

Celebrating Pennsylvania's Trauma Centers During The COVID-19 Pandemic





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BACKGROUND

The Pennsylvania Trauma Systems Foundation (PTSF) was created by the combined efforts of the Pennsylvania Medical Society and the Hospital and Healthsystem Association of Pennsylvania along with the Pennsylvania Nurses Association, the Pennsylvania Emergency Health Services Council and the Pennsylvania Department of Health.

The Commonwealth of Pennsylvania first recognized PTSF in December 1984 when Governor Thornburg signed Act 209 into law. Act 209 expired in June 1985. A comprehensive Emergency Medical Services Act (Act 45) was signed into law in July 1985, which again recognized the PTSF and established its mandate.

A MESSAGE FROM THE 2020 CHAIRMAN OF THE BOARD AND EXECUTIVE DIRECTOR

This annual report for 2020 highlights the activities of the Pennsylvania Trauma Systems Foundation as it celebrates its 35th year of service in advancing the care of injured patients in Pennsylvania. In 1985 the Foundation was developed by a group of committed organizations and incorporated into the EMS Act to assure the highest level of trauma care possible. This care involves a comprehensive network of services starting with emergency care at the time of the injury to the commitment of a trauma center in providing 24-hour availability of clinical experts and resources to make the difference in saving lives. As the accrediting body for trauma centers in Pennsylvania, PTSF has the task of assuring the public that a trauma center meets the rigorous criteria necessary to care for the most severely injured patients.

Of note this year were the incredible challenges faced by all our hospitals during a worldwide COVID-19 pandemic. Trauma programs were faced with declining volumes of patients overall but in our urban centers penetrating trauma volume escalated with violence related injuries. As we prepare for the publication of this annual report the number of vaccinated individuals continues to increase and Pennsylvania COVID-19 cases continue to fall. Trauma Centers are now facing elevated volumes as the world experiences "life after lock down."

Hospital staff made us proud as they put their own lives on the line in caring for COVID-19 patients and supporting the needs of their institutions. The PTOS trauma registry added a COVID-19 data element and the PTSF research committee formed three work groups in examining how COVID-19 impacted trauma care and outcomes of injured patients.

Some hospitals, undeterred by pandemic challenges moved forward with achieving accreditation or elevating their level of trauma center accreditation including:

- One additional Critical Access Hospital: Conemaugh Miners Medical Center - Hastings, PA
- Elevation to Level I accreditation status of Penn Medicine Lancaster General Health – Lancaster General Hospital – Lancaster, PA

Twelve hospitals pursued trauma center accreditation including 5 hospitals pursuing Level II accreditation and 7 hospitals pursuing Level IV accreditation. Continued grant funding by the HRSA Medicare Rural Hospital Flexibility/Critical Access Hospital Program through the PA Office of Rural Health enabled PTSF to waive fees of Critical Access Hospitals pursuing Level IV accreditation.

Thank you for your ongoing support. Because of you, we continue to elevate the quality of trauma care throughout Pennsylvania and beyond.

Sincerely,

Meg Ashton, RN, BSN, MA, CEN
Chair, Board of Directors

Juliet Altenburg, RN, MSN
Executive Director



Meg Ashton, RN, BSN, MA, CEN



Juliet Altenburg, RN, MSN



47,512

lives saved in 2020



1,020,686

total count 1985 - 2020



MISSION

Optimal outcomes for every injured patient.

VISION

We are committed to Zero Preventable Deaths from injury in Pennsylvania.

VALUES STATEMENT

EXCELLENCE

We promote and support quality results and optimal outcomes through continuous performance improvement, education and collaboration.

INNOVATION

We seek and support research and best practices that standardize and shape the future of trauma care.

INTEGRITY

We are committed to honesty, fairness and transparency.

TEAMWORK

We encourage respectful, multidisciplinary collaboration to develop standards, solve problems and achieve common goals.

VALUE PROPOSITION

THROUGH OUR UNIQUE:

- Expert team of accreditation, performance improvement and trauma registry professionals;
- Advanced technology for the acquisition of trauma center data and performance improvement;
- Committees comprised of trauma center staff focusing on patient outcomes, trauma registry data, standards of accreditation and research;
- Relationships with state and national trauma organizations;
- Streamlined trauma center accreditation process; and
- Board of Directors comprised of administrators, legislators, nurses and physicians who are leaders in their field.

WE WILL DELIVER VALUE TO THE TRAUMA CENTERS AND CUSTOMERS WE SERVE BY:

- Providing quality education to hospitals;
- Educating the public and legislators on the value of trauma centers/systems;
- Providing data to support clinical and trauma system research;
- Participating in national trauma center/system forums to advance trauma care statewide and nationally; and
- Developing strategic initiatives to provide the highest caliber of trauma center care in the country.



49,657

total patients 2020



95.70%

% survivors 2020

BOARD MEMBERSHIP & NOMINATING ORGANIZATIONS

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Trauma Program Manager
St. Mary Medical Center, Langhorne, Pennsylvania
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Chair, Department of Emergency Medicine
Reading Hospital – Tower Health, Reading, Pennsylvania
Representing the Pennsylvania College of Emergency Physicians

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PennState Health Milton S. Hershey Medical Center
Hershey, Pennsylvania
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Majority Chair, Senate Health & Human Services Committee

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Allegheny General Hospital – Allegheny Health Network, Pittsburgh, Pennsylvania
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Representing the Majority Chair of the House Health Committee

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Director, Division of Neurotrauma and Critical Care
Thomas Jefferson University Hospital, Philadelphia, Pennsylvania
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Pennsylvania Department of Health, Bureau of Emergency Medical Services
Representing the Secretary of the Pennsylvania Department of Health

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Trauma Program Manager
Penn Medicine – Lancaster General Health, Lancaster General Hospital, Lancaster, Pennsylvania
Representing the Pennsylvania State Nurses Association

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Meadville Medical Center, Meadville, Pennsylvania
Representing the Hospital & Healthsystem Association of Pennsylvania

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Trauma Program Medical Director
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Representing the Pennsylvania Medical Society

SUSAN L. WILLIAMS, MD

Chief Medical Officer
Conemaugh Health System, Johnstown, Pennsylvania
Representing the Hospital & Healthsystem Association of Pennsylvania



Pictured from left: (standing) S. Radzevick, D. Adams, J. Altenburg, K. Burd, L. Diehl; (seated) D. Gondell, L. Stamey, G. Wenger, A. Krichten. Not pictured: A. Over

FOUNDATION STAFF

DOR ADAMS | Finance Specialist

JULIET ALTENBURG, MSN, RN | Executive Director

KEVIN BURD | Director of Operations

LYNDSEY DIEHL, RHIA, CHDA, CSTR | DIRECTOR of Data Quality

DARLENE GONDELL, MSN, RN, CRNP, ACNP-BC, CCRN, CNRN, TCRN | Manager of Accreditation

AMY KRICHTEN, MSN, RN, CEN, TCRN | Director of Accreditation

ANNA OVER, MSN, RN, TCRN, EMT-1 | Manager of Trauma Center Development

STEPHANIE RADZEVICK, CPC | Trauma Data Analyst

LINDA STAMEY | Administrative Assistant

GABRIELLE WENGER, RHIT, CPC, CAISS, CSTR | Trauma Registry Auditor

LEVELS OF TRAUMA ACCREDITATION

“Levels” of accreditation identify the specific capabilities of trauma centers. Dual accreditation can exist for hospitals that seek accreditation as both a pediatric and adult trauma center. Trauma center accreditation applies to an entire hospital, not just the emergency department of the hospital. In Pennsylvania, there are four levels of trauma centers:

- Level 1 Trauma Center, Adult and/or Pediatric
- Level 2 Trauma Center, Adult and/or Pediatric
- Level 3 Trauma Center, Adult
- Level 4 Trauma Center, Adult

GENERAL CHARACTERISTICS

LEVEL 1 TRAUMA CENTERS

- Multidisciplinary treatment and comprehensive care, including specialized resources for the most severe trauma patients
- Trauma related research, publications, and educational outreach
- Surgical residency program
- Surgically directed Intensive Care Unit

LEVEL 2 TRAUMA CENTERS

- The same spectrum of care as a level 1 trauma center
- Surgically co-directed Intensive Care Unit

LEVEL 3 TRAUMA CENTERS

- Smaller, community hospitals that care for patients with moderate injuries and have the ability to stabilize the severe trauma patient in preparation for transport to a higher-level trauma center
- Surgical specialist requirements are Trauma/General and Orthopedic Surgery

LEVEL 4 TRAUMA CENTERS

- Provide enhanced trauma services with a focus on optimizing trauma care within the Emergency Department
- Provide initial care and stabilization of traumatic injury while arranging transfer to a higher level of trauma care



11,818

injuries in rural counties 2020



ACCREDITED TRAUMA CENTERS

COMBINED LEVEL 1 ADULT & LEVEL 1 PEDIATRIC TRAUMA CENTERS

- 1 PennState Health
Milton S. Hershey Medical Center

COMBINED LEVEL 1 ADULT & LEVEL 2 PEDIATRIC TRAUMA CENTERS

- 2 Lehigh Valley Health Network
Lehigh Valley Hospital Cedar Crest

- 3 Geisinger Medical Center

LEVEL 1 ADULT TRAUMA CENTERS

- 4 Allegheny Health Network
Allegheny General Hospital

- 5 Conemaugh Memorial Medical Center
Conemaugh Health System

- 6 Einstein Medical Center Philadelphia
Einstein Healthcare Network

- 7 Penn Medicine-Lancaster General Health
Lancaster General Hospital

- 8 Penn Medicine
Penn Presbyterian Medical Center

- 9 Reading Hospital – Tower Health

- 10 St. Luke's University Health Network,
St. Luke's University Hospital – Bethlehem

- 11 Temple Health
Temple University Hospital

- 12 Thomas Jefferson University Hospital
Jefferson Health

- 13 UPMC Mercy

- 14 UPMC Presbyterian

- 15 WellSpan York Hospital
WellSpan Health

LEVEL 1 PEDIATRIC TRAUMA CENTERS

- 16 Children's Hospital of Philadelphia

- 17 St. Christopher's Hospital for Children – a
Partnership of Tower Health & Drexel University

- 18 UPMC Children's Hospital of Pittsburgh

LEVEL 2 ADULT TRAUMA CENTERS

- 19 Abington Hospital
Jefferson Health

- 20 Allegheny Health Network
Forbes Hospital

- 21 Crozer-Chester Medical Center
Crozer-Keystone Health System

- 22 Geisinger Community Medical Center

- 23 Geisinger Holy Spirit

- 24 Geisinger Wyoming Valley Medical Center

- 25 Guthrie Robert Packer Hospital

- 26 Jefferson Torresdale Hospital
Jefferson Health

- 27 Lankenau Medical Center
Mainline Health

- 28 Paoli Hospital
Mainline Health

- 29 St. Mary Medical Center
Trinity Health Mid-Atlantic

- 30 UPMC Altoona

- 31 UPMC Hamot

- 32 Wilkes-Barre General Hospital
Commonwealth Health

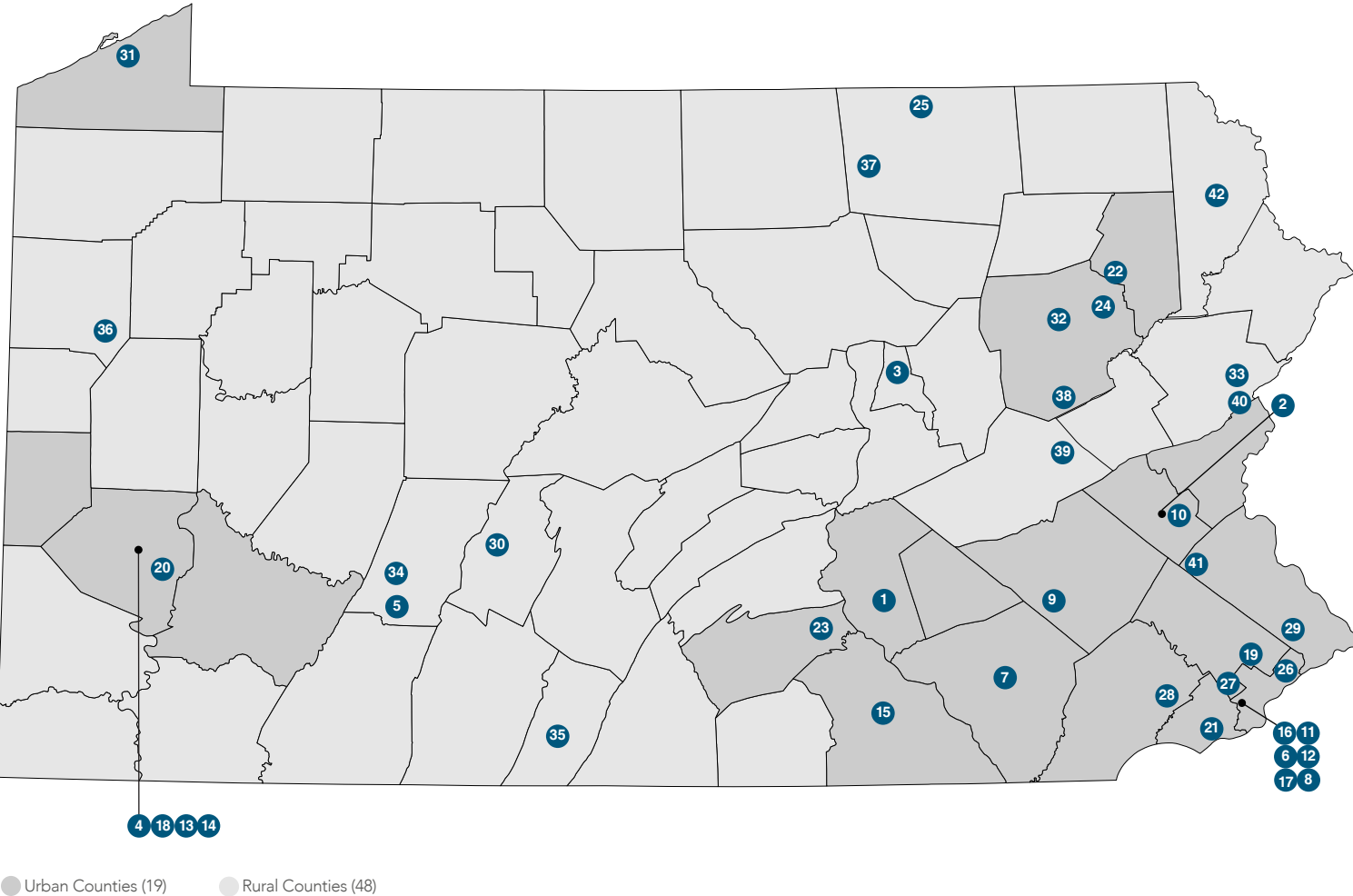
LEVEL 3 ADULT TRAUMA CENTERS

- 33 Lehigh Valley Health Network
Lehigh Valley Hospital Pocono

LEVEL 4 ADULT TRAUMA CENTERS

- 34 Conemaugh Miners Medical Center
 - 35 Fulton County Medical Center
 - 36 Grove City Medical Center
- 37 Guthrie Troy Community Hospital
 - 38 Lehigh Valley Health Network – Lehigh Valley Hospital Hazleton
 - 39 St. Luke’s University Health Network – St. Luke’s Hospital Miners Campus
- 40 St. Luke’s University Health Network – St. Luke’s Hospital Monroe Campus
 - 41 St. Luke’s University Health Network – St. Luke’s Hospital Upper Bucks Campus
 - 42 Wayne Memorial Hospital

PENNSYLVANIA COUNTY MAP



ANNUAL TRAUMA SYSTEM DEVELOPMENT UPDATE

2020 Strategic Plan Accomplishments

TRAUMA SYSTEM DEVELOPMENT AND ENHANCEMENT

Level IV Trauma Center Accreditation

January 1, 2021—Conemaugh Miners Medical Center, located in Hastings, Pennsylvania was granted Level 4, adult trauma center accreditation. This trauma center is part of the Conemaugh Health System and is the third Critical Access Hospital in Pennsylvania to achieve this status.

Photo credit: Conemaugh Miners Memorial Medical Center



Level I Trauma Center Accreditation

December 14, 2021—Penn Medicine – Lancaster General Health, Lancaster General Hospital located in Lancaster, Pennsylvania was approved to elevate from Level 2 adult accreditation to Level 1 adult accreditation.

Photo credit: Penn Medicine - Lancaster General Hospital pre-pandemic photo celebrating new residents



Critical Access Hospital Funding

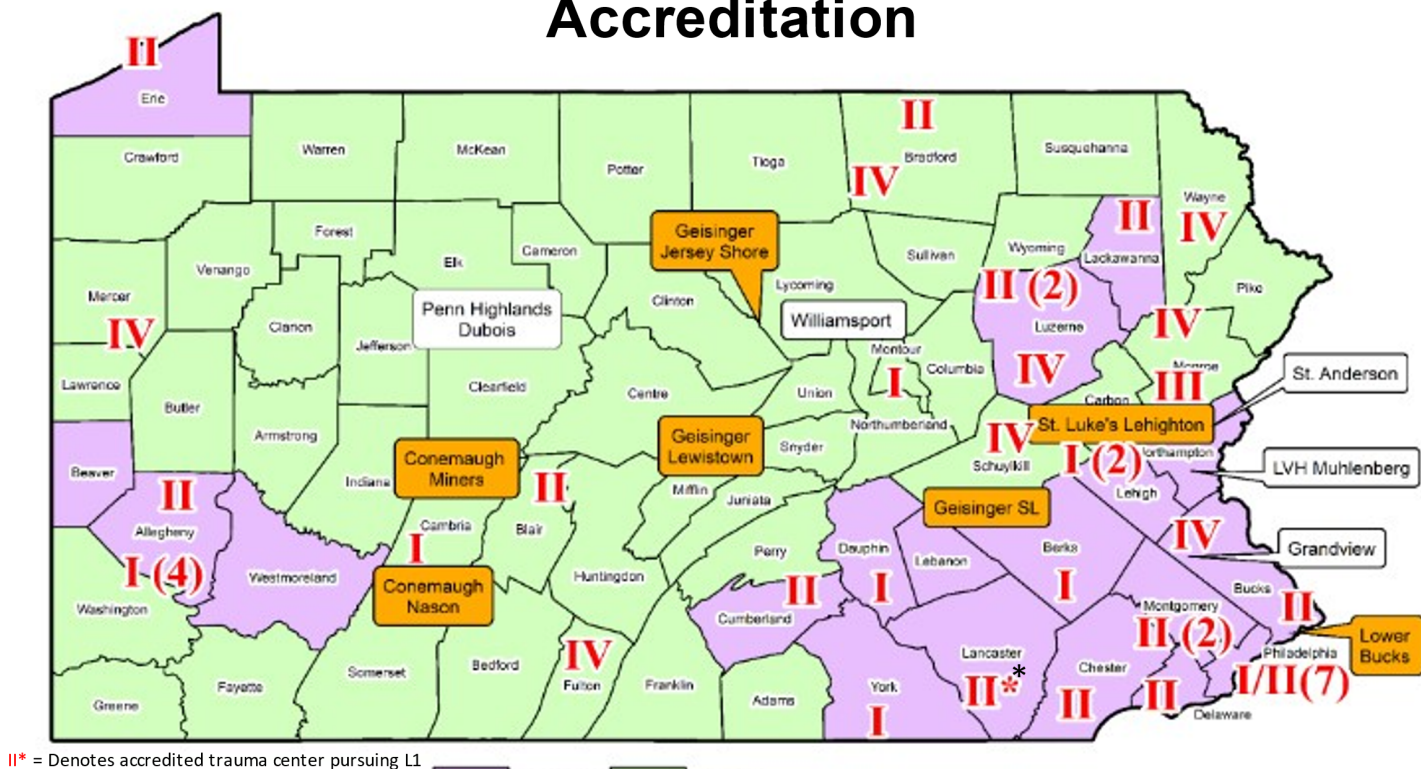
Grant funding was provided for the 11th consecutive year to PTSF through the federal Medicare Rural Hospital Flexibility/ Critical Access Hospital (CAH) Program. Funding was used waive PTSF fees to Critical Access Hospitals to cover education and software costs during Trauma Center accreditation pursuits.

Trauma Center Accreditation Pursuits

Twelve hospitals continued to develop their trauma programs with the support of PTSF staff in the hopes of preparing their hospitals to become accredited trauma centers. PTSF provides a variety of resources to hospitals including individualized education on performance improvement, registry abstraction, and knowledge of standards of accreditation. Education was done virtually and trauma program leadership classes were taught through on-line platforms.

Effective 9/2/2020

Hospitals Pursuing Trauma Center Accreditation



Total Number of Trauma Centers: 41

Adult Level I = 11

Pediatric Level I = 3

Combined Adult I/Peds I = 1

Adult Level II = 15

Combined Adult I/Peds II = 2

Level III = 1

Level IV = 8

PTSF Strategic Goal: Optimizing Analysis of Key Data through TQIP and Performance Improvement Databases

BACKGROUND

In 2008, the American College of Surgeons (ACS) created the national Trauma Quality Improvement Program (TQIP) that was aimed at enhancing clinical outcomes of trauma patients by creating a risk adjusted benchmarking system for use by individual trauma centers and states. Several years later the ACS created TQIP "Collaboratives." These Collaboratives are groups of trauma centers enrolled in TQIP which work together to review benchmarking information and share best practices to improve care.

Beginning in January 2017, the PTSF Board of Directors approved that all accredited Level 1, 2 and 3 trauma centers in Pennsylvania must enroll in TQIP making Pennsylvania one of only 2 states in the country at that time to require TQIP participation from all trauma centers. (Prior to this time half of PA trauma centers voluntarily participated.) PTSF also required that all TQIP centers must submit data for use by the Pennsylvania TQIP Collaborative.

PA-TQIP COLLABORATIVE JOURNEY

In 2019 the PA TQIP Collaborative dataset grew from 11 participating PA trauma programs to 36 trauma programs. By requiring all Level 1, 2, and 3 trauma centers to participate, more comprehensive risk adjusted benchmarking reports are now available with information on high and low performance throughout the state. The PA TQIP Collaborative also continues to offer exciting opportunities to share best practices and clinical care challenges with the goal of ensuring equitable, high level trauma care across the Commonwealth. As trust and transparency grows, sharing of both successes and failures will continue to benefit all members. 2020 marked the first year that policy AC-140 was an option. This policy had been developed by the Outcomes Committee, and then sent to Standards Committee and then to the Board for approval and ultimately approved in 2020. This policy provides accredited trauma centers that meet several criteria with the option of submitting TQIP data to the board for a possible accreditation extension of one year.

2020 PA TQIP HIGHLIGHTS

- Fall 2020 TQIP Collaborative Report included 29 PA Adult Level I and II trauma programs with 18,902 cases (which includes patients from January 2019 to March 2020) vs. 502 TQIP centers nationally submitting 369,406 cases.
- The Pennsylvania TQIP Collaborative continues to be a strong performer against other collaboratives in overall risk adjusted mortality, and specifically for risk adjusted elderly mortality (Figure 1).
- Risk-Adjusted specific hospital events have historically shown the PA-TQIP Collaborative as a high performer regarding acute kidney injury in all patients and surgical site infections in all patients. 2020 showed PA-TQIP further decreasing those odds-ratios even more, with surgical site infection in all patients odds-ratio being 0.19! (Figure 2)
- Another area of improvement noted in the Risk-Adjusted specific hospital events included the PA-TQIP Collaborative performance regarding Pulmonary Embolisms in all patients. In 2019, the collaborative had been a low performer in this area and 2020 Fall report shows our collaborative now back in the black (average) performance with other collaboratives (Figure 2). Projects instituted based on underperforming areas noted on TQIP report and within Collaborative:
 - **Reducing Venous Thromboembolism**
 - VTE White Paper produced
 - Multi-disciplinary: trauma surgeons, Trauma Program Managers, PI coordinators, pharmacists, subspecialists
 - Contributing factors addressed in the white paper:
 - Timing of prophylaxis
 - Dosing- weight based
 - Checking levels
 - Subspecialty support



893

patients 100+ years all time



114

oldest age

- Best Practice Quick Shot presentations at each PA-TQIP Collaborative to promote sharing amongst centers
- Next Steps: Specific Spine workgroup to provide additional insight into subspecialty patients
- The **"Leave No Center Behind"** initiative continued in 2020 with a 5-year goal to have all PA trauma centers without any red diamonds on their reports. This initiative has been designed to pair high and low performing centers, with additional centers able to request pairing.
 - **Overcoming Barriers for sharing of outcomes between trauma centers**
 - Challenges remain will trauma centers being willing to share their reports with one another. Reasons as expressed by participants include:
 - Lack of hospital administrative support to share data.
 - Skepticism regarding accuracy of data submitted and whether reports are valid.
 - Fear of retribution during site survey.
 - Fear that a competing hospital will use outcomes against them.
 - Future Vision
 - Openly share data- ~70% centers currently willing to do it.
 - Control the data set- do drill downs for the whole state- save time for the centers.
 - Pair high performing centers with low performing centers.
- **Geriatric Trauma Care Best Practices**
 - Although PA is a high performer as reflected in the TQIP Collaborative report, there remains a high number of geriatric complications within the PTOS statewide registry.
 - 2020 Geriatric-focused projects continued with workgroups focusing on non-surgical admissions, functional outcomes evaluation and tracking, and review of activation criteria for potential undertriage of Geriatric patients.
 - **Policy AC-140: Level I, II and III Trauma Center Accreditation Extension was approved and provides accredited trauma centers with an option to apply for a accreditation survey extension if the meet the following criteria and submit their TQIP data to the board for consideration.** Criteria for eligibility to increase site survey cycle to 4-years:
 1. Program must have received a prior full three years of accreditation without any significant issues that are listed below.
 2. Program may not be applying for an upgrade in level of Trauma Center.
 3. Program must receive at a minimum a full three-year accreditation on this cycle without any of the significant issues listed below.
 4. Any program that has lost both the TPM and TPMD positions within the 12 months prior to accreditation survey will not be eligible for the 4-year accreditation.
 5. TQIP Metrics for consideration: All Patient Mortality and All Patient Complications: Trauma Center's most recent report compared to national (not limited to PA Collaborative comparison). Must not be statistically significant low performer (red diamond)
- Any program that received one of the following significant issues would not qualify for a four-year accreditation. These significant issues are thought to affect patient outcomes.
 - Administration - Institutional Commitment
 - Clinical Care
 - Clinical Care in resuscitative phase including ATLS principles and/or Emergency Physician involvement
 - Physician Response to trauma team activations
 - Suboptimal clinical care
 - Performance Improvement
 - Registry Timeliness and accuracy

Figure 1:
Red diamonds show areas representing opportunities for improvement in Pennsylvania trauma centers. Green diamonds show high performance

Fall 2020 TQIP Benchmark Report ID: Pennsylvania Collaborative

Figure 2: Risk-Adjusted Mortality by Cohort

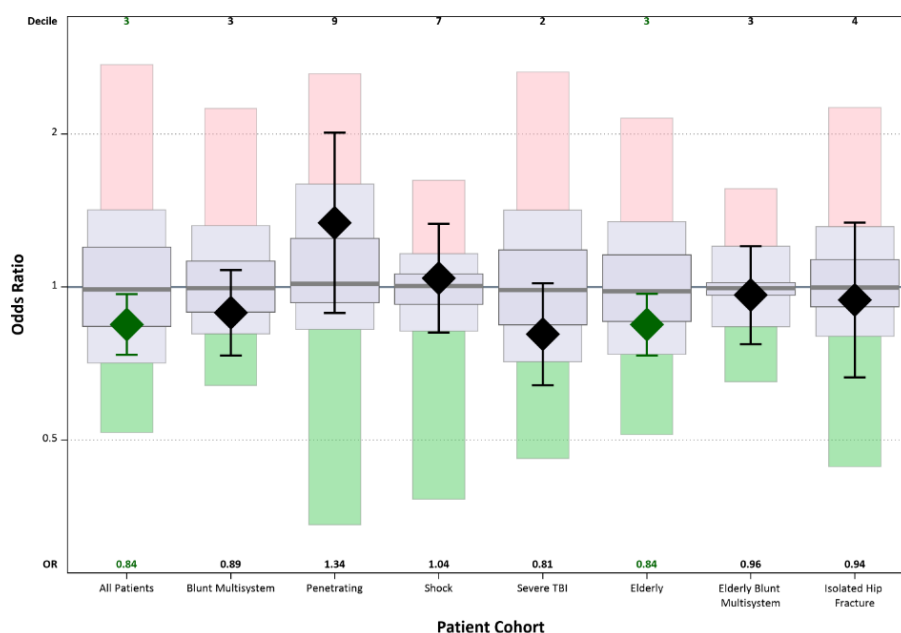
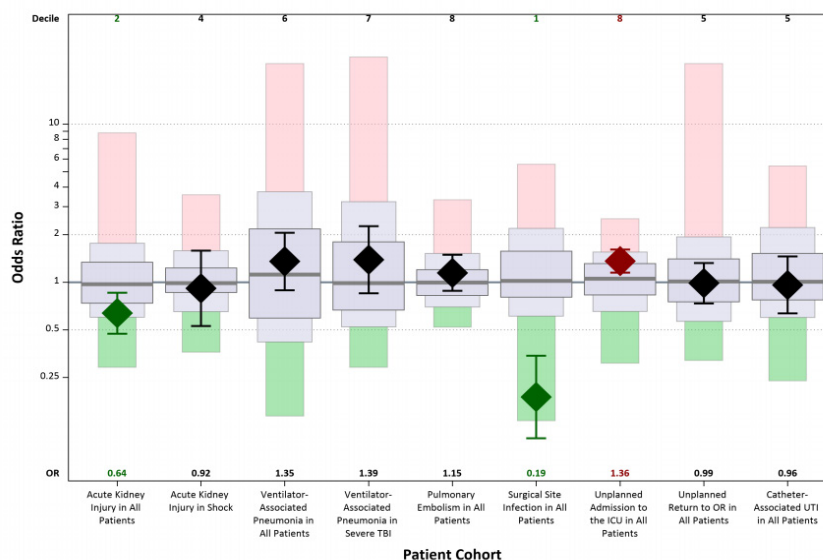


Figure 2

Fall 2020 TQIP Benchmark Report ID: Pennsylvania Collaborative

Figure 5: Risk-Adjusted Specific Hospital Events by Hospital Event/Cohort



2020 Outcomes Committee and PIPS Committee Updates:

- PIPS Committee, with PTSF staff support, worked on updating the Outcomes manual, which had been last updated in 2017. The updated manual was then approved and published in January 2021.
- Outcomes Committee, with PTSF staff support, worked on updating the PI Primer. The updated manual is intended to be a living document, with periodic updates as needed.



COMMITTEES & COMMITTEE ROSTER

The PTSF Board of Directors recognized the contributions of 12 committees in 2020; five were comprised only of PTSF board members. Every accredited trauma center within the Commonwealth had representation within these committees.

CONFLICT OF INTEREST (BOARD)

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Deborah Chappel, RN
Doug Kupas, MD
Philip Pandolph
David Scaff, DO
Susan Williams, MD

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Lars Sjöholm, MD
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Alicia Stoner
Hannah Thomas
Christina VanBrunt
Donna Vernon
Janelle Walker
Holly Weber

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William Hoff, MD
Douglas Kupas, MD
Andy Peitzman, MD
J. Spence Reid, MD
C. William Schwab, MD
Doug Trostle, MD
Jami Zipf, RN

TRAUMA INJURY PREVENTION

2020 SUMMARY REPORT

Despite the strain of a global pandemic on Pennsylvania's trauma centers, injury prevention activities continued in innovative ways throughout 2020 often in virtual formats, and sometimes in combination with community food outreach programs. We commend Injury Prevention Coordinators throughout Pennsylvania, who not only continued to do community outreach as part of their injury prevention roles, but also served on the frontlines in the care of COVID-19 patients and weary staff colleagues when vaccines were not yet available. As one injury prevention coordinator commented, "A truly unusual year with lots learned and lots to be proud of!"



Despite a Global Pandemic, Injury Prevention Activities Continued In Innovative Ways

CATEGORIES OF PREVENTION

FALL PREVENTION

- 1 Number of Matter of Balance classes completed
- 14 Number of Matter of Balance class participants
- 58 Number of Other Fall Prevention programs including screenings and lectures (54 in-person, 4 virtual)

SENIOR DRIVING SAFETY

- 3 Number of Car Fit events completed (in-person)
- 32 Number of Car Fit event participants
- 6 Number of Car Fit Technician trainings (4 in-person, 4 virtual)
- 6 Number of Car Fit Technicians trained
- 9 Number of Other Senior Driving Safety programs including lectures (in-person)
- 160 Number of Other Senior driving safety program participants

CHILD PASSENGER SAFETY (CPS)

- 224 Number of Car Seat Check-up Events
- 457 Total Number of Seats Checked
- 843 Number of Child Passenger Safety programs including lectures
- 4 Number of CPS Technician trainings hosted (in-person)
- 18 Number of CPS Technicians trained

TEEN DRIVING SAFETY

- 23 Number of ImPACT Teen Driving Safety programs provided (15 in-person, 8 virtual)
- 2,531 Number of ImPACT Teen Driving Safety participants
- 1 Number of Other Teen Driving programs provided

BIKE SAFETY PROGRAMS

- 50 Number of Bike Safety programs provided
- 4,518 Number of Bike Safety program participants
- 4,026 Number of Bike Helmets distributed by trauma centers

CONCUSSION/TBI PROGRAMS

- 1 Number of Concussion Education programs
- 140 Number of Concussion Education program participants

DRUG & ALCOHOL AWARENESS

- 17 Number of Drug and Alcohol Awareness programs (14 in-person, 3 virtual)
- 3,905 Number of Drug and Alcohol Awareness program participants

VIOLENCE PREVENTION

- 42 Number of Violence Prevention programs (24 in-person, 18 virtual)
- 469 Number of Violence Prevention program participants
- 10 Number of Healthcare Provider Violence Prevention programs
- 122 Number of Healthcare Provider Violence Prevention program participants

STOP THE BLEED (STB)

- 41 Number of STB Community programs (36 in-person, 5 virtual)
- 1,125 Number of STB Community participants
- 24 Number of STB Healthcare Provider trainings (18 in-person, 6 virtual)
- 257 Number of STB Healthcare Providers trained
- 3 Number of STB Law Enforcement trainings
- 40 Number of STB Law Enforcement Personnel trained
- 26 Number of STB School trainings
- 1,304 Number of STB School Staff and Students trained
- 63 Number of STB kits distributed in your communities
- 22 Number of tourniquets distributed



OTHER COMMUNITY PROGRAMS*

- 501 Number of Burn Prevention programs
- 1,022 Number of Burn Prevention program participants
- 502 Number of Drowning Prevention programs
- 624 Number of Drowning Prevention participants
- 502 Number of Pediatric Home Safety programs
- 1,732 Number of Pediatric Home Safety participants
- 1 Number of Farm Safety programs
- 512 Number of Farm Safety participants
- 1 Number of Sports Safety programs
- 858 Number of Sports Safety participants
- 653 Number of Poison Prevention programs
- 965 Number of Poison Prevention participants
- 250 Safety Whistles with LED lights distributed to PA Game Commission Officers
- 2,637 Safety Town participants
- 65 Number of Locking Medicine Bags to low-income families with children. Total reach: 153 parents and children
- 422 Number of participants in virtual Pedestrian Safety event
- 113 Number of participants in virtual Look Before You Lock event
- 183 Number of participants in virtual Window Lock Safety event

TRAUMA RESEARCH

Trauma Research is the cornerstone of PTSF's current strategic plan as we continue to promote clinical and trauma systems research utilizing PTSF's statewide trauma registry called "PTOS". PTOS is known nationally for the quality of its data and is a repository of data abstracted from every patient meeting PTOS criterion from Pennsylvania accredited trauma centers since 1986. This section highlights research performed by Pennsylvania's Trauma Centers much of which was made possible by utilizing data from the statewide PTOS trauma registry.

RESEARCH GRANTS & AWARDS

During the 24th Annual Fall Conference & Meeting, the Trauma Research Committee recognized PA trauma center researchers at the "PTOS Trauma Registry & Trauma Research" session. This was the fourth year that grants and awards were given to PA trauma center researchers. Money used for awards is received from the state of Ohio as part of contractual work performed by the PTSF Research Committee. The committee scores Ohio research proposals that are used to award Ohio researchers money that is received from moving traffic violations.

PTSF RESEARCH GRANT AWARD FOR BEST PTOS DATA REQUEST



Jeremy W. Cannon, MD, SM, FACS
Trauma, Surgical Critical Care &
Emergency Surgery
University of Pennsylvania
"Police Transport for Penetrating Trauma"

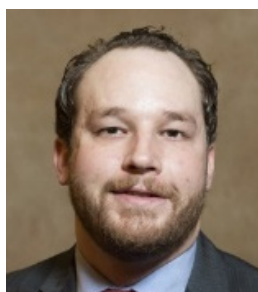
2020 PTOS DATA REQUESTS

- 16 requests for formal research
- 15 informal requests (PTSF, trauma center non-research)
- 2 requests from statewide organizations

PTSF BEST COMPLETED RESEARCH AWARDS



Elinore Kaufman, MD, MSHP
Penn Presbyterian Medical Center
**1st Place Winner for
Best Completed Research
using PTOS database**
*"Changes in Pennsylvania
Outcomes Over Time"*



Josh Brown, MD
UPMC Presbyterian
**2nd Place Winner for
Best Completed Research
using PTOS database**
*"Disparities in Rural vs. Urban
Field Trigger: Risk and Mitigating
Factors for Undertriage"*



Jeremy W. Cannon, MD, SM, FACS
Trauma, Surgical Critical Care &
Emergency Surgery
University of Pennsylvania
**3rd Place Winner for
Best Completed Research
using PTOS database**
*"Trauma Center Activity and
Surge Response During the Early
Phase of the COVID-19 Pandemic -
the Philadelphia Story"*

ANNUAL PTOS DATA SUMMARY

| | Total PTOS Patients | Total Deaths | Percent Mortality |
|------------------|---------------------|--------------|-------------------|
| 1986-1995 | 165,489 | 11,048 | 6.676% |
| 1996-2005 | 233,533 | 15,260 | 6.534% |
| 2006-2015 | 377,839 | 17,429 | 4.613% |
| 2016 | 43,907 | 1,771 | 4.000% |
| 2017 | 45,347 | 1,879 | 4.100% |
| 2018 | 50,019 | 1,924 | 3.800% |
| 2019 | 51,447 | 1,883 | 3.700% |
| 2020 | 49,657 | 2,145 | 4.300% |



49,568

GSWs 1985 - 2020



2,388

GSWs 2020

| | Average Hospital Length of Stay (Days) | Average Age | Average ISS |
|------------------|--|-------------|-------------|
| 1986-1995 | 9.042 | 38.840 | 12.454 |
| 1996-2005 | 6.364 | 41.577 | 12.432 |
| 2006-2015 | 5.394 | 48.134 | 10.960 |
| 2016 | 4.846 | 52.275 | 9.911 |
| 2017 | 4.850 | 53.413 | 9.915 |
| 2018 | 4.884 | 54.827 | 9.703 |
| 2019 | 4.901 | 55.744 | 9.818 |
| 2020 | 5.184 | 54.918 | 10.063 |

| | Total Driver or Passenger MVA | Total Wearing a Seatbelt | Total Not Wearing a Seatbelt | Percentage Not Wearing a Seatbelt |
|------------------|-------------------------------|--------------------------|------------------------------|-----------------------------------|
| 1986-1995 | 53,205 | 15,453 | 37,752 | 71.0% |
| 1996-2005 | 65,969 | 26,062 | 39,907 | 60.5% |
| 2006-2015 | 67,950 | 33,970 | 33,980 | 50.0% |
| 2016 | 9,545 | 3,692 | 5,853 | 61.30% |
| 2017 | 9,636 | 3,742 | 5,894 | 61.16% |
| 2018 | 9,951 | 4,211 | 5,740 | 57.68% |
| 2019 | 9,986 | 3,989 | 5,997 | 60.05% |
| 2020 | 10,015 | 3,303 | 6,712 | 67.02% |

- Pennsylvania Trauma Outcomes Study (PTOS) is Pennsylvania's statewide trauma registry
- All accredited trauma centers are required to submit data on their trauma patients who meet PTOS inclusion criteria
- Injury Severity Scores (ISS) range from 0–75. An ISS score greater than 15 is considered significant trauma
- 41 accredited trauma centers submitted PTOS data in 2019

TRAUMA CENTER INJURIES & DEATHS BY COUNTY

| County of Injury | Total Patients | # Deaths | % Deaths | County of Injury | Total Patients | # Deaths | % Deaths |
|------------------|----------------|----------|----------|---|----------------|----------|----------|
| Adams | 241 | 7 | 2.905 | Luzerne | 1831 | 66 | 3.605 |
| Allegheny | 4938 | 184 | 3.726 | Lycoming | 111 | 3 | 2.703 |
| Armstrong | 193 | 9 | 4.663 | McKean | 52 | 4 | 7.692 |
| Beaver | 410 | 15 | 3.659 | Mercer | 398 | 5 | 1.256 |
| Bedford | 195 | 8 | 4.103 | Mifflin | 146 | 6 | 4.11 |
| Berks | 1651 | 64 | 3.876 | Monroe | 993 | 22 | 2.216 |
| Blair | 524 | 23 | 4.389 | Montgomery | 1940 | 65 | 3.351 |
| Bradford | 283 | 9 | 3.18 | Montour | 120 | 11 | 9.167 |
| Bucks | 2168 | 60 | 2.768 | Northhampton | 1281 | 30 | 2.342 |
| Butler | 554 | 22 | 3.971 | Northumberland | 383 | 20 | 5.222 |
| Cambria | 629 | 20 | 3.18 | Perry | 116 | 4 | 3.448 |
| Cameron | 9 | 0 | 0 | Philadelphia | 6893 | 456 | 6.615 |
| Carbon | 428 | 5 | 1.168 | Pike | 140 | 5 | 3.571 |
| Centre | 243 | 10 | 4.115 | Potter | 27 | 2 | 7.407 |
| Chester | 1048 | 22 | 2.099 | Schuylkill | 661 | 30 | 4.539 |
| Clarion | 102 | 3 | 2.941 | Snyder | 113 | 3 | 2.655 |
| Clearfield | 296 | 14 | 4.73 | Somerset | 316 | 11 | 3.481 |
| Clinton | 54 | 5 | 9.259 | Sullivan | 26 | 0 | 0 |
| Columbia | 316 | 8 | 2.532 | Susquehanna | 93 | 1 | 1.075 |
| Crawford | 212 | 4 | 1.887 | Tioga | 79 | 4 | 5.063 |
| Cumberland | 627 | 16 | 2.552 | Union | 126 | 7 | 5.556 |
| Dauphin | 678 | 22 | 3.245 | Venango | 160 | 3 | 1.875 |
| Delaware | 1799 | 55 | 3.057 | Warren | 98 | 2 | 2.041 |
| Elk | 111 | 3 | 2.703 | Washington | 577 | 31 | 5.373 |
| Erie | 905 | 43 | 4.751 | Wayne | 271 | 10 | 3.69 |
| Fayette | 257 | 5 | 1.946 | Westmoreland | 1027 | 48 | 4.674 |
| Forest | 15 | 0 | 0 | Wyoming | 101 | 6 | 5.941 |
| Franklin | 213 | 13 | 6.103 | York | 1529 | 57 | 3.728 |
| Fulton | 91 | 2 | 2.198 | DATA OUTSIDE OF THE COMMONWEALTH INCLUDING: | | | |
| Greene | 36 | 3 | 8.333 | Delaware | 120 | 3 | 2.5 |
| Huntingdon | 135 | 4 | 2.963 | Maryland | 92 | 2 | 2.174 |
| Indiana | 197 | 5 | 2.538 | New Jersey | 927 | 24 | 2.589 |
| Jefferson | 134 | 5 | 3.731 | New York | 610 | 26 | 4.262 |
| Juniata | 69 | 2 | 2.899 | Ohio | 375 | 13 | 3.467 |
| Lackawanna | 655 | 24 | 3.664 | West Virginia | 210 | 4 | 1.905 |
| Lancaster | 1839 | 91 | 4.948 | Other State | 70 | 3 | 4.286 |
| Lawrence | 191 | 5 | 2.618 | Virginia | 10 | 0 | 0 |
| Lebanon | 380 | 12 | 3.158 | Other Country | 46 | 0 | 0 |
| Lehigh | 1625 | 48 | 2.954 | Not Valued | 5038 | 52 | 1.032 |

p e n n s y l v a n i a
**TRAUMA
SYSTEMS**
f o u n d a t i o n



Celebrating the PAST.
Advancing the FUTURE.

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Pictured on cover: Children's Hospital of Pittsburgh Trauma Team