Consultation Site Visit  
Level I Trauma Center

| Name of Facility | University Hospitals Case Medical Center  
<table>
<thead>
<tr>
<th></th>
<th>Cleveland, Ohio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Visit ID Number</td>
<td>6232</td>
</tr>
<tr>
<td>President</td>
<td>Dr. Fred C. Rothstein, MD</td>
</tr>
<tr>
<td>Medical Director</td>
<td>Keith D. Clancy, MD FACS</td>
</tr>
<tr>
<td>Program Manager</td>
<td>Sandra Daly-Crossley, RN</td>
</tr>
<tr>
<td>Survey Dates</td>
<td>April 28-29, 2015</td>
</tr>
</tbody>
</table>
| ACS Surveyors     | Jeffrey Young, MD FACS  
|                   | Jonathan D. Gates, MD FACS  
|                   | Amy Koestner, RN |
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EXECUTIVE SUMMARY

University Hospitals Case Medical Center in Cleveland, Ohio was reviewed on April 28-29, 2015 by Drs. Jeffrey Young and Jonathan Gates, and Amy Koestner, RN, for consultation as a Level I trauma center. This hospital provides trauma care for adults only. At the time of the visit, the hospital was not actively accepting trauma patients due to Ohio regulations that require a hospital to have completed a consultation visit and have submitted an action plan before allowing emergency medical services (EMS) to bring trauma patients to the facility. The findings of the reviewers are as follows.

Deficiencies

1. The Level I trauma center does not meet admission volume performance requirements. (2.3) (Type I)
2. The 80% compliance of the surgeon's presence in the emergency department (ED) is not confirmed or monitored by performance improvement and patient safety (PIPS). (2.7) (Type I)
3. The criteria for the highest level of activations are clearly defined but not yet evaluated by the PIPS program. (6.7) (Type II)
4. Other emergency physicians who take trauma call do not have the documented 16 hours annually or 48 hours in 3 years of trauma-related continued medical education (CME) and do not participate in an internal educational process (IEP) conducted by the trauma program based on the principles of practice-based learning and the PIPS program. (7.13) (Type II)
5. Other neurosurgeons who take trauma call do not have the documented 16 hours annually or 48 hours in 3 years of verifiable, external trauma related CME, and do not participate in an IEP conducted by the trauma program based on the principles of practice-based learning and the PIPS program. (8.14) (Type II)
6. The orthopaedic trauma team member does not have documentation of the acquisition of 16 hours of CME per year on average and has not participated in an internal educational process conducted by the trauma program and the orthopaedic liaison based on the principles of practice-based learning and the PIPS program. (9.17) (Type II)
7. Programs that admit more than 10% of injured patients to nonsurgical services do not demonstrate the appropriateness of that practice through the PIPS process. (5.11) (Type II)
8. The PIPS process has not demonstrated the appropriate care or response by providers for the entire site visit year. (13.2) (Type II)
9. The PIPS program has not defined conditions requiring the surgeon’s immediate hospital presence. (2.6) (Type II)
10. Seriously injured patients are not admitted to or evaluated by an identifiable surgical service staffed by credentialed trauma providers. (5.12) (Type I)
11. The core group does not take at least 60% of the total trauma call hours each month. (5.21) (Type II)
12. An attendance threshold of 80% is not met for trauma surgeon presence in the ED. (6.6) (Type I)
13. There is no trauma medical director (TMD)-approved plan that determines which types and severity of neurologic injury patients should remain at the facility when no neurosurgical coverage is present. (8.6) (Type II)
14. The process of analysis does not occur at regular intervals to meet the needs of the program. The committee has only been meeting since January, 2015. (16.5) (Type II)
15. A published backup call schedule for trauma surgery is not available. (6.5) (Type II)
A published backup call schedule for neurosurgery is not available. (5.3) (Type II)

There is no orthopaedic surgeon who is identified as the liaison to the trauma program. (9.4) (Type I)

The orthopaedic surgical liaison to the trauma program at Level I and II centers has not documented at least 16 hours annually or 48 hours in 3 years of verifiable, external trauma-related CME. (9.16) (Type II)

The operating rooms (ORs) are not promptly available to allow for emergency operations on musculoskeletal injuries, such as open fracture debridement and stabilization and compartment decompression. (9.2) (Type I)

The design of the backup call system, the responsibility of the orthopaedic trauma liaison, has not been approved by the TMD. (9.8) (Type II)

Physicians who are not board certified in emergency medicine who work in the ED are not current in ATLS. (7.15) (Type II)

There is no trauma multidisciplinary peer review committee with participation by the TMD or designee and representatives from general surgery, orthopaedic surgery, neurosurgery, emergency medicine, and anesthesia. This meeting only began after the site visit year. (16.19) (Type II)

The trauma center does not provide a continuous rotation in trauma surgery for general surgery senior residents that is part of an Accreditation Council for Graduate Medical Education-accredited program. (17.5) (Type I)

The orthopaedic service does not participate actively in the PIPS program. (9.12) (Type II)

The orthopaedic liaison does not attend 50% of multidisciplinary PI (MDPI) meetings. (9.13) (Type II)

**Strengths**

1. Dr. Keith Clancy and Dr. Vanessa Ho
2. Trauma program manager and trauma program staff
3. ED nursing certification with 70% TNCC
4. Hospital financial support for becoming trauma center (multiple faculty and NP/PA hires)
5. Hospital administrative support
6. Trauma bays
7. Injury prevention center
8. Commitment to emergency medical services and medical direction
9. Commitment to future 24/7 in-house radiology coverage
10. Geriatric integration with trauma service
11. Current patient complexity provides excellent infrastructure for trauma care
12. Blood bank commitment and capacity
13. Commitment to increase registry FTEs

**Weaknesses**

1. Intensive care unit and postanesthesia care unit nursing certifications
2. Organ procurement
3. Few research articles from general surgery
4. Long ED times
5. Insufficient office space for trauma program

**Recommendations**

1. Increase volumes to meet level 1 criteria.
2. Audit and ensure 80% presence for highest-level activations.
3. All liaisons must attend at least 50% of PI meetings.
4. Implement and audit activation criteria that have already been delineated.
(5) Initiate an IEP program.
(6) Ensure all liaisons meet CME requirements.
(7) Ensure that the program continues to evaluate non-surgical admissions in a consistent manner.
(8) Institute a trauma service as planned.
(9) Institute an in-house trauma surgeon program as described when staff available.
(10) When core trauma surgeons are hired, ensure that 60% of call is covered by that core.
(11) Continue monthly PI meetings.
(12) Create backup trauma and orthopaedic call schedules, and ensure the TMD approves.
(13) Work with the other Level I in the city to create a plan for complex neurotrauma as the center builds its capabilities.
(14) Ensure that the orthotrauma OR is available as planned.
(15) The emergency medical physician boarded in IM must complete ATLS.
(16) The center must have a senior-level general surgery resident rotation on trauma surgery.
(17) Create an orthopaedic trauma liaison position that meets American College of Surgeons Committee on Trauma requirements.
(18) Adding geriatrics representation to the MDPI could be helpful.
(19) Make certain that advanced practice providers that see patients in the ED have ATLS.
(20) Try to find adequate office space for trauma program to be co-located.
I. PURPOSE OF REVIEW

University Hospitals Case Medical Center in Cleveland, Ohio was reviewed on April 28-29, 2015 by Drs. Jeffrey Seth Young and Jonathan Gates, and Amy Koestner, RN, for consultation as a Level I Trauma Center. This hospital provides trauma care for adults only. The review was requested by UHCMC, which has no designating agency. The reporting year for the review was Feb 2014 to Jan 2015.

There was a consultation visit 10 years ago by Galen Poole and Mike Thomason. The hospital did not pursue verification after this consultation visit.

During the prereview meeting, the site surveyors met with the following members of the trauma program.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Anderson, MD</td>
<td>Chief Medical Officer</td>
</tr>
<tr>
<td>Keith Clancy, MD</td>
<td>Division Chief, Trauma/Acute Care Surgery</td>
</tr>
<tr>
<td>Sandra Daly-Crossley, RN, MSN</td>
<td>Trauma Program Manager</td>
</tr>
<tr>
<td>Michael Dingeldein, MD</td>
<td>Pediatric Trauma Medical Director, Rainbow Babies &amp; Children’s</td>
</tr>
<tr>
<td>Ronald Dziedzicki</td>
<td>Vice President and Chief Operating Officer</td>
</tr>
<tr>
<td>Jane Dus, RN, MSN</td>
<td>Vice President and Associate Chief Nursing Officer</td>
</tr>
<tr>
<td>Dan Ellenberger</td>
<td>Director, Emergency Medical Services Institute</td>
</tr>
<tr>
<td>Ellen Fitzenrider</td>
<td>Trauma Data Analyst</td>
</tr>
<tr>
<td>Judy Harris, RN, MSN</td>
<td>Trauma Performance Improvement Coordinator</td>
</tr>
<tr>
<td>Vanessa Ho, MD</td>
<td>Trauma/Acute Care Surgery</td>
</tr>
<tr>
<td>Alan Hoffer, MD</td>
<td>Neurological Surgery/Neurosurgery Liaison</td>
</tr>
<tr>
<td>Edmundo Mandac, MD</td>
<td>Interim Chair, Emergency Medicine/Emergency Medicine Liaison</td>
</tr>
<tr>
<td>Randall Marcus, MD</td>
<td>Chair, Department of Orthopaedics</td>
</tr>
<tr>
<td>Jeffery Peters, MD</td>
<td>Chief Operating Officer, University Hospitals Health System</td>
</tr>
<tr>
<td>Fred Rothstein, MD</td>
<td>President</td>
</tr>
<tr>
<td>James Rowbottom, MD</td>
<td>Chair, Anesthesia/Critical Care Liaison</td>
</tr>
<tr>
<td>Warren Selman, MD</td>
<td>Chair, Neurological Surgery</td>
</tr>
<tr>
<td>Jon Sontich, MD</td>
<td>Chief, Orthopaedic Trauma</td>
</tr>
<tr>
<td>Kathy Wesolowski</td>
<td>Manager, Injury Prevention</td>
</tr>
<tr>
<td>Peter Young, MD</td>
<td>Radiology Liaison</td>
</tr>
</tbody>
</table>

During this meeting, the verification program was reviewed, and the prereview questionnaire was discussed in detail. Important issues that were addressed included the proposed structure of the trauma center, once it can open its doors to trauma patients. The hospital is planning on having five trauma/critical care surgeons in place by October, 2015. There will be four total NP/PA FTEs in place for trauma service night coverage, and three FTEs for day coverage. Orthopaedics has two fellowship-trained surgeons to start June 1. Neurosurgery is also pursuing another faculty hire.

II. HOSPITAL INFORMATION

UHCMC is a university, not-for-profit hospital. It has an affiliation with Case Western Reserve University (CASE).

The payer mix for the hospital is as follows.
<table>
<thead>
<tr>
<th>Payer</th>
<th>All Patients (%)</th>
<th>Trauma Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Medicare</td>
<td>55</td>
<td>59</td>
</tr>
<tr>
<td>Medicaid</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>HMO/PPO</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Uncompensated</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The "other" category includes Workman's Comp cases, industrial coverage, research patients and Tricare.

All of the trauma activities are within one campus.

The bed status for the hospital is as follows.

<table>
<thead>
<tr>
<th>Hospital Beds</th>
<th>Adult</th>
<th>Pediatric</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensed</td>
<td>703</td>
<td>244</td>
<td>947</td>
</tr>
<tr>
<td>Staffed</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Average Census</td>
<td>491</td>
<td>152</td>
<td>643</td>
</tr>
</tbody>
</table>

The hospital is located within the east side of Cleveland, Ohio and serves the local and regional population of Northeast Ohio. The affiliated pediatric trauma program is independent from the adult program and is an active, well-recognized trauma program that has been verified and reverified multiple times. Budgetary, administrative, and medical staff commitment is evident.

The hospital has the commitment of the institutional governing body and the medical staff to become a trauma center. There are resolutions supporting the trauma program from both the hospital administration and the medical executive committee.

**III. PREHOSPITAL**

UHCMC is located in the City of Cleveland in eastern Cuyahoga County. A total of 12 trauma centers are located within a 50-mile radius of the hospital, including three Level I adult centers and two Level II centers. There is a Level I pediatric center located on the UHCMC campus. There are two Level II pediatric trauma centers as well.

The day-to-day authority over emergency medical services (EMS) is assigned at the state level by the Ohio department of public safety-division of emergency medical services. Day-to-day authority for EMS operations varies within individual regions, counties and cities. UHCMC provides medical direction and education to over 100 fire and EMS services in Northeast Ohio, a strength of the program. The trauma program team participates in prehospital care protocol development and the performance improvement and patient safety (PIPS) program. Examples include regular participation in bimonthly EMS council meetings. The TMD is a member of the council and provides input into the prehospital protocols.

There are nine rotor wing aircraft operating in the immediate Northeastern Ohio area that are available for both interfacility and scene flight response. University MedEvac operates two aircraft that support UHCMC. Crew configurations vary among the services and include RN/EMT-P crews and/or MD/NP/RN flight crews. Fixed wing aircraft are available through the rotor wing services for long-distance patient transports. The hospital serves as a base station and provides medical direction for EMS operations.
The trauma program team is involved in prehospital training by way of EMS education, outreach and protocol development. The trauma medical director (TMD) is a member of the EMS operations committee, which has operational oversight for EMS protocol development and approval and well as PI for EMS system wide. The trauma program manager (TPM) is a state-certified EMS CE instructor. The UHCMC Health System sponsors numerous EMS Education Symposiums annually. A representative from the emergency department (ED) participates in the prehospital PIPS program.

IV. TRAUMA SERVICE

A. TRAUMA MEDICAL DIRECTOR (TMD)

The TMD, Dr. Keith Clancy, graduated from Creighton University in 1992, and completed his residency in Surgery at Loyola University Medical Center in 1998. He also completed a trauma fellowship in Surgery in 2000. He is board certified in general surgery and in surgical critical care. He is a Fellow of the American College of Surgeons (ACS), and is current in ATLS as an instructor. His external trauma continuing medical education (CME) for the last 3 years is adequate. He is a member of the American Association for the Surgery of Trauma and Eastern Association for the Surgery of Trauma. The TMD participates in trauma call, though that call has not yet begun.

There is currently no designated, recognizable trauma service. However, it is under development. Dr. Clancy has been involved in the hiring of an additional five general trauma surgeons to begin over the course of June to September of this year. He reports to the chairman of the department of surgery for clinical issues and the Vice President of Medical-Surgical Service for operational issues. He also serves as the University Hospitals System Director of Trauma as it begins to develop. There are 12 hospitals in Northeast Ohio, including two Level II trauma centers and three Level III trauma centers, that comprise the UHCMC trauma system.

Dr. Clancy has the authority and administrative support to lead all aspects of the program on paper, though this has not been operationalized.

B. TRAUMA SURGEONS

Including Dr. Clancy, there is one other board-certified/eligible surgeon currently taking trauma call. The trauma surgeon core group is adequately defined by the TMD. There are two core trauma surgeons who do not take at least 60% of the total trauma call hours each month. Trauma-related CME or IEP participation over the past 3 years is adequate for both surgeons on the call panel, and they have successfully completed the ATLS course at least once. While on call, the trauma surgeon is dedicated to the trauma center, and may care for non-trauma emergencies. The general surgeon or appropriate substitute (PGY-4-5 resident) is available for major resuscitations in-house 24 hours a day, although at this time they are not assigned to the trauma service. There is a published backup call schedule for the trauma surgeons. The trauma surgeons are board certified in surgical critical care. We are unable to evaluate if the trauma panel surgeons respond promptly to activations, since the center has not put in place its activation system yet.

C. TRAUMA PROGRAM MANAGER (TPM)

Ms. Sandra Daly-Crossley, RN, is the TPM, and holds a bachelor and master’s degree in nursing. She has been in that position for 2 years. She has considerable clinical trauma experience through flight nursing, emergency nursing and previous TPM experience at other trauma centers. She is a TNCC, ACLS, and EMS instructor. She has over 60 continuing education credits accrued during the reporting period.

She reports to the vice president of medical surgical services for clinical, operational, and fiscal issues, and the TMD for patient care and provider-related issues.
Ms. Daly-Crossley has three support FTEs within her department. These include a PI coordinator, trauma data analyst, and administrative assistant. There is currently one open trauma registrar FTE position. She is an active member in regional and state trauma committees. She represents the hospital on the local EMS advisory committee.

D. TRAUMA SERVICE

At the time of review there is no trauma service at UHCMC, though its operational design is complete. The TMD will review the appropriateness and timeliness of care and PI issues for patients admitted with primary traumatic injuries and will be the liaison between the hospital administration and the trauma surgeons.

Seriously injured patients were not admitted to or evaluated by an identifiable surgical service staffed by credentialed trauma providers during the site visit year. The plan is for this service to be created. There is insufficient infrastructure and support to the trauma service to ensure adequate provision of care at this time. The trauma service faculty will be comprised of trauma fellowship trained surgeons with added qualifications in surgical critical care. Once hired, they will comprise the division of trauma and acute care surgery and be responsible for the care for the trauma/acute care surgery patient population. In addition to attending physician coverage, nurse practitioners are integral to the trauma/acute care surgery coverage. At the time of the review, there is no senior level general surgery rotation on trauma, and the logistics for such have not yet been worked out.

The hospital has additional credentialing criteria for serving on the trauma panel, and these include the following.

- Board certification in general surgery (within 5 years of completion of an approved residency)
- Member in good standing of the active hospital medical staff with appropriate credentials in trauma/general surgery and surgical critical care
- Current ATLS provider status
- Successful achievement on annual review by TMD of quality metrics that support ongoing trauma panel participation
- Evidence of sufficient trauma-related CME during the credentialing period
- Meets all other departmental requirements as well as those outlined in the most current edition of the ACS “Resources for the Optimal Care of the Injured Patient”

E. TRAUMA RESPONSE/ACTIVATION

There is currently no formal trauma activation process in place. They have been defined to three levels but have not been implemented. The criteria and the tiered response were reviewed and are acceptable. The same is true of a trauma flow sheet, which was provided for the reviewers. EMS, EM physician, ED nurse, and trauma surgeon can activate the trauma team.

The statistics for each level of response are unavailable, as the process has not been implemented.

It is expected that the trauma surgeon be present in the ED on patient arrival (or within 15 minutes) of patient arrival with prior notification for the highest level of trauma team activation, though this could not be audited by the team. The trauma attending will be expected to respond to the ED for partial team activations, and to be present to evaluate the patient within 30 minutes of patient arrival.

The highest level of activation will be instituted via group pager. The criteria for activation of each level are clearly defined by the trauma center and are not yet, but will be, be continuously evaluated by the PIPS program, and include the six minimum criteria of the Committee on Trauma for the
highest level of activation. The reviewers cannot evaluate trauma surgeon presence at activations at the time of this review.

The personnel on the trauma team for each level of activation include the following.

<table>
<thead>
<tr>
<th>Responder</th>
<th>Activation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest</td>
</tr>
<tr>
<td>Trauma Attending</td>
<td>X</td>
</tr>
<tr>
<td>ED Attending</td>
<td>X</td>
</tr>
<tr>
<td>ED Resident</td>
<td>X</td>
</tr>
<tr>
<td>Surgical Resident (PGY4-5)</td>
<td>X</td>
</tr>
<tr>
<td>Mid Level's (NP)</td>
<td>X</td>
</tr>
<tr>
<td>ED RN (s)</td>
<td>X</td>
</tr>
<tr>
<td>EMT-P</td>
<td>X</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>X</td>
</tr>
<tr>
<td>Respiratory</td>
<td>X</td>
</tr>
<tr>
<td>Radiology/CT</td>
<td>X</td>
</tr>
</tbody>
</table>

F. TRAUMA/HOSPITAL STATISTICAL DATA

Though PGY4-5 residents are noted in the activation protocol, these residents are not yet available to the trauma program.

The ED activity and trauma demographics are summarized below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ED Visits</td>
<td>57,140</td>
</tr>
<tr>
<td>Trauma ED Visits</td>
<td>13,578</td>
</tr>
<tr>
<td>Blunt trauma</td>
<td>92.5</td>
</tr>
<tr>
<td>Penetrating trauma</td>
<td>7.5</td>
</tr>
<tr>
<td>Burns</td>
<td>0</td>
</tr>
</tbody>
</table>

The trauma-related ED activity led to the following trauma admissions.

<table>
<thead>
<tr>
<th>Service</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma</td>
<td>4</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>100</td>
</tr>
<tr>
<td>Neurosurgical</td>
<td>220</td>
</tr>
<tr>
<td>Other Surgical</td>
<td>67</td>
</tr>
<tr>
<td>Burn</td>
<td>0</td>
</tr>
<tr>
<td>Non-Surgical</td>
<td>146</td>
</tr>
<tr>
<td>Total</td>
<td>537</td>
</tr>
</tbody>
</table>

The number of non-surgical admissions (146) is high, representing 40% of the total admissions. These have been reviewed by the TPM since January, 2015. Those patients admitted to non-surgical services with an ISS greater than 9 are referred to the TMD for review.

Arrangements have been made for co-management of selected elderly trauma patients with the geriatric service that has a designated floor. This is important, given that 323 (60%) of their total trauma admissions were geriatric patients.

UHCMC does not meet the admission volume performance requirements.

The disposition of trauma admissions from the ED is shown below.
## Disposition

<table>
<thead>
<tr>
<th>Disposition</th>
<th>Number</th>
<th>Admitted to Trauma Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED to OR</td>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td>ED to ICU</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>ED to Floor/Ward</td>
<td>248</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>335</td>
<td>4</td>
</tr>
</tbody>
</table>

The ISS and percent mortality are as follows.

<table>
<thead>
<tr>
<th>ISS</th>
<th>Trauma Admissions</th>
<th>Deaths</th>
<th>Mortality (%)</th>
<th>Admitted to Trauma Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>416</td>
<td>7</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10-15</td>
<td>62</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>16-24</td>
<td>35</td>
<td>3</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>&gt;25</td>
<td>24</td>
<td>14</td>
<td>56</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>537</td>
<td>27</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

The differences in the totals of the above three tables are because of a presumed 89 patients that are direct transfers from an inpatient bed at one facility to an inpatient bed at UH. The other transfers listed presumably entered the system through the ED and would be captured in the trauma admissions as a result of ED activity.

The number of trauma transfers is as follows.

<table>
<thead>
<tr>
<th>Transfers</th>
<th>Air</th>
<th>Ground</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfers In</td>
<td>38</td>
<td>337</td>
<td>375</td>
</tr>
<tr>
<td>Transfers Out</td>
<td>8</td>
<td>30</td>
<td>38</td>
</tr>
</tbody>
</table>

A mechanism for direct physician-to-physician contact is present for arranging patient transfer. The decision to transfer an injured patient to a specialty care facility in an acute situation is based solely on the needs of the patient.

### G. TRAUMA BYPASS

UHCMC has a bypass protocol, and during the reporting year, was not on bypass; however, all major trauma patients are taken directly to MetroHealth unless circumstances require them to stop at UHCMC for life threatening issues. The trauma surgeon is involved in the development and decisions of the trauma center's bypass protocol.

### H. NEUROSURGERY

Dr. Seth Alan Hoffer, the neurosurgical liaison to the trauma program, graduated from the University of Rochester School of Medicine and Dentistry in 2001, completed his residency training at the University Hospitals of Cleveland in 2009 and was board certified in 2014. He is a member of the American Association of Neurological Surgery and Congress of Neurological Surgery. Dr. Hoffer has adequate trauma CME over the past 3 years.

Including Dr. Hoffer, there are seven board-certified/eligible neurosurgeons on the call panel. Trauma-related CME or IEP over the past 3 years is inadequate for the neurosurgeons on the call panel.

While on call, the neurosurgeon is dedicated to the hospital. Neurotrauma care is promptly and continuously available for severe traumatic brain injury and spinal cord injury, and for less severe head and spine injuries when necessary. An attending neurosurgeon is promptly available to the
hospital's trauma service when neurosurgical consultation is requested. During the reporting year, the neurosurgeons performed two emergency craniotomies within 24 hours of admission. Qualified neurosurgeons are expected to be regularly involved in the care of head and spinal cord-injured patients. The hospital does not provide an on-call neurosurgical backup schedule with formally arranged contingency plans in case the capability of the neurosurgeon, hospital, or system to care for neurotrauma patients is overwhelmed. All neurosurgical transfers/diversions are monitored in the PIPS program and convincingly demonstrate appropriate care in the receiving institution. There is a neurosurgical residency program at this institution.

I. ORTHOPAEDIC SURGERY

There is no orthopaedic liaison to the trauma program. CME is not adequate for the orthopaedists. This individual has been hired but has not started in the position. He is fellowship trained in orthopaedic trauma. In addition, another trauma-fellowship orthopaedic surgeon has signed on and will begin within the next three months. There are plans for an additional two more orthopaedic trauma surgeons.

During the reporting year, 40 operative cases were done within 24 hours of admission by the orthopaedic service. Also during the reporting year, there were no operative pelvis and acetabular fracture cases performed at this institution. There is an orthopaedic surgery residency program here, and the hospital participates in an orthopaedic trauma fellowship with MetroHealth.

The reviewers were unable to evaluate if an orthopaedic team member is promptly available in the trauma resuscitation area when consulted by the surgical trauma team leader for multiply injured patients. Orthopaedic team members have dedicated call at their institution. The design of the backup call system is the responsibility of the orthopaedic trauma liaison and has not been approved by the TMD.

The trauma center provides sufficient resources including instruments, equipment, and personnel for modern musculoskeletal trauma care, with readily available operating rooms (ORs) for musculoskeletal trauma procedures. Physical/occupational therapists and rehabilitation specialists are involved in the acute and rehabilitation phases of care. The ORs are planned to be promptly available to allow for emergency operations on musculoskeletal injuries, such as open fracture debridement/stabilization and compartment decompression. There is a proposed mechanism to ensure OR availability without undue delay for patients with semi-urgent orthopaedic injuries. Plastic surgery, hand surgery, and spinal injury care capabilities are present.

V. HOSPITAL FACILITIES
A. EMERGENCY DEPARTMENT

The ED has a designated emergency physician director supported by an appropriate number of additional physicians to ensure care for injured patients. Dr. Edmundo Mandac, the emergency medicine liaison to the trauma program, graduated from the University of Hawaii Burns School of Medicine in 1977, and completed his residency in internal medicine in 1981. Dr. Mandac is board certified, has taken ATLS in the past, and is currently an ATLS provider. He has adequate trauma-related CME. He or an alternate emergency physician is available to the TMD for PI program issues that occur in the ED.

Including Dr. Mandac, there are 23 board-certified/eligible emergency physicians who treat trauma patients. Trauma-related CME or IEP participation over the past 3 years is not adequate for the emergency physicians on the call panel. Emergency physicians on the call panel are regularly involved in the care of injured patients. Not all of the emergency physicians have successfully completed the ATLS course at least once, nor are all non-EM boarded ED physicians current in ATLS.
The roles of the emergency physicians and trauma surgeons are well defined, agreed upon, and approved by the director of the trauma services. While on call, the emergency physician does not have responsibilities outside the ED. Emergency medicine residents are involved in the care of patients in the ED. The residents are supervised at all times by in-house attending emergency physicians.

There is a covered, heated entrance to the ED with parking for eight vehicles. The decontamination area is adjacent to this entrance. There are three well-equipped trauma resuscitation areas a short distance from the ambulance entrance. The helicopter landing pad is on an adjacent building.

Since the program has not gone live with its trauma resuscitation and activation program, we are unable to evaluate the effectiveness of the trauma flow sheet in capturing essential information.

Credentialing requirements for nurses who treat trauma patients include BLS and ACLS completion within 1 year of hire. Completion of TNCC after 1 year of employment is strongly recommended for nurses without prior trauma experience or TNCC certification. Annual requirements for all ED RNs cover trauma core competencies.

Nurses are required to have trauma-related continuing education, including TNCC. Courses have been held both on campus and throughout the UHCMC hospital system. Approximately 70% of the ED nurses have attended TNCC. The nurses average 10 years’ experience, with an annual turnover rate of 5%. Extra certifications include 70% TNCC, 13% CEN, and 90% ACLS.

The hospital has a separate area and separate equipment for pediatric resuscitation.

**B. RADIOLOGY**

There is a radiologist appointed as liaison to the trauma program. Radiology is promptly available, in person or by teleradiology 24/7. There is currently in-hospital coverage by attending level physicians through day time hours. After hours coverage is performed by radiology fellows and residents, although attending radiologists are available for complex studies and IR at all times. After hours studies are over-read by an attending radiologist the following morning. Attending radiologists will be in house 24/7 beginning July 1, 2015.

Radiology communications include changes between preliminary and final interpretations. The PIPS program monitors the changes. When an error is identified, the hospital utilizes the RADPEER review system. Preliminary reports are compared to the initial radiologist’s reading and any discrepancies are communicated to either the admitting physician or ED physician. Discrepancies are tracked and documented using the VERIFY system.

The department contains resuscitation equipment for both adult and pediatric patients. There are policies developed to ensure trauma patients who may require resuscitation and monitoring by accompanied by appropriately trauma team providers during transportations to and while in the radiology department. Conventional radiography and CT are available 24 hours per day. There is an in-house radiographer.

The CT technician is available in-house 24/7. Conventional catheter angiography and sonography are available 24 hours per day. MRI capability is available 24 hours a day and the PIPS program documents the appropriate timeliness of the arrival of the MRI technologist. After hours, response time for starting procedures for angiography is 30 minutes and MRI is 50 minutes.

**C. OPERATING SUITE**
The 42-bed operating suite is located on the UHCMC campus. The primary ORs for emergent adult trauma are located off the second floor lobby of Lerner Tower and adjacent to the SICU and blood bank. The OR is adequately staffed and immediately available. The OR personnel are in-house 24/7 to start an operation. There is a mechanism for providing additional staff for a second room when the first OR is occupied. If the in house teams are actively involved in a case the backup trauma team is notified by group pager to respond to the hospital. One scrub nurse can break scrub to open a room prior to the arrival of the trauma team personnel. There will be sufficient personnel to start two rooms 24/7.

During the daytime there is a room for add-on orthopaedic and trauma take backs. Other non-urgent cases can be add-ons to the OR schedule if all rooms are in use. If a room is open and available, that room is used. The OR team does not have functions requiring its presence outside the OR. There is a mechanism for documenting the trauma surgeon's presence in the OR availability and delays when on-call team is used. The OR has the essential equipment.

The anesthesia liaison to the trauma program, Dr. James Rowbottom, graduated from the University of Cincinnati College of Medicine in 1987, completed his training in anesthesia, and was certified in 1993. He is an ATLS provider. There are 47.5 anesthesiologists on staff, and two are on backup call off-hours. All of the anesthesiologists taking call have successfully completed an anesthesia residency program. UHCMC utilizes CRNAs, and they are involved in the care of the trauma patient, with two providing in-house call.

Anesthesiology services are promptly available for emergency operations and for airway problems. There are anesthesia services in-house 24 hours a day. When anesthesiology chief residents or CRNAs are used to fulfill availability requirements, the staff anesthesiologist on call is advised, promptly available at all times, and present for all operations. The availability of the anesthesia services and the absence of delays in airway control or operations are documented by the hospital PIPS process.

D. POSTANESTHESIA CARE UNIT (PACU)

The PACU contains 31 beds. The PACU has qualified nurses available 24 hours per day as needed during the patient's postanesthesia recovery phase. The PIPS program documents that the PACU nurses are available and delays are not occurring when the PACU is covered by a call team from home. The PIPS process ensures that the PACU has the necessary equipment to monitor and resuscitate patients. The PACU occasionally serves as an overflow for the ICU.

Credentialing requirements for nurses who care for trauma patients address issues that may arise for boarded ICU patients in the event that ICU beds are not immediately available. In the event that there are no SICU beds, the most stable ICU patients are "boarded back" to the PACU. PACU RNs are required to complete the same annual competencies as ICU RNs with the exception of Swan-Ganz monitoring and care of postop hearts/transplants. Patients of this type are not boarded in the PACU. Extra certification in PACU staff includes 98% ACLS and 17% CPAN.

E. INTENSIVE CARE UNIT (ICU)

The ICU consists of 94 beds, including 20 pediatric and 20 surgical. Dr. Clancy, the surgical director of the ICU, is responsible for setting policies and administration related to trauma ICU patients. Dr. Clancy has board certification in surgical critical care. He has appropriate training and experience for the role of surgical director.

The trauma surgeon remains in charge of patients in the ICU. The immediate response for life-threatening events is provided by a trauma intensivist who will cover trauma patients during day time hours. There will be a trauma surgeon in-house 24/7 who will cover the trauma ICU after hours.
with the addition of an NP and residents on the trauma/acute care surgery service. There will be an in-house surgeon covering the ICU at all times. Quality-of-care issues are resolved by a local PI group that reports up through the hospital PI structure.

There is a surgically directed ICU team, consisting of trauma surgeons with board certification in surgical critical care. All will be responsible for the ICU management of patients on the trauma/acute care surgery service. The trauma service will retain responsibility for patients in the ICU and coordinate all therapeutic decisions appropriate for the level of the trauma program.

Qualified nurses are available 24 hours per day to provide ICU care. ACLS is required within 1 year of hire, and TCAR is strongly recommended. Critical care orientation includes classes and competencies in hemodynamic monitoring, ventilator management, IABP, and VAD. The nurses average 10 years of experience, with an annual turnover rate of 10%. The hospital always maintains a one-nurse-to-two-patients or better staffing pattern for patients in the unit.

Extra certification includes 61% ACLS and 30% CCRN. Continuing trauma-related education includes ongoing annual competencies (A-line, chest tubes/invasive monitoring/hemodynamics), ACLS, and TCAR, if not already completed. The ICU has the necessary equipment to monitor and resuscitate patients. Intracranial pressure monitoring equipment is available. There is a respiratory therapist available to care for trauma patients 24 hours per day. Hemodialysis is available.

**F. BLOOD BANK**

The blood bank acts as the regional blood bank for the hospital system.

There is a massive transfusion protocol (MTP), and uncrossmatched blood is immediately available. MTP is a hospital-wide protocol developed by a multidisciplinary team to address the needs of the adult patient requiring massive transfusion. The MTP is designed to provide a balanced resuscitation of blood products. The transfusion medicine service is involved in the MTP as well as the initiating attending service physician to provide on-going monitoring of the utilization of blood products and laboratory studies while the MTP is active. The average turnaround time for type-specific blood is 15 minutes, and for full crossmatch, 30 minutes. The blood bank has an adequate supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients.

**VI. SPECIALTY SERVICES**

**A. PEDIATRIC TRAUMA**

The trauma program defines an injured pediatric patient as younger than 16 years old. No such patients were admitted during the reporting year. Pediatric patients are treated at Rainbow Children’s Hospital, a verified pediatric trauma center. Pediatric patients are not treated or admitted to the adult trauma center.

**B. REHABILITATION SERVICES**

Dr. Mirza Baig, the director of the rehabilitation program, is board certified in physical medicine and rehabilitation. Individual patient rehabilitation needs are identified through initial and ongoing assessments. Referrals can be made to all of the rehabilitation specialties, and therapies are initiated as soon as medically indicated. Ongoing outpatient therapy and/or inpatient rehabilitation needs are assessed and therapies initiated as indicated. In 2013, UHCMC opened a 50-bed rehabilitation hospital located approximately 10 miles east of the main hospital campus in Beachwood, Ohio. There is a plan to open an additional off-site rehabilitation facility in the west of Cleveland in 2016 with an additional 50 beds.
Rehabilitation consultation services, occupational therapy, speech therapy, physical therapy, and social services are available during the acute phase of care (ICU and floor). Rainbow Babies and Children’s Hospital has separate pediatric rehabilitation specialists to assess the needs of pediatric trauma patients and recommend transfer to appropriate in patient rehab facilities when indicated.

C. BURN PATIENTS

During the reporting year, the hospital admitted no burn patients. No patients were transferred in, and three patients were transferred out. MetroHealth is the regional burn center and the hospital has transfer arrangements for burn patients.

D. VERTEBRAL COLUMN INJURIES

During the reporting year, the hospital admitted 76 patients with spinal column injuries. There were 54 transfers in, and no transfers out. There are transfer agreements in place.

E. ORGAN PROCUREMENT

The organ procurement program led to six trauma referrals during the reporting year, which in turn resulted in one donor. The trauma center has an established relationship with a recognized organ procurement organization (OPO). There are written policies for triggering notification of the OPO. The PIPS process reviews the organ donation rate. There are written protocols for declaration of brain death.

F. SOCIAL SERVICES

The social worker team is actively involved with injured patients. Social workers and case managers are available on all the in-patient units (and in the ED as needed) to assist with discharge planning, placement, rehabilitation, drug and alcohol treatment referrals, as well as social and financial issues. A social worker/case manager is on-call for week-end/holiday coverage. The trauma program does not have a social worker dedicated to the injured patient. Social services, psychiatric assessment (EPAT) and pastoral care are available to assist with crisis intervention and counseling 24/7.

G. DISASTER PLANNING AND MANAGEMENT

The trauma center has a disaster plan described in the hospital disaster manual that meets the disaster-related requirements of the Joint Commission. A trauma surgeon is a member of the disaster committee. The hospital is able to respond to radioactive, chemical, and biological hazardous materials.

H. OTHER SURGICAL SPECIALISTS AND MEDICAL CONSULTANTS

The trauma center has a full spectrum of surgical and medical specialists.

VII. PERFORMANCE IMPROVEMENT AND PATIENT SAFETY

A. PIPS

The UHCMC trauma program has built the infrastructure of the PIPS program. The consultation visit is being utilized to establish provisional status by the State of Ohio rules. Due to legislative rules the center is currently limited on what trauma patients are brought to the facility and admitted. Cases are identified through the daily review of admissions by the trauma data analyst and PI nurse and the transfer center.

The trauma center has a written PI plan that includes defined levels of review. The first level is through the identification and abstraction process, with charts reviewed for clinical and operational
issues by the PI nurse or the TPM. A secondary review includes the TPM and TMD, and the TMD determines if the chart is in need of further review. Charts requiring a level 3 review are sent to the committee. The PI plan describes the loop closure process, but there were limited examples of this due to the trauma service not being an established service involved in ED care or activations. During the chart review process there were a limited number of charts that had developed action plans.

The PI process tracks and monitors patients admitted to a non-surgical service; a PI nurse reviews those that fall out. Non-surgical service admissions were 27% of the total trauma admission, with 62% identified as geriatric patients. The center is aware of this population and unique care issues. A geriatric service is involved in the care of this patient population. We feel due to the high number of these patients, the program will need to improve their analysis of these admissions to meet the criteria.

The monthly multidisciplinary trauma peer review has only been effect since January, 2015. Although there were only 4 months of minutes, they were well written and structured. The multidisciplinary committee reports to the department of surgery quality committee, which has authority to address credentialing and privileging issues.

The TMD chairs the multidisciplinary systems review committee. This committee has been in place for over a year and does not have an attendance requirement. There has been no representation from orthopaedic surgery available to attend this committee. The committee attendees include physician representatives and key leaders from departments across the trauma center. The committee meeting appears to be well attended and process goal oriented.

Overall, the reviewers found trauma PI was in the beginning stages of development across the trauma center. Without a fully developed and implemented trauma service it was difficult to assess the function of the PI program. The hospital reported in the PRQ that only four patients were admitted to the trauma service for the reporting year.

B. TRAUMA REGISTRY

The hospital utilizes Trauma Base, a Clinical Decision Management software product. There is one registrar that has extensive registry experience. The hospital met the requirements for data entry being completed within 60 days of discharge for 80% of the patients. The registry includes patients with a discharge diagnosis of ICD-9 CM categories 800 to 959.0 and admitted to the hospital. There is an additional registry position that has been funded and is being posted next month. The trauma registry is supportive of the PIPS program. The trauma program ensures that trauma registry confidentiality measures are in place. There are strategies for monitoring data validity for the trauma registry. UHCMC submits to both the State of Ohio Trauma Registry and the National Trauma Data Bank (NTDB). UHCMC will participate in Trauma Quality Improvement Program once verified.

C. TRAUMA DEATH AUDITS

The center had 27 deaths (seven in the ED, 20 in-hospital deaths, and no DOA) during the reporting period. All deaths were available for review at the time of the site visit. The center scored 18 as mortalities without opportunity for improvement (OFI), two as a mortality with OFI, and seven are pending scoring based on obtaining autopsy reports. Overall the death rate was 4% for total trauma admissions. UHCMC reports an impressive autopsy rate of 70% completion.
D. MULTIDISCIPLINARY TRAUMA COMMITTEE

The multidisciplinary peer review committee functions within the parameters of the trauma center’s quality division. At the time of the visit there was no orthopaedic surgeon liaison appointed to the committee, thus the attendance requirement is not met. Adequate attendance was noted by the two trauma surgeons, neurosurgery, emergency medicine, critical care and anesthesia. The committee has been in place since January, 2015 and all minutes were available for review.

There is a trauma steering/trauma performance operations committee that addresses the trauma program operational issues. There is documentation reflecting the review of operational issues and, when appropriate, the analysis and proposed corrective actions.

Nursing PI issues are reviewed by the trauma PI program.

E. PROTOCOL MANUAL, EVIDENCE-BASED GUIDELINES AND BENCHMARKS

The trauma center has developed a number of trauma specific guidelines. Examples include the MTP, C-spine Clearance, Management of Blunt Splenic Injuries, Assessment of the Stable Blunt Trauma Patient, and Care of the Pregnant Trauma Patient. Since the hospital has not operationalized the trauma service yet, there is limited evidence of compliance with these guidelines.

UHCMC is a member of the University Hospitals Consortium (UHC). UHCMC will utilize the UHC established benchmark program for patient care quality indicators against other participating academic medical centers across the country. There are trauma specific indicators benchmarked within the UHC reports.

F. RECOMMENDATIONS FOR PIPS PROGRAM

The review team recommends initiating aspects of the PI plan as the trauma service transitions to provisional status. Additionally, they advise developing a process for monitoring appropriate activation levels through over and under triage evaluation.

VIII. EDUCATIONAL ACTIVITIES, OUTREACH PROGRAMS, AND PREVENTION

The hospital does not have a continuous rotation in trauma surgery for senior general surgery residents that is part of an Accreditation Council for Graduate Medical Education (ACGME)-accredited program. General surgery, orthopaedic surgery, and neurosurgery residents do not yet participate in rotations that support trauma education consistent with ACGME requirements for their specific residency. A general surgery PGY4 resident provides trauma coverage as part of the night float system but currently the trauma service is not assigned upper level general surgery residents. In this teaching facility, the requirements of the Residency Review Committee are met.

The trauma center participates in an ATLS course at least annually. During the report year, UHCMC sponsored three provider courses.

Educational offerings for physicians, nurses and prehospital providers include the following.

- Physicians: ATLS course, surgical/trauma grand rounds, trauma ICU journal club
- Nurses: TNCC, TCAR, and STN trauma modules
- Prehospital providers: Monthly in-services/case reviews system wide, online CE, and annual educational symposiums
The hospital provides a mechanism for trauma-related education for nurses involved in trauma care. Budget supports trauma-specific education for all providers including nursing, NPs, physicians, and EMS. Courses supported include TCAR, ATLS, and ITLS as well as annual conferences.

The trauma center is engaged in public and professional education. The trauma center provides some means of referral and access to trauma center resources. UHCMC has a trauma injury prevention program, including public education activities. Katherine Wesolowski is the injury prevention coordinator and has a demonstrated job description and salary support. The trauma center demonstrates the presence of prevention activities that center on priorities based on local data, and collaborates with national, regional, or state programs. Examples of injury prevention and outreach include a seatbelt education program, a reckless driving program, and a texting and driving program. It will be important for the trauma center to be part of the local trauma system. The reviewers encouraged the leadership to work with MetroHealth on data and outcomes information exchange. This is not currently in place.

The screening instruments to identify patients who are problem drinkers are BAC and CAGE. Positive screens are referred to trauma nurse/nurse practitioner/physician assistant/social worker.

**IX. RESEARCH**

UHCMC has a trauma research program. There is one ongoing project with Institutional Review Board approval. The trauma center has met the minimum of 20 peer-reviewed articles published in journals included in Medline in 3 years.

**X. CHART REVIEW PROCESS**

The requested charts were fully provided by the trauma team. These charts were appropriately subdivided by the requested categories, and the trauma team members were helpful in the chart review process. The charts were more than 90% complete as it relates to OR reports, EMS run sheets, discharge summaries, ED flow sheet, history/physical examinations, and specialty consults. The chart review process demonstrated that the quality of patient care was fair since no trauma system was in place. The surgical response times to the ED were not evaluable due to the lack of an activation system.

**XI. EXIT INTERVIEW**

The exit interview was attended by many of the same members who were present at the prereview dinner. The Verification Review Committee statement was read verbatim. The summary was then presented and various aspects of the review were discussed by the site visitors and the trauma team members. There were no disagreements with the summary report expressed by the trauma team members.
Chart Reviews

(Be aware, at the time of these cases there was no trauma activation process at this facility)

1. Anticipated mortality with opportunity for improvement ISS=32
This is a 26-year-old male with a GSW to the right and left flanks. The patient was brought in by private vehicle. Since the center is not yet designated, transfer to the nearby Level 1 was arranged, however the patient became hypotensive, a chest tube was placed and the patient was intubated and taken to the OR. In the OR, the patient underwent an exploratory laparotomy and thoracotomy. The patient could not be resuscitated in the OR and succumbed.
PI: It was felt there was a delay in transfer and communication. A letter was sent by the TMD to the EM operations director. There could have been better use of the MTP and this was discussed and followed up with anesthesia. The TMD also met with EMS to discuss direct transport of these patients to MetroHealth until a trauma center was available at UH. There were processes put in place to insure seamless transportation in these cases.
Comment: Good PI of the case.

2. Anticipated mortality with opportunity for improvement ISS=17
This is a 30-year-old male presenting with a GSW to the lateral lower back. The police responded to the scene, and the patient became unresponsive in the car and was taken directly to UH. In the ED the patient was in cardiac arrest. Airway was established and ACLS was performed. FAST did not show blood in the peritoneum. The code was called in the ED.
PI: Case reviewed. Since police brought patient, little warning was available. An IO was placed in the tibia, despite the abdominal GSW, and this was felt to be an OFI.
Comment: Unsurvivable. No real issues.

3. Anticipated mortality with opportunity for improvement ISS=17
This is a 35-year-old male taken to UHCMC after his motorcycle collided with a pole. At the scene the patient was unresponsive and CPR was initiated. The patient was supposed to be transported to the Level 1 center, but was diverted to UH. On arrival the patient was comatose, with a King airway in place. The patient underwent ACLS and despite several attempts could not be intubated. The patient succumbed.
PI: First, it was felt patient met criteria for DOA due to prehospital time. Second, if the King airway was removed and an airway could not be obtained, a surgical airway should have been done. At autopsy, it was found that there was an esophageal intubation. It was felt airway management did not meet standard of care and was referred to quality committee. Case was discussed at PIPS with EM present and was sent to EM quality committee.
Comment: Good routing of issues. It seems care was not aggressive due to belief patient was essentially DOA.

4. Mortality without opportunity for improvement ISS=4
This is an elderly male who presented to an outside ED after a fall at a nursing home and suffered a head injury. CT revealed a SAH in the bilateral frontal and temporal lobes. Neurosurgery was consulted. Subsequently the SAH blossomed and the patient suffered a cardiac arrest on the floor. CPR was performed but the patient’s family did not want further resuscitation.
PI: Patient was DNR and CPR was performed. On investigation, it was found that the hospital could not honor the DNR until the family produced the documents so it was felt to be not an OFI.
Comment: Adequate PI

5. Mortality without opportunity for improvement ISS = 26
This is a 69-year-old female fell on the way to the bathroom. The patient was transferred to a referring hospital and decompensated and required intubation. She was then transferred to UH. On arrival the patient had fixed pupils and an elevated INR. The patient was admitted to neurosurgery but the family elected to withdraw care.
PI: Several issues were examined. INR reversal was done adequately at the outside facility. Also, the patient appeared to have herniated prior to transfer. There were no OFI’s identified.

Comment: Adequate PI for the current status of their system.

6. Mortality without opportunity for improvement
   ISS=25
   This is an 89-year-old male who fell and suffered a head injury. The patient was originally taken to a referring hospital and transferred. CT revealed large acute SDH with layering before transfer. The patient was taken urgently to the OR on arrival at UH. The SDH reaccumulated and the patient was make comfort measures only and succumbed.

PI: There were no issues identified

Comment: From the chart it is difficult to discern how “rapid” the transfer to the OR was. The patient was admitted at 0250 and the operative note terminates around 0800. When the PI program is up and running documenting these times for emergency operations will be vital to identify system delays.

7. Pelvic/Femur
   This is a 24-year-old female involved in a bicycle accident who suffered a left femur fracture. The patient was evaluated in the ED and orthopaedic consultation was obtained. The patient was taken to the OR that day for repair and had no complications. There was no LOC, or trauma evaluation.

PI: No PI issues identified

Comment: Adequate care

8. Pelvis/Femur
   This is a 41-year-old female found by the side of the road. The patient stated that she jumped out of a moving vehicle. She had left hip pain and deformity present on EMS report. The patient was seen in the ED and evaluated. She underwent a complete workup and only injury identified was a dislocation of the left hip. This was relocated in the OR and the patient recovered uneventfully.

PI: No PI issues identified

Comment: Adequate care

9. ISS>25 with survival
   This is an 87-year-old male found down in his driveway. The patient has a history of dementia. The patient was brought in by EMS and found to have an acute on chronic SDH. Neurosurgery evaluated the patient and the patient was taken to the OR for burr hole placement. In the discharge summary, the patient had new onset of atrial fibrillation and an NSTEMI. The patient was evaluated by cardiology and appropriate measures were taken. The patient was discharged to skilled nursing.

PI: No issues identified

Comment: The rhythm complication and NSTEMI could have been identified. As the program matures it will need to put in systems to catch these complications that occur on patients admitted to other services.

10. Anticipated mortality with opportunity for improvement
    ISS=4
    This is a 23-year-old male who suffered a GSW to the abdomen. The patient was brought to UHCMC due to the patient being in cardiac arrest. The patient had bilateral chest tubes placed in the ED. Bedside ultrasound demonstrated no cardiac activity and care was terminated.

PI: The case was reviewed. The conclusion was the patient should have been pronounced dead on arrival. Again, femoral access should not have been used in the GSW to abdomen.

Comment: Good analysis. Again, with lack of trauma system at this point in time, other factors could not be evaluated.
11. Non-surgical admission ISS = 10
This elderly male fell and was seen at a referring hospital. CT head was done and read as negative. He returned to the hospital about 10 days later reporting additional falls. The patient’s family reported a change in LOC and described a syncopal type episode. Patient has dementia, HTN, and gout. A repeat CT head revealed a SAH and the patient was transported to UHCMC by EMS. Patient’s GCS remained 15 and vital signs were within normal except for hypertension. He was seen in the ED department as a non-activation. Neurosurgery was consulted and initially planned on admitting patient. The plan of care was non-operative and based on medical concerns and work up for syncope patient was admitted to the geriatric service. Patient’s ED dwell time was 24 hours. He had an eight day stay and was discharged home.
Hospital PI: Chart was reviewed by the PI coordinator. There were no issues identified.
PI Comments: Care was appropriate. Reviewer did discuss the 24 hour ED dwell time with the TPM. With the anticipated increase in trauma volume the reviewer questions if this is an issue that needs to be addressed. There is currently no activation process in place but patient should have triggered a second tier team activation.

12 Mortality without opportunity for improvement ISS = 26
This middle-aged male arrived at the first hospital with suicidal ideations and an ETOH of .448. The patient past medical history included: schizophrenia, depression, and seizures. He was transferred to another non-trauma center for psychiatric in patient services. At the second hospital he was found down after a presumed seizure. A rapid response team was called, he was intubated and CT head was performed. An EDH 3.7 cm with 2.4 cm midline shift was noted. The patient was transferred to UHCMC as a direct admit to the neurosurgical service. On arrival his GCS was 3T. His repeat CT head showed herniation. He was evaluated for brain death and was pronounced dead on hospital day 4. He was evaluated for organ donation and did not meet criteria.
Hospital PI; Chart reviewed by the TMD and signed out as a death without opportunity for improvement at this facility.
PI Comments: Reviewer agrees that care at UHCMC was appropriate. There was no documentation or communication on the evaluation of care at the previous hospital.

13 Death without OFI
This elderly female fell sustaining a Type 2 odontoid fracture and C1 fracture with displacement. Patient was transferred from a referring hospital by local air medical service without incidence. Arrived at UHCMC as a direct admit to neurosurgery. She was taken to the OR for C1-C5 fusion. She remained intubated postoperatively until hospital day 4. She was extubated and did reasonably well but developed some further respiratory deterioration the following day and required intubation. Her daughter, DPOA agreed to the intubation. The next morning the patient was responsive, appropriate and requested extubation. Care team explained respiratory situation and probable demise to the patient and family. The patient insisted that she wanted to be extubated. A psychiatric consult was obtained; patient was appropriate and clear on her wishes. A family and team meeting was held and family supported the patient’s wishes. She was extubated on hospital 13 and expired shortly after.
Hospital PI: Chart was reviewed by the TMD and rated as a mortality without opportunity
PI Comment: Care was appropriate. Psychiatric dictation was comprehensive in explaining the extubation issue and family and team involvement and communication. The patient did have a DVT and was treated with heparin appropriately. This was not listed as a complication.

14 EDH/ SDH ISS=21
This elderly female sustained a ground level fall and presented at a referral hospital. Patient’s medications included Coumadin. Her past medical history includes CAD, CHF, A-fib. Her CT head revealed SDH and orbital floor fracture. She was transferred to UHCMC for neurosurgical care per EMS. She was seen by the emergency medicine physician as a non-activation. The neurosurgical service admitted the patient. ENT was consulted for the orbital fracture which was treated non-operatively. INR was 1.2 and patient was admitted to ICU for observation. ED dwell time was < 5
hours. Patient was discharged home on hospital day 2 after repeat scan showed a stable scan. Follow up appointments were set for 5 weeks postdischarge.

Hospital PI: There was no PI on the case.

PI comments: Care was appropriate. If center had activation criteria in place I would suggest this would be a second tier activation. The ED dwell time was greater than five hours.

15 Pelvic ISS = 9 LOS 13
This middle-aged female was transported to UHCMC after sustaining a fall getting out of the bathtub. Her medical history is significant for stage IV breast cancer with metastatic disease. She was transported without incident. She was seen by the ED physician where an x-ray showed a fractured transverse proximal right femoral shaft fracture. She was admitted to the orthopaedic service. She had a < 7 hour stay in ED. The patient was taken to the OR for IM rodding the following morning. Intraoperatively, she developed a-fib, with multiple drug therapy utilized to correct the arrhythmia. On day five EP was consulted for intermittent episodes of flutter. She was discharged to in-patient rehabilitation. Her Coumadin was restarted prior to discharge with follow up evaluation scheduled.

Hospital PI: Chart was reviewed by the trauma service, no issues identified.

PI comments: Care was appropriate. ED dwell time was seven hours and was not identified as an opportunity for improvement.

16 Thoracic LOS 1 ISS 18
This middle-aged male was out walking his dog and woke up with bruises. He believes he slipped and fell. He presented to a referring hospital with headache and facial laceration. His history is significant for HTN. A CT head was completed and a small EDH was identified along with a right rib fracture. He was transferred to UHCMC as a direct admit to neurosurgery. He was admitted to the floor and remained stable. He was discharged the following day after the repeat CT head was stable.

Hospital PI: No PI documents found

PI Comments: Care was appropriate. As the trauma service develops there may be some value in monitoring the direct admission process for trauma patients.

17 Transfer out LOS 1 ISS 14
Patient was the driver of a motorcycle that lost his balance and had to lay the bike down. He was traveling at a low speed and landed on his chest, right upper extremity and sustained road rash. GCS = 15 and vital signs were within normal limits. ED department assessed the patient, chest CT was done and revealed a right pneumothorax. A right chest tube was placed approximately an hour after report available. There was no surgeon on call so the patient was transferred to the Level I center.

Hospital PI: The TMD reviewed the case and identified four issues: size of IV line, small chest tube versus larger size for trauma, chest tube placed 1 hour after CT done, transfer 6 hours after arrival.

PI Comments: Although the issues were identified, there was no action plan documented as follow up with the EM physician. In discussing the case with the TMD, he stated this patient’s presentation was shortly after his arrival as TMD and the chart review was not timely. He stated the trauma service was planning to address the issue in their first IEP newsletter. ED dwell time was greater than six hours.

18 Death with opportunity ISS 75 LOS 75
This was a young female that sustained a GSW to chest. She was in cardiac arrest upon EMS arrival and was pronounced. EMS was told the patient was pregnant and they re-started CPR and transported for potential fetal salvage. Patient arrived at UHCMC and was treated by emergency medicine. Obstetrics was present in the ED, where a C section was performed within minutes of arrival. Fetal heart rate was initial 40 and then deteriorated further.

Hospital PI: Case was reviewed by the PI nurse, TMD and moved to the trauma peer review committee. PI cited that the patient was DOA and EMS care was appropriate; including transport for
fetal salvage. The TMD felt there was opportunity to develop a trauma obstetrical guideline. Case was taken to committee and guideline is underdevelopment.

PI comment: Documentation of committee discussion was good. Guideline was reviewed on site and waiting final approval from obstetrics section. This was a nice example of good loop closure. Patient was given an ISS of 75, there was an autopsy report available and was appropriately scored.

19 Non surgeon admit ISS = 5 LOS 11
This middle-aged female sustained a mechanical fall. She arrived at UHCMC by private vehicle with complaints of back pain. Her history is significant for cirrhosis. She is on the transplant list. She was seen in the ED where a CT chest revealed T12 burst fracture without cord compromise. The patient was admitted to the orthopaedic service for non-surgical management. Patient was placed in a TLSO brace. She remained hospitalized for continued care of her comorbidities. She was transferred to a local in-patient rehabilitation facility. She was readmitted to UHCMC within 72 hours of discharge with had esophageal varices, primary sclerosing cholangitis and multiple organ failure. Patient was moved to comfort care and expired.

Hospital PI: Case reviewed for readmission and signed out with no issues. Case was not reviewed for the death.

PI Comments: Patient had ED dwell time of 8 hours on first visit. As the center establishes their trauma service there may be some value in reviewing these type of readmissions and deaths.

20 Mortality without opportunity LOS 1 ISS 10
This elderly male presented after falling backwards and striking head. He was immediately unresponsive. Family witnessed the incident and reported he was pulseless for approximately 5-7 minute and started bystander CPR. He was transported to a referring hospital. EKG determined STEMI and UHCMC cardiology service was contacted for transfer. He was a direct admitted to the ICU. His past medical history was significant for COPD, HTN, OSA, CPAP. CT head was done and show diffuse SAH with 7 mm shift was note. The neurosurgical service was consulted and placed an ICP monitor. The repeat CT showed diffuse cerebral edema and the family moved to comfort care and patient expired.

Hospital Comments: No issues were identified.

PI comments: Care was appropriate. Patient presented as a STEMI. He was a direct admission, again this process might prove to be a valuable audit filter for the program.

21. Death with Opportunity
This is an 84-year-old man on Coumadin who had a fall out of bed and struck his head. He presented to a network hospital with bilateral SDH diagnosed on head CT at the referring hospital. His INR was 2.3 and he was given 1 unit of FFP and antihypertensive medication in light of a possible aneurysmal bleed. His neurological exam was a GCS of 3 and he was fixed and dilated upon arrival to UH. After discussions with the family, he was extubated with comfort measures only.

Reviewer’s Comments - The PI was about the use of anti-hypertensives and Coumadin reversal at the outside hospital. A letter was sent to the ED chief at the referring hospital outlining the need for proper Coumadin reversal. They have a network policy which is published on their server. Apparently, this network hospital was not aware of the policy. Care was adequate after arrival at UHMC however; the die was cast on his arrival. They had a postmortem study.

22. Pelvic Fracture
This is an 84-year-old woman who fell a short distance. There was no trauma service activation and no trauma service response. She had a SDH, base of skull fracture and a right femoral neck fracture. She was admitted to neurosurgery and all the appropriate consults were done including orthopaedics, medicine, and ENT. Her INR was 1.1.

Reviewer’s Comments – The run sheet was present. The patient was seen in the ED and the appropriate consultations were done over time. The care was good; her dementia was a problem hence her hospitalization led resulted in her hospice care. The lack of trauma response has been
outlined ahead of time and is limited by the issue with the state of Ohio limiting their ability to care for trauma patients until the ACS consultation visit.

23. Spleen/Liver
This male had a fall off a roof 2 days before arrival. He was feeling poorly and brought in by a friend and found to be hypotensive in the ED. The ED evaluated him, obtained a CT scan of the abdomen and started blood products. A surgical consultation was obtained and he was seen in timely fashion. He ended up going to the OR 3.5 hours after arrival where he had a splenectomy and partial tail of pancreas removal found in the specimen. His recovery was adequate however, he ended up with a surgical site infection in the left upper quadrant requiring drain placement by IR.
Reviewer’s comments – The PI is good with an emphasis on the ED and their initial management of a hypotensive patient. The ED was slow to recognize the urgency of the issue and the diagnosis. No FAST was done on this hypotensive patient and the CT scan was done in a delayed fashion. This is the case that outlines the need for a formal trauma service and activation process. There was a discussion about the late notification of the acute care surgeon, the decision-making in obtaining a CT scan of the abdomen without FAST, the tail of pancreas injury, and the deep SSI in the LUQ. They have a trauma M and M and a PIPS committee in place. There is a letter in the PIPS minutes from the ED acting director addressing some of these issues so this is the beginning of loop closure.

24. Transfer Out
This is a 21-year-old fellow who had a single GSW to the left upper back. He was initially hypotensive. He had a chest tube placed on the left and it is not known how much came out by the record. Blood was given in the ED and he was transferred out via helicopter to MetroHealth.
Reviewer’s comments - This patient presented to the ED at a time before the TMD started at UH. This decision to transfer the patient to a higher level of care was made by the ED without inclusion of surgery in that decision. There is a plan to change this system as more attending staff are brought in and a recognized acute care surgery service is established. Follow up of this patient is needed and was not present in the chart or a PIPS process. That follow up normally would go to the ED and was found in the record of some of the transfers out but inconsistently.

25. Transfer Out
This was a 32-year-old fellow with bilateral chest wounds from a knife that were self-induced. A left chest tube placed for an undisclosed amount of blood in return. The patient was transferred to MetroHealth and there is follow up documentation in the UHCMC record. It appears that in addition an right chest tube had been placed but he did not require any operative intervention.
Reviewer’s comments – The PIPS addressed the issue of the size of the chest tube, a 28 was placed and a 32 should have been according to their discussion; this is debatable in the literature nowadays. No comment about a possible missed pneumothorax on the right which is of concern. The PIPS might have discussed the need for chest tube, policy for exploration or not and issues about missed diaphragmatic injuries with thoracoabdominal stab wounds.

26. Transfer Out
This is a 19-year-old with right leg gunshot wounds. He was seen in the ED as he was brought via a friend and not EMS. He had a comminuted right mid-shaft femur fracture and normal distal pulses. The orthopaedic surgeon saw the patient and recommended transfer to MetroHealth. There was follow-up in the chart indicating he underwent ORIF of the femur fracture.
Reviewer’s Comment – This case was discussed in the PIPS process and a request was made of the ED charge nurse to look at record and address a few documentation issues. The nurses in the ED reviewed the chart and picked up on a lack of vital signs before patient transferred and did not document the appearance and color, or pulses of the foot after the orthopaedic splint was applied. This is indicative of an attempt in the right direction to begin the process review toward improved care. Chances are this patient could also be cared for at UHCMC and once the new orthopaedic trauma attendings are hired and practicing this will change the profile of cases at UH.
27. **Non-surgical admission**
This is a 53-year-old man with a seizure disorder who presented after a fall and a presumed seizure. He had a negative head CT, a finding of lucency in the vertebral body of C4, a negative CTA and bilateral zygomatic arch fractures. He had the appropriate consultations with OMFS and neurosurgery (who do all the spine consultations) and no operative intervention was needed. He was admitted to Medicine and the consultation services followed him.

**Reviewer’s Comments** – I believe their numbers are very high for admit to Medicine. I think a geriatrician on the Trauma Service will help. They have a geriatrics floor and an active service so close collaboration in the future will be mandatory. This is a multisystem injury and would be best served on a trauma service. No PIPS issues discussed. I think it is a missed opportunity to begin these discussions with the trauma service and the others at the table in PIPS. The TPM feels that they are working on a system to evaluate the large percentage of patients admitted to medicine.

28. **Non-surgical admission**
This is a 70-year-old woman with a seizure disorder who had a fall in the nursing home and ended up with a non-displaced femur fracture. Orthopaedics saw her in timely fashion and her work up in the ED was done and they casted her. It sounds like she was quite compromised in the NH and had a PEG tube in place beforehand. She had an abdominal CT scan that showed a lesion in the rectosigmoid junction most likely representing a new diagnosis of rectal cancer. She was admitted to Medicine as it appears this femur was to be treated non-operatively.

**Reviewer’s Comments** – It is a bit unclear how compromised she was beforehand but this clearly dictated the care that followed. This non-operative approach indicates that she was non-ambulatory and most likely would lead to her demise.

29. **Thoracic and Cardiac, Splenic and Liver**
This is a 61-year-old man who had a fall down 13 stairs the day before his ultimate ED presentation. He was sent home from the ED initially when seen. Upon his return 24 hours later, he was found to have several more rib fractures, a small left-sided pneumothorax and a left kidney contusion.

Surgical consultation was made at this time.

**Reviewer’s Comments** – the PI does address the readmission to the hospital and the missed injuries. There is an increased find of about 57% with CT scanning of the chest in patients with a known rib fracture on the chest film. It is also unclear if a UA was done on the initial presentation as the hematuria might have been suggestive of injury. I think that this is indicative of the need for more surgery involvement. I think the PI should have addressed with an in depth review as to why this fellow was initially discharged from the ED. These are some of the fixes that will arise as they move to a trauma center concept. I believe the ED is engaged in this early effort.