Trauma Center Introduction:

Systems and Infrastructure

and

Defining Trauma Center Levels

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Objectives for the first hour of this course:

• Define the 4 levels of verification and designation, and
  – The resources required to meet criteria

• Compare existing resources to required resources needed for verification and designation – what do you have vs what do you need?
Nothing to DISCLOSE:

• None of the speakers or planning committee members have anything to disclose, i.e. no financial relationship that may cause a conflict of interest.

• No Sponsorship, commercial support, endorsement of products, or off-label use of commercial products will occur during this presentation.
Level I and II Centers

Differences/Similarities

Resources/Requirements

Michigan Trauma Coalition
Michigan Statewide Trauma System

Trauma is the leading cause of death in people ages 1-44 in the nation and it accounts for 47% of all deaths in this age group. In Michigan, crash related deaths alone cost $1.04 billion per year. The overall goal of a trauma system is to reduce the incidence and severity of injury as well as to improve health outcomes for those who are injured.

Michigan has been engaged in formal trauma system development since 2000. The vision for Michigan is a regionalized, coordinated and accountable system of emergency care that ensures the right patient gets to the right place at the right time. The 2004 Trauma System Agenda for the Future states, "The concept of inclusive trauma care systems promotes regionalization of trauma care, so that all areas of the country receive the best possible care. Equally important, an inclusive trauma care system must identify high-risk behaviors in each community and the population groups at risk for injury so that the system can provide an integrated approach to care that is responsive and appropriate to local needs".

The EMS and Trauma Services Section Statewide Trauma System Administrative Rules describes the components of the trauma system. This includes eight regional trauma networks comprised of the local Medical Control Authorities within the region which integrates into existing regional preparedness. They are responsible for the oversight of the trauma care provided in each region of the state. Further information about the components of the Michigan trauma system including data collection, the process of verification and designation of trauma facilities, and more information about the trauma networks including the trauma hospitals can be found on the Michigan Trauma Coalition website.
The information you need

- **History**: Background information on Michigan’s trauma system
- **Committees**: Details regarding the Trauma and EMS advisory committees
- **Trauma Registry**: Information on the state’s registry of designated trauma facilities
- **Contacts**: Contact information for the State Trauma Manager and staff
- **Regional Trauma Networks**: Information regarding the regional trauma system and Regional Trauma Advisory Committee
- **Designation**: Information on the process to become designated as a trauma center
- **Frequently Asked Questions**: Answers to frequently asked questions
- **Find your region**: Map of Michigan with regions labeled 1 to 8
- **What’s the process?**
- **Everything else!**
Resources for Optimal Care of the Injured Patient 2014

We have made the final version (v1.1) of the 2014 Resources for Optimal Care of the Injured Patient document available for download.

We have created a resource repository, which is referred to in several places throughout Resources for Optimal Care of the Injured Patient 2014. The content related to the criteria is complete. We do not envision any additional edits to the content until a formal process is developed for ongoing revision of the document.

Verification applicants with any visits scheduled on or after July 1, 2015, will be required to meet the criteria contained in the Resources for Optimal Care of the Injured Patient 2014. For more information regarding a site visit, please review our site visit materials. Please allow for a 12-month lead time when requesting a visit.

Get Your Copy
The Orange Book: 2014

- Save and print the PDF document or
- Order from the ACS ‘e-Store’ ($50.00)
Site Visit Materials

Resources for Optimal Care FAQ

Site Visit Application

- Must return completed site visit application **12 months in advance** to preferred timeframe.
- New and previously approved surgeons/physicians who have been through the Alternate Pathway and are still on the trauma call panel will be reviewed at every reverification visit beginning with the implementation of the new 2014 guidelines. The same fee applies for the additional specialty reviewer.
- Currently accepting site visit applications to be scheduled December 1–11, 2015, and for all of 2016. For those trauma centers expiring prior to this date, exceptions may be made provided that capacity is not overwhelmed.
- Visits scheduled prior to July 1, 2015, will be reviewed by the Resources 2006 manual (Green Book). Visits scheduled on or after July 1, 2015, will be reviewed under the Resources 2014 manual (Orange Book).

• [https://www.facs.org/quality-programs/trauma/vrc/site-packet](https://www.facs.org/quality-programs/trauma/vrc/site-packet)
Michigan Statewide Trauma System administrative rules:

“Trauma facility” means a healthcare facility designated by the department as having met the criteria set forth in the code as being either a

- **Level I regional trauma research facility**
- **Level II regional trauma facility**
- **Level III community trauma facility**, or
- **Level IV trauma support facility**
ACS Definitions:

... “Effective trauma systems must have a lead hospital. These lead hospitals should be the highest level available within the trauma system

- In many areas, Level I centers will serve as the lead hospitals
- In systems with less dense populations, Level II facilities may assume this role
- In smaller community and rural settings, Level III centers must serve as the lead hospital
What is a Level I Trauma Center (ACS):

Level I

- A **regional resource** trauma center
- A **tertiary care facility** central to the trauma care system
- While “clinical outcomes of severely injured patients are expected to be equivalent at Level I and II trauma centers,” Level I is **full-service plus**
- Must provide **leadership and total care** for **every aspect of injury**, from prevention through rehabilitation.
- For the most part, these are usually **university-based teaching hospitals**. Other hospitals willing to commit these resources, however, may meet the criteria for Level I recognition.
- Have a **major responsibility for providing leadership in education, research, and system planning**.
  - This responsibility extends to all hospitals caring for injured patients in their regions.
“Standards for provision of clinical care to injured patients for Level I and Level II trauma centers are identical…”

They are distinguished from Level II centers by:

1. **Volume requirement: 1200 pts/yr** or
   • Have **240 admissions with an Injury Severity Score >15**

2. **Surgically-directed critical care service**

3. **Resident training**

4. **Research publication: 20 peer-reviewed articles/3-yrs** with at least one authored or co-authored by general surgery trauma team members
   a) Or **10 peer-reviewed articles/3 yrs** and documentation of other scholarly activities

5. **Provide for complex, specialized injuries** such as replantation
What is a Level II Trauma Center (ACS):

**Level II**

- Expected to **provide initial definitive trauma care, regardless of severity of injury**
- Level I and Level II trauma centers are expected to be **clinically equivalent except for complex, specialized injuries such as replantation**
  - Patients with more complex injuries may have to be transferred to Level I center
- Can be an **academic institution or a public or private community facility** located in an urban, suburban, or rural area
  - Where a Level I center does not exist, Level II center should take on responsibility for education and system leadership

**Michigan Trauma Coalition**
mitrauma.org
1. **Trauma Activations**: Surgeon in ED on patient arrival or within **15 minutes of pt arrival, 80% of the time**.
   - Published **back-up call** schedule
   - Highest activation must include the minimal set of criteria

2. **Anesthesia services**: In Level I and II trauma centers must be available **in-house 24 hours a day**
   - Anesthesiologist liaison to PIPS committee- **50% minimal attendance**

3. **An Operating Room** must be adequately staffed and available within 15 minutes at Level I and II trauma centers
   - Level I-II must have a complete **OR team in the hospital at all times**
   - Level I centers must have cardiothoracic surgery capabilities 24 hrs/day
   - In Level II centers, if cardiopulmonary bypass equipment is not immediately available, must have plan to transfer to an appropriate center and PI review of 100% of all patients transferred
   - Level I centers must have an operating microscope available 24 hrs/day
4. **Radiology:** Level I-II must have in-house radiology tech and CT tech.
   - In Level I & II centers, radiologists must be available within 30 min. to perform complex imaging studies or **interventional procedures**
   - Preliminary reports must be permanently recorded; Must monitor discrepancies (missed injuries)
   - **Radiologist as liaison** to PIPS committee- 50% minimal attendance
   - Mechanism in place to view radiographic imaging from referring hospitals within catchment area. Radiologists should be available within 30 minutes to read and interpret such images.

5. **ICU:** Level I must have **surgically directed care**; Level II must have Trauma Surgeon minimally as co-director, and **maintaining responsibility for care**
   - Level I requires **24/7 in-house coverage** vs Level II requires **credentialed provider within 15 minutes**
   - **ICU liaison** to PIPS committee- 50% minimal attendance and also Trauma CME requirement (verifiable, external CME totaling 48 credits over 3 yrs.)
   - **ICU Nursing Ratio** cannot exceed 2:1 in Levels I-II-III
   - **ICP Monitoring** in Level I–II centers
6. **Surgical Specialties:**
   - Level I must have **orthopaedic surgery, neurosurgery, cardiac surgery, thoracic surgery, vascular surgery, hand surgery, microvascular surgery, plastic surgery, obstetric and gynecologic surgery, ophthalmology, otolaryngology, and urology**
   - Level II centers must have the SAME surgical specialists described for Level I trauma centers and should provide cardiac surgery; exception is replantation
   - Physician liaisons to PIPS Committee from **general surgery, ortho, neurosurgery, and emergency medicine**, with 50% minimal attendance and also Trauma CME requirement (verifiable, external CME totaling 48 credits over 3 yrs.)

7. **Transfer Agreements:** Must have transfer agreements in place if transferring patients for burn care, microvascular surgery, cardiopulmonary bypass capability, complex ophthalmologic surgery, or high-complexity pelvic fractures

8. **Resp Therapy** 24/7

9. **Lab and Blood Bank** 24/7, with adequate in-house supply of PRBCs, FFP, platelets, cryo, and appropriate coagulation factors to meet the needs of injured patients
   - Level I-II must have ThromboElastography (**TEG**)
   - Must have Massive Transfusion Guideline (all Levels)

10. **Social Work** 24/7
11. **Neurotrauma Contingency Plan:**
   - Plan for diversion if capacity is exceeded.
   - IF Neurosurgeons cover more than one center, must have published back up call system

12. **Diversion/Disaster:** The trauma director must be involved in the development of the trauma center’s bypass (diversion) protocol; a surgeon from the trauma call panel must serve on the Disaster committee.

13. **Physical Medicine & Rehab** (Physiatry): In Level I -II centers, rehabilitation services must be available within the hospital’s physical facilities or as a freestanding rehabilitation hospital, in which case the hospital must have transfer agreements
   - Must have Rehabilitation consultation services, OT, PT, speech therapy, and social services available beginning at critical care phase

14. **SBIRT:** Alcohol Screening & Brief Intervention - Universal screening for alcohol use must be performed for all injured patients and must be documented
   - At Level I - II centers, all patients who have screened positive must receive an intervention by appropriately trained staff, and this intervention must be documented
13. **Professional Education**: Covered in next section

14. **Injury Prevention**: At Level I centers, the injury prevention coordinator must be an individual who is separate from the trauma program manager, with a job description and salary support.
   - In Level II, III, and IV centers, this position may be filled by a trauma program manager with a specific role in prevention efforts detailed in the job description, but only if this role does not negatively affect the work product of the trauma program manager.
Designation Requirements from State of Michigan

• Verification and Designation for Level I and II Trauma Centers:
  – **Data:** Upload to State Trauma Registry
  – **Performance Improvement:** Participate in the State PI Plan - Minimally, by participating in regional data collection (audit filters), analysis and sharing.
  – **Injury Prevention:** Participate in coordinating and implementing Regional Trauma Network injury prevention work plans and initiatives.
  – **Staff Assistance:** Level I-II centers will provide the names of two personnel to train to serve as Michigan site reviews
    • One (1) physician, either surgeon or emergency physician and (at least) one (1) trauma nurse manager/coordinator, or one (1) trauma quality improvement RN, or one (1) mid-level provider (physician assistant, nurse practitioner, advanced practice nurse with trauma experience.)
What level is right for my hospital? I or II?

Critical Determinants:

1) **What is my hospital’s trauma volume**
   a. Risk/benefit of using ICD-9 to query volume
   b. Is there growth potential?

2) **Access to Requisite Physicians for Call Panels**
   a. Trauma Surgery, Ortho, Neurosurgery, Surgical Critical Care
      • Trauma surgeon commitment
      • Subspecialty Panels
      • Degree of physician engagement

3) **Existing resources:**
   a. Has my hospital been credentialed for Stroke? Is there a STEMI activation policy in place? Can current M & M meetings set an example for Trauma PIPS?

4) **What is our ICU structure?**

5) **What is this likely to cost?**
Any questions for this section?
Introductions to Trauma Systems and Program Development

Michigan Verified
Level III and Level IV Facilities

Cheryl Moore
Region 8 Trauma Coordinator
Verification is a process where a recognized entity provides an objective, external review of institutional capability and performance. The American College of Surgeons Committee on Trauma (ACS-COT) provides verification for Level I, Level II, and Level III trauma facilities in Michigan and across the country. The Michigan Department of Community Health (MDCH) can provide verification of Level III and Level IV facilities who request it in an in-state process. Designation is a status that is conferred by the Michigan Department of Community Health on trauma facilities that have been verified by either the American College of Surgeons Committee on Trauma or by the State of Michigan.
Objectives

• Be able to compare what is currently in place to what is required by State of Michigan for verification/designation.
• Obtain knowledge of trauma facility definitions.
• Obtain knowledge of trauma facility verification/designation criteria.
• Obtain knowledge of trauma facility required resources and your current resources.
• Be able to determine your facility’s level of trauma designation.
Level III Trauma Facility Definition

A Level III trauma center represents an important part of the trauma system. A Level III trauma center should have the capability to initially manage the majority of injured patients and have transfer agreements with a Level I or II trauma center for seriously injured patients whose needs exceed the facility’s resources.

https://www.facs.org/
Michigan Criteria

Rule 325.133 and Rule 325.134

- Submit data on patients who meet trauma inclusion criteria as defined in the most current version of the American College of Surgeons National Trauma Data Bank, “National Trauma Data Standard: Data Dictionary” (http://www.ntdsdictionary.org/dataElements/datasetDictionary.html). (MI-CD 1-1)
- Submit twelve (12) months of data into the State Trauma Registry prior to applying for designation as a Michigan trauma facility. The healthcare facility may determine the twelve (12) month time frame, but it must start no earlier than fifteen (15) months from the date of application. (MI-CD 1-2)
- Continue to submit data into the State Trauma Registry after submission of the initial twelve (12) months of data. Data should be submitted quarterly by the following dates: January 15, April 15, July 15, and October 15. (MI-CD 1-3)
- Identify a trained staff member responsible for data collection. (MI-CD 1-4)

http://www.michigan.gov/traumasystem
Michigan Criteria

Rule 325.135

- All Michigan trauma facilities must participate in regional performance improvement as described in the Regional Trauma Networks work plan (MI-CD 2-1)
- In-state verified Level III trauma facilities must meet performance improvement criteria outlined by the state of Michigan and ACS. (MI-CD 2-2)
- Have a written Performance Improvement plan. (MI-CD 2-3)
- The process of event identification and levels of review must result in the development of corrective action plans, and methods of monitoring, re-evaluation, and risk stratified benchmarking must be present. This process must be reviewed and updated annually. (MI-CD 2-3)
- Problem resolution, outcome improvements and assurance of safety (loop closure) must be readily identifiable through methods of monitoring, re-evaluation benchmarking and documentation. (MI-CD 2-3)
- A policy in place to review issues that revolve predominately around (1) system and process issues such as documentation and communication; (2) clinical care including identification and treatment of immediate life threatening injuries (ATLS); and (3) transfer decisions. (MI-CD 2-3)
- All criteria for trauma team activation have been determined by the trauma program and evaluated on an ongoing basis in the PI process. (MI-CD 2-3)
- The PI program identifies, reviews and documents findings and corrective action on the following audit filters: (MI-CD 2-3)
  - Any system and process issues
  - Trauma deaths in house or in emergency department
  - Any clinical care issues, including identifying and treatment of immediate life threatening injuries
  - Any issues regarding transfer decisions
  - Trauma team activation times to trauma activation

http://www.michigan.gov/traumasytem
Michigan Criteria

Rule 325.130
• Provide a brief description on how the facility is participating in the Regional Trauma Network injury prevention work plan (www.michigan.gov/traumasystem) (MI_CD 3-1)

http://www.michigan.gov/traumasystem
Michigan Level III Trauma Facility Verification/Designation Criteria

- **Hospital**
  - Administrative and medical commitment

- **Trauma System**
  - Involvement in regional and state trauma system planning
  - Trauma performance improvement program with required audit filters
  - Trauma registry
  - Appropriate physician involvement and credentialing
  - Physical therapy and social services
  - Continuous general surgery coverage
  - Transfer plans
  - Multi disciplinary peer review committee
Michigan Level III Trauma Facility Verification/Designation Criteria

- Pre-Hospital
  - Bypass and diversion protocol
  - Education of pre-hospital providers
- Inter-hospital transfer plans, guidelines
- Trauma Program Manager
- Trauma Medical Director
- Registrar
- General Surgery
- Emergency Department Providers
- Anesthesia
- Orthopedic surgery
- Operating room & PACU
Michigan Level III Trauma Facility Verification/Designation Criteria

- Radiology
- Lab and Blood Bank
- Respiratory Therapy
- Trauma Team Activation
- Trauma Registry
- Performance Improvement
- Outreach and Education
- Disaster planning
- Alcohol screening
- Organ procurement and confirmatory test for diagnosis of brain death
## Resources Required for Level III

<table>
<thead>
<tr>
<th>What is required</th>
<th>What you have now</th>
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<tbody>
<tr>
<td>Emergency Medicine</td>
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<tr>
<td>Trauma/General surgery</td>
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<tr>
<td>Orthopedic surgery</td>
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<td>Trauma Medical Director</td>
<td>☐ General Surgeon</td>
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<tr>
<td>Trauma Program Manager</td>
<td>☐ ED manager, RN</td>
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<tr>
<td>Registrar</td>
<td>☐ Quality Management, LPN</td>
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<tr>
<td>Internal Medicine</td>
<td>☐ Family Practice, Hospitalists</td>
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*Michigan Trauma Coalition*
# Resources Required for Level III

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<td>Social Services</td>
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<tr>
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<td>☐ Data system</td>
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<tr>
<td>Injury Prevention</td>
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</table>
Level III Current Policies and Procedures

Look at current policies, procedures, and guidelines that you already have in place.

Incorporate trauma requirements into most policies & protocols that are currently in place.

Examples:

1. Policy on ICU care - add sentence “physician coverage will be available within 30 minutes of being notified”
2. ICU staffing plan - add “patient to RN staffing ratio will not exceed two to one for all trauma patients”
3. Bypass & Diversion policy - add “trauma surgeon on call is notified of all trauma diversions”

For more examples like this see “Level III Trauma Designation Work Plan“
http://www.michigan.gov/traumasystem
State of Michigan Requirements for Level III

Resources:

MDCH-Michigan Statewide Trauma
- System Level III Trauma Designation Work Plan
- Level III Criteria Quick Reference Guide
http://www.michigan.gov/traumasytem

American College of Surgeons – Committee on Trauma
- Resources for Optimal Care of the Injured Patient 2014
  (6th Edition)
https://www.facs.org

Regional Trauma Coordinators
Level IV Trauma Facility Definition

Most Level IV hospitals are in rural locations and usually supplement care within a larger trauma system. Level IV facilities provide initial evaluation and assessment of injured patients, but most patients will require transfer to higher-level trauma centers.

https://www.facs.org
Michigan Level IV Trauma Facility Verification/Designation Criteria

• Hospital
  - Administrative and medical commitment

• Trauma System
  - Involvement in regional and state trauma system planning, regional PI, regional injury prevention (http://www.michigan.gov/traumasytem)
  - Trauma performance improvement program with required audit filters
  - Trauma registry
  - Physician involvement and credentialing
  - Transfer plans
  - Multi disciplinary peer review committee

• Pre-Hospital
  - Bypass and diversion protocol
  - Education of pre-hospital providers
Michigan Level IV Trauma Facility Verification/Designation Criteria

- Inter-hospital transfer plans, guidelines
- Trauma Program Manager
- Trauma Medical Director
- Registrar
- Emergency Department providers
- Radiology
- Lab and Blood Bank
- Trauma Team Activation
- Trauma Registry
- Performance Improvement
- Outreach and Education
- Disaster planning
- Alcohol screening
- Organ procurement and brain death
# Resources Required for Level IV

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*Michigan Trauma Coalition*

[mitrauma.org](https://mitrauma.org)
Level IV Current Policies and Procedures

Look at current policies, procedures, and guidelines that you already have in place.

Incorporate trauma requirements into most policies & protocols that are currently in place.

Examples:

1. Trauma Peer Review Committee will meet (with it’s own agenda) quarterly at 0700 prior to ED section meeting.
2. Emergency department is continuously covered by a physician/mid level and RN for trauma resuscitations.

For more examples see “Level IV Trauma Designation Work Plan “
http://www.michigan.gov/traumasystem
State of Michigan Requirements for Level IV

Resources:
MDCH-Michigan Statewide Trauma
- System Level IV Trauma Designation Work Plan
- Level IV Criteria Quick Reference Guide
http://www.michigan.gov/traumasytem

American College of Surgeons Committee on Trauma
https://www.facs.org

Regional Trauma Coordinators
Different Infrastructures between Level III and Level IV facilities

**Level III**
- General surgery
- Orthopedic surgery
- Anesthesia
- Internal Medicine services
- OR & PACU
- Respiratory services
- Social services
- Physical therapy
- Trauma Medical Director = properly credentialed general surgeon
- ICU
- CT
- Registrar attends the American Trauma Society’s Trauma Registrar Course or equivalent provided by a state trauma program, and the Association of the Advancement of Automotive Medicine’s Injury Scaling Course
- Bain death and Organ donation protocol

**Level IV**
- Emergency services
- Strong transfer guidelines and plans
- Trauma Medical Director = ED Medical Director, ED physician
- Strong Trauma Team Activation protocols and resuscitation protocols

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*Mitrauma.org*
How can we incorporate our current resources into the trauma program?

Important Questions:

• Does your hospital generate reports for STROKE, and STEMI patients currently? Meet with a person from Quality Management department. This person will be an excellent resource for you in setting up your audit filters, excel spreadsheets, etc…

• Can a daily/weekly/monthly report be generated for all patients ICD coded 800-959.9?

• Can a daily hospital admission report be generated for you?

• Can the Trauma Peer Review meeting dovetail onto ED section meeting?

• Does your institution use an EMR? Can you use a split screen for data entry into ImageTrend
# Trauma Section Contact List

Capitol View Building, 6th Floor  
201 Townsend Street  
Lansing, MI  48913  
Fax: (517) 241-9458  
Website: [www.michigan.gov/traumasytem](http://www.michigan.gov/traumasytem)

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>Email Address</th>
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</table>
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| Vacuum, Region 6 Trauma Coordinator |                      |                                |
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Questions