



## ***Division of Public Health Services***

*Office of the Assistant Director*

*Public Health Preparedness Services*

*Bureau of Emergency Medical Services and Trauma System*

150 N. 18<sup>th</sup> Avenue, Suite 540  
Phoenix, Arizona 85007  
(602) 364-3150 / 1-800-200-8523  
(602) 364-3568 FAX

DOUGLAS A. DUCEY, GOVERNOR  
CORY NELSON, INTERIM DIRECTOR

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### **TRAUMA AND EMS PERFORMANCE IMPROVEMENT (TEPI)**

#### **STANDING COMMITTEE**

**Date:** March 19, 2015 - **Time:** 9:00 AM

**Location:** 150 N. 18<sup>th</sup> Ave., Conference Room 540A

**Conference Call:** 1-877-820-7831 - **Code:** 450908#

**iLinc URL:** <https://azdhsems.ilinc.com/join/xcphsxt>

*You must register prior to the meeting to join the web conference session.*

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#### **AGENDA**

- I. Call to Order – Chris Salvino, MD, Chair
- II. Roll Call – Jennifer Herbert (25 Members, 13 required for quorum)
- III. Chairman’s Report – Chris Salvino, MD, Chair
  - a. Attendance report (Attachment III.a.)
  - b. Welcome new member, Ralph Zane Kelley, MD
  - c. Vacancy: ACS Verified Level I Trauma Program Representative/PI Coordinator
- IV. Bureau Report – Rogelio Martinez, MPH
  - a. NEMSIS 3.0
  - b. AZ-PIERS 3.0 transition
  - c. Web registry trauma transition
  - d. Race and Ethnicity standardization (Attachment III.d.)
- V. Discussion and Action Items
  - a. Discuss, amend, and approve TEPI meeting minutes of November 20, 2014 (Attachment V.a.)
  - b. Discuss, amend, approve overtriage and undertriage document (Attachment V.b.)
  - c. Brainstorm ideas for EMS annual report – Anne Vossbrink
- VI. Progress Reports
  - a. EMS Registry Users Group (EMSRUG) - Robert Corbell

*Persons with disabilities may request reasonable accommodations such as a sign language interpreter, by contacting Donna Meyer, Administrative Assistant III, 602-364-3158; State TDD Number 1-800-367-8939; or Voice Relay Number 711. Request should be made as early as possible to allow time to arrange accommodations.*

*“Health and Wellness for all Arizonans”*

- b. Trauma Registry Users Group (TRUG) - Melissa Moyer
- c. Trauma Program Manager Workshops – Michelle Guadnola
- d. Registry Data In Action
  - i. AZ-PIERS - Anne Vossbrink
  - ii. ASTR - Mary Benkert
  - iii. Trauma Quarterly Report (Attachment VI.d.iii.) – Vatsal Chikani
  - iv. AZ-PIERS Quarterly Report (Attachment VI.d.iii.) – Val Gale

VI. Agenda Items for Next Meeting

VII. Call to the Public: A public body may make an open call to the public during a public meeting, subject to reasonable time, place and manner restrictions, to allow individuals to address the public body on any issue within the jurisdiction of the public body. At the conclusion of an open call to the public, individual members of the public body may respond to criticism made by those who have addressed the public body, may ask staff to review a matter, or may ask that a matter be put on a future agenda. Members of the public body shall not discuss or take legal action on matters raised during an open call to the public unless the matters are properly noticed for discussion and legal action. A.R.S. § 38-431.01 (G).

Members of the public body may present a brief summary of current events. Members of the public body shall not propose, discuss, deliberate, or take legal action on matters raised during a summary of current events unless the matters are properly noticed for discussion and legal action.

VIII. Summary of Current Events

- a. June 11-12, 2015: EMS Odyssey. Desert Willow Conference Center. Phoenix
- b. July 15-17, 2015: Western Pediatric Trauma Conference. Park City, Utah
- c. July 30-31, 2015: SW Regional Trauma Conference. J.W. Marriott Starr Pass Resort and Spa, Tucson
- d. November 2-4, 2015: National Pediatric Disaster Conference. Camelback Inn Resort and Spa, Scottsdale
- e. November 6-7, 2015: Pediatric Trauma Society Meeting. OMNI Resort & Spa Montelucia, Scottsdale
- f. November 12-13, 2015: Southwest Trauma and Acute care symposium (STACS). Talking Stick Resort, Scottsdale

IX. Next Meeting: July 16, 2015, 9:00 AM at 150 N. 18<sup>th</sup> Avenue, Room 215A & 215B

X. Adjournment

*Persons with disabilities may request reasonable accommodations such as a sign language interpreter, by contacting Donna Meyer, Administrative Assistant III, 602-364-3158; State TDD Number 1-800-367-8939; or Voice Relay Number 711. Request should be made as early as possible to allow time to arrange accommodations.*

*“Health and Wellness for all Arizonans”*

# Committee Attendance Report

Attachment III. a

## Trauma & EMS Performance Improvement Committee

		Present	Tele	Absent
Arvie Webster	ACS Verified Level I Trauma Program Re			
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bill Ashland	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Vice Chair/State Designated Level I Trau			
	5/24/2012	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brian Bowling	3/21/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chris Salvino	Air Ambulance Premier EMS Agency Qu			
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dale Woolridge	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Chair (STAB Liaison)			
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Danielle Stello	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Injury Researcher			
	5/24/2012	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Darlene Herlinger	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pre-hospital EMS Coordinator (NAEMS/			
	5/24/2012	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Eric Merrill	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Trauma & EMS Performance Improvement Committee

		Present	Tele	Absent
Eric Merrill	Ground Ambulance or First Responder P			
	7/18/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gail Bradley	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Medical Direction Commission (MDC) Li			
Garth Gemar	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	EMS Medical Director of a Premier EMS			
	5/24/2012	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Jill McAdoo	Ground Ambulance or First Responder P			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Josh Gaither	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	EMS Researcher (AEMRC)			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mary McDonald	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Pre-hospital EMS Coordinator (SAEMS/			
	5/24/2012	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/15/2012	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Melissa Moyer	7/18/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Trauma & EMS Performance Improvement Committee**

		Present	Tele	Absent
Melissa Moyer	Representative of the Trauma Registry			
	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Michelle Guadnola	State Designated Level I Trauma Center			
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pam Noland	State Designated Level IV Trauma Center			
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pamela Goslar	IPAC Representative			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Paul Dabrowski	Trauma Surgeon			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rebecca Haro	EMS Council Liaison			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Robert Corbell	EMS Registry Group Member			
	5/24/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/15/2012	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Trauma & EMS Performance Improvement Committee**

		Present	Tele	Absent
Robert Corbell	EMS Registry Group Member			
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Robert Djergaian	Rehabilitation Specialist			
	11/15/2012	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/18/2013	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/21/2013	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sue Kern	Pre-hospital EMS Coordinator (NAEMS/)			
	3/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Summer Magoteaux	Pediatric Representative (MD or RN)			
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Tiffany Strever	State Designated Level I Trauma Center			
	11/21/2013	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/17/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11/20/2014	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**TRAUMA AND EMS PERFORMANCE IMPROVEMENT (TEPI)  
STANDING COMMITTEE**

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**Date:** November 20, 2014 - **Time:** 9:00 A.M.

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**Meeting Minutes DRAFT**

- I. Call to Order – Chris Salvino, MD, Chair, called the meeting to order at 9:03 AM.
- II. Roll Call – 25 Members, 13 required for quorum. A quorum was present.

Members Present:

Arvie Webster*	Garth Gemar, MD*
Bill Ashland	Jill McAdoo
Brian Bowling	Josh Gaither, MD
Chris Salvino, MD	Mary McDonald
Dale Woolridge, MD	Melissa Moyer
Danielle Stello*	Michelle Guadnola
Darlene Herlinger*	Pam Noland*
Eric Merrill	Pamela Goslar*
Gail Bradley, MD	

Members Absent:

Robert Djergaian, MD
Sue Kern

\* indicates member participated telephonically

- III. Chairman's Report – Chris Salvino, MD
- a. Asked each member to review the Attendance report
  - b. Welcomed new member Gail Bradley, MD (MDC Liaison)
  - c. Vacancy - Level II or III Trauma Program Manager
- IV. Bureau Report – Rogelio Martinez, MPH
- a. ASTR transition to web registry
  - b. Annual STAB Report released and available on the web
- V. Discussion and Action Items
- a. Discuss, amend, approve TEPI meeting minutes of July 17, 2014. Rebecca Haro made the motion to approve the minutes, Michelle Guadnola seconded the motion. **Motion carries** and the minutes were approved as presented.
  - b. Form a workgroup to develop a strategy for obtaining real-time outcome data for use in EMS quality assurance – Rogelio Martinez, MPH. Pam Goslar, PhD made the motion to form the workgroup, seconded by Bill Ashland. **Motion carries.** Volunteer Co-Chairs: Rebecca Haro & Bill Ashland. Volunteer Members: Mary McDonald, Melissa Moyer, Jill McAdoo, Paul Dabrowski, MD, Summer Magoteaux, Pam Noland & Darlene Herlinger.
  - c. Form a workgroup to develop agency/vendor data quality reports for AZ-PIERS - Robert Corbell. Michelle Guadnola made the motion to form the workgroup, seconded by Tiffany Strever. **Motion carries.** Volunteer Co-Chairs: Robert Corbell & Paul Dabrowski, MD. Volunteer Members: Anne Vossbrink, Rebecca Haro, Michelle Guadnola, Tiffany Strever, Brian Bowling, Melissa Moyer.
  - d. Form a workgroup to develop Medical Direction performance improvement guidelines – Rogelio Martinez, MPH. Mary McDonald made the motion to form the workgroup, seconded by Rebecca Haro. **Motion carries.** Volunteer Co-Chairs: Gail Bradley, MD &

Garth Gemar, MD. Volunteer Members: Mary McDonald, Josh Gaither, MD, Summer Magoteaux, Franco Marin, MD, Jill McAdoo, Dale Woolridge, MD.

- VI. Reports were presented as follows:
  - a. Operational Excellence – Maureen Brophy
  - b. EMS Registry Users Group (EMSRUG) - Robert Corbell
  - c. Trauma Registry Users Group (TRUG) - Melissa Moyer
  - d. Trauma Program Manager Workshops – Michelle Guadnola
  - e. Registry Data In Action
    - i. AZ-PIERS - Anne Vossbrink
    - ii. ASTR Update - Mary Benkert
    - iii. Data Quality Report - Anne Vossbrink
  
- VI. Agenda Items for Next Meeting – Updates from the three new workgroups.
  
- VII. Call to the Public – No items were presented.
  
- VIII. Summary of Current Events
  - a. February 8-9, 2015: 2015 Pediatric Symposium. Hilton Village of Oak Creek, Sedona
  
- IX. Next Meeting: March 19, 2015, 9:00 AM at 150 N. 18<sup>th</sup> Avenue, Room 215A & 215B
  
- X. Meeting adjourned at 9:56 AM

Approved by: TEPI

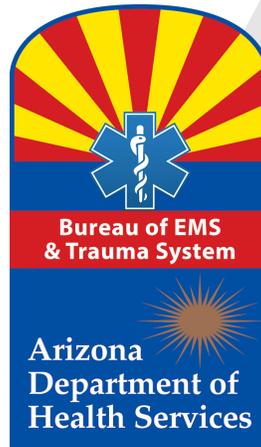
Date:

# VISITORS PLEASE SIGN IN

Trauma and EMS Performance Improvement (TEPI) - November 20, 2014 @ 9:00 A.M.

Name (PLEASE PRINT)	Organization & Position
1 Jensen Schell	Withmann Fire District FF/Paramedic
2 SCOTT KERUMAN	LIFE LINE APPRECIANCE
3 David <del>MARKER</del>	<del>RRHS / ASSISTANT</del>
4 DAVID SULLIVAN	RURAL/METRO GM
5 Brandon Leung	Air methods - Native Air / Life Net
6 Jennifer Smith	UAW C
7 Anne Getty	UAW
8 Tiffy Strever	UAW
9 <del>Barbara Bonlee</del>	<del>UAW</del>
10 Cindy Inskoop	Mavericks Fire
11 Renee Castro-Morris	Scottsdale Waikare / Scottsdale Fire
12 <del>Caiti Ackermann</del>	<del>JCC North Mountain</del>
13 Brian Bowling	Nature Air / Life Net / Air methods
14 Tracey Schlosser	Bene
15 Valdi Bennett	BGS MC - trauma
16 Louis Weber	BTMC
17 <del>Matthew Eckhoff</del>	<del>ADHS</del>
18	

**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**STATE LEVEL TRAUMA MEASURES  
UNDER/OVER TRIAGE  
ARIZONA STATE TRAUMA REGISTRY 2013  
HOSPITAL DISCHARGE DATABASE 2013**

**Prepared by:**

**Vatsal Chikani, MPH**

**Rogelio Martinez, MPH**

**Terry Mullins, MBA**

**Data and Quality Assurance Section**

**Special thanks to workgroup members: Laurie Wood, RN; Tracey Schlosser, RN; Nathan Windatt, RN, BScN; Shari Herrin, RN, MSN, MBA; Erin Keefe, RN, MSN; Rebecca Haro, NREMT-P; Jim Hayden, Leslie Garwood, Maria Martinez, RN; Mary McDonald, RN, BSN; Glenn Kasprzyk, Paul Dabrowski, MD.**

**Purpose:** The purpose of this report is to apply the State Trauma Advisory Board (STAB) workgroup's recommended undertriage and overtriage formulas to Arizona's traumatic injury.

**Background:** Following the May 29, 2014 STAB meeting, a workgroup was tasked with developing over and under triage formulas based on the trauma definition in Arizona (R9-25-1402. *Data Submission Requirements A [3]*).

**Methods:** The Arizona State Trauma Registry 2013 (ASTR) and the Hospital Discharge Database 2013 were queried to find cases with an "Emergency Department or Hospital Arrival Date" of January 1, 2013, to December 31, 2013.

Patients were classified by their Injury Severity Score (ISS) to determine a minor/moderate from a major trauma. An ISS represents the severity injuries sustained by a patient. Injuries with an ISS < 15 are minor to moderate.

**Definitions:**

- **Undertriage definition** = All patients with an ISS > 15 who were not transported to a Level I
- **Overtriage definition** = All patients transported to a Level I Trauma Center who:
  - Did not die,
  - Were not admitted to the intensive care unit or operating room,
  - Were not admitted to the hospital for more than 48 hours.

**Formulas:**

- **Undertriage:** All patients with an ISS > 15 not taken to a Level I Trauma Center
- **Overtriage:**  

$$\frac{\text{Patients who met the "overtriage definition" at a Level I Trauma Center}}{\text{Total number of patients at a Level I Trauma Center}}$$

Patients who did not have a trauma team activation and met the overtriage criteria were excluded from the classification.

**Targets:** Undertriage rate of < 5% and an overtriage rate between 25% - 35%<sup>1</sup>.

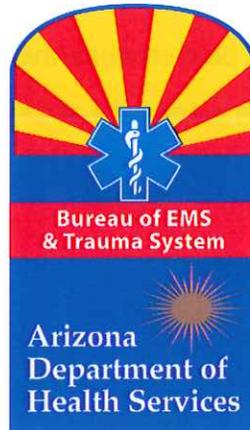
**Results:**

Undertriage	N	%
<b>Total patients with ISS &gt; 15</b>	<b>4,586</b>	<b>100%</b>
Level I (Appropriate triage)	3,948	86.0%
Level III (Undertriage)	30	0.6%
Level IV (Undertriage)	78	1.7%
Non-designated (Undertriage)	530	11.5%
<b>Total Undertriage</b>	<b>608</b>	<b>13.9%</b>

Overtriage	N	%
<b>Total patients at Level I Trauma Centers</b>	<b>21,068</b>	<b>100%</b>
<b>Over</b>	<b>8,598</b>	<b>40.81%</b>
<b>Appropriate</b>	<b>12,470</b>	<b>59.18%</b>

<sup>1</sup> American College of Surgeons. (2014). *Resources for Optimal Care of the Injured Patient*. Chicago, Ill; American College of Surgeons, Committee on Trauma.

**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**LEVEL I TRAUMA CENTERS  
PERFORMANCE IMPROVEMENT MEASURES  
ARIZONA STATE TRAUMA REGISTRY 2013  
HOSPITAL DISCHARGE DATABASE 2013**

**Prepared by:**

**Vatsal Chikani, MPH**

**Rogelio Martinez, MPH**

**Mary Benkert**

**Data and Quality Assurance Section**

**Report No. 14-4-L1**

## Purpose:

The purpose of this report is to provide Level I trauma centers with a baseline level of comparison on their performance measures in 2013. This report can be used to support Quality Assurance initiatives in their communities and their referring hospitals.

This report analyzes four trauma related performance measures:

1. Reduce Emergency Department (ED) dwell time at Level III/IV trauma centers before transfer to Level I trauma centers,
2. Reduce transfers after admission,
3. Reduce deaths outside of trauma centers,
4. Increase trauma billing efficiency.

## Methodology:

The [Arizona State Trauma Registry 2013](#) (ASTR) and the [Hospital Discharge Database 2013](#) (HDD) were queried for data on the four measures.

- 1) Patients with an ED disposition of "Transfer to acute care" were filtered. The final transfer destination was an Arizona Level I Center or an acute care facility in Nevada.

The ED Dwell time is the difference between two elements "ED/Hospital Arrival Date/Time" and "ED Exit Date/Time", or if unavailable, "Length of Stay".<sup>1</sup> **This measure used transfer data from Level III or Level IV trauma centers to your facility.**

- 2) The transfer after admission was calculated by first filtering patients who were admitted and then had a final discharge disposition as transfer. The final hospital discharge destination was an Arizona Level I trauma centers or a Nevada acute care facility.<sup>1</sup> **This measure used transfer data from Level III or Level IV trauma centers for your facility.**

- 3) Patients that die in a Non-trauma centers were found by querying trauma related injuries in the HDD. Deaths were limited to hospitals that were not designated trauma centers in 2013.<sup>2</sup>

- 4) The trauma billing efficiency score was calculated by comparing patients who had a trauma team activation and arrived by ambulance in ASTR. A hospital that meets this criteria would qualify for 068X revenue under the HDD. A billing efficiency score was calculated by comparing the numbers reported in HDD and ASTR.<sup>1,2</sup>

<sup>1</sup> Source: Arizona State Trauma Registry

<sup>2</sup> Source: Hospital Discharge Database

**Level I Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L1**

**Performance Measure 1: Reduce ED Dwell Time**

**Table 1: ED dwell time by ISS by categorical classification**

1st Performance Measure: ED dwell time (hrs)	Overall		By Injury Severity Score					
			Missing		ISS ≤15		ISS >15	
	N	%	N	%	N	%	N	%
<2 hours	243	17.4%	12	36.3%	193	17%	38	16.6%
≥2 hours	1,152	82.5%	21	63.6%	941	82.9%	190	83.3%
Total patients transferred	1,395	100%	33	100%	1,134	100%	228	100%

**Table 2: Time distribution of ED dwell time**

Median ED dwell time (hrs)	Count	25%	Median	75%	Max
Overall	1,362	2	3.4	5	21
<b>By Injury Severity Score</b>					
ISS ≤15	1,134	2	3.4	5	21
ISS >15	228	2	3.5	5	18

Traumatic injuries require that a system rapidly assess and intervene to prevent morbidity and mortality. One method for assessing performance on this measure is to evaluate the length of time patients are held in a level III or IV trauma center before they are transferred to a level I trauma center.

Most experts agree that patients whose injuries require a transport to a level I trauma center should be transferred within two hours of arrival at the level III or level IV trauma center. **This measure exclusively analyzed ‘transfer data’ from Level III/Level IV trauma centers to a Level I trauma center.**

While there are various factors that contribute to a transfer, a sending facility can develop interventions and best practices that can reduce the ED dwell time.

**Level I Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L1**

**Performance Measure 2: Reduce transfers after admission**

**Table 3: Transfers after admission by length of stay**

2nd Performance Measure: Transfer after admission	Total	Level III Trauma Centers	Level IV Trauma Centers	%
Total patients	31	16	15	100%
<b>LOS (Days)</b>				
< 1 day	9	5	4	29%
1	16	8	8	51.6%
2	3	1	2	9.6%
3	2	1	1	6.4%
4	1	1	0	3.2%

The goal of any trauma system is to get the right patient to the right place in the right amount of time.

Depending upon the severity of injury, some patients should be evaluated and admitted at a level III or level IV trauma centers. These facilities must have the resources and personnel necessary to address the needs of that patient.

**This measure used ‘patient transfer’ data from Level III/IV trauma centers for a Level I facility.**

Patients that are outside of a level III/IV trauma center’s capabilities should be stabilized by the staff while simultaneously arranging for transportation to a proper level of care. Patients that present to a level III/ IV trauma center should be adequately screened to ensure that the hospital is able to provide the right level of care.

**Level I Trauma Centers**  
**Data Source: Hospital Discharge database 2013**  
**Report No. 14-4-L1**

**Performance Measure 3: Reduce deaths outside of trauma center**

The Arizona State Trauma Advisory Board adopted the trauma triage guidelines developed by the Centers for Disease Control and Prevention. This evidence based tool recognizes seriously injured individuals who should receive treatment at a designated trauma center.

**Table 4: Mortality at non-trauma centers**

3rd Performance Measure: Mortality at Non-trauma centers	Died		Survived	
	N	%	N	%
Level I	642	2.8%	21,833	97.1%
Level IV	17	0.7%	2,354	99.2%
Level III	48	1.2%	3,784	98.7%
Non-trauma centers	178	1.5%	11,632	98.4%

**Table 5: Mortality at non-trauma centers by county of residence**

The area with the most mortality at Non-trauma centers in 2013 was the Southeastern part of the state. This was followed by the Northern, Central, and Western regions.

	N	%
<b>Region</b>		
Missing county	1	0.5%
Out of state county	9	5%
Northern	48	26.9%
Southeastern	87	48.8%
Central	23	12.9%
Western	10	5.6%

**Table 6: Age demographics of deaths outside trauma centers**

	N	%
Total Died	178	100%
<5	3	1.6%
5-8	1	0.5%
15-17	3	1.6%
18-24	14	7.8%
25-44	22	12.3%
45-64	135	75.8%
65+	1	0.5%

**Table 7: Injury demographics of deaths outside trauma centers**

Type of injury	N	%
Traumatic Brain Injury	50	28%
Other head, face, neck	17	9.5%
Vertebral column injury	10	5.6%
Torso	23	12.9%
Upper extremity	7	3.9%
Lower extremity	57	32%
Other & unspecified	1	0.5%
System wide & late effects	13	7.3%

**Table 8: Admission demographics of deaths outside trauma centers**

Source of admission	N	%
Non-Health Care Facility point of origin	166	93.2%
Clinic or Physician's Office	3	1.6%
Transfer from a Hospital (different facility)	6	3.3%
Transfer from another Health Care Facility	3	1.6%

**Level I Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Hospital Discharge database 2013**  
**Report No. 14-4-L1**

**Performance Measure 4: Increase billing efficiency**

**Table 9: Billing efficiency for level I trauma centers**

4th Performance Measure: Billing efficiency	ASTR - Trauma Team Activation and Arrived by Ambulance	HDD # 068X Selected	Trauma Billing Efficiency Score
Aggregate Level I	17,296	14,622	84.5%

Trauma team activations are vital resource that ensure a coordinated and capable response to injured patients presenting to a trauma center. This resource is an essential component of a trauma center and are costly to a hospital.

Financial viability ensures the sustainability of dedicated trauma care in communities. A commitment to clinical excellence must coincide with efficient billing.

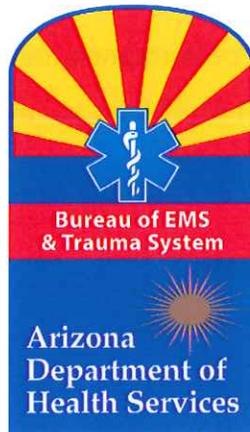
Data from two registries (HDD and ASTR) were used to develop the following tool to describe how the designated trauma centers are performing related to trauma billing efficiency.

**Trauma Billing Efficiency Score= HDD # 068X Selected / ASTR - Trauma Team Activation:**

A higher value denotes a better trauma billing efficiency for the state.



**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**LEVEL III TRAUMA CENTERS  
PERFORMANCE IMPROVEMENT MEASURES  
ARIZONA STATE TRAUMA REGISTRY 2013  
HOSPITAL DISCHARGE DATABASE 2013**

**Prepared by:**

**Vatsal Chikani, MPH**

**Rogelio Martinez, MPH**

**Mary Benkert**

**Data and Quality Assurance Section**

**Report No. 14-4-L3**

## Purpose:

The purpose of this report is to provide hospitals a baseline level of comparison on their performance in 2013. This report can be used to support Quality Assurance initiatives in their communities.

This report analyzes four trauma related performance measures:

1. Reduce Emergency Department (ED) dwell time at Level III trauma centers before transfer to Level I trauma centers,
2. Reduce transfers after admission,
3. Reduce deaths outside of trauma centers,
4. Increase trauma billing efficiency.

## Methodology:

The [Arizona State Trauma Registry 2013](#) (ASTR) and the [Hospital Discharge Database 2013](#) (HDD) were queried for data on the four measures.

- 1) Patients with an ED disposition of "Transfer to acute care" were filtered. The final transfer destination was an Arizona Level I Center or an acute care facility in Nevada.

The ED Dwell time is the difference between two elements "ED/Hospital Arrival Date/Time" and "ED Exit Date/Time", or if unable, "Length of Stay".<sup>1</sup> **This measure used transfer data from your facility to Level I trauma centers.**

- 2) The transfer after admission was calculated by first filtering patients who were admitted and then had a final discharge disposition as transfer. The final hospital discharge destination was an Arizona Level I trauma centers or a Nevada acute care facility.<sup>1</sup> **This measure used transfer data from your facility to Level I trauma centers.**

- 3) Patients that die in a Non-trauma centers were found by querying trauma related injuries in the HDD. Deaths were limited to hospitals that were not designated trauma centers in 2013.<sup>2</sup>

- 4) The trauma billing efficiency score was calculated by comparing patients who had a trauma team activation and arrived by ambulance in ASTR. A hospital that meets this criteria would qualify for 068X revenue under the HDD. A billing efficiency score was calculated by comparing the numbers reported in HDD and ASTR.<sup>1,2</sup>

<sup>1</sup> Source: Arizona State Trauma Registry

<sup>2</sup> Source: Hospital Discharge Database

**Level III Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L3**

**Performance Measure 1: Reduce ED Dwell Time**

**Table 1: ED dwell time by ISS by categorical classification**

1st Performance Measure: ED dwell time (hrs)	Overall		By Injury Severity Score					
			*Missing/NA/ND		ISS <=15		ISS >15	
	N	%	N	%	N	%	N	%
<2 hours	37	9.3%	2	100.0%	29	9.4%	6	7.1%
>=2 hours	357	90.6%	0	0	279	90.5%	78	92.8%
Total patients transferred	394	100.0%	2	100.0%	308	100.0%	84	100.0%

**Table 2: Time distribution of ED dwell time**

Median ED dwell time (hrs)	Count	25%	Median	75%	Max
Overall	392	3	3.8	5	21
<b>By Injury Severity Score</b>					
ISS <=15	308	3	3.8	5	21
ISS >15	84	3	4.1	5	18

Traumatic injuries require that a system rapidly assess and intervene to prevent morbidity and mortality. One method for assessing performance on this measure is to evaluate the length of time patients are held in a Level III trauma center before they are transferred to a Level I trauma center.

Most experts agree that patients whose injuries require a transport to a Level I trauma center should be transferred within two hours of arrival at the Level III trauma center. **This measure exclusively analyzed 'transfer data' from Level III trauma centers to a Level I trauma center.**

While there are various factors that contribute to a transfer, a sending facility can develop interventions and best practices that can reduce the ED dwell time.

**Level III Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L3**

**Performance Measure 2: Reduce transfers after admission**

**Table 3: Transfers after admission by Length Of Stay (LOS)**

2nd Performance Measure: Transfer after admission	N	%
Total patients	16	100.0%
<b>Los (Days)</b>		
<1 day	5	31.2%
1	8	50.0%
2	1	6.2%
3	1	6.2%
4	1	6.2%

The goal of any trauma system is to get the right patient to the right place in the right amount of time.

Depending upon the severity of injury, some patients should be evaluated and admitted at a Level III trauma centers. These facilities must have the resources and personnel necessary to address the needs of that patient.

**This measure used ‘patient transfer’ data from Level III trauma centers for a Level I trauma center.**

Patients that are outside of a Level III/IV trauma center’s capabilities should be stabilized by the staff while simultaneously arranging for transportation to a proper level of care. Patients that present to a Level III trauma center should be adequately screened to ensure that the hospital is able to provide the right level of care.

**Level III Trauma Centers**  
**Data Source: Hospital Discharge database 2013**  
**Report No. 14-4-L3**

**Performance Measure 3: Reduce deaths outside of trauma center**

The Arizona State Trauma Advisory Board adopted the trauma triage guidelines developed by the Centers for Disease Control and Prevention. This evidence based tool recognizes seriously injured individuals who should receive treatment at a designated trauma center.

**Table 4: Mortality at non-trauma centers**

3rd Performance Measure: Mortality at non-trauma centers	Died		Survived	
	N	%	N	%
Level I trauma centers	642	2.8%	21,833	97.1%
Level IV trauma centers	17	0.7%	2,354	99.2%
Level III trauma centers	48	1.2%	3,784	98.7%
Non-trauma centers	178	1.5%	11,632	98.4%

**Table 5: Mortality at non-trauma centers by county of residence**

	N	%
Region		
Missing county	1	0.5%
Out of state county	9	5%
Northern	48	26.9%
Southeastern	87	48.8%
Central	23	12.9%
Western	10	5.6%

**Table 6: Age demographics of deaths outside trauma centers**

	N	%
Total Died	178	100%
< 5	3	1.6%
5-8	1	0.5%
15-17	3	1.6%
18-24	14	7.8%
25-44	22	12.3%
45-64	135	75.8%
65+	1	0.5%

**Table 7: Injury demographics of deaths outside trauma centers**

Type of injury	N	%
Traumatic Brain Injury	50	28.0%
Other head, face, neck	17	9.5%
Vertebral column injury	10	5.6%
Torso	23	12.9%
Upper extremity	7	3.9%
Lower extremity	57	32.0%
Other & unspecified	1	0.5%
System wide & late effects	13	7.3%

**Table 8: Admission demographics of deaths outside trauma centers**

Source of admission	N	%
Non-Health Care Facility point of origin	166	93.2%
Clinic or Physician's Office	3	1.6%
Transfer from a Hospital (different facility)	6	3.3%
Transfer from another Health Care Facility	3	1.6%

**Level III Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Hospital Discharge database 2013**  
**Report No. 14-4-L3**

**Performance Measure 4: Increase billing efficiency**

**Table 9: Billing efficiency for level III trauma centers**

4th Performance Measure: Billing efficiency	ASTR - Trauma Team Activation and Arrived by Ambulance	HDD # 068X Selected	Trauma Billing Efficiency Score
Aggregate Level III	1,263	657	52.0%

Trauma team activations are vital resource that ensure a coordinated and capable response to injured patients presenting to a trauma center. This resource is an essential component of a trauma center and are costly to a hospital.

Financial viability ensures the sustainability of dedicated trauma care in communities. A commitment to clinical excellence must coincide with efficient billing.

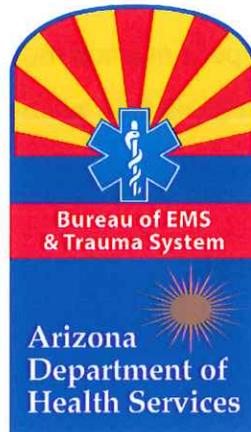
Data from two registries (HDD and ASTR) were used to develop the following tool to describe how the designated trauma centers are performing related to trauma billing efficiency.

**Trauma Billing Efficiency Score= HDD # 068X Selected / ASTR - Trauma Team Activation:**

A higher value denotes a better trauma billing efficiency for the state.



**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**LEVEL IV TRAUMA CENTERS  
PERFORMANCE IMPROVEMENT MEASURES  
ARIZONA STATE TRAUMA REGISTRY 2013  
HOSPITAL DISCHARGE DATABASE 2013**

**Prepared by:**

**Vatsal Chikani, MPH**

**Rogelio Martinez, MPH**

**Mary Benkert**

**Data and Quality Assurance Section**

**Report No. 14-4-L4**

## Purpose:

The purpose of this report is to provide hospitals a baseline level of comparison on their performance in 2013. This report can be used to support Quality Assurance initiatives in their communities.

This report analyzes four trauma related performance measures:

1. Reduce Emergency Department (ED) dwell time at Level IV trauma centers before transfer to Level I trauma centers,
2. Reduce transfers after admission,
3. Reduce deaths outside of trauma centers,
4. Increase trauma billing efficiency.

## Methodology:

The [Arizona State Trauma Registry 2013](#) (ASTR) and the [Hospital Discharge Database 2013](#) (HDD) were queried for data on the four measures.

- 1) Patients with an ED disposition of "Transfer to acute care" were filtered. The final transfer destination was an Arizona Level I trauma center or an acute care facility in Nevada.

The ED Dwell time is the difference between two elements "ED/Hospital Arrival Date/Time" and "ED Exit Date/Time", or if unavailable, "Length of Stay".<sup>1</sup> **This measure used transfer data from your facility to Level I trauma centers.**

- 2) The transfer after admission was calculated by first filtering patients who were admitted and then had a final discharge disposition as transfer. The final hospital discharge destination was an Arizona Level I trauma centers or a Nevada acute care facility.<sup>1</sup> **This measure used transfer data from your facility to Level I trauma centers.**

- 3) Patients that die in a non-trauma centers was found by querying trauma related injuries in the HDD. Deaths were limited to hospitals that were not designated trauma centers in 2013.<sup>2</sup>

- 4) The trauma billing efficiency score was calculated by comparing patients who had a trauma team activation and arrived by ambulance in ASTR. A hospital that meets this criteria would qualify for 068X revenue under the HDD. A billing efficiency score was calculated by comparing the numbers reported in HDD and ASTR.<sup>1,2</sup>

<sup>1</sup> Source: Arizona State Trauma Registry

<sup>2</sup> Source: Hospital Discharge Database

**Level IV Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L4**

**Performance Measure 1: Reduce ED Dwell Time**

**Table 1: ED dwell time by ISS by categorical classification**

1st Performance Measure: ED dwell time (hrs)	Overall		By Injury Severity Score					
			Missing		ISS ≤15		ISS > 15	
	N	%	N	%	N	%	N	%
< 2 hours	202	20.7%	10	32.2%	160	19.9%	32	22.8%
≥ 2 hours	772	79.2%	21	67.7%	643	80%	108	77.1%
Total patients transferred	974	100%	31	100%	803	100%	140	100%

**Table 2: Time distribution of ED dwell time**

Median ED dwell time (hrs)	Count	25%	Median	75%	Max
Overall	943	2	3.2	4	18
<b>By Injury Severity Score</b>					
ISS ≤15	803	2	3.3	5	18
ISS >15	140	2	3.1	4	10

Traumatic injuries require that a system rapidly assess and intervene to prevent morbidity and mortality. One method for assessing performance on this measure is to evaluate the length of time patients are held in a Level IV trauma center before they are transferred to a Level I trauma center.

Most experts agree that patients whose injuries require a transport to a Level I trauma center should be transferred within two hours of arrival at the Level IV trauma center. **This measure exclusively analyzed 'transfer data' from Level IV trauma centers to a Level I trauma center.**

While there are various factors that contribute to a transfer, a sending facility can develop interventions and best practices that can reduce the ED dwell time.

**Level IV Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Report No. 14-4-L4**

**Performance Measure 2: Reduce transfers after admission**

**Table 3: Transfers after admission by Length Of Stay (LOS)**

2nd Performance Measure: Transfer after admission	N	%
Total patients	15	100%
<b>LOS (Days)</b>		
< 1 day	4	26.6%
1	8	53.3%
2	2	13.3%
3	1	6.6%

The goal of any trauma system is to get the right patient to the right place in the right amount of time. A transfer after admission may reveal improper admissions at Level III or IV trauma center. Hospitals should explore these individual records to find if these were appropriate or if optimization of services can occur.

Depending upon the severity of injury, some patients should be evaluated and admitted at a Level III or Level IV trauma centers. These facilities must have the resources and personnel necessary to address the needs of that patient.

Patients that are outside of a Level III/IV trauma center's capabilities should be stabilized by the staff while simultaneously arranging for transportation to a proper level of care. Patients that present to a Level III/ IV trauma center should be adequately screened prior to admission to ensure that the hospital is able to provide the right level of care.

**Level IV Trauma Centers**  
**Data Source: Hospital Discharge database 2013**  
**Report No. 14-4-L4**

**Performance Measure 3: Reduce deaths outside of trauma center**

The Arizona State Trauma Advisory Board adopted the trauma triage guidelines developed by the Centers for Disease Control and Prevention. This evidence based tool recognizes seriously injured individuals who should receive treatment at a designated trauma center. Trauma centers should work with their communities to ensure severely injured patients receive services at the appropriate facility.

**Table 4: Mortality at non-trauma centers**

3rd Performance Measure: Mortality at non-trauma centers	Died		Survived	
	N	%	N	%
Level I trauma center	642	2.8%	21,833	97.1%
Level IV trauma center	17	0.7%	2,354	99.2%
Level III trauma center	48	1.2%	3,784	98.7%
Non-trauma centers	178	1.5%	11,632	98.4%

**Table 5: Mortality at non-trauma centers by county of residence**

Region	N	%
Missing county	1	0.5%
Out of state county	9	5%
Northern	48	26.9%
Southeastern	87	48.8%
Central	23	12.9%
Western	10	5.6%

**Table 6: Age demographics of deaths outside trauma centers**

	N	%
Total Died	178	100%
<5	3	1.6%
5-8	1	0.5%
15-17	3	1.6%
18-24	14	7.8%
25-44	22	12.3%
45-64	135	75.8%
65+	1	0.5%

**Table 7: Injury demographics of deaths outside trauma centers**

Type of injury	N	%
Traumatic Brain Injury	50	28.0%
Other head, face, neck	17	9.5%
Vertebral column injury	10	5.6%
Torso	23	12.9%
Upper extremity	7	3.9%
Lower extremity	57	32.0%
Other & unspecified	1	0.5%
System wide & late effects	13	7.3%

**Table 8: Admission demographics of deaths outside trauma centers**

Source of admission	N	%
Non-Health Care Facility point of origin	166	93.2%
Clinic or Physician's Office	3	1.6%
Transfer from a Hospital (different facility)	6	3.3%
Transfer from another Health Care Facility	3	1.6%

**Level IV Trauma Centers**  
**Data Source: Arizona State Trauma Registry 2013**  
**Hospital Discharge database 2013**  
**Report No. 14-4-L4**

**Performance Measure 4: Increase billing efficiency**

**Table 9: Billing efficiency for level IV trauma centers**

4th Performance Measure: Billing efficiency	ASTR - Trauma Team Activation and Arrived by Ambulance	HDD # 068X Selected	Trauma Billing Efficiency Score
Aggregate Level IV	1,601	439	27.4%

Trauma team activations are vital resource that ensure a coordinated and capable response to injured patients presenting to a trauma center. This resource is an essential component of a trauma center and are costly to a hospital.

Financial viability ensures the sustainability of dedicated trauma care in rural communities. A commitment to clinical excellence must coincide with efficient billing.

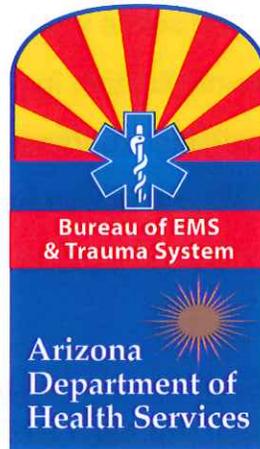
Data from two registries (HDD and ASTR) were used to develop the following tool to describe how the designated trauma centers are performing related to trauma billing efficiency.

**Trauma Billing Efficiency Score= HDD # 068X Selected / ASTR - Trauma Team Activation:**

A higher value denotes a better trauma billing efficiency for the state.



**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**PERFORMANCE IMPROVEMENT TOOLKIT:  
STEMI  
AZ-PIERS 2014 - Q3 & Q4**

**Prepared by:**

**Vatsal Chikani, MPH**

**Anne Vossbrink, MS**

**Rogelio Martinez, MPH**

**Data and Quality Assurance Section**

**Report No. 14-4-EMS-STEMI**

**Special thanks to the TEPI EMS workgroup: Paul Dabrowski, MD; Jill McAdoo, RN;  
Pam Goslar, PhD; Rebecca Haro; Garth Gemar, MD; Terry Mullins, MBA;  
Bentley Bobrow, MD, FACEP**

## Purpose:

The purpose of this report is to provide agencies with a level of comparison on their performance in Quarters 1 and 2 of 2014 in confirmed ST segment Elevation Myocardial Infarctions (STEMIs). This report can be used to support Quality Assurance initiatives in their communities.

This report analyzes four STEMI related performance measures:

1. Reduce the length of time from arrival on scene until a 12-lead ECG is acquired,
2. Increase the frequency of hospital pre-notification for STEMI patients,
3. Increase the frequency that STEMI patients are transported to a cardiac receiving/referral center,
4. Increase the frequency that STEMI patients receive prehospital aspirin and oxygen therapy,
5. Reduce the mortality and morbidity of STEMI patients.

## Methodology:

The [Arizona Prehospital Information & EMS Registry System \(AZ-PIERS\)](#) was analyzed to find records where a probable STEMI occurred. Probable STEMIs were identified by EMS reporting a probable STEMI (IT12\_5) or a patient that met the STEMI triage criteria (IT12\_1). The records in this analysis were pulled on October 16, 2014, and had:

1. A unit notified date range of January 1, 2014, to June 30, 2014, AND
2. *Stemi Triage Criteria* (IT12\_1) = Yes and/or *STEMI Probable* (IT 12\_5) = Yes

This report presents the EMS performance measures for the 484 STEMI cases as identified and reported by the participating AZ-PIERS agencies.

**STEMI registry:** The Save Hearts in Arizona Registry and Education (SHARE) STEMI registry was used to get STEMI patient outcomes. In the SHARE STEMI registry, a total of 466 records were identified as confirmed STEMI cases by cardiac centers (receiving/referral) and were treated or transported to the hospital by the AZ-PIERS agencies.

**Linkage:** An attempt to match AZ-PIERS records (484) with the SHARE STEMI registry cases (466) was made using LINK-PLUS software by CDC.

**Limitations:** If a patient received care for a STEMI involving more than one submitting EMS agency, that patient would be counted multiple times (once for each EMS agency encounter).

- State benchmarks are restricted to include those agencies that participated in the registry. If your agency is not currently participating, please visit us on our [AZ-PIERS homepage](#) for information on how to sign up.
- The *STEMI Triage Criteria* (IT12\_1) and *STEMI Probable* (IT12.5) are not standard NEMSIS 2 variables and may not be well collected by some submitting agencies.
- The STEMI SHARE registry contains confirmed cases from hospitals recognized as cardiac centers (receiving/referral). Any suspected STEMI patients taken to a non-cardiac center by AZ-PIERS submitting agencies will not be present in this report.

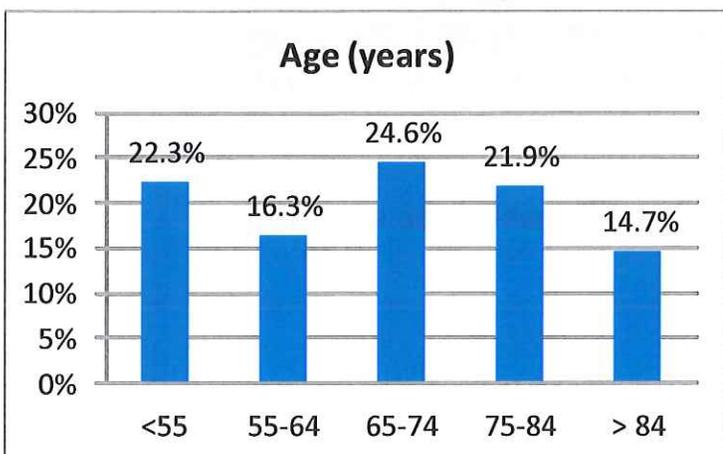
**Table 1: STEMI patient demographics (n=484)**

	N	%
<b>Suspected STEMI cases</b>	<b>484</b>	<b>100%</b>
<b>Age (years)</b>		
Missing	1	0.2%
< 55	108	22.31%
55-64	79	16.32%
65-74	119	24.58%
75-84	106	21.9%
> 84	71	14.66%
<b>Gender</b>		
Missing	14	2.89%
Female	182	37.6%
Male	288	59.5%
<b>Race/ethnicity</b>		
Missing	327	67.56%
American Indian or Alaska Native	22	4.54%
Black or African American	3	0.61%
Native Hawaiian or Other Pacific Islander	3	0.61%
Other Race	6	1.23%
White	123	25.41%
<b>EMS Discharge Status</b>		
Treated and transferred	118	24.38%
Treated and transported	366	75.61%

A total of 484 STEMI patients were identified from the AZPIERS database for quarter 1 and 2 of 2014. In 68% of the cases, the patient Race (E06\_12) variable was missing. Of those cases in which race was documented, the majority of STEMI patients were white.

Over two-thirds of all STEMI patients were male. The median age of STEMI patients was 67 years. Additionally, 35% were older than 74 and 22% were younger than 55.

**Graph 1: Distribution of ages for STEMI patients (n=484)**



The highest volume of STEMI patients occurred in 65-74 year olds, followed by 75-84, 55-64, under 55, and > 84.

## Performance Measure 1: Reduce the length of time from arrival on scene to a 12-lead ECG acquisition

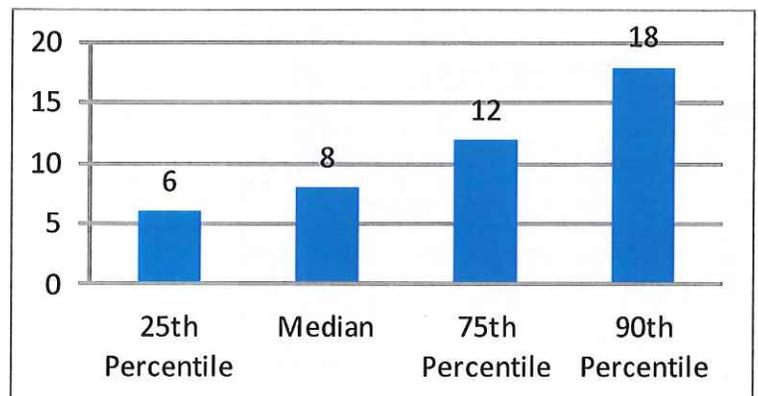
**Table 2: Patient contact to 12-lead time (n=484), (5 minute benchmark)**

	N	%
Not documented	160	33.05%
≤ 5 minutes	72	14.87%
> 5 minutes	252	52.06%

Of the 484 STEMIs in AZ-PIERS, a large portion of cases (33%) failed to document an ECG acquisition. Documentation of an ECG occurs through the *Procedure* variable (E19\_03).

**Graph 2: Patient contact to 12-lead time (minutes) (n=324)**

The median time from the patient contact to 12-lead ECG acquisition was 8 minutes. In 90% of cases, a 12-lead ECG was performed within 18 minutes after arriving on scene. A 12-lead ECG time was missing in 160 records, through the *Procedure* variable (E19\_03).



**Table 3: Patient contact to 12-lead time (minutes) (n=324)**

Total	Missing	25th Percentile	Median	75th Percentile	90th Percentile	Min	Max
324	160	6	8.0	12	18	0	185

A large portion of records (49%) had missing times and were unable to be calculated.

## Performance Measure 2: Increase the frequency of hospital pre-notification for a STEMI patient

**Table 4: Time to transmit 12-lead ECG (minutes) (n=484)**

Total	Missing	25th	Median	75th	90th	Min	Max
484	416	2	4.0	9	14	0	83

\*Of the 484 STEMIs only 68 ePCRs recorded a transmission time to the hospital

The 12-lead ECG transmission time was missing in 86% of records. AZ-PIERS collects this variable through the data elements *Receiving Hospital Contacted Date/Time* (IT5\_71) or 12-Lead ECG transmitted time. In the 68 prehospital records, the 12-lead ECG had a median transmission time of 4 minutes.

The 12-lead transmission variable is an optional variable in the current version of AZ-PIERS. This will move to a mandatory field for the next version.

**Table 5: Patient contact to scene departure (minutes) (n=484)**

Total	Missing	25th Percentile	Median	75th Percentile	90th Percentile	Min	Max
484	36	12	16	20	25	0	177

The median time for recognition and treatment of a STEMI in the field was 16 minutes. The overall system recommendation from first medical contact to Percutaneous Coronary Intervention (PCI) is 90 minutes.

**Table 6: Patient contact to scene departure (30 minute benchmark)**

	N	%
<i>Not documented</i>	36	7.43%
<i>≤ 30 minutes</i>	427	88.22%
<i>&gt; 30 minutes</i>	21	4.33%

**Table 7: Patient contact to scene departure (20 minute benchmark)**

	N	%
<i>Not documented</i>	36	7.43%
<i>≤ 20 minutes</i>	355	73.34%
<i>&gt;20 minutes</i>	93	19.21%

### Performance Measure 3: Increase the frequency that STEMI patients are transported to a cardiac receiving/referral center

Table 8: Hospital destination for STEMI patients as reported by AZ-PIERS (n=484)

Hospital destination	N	%
Missing	8	1.65%
Non-cardiac center (receiving/referral )	225	46.48%
Cardiac center (receiving/referral)	251	51.85%

Only 51% of patients were transported to a cardiac receiving or referral center. Suspected STEMI patients who went to a non-cardiac center will be missing outcomes.

A complete list can be found of cardiac centers can be found at:

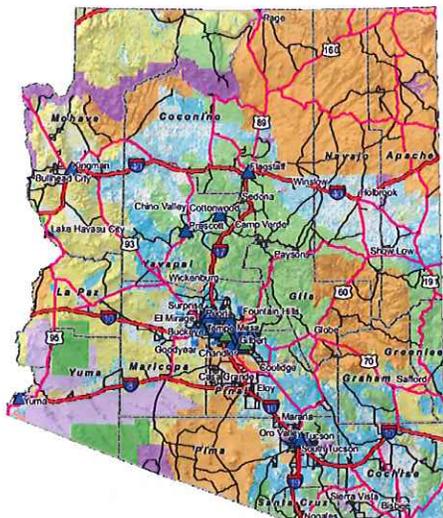
Cardiac Receiving Centers:

<http://www.azdhs.gov/azshare/documents/cardiac-receiving-centers.pdf>

Cardiac Referral Center:

<http://www.azdhs.gov/azshare/documents/cardiac-referral-centers.pdf>

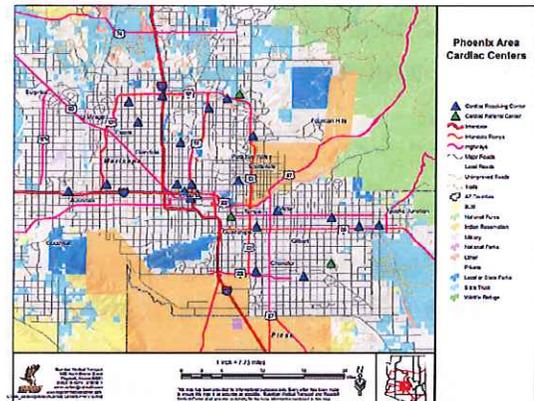
Map 1: Arizona cardiac receiving/referral centers



Arizona Cardiac Centers

- Cardiac Receiving Center
- Cardiac Referral Center
- AZ Interstates
- AZ Major Roads
- AZ Minor Roads
- AZ Counties
- BLM
- National Forest
- Indian Reservation
- Military
- National Parks
- Other
- Local or State Parks
- State Trust
- Wildlife Refuge

Map 2: Phoenix cardiac receiving/referral centers

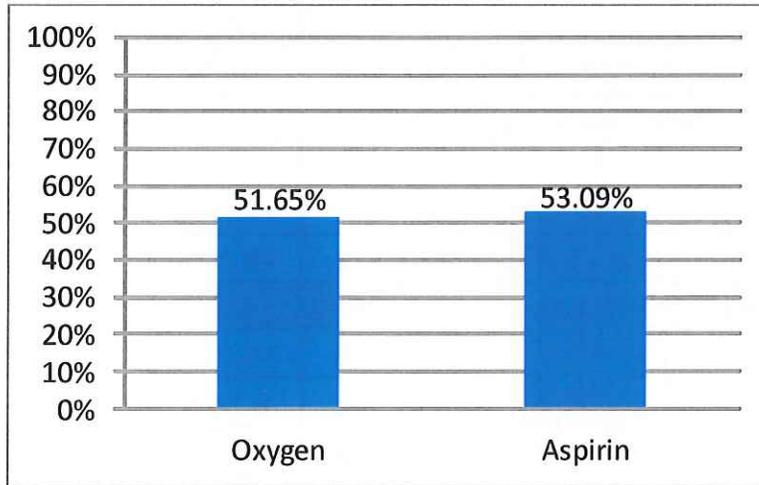


Phoenix Area Cardiac Centers

- Cardiac Receiving Center
- Cardiac Referral Center
- AZ Interstates
- AZ Major Roads
- AZ Minor Roads
- AZ Counties
- BLM
- National Forest
- Indian Reservation
- Military
- National Parks
- Other
- Local or State Parks
- State Trust
- Wildlife Refuge

**Performance Measure 4: Increase the frequency that STEMI patients receive prehospital aspirin and oxygen**

**Graph 4: Suspected STEMI patients who received oxygen and aspirin (n=484)**



**Table 9: STEMI patients who received oxygen and aspirin (n=484)**

	N	%
<b>Oxygen</b>		
Yes	250	51.65%
No	234	48.34%
<b>Aspirin</b>		
Yes	257	53.09%
No	227	46.9%

There are three possible reasons for reporting a “No/Not Documented”:

- The ePCR vendor failed to properly map the medication code - Aspirin (81) or Oxygen (910/9396/9397/9398) to “Medication Given” (E18\_03),
- The provider did not document they provided aspirin or oxygen,
- The provider did not provide aspirin or oxygen.

## Performance Measure 5: Reduce the mortality and morbidity of STEMI patients

**Table 10: Confirmed STEMI cases (n=466)**

	N	%
<b>Total STEMI reported by STEMI registry</b>	<b>466</b>	<b>100%</b>
<b>12-lead ECG performed</b>		
<b>Missing</b>	<b>37</b>	<b>7.93%</b>
<b>No</b>	<b>57</b>	<b>12.23%</b>
<b>Yes</b>	<b>372</b>	<b>79.82%</b>
<b>EMS identified STEMI correctly</b>		
<b>Missing</b>	<b>118</b>	<b>25.32%</b>
<b>No</b>	<b>39</b>	<b>8.36%</b>
<b>Yes</b>	<b>309</b>	<b>66.3%</b>
<b>Patient survived</b>		
<b>Missing</b>	<b>11</b>	<b>2.36%</b>
<b>No</b>	<b>53</b>	<b>11.37%</b>
<b>Yes</b>	<b>402</b>	<b>86.26%</b>

A total of 466 STEMI cases were reported by hospitals from participating AZPIERS agencies. In AZPIERS, a total of 484 patient records showed met the inclusion of a suspected STEMI. Of the 413 confirmed STEMI only 48 STEMI cases were matched with AZPIERS STEMI cases. Reasons for the non-matched cases may be due to:

- *Probable STEMI* (IT12\_5) was not reported and excluded the case from matching,
- Vendors/agencies defaulted *Probable STEMI* (IT12\_5) “Yes” by default,
- Values used for linking were mismatched due to data entry error.

**Table 11: Linking STEMI patients from STEMI registry to AZ-PIERS STEMI cases**

	N	%
<b>Total cases reported in AZPIERS</b>	<b>484</b>	<b>100%</b>
<b>Unmatched cases</b>	<b>438</b>	<b>90.49%</b>
<b>Matched cases</b>	<b>46</b>	<b>9.5%</b>