Southern Nevada Trauma System

An Overview
The Trauma System

- The Office of Emergency Medical Services & Trauma System (OEMSTS) is responsible for oversight of the trauma system.
- The ideal trauma system includes:
  - Prevention
  - Pre-hospital care and transport
  - Acute hospital care
  - Rehab
  - Research
Inclusive Trauma System

- Our trauma system is inclusive
  - An inclusive trauma system ultimately matches the needs of the patients with the facility resources to achieve cost-effective and optimal trauma care.
  - An inclusive trauma system strives to meet the need of all injured patients requiring an acute care facility, regardless of severity of injury, geographic location, or population density.
  - In an inclusive system, non-trauma center hospitals are expected to stabilize, treat and transfer as needed.
Levels of Trauma Centers

- Level I:
  - Treats step 1, 2, 3 and 4 patients
  - Provides research
  - Teaches physicians
  - Has admit criteria to maintain designation (must admit 1200 patients yearly or have 240 admissions with an ISS > 15)

- Level II:
  - Treats step 1, 2, 3 and 4 patients
  - No admit criteria for maintaining designation

- Level III:
  - Treats step 3 and 4 patients
  - No admit criteria for maintaining designation

- Patients are transported by EMS to trauma centers based on the Trauma Field Triage Criteria (TFTC) protocol.
Trauma Field Triage Criteria

- **Step 1: Physiological**
  - Altered level of consciousness
  - Systolic blood pressure less than 90 mmHg
  - Respiratory rate <10 or >29

- **Step 2: Anatomical**
  - Penetrating injury to head, neck, torso or upper arms/legs
  - Chest wall instability
  - 2 or more long bone fractures
  - Etc
Trauma Field Triage Criteria

- **Step 3: Mechanism**
  - Falls (significant height)
  - High risk auto crash
  - Motorcycle crash > 20 mph
  - Auto/pedestrian

- **Step 4: Special Considerations**
  - Added to TFTC mid 2013
  - Older adults
  - Children
  - Anticoagulants or bleeding disorders
  - Burns
  - Pregnancy >20 weeks
  - EMS Provider Judgment
Trauma Field Triage Criteria

- Step 1 and 2 patients will be transported to a level I or II trauma center
- Step 3 and 4 patients will be transported to a level I, II or III trauma center
- Transport destination is based on catchment area.
Questions?
Southern Nevada Trauma System

Overview of Trauma Center Authorization Procedure
Southern Nevada Health District
Trauma Center Authorization Process

- Trauma Field Triage Criteria Data
- Trauma Registry Data
- Regional Trauma Advisory Board/Trauma Medical Audit Committee Data

Ongoing system assessment using criteria developed by SNHD/RTAB
Southern Nevada Health District
Trauma Center Authorization Process

Need for additional trauma center(s) or change to existing trauma centers identified

SNHD District Board of Health requests applications for designation
OR
Hospital submits application for authorization to SNHD
Southern Nevada Health District Trauma Center Authorization Process

SNHD staff reviews application based on criteria outlined in the regulations and makes a recommendation to the District Board of Health.

If application is approved and authorization is granted the recommendation is forwarded to the Nevada Division of Public and Behavioral Health (DPBH).
Southern Nevada Health District Trauma Center Authorization Process

- **American College of Surgeons (ACS) Verification Process**
- **DPBH conducts designation process as outlined in NAC 450B.817-450B.875**
- **DPBH issues written notification of designation based on successful completion of ACS verification and DPBH designation process**
Questions?
DATA
Southern Nevada Trauma System
Legislative Authority

- NRS 450B.764 Development of system for collection of information concerning treatment of trauma.

- The Division is responsible for developing a standardized system for the collection of information concerning the treatment of trauma and carry out a system for the management of that information.
History of OEMSTS Trauma Data Collection

- Trauma data from trauma centers are not currently available from the State trauma registry.
- Non-Trauma center data extracts have recently been made available.
- A subset of trauma registry data is provided to OEMSTS by all trauma centers in Southern Nevada.
- Our current data collection and analysis is intended to provide an overview of local trauma activities.
With the use of analytical software, OEMSTS has reviewed, updated, and stored trauma data from 2010 through 2015.

The analytic software program has been in use since 2014. It provides a user-friendly interface for reporting without time consuming manual analysis. However, all data validation is still manual at this time.
OEMSTS Data Processing

- Data processing and validation consists of several steps.
  1. All trauma centers submit data for trauma patients on a monthly basis. This data is submitted electronically, via a HIPAA compliant server to the OEMSTS.
  2. OEMSTS filters through monthly Transfer of Care (TOC) data for the exact number of incidents in the 911 system involving a traumatic patient.
3. The TOC data is compared with the data from each trauma center in order to verify both the initial location of the emergency as well as the trauma center destination. GPS information is validated for each physical address including zip code.

4. EMS response times reported by hospitals are compared to TOC data and validated.
5. After all data has been examined and evaluated for accuracy, it is combined with trauma field triage criteria information and patient age demographics from the trauma centers to form a view of the Southern Nevada Trauma System that is as complete as currently possible. Reports are then generated using analytic software.
Why Do We Need Data?

- “...provide for the timely collection of data from all providers in the form of consistent data sets with minimum standards. The information system should be designed to provide system-wide data... An important use of this information is to develop, implement, and influence public policy.”

- The American College of Surgeons, Clark County Trauma System Consultation, August, 2004
Who Does the Data Represent?

- Data collected by the Office of Emergency Medical Services and Trauma System (OEMSTS) represents patients who have been injured to the extent of meeting the Trauma Field Triage Criteria.
- Ideally this data would document the continuum of care from incident to discharge.
What is The Data?

- OEMSTS trauma data is a subset of the National Trauma Data Bank. The data measures number, severity and distribution of TFTC patients in Clark County. This data is used by SNHD and community stakeholders to target education, outreach and prevention measures in the community.
Where do injuries occur?

- OEMSTS studies trauma by several methods, including GPS coordinates, zip code, and physical address. All of this information is verified by OEMSTS for accuracy.

- Catchment area compliance by EMS is also measured using trauma data. Currently, the RTAB accepts a 5% out of area transport rate.
  - Several factors, including large special events such as New Years Eve, can cause EMS crews to transport out of the catchment area.
How Often is Data Analyzed?

- Data is submitted on a monthly basis and analyzed quarterly. Aggregate data regarding the function of the trauma system are presented during TMAC and RTAB.
How...The Outcome of the Trauma Patient

- OEMSTS evaluates the disposition of the patient from the trauma center. This includes patient admission, treatment in the Operating Room, patient discharge, or patient death.

- All trauma center deaths are evaluated by in house performance improvement programs. Any mortality with the possibility for improvement is further reviewed by OEMSTS and the Trauma Medical Audit Committee (TMAC).
Questions?
Trauma Center Applications and SNHD Recommendation
OEMSTS Authority

- **NRS 450B.237(3)** Enables the Board of Health to adopt regulations which establish the standards for the designation of hospitals in the county as centers for the treatment of trauma.
- Standards must be consistent with the regulations adopted by the State Board of Health.
OEMSTS Authority

- NAC 450B.828  Addition of centers to system for providing treatment for trauma. A trauma center may be added on the basis of a demonstrated change in need that cannot be met by existing centers.
- Need includes a significant increase in the volume of patients with trauma and geographic distribution of the patients without access to the existing centers.
OEMSTS Authority

- **Trauma System Regulations Section 300** Any hospital that desires designation as a Trauma Center shall first request Authorization from the Board.

- The Board shall determine the needs of the Clark County trauma system based on evidence obtained through continuous evaluation of the system.
  - assessing the volume, acuity and geographic distribution of Patients requiring trauma care; and the location, depth and utilization of trauma resources in the system.
OEMSTS Authority

• District Procedure for Authorization as a Center for the Treatment of Trauma or Pediatric Center for the Treatment of Trauma. The application must demonstrate the need for additional trauma services at the level being requested in the proposed service area, including:
  • the population to be served;
  • geographic considerations, such as the distance from existing centers; and
  • the projected impact on the trauma system.
OEMSTS Oversight

- The RTAB and TMAC provide continuous oversight of the trauma system through review of EMS & Trauma System data, Trauma Center data, engaging the participation of EMS agencies (public and private) and seeking input from acute, rehab and long term care facilities.
System Considerations

- Since 2010 the data has not shown an increase in volume that could not be met by the existing system.
- Since 2010 EMS services have not indicated that out of service times linked to trauma center location or trauma center transfer of care was an issue.
- Since 2010 the OEMSTS has not received a complaint from the public or any provider regarding the lack of access to trauma care.
TFTC Patient Volume

- Annual volume of TFTC patients has increased by 260 patients since 2013
TFTC Patient Volume

- TFTC patient volume by step and year.
Patient Acuity and Disposition

Data show no significant percentile change in the acuity or disposition of patients since 2010.
Patient Acuity and Disposition

Anatomical

Discharged (%)  Admitted (%)  To OR (%)  To ICU (%)  Transferred (%)  Deceased (%)
Patient Acuity and Disposition

Special Considerations

- Discharged (%)
- Admitted (%)
- To OR (%)
- To ICU (%)
- Transferred (%)
- Deceased (%)

Year:
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
Applications

- Applicants have stated that transport times are excessive in their areas of intended service.
- The OEMSTS was unable to locate data to support an ideal transport time for step III or IV patients through a literature search.
- For all steps in Clark County the median transport time in 2015 was 16.7 minutes
Median Transport Time

- Median transport times for all steps in Clark County 2010 to 2015
Applications

- The applicants have stated that trauma center designation would mean that patients would receive care in their communities.
- The ACS states in “Resources for Optimal Care of the Injured Patient 2014 (pg 49)” that Rural hospitals should endeavor to treat trauma patients in their community as appropriate to the level of resources available.
- No similar statement is made regarding community, suburban or urban settings.
- The ACS Resource document further states: Level III trauma centers are generally not appropriate in an urban or suburban area with adequate Level I and/or Level II resources.
- All applicant facilities are obligated under EMTALA to receive and stabilize patients within their respective capability.
Applications

- The applicants have stated that they are already seeing trauma patients in their facilities.
  - This is a function of an inclusive trauma system.
  - All receiving facilities are capable of assessing trauma patients and transferring to a higher level of care as appropriate.
  - Per current SNHD EMS protocols, patients meeting TFTC criteria are transported to designated trauma centers.
Applications

- Applicants have indicated that obtaining trauma center designation will increase system resilience in the event of a large scale disaster.
  - System resilience is a function of individual facility plans for accommodating a surge in patient volume during a large scale disaster. Additional treatment facilities may contribute to system resilience regardless of their designation as trauma centers.
  - In the event of a large scale disaster, TFTC protocol would be suspended and the incident command structure would determine transport destination based on multiple factors, including, but not limited to, open beds, plant status, traffic congestion and self-referred patients.
  - System Resilience is also dependent on mass casualty plans and exercises.
ACS has recently promulgated a position statement regarding the addition of trauma centers ("Statement on Trauma Center Designation Based upon System Need" Jan 1, 2015).

The ACS paper:
- Reinforces the importance of focusing on system need when expanding a trauma system.
- Supports lead agency authority to designate trauma centers.
The ACS recommends utilizing the following measures when determining system need, including:

- Number of Level I and II centers per 1 million population
- Percentage of population within 60 minutes of a level I or II.
- EMS transport times.
- Percentage of severely injured patients seen at a trauma center.
- Trauma related mortality.
- Frequency and nature of inter-hospital transfers.
- Percentage of time trauma hospitals are on diversion status (trauma bypass)

Allocation of trauma centers should be reassessed at regular intervals. The RTAB and TMAC perform this function quarterly.
The ACS has distributed the Needs Based Assessment of Trauma System (NBATS) Tool to assist lead agencies. The tool was developed by the Needs Based Trauma Center Designation Consensus Conference, convened by the ACS Committee on Trauma.

The tool uses 6 questions to assess the need for trauma centers:

- Question 1. Population of the trauma service area
- Question 2. Median Transport Times
- Question 3. Lead Agency/System Stakeholder/ Community Support
- Question 4. Patients Discharged from Non-Trauma Centers with an Injury Severity Score > 15
ACS Needs Based Assessment of Trauma System (NBATS) Tool

- Question 5. Number of existing trauma centers in the trauma service area (TSA)
- Question 6. Number of patients with an ISS >15 seen at existing level I and II centers
ACS Needs Based Assessment of Trauma System (NBATS) Tool

- Scoring System Used to Allocate Trauma Centers within the TSA:
  - TSAs with scores of 5 points or less shall be allocated 1 trauma center
  - TSAs with scores of 6-10 points shall be allocated 2 trauma center
  - TSAs with scores of 11-15 points shall be allocated 3 trauma center
  - TSAs with scores of 16-20 shall be allocated 4 trauma center
ACS Needs Based Assessment of Trauma System (NBATS) Tool

- Using the NBATS tool the score is 5.5.
- Limitations of the NBATS includes population estimates for entire TSA and does not account for varied growth rates in areas of the TSA.
- Geographic size of the TSA is not addressed.
- NBATS was one tool used in conjunction with data to determine need.
- The final evidence based determination was relied heavily on data, NBATS was used as a supplementary tool.
In 2011 the ACS visited Clark County to assess the trauma system and their recommendation was that “At the time of the TSC visit, there was general agreement by both stakeholders and the TSC that the current configuration of the trauma system should remain in place.”

(“American College of Surgeons Committee on Trauma Trauma System Consultation July 18th – 21st, 2011 pg. 86)
Conclusion

- Based on NRS 450B, NAC 450B, Trauma System Regulations, the “District Procedure for Authorization as a Center for the Treatment of Trauma or Pediatric Center for the Treatment of Trauma”, the American College of Surgeons’ collected references and available EMS & Trauma System data the current system continues to meet the trauma needs of the trauma service area.
- The applicants have not demonstrated unmet need for additional trauma services.
- The OEMSTS cannot recommend authorization to seek designation as a Center for the Treatment of Trauma.
Questions
Trauma System Questions
Format

- The questions presented here are verbatim from the original email.
- These questions were solicited by the RTAB in an effort to educate members and the public.
Need Question

- My understanding is that our decision whether to recommend approval for one or more of the three applicants as centers for the treatment of trauma is to be based on “Need”; that is, whether the population in each of the areas where the specific hospitals are located is sufficient to warrant an additional trauma center. Other than “Need,” are there any other criteria we (the RTAB) should be considering? If the answer is “Yes,” please identity them for us. Also, are we required to give greater weight to one factor versus another?
St. Rose Question

In 2004, it was determined that the southeastern section of Clark County (the Henderson/Green Valley area) needed additional trauma services due to population and trauma cases; and thus designated St. Rose Siena as a Level 3 trauma center. Is the population and/or trauma volume in the northwestern and southwestern sections of Clark County at or near the population and/or trauma volume as 2004?
Patient Volume and Other Factors

Question

- Assuming UMC and Sunrise receive the minimum number of trauma cases designated by the ACS for a Level 1 and Level 2 Trauma Center, respectively, should we be considering any other factors related to UMC and Sunrise? If so, what factors and how much weight do we give each factor? (I understand that it is in everyone’s best interest that UMC and Sunrise’s trauma programs are fully supported and successful.)
Transport Time Question

How do we factor in the given geographical distances and travel constraints (especially during rush hours) between UMC and both the northwestern and southwestern sections of Clark County as they relate to providing rapid trauma care to patients in those areas?
Trauma Declination Question

- We know that Trauma Centers do not go on EMS divert; however, does UMC, Sunrise, or St. Rose Siena track trauma transfer declinations from local hospitals and outreach areas? If so, would you please provide us with a declination report. If this is not tracked, how is the determination made that there is an excess trauma bed capacity?
Payer Mix Question

- What is the current payer mix at UMC and what is the payer mix for the trauma cases in the zip codes proposed by each applicant that are currently seen at UMC and appropriate for an adult Level III (i.e., ISS <15)? Please show payer mix by application.

- Payer mix is not pertinent to the determination of need.
Questions?