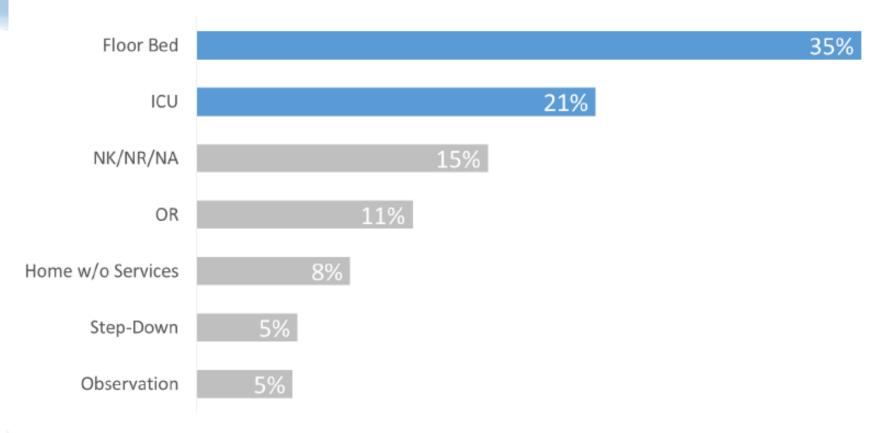
Most transfers do not go to the ICU.



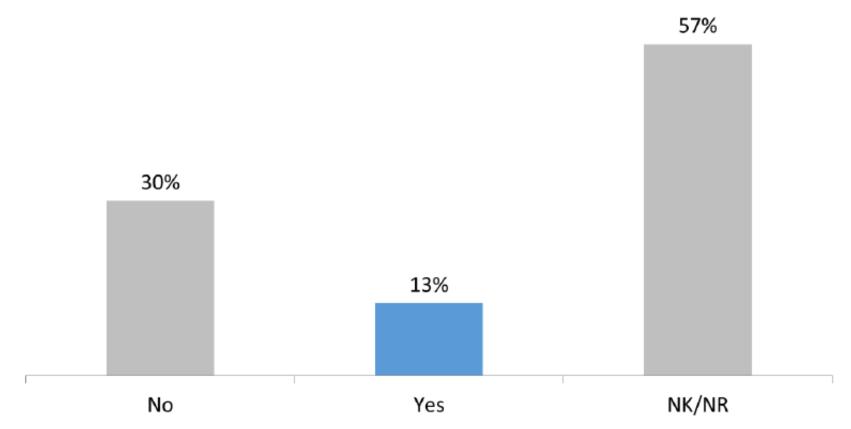
Most transfer patients are in the ED for 1-5 hours at the final hospital.



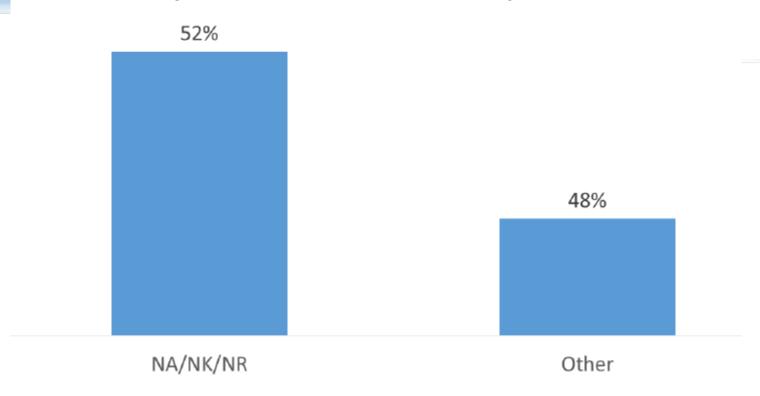
The majority of transfer patients go to a floor bed or the ICU.



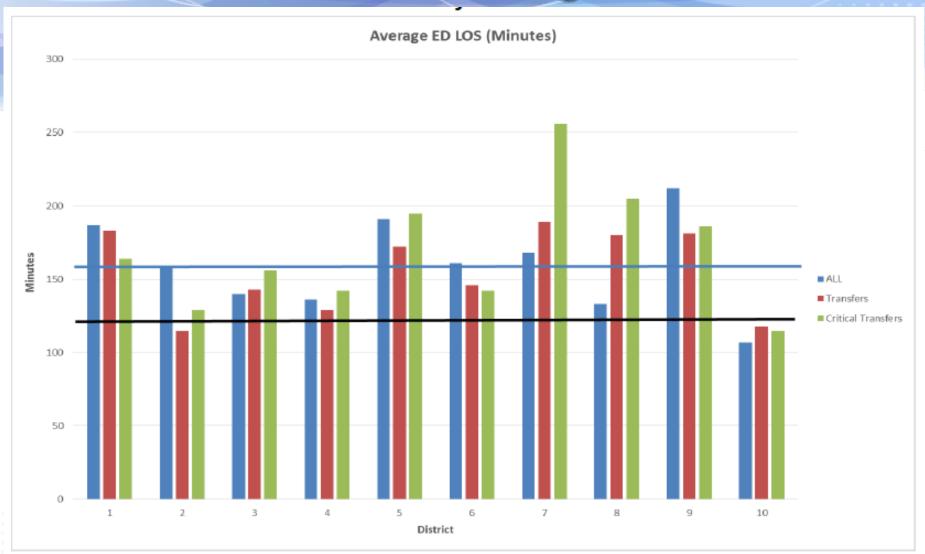
A small portion of transfers had a delay indicated.



Most delay reasons were not completed.



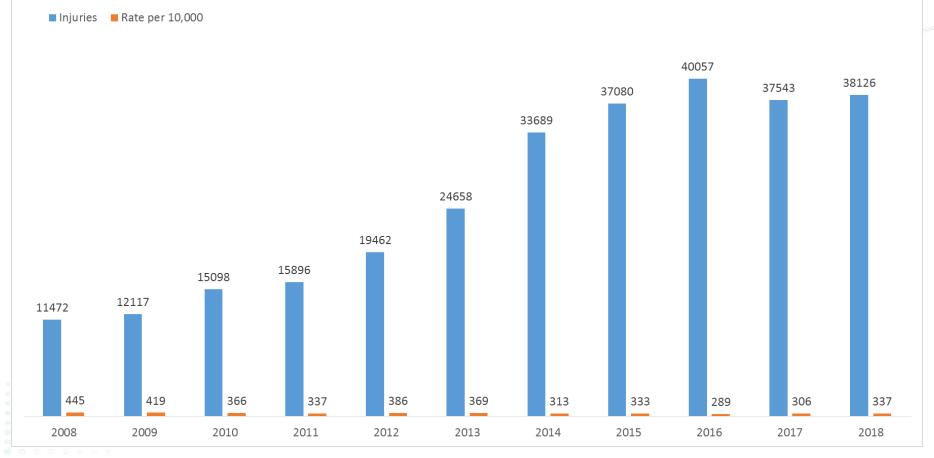
Districts - Page 22



^{*}Black line represents the 120 minute performance improvement filter

^{**}Blue line represents the state average

The mortality rate from traumatic injuries has decreased as traumatic injuries have increased and leveled off.



Email questions to: indianatrauma@isdh.in.gov

American College of Surgeons - Committee on Trauma

Dr. Scott Thomas



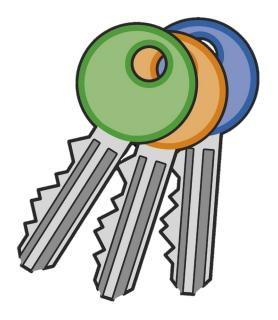
Other Business



2019 ISTCC & ITN Meetings

- Location: Indiana
 Government Center –
 South, Conference
 Room B.
- Webcast still available.
- Time: 10:00 A.M. EST.

- 2019 Dates:
 - August 16
 - October 11
 - December 13



Mobility

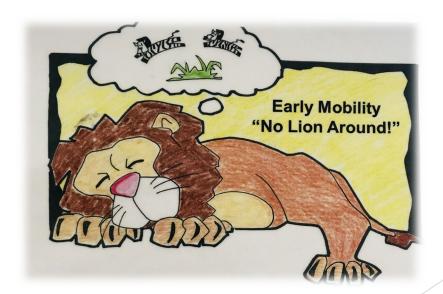
Why It Is Important

- Early Mobility decreases risk of:
 - Debility (weakness, contractures)
 - ► Longer ICU & Hospital LOS
 - Prolonged Vent days
 - Hospital Acquired Pressure Ulcers
 - Pneumonia
 - Delirium
 - DVT & PE
 - Constipation
 - CAUTI (due to urinary retention from being in bed)
 - Mortality
 - ► Falls



Background

Many survivors of trauma requiring ICU stays never return to their baseline function limiting them from returning to work or other societal functions



Society of Trauma Nurses 2018 Conference

- University of Kentucky Study: Walking A Road to Recovery
 - Level 1 trauma center
 - Completed an Early Mobility program in their Trauma ICU
 - ▶ 2 ICUs that care for trauma with 12 beds each (24 beds)

https://uknowledge.uky.edu/cgi/viewcontent.cgi?referer=&httpsredir =1&article=1146&context=dnp_etds

Project consisted of:

- All patients verticalized immediately as soon as BP permitted by raising HOB at least 30 degrees or reverse Trendelenburg
- Mobility assessment completed within 24 hours
- ▶ 24-48 hours post admission to ICU:
 - Core was engaged by at least sitting EOB or chair, feet on the floor twice per day in addition to therapy
 - Multi-disciplinary approach, no added staff or equipment, leadership and physicians assisted if necessary
 - Physicians discussed importance of mobility with patients if non-compliant
- Exclusion criteria:
 - NWB BLE (can still sit in a chair or EOB)
 - Unstable spine fractures (until stabilized)
 - Comfort measures
 - CRRT
 - Open abdominal wall

Results

- Examined Metrics:
 - ICU LOS and Hospital LOS
 - ► ICU Readmissions (floor back to ICU)
 - Vent days
 - Pneumonia
 - ▶ VTE
 - Disposition at D/C (home, outpt rehab, acute rehab, LTAC, SNF)
 - Mobility score at ICU and Hospital discharge

Results

- Data was 8 months pre project and 8 months post project
- 232 patients pre project and 228 post project
- Improvements:
 - ► ICU Mobility Score: Pre mean score 5.5 vs post mean score 7.1
 - ▶ Pneumonia: Pre 98.3% vs post 96.5%
 - Vent Days: pre mean 2.2 days vs post mean days 1.9
- Non-statistically significant changes:
 - **LOS**
 - ▶ VTE
 - Disposition to home

Proposal

- Complete a Mobility Pilot for Trauma Patients in our TICU
- Timeframe: Compare 6 months of data pre project with 6 months post project
- Metric: Debility: compare first filed BMAT mean score and last filed BMAT mean score on discharge
- Metric: Compare mobility compliance BID pre and post



Proposal

- Project:
 - ▶ 24-48 hours post admission to ICU:
 - Core engaged by at least sitting EOB or chair, feet on the floor twice per day in addition to therapy
 - Multi-disciplinary approach, leadership and physicians assisted if necessary
 - Physicians discussed importance of mobility with patients if non-compliant
 - Exclusion criteria:
 - ► NWB BLE (can still sit EOB and/or chair)
 - Unstable spine fractures (until stable)
 - Comfort measures
 - CRRT
 - Open abdominal wall

BMAT Assessment

BMAT-PICTURE GUIDE: ADULT

Assessment Level 1-Sit and Shake

- From a semi-reclined position, ask patient to sit up and rotate to a seated position at the side of the bed
- *may use the bedrail.

 2. Ask patient to reach out and grab your hand and shake making sure patient reaches across his/her midline



PASS= Patient is able to come to a seated position, maintain core strength. Maintains seated balance while reaching across midline. Move on to Assessment Level 2

FAIL= Patient unable to perform tasks, patient is MOBILITY LEVEL 1

Assessment Level 2-Stretch and Point

- With patient in seated position at the side of the bed, have patient place both feet on the floor (or stool) with knees no higher than hips.
- Ask patient to stretch one leg and straighten the knee, then bend the ankle/flex and point the toes. If appropriate, repeat with the other leg



PASS= Patient is able to demonstrate appropriate quad strength on intended weight bearing limb(s). Move onto Assessment Level 3 FAIL= Patient unable to complete task. Patient is MOBILITY LEVEL 2

Assessment Level 3-Stand

- Ask patient to elevate off the bed or chair (seated to standing) using an assistive device (cane, bedrail).
- Patient should be able to raise buttocks off be and hold for a count of five. May repeat once.





PASS=

Patient maintains standing stability for at least 5 seconds, proceed to assessment level 4.

FAIL=

Patient unable to demonstrate standing stability. Patient is

MOBILTY LEVEL 3

PASS= Patient
demonstrates balance while
shifting weight and ability to
step, takes independent
steps, does not use
assistive device patient is
MOBILITY LEVEL 4
Fail= Patient not able to
complete tasks OR requires
use of assistive device.

Patient is MOBILITY LEVEL 3

Assessment Level 4-Walk

- Ask patient to march in place at bedside.
- Then ask patient to advance step and return each foot.

There are medical conditions that may render a patient unable to step backward; use your best clinical judgment.





Nurse Driven Mobility

Mobility by Nursing

- On Admission, ask baseline (1 week prior to admit) mobility questions on navigator, and complete BMAT on admission assessment
 - Nursing will order Physical Therapy (PT) if BPA is received due to a loss in mobility function from baseline
- Assess mobility using BMAT BID, change in level of condition, or transition of care
- Based on BMATlevel, perform recommended interventions

Mobility Team

- Patients requiring ROM (Level 1)
- Patients requiring total assist for mobility (Level 2)
- Exclude patients with comfort measures ordered
- Mobility Tech will generate a list in Epic based on filed BMAT levels to locate patients needing to be treated

Consult PT/OT

- Patients with functional loss by 1 or more levels from baseline function
- Patient may benefit from new assistive devices (cane, walker) or gait/balance training
- Patient must be able to participate in Therapy
- Patient expected to recover from medical compromise
- Disposition needs:
 Patient will not be able to discharge to the same place pre-admission
 - Case Management will assist during MDR
- PT will assess the need for OT and order as appropriate

ı

Discussion

- Reduced amount of inappropriate PT/OT consults
- Engaged bedside nursing staff to get patients moving
- Nursing have the autonomy to drive mobility and therapy consults
- Utilized a BPA in our EMR to use technology to help drive mobility
- Next steps:
 - Measure debility to see if it has decreased
 - Monitor Falls and LOS to see impact

- Halcomb, P. (2017). Post evaluation of a nurse driven early mobility program. *University of Kentucky Uknowledge*. *DNP Projects*, 129. Retrieved from https://uknowledge.uky.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1146&context=dnp_etds
- Adler, J. & Malone, D. (2012). Early mobilization in the intensive care unit: A systematic review. *Cardiopulmonary Physical Therapy Journal*, 23(1), 5-132.
- Appleton, R. & Kinsella, J. (2012). Intensive care unit acquired weakness. *Continuing Educationin Anesthesia, Critical Care and Pain, 12*(2), 62-66. doi:10.1093/bjaceaccp/mkr057
- Arnold, M. (2003). Pressure ulcer prevention and management: The current evidence for care. *AACN Clinical Issues*, *14*(4), 411-428.
- Bailey, P., Thomsen, G.E., Spuhler, V.J., Blair, R., Jewkes, J., Bezdjian, L., Veale, K., Rodriguez, L. & Hopkins, R.O. (2007). Early activity is feasible and safe in respiratory failure patients. *Critical Care Medicine*, 35(1), 139-145. doi:10.1097/01.CCM.0000251130.69568.87
- Balas, M.C., Vasilevskis, E.E., Burke, W.J., Boehm, L., Pun, B.T., Olsen, K.M., Peitz, G.J., & Burtin, C., Clerckx, B., Ferdinande, P., Langer, D., Troosters, T., hermans, G., Decramer, M., Gosselink, R. (2009). Early exercise in critically ill patients enhances short-term functional recovery. Critical Care Medicine, 37(9), 2499-2505. doi 10.1097/CCM.0b013e3181a38937
- Clark, D.E., Lowman, J.D., Griffin, R.L., Matthews, H.M. & Reiff, D.A. (2013). Effectiveness of an early mobilization protocol in a trauma and burns intensive care unit: A retrospective study. Physical Therapy, 93(2), 186-189. Retrieved from http://eds.a.ebscohost.com.ezproxy.uky.edu

- Clavet, H., Hebert, P.C., Fergusson, D., Doucette, S. & Trudel, G. (2008). Joint contracture following prolonged stay in the intensive care unit. *Canadian Medical Association Journal*, 178(6), 691-697. doi: 10.1503/cmaj.071056
- Covinsky, K.E., Palmer, R.M., Fortinsky, R.H., Counsell, S.R., Stewart, A.L., Kresevic, D., Burant, C.J. & Landefeld, C.S. (2003). Loss of independence in activities of daily living in older adults hospitalized with medical illnesses: Increased vulnerability with age. *Journal of the American Geriatric Society*, 51, 451-458. Retrieved from http://eds.a.ebscohost.com.ezproxy.uky.edu
- de Jonghe, B, Bastuji-Garin, S., Durand, M.C., Malissin, I., Rodrigues, P., Cerf, C., Outin, H. & Sharshar, T. (2007). Respiratory weakness is associated with limb weakness and delayed weaning in critical illness. *Critical Care Medicine*, 35(9), 2007-2015. Doi:10.1097/01.CCM.0000281450.01881.d8
- de Jonghe, B., Lacherade, J.C., Sharshar, T. & Outin, H. (2009). Intensive care unit acquired weakness: Risk factors and prevention. *Critical Care Medicine*, (37)10, S309-S315. doi: 10.1097/CCM.0b013e3181b6e64c
- Dowdy, D.W., Eid, M.P., Sedrakyan, A., Mendez-Tellez, P.A., Pronovost, P.J., Herridge, M.S. & Needham, D.M. (2005). Quality of life in adult survivors of critical illness: A systematicreview. *Intensive Critical Care Medicine*, *31*, 611-620. doi: 10.1007/s00134-005-2592-6

- ► Engel, H.J., Needham, D.M., Morris, P.E. & Gropper, M.A. (2013). ICU early mobilization: From recommendation to implementation at three medical centers. *Critical Care Medicine*, 41, S69-S80. doi:10.1097/CCM.0b013e3182a240d5
- Fink, H., Helming, M, Unterbuchner, C. Lenz, A., Neff, F., Martyn, J. & Blobner, M. (2008). Systemic Inflammatory response syndrome increases immobility-induced neuromuscular weakness. *Critical Care Medicine*, *36*(3), 910-916. doi: 10.1097/CCM.0B013E3181659669
- Fraser, D., Spiva, L., Forman, W. & Hallen, C. (2015). Original research: Implementation of an early mobility program in an ICU. *American Journal of Nursing*, 115(12), 49-58. Retrieved from http://eds.a.ebscohost.com.ezproxy.uky.edu
- ▶ Herridge, M.S., Batt, J. & Hopkins, R.O. (2008). The pathophysiology of long-term neuromuscular and cognitive outcomes following critical illness. *Critical Care Clinics*, 24, 179-199. doi:10.1016/j.ccc.2007.11.002
- ▶ Herridge, M.S., Cheung, A.M., Tansey, C.M., Matte-Martyn, A., Diaz-Granados, N., Al-Saidi,
- F., Cooper, A.B., Guest, C.B., Mazer, C.D., Mehta, S., Stewart, T.E., Barr, A., Cook, D. & Slutsky, A.S. (2003). One-year outcomes in survivors of the acute respiratory distress syndrome. *New England Journal of Medicine*, 348(8), 683-693. Retrieved from http://eds.a.ebscohost.com.ezproxy.uky.edu

- ► Hopkins, R.O., Mitchell, L., Thomsen, G.E., Schafer, M., Link, M., & Brown, S.M. (2016). Implementing a mobility program to minimize post-intensive care syndrome. *AACN Advanced Critical Care*, 27(2)2, 187-203.
- Hopkins, R.O., Spuhler, V.J. & Thomsen, G.E. (2007). Transforming ICU culture to facilitate early mobility. *Critical Care Clinics*, 23, 81-96. doi: 10.1016/j.ccc.2006.11.004
- Hopkins, R.O., Suchyta, M.R., Farrer, T.J. & Needham, D.M. (2012). Improving post-intensive care unit neuropsychiatric outcomes. Understanding cognitive effects of physical activity. *American Journal of Respiratory and Critical Care Medicine*, 186(12), 1220-1228.doi:10.1164/rccm.201206-1022CP
- Klein, K., Mulkey, M., Bena, J.F. & Albert, N.M. (2015). Clinical and psychological effects of early mobilization in patients treated in a neurologic ICU: A comparative study. *Critical Care Medicine*, 43,4, 865-873.doi: 10.1097/CCM.0000000000000787

- Knight, J., Nigam, Y. & Jones, A. (2009). Effects of bedrest1, 2,3. Nursing Times retrieved on January 7, 2016 from http://www.nursingtimes.net/
- Lima, N.P., da Silva, G.M.C., Park, M., Pires-Neto, R.C. (2015). Mobility therapy and central or peripheral catheter-related adverse events in an ICU in Brazil. *Journal of Brazilian Pneumology*, 41(3), 225-230.
- Lord, R. K., Mayhew, C. R., Korupolu, R., Mantheiy, E. C., Friedman, M. A., Palmer, J. B. & Needham, D. M. (2013). ICU early physical rehabilitation programs: Financial modeling of cost savings. *Critical Care Medicine*, *41*(3), 717-724. doi: 10.1097/CCM.0b013e3182711de2
- McWilliams, D., Weblin, J., Atkins, G., Bion, J., Williams, J., Elloit, C. Whitehouse, T. & Snelson, C. (2015). Enhancing rehabilitation of mechanically ventilated patients in the intensive care unit: A quality improvement project. *Journal of Critical Care*, 30, 13-18. doi:10.1016/j.jcrc.2014.09.018
- Morris, P.E. (2007). Moving our critically ill patients: Mobility barriers and benefits. *Critical Care Clinics*, 23(1), 1-20. Retrieved fromhttps://www.clinicalkey-com.ezproxy.uky.edu/

- Morris, P.E., Griffin, L., Berry, M., Thompson, C., Hite, R.D., Winkelman, C., Hopkins, R.O., Ross, A., Dixon, L., Leach, S., Haponik, E. (2011). Receiving early mobility during an
- intensive care unit admission is a predictor of improved outcomes in acute respiratory failure. *The American Journal of Medical Sciences 341*(5), 373-377. Retrieved from http://eds.a.ebscohost.com.ezproxy.uky.edu
- Needham, D.M. (2008). Mobilizing patients in the intensive care unit: Improving neuromuscular weakness and physical function. *Journal of the American Medical Association*, 300(14), 1685-1689. Retrieved from http://jama.jamanetwork.com/
- Ogochukwu, A., Gammon, H., Burmeister, C., Frega, D., Nerenz, D., DiGiovine, B & Siddiqui, A. (2016). Benefits of early active mobility in the medical intensive care unit: A pilot study. *The American Journal of Medicine*, 129(8), 866-871.doi:10.1016/j.amjmed.2016.03.032
- Parker, A. & Needham, D.M. (2013). The importance of early rehabilitation and mobility in the ICU. Society of Critical Care Medicine Critical Connections, retrieved November 11, 2015 from http://www.sccm.org/Communications/Critical-Connections/Archives/Pages/Importance-Early-Rehabilitation-Mobility-ICU.aspx.

- Perme, C. & Chandrashekar, R. (2009). Early mobility and walking program for patients in intensive care units: Creating a standard of care. *American Journal of Critical Care*, 18(3), 212-221. doi: 10.4037/ajcc2009598
- Schweickert, W.D., Pohlman, M.C., Nigos, C., Pawlik, A.J., Esbrook, C.L., Spears, L., Miller, M., Franczyk, M., Deprizio, D., Schmidt, G.A., Bowman, A., Barr, R., McCallister, K.E., Hall, J.B. & Kress, J.P. (2009). Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomized controlled trial. *Lancet*, *373*, 1974-1882.
- Sricharoenchai, T., Parker, A.M., Zanni, J.M., Nelliot, A., Dinglas, V.D. & Needham, D.M. (2014). Safety of physical therapy interventions in critically ill patients: A single center prospective evaluation of 1110 intensive care unit admissions. *Journal of Critical Care*, 29, 395-400.
- Stevens, R.D., Dowdy, D.W., Michaels, R.K., Mendez-Tellez, P.A., Pronovost, P.J.& Needham, D.M. (2007). Neuromuscular Dysfunction acquired in critical illness: A systematic review. *Intensive Care Medicine*, 33(11), 1876-1891.doi: 10.1007/s00134-007-0772-2

- Stevens, R. D., Marshall, S. A., Cornblath, D. R., Hoke, A., Needham, D. M., de Jonghe, B., Ali, N. A. & Sharshar, T. (2009). A framework for diagnosing and classifying intensive care unit acquired weakness. *Critical Care Medicine*, *37*(10), s299-s308. doi: 10.1097/CCM.0b013e3181b6ef67
- Vollman, K. M. (2013). Understanding critically ill patient's hemodynamic response to mobilization. Using the evidence to make it safe and feasible. *Critical Care Nursing Quarterly*, 36(1), 17-27. doi: 10.1097/CNQ.0b013e3182750767
- Vollman, K. M. (2010). Introduction to progressive mobility. Critical Care Nurse, 30(2), S3- S5.doi: 10.4037/ccn2010803
- Winkelman, C. (2007). Inactivity and inflammation in the critically ill patient. *Critical Care Clinics*, 23, 21-34. doi: 10.1016/j.ccc.2006.11.002
- Winkelman, C., Johnson, K.D., Hejal, R., Gordon, N.H., Rowbottom, J., Daly, J., Peereboom, K. & Levine. A.D. (2012). Examining the positive effects of exercise in intubated adults in ICU: A prospective repeated measures clinical study. *Intensive Critical Care Nursing*, 28(6), 307-318. Retrieved from http://ac.els-cdn.com.ezproxy.uky.edu
- Winkelman, C. & Peereboom, K. (2010). Staff-perceived barriers and facilitators. *Critical Care Nurse*, *30*(2), S13-S16. doi: 10.4037/ccn2010393
- Zomorodi, M., Topley, D. & McAnaw, M. (2012). Developing a mobility protocol for early mobilization of patients in a surgical/trauma ICU. Critical Care Research and Practice, 1-10. doi:10.1155/2012/964547