#### The Michigan Trauma Quality Improvement Program

Ypsilanti, MI October 8, 2019



#### Disclosures

- Salary Support for MTQIP from BCBSM/BCN
  - Mark Hemmila
  - Judy Mikhail
  - Jill Jakubus
  - Anne Cain-Nielsen

#### **No Photos Please**



#### **Evaluations**

- Link will be emailed to you following meeting
- You have up to 7 days to submit
- Please answer the evaluation questions
- Physicians/Nurses/Advanced Practitioners:
  - E-mail certificate for 4.0 Category 1 CME

#### Michigan Trauma Quality Improvement Program (MTQIP) Collaborative Meeting Oct 8, 2019 Lecture(s):

**Trauma Resuscitation: What Works, What Doesn't** Judy Mikhail, RN , Mark Hemmila, MD

**Center Presentations** Scott Davidson, MD, Loretta Farrell, RN, Ruth Johnson, RN

**Program Manager Update** Judy Mikhail, RN

MTQIP Data Review Mark Hemmila, MD

**Program Manager-Data Update** *Jill Jakubus, PA* 

#### **Financial Disclosure Information:**

There are no relevant financial relationships with ACCME-defined commercial interests to disclose for this activity.

#### Accreditation and Credit Designation:

The University of Michigan Medical School is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The University of Michigan Medical School designates this live activity for a maximum of 4.00 AMA PRA Category 1 Credit(s)  $^{\text{TM}}$ . Physicians should claim only the credit commensurate with the extent of their participation in the activity.

#### Guests

- Speakers
  - Scott Davidson, MD Bronson
    - Burn Decontamination, Research Project
  - Loretta Farrell, RN Bronson
  - Ruth Johnson, RN Bronson
    - VTE Success Story

#### **Data Submission**

- Data submitted August 2, 2019
  - This report
  - 4 week turnaround
- Data submitted October 4, 2019
  - Pending
- Next data submission
  - December 6, 2019

#### **Future Meetings**

- Winter
  - Tuesday February 11, 2020
  - Ypsilanti, EMU Marriott
- Spring
  - Wednesday May 13, 2020
  - Boyne Falls, Boyne Mountain Resort
- Spring (Registrars and MCR's)
  - Tuesday June 2, 2020
  - Ypsilanti, EMU Marriott
  - Level III's

#### State of Michigan

- FY 2019 (Oct to Sep)
  - Level 3's
  - Data Validation (5 Level 3's)
- FY 2020
  - Proposal accepted
  - Level 3's
  - Expanded Level 3 data validation
  - State and region reporting (Level 1,2,3)

#### Trauma Resuscitation: What Works, What Doesn't

MTQIP Members Judy Mikhail, PhD Mark Hemmila, MD



### Background

- MTQIP Site Visits
  - Check out ED's/Trauma Bays
- U of M
  - Multifunction
  - Difficulty with equipment
  - Lots of people
  - Lots of new equipment

#### Trauma Cart

- Spectrum
- Bronson
- Standardized Equipment
- One place
- Efficient
- Mass/Multiple Casualty
- Change is hard



#### **Let's Learn From Each Other**

- What works
- What doesn't
- Surveys
- Discussion
- Let's have fun

# MTQIP Meeting 10.08.19 Resuscitation Slides

# Ascension Borgess

## Trauma Cart

- William Curtiss MD
- Sally Ossewaarde MSN



# The Problem

Supplies not restocked.

Missing or outdated.

Deleted from stock.

Variable Supplies in each Trauma Bay.

## Resolution

- Devised a Trauma Cart
- Carts are stocked identically.
- Lidocaine and needles are in the cart.
- Carts are locked.
- RN responsible for the room is responsible to restock and lock.
- Laminated cards are on each cart with pictures of each row and quantity of supplies.







# **UPHS** Marquette

## June 2, 2019





580 W Magnetic

850 W Baraga

## Last patient to leave



## Attempted to keep familiar items









## But no one could find them





## Still looking for chest tubes





## Some new equipment



## Curious planning





## New Helipad on the same block!!!





## Same great friends



# Mercy Health Muskegon

# **MUSKEGON**

Michelle Kucera, Trauma Program Manager Lanae Kelley, MCR

## Trauma Bay

- New trauma/resuscitation bays built last year at Mercy campus
  - Campus consolidation 2020
  - Built with Trauma Department/Staff input
  - Pros/Cons to both resuscitation bays
  - Run simulations in new resuscitation bays

#### **Current Trauma Bay**

#### **Future Resuscitation Bay**




#### **Current Supply Cabinets**

Frank A.



**Future Supply Cabinets** 

## What works well...

Blood products are automatically delivered with each Trauma Code Activation.

- 2 units PRBC
- 2 units FFP
- Uncrossmatched
- Quicker utilization of blood product resuscitation
- Helps maintain a 1:1 ratio right from the beginning



## What works well...

- Role badges
- Laminated
- Badge clips
- Stickers did not work



## Trauma Simulations

- Utilize high fidelity manikin
- Adult and pediatric simulation
- Scenarios written based on real trauma patients
- ED Attendings and Trauma Surgeon required to attend 1/year
- Combined staff from both campuses in anticipation of consolidation
- Multidisciplinary

## Room for improvement...

- Resuscitation hand-off
  - Specifically MTP to OR staff
- Frequency of simulations
- Trauma room staffing
  - Assigning trauma RN each shift
- Crowd control
- Trauma Provider arrival time documentation

## **Detroit Receiving Hospital**

## Detroit Receiving Hospital Major Resuscitation Activation

Deployment of Blood Cooler by Communication Specialist

Dr Anna Ledgerwood

## Major Resuscitation Activation

#### **Definition**:

Communication Specialist – personnel who manage the incoming call from pre-hospital provider, transferring facility, activation of trauma pager, arrange patient transfer in and out of the hospital, activate the trauma pager, pick up blood/cooler for major trauma activation

## Process after Major Resuscitation is activated

1. Communication specialist will pick the blood cooler from the blood bank and take it to resuscitation.

2. If the patient is hemodynamically stable, the communication specialist will the take the cooler back to the blood bank..

3. If the patient requires blood products, the physician will activate the massive blood transfusion protocol.

4. First cooler contains 4 units of **O** Negative red blood cells

5. Blood specimen send to the stat lab for processing

## Benefits of Deploying Blood Cooler for Major Resuscitation

- Expedites timely blood product administration
- Designated person to obtain the blood cooler

## Challenges

## Location of our Communication Center is in the Main ED

Ideally it needs to be at the front of the ED close to the ambulance entrance/triage



# Proximity of ambulance entrance to resuscitation

Across ambulance triage There is a room that Can be use for the Communication Center Replace the wall with Glass window for better Visibility of the in coming Ambulance traffic. Trauma code will be Updated timely



## Hurley Medical Center

## Massive Transfusion and Blood Utilization

Michelle Maxson, RN, MSN

Senior Manager of Trauma Operations

**Hurley Medical Center** 

## Mean Ratio PRBC/FFP 4 Hrs



LEGEND Hurley Medical Center MTQIP - All Other Hospitals — MTQIP - All 95% Confidence Interval

## Blood Release

- Blood chest automatically released for all Class I traumas
  - Brought to ED by runner
  - Time of arrival documented in EMR
- MTP activated via trauma radio
  - Activated by Trauma Attending



ED Notes

#### Blood chest at bedside

### MTP

- Blood chest contains 3 O-/O+ PRBC and 3 A FFP (AB for pediatrics)
- Every odd chest beginning with chest 3 contains jumbo PLT
- Every even number beginning with chest 4 contains 2 units of cryo
- Blood Bank staff keep track of MTP
  - Essential for success of MTP
  - Utilize Massive Transfusion Tracking Sheet



#### **Massive Transfusion Tracking Sheet**

Buggested use of this sheet. Cross off units as you given. Volume transfused must be charted under the I&O flow sheet as intake in the "Blood- MTP only" row

Chest Shipment		Thawed	PRBCs	Platelets	Cryo
		Plasma		(1 jumbo apheresis unit)	10 units
	Chest #1	1	2		
	Cilest #1	3	4		
	<u>***</u>	5	6		
	Chest #2	7	8		
		9	10		
		11	12		
	Chest #3	14	15	13	
		16	17		
		18	19		
	Chest #4	22	23		20,21
		24	25		
6		26	27		
	Chest #5	29	30	28	
- <b>2</b>		31	32		
L L		33	34		
S	Chest #6	37	38		35,36
		39	40		
00		41	42		
	Chest #7	44	45	43	
		46	47		
e		48	49		
<b>_</b>		52	53		50,51
~	Chest #8	54	55		
a se		56	57		
12	Chest #9	59	60	58	
		61	62		
		63	64		
	Chest #10	67	68		65,66
		69	70		
		71	72		
Continue MTP as necessary					
Remember to deactivate the massive transfusion over the trauma radio/phone when MTP is terminated					



- Tranexamic acid is given as soon as need for MTP is identified
- Rapid TEG is included in standard labs for all Class I traumas
- Rapid TEG drawn every 20 minutes during active MTP to guide further transfusion
- All unused products returned to Blood Bank ASAP



## Blood Usage and Wastage

July 2019					
	Discarded	Transfused			
Packed Red Blood Cells	11	442			
Fresh Frozen Plasma	9	166			
Platelet Pheresis	2	35			
Cryoprecepitate	0	0			

#### August 2019

	Discarded	Transfused
Packed Red Blood Cells	6	400
Fresh Frozen Plasma	6	130
Platelet Pheresis	4	70
Cryoprecepitate	2	16

## How Did We Get Here?

- Review of all MTPs
  - Identify where the process broke down
- Education to key stakeholders
  - Dedicated ED nurses
  - Anesthesia
- Blood Bank Staff



## Thank You!



AAIN F

NTRANCI

## Ascension St John Detroit

## **Blood Product Availability**

### **Ascension St. John Hospital**



- Karrie Brown, MSN, RN Trauma Program Manager
- Melissa Cunningham, MSN, RN, CEN, TCRN – MTQIP Clinical Reviewer





#### About Us

## Ascension St. John Hospital

- Detroit, Michigan
  - East Side
- Serve Wayne, Macomb, and St. Clair Counties
- ACS Verified Level I Adult and Level II Pediatric Center
- ED Volume 120,000 annually
- Trauma registry volume 2500 annually
  - Blunt: 80%
  - Penetrating: 18%
  - Burn: 2%







**Blood Product Availability** 

### What Works

- Logistics
  - Blood Bank below ED, OR, SICU
  - Dedicated tube system from Blood Bank to ED
  - Blood Refrigerator in the OR





**Blood Product Availability** 

### What Works

- Lots of Practice!
  - 2018: 55 Trauma MTPs
  - 2019: 45 Trauma MTPs (Through 10/4/2019)
- Average time of activation to first unit hung
  - **15 minutes** (2019)
  - 6 minutes 29 minutes
- RBC to Plasma Ratio: 1.8



Dr. Van Beek, MDA, Anesthesia Liaison **Blood Product Availability** 

### What Works

- Great PI process
- All MTP cases reviewed at Tertiary Level
  - Activated appropriately and timely
  - Utilized appropriately
  - Blood product wastage
  - Crystalloid usage
- MTP product usage reported monthly at Trauma Systems Committee



**Blood Product Availability** 

### **Success Story**

- Male s/p GSW to abdomen (mid epigastrium)
  - Private auto
  - Level I activated
    - BP 192/56, P 82, RR 21, GCS 15
  - MTP
    - BP 85/53, P 80, RR 28, GCS 15
  - To OR



**Blood Product Utilization** 

### **Success Story**

- 1<sup>st</sup> Unit Hung in OR (18 minutes)
  - Spleen, Grade V kidney laceration, retroperitoneal hematoma, small bowel injury, fundus, pancreas, diaphragm
- 24 hours
  - 62 PRBC, 61 Plasma, 65 Platelets, 10 Cryoprecipitate
  - 13L Crystalloid
- Discharged home with Home Health Care



Blood Product Availability

### **Opportunities for improvement**

- Blood refrigerator in ED Resuscitation module
  - Currently housed in Trauma Office Lobby
- Crystalloid Fluid Usage



## MidMichigan-Midland

## MidMichigan Medical Center Midland

Asha Shah- Trauma Medical Director Shari Meredith- Trauma Program Manager Michelle Abedrabo- MCR

## ED Trauma Bay



- Trauma registry: 1,125 patients
- Annual ED visits: 41,725
- 25 ED rooms
- 2 primary trauma/critical care resuscitation bays
  - 8 additional flex trauma/critical care resuscitation rooms.

## What Works Well: Code 1 Blood Availability

#### The process...

- Code 1 trauma patients are pre-registered as Jane/ John Doe to expedite release of blood products.
- Blood bank receives Code 1 page/ automatically prepares cooler with 2 units O-neg PRBCs/ 2 units liquid plasma
- Security automatically responds to bloodbank and transports cooler to ED resuscitation bay.
  - Blood products are delivered < 5 minutes.
# What Works Well: Nurse Driven Trauma Activations

**The problem:** We were seeing increasing under-triage rates: 5-6%!

- WHY??? ED physicians were not activating traumas based on pre-defined criteria
  - Nurses were suggesting activation based off EMS report- physician declining to activate.

#### • What did we do?

- Worked with ED leadership and decided to move towards nurse driven trauma activations
- Education blitz with activation quizzes for all ED nurses. Online learning via Connect modules
- Annual competency/education on activation criteria

# What Works Well: Nurse Driven Trauma Activations

Under-triage rate-physician driven activations	Under-triage rates- Nurse Driven Trauma Activation
>5%	1%

Continued education and PI feedback for any under-triage case with ED nurse/ ED physician/ trauma service.

What Works Well: Coordinated RN Response for Massive Transfusion Protocol

**The Problem:** MTP is resource intensive- felt like there wasn't enough "man power" to effectively run the MTP.

What did we do? Starting 4/2019 "Code Massive Transfusion Protocol" paged overhead- additional response from 3 MTP trained RNs.

• Roles assigned: RN scribe/Transfusionist/ Rapid Infuser

# What Works Well: Coordinated RN Response for Massive Transfusion Protocol

Feedback:

- Departments love the coordinated response! Allows ED RNs to focus on caring for trauma patient.
- Builds teamwork between departments
- More exposure to the MTP process

# What Works Well: Coordinated RN Response for Massive Transfusion Protocol





### **Test Poll**

- Web browser
  - PollEv.com
  - Enter your name
- App PollEverywhere
- Text message
  - Number =
  - Text =



### What condition was historically treated with plombage?

Diphtheria Plague Tuberculosis **Rickets** 

### What's the best restaurant in the state?

Тор

### How dedicated is your ED resuscitation room?

Solely used for trauma

Primarily used for trauma

Shared and used for many kinds of resuscitations other than trauma

### Comments - How dedicated is your ED resuscitation room?

Тор

# Who has primary responsibility for the layout of and equipment available in your ED resuscitation room?

**Emergency Medicine** 

Trauma Surgery

Jointly shared between Emergency Medicine and Trauma Surgery

# Comments - Who has primary responsibility for the layout of and equipment available in your ED resuscitation room?

Тор

# Are you satisfied with the physical layout of your trauma resuscitation room?



No

# Comments - Are you satisfied with the physical layout of your trauma resuscitation room?

Тор

# Are you satisfied with the equipment available and location of equipment in your resuscitation room?



No

# Comments - Are you satisfied with the equipment available and location of equipment in your resuscitation room?

Тор

### Do you have a standardized layout with defined equipment (e.g. tape on floor) and people positions?



No

# Comments - Do you have a standardized layout with defined equipment and people positions?

Тор

# Do you utilize a trauma cart or pre-made bins for procedure related equipment?



No

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

🐃 у Слу Солкеу

### Comments - Do you utilize a trauma cart or pre-made bins for procedure related equipment?

Тор

### Do you utilize video recording of trauma resuscitations?



No

## Beaumont Dearborn

BH- Dearborn Trauma Activation Documentation Cara Sequin & Josh Chernich

2 Opportunities:

Improve timeliness of Radio calls & completeness of Scribe RN documentation on flow sheet

#### **Kaizen Summary:**

#### 1.) OBSERVATION:



Beaumont			
Time of Injury Patient Time of Arrival			
Time o	of Trauma Ca	lled	
*RED 1	BLUE 2	Trauma Ev	valuation
Upgraded to		Time Upgrade	Paged
Title		Name	Arrival
*Trauma Surgeon			
Trauma APP #1		12 4000-105 14.00	
Trauma APP #2			
ECP Attending			
ECP Resident			
Primary RN		NO POR	
Socondan, PN			

#### <u>AREA</u>: Emergency Center <u>DATE</u>: 5/16/18

NAMES: Jessica Wallace, Jessica Diccico, Daniel Waderlow

#### 3.) KAIZEN:

Create an easy and efficient way for the trauma nurse to receive a reliable activation time for the trauma patient coming in when heard overhead in department.

#### 2.) PROBLEM:

- It was found in trauma flow sheet audits that nursing staff is missing "time of injury & time of trauma called" consistently.
- Dispatch receives multiple phone calls regarding activations.
- Trauma team frequently had to display pager times for scribe to document activation time.

#### 4.) RESULT:

We implemented the Raven to be used in the trauma bay so that activation information and times will be readily available for scribe nurses.



## Trauma Activations What's the data telling us?

#### **RECENT PERSONNEL CHANGE in PROCESS:**

1. Experienced dispatchers moved to corporate office as part of bed management team

EC specialists now answering the radio...

- 2. Typing too much delaying relay of information prior to patient's arrival
- 3. Page trauma last after paging overhead in department

### EC Meeting: Feedback on Trauma

### Activation Process

- March data- 15% compliance rate with pre-notification when patients brought by ambulance- *this is a <u>major</u> change*.
  - Timing of activation is going out as patient is arriving/has arrived- too late
  - Trauma needs to be paged as soon as call comes in to have the team be present on arrival
  - Don't need detail, just need to be called before overhead

#### **Process change**:

- 1- Immediately page "RLT/BLT" once radio call is taken
- 2- EDS notifies charge nurse & completes ED overhead page
- 3- Follow up page with relevant MOI/VS/Age specific information as time permits

### **Re-evaluation of Trauma Activations** *Before & After Process Change*

#### **15% Prenotification Page for Trauma Activations**

Mar-20-2019 22:15	Red Level, 24yo male drive hit by large truck, unresponsive, posturing noted Trauma Bay 2 Dr leischner		EMS
Mar-22-2019 16:35	BLT 32F MVC, Does not speak English, unable to obtain info Trauma Bay 1		EMS
Mar-22-2019 23:45	BLT 16M MVC > 60mph head lac unknown loc trauma bay 2		EMS
Mar-23-2019 03:45	RLT-Approx 30 vo M, GSW, unresponsive, 3 wounds	drop off	EMS
Mar-23-2019 13:01	BLT MVA 38M 45 mph, rear ended, +LOC, back pain with loss of sensation to bilateral legs		EMS
Mar-23-2019 13:05	BLT upgraded to RLT per physician	Upgraded	EMS
Mar-23-2019 16:18	RLT TB1 Approx 33yo male. Traumatic CPR n't motorcycle accident. EMS still on scene	ets will be paged out	EMS
Mar-23-2019 16:19	RLT TB1 33yo male traumatic cpr rt motorcycle accident.	ETA 2 min	EMS
Mar-23-2019 21:43	BLT TB135yo male head injury post assault.facial trauma. AMS. + etoh combative		EMS
Mar-23-2019 21:51	RLT TB1-Upgraded from BLT. 35yo male assault, facial trauma, AMS, + etoh, combative.		EMS
Mar-24-2019 18:04	RLT TB1GSW to the head unknown age, unresponsive, breathing spontaneously, poor Ws		EMS
Mar-26-2019 16:48	BLT 1 month oldfemale PTfallfrom 3t- +hematoma to head HR 150 TB1		EMS
Mar-26-2019 19:54	RLT 25M Head Trauma. Hit multiple times on head with baseball bat. GCS15 Trauma Bay 1		EMS
Mar-27-2019 04:34	BLT*80 woffall unknown amount of stairs'-Loc'blood thinners unknown'Head/neck pain "[English barrier]		EMS
Mar-27-2019 14:46	RLT TB1	is here now	EMS

## **97%** Prenotification Page for Trauma Activations

9/16/19 11:38 9/16/19 11:55	RLT RED 41 vo F GSW abdomen evisceration; bo 130-90; fept given	ETA 5
9/16/19 20:50 9/16/19 20:52	Blue Blue to TB 1 from triage: 72m fall from standing with altered mental status	Here now from triage
9/16/19 22:08 9/16/19 22:10	Red RED to TB1: 50f, 5-6 GSW to body, 3 to chest, here now	ETA 2
9/17/19 01:30 9/17/19 01:33	RED RED 19m gsw.back of head, gcs 15, vss, here now	ETA 3
9/17/19 15:12 9/17/19 15:15	Blue Blue for TB1: 28 yo MCC 50mph + helmet	ETA 3
9/17/19 22:17 9/17/19 22:24	BLT Blt 30m assault with bb gun	ETA 5
9/18/19 13:15 9/18/19 13:18	BLT 5 min ETA 43 F tboned 45mph, unrestrained, lac to head, stable vs	ETA 5
9/18/19 17:53 9/18/19 17:54	BLT BLT 41m motorcycle vs car, 25mph, back pain TB1, GCS 15	ETA 2
9/18/19 21:28 9/18/19 21:29	BLT BLT 26F rollover MVC 70+mph, TB 1	ETA 2
9/19/19 04:08 9/19/19 04:11	Red* RLT TB 1 35 yg m GSW to L upper thigh, GCS 15	ETA 5

### QTR 1 vs. QTR 2 Stats

Sending out RLT/BLT page <u>first</u> in the trauma activation process should help to increase % of surgeons present on arrival vs. in 15 mins.

Trauma Pt Count	409		Quarter 2	Trauma Pt Count	504
Red Level	35			Red Level	55
% TS in ED at arrive	34.3% (14)			% TS in ED at arrive	44% (24)
% TS in ED <= 15 min	97.1% (34)			% TS in ED <= 15 min	100% (55)
% TS in ED <= 30 min	97.1% (34)			% TS in ED <= 30 min	100% (55)
	Trauma Pt Count Red Level % TS in ED at arrive % TS in ED <= 15 min % TS in ED <= 30 min	Trauma Pt Count         409           Red Level         35           % TS in ED at arrive         34.3% (14)           % TS in ED <= 15 min	Trauma Pt Count       409         Red Level       35         % TS in ED at arrive       34.3% (14)         % TS in ED <= 15 min	Trauma Pt Count         409         Quarter 2           Red Level         35            % TS in ED at arrive         34.3% (14)            % TS in ED <= 15 min	Trauma Pt Count         409         Quarter 2         Trauma Pt Count           Red Level         35         Red Level           % TS in ED at arrive         34.3% (14)         % TS in ED at arrive           % TS in ED <= 15 min

## Covenant HealthCare

## **REBOA in Trauma Resuscitation**

Sujal Patel, MD, FACS

Trauma Medical Director

Covenant HealthCare



Extraordinary care for every generation.



## Best Aspect of current resuscitation room

## Location & Accessibility



## What does not work well?

- Need for ultrasound guided placement before
  REBOA catheter inserted
  Artline placement by ED in timely fashion
- Identifying early enough to place



## How would you propose changing it?

- -Work with residents and physicians
- -Training-arranged with rep.
- -Ongoing training with simulation and continues work with ED physicians and residents



What positive resuscitation change have you implemented, and how? REBOA

- -Development of guideline and order set
- -Ability to control bleeding with the catheter
- -Allowing time to get to OR for repair
- -PI measures to monitor compliance
- -REBOA Nursing Education for ECC & NTICU



## **Resources:**

- REBOA Tip Sheet
- REBOA protocol
- ER-REBOA Learning Module
- REBOA & Sheath Management Powerpoint
## Spectrum Health

#### Spectrum Health Trauma resuscitation: Introduction of REBOA as a resource

Alistair Chapman, MD Gaby Iskander, MD Amy Koestner, RN

#### Introduction

- 2017 stakeholder team investigated REBOA
- Literature review
- Trauma registry data
- Equipment
- Credentialing process

# The role of REBOA in the control of exsanguinating torso hemorrhage

Walter L. Biffl, MD, Charles J. Fox, MD, and Ernest E. Moore, MD, Denver, Colorado





- Technique Review
- Online PowerPoint Review
- Hands-on Demonstration
  - Repeat in 6 months



Certificate

#### **Inclusion Criteria**

- Greater than or equal to 18 years old
- Hypotensive (SBP < 90) and partial/non-responder to resuscitation
- Truncal hemorrhage (abdomen or pelvis)
- Penetrating lower extremity injury
- BOTTOM LINE: Reserved for sick patients in hemorrhagic shock, not responsive to traditional therapy.

#### Implementation

- Education plan and skill sessions for trauma surgeons
- Policy (all inclusive), detailed steps
- Simulation scenario for training
- PI process that includes structured review and evaluation process



#### Implementation

#### Department Area:

Emergency department; Surgical Services; Adult Critical Care; Interventional radiology

- 1. Purpose: To outline the steps for the care and management of the patient with resuscitative endovascular balloon occlusion of the aorta (REBOA). This is an alternative treatment to resuscitative ED thoracotomy with aortic clamping. REBOA minimizes hemorrhage by supporting proximal aortic pressure until definitive hemorrhage control and hemostasis are obtained.
- 2. Responsibility: Registered Nurse, Provider
- 3. Equipment Needed:
- Femoral Art Line Lawson #704904 needed prior to REBOA (Pull from Central Line Cart in Trauma Bay)
- 7 Fr Sheath Avanti Lawson #31147
- ER-REBOA<sup>™</sup> Catheter tote:
- (1) REBOA Lawson #500113
- (4) 10 ml Syringe Saline Flush Lawson #550066
- (1) Towel Sterile 4 pack Lawson #3011
- (1) Sheet Drape 40x58 Sterile Lawson 651273 • (1) Set Cath 8.5FR Emergency Infus Lawson 650901
- (2) Dead End Cap IV Lawson #650110
- (1) Marker ASPEN Skin Sterile w/ ruler Lawson #650868



#### **Spectrum Health ER-REBOA Review & Updates**

Alistair J Chapman, MD Gaby Iskander, MD June 17th, 2017

Spectrum Health Trauma Program Michigan State University College of Human Medicine Grand Rapids, MI

SPECTRUM HEALTH





116

#### **REBOA PI Tool**

#### Components:

- Pre-arrival
- Work up
- Technical
- Post inflation
- Sheath removal
- Other post procedures
- Dispo

	SH BUTTERWORTH ADULT TRAL	IMA CRITIQUE WORKSHEET		
	RESUSCITATIVE ENDOVASCIII AR RALLOON OCCILISION of the AOPTA (REPOA)			
	Dt Name:	Arrival Data & Time:		
	Pt. Name: Patient /	Activation: 1 2		
	Age: Criteria	ior Level Met: V N		
	MRN: Trauma	Sumaan		
	TB#: 2 <sup>nd</sup> Trau	ma Surgeon:		
	REBOA SYSTEMATIC REVIEW			
1. Mechanism of Injury:				
	2. Pre Hospital Course:			
Pre hospital CPR: U Y IN Time from injury to index hospital (minutes):				
	3. Work-Up (Purpose: Establish inclusion & determination of z	one placement)		
	Chest X-Ray: Y N Time: Results:			
	Pelvis X-Ray/CT: V V N Time: Results:			
	FAST Exam: Y N Time: Results:			
	Initial BP:/ Automatic  Manual Initial HR:	Initial GCS:Initial Temp:*C		
	Blood Product: V N Total product prior to REBOA: F	RBC: U EFBinn RK: U TXA: Y N		
	Pt nemodynamic response:  Partial Responder  Non-Re	sponder Subsequent BP: @		
Pre Hospital Course:		Base Deficit +/-: Lactate and add		
	for an intermediate to date to an ited (astronomers).	Pahis Lower Extremities		
	from injury to index hospital (minutes):	Vac nabic binder utilized: V N		
. Work-Up (Purpose: Establish inclusion & detern	ination of zone placement)			
Chest X-Ray: 🗌 Y 🗌 N Time: Resul		ment:		
Pelvis X-Ray/CT: V V N Time: Resul				
Feivis A-Ray/CI. I I IN Time. Result	5.			
FAST Exam: 🗆 Y 🗆 N Time: Resul	5.			
Initial BP:/ Automatic 🗆 Manual 🗆 🛛 I	itial HR: Initial GCS: Initial Temp:°C			
Blood Product: V N Total product prior	REBOA: PRBC: U EEP: U Plt: U TXA· V N	nic response: 🗆 Y 👘 N		
Pt nemodynamic response: 🗆 Partial Responder	Non-Responder Subsequent BP: @/	Time:		
Initial labs: Hgb: mg/dL Hematocrit (%):	NR: pH Base Deficit +/-: Lactate:mg/dL			
Arterial Line placement time: Site: 🗆 F				
Suspected location of hemorrhage?  Chest	Abdomen 🗌 Pelvis 🗍 Lower Extremities			
Determination of zone placement: 7 1				
Determination of zone placement:  Zone 1		er removal: CT IR OR SICU		
Pre notification to IR/CT/OR of REBOA placemen	$\sqcup$ IR $\sqcup$ CT $\Box$ OR			
Additional IV/Line Access: C	ntral Line placement:	ultimately identified?  V		
Technical Aspects		┦└────────────────────────────		
Balloon inflation time:				
Distance of estheter incertion (em);		me sheath was in place:		
Distance of catheter insertion (cm):				
Inflation volume (cc):		was of hospitalization (shack all that can be		
1 <sup>st</sup> Post-Inflation BP: @ / Posi	ive hemodynamic response: 🗌 Y 🛛 🛛 N	Embolization [] location:		
1 <sup>st</sup> Post HR: Post GCS: Post Temp: °		sopressors required: Y N TXA: Y		
Badiologic confirmation of placement in Trauma		e/algorithm/policy? V N		
Post Inflation Course				

#### Lessons Learned

- Educational efforts were focused on Trauma Surgical team, ED physician and nurses.
- SICU & OR received education for post placement care
- Keep on track with 3-6 month education through simulation scenarios
- All REBOA cases on Peer Review agenda

# SPECTRUM HEALTH

## Beaumont Troy

# Beaumont Health - Troy

Dr. Peter Perakis, TMD Kayela Voss, TPM Erin Driscoll, MCR

#### Trauma Room Staffing

- Improvement of patient care during trauma activations since implementation of TeamSTEPPS
  - Assigned Team Member Roles and Responsibilities
  - Communication Techniques and Processes
  - Brief and Debrief





#### Teamwork Challenges

- Excess amount of people, clogging resus area and creating extra noise
- Undefined roles: multiple people doing the same thing, assumptions that certain tasks are being completed when they're not, no one knows what other people are doing





- Communication problems:
   pertinent information not
   getting to the people who
   need it
- Leadership conflict: is trauma or emergency in charge?

#### Why TeamSTEPPS?

- Developed by The Department of Defense, managed by AHRQ
- TeamSTEPPS was implemented in the Baghdad Combat Support Hospital (CHS), a fixed facility for a 13-month deployment (November 2007 to December 2008).
- The study reported significant decreases in the rates of communication-related errors, medication and transfusion errors, and needle stick incidents reported after implementation



MRTC (Medical Readiness Training Command) training at the Mayo Clinic in 2014





#### Brief

- Physician lead
- Team members present
- Assign roles
- Resources available





#### Our Biggest Improvement: Communication

- Clear, defined roles
- Time-out for EMS report
- Closed-loop communication (check-back)
- "Moment of Clarity"





#### Joint Commission: Root Causes for Sentinel Events



	Most frequently identified root causes for Sentinel		
	January 1-December 31, 2014 (2,378 total)		
	Human factors (ex: staff supervision issues)	547	
	Leadership (ex: organizational planning)	517	
	Communication (ex: with patients or administration)	489	
	Assessment (includes timing or scope of assessments)	392	
	Physical environment (ex: fire safety)	115	
	Information management (ex: medical records)	72	
•	Care planning (planning and/or interdisciplinary collaboration)	72	
	Health information technology-related (ex: incompatibility between devices)	59	
	Operative care (ex: blood use or patient monitoring)	58	
	Continuum of care (includes transfer and/or discharge of patient)	57	

#### Something New: Debrief

- Summary of key events
- What went well?
- Where are our opportunities for improvement?

• Planning





#### Summary

- Implementation of TeamSTEPPS at Beaumont Troy for trauma activations has:
  - Improved communication
  - Decreased potential for medical errors
  - Increased staff confidence
  - Created an environment of teamwork
  - Improved organization
  - Decreased staff stress during emergent situations
  - Improved patient care



#### References

- Agency for Healthcare Research and Quality. (2015, May 21). *TeamSTEPPS 2.0 Fundamentals*. Retrieved October 3, 2019, from https://www.ahrq.gov/teamstepps/instructor/fundamentals/index.html
- Deering, S., et al. (2011). On the Front Lines of Patient Safety: Implementation and Evaluation of Team Training in Iraq. *The Joint Commission Journal on Quality and Patient Safety*, *37*(8), 350. doi:10.1016/S1553-7250(11)37045-6
- Joint Commission Online. (2015, April 29). *Sentinel event statistics released for 2014.* Retrieved October 3, 2019, from https://www.jointcommission.org/assets/1/23/jconline\_April\_29\_15.pdf

## Henry Ford Hospital

Detroit

### Trauma Bay Resuscitation: What Works, What Doesn't

# Henry Ford Hospital

Nadia M. Obeid, MD – MTQIP Champion





### **Success Story**

- Male, level 1 trauma activation. Arrived by private vehicle
- GSW x18
- Exam: 36.4°C, HR 110, BP 86/56, RR 32. Diaphoretic & agitated. GCS 15. Intact pulses
- 2 large bore IVs, 2U PRBC
- Labs/ABG
- FAST- no pericardial effusion; CXR- no hemo/pneumothorax
- To OR





### **Success Story**

- Right IJ cordis, arterial line, & Foley placed intraop
- Injuries:
  - Left iliac wing fx, left tibia fx, left humerus fx
  - Diaphragm, L liver, anterior & posterior stomach, sigmoid colon, jejunal & transverse colon mesentery
- Emergent ex lap: primary repair diaphragm, stomach, & colon; SBR (discontinuity); repair mesocolon; hepatorraphy; abdomen packed, Abthera VAC
- Total 6 PRBC, 6 FFP, 1 pack platelets
- To SICU postop
- POD#2 return to OR for re-exploration, small bowel anastomosis, abdominal closure
- D/C home





### **Success Story**

- Short time in ER resusc room prior to OR
- Resuscitation with blood early
- Balanced hemostatic resuscitation
- Teamwork and effective communication





## **Positive Changes**

#### • Improved teamwork

- Cross-supervision & teaching for FAST, chest tubes, lines
- Communication between trauma chief & ER chief team leader
- Continuous education on standard resuscitation roles
- Debrief sessions
- Surgery & ER attendance at each other's M&M
- Mock drills, simulations
- Improved hemostatic resuscitation
- TEG implementation
- EMS outreach





## **Opportunities for Improvement**

- Additional mock resuscitation drills
- Interchangeable resuscitation roles between ER & Surgery
- Pre-hospital notification
- Combined lectures/grand rounds





### **Future Directions**

- Improved workspace for pre-hospital providers
- Develop drill/simulation curriculum
- Standardized transfusion triggers for TEG
- Map/revise trauma intake process





## McLaren Oakland

# Trauma Team Leader (TTL) Caps

Courtney Berry, TPM Megan Wright, MCR Dr. Jason Pasley, TMD



OAKLAND

#### The Problem



- Confusion on team lead, no Captain of the Ship!
- Nursing was hearing multiple orders
- Unsafe for patient

#### What we did;



#### Who is the TTL?

- Trauma Team Leader the Trauma Surgery Attending or ED Attending with serve this role.
- The Trauma Team Leader initiates the resuscitation and assumes responsibility for life saving procedures, delegating and assisting with procedures including surgical airway, emergent chest tube placement, and ED thoracotomy. The trauma team leader is responsible for most of the communication during the resuscitation.


#### Where are we now?



- TTL clearly identifiable
- Improved effective communication with team
- Orders, instructions, and roles are clear
- Overall improved process

## Sparrow Hospital

## Crowd Control in Trauma Resuscitation

Sparrow Hospital Benjamin Mosher MD Penny Stevens DNP, RN

## Christopher Stimson RN

Performance Improvement Nurse

#### Problem

- Too many staff members responding to Level 1 activations
- Staff complaints
  - Communication
  - Inability to access supplies
  - Difficulty assessing the patient

### **Contributing Factors**

- Number of staff who receive trauma pages
- Overhead paging
- Students/orientees
  - Nursing
  - Medical
  - EMS
  - PA/NP
  - Respiratory therapy
  - Radiology
  - Phlebotomy
- "P" Factor
  - Pregnant, penetrating trauma, pediatric

#### **Proposed Solution**



#### Identification of Appropriate Staff



### Stickers

- Staff without an orange lanyard/badge pull given a sticker
- Monitored by a Charge RN stationed at the door of the resuscitation room



### Survey

- Pre and Post implementation of Stickers/Lanyards
- N = 141 respondents pre-implementation
- N = 96 respondents post-implementation
- ED physicians and RNs, Trauma surgeons and APs

#### Results

- Staff perceived less noise (p = .009)
- Staff perceived more efficient communication (**p** = .005)
- Observation of number of people in the room decreased
  - not statistically significant
  - smaller range

Project is on-going

## St Joseph Mercy Oakland

#### HIGH RISK, LOW FREQUENCY: THE INJURED OB PATIENT

## MICHIGAN QUALITY IMPROVEMENT OCTOBER 8, 2019

- ALICIA KIENINGER, MD, FACS, TRAUMA MEDICAL DIRECTOR
  - MICHELE HUNT, BSN, RN, MTQIP CLINICAL REVIEWER

#### CASE REVIEW

- Female, pregnant, 25.2 wga, MVC
  - High speed single car vs pole, prolonged extrication, pregnancy identified after extrication
- Tier 2 activation- trauma attending home call
- Injuries:
  - Pelvic Fracture
  - Distal Radial fx right
- Patient initially hemodynamically stable, with normal FHT
  - Trauma attending notified of patient condition and additional work up
- Transported to CT scan with trauma team
- Fetal monitoring with signs of decelerations after return to resuscitation bay
- Trauma team reviewing CT scans
- Patient taken emergently to OB delivery room for C-section.

#### ALL THAT WAS RIGHT ABOUT CASE

- EMS pre-activation
- Multidisciplinary team present on arrival
- Appropriate Equipment

#### PERFORMANCE IMPROVEMENT/OFI

- COMMUNICATION
  - Tunnel vision
- SILOS OF CARE
  - OB/Trauma
- RESUSCITATION/SURGERY
  - Where is the patient best managed?
  - Who should be present?
- COLLABORATIVE LEARNING
  - M&M
  - SIMULATION LAB
- TEAM BUILDING ACROSS DISCIPLINES

### MAINTAINING GROWTH AND BEST PRACTICES

- Policy and Procedures
  - OB to be notified and will respond to all Alpha and Bravoexisting policy
  - Notification of trauma attending for any urgent c-section in a trauma patient
- Schedule one multidisciplinary OB simulation annually
- Include OB in educational review of Trauma OB cases
- Collaborate with ED and Critical Care/Trauma RN (CCTRN) education
- Present cases at appropriate educational events

#### OUTCOMES

- Transfer for orthopedic trauma care
- Strong collaboration with OB
- Shared learning between multidisciplinary team

#### FOUR MONTHS LATER

- MVC, four vehicle, High Speed
  - Female 36 wga,
    - unrestrained driver, 50-70 mph, air bags deployed, extricated from vehicle,
    - Tier 2 Trauma/OB activation; open ankle fracture
  - FHT decelerations in Trauma Bay
    - To main OR for c-section delivery due to possible placental abruption, trauma team immediately available
      - Baby with some respiratory difficult, transferred to NICU with CPAP



- Providers tend to focus on their area of expertise
- Communication between specialties is key
- High risk uncommon scenarios benefit from a collaborative approach BEFORE they occur
- Maintenance of skills and knowledge are key



# Comments - Do you utilize video recording of trauma resuscitations?

Тор

### Do you encounter crowd control problems during a highest level trauma resuscitation?



No

### Comments - Do you encounter crowd control problems during a highest level trauma resuscitation?

Тор

# Where is you CT scanner located relative to the trauma resuscitation room?

In ED or next to room/ED (<50 ft)

Down hall on same floor (50-100 ft)

Down hall on same floor (>100 ft)

On separate floor

# Comments - Where is you CT scanner located relative to the trauma resuscitation room?

Тор

#### Where are blood products located?

In the trauma resuscitation room In the ED In the Blood Bank Other

#### **Comments - Where are blood products located?**

Тор

#### Who restocks?

.

Тор

#### **Staff training?**

Тор

#### **Trauma room staffing?**

Тор

#### Road trips? Nursing staff, anesthesia.

Тор

#### Who is responsible for trauma team activation?

ED Physician

ED Nurse

Trauma Surgeon

Other

#### Comments - Who is responsible for trauma team activation?

Тор

# What percentage of time trauma team activated prior to patient arrival?



# Comments - What percentage of time trauma team activated prior to patient arrival?

Тор

#### Lunch

Back at 1:00p


Burn Decontamination: MTQIP Survey

Scott B. Davidson, MD, FACS Bronson Trauma Surgery Service 10/8/2019

### **Collaborative Process**

- First catch a bass (research idea)
- Home institution IRB approval
- Contact MTQIP: Judy Mikhail
- MTQIP Survey Policy



### **Collaborative Process**

- Complete Survey Request Form and submit with protocol
- Data Use Agreement (DUA): allows both entities to use/disclose data for research
- Survey sent to MTQIP membership (Qualtrics®)

#### M•TQIP

Survey Request Form

Submission Date

1. List names and emails of all survey request investigators:

Name	MTQIP	Investigator Role	Email Address
	Trauma Center		
		Principle	
		Investigator	
		Co-Investigator	

2. Briefly describe (one paragraph) your survey topic.

3. Place an X next to the statement that most closely reflects your survey intent.

To determine trauma center practices for information sharing purposes at with <b>no intent</b> to publish
To determine trauma center practices for research purposes with intent to publish

4. Place an X next to which contact list you wish to draw your sample from.

MTQIP Contact List
Specific MTQIP Meeting Participant List. Specify meeting date:

5. Place an X next to all subpopulations you wish to draw your sample of respondents

Trauma Surgeons
Orthopedic Surgeons
Neurosurgeons
Advanced Practitioners
Trauma Medical Directors (TMD)
Trauma Program Managers (TPM)
MTQIP Clinical Reviewers (MCR)
Trauma Registrars
Other (describe)

6. Return completed form to: Judy Mikhail PhD, Chair, Publications Committee: jmikhail@med.umich.edu

### **Burn Decontamination**

- Known risk of contamination to facility/personnel during mass casualty events
- Concern for secondary contamination of facility/personnel in non-mass casualty events
- Burn victims exposed to product of incomplete combustion
- Methamphetamine production/explosion, MVC gas/diesel exposure

### **Burn Decontamination**

• Challenged by colleagues

• Literature review: best practice, protocols

• Internal survey of nurses in ED, Trauma unit and WMAC

• MTQIP query Michigan Level I and II centers

### **MTQIP Survey Results**

• Completed: 32% TMDs, **50% (n=17) TPMs** 

• 69% decon burn patients

• Chem 65%, Flame 29%, Thermal 24%, Elec 12%

### **MTQIP Survey Results**

• Decon Protocol use: 69% yes

• Decon Protocol usage: provider discretion 55%

• Additional data points: products used, burn volumes, Level I or II, university vs community

### **Next Steps**

• Publish in a peer reviewed journal

• National survey

• Potential to develop/disseminate best practices in burn decontamination

### References

- 1. Patient Decontamination in a Mass Chemical Exposure Incident: National Planning Guidance for Communities. U.S. Department of Homeland Security and U.S. Department of Health and Human Services, December 2014.
- Briggs S. Advanced Disaster Medical Response Manual for Providers. Second Edition. Massachusetts General, International Trauma Disaster Institute, and Harvard Medical School. Boston, Massachusetts. Cine-Med;2013.
- 3. Larson TC, Orr MR, derHeide EA, et al. The Threat of Secondary Chemical Contamination of Emergency Departments and Personnel: An Uncommon, but Still Occurring Problem. *Disaster Med Public Health Prep.* 2016;10:199-202.
- 4. Sumi K, Tsuchiya Y. Toxic Gases and Vapours Produced at Fires. *Canadian Building Digest.* 1971;144:1-10.

### Thank You

- Mark Hemmila, MD
- Judy Mikhail, PhD, MBA, RN





INCREASING LOVENOX USE IN BMH TRAUMA PATIENTS: 2018 PI PROJECT FOR MTQIP

### October 8, 2019

Loretta Farrell, BSN, RN Oreste Romeo, MD, FACS Ruth Johnson MSN, RN





• We have no disclosures





# Reason For This Project

# Lovenox Administration Rates in Trauma Patients for (Target >50%)

Cohort 2 (Admit to Trauma Service), Exclude DOAs, Exclude Transfers Out, 01/01/2017 - 12/31/2018 Blue = BMH Green = All MTQIP Centers





- Met with TPM and TMD to review MTQIP data and targets
- Research Nurse performed literature search & sent information to providers
- Discussed with Trauma Team (Attending's, APP's, and Pharmacist's)
- Presented monthly at multi-disciplinary PI meetings





# Data Collection

#### **Real Time Data Collection:**

- □ January 2018
- Daily spreadsheets
  - $\hfill Included all patients admitted to trauma surgeons <math display="inline">\geq$  16 yrs. and with a LOS  $\geq$  48 hours
  - Demographics
  - □ Was Lovenox given in 48 hrs?
  - □ Was there a major bleed?
  - □ Was Anti XA drawn?
    - $\Box$  If yes, was it therapeutic (0.2-0.4)?
    - □ If no, was it adjusted?



Data Collection and Analysis





# Kept The Ball Rolling

- □ Noted small improvement first 2 months
- Issue addressed on every patient in daily multidisciplinary rounds
- Initiated white board in trauma department with current compliance rates- updated monthly by MCR
- □ Provided updates monthly at PI Meeting







# Ouch-There is a problem!

# April: Compliance week period Why?

for a two



Noted increase in locums, increase in fallouts over weekend

**Re-education done** 

White board revised to include weekly compliance rate, with colors and comments, triggered conversations





# Don't Give Up!!!

- Brought drilldown of patients with complications of VTE to PI group
- □ Anti XA Assay added to trauma order set (6/18)
- □ TMD met with IMHS and Ortho to discuss VTE prophylaxis in their patients
- Six month recap- only one month at <50%. Drilldown showed high number of ambulatory patients not given Lovenox
- □ New residents in July focused education





# Results – Lovenox given



Cohort 2 (Admit to Trauma Service), Exclude DOAs, Exclude Transfers Out, 01/01/2017 - 12/31/2018 Blue = BMH Green = All MTQIP Centers







Year	Compliance	VTE	PE incidence		
2017					
2018					
2019 Q1	57.5%	0.78%	0		

#### VTE includes DVT and PE







# 2019 Continued Efforts

							Other				
			Date/time of	Date/time		Lovenox	proph 48	Diagnosis	# of	Received	
Registry#	Name	CSN	admit	of proph	Туре	48 hrs?	hrs?		Patients	any proph	Comments
XXXXX	Doe, John	xxxx1	1/1/19 0200	1/2/19 0900	Lovenox	1	0	Rib fractures	1	1	
00000	Doe, Jane	xxxx2	1/1/19 0230	1/2/19 0900	Heparin	0	1	Skull fracture	1	1	
AAAAA	Doe, Junior	xxxx3	1/1/19 0215	1/4/19 0900	Lovenox	0	0	SDH	1	0	Active bleeding
						1	1		3	2	





# 2019 Continued Efforts





# Thank you! bronsonhealth.com



#### **Program Manager Updates**

Judy Mikhail, PhD



# Performance Index Reminder

### 2019 Performance Index Year End Process

- January 2020
  - 2019 scores calculated
  - Prelim results to centers
  - Questions & corrections
- February 2020
  - Administrator list updated
  - Final results to centers
  - Final results to BCBSM

# VBR Reminder

### VBR Physician Eligibility

- Twice a year
- Dec / June
- Confirm trauma center surgeons PO enrollment

# **CME** Reminder Todays Meeting



#### Office of Continuing Medical Education and Lifelong Learning

# **BCBSM Evaluations**



One Due Now

One Due Nov

### Annual BCBSM 4 Questions (q Oct Meeting)

#### October Meeting Evaluation – Sent Electronically After Meeting

(1=strongly disagree to 5=strongly agree)



- 1. I find value in MTQIP
- 2. Our hospital can only participate in MTQIP with \$ support from BCBSM
- 3. MTQIP's coordinating center (Mark/Jill/Judy) is a valued partner
- 4. BCBSM/BCN has been a reliable partner in MTQIP's quality efforts

### Biannual (q2-Yr) Indepth BCBSM Evaluation

- Disciplines
  - Surgeons
  - TPM, MCR, REG
- Sections/ # Questions
  - CQI Coordinating Center (5)
  - Collaborative Meetings (8)
  - Data Registry, Reports, Audits (11)
  - Support, Resources, Value (8)



### November 2019



#### **MTQIP** Data

Mark Hemmila, MD



#### Reports

- Changes to format
- Added
- Feedback to Jill or Mark
#### **#4 VTE Prophylaxis Initiated ≤ 48 hrs**

 Venous Thromboembolism (VTE) Prophylaxis Initiated Within 48 Hours of Arrival in Trauma Service Admits with > 2 Day Length of Stay (18 Mo's: 1/1/18-6/30/19) Metric #4 - VTE Prophylaxis Timeliness Cohort 2 - Admit to Trauma 1/1/18 - 6/30/19



1/1/18-5/31/19

% ≤ 48 Hr of Arrival

#### **#4 VTE Prophylaxis Initiated ≤ 48 hrs**

- Hospital Target  $\geq$  55% = 10 points
- CQI Target 80% of hospitals  $\geq$  55%
  - 30/34 hospitals (88%)
  - May 2014: 7 > 50%
  - Jan 2015: 31 > 50%



## **#5 VTE Prophylaxis with LMWH**

 Low Molecular Weight Heparin (LMWH) Venous Thromboembolism (VTE) Prophylaxis Use in Trauma Service Admits (18 Mo's: 1/1/18-6/30/19) Metric #5 - VTE Prophylaxis LMWH Type Cohort 2 - Admit to Trauma 1/1/18 - 6/30/19



1/1/18-5/31/19

Pg. 4



# For 2020 #4 and #5 Combined into One Measure

- Venous Thromboembolism (VTE) Prophylaxis Initiated Within 48 Hours of Arrival in Trauma Service Admits with > 2 Day Length of Stay
- <u>And</u>
- Low Molecular Weight Heparin (LMWH)
   Venous Thromboembolism (VTE) Prophylaxis
   Use in Trauma Service Admits
- Collaborative Mean = 50%

#### **#6 Red Blood Cell to Plasma Ratio**

 Red blood cell to plasma ratio (weighted mean points) of patients transfused ≥5 units in first 4 hours (18 Mo's: 1/1/18-6/30/19)

#### Metric #6 - RBC to FFP Ratio - Mean Cohort 1 - MTQIP AII 1/1/18 - 6/30/19



1/1/18-5/31/19

#### **#7 Serious Complications**

 Serious Complication Rate - Trauma Service Admits (3 years: 7/1/16-6/30/19)

# **Z-score**

- Measure of trend in outcome over time
- Hospital specific
  - Compared to yourself
- Standard deviation
- > 1 getting worse
- 1 to -1 flat
- < -1 getting better</li>

#### **#7** Serious Complication Rate (Z-score)

Metric #7 - Z-score - Serious Complication Rate Cohort 2 - Admit to Trauma 7/1/16 - 6/30/19



7/1/16-5/31/19



## **#8 Mortality**

 Mortality Rate - Trauma Service Admits (3 years: 7/1/16-6/30/19)

#### **#8 Mortality Rate (Z-score)**



7/1/16-5/31/19



# **#9 Open Fracture Antibiotic Usage**

- Type of antibiotic administered along with date and time for open fracture of femur or tibia
- Presence of acute <u>open</u> femur or tibia fracture based on AIS or ICD10 codes (See list)
- Cohort = Cohort 1 (All)
- Exclude direct admissions and transfer in
- No Signs of Life = Exclude DOAs
- Transfers Out = Include Transfers Out
- Time Period = 7/1/18 to 6/30/19

#### **#9 Open Fracture Antibiotic Usage**

- ACS-COT Orange Book VRC resources
  - Administration within 60 minutes
    - ACS OTA Ortho Update
    - ACS TQIP Best Practices Orthopedics
- Measure = % of patients with antibiotic type, date, time recorded and ≤ 120 minutes





7/1/18-5/31/19

Open Fracture - Time to Abx  $\leq$  60 m in Cohort 1 - MTQIP All 7/1/18 - 6/30/19



7/1/18-1/31/19

Pg. 8

# For 2020 #9 is a Collaborative Wide Measure

- All or nothing
- Target  $\geq 85\%$
- Current = 82%
- 475 patients
- They all count
- Feedback to centers list of patients



# **#10 Head CT Scan in ED on patient taking anticoagulation medication with TBI**

- Head CT date and time from procedures
- Presence of prehospital anticoagulation or antiplatelet use
- TBI (AIS Head, excluding NFS, scalp, neck, hypoxia)
- Cohort1, Blunt mechanism
- Exclude direct admissions and transfer in
- No Signs of Life = Exclude DOAs
- Transfers Out = Include Transfers Out
- Time Period = 7/1/18 to 6/30/19

# **#10 Head CT**

- Measure = % of patients with Head CT, date, and time
- Timing
- Treatment
  - 2018 Data collection initiated

Metric #10 - ED Head CT - Code, Date and Time Cohort 1 - MTQIP All, TBI on Anticoagulant 7/1/18 - 6/30/19



7/1/18-5/31/19

Pg. 10

#### 2020 Metric #10 - ED Head CT ≤ 120 min Cohort 1 - MTQIP AII, TBI on Anticoagulant (Excluding ASA) 7/1/18 - 6/30/19





7/1/18-5/31/19

#### VTE LMWH ≤ 48 hours Cohort - TBI



VTE LMWH ≤ 48 hours Cohort - Spine Injury



# **Participant Agreement Update**

#### Status

• All 34 centers complete

#### **ASPIRE Amendment**

- MTQIP complete
- ASPIRE pending

#### **MSQC > MACS Amendment**

- MTQIP complete
- MSQC complete

#### **Patient Reported Outcomes/App Update**





**App Built** 

IRB Application Approved

Procurement Next

# Value Based Reimbursement

2018 result > 2019 payments (3/19 to 2/20)

• Are you seeing change in BCBSM payment?

#### 2020 VBR

- Measurement 1/19 to 12/19
- Payment 3/20 to 2/21
- LMWH ≥ 50%
- VTE pro in 48 hrs  $\geq$  55%
- PRBC to FFP > 7.0 points

#### 2021 VBR

Select Measures

#### **Program Manager Update**

Jill Jakubus, PA-C



# **Objectives**

- Opportunity for improvement
- Polling definition review
- Solution implemented
- Examine the data
- Research in progress update





### **Failure to Rescue**

# Are we providing meaningful and actionable data?



## **Failure to Rescue**

Failure to Rescue =  $\frac{\# \Gamma}{\# G}$ 

= # Dead w/Comp # Complication

#### Grade 2

Decubitus Ulcer • DVT: Lower Extremity • DVT:
Upper Extremity • Enterocutaneous Fistula
Extremity • Compartment Syndrome • Pneumonia
• Pulmonary Embolism • Unplanned Return to OR

• Unplanned Admission to ICU

#### Grade 3

ARDS • Acute Kidney Injury • Cardiac Arrest with
CPR • Myocardial Infarction • Sepsis • Stroke/CVA
• Renal Insufficiency • Unplanned Intubation • C.
Difficile Colitis


### **Failure to Rescue**

**Failure to Rescue** =  $\frac{\# \text{ Dead w/Comp}}{\# \text{ Complication}}$ 

<u>Update</u> Exclude LOS < 1 day Exclude death in ED



Failure to Rescue Cohort 2 - Admit to Trauma



Trauma Center

May 2019 Report

Failure to Rescue Cohort 2 - Admit to Trauma



Trauma Center

Oct 2019 Report

#### Failure to Rescue Excluding Withdrawal of Care Cohort 2 - Admit to Trauma



Oct 2019 Report

### **Failure to Rescue - Update**

	9	10	26
<ul> <li>Cases previous</li> </ul>	12	52	18
<ul> <li>Cases now</li> </ul>	2	15	3
<ul> <li>Death location</li> </ul>			
• ICU	2	13	2
• OR		2	
• Floor			1

### **Failure to Rescue – Top 3 Drivers**

	9	10	26
• Grade 2			
<ul> <li>Extremity Compartment</li> </ul>	1		
Syndrome			
• Grade 3			
<ul> <li>Cardiac Arrest w/CPR</li> </ul>	2	12	3
<ul> <li>Unplanned Intubation</li> </ul>		6	2
• AKI		5	

Cohort 2 – Admit to Trauma, Excluding DOA, Excluding Withdrawal of Care, 3/1/17 – 5/31/19

# What high/low outliers would you like to see presented in the future?

Тор

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

### Summary

- Failure to rescue criteria now excludes patients with LOS < 1 day or died in ED</li>
- Withdrawal of care exclusion can be applied online or found in the meeting report



# **Research in Progress**

Center	PI	Торіс	Phase
Detroit Receiving	Oliphant	The accuracy of orthopaedic data in a trauma registry	Analysis
Henry Ford	Johnson	EMS vs. private car effect on outcomes	Analysis
Michigan Medicine	Wang	Injury prevention in vunerable populations	Analysis
Michigan Medicine	Jakubus	Data validation in benchmark reporting and modeling	Accepted presentation at EAST Jan 2020. Revisions pending J Trauma Acute Care Surg.
Michigan Medicine	Goulet	Resource, outcomes, and care variation in IHF	Methods
Providence Hospital	Lopez	TXA in trauma	Analysis
Providence Hospital, Spectrum Health, St. Joseph Mercy, Michigan Medicine	Iskander, Lopez, Jakubus, Wahl	Optimal timing head CT's for geriatric falls	Analysis
Spectrum Health	Chapman	Outcomes in operative fixation of rib fractures	Propensity analysis
St. Joseph Mercy	Hecht	VTE type for trauma patients	Presented AAST Sept 2019. Accepted publication J Trauma Acute Care Surg.
University of Minnesota	Tignanelli	Outcomes in geriatric trauma patients with solid organ injury	Analysis

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## Conclusion

- Evaluations
  - Fill out and turn in
- Questions?
- See you in February