



Division of Public Health Services

Office of the Assistant Director

Public Health Preparedness Services

Bureau of Emergency Medical Services and Trauma System

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

DOUGLAS A. DUCEY, GOVERNOR
CARA M. CHRIST, MD, DIRECTOR

TRAUMA AND EMS PERFORMANCE IMPROVEMENT (TEPI)

STANDING COMMITTEE

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

Location: 150 N. 18th Ave., Conference Rooms 215 A&B

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.

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 members: Heather Miller & Jeffrey Schaff
 - c. 2015 in Review, Goals for 2016 – Chris Salvino, MD, Chair
- IV. Bureau Report – Rogelio Martinez, MPH
 - a. Web registry trauma transition
- V. Discussion and Action Items
 - a. Discuss, amend, and approve TEPI meeting minutes of July 16, 2015 (Attachment V.a.)
 - b. Discuss AZ-PIERS and Hospital Discharge Database linkage and potential research questions – Vatsal Chikani/Robyn Blust (Attachment V.b.)
 - c. Discuss and present AZ-PIERS Stroke Report (Attachment V.c.) – Anne Vossbrink
- VI. Progress Reports
 - a. EMS Data Quality and Data Completeness Workgroup - Robert Corbell and Paul Dabrowski, MD
 - b. EMS Registry Users Group (EMSRUG) - Robert Corbell
 - c. Trauma Registry Users Group (TRUG) - Melissa Moyer

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”

- i. Inter Rater Reliability – (Attachment V.d.)
- d. Trauma Program Manager Workshops – Michelle Guadnola
- e. Registry Data In Action
 - i. AZ-PIERS - Anne Vossbrink
 - ii. ASTR - Mary Benkert

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. AFDA – Laughlin, Nevada – January 12- 14, 2016 -
<http://www.azfiredistricts.org/conferences/>
- b. Arizona Trauma Association Presents: Game Day Sunday, - February 7, 2016
<http://www.aztracc.org/tackletrauma5k/>
- c. Trauma Conference International – July 14 – 15, 2016 – Hotel Coronado, Coronado, CA
<http://traumacon.org/>

IX. Next Meetings: March 17, 2016 @ 9:00 AM in Rooms 215A&B, 150 N. 18th Ave.
July 21, 2016 @ 9:00 AM in Rooms 215A&B, 150 N. 18th Ave.
November 17, 2016 @ 9:00 AM in Rooms 215A&B, 150 N. 18th Ave.

X. Adjourn

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

Trauma & EMS Performance Improvement Committee

		Present	Tele	Absent
Bill Ashland	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"/>
	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"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brian Bowling	Air Ambulance Premier EMS Agency Qu			
	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"/>
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chris Salvino	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"/>
	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"/>
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dale Woolridge	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"/>
	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/19/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Danielle Stello	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"/>
	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 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"/>
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Darlene Herlinger	Pre-hospital EMS Coordinator (SAEMS/			
	3/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Trauma & EMS Performance Improvement Committee

		Present	Tele	Absent
Darlene Herlinger	Pre-hospital EMS Coordinator (SAEMS/			
	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"/>
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Eric Merrill	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 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"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gail Bradley	Medical Direction Commission (MDC) Li			
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Garth Gemar	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"/>
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heather Miller	Western Arizona Council of Emergency			
	7/16/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeffrey Schaff	ACS Verified Level I Trauma Program M			
	7/16/2015	<input type="checkbox"/>	<input 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"/>
	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"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Josh Gaither	EMS Researcher (AEMRC)			

rauma & EMS Performance Improvement Committee

		Present	Tele	Absent
Josh Gaither	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"/>
	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"/>
3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Mary McDonald	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"/>
	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"/>
	11/20/2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Melissa Moyer	Representative of the Trauma Registry			
	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 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"/>
3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pam Noland	State Designated Level IV Trauma Cente			
	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"/>
	3/19/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pamela Goslar	IPAC Representative			

rauma & EMS Performance Improvement Committee

		Present	Tele	Absent
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"/>
3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input checked="" type="checkbox"/>	<input 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"/>
3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ralph Zane Kelley	State Designated Level II or III Trauma C			
	3/19/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>
3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<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"/>
	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"/>
3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7/16/2015	<input checked="" type="checkbox"/>	<input 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"/>

Trauma & EMS Performance Improvement Committee

Present Tele Absent

Robert Djergaian	Rehabilitation Specialist			
	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"/>
	3/19/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/16/2015	<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"/>
	3/19/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3/19/2015	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7/16/2015	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Bureau of Emergency Medical Services and Trauma System
2016 Statutory/Standing Committee Meetings**

Date	Time	Meeting	Conference Room
January 21, 2016	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor 150 Bldg
January 21, 2016	10:30 a.m.	Emergency Medical Services	215A & 215B – 2nd Floor 150 Bldg
January 21, 2016	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor 150 Bldg
March 17, 2016	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
March 17, 2016	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
March 17, 2016	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg
May 19, 2016	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor 150 Bldg
May 19, 2016	10:30 a.m.	Emergency Medical Services Council	215A & 215B – 2nd Floor 150 Bldg
May 19, 2016	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor 150 Bldg
July 21, 2016	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
July 21, 2016	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
July 21, 2016	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg
September 15, 2016	9:00 a.m.	State Trauma Advisory Board	215A & 215B – 2nd Floor 150 Bldg
September 15, 2016	10:30 a.m.	Emergency Medical Services Council	215A & 215B – 2nd Floor 150 Bldg
September 15, 2016	12:00 p.m.	Medical Direction Commission	215A & 215B – 2nd Floor 150 Bldg
November 17, 2016	9:00 a.m.	Trauma and EMS Performance Improvement (TEPI)	215A & 215B – 2nd Floor 150 Bldg
November 17, 2016	10:30 a.m.	Education Committee	215A & 215B – 2nd Floor 150 Bldg
November 17, 2016	12:00 p.m.	Protocols, Medications and Devices Committee	215A & 215B – 2nd Floor 150 Bldg

DISCLAIMER: “Meeting schedule subject to change upon the request of the Governor’s Office or the Office of the Director. Should this occur, the Bureau will make all reasonable efforts to contact the affected members as soon as feasible.”

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

Date: July 16, 2015 Time: 9:00 A.M.

Meeting Minutes Draft

- I. Call to Order – Bill Ashland, Vice 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:

Bill Ashland	Jill McAdoo
Brian Bowling*	Josh Gaither, MD*
Chris Salvino, MD*	Mary McDonald
Dale Woolridge, MD*	Michelle Guadnola
Danielle Stello*	Pam Noland
Darlene Herlinger*	Pamela Goslar
Eric Merrill	Paul Dabrowski, MD
Gail Bradley, MD	Ralph Zane Kelly, MD*
Garth Gemar, MD*	Rebecca Haro
	Robert Corbell

Members Absent:

Melissa Moyer
Robert Djergaian, MD
Sue Kern
Summer Magoteaux
Tiffany Strever

* indicates member participated telephonically

- III. Chairman’s Report – Bill Ashland, RN, Vice Chair
 - a. Attendance report
 - b. Vacancy: ACS Verified Level I Trauma Program Representative/PI Coordinator
- IV. Bureau Report – Rogelio Martinez, MPH
 - a. Web registry trauma transition
 - b. AZ-PIERS version 3.0
- V. Discussion and Action Items
 - a. Discuss, amend, and approve TEPI meeting minutes of March 19, 2015. Pam Goslar made the motion to approve the minutes, Rebecca Haro seconded the motion. **Motion carries** and the minutes were approved as presented.
 - b. Discuss and approve the revised EMS Data Quality and Data Completeness Workgroup Project. Michelle Guadnola made the motion to approve the project, seconded by Pam Goslar. A discussion ensued and the **motion carries** with friendly amendments.
- VI. Progress Reports
 - a. EMS Registry Users Group (EMSRUG) - Robert Corbell
 - b. Trauma Registry Users Group (TRUG) – Rogelio Martinez, MPH
 - c. Trauma Program Manager Workshops – Rogelio Martinez, MPH

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”

- d. Registry Data In Action
 - i. AZ-PIERS - Anne Vossbrink
 - ii. ASTR - Mary Benkert

- VI. Agenda Items for Next Meeting: None presented

- VII. Call to the Public: David Harden, JD, announced that the Acute Traumatic Pain course is now online.

- VIII. Summary of Current Events
 - a. July 30-31, 2015: SW Regional Trauma Conference. J.W. Marriott Starr Pass Resort and Spa, Tucson
 - b. November 2-4, 2015: National Pediatric Disaster Conference. Camelback Inn Resort and Spa, Scottsdale
 - c. November 5 – 6, 2015: Emergency Pediatric Interdisciplinary Care (EPICC) Conference – Desert Diamond Casino, Tucson, AZ 85629
 - d. November 6-7, 2015: Pediatric Trauma Society Meeting. OMNI Resort & Spa Montelucia, Scottsdale
 - e. November 12-13, 2015: Southwest Trauma and Acute care symposium (STACS). Talking Stick Resort, Scottsdale

- IX. Next Meeting: November 19, 2015, 9:00 AM at 150 N. 18th Avenue, Room 215A & 215B

- X. Adjournment – 9:48 AM

Approved by TEPI
Date:

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”

VISITORS PLEASE SIGN IN

TEPI Committee - July 16, 2015 @ 9:00 am

Name (PLEASE PRINT)	Organization & Position
1 Sandy Nygaard	Barnet Stonwood Pajosa card
2 JEFF FARNS	TUBS R MISSA FOS & RESIDENCE
3 Dale Houghton	John Q Lincoln honor health
4 Sherny Nealey	Sun City Fire and Medical Dept.
5 CHRIS Thompson	YRM &
6 Franco Castro - Marin	Sea Hole FD Haver Col 1st
7 Gail Barkly	Pena, Sun City, Pena Fire & BSMC
8 Jim Braddock	Forest Fire Dept. Foursided
9 Mr Gmez	Chambers Fies HERNIMS
10 Daniel Didier	Abrams West Trauma Ops Director
11 DAVID HADDEN	ADNA BOARD
12	
13	
14	
15	
16	
17	



Outcomes Matter: Linking EMS Records to Hospital Diagnoses

Vatsal Chikani¹, MPH, Robyn Blust¹, MPH, Joe Graw, MBA², Anne Vossbrink¹, MS

¹ Arizona Department of Health Services ² Imagetrend?

Objective

To deterministically link the Arizona Prehospital Information & EMS Registry System (AZ-PIERS) to the Arizona Hospital Discharge Database (HDD) in order to obtain information on patient hospital outcomes.

Introduction

- EMS agencies receive limited information regarding patient outcomes from hospitals due to a lack of standardization, fear of legal implications, and other issues.
- Similar presentation of various health conditions (e.g. stroke and diabetic shock) leave EMS providers questioning whether they correctly assessed and treated their patients.
- This knowledge gap has restricted the evaluation of real world protocols, procedures and assessments; the implementation of benchmarks based on patient outcomes; and proper feedback to field personnel.

Table 1: Deterministic linkage steps and percent linked

Step	Linkage Criteria	n	%
	EMS 2014	290,902	
1	LN, FN, Sex, DOB, DOI	188,245	64.71%
2	LN, FN, Sex, SSN, DOI	1,721	0.59%
3	LN, FN, Sex, DOB or SSN, DOI +2 days	17,403	5.98%
4	LN, FN, Sex, Facility, DOI +2 days	4,552	1.56%
5	LN, FN, DOB or SSN, DOI +2 days	6,441	2.21%
6	LN, Soundex FN, Sex, DOB or SSN, DOI +2days	9,701	3.33%
7	LN, Soundex FN, Sex, Facility, DOI +2days	377	0.13%
8	LN, Soundex FN, DOB or SSN, DOI +2days	338	0.12%
9	Soundex LN, FN, Sex, DOB or SSN, DOI +2 days	7,388	2.54%
10	Soundex LN, FN, Sex, Facility, DOI +2 days	324	0.11%
11	Soundex LN, Soundex FN, Gender, DOB or SSN, DOI +2 days	658	0.23%
12	SSN, DOB, Sex, DOI +2 days	4,869	1.67%
13	LN, SSN/DOB, Sex, DOI and facility	5,452	1.87%
14	LN, FN, SSN/DOB, Gender, DOI + or - 2 days	2,701	0.93%
15	LN=FN, FN=LN, SSN/DOB, Gender, DOI + or - 2 days	1,033	0.36%
	Total cases linked	251,203	86.35%

Methods

Data were queried from AZ-PIERS and HDD for the year 2014. AZ-PIERS was restricted to 911 calls with a patient disposition of “treated and transferred,” or “treated and transported”. Patients transported to non-reporting facilities those transported outside of Arizona are missing.

A fifteen step deterministic approach was used to link AZ-PIERS to HDD using SAS 9.4 (SAS Institute, Cary, NC). Records were matched in progressively less restrictive steps using any combination of: last name (or soundex of last name), first name (or soundex of first name), date of birth, Social Security Number, gender, date of incident/date of admission and hospital ID (Table 1). Record pairs that did not meet the first set of match criteria were passed to the second set of match criteria for further comparison. To qualify as a match, a record pair had to meet all the criteria in any given step.

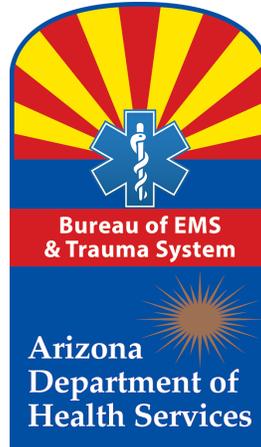
Results

In 2014, a total of 318,783 records were reported to AZ-PIERS. Of those, 290,902 qualified for linkage. These records were matched against the 2,953,519 discharge records reported to HDD for the year 2014. The first step, which involved exact matching on first name, last name, date of birth, gender and date of incident/date of admission, yielded a linkage of 64.6% (188,034). The successive fourteen steps yielded a further linkage of 21.7% for a total linkage of 86.3%.

Conclusions

- Using a stepwise deterministic approach we were able to successfully link a high percentage of EMS records to their respective outcomes in HDD.
- This is an important first step towards developing a standard methodology for health information linkage at the state level.
- Future linkage projects involving other registries or states may help validate the presented template.

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



**PERFORMANCE IMPROVEMENT TOOLKIT:
STROKE
AZ-PIERS 2014**

Prepared by:

Vatsal Chikani, MPH

Robyn Blust, MPH

Anne Vossbrink, MS

Rogelio Martinez, MPH

Data and Quality Assurance (DQA) Section

Report No. 15-4-EMS-STROKE

**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 data to assess and compare their stroke performance. This report can be used to support ongoing Quality Assurance initiatives.

This report analyzes three stroke performance measures:

1. Frequency of transports to a stroke center based upon EMS evaluation,
2. Documentation of symptom onset time,
3. Documentation of stroke patient assessment.

This analysis also reports outcomes for stroke patients in the state's EMS system.

Methodology:

From January 1, 2014, to December 31, 2014, we queried 318,783 records from the Arizona Prehospital Information & EMS Registry System (AZ-PIERS) and 2,953,519 records from the Arizona Hospital Discharge Database (HDD). AZ-PIERS was then restricted to the 290,902 records with a 911 call and a patient disposition of either treated and transferred, or treated and transported. These records were matched against the HDD records using a step-wise deterministic approach. A total of 251,202 (86.4%) AZ-PIERS records were successfully matched to HDD. Using the matched records, EMS suspected stroke and hospital confirmed stroke cases were identified:

EMS-Stroke cases: *Provider's Primary Impression* (E09_15) = "Stroke" or "TIA"

HOSP-Stroke cases: *Principal Diagnosis* = ICD-9 codes 430-434 and 437.3

The 4,632 hospital confirmed stroke cases were analyzed in order to evaluate the quality of EMS care for stroke patients in Arizona.

Limitations:

If a patient received stroke care from more than one submitting EMS agency, that patient would be counted multiple times in AZ-PIERS (once for each EMS agency encounter).

There are some variables with missing documentation. There are three possibilities as to why documentation is missing or null for a specific data element in AZ-PIERS:

1. The ePCR vendor failed to properly map the data element,
2. The provider failed to document the procedure,
3. The provider failed to perform the procedure.

Lastly, state benchmarks are restricted to only include those agencies participating 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.

Table 1: Stroke recognition results by EMS and hospital

	N	Percent
*EMS-Stroke = Yes	3,029	NA
*HOSP-Stroke = Yes	4,632	NA
EMS-Stroke = Yes & HOSP-Stroke = Yes	1,361	44.9%
EMS-Stroke = No & HOSP-Stroke = Yes	3,271	70.6%
EMS-Stroke = Yes & HOSP-Stroke = No	1,668	55%

*EMS-Stroke=Yes is EMS Primary Impression equal to stroke
 HOSP-Stroke=Yes is Principal hospital diagnosis is equal to stroke

In 2014, EMS agencies transported and identified a stroke (EMS-Stroke) in 3,029 incidents. Hospitals identified 4,632 incidents of strokes (HOSP-Stroke) in the same year.

Both EMS and hospitals identified strokes in 1,361 incidents. EMS failed to document a hospital confirmed stroke in 3,271 incidents.

Graph 1: Stroke recognition results by EMS and hospital

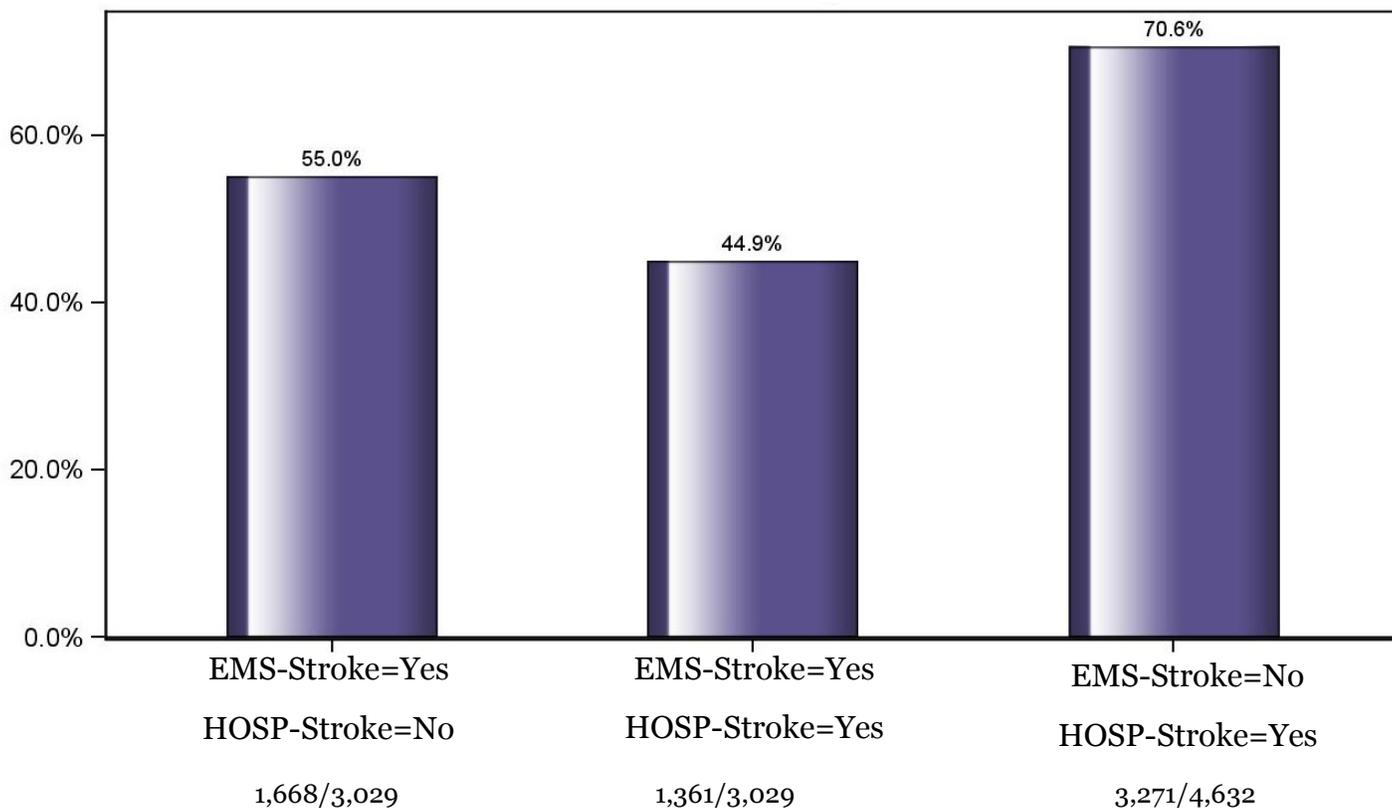


Table 2: Demographics for stroke patients in AZ-PIERS

Demographics	N	%
Confirmed Hospital Stroke Cases	4,632	100%
Age (years)		
Missing	4	0%
<45	178	3.8%
45-54	341	7.3%
55-64	517	11.1%
65-74	1,093	23.5%
75-84	1,356	29.2%
≥ 85	1,143	24.6%
Gender		
Missing	89	1.9%
Female	2,404	51.8%
Male	2,139	46.1%
Race		
Missing	1,860	40.1%
American Indian or Alaska Native	41	0.8%
Asian	33	0.7%
Black or African American	79	1.7%
Native Hawaiian or Other Pacific Islander	2	0.0%
White	2,380	51.3%
Other Race	237	5.1%

A total of 4,632 patients were confirmed stroke cases by the hospital.

Males made up 46% of suspected strokes. The largest proportion of strokes occurred in patients over 65 years of age (77%).

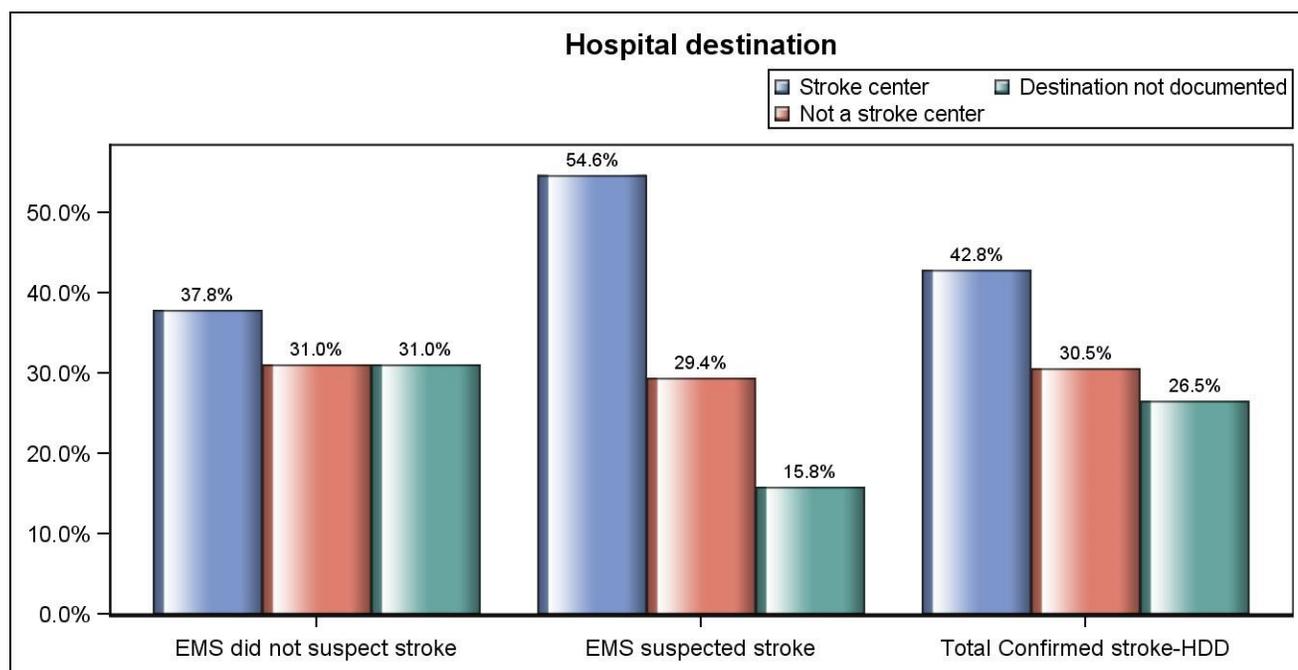
The documentation of *Race* (E06_12) by field providers is slowly improving. However, this variable is still missing in many cases (40%).

Resources are available online to help providers and EMS agencies feel comfortable when collecting race and ethnicity:

- <http://www.hretdisparities.org/Howt-4176.php>
- <http://www.hretdisparities.org/uploads/ResponseMatrix.ppt>
- <http://www.azdhs.gov/documents/preparedness/emergency-medical-services-trauma-system/data/the-importance-of-demographic-data.pdf>

Performance Measure 1: Frequency of transport to a stroke center based upon EMS evaluation

Graph 2: Hospital destination for stroke patients (n=4,632)



Of the 4,632 confirmed strokes, some patients went to a stroke center (40%) while others did not (34%). EMS destination was missing in over one-quarter of stroke cases (27%).

A higher proportion of EMS suspected strokes arrived at a stroke center. Interestingly, the same proportion of non-suspected and suspected stroke patients arrived at a non-stroke center (33%).

A complete list of stroke centers can be found in the resources page following this report.

Table 3: Hospital destination for stroke patients (n=4,632)

Hospital destination	All HDD confirmed stroke		EMS suspected stroke			
			No		Yes	
	N	%	N	%	N	%
Destination not documented	1,232	26.5%	1,016	31%	216	15.8%
Stroke center	1,835	39.6%	1,147	35%	688	50.5%
Not a stroke center	1,565	33.7%	1,108	33.8%	457	33.5%
Total cases	4,632	100%	3,271	100%	1,361	100%

Performance Measure 2: Documentation of symptom onset time

Table 4: Documentation of incident date/time for stroke patients (n=4,632)

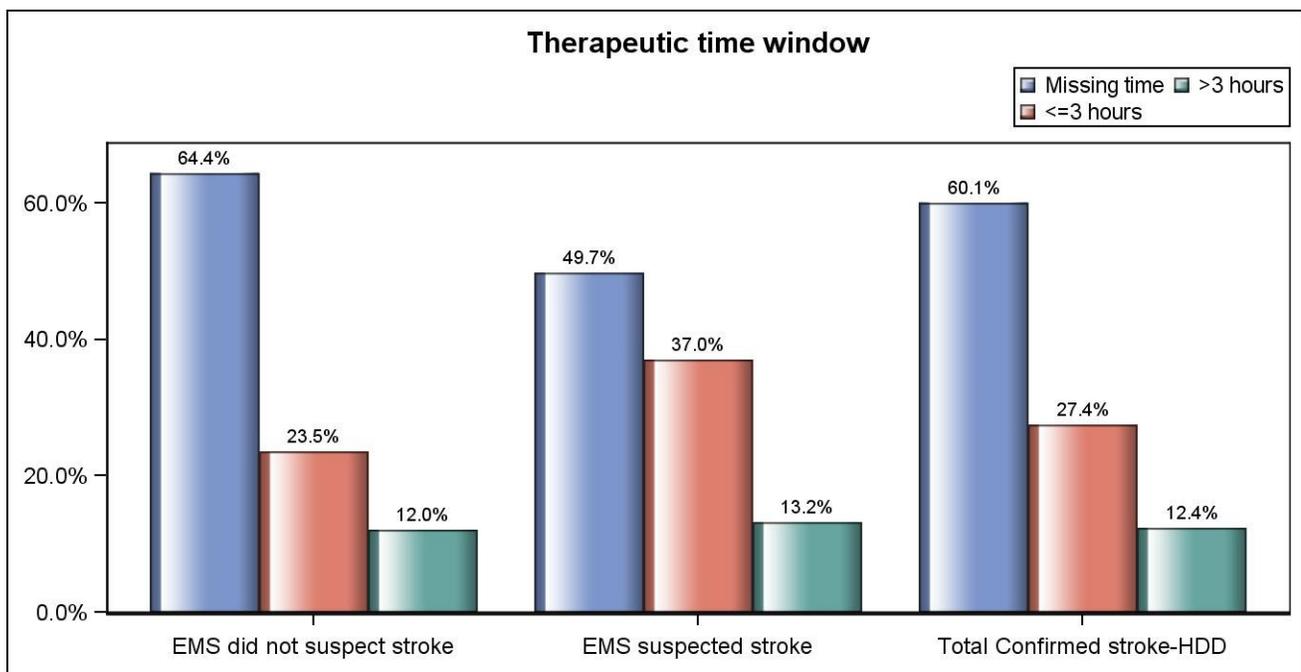
Therapeutic time window	All HDD confirmed stroke		EMS suspected stroke			
			No		Yes	
	N	%	N	%	N	%
Missing time	2,784	60.1%	2,107	64.4%	677	49.7%
≤ 3 hours	1,273	27.4%	769	23.5%	504	37.0%
> 3 hours	575	12.4%	395	12.0%	180	13.2%
Total cases	4,632	100%	3,271	100%	1,361	100%

Stroke interventions are based on a specific time window of 3 hours. A quick identification by EMS and prenotification to the receiving hospital may reduce potential time delays.

Most stroke patients had missing times (64%); however, even with these limitations, when EMS suspected a stroke, more patients arrived at the hospital within 3 hours [(total n=468 (34%)].

Unfortunately, there is no current way to determine how many of these patients were TPA-eligible.

Graph 3: Documentation of incident date/time for stroke patients (n=4,632)



Performance Measure 2: Documentation of symptom onset time

Table 5: Documentation of pre-notification time for stroke patients (n=4,632)

Facility notification time	All HDD confirmed stroke		EMS suspected stroke			
			No		Yes	
	N	%	N	%	N	%
Not documented	4,340	93.6%	3,091	94.4%	1,249	91.7%
Documented	292	6.3%	180	5.5%	112	8.2%
Total cases	4,632	100%	3,271	100%	1,361	100%

The therapeutic time window was calculated through *Chief Complaint Duration* (E09_06) or *Incident Onset Date/Time* (E05_01) and *Patient Arrived at Destination Time* (E05_10).

A large proportion of confirmed stroke cases had a missing *Chief Complaint Duration* (E09_06) or *Incident Onset Date/Time* (E05_01) (60%). As stroke is a time sensitive condition, proper documentation in the field allows hospitals to tailor their treatment for the best possible outcome for the patient.

Facility notification time is calculated from *Receiving Hospital Contacted Date/Time* (IT5_71) and was missing in 93.6% of confirmed stroke cases.

There are three possibilities as to why documentation is missing or null for a specific data element:

- The ePCR vendor failed to properly map the data element,
- The provider failed to document the procedure,
- The provider failed to perform the procedure.

Performance Measure 3: Documentation of stroke patient assessment

Graph 4: Documentation of blood glucose for stroke patients (n=4,632)

Oftentimes, stroke symptoms are hard to differentiate from diabetic issues. For that reason, providers are asked to test a patient’s blood glucose level. There was a documentation of blood glucose levels in 76% of patients that tested positive for a stroke scale.

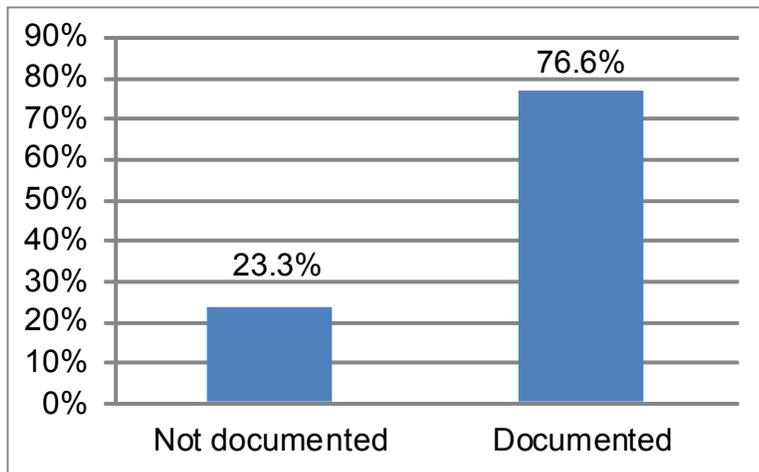


Table 6: Documentation of blood glucose for stroke patients

	N	%
Documented	3,550	76.6%
Not documented	1,082	23.3%
Total confirmed stroke cases	4,632	100%

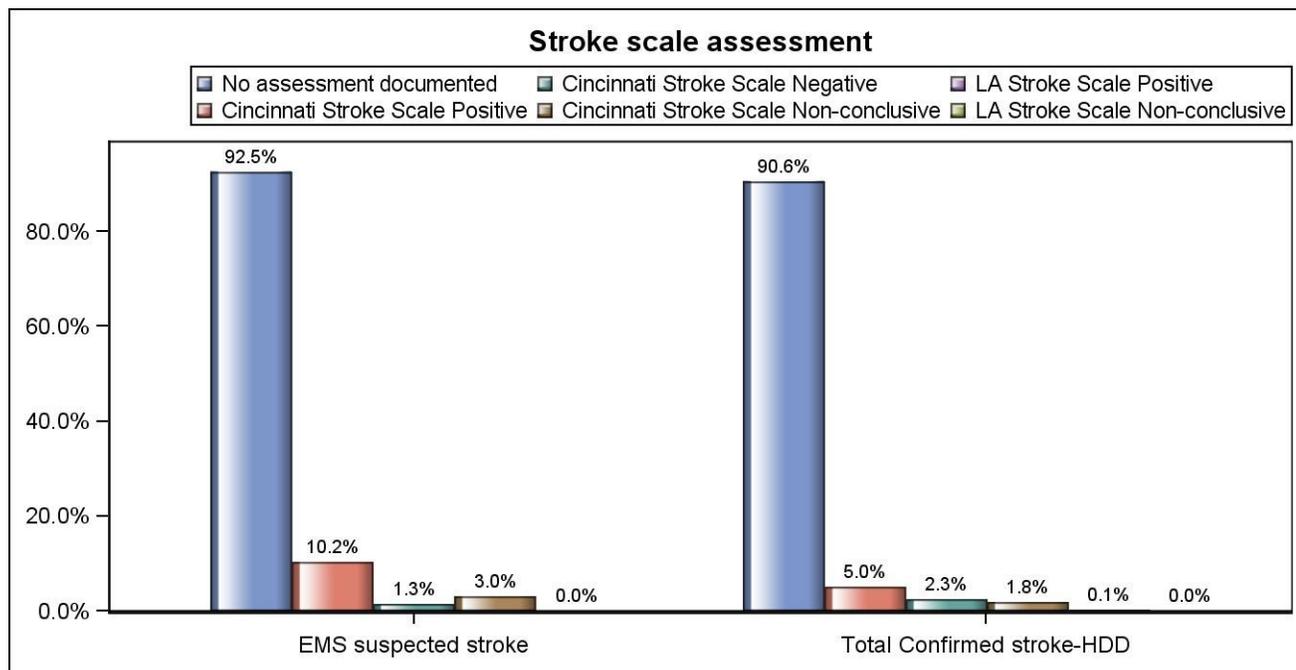
Blood glucose was measured through *Blood Glucose Level (E14_14)*. There are three possibilities that can occur in reporting a “No/Not Documented” for data elements:

- The ePCR vendor failed to properly map the data element,
- The provider failed to document the procedure,
- The provider failed to perform the procedure.

Agencies can access the quality of their data by logging into AZ-PIERS, clicking on Data Exchange, Data Posting, and Data Posting Report. Patient records that fail to meet the data structure requirements, or schema, will be shown under the “Failed” tab.

Performance Measure 3: Documentation of stroke patient assessment

Graph 5: Documentation of assessments for stroke patients (n=4,632)



Of the 4,632 confirmed strokes, a large proportion of providers failed to document a stroke scale (90.6%) in *Stroke Scale* (E14_24). Only 5.1% of confirmed stroke patients had a documented positive stroke scale.

Table 7: Documentation of stroke assessments

Stroke scale assessment	All HDD confirmed stroke		EMS suspected stroke			
			No		Yes	
	N	%	N	%	N	%
No assessment documented	4,197	90.6%	3,038	92.8%	1,159	85.1%
Cincinnati Stroke Scale Positive	232	5.0%	92	2.8%	140	10.2%
Cincinnati Stroke Scale Negative	109	2.3%	90	2.7%	19	1.3%
Cincinnati Stroke Scale Non-conclusive	85	1.8%	43	1.3%	42	3%
LA Stroke Scale Positive	6	0.1%	5	0.1%	1	0%
LA Stroke Scale Non-conclusive	3	0%	3	0%	0	0
Total cases	4,632	100%	3,271	100%	1,361	100%

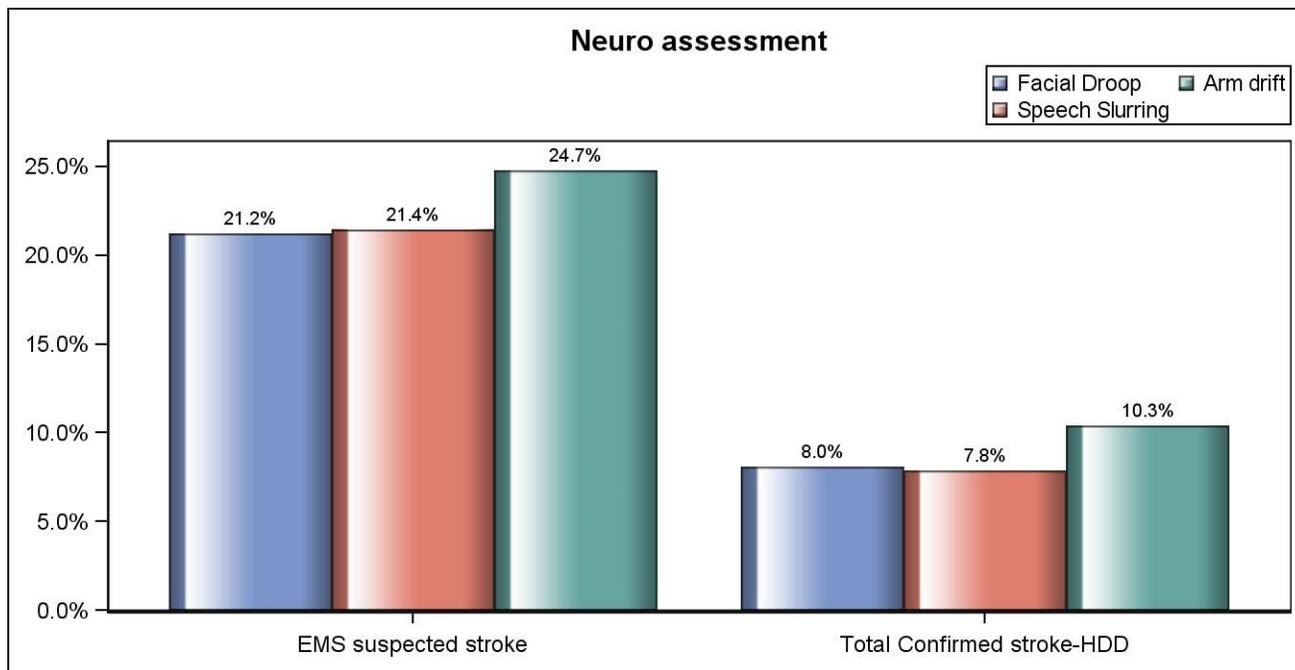
Performance Measure 3: Documentation of stroke patient assessment

Table 8: Results of neurological assessments for patients (n=4,632)

Neurological assessment			EMS did not suspect stroke		EMS suspected stroke	
	N	%	N	%	N	%
Facial Droop	374	8.0%	85	2.5%	289	21.2%
Speech Slurring	364	7.8%	72	2.2%	292	21.4%
Arm drift	481	10.3%	144	4.4%	337	24.7%
Total Cases	4,632	NA	3,271	NA	1,361	NA

In the 4,632 confirmed strokes, the most commonly selected positive indicator was an arm drift (10.3%). It is important to note that any positive indicator may have occurred by itself or in conjunction with any others. The data collection format of the variable makes it difficult to analyze whether the neurological assessment was documented or missing.

Graph 6: Results of neurological assessments for patients (n=4,632)



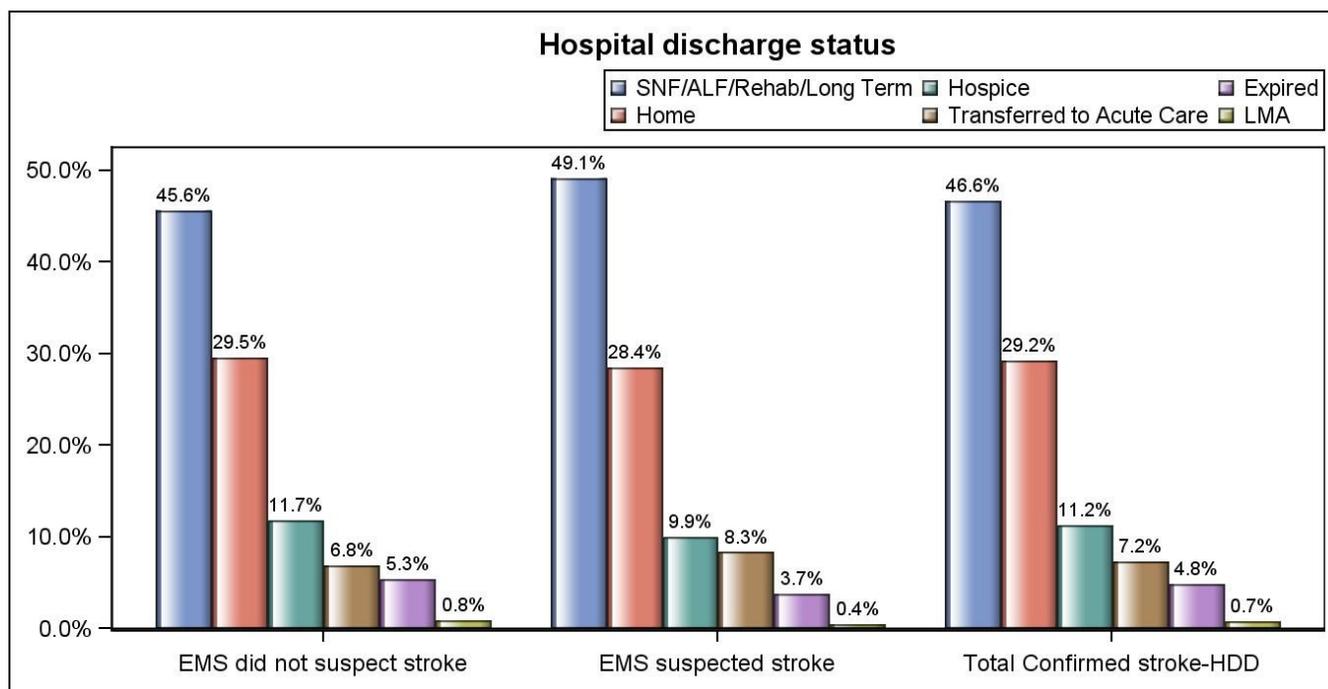
Outcomes for stroke patients in the state EMS system

Table 9: Discharge disposition of stroke patients (n=4,632)

Hospital discharge status	All HDD confirmed stroke		EMS suspected stroke			
			No		Yes	
	N	%	N	%	N	%
Skilled Nursing Facility/ Assisted Living Facility/ Rehab/Long Term Care	2,162	46.6%	1,493	45.6%	669	49.1%
Home	1,355	29.2%	968	29.5%	387	28.4%
Hospice	519	11.2%	384	11.7%	135	9.9%
Transferred to Acute Care	337	7.2%	224	6.8%	113	8.3%
Expired	225	4.8%	174	5.3%	51	3.7%
Left against medical advice	34	0.7%	28	0.8%	6	0.4%
Total cases	4,632	100%	3,271	100%	1,361	100%

When EMS failed to document a stroke, the mortality was 17% (expired+hospice). When EMS identified a stroke, the mortality was lower (13.6%).

Graph 7: Discharge disposition of stroke patients (n=4,632)



Additional Resources and training

National Resources

Center for Disease Control and Prevention—Facts about Stroke: http://www.cdc.gov/stroke/docs/consumered_stroke.pdf

Stroke Education for EMS: http://www.strokeassociation.org/idc/groups/stroke-public/@wcm/@hcm/@sta/documents/downloadable/ucm_456069.pdf

State Resources

An Introduction to EMS Agency Performance Improvement: <http://www.azdhs.gov/documents/preparedness/emergency-medical-services-trauma-system/data/users/ems-performance-improvement-plan.pdf>

Designated stroke centers:

(source: Joint Commission* and Arizona Stroke Coalition):

Abrazo Arrowhead Campus*	Banner Baywood Medical Center*
Banner Boswell Medical Center*	Banner Del E. Webb Medical Center*
Banner Desert Medical Center*	Banner Estrella Medical Center*
Banner University Medical Center—Phoenix Campus*	Banner Thunderbird Medical Center*
Carondelet St. Mary's Hospital—Tucson*	Carondelet St. Joseph's Hospital—Tucson *
Chandler Regional Hospital*	St. Joseph's Hospital & Medical Center*
Abrazo West Campus*	Abrazo Maryvale Campus*
Mayo Clinic Hospital—Phoenix *	Mercy Gilbert & Medical Center*
Northwest Medical Center—Tucson*	Oro Valley Hospital*
Banner University Medical Center—Tucson Campus*	Abrazo Central Campus
HonorHealth Scottsdale Osborn Medical Center	Abrazo Scottsdale Campus
HonorHealth John C. Lincoln Medical Center	HonorHealth Deer Valley Medical Center
Flagstaff Medical Center	Tucson Medical Center

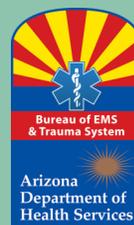
Arizona State Trauma Registry

Inter Rater

Reliability



Prepared By:



Acknowledgements

The Bureau of EMS and Trauma System would like to acknowledge the hard work of the Trauma Registry User's Group (TRUG), State Trauma Advisory Board (STAB) and the Trauma and Emergency Medical Services Performance Improvement (TEPI) committees.

Although time consuming and detail oriented, the Inter Rater Reliability project focused on data validation, quality, and timeliness; the fundamental aspects of any registry.

Special recognition for leading the project go to:

Mellissa Moyer, CSTR - John C. Lincoln North Mountain

Rose Johnson, CSTR - St. Joseph's Hospital & Medical Center

Mary Benkert - Arizona Department of Health Services

Executive Summary

Introduction: The Arizona State Trauma Registry (ASTR) collects data from forty two (42) facilities around the state. Given the varying levels of experience and training amongst the registrars, Arizona needed a way to measure the accuracy and consistency of the trauma data being submitted.

Objective: To standardize data collection and improve data quality in ASTR.

Methods: The State, in collaboration with the Trauma Registry User's Group (TRUG) recently performed an Inter Rater Reliability (IRR) project.

The TRUG members provided sample cases from real patients that were entered into ASTR. A small workgroup was formed to select an IRR case that was well-documented and representative of a typical state trauma patient, yet sufficiently challenging in order to stimulate discussion among members.

Trauma registrars were provided with the IRR case containing redacted health information and given a month to enter their results in the Trauma One software. The state trauma registrar compiled all the results and presented the workgroup with a frequency of selected answers. After discussion, the small workgroup developed a draft answer key which was discussed during the TRUG quarterly meeting on July 22, 2015. Based on input and discussion from the entire group the answer key was finalized.

Results: Of 90 registrars from 42 participating hospitals, 26 (29%) participated in the IRR. The majority of participants (81%) were from Level I trauma centers. The aggregate scores per section were: Demographics 92.4%; Injury 81.1%; Pre-hospital 92.5%; ED/Toxicology 86.7%; Discharge/Finance 75.4%; Procedures 67.2%; ICD-9 Diagnoses 21.0%; and AIS Diagnoses 36.9%. Overall, injury severity was underestimated by IRR participants (Table 1).

Table 1: Measures of injury severity, correct vs. average IRR score

	Correct Score	Average IRR Score
Injury Severity Score (ICD-9)	48	43.8
Injury Severity Score (AIS)	48	46.1
Revised Trauma Score	6.9	6.4
Probability of Survival	75.4%	70.0%

Conclusion: While overall participation from registrars and submitting facilities in the IRR was low, the project did identify slight inconsistencies, particularly in the coding of diagnoses and procedures. In future IRR projects, there should be more efforts to increase participation from registrars and submitting facilities.

Distribution of ICD 9 and AIS based ISS

Injury Severity Score (ISS)

A trauma patient's ISS can be calculated through the [International Classification of Diseases \(ICD\)](#) or the [Abbreviated Injury Score \(AIS\)](#).

Figure 1:
Distribution of ICD
based ISS:
ASTR, 2013

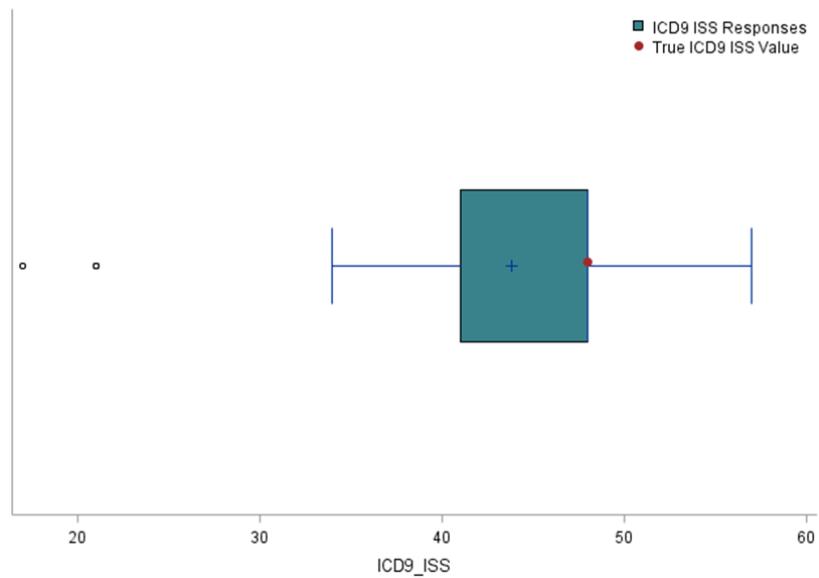
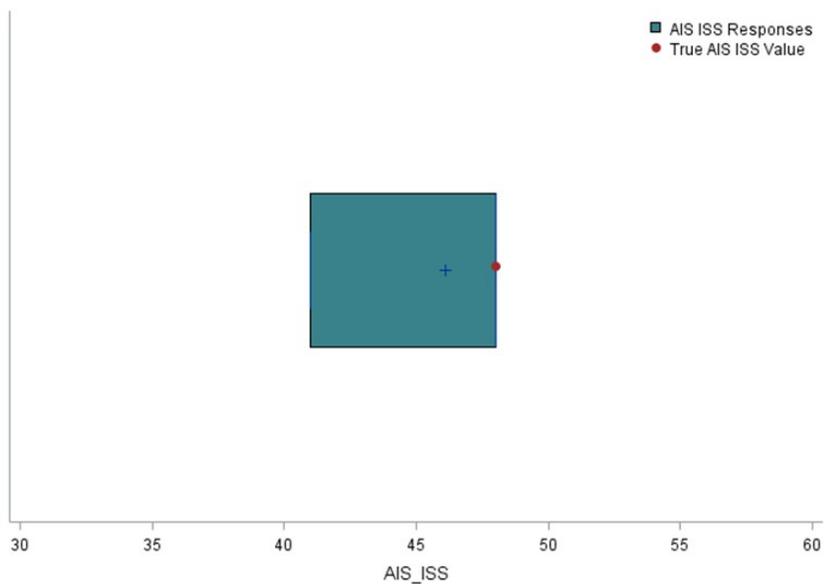


Figure 2:
Distribution of AIS
based ISS:
ASTR, 2013



Distribution of ICD-9 and AIS based ISS

ICD-9 based ISS

Table 1:
Distribution of ICD
based ISS:
ASTR, 2013

Total number	26
Mean	43.81
Standard Deviation	10.23

An ICD-9 based ISS is dependent upon the diagnosis codes that are selected. A registrar that underdiagnosed a patient will under report the ISS.

Table 2:
Percentile distribution
of ICD based ISS:
ASTR, 2013

Percentile	ICD-9 ISS
99%	57
75%	48
50th percentile	48
25%	41
Minimum	17

If providers fail to document a diagnosis, an under reporting of an ISS may occur.

The correct ICD9 ISS was 48, the mean was 43.8. This measure was under reported but was within one standard deviation.

AIS based ISS

AIS codes are for designated Level I Trauma Centers only. The AIS based ISS is dependent upon the 2005 AIS diagnosis codes that are selected. A registrar that underdiagnosed a patient will under report the ISS.

Total Number	22
Mean	46.09
Standard Deviation	3.19

Table 3:
Distribution of ICD
based ISS:
ASTR, 2013

If providers fail to document a diagnosis, an under reporting of an ISS may occur.

The correct AIS ISS was 48, the mean was 46.1. This measure was under reported but was within one standard deviation.

Percentile	AIS ISS
99%	48
75%	48
50th percentile	48
25%	41
Minimum	41

Table 4:
Percentile distribution
of AIS based ISS:
ASTR, 2013

Distribution of RTS and POS

Revised Trauma Score (RTS)

An RTS is based on a patient's vital signs (Glasgow Coma Score, Systolic Blood Pressure, and Respiratory Rate).

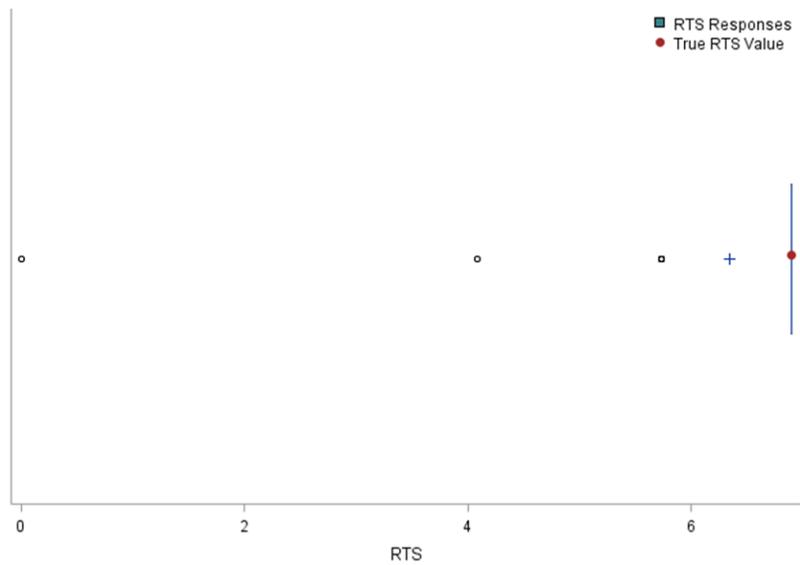


Figure 1:
Distribution of RTS:
ASTR, 2013

Probability of Survival (POS)

The POS is based on a patient's age, ISS, and RTS. Both RTS and POS are dependent on diagnosis codes and were used for insight in the IRR.

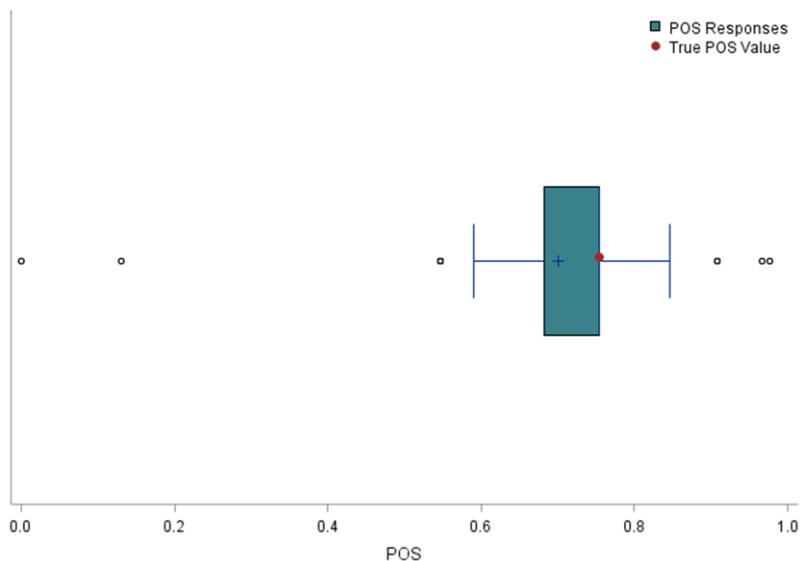


Figure 2:
Distribution of POS:
ASTR, 2013

Distribution of RTS and POS

Revised Trauma Score

Table 5:
Distribution of RTS:
ASTR, 2013

Total Number	26
Mean	6.35
Standard Deviation	1.46

The Emergency Department (ED) RTS is dependent upon a patient's systolic blood pressure, respiratory rate, and Glasgow Coma score.

Table 6:
Percentile distribution
of RTS:
ASTR, 2013

Percentile	RTS
99%	6.90
75%	6.90
50 th Percentile	6.90
25%	6.90
Minimum	0

The correct RTS was 6.9, the mean was 6.3. This measure was under coded but was within 1 standard deviation.

Probability of Survival

A POS is dependent upon Trauma Type, ISS (ICD-9), RTS in the ED, and a patient's age.

The correct POS was 0.754, the mean was .70. This measure was under coded but was within 1 standard deviation.

It is important to note that Trauma Registrars are trained to be more conservative in coding.

Total Number	26
Mean	0.70
Standard Deviation	0.22

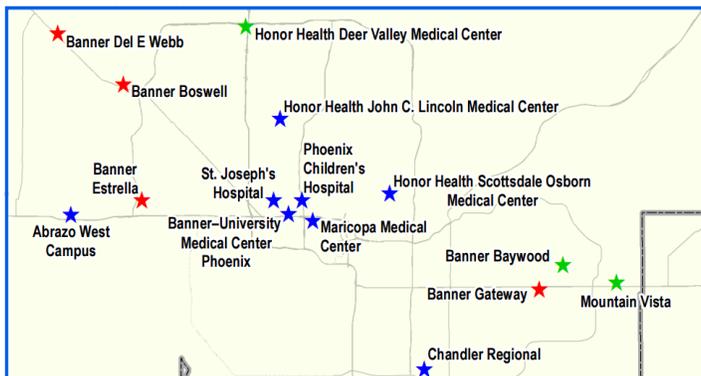
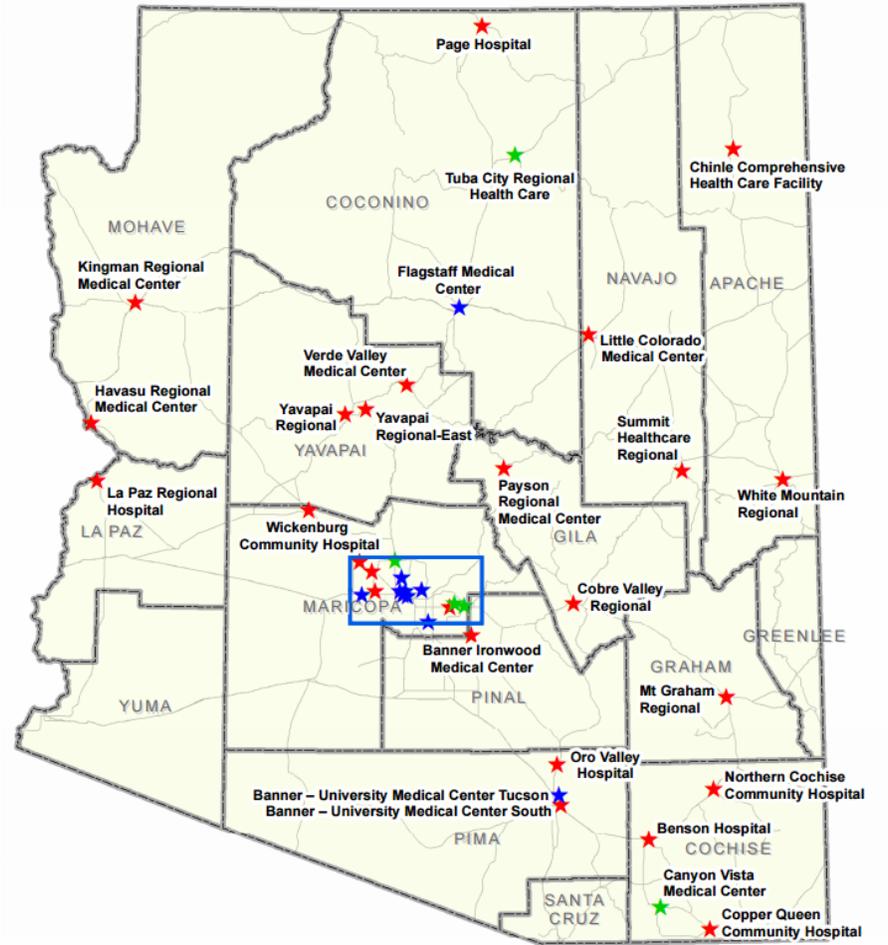
Table 7:
Distribution of POS:
ASTR, 2013

Percentile	POS
99%	0.976
75%	0.75
50 th Percentile	0.75
25%	0.68
Minimum	0

Table 8:
Percentile distribution
of POS:
ASTR, 2013

Appendix B.

DESIGNATED ARIZONA TRAUMA CENTERS



Trauma Centers

- ★ Level I
- ★ Level III
- ★ Level IV




Map Date: June 2015

Data Source:
Bureau of EMS & Trauma System
Arizona Department of Health

Appendix C.

2013 Arizona Trauma Registry Inclusion Criteria

