

# **Southern Nevada Trauma System Plan**

**February 26, 2015**



**Southern Nevada Health District ~ P.O. Box 3902 ~ Las Vegas, Nevada 89127**

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## **TERMS AND ACRONYMS**

- ACS**----- means American College of Surgeons
- ACS-COT** ----- means American College of Surgeons - Committee on Trauma
- ALS**----- means Advanced Life Support
- ATLS**----- means Advanced Trauma Life Support
- BIS** ----- means Benchmark Indicators and Scoring tool outlined in  
HRSA Model Trauma System Planning and Evaluation Document
- Board**----- means Southern Nevada District Board of Health
- CDC** ----- means Centers for Disease Control and Prevention
- COBRA**----- means Consolidated Omnibus Budget Reconciliation Act
- DPBH** ----- means Division of Public and Behavioral Health of the Nevada  
Department of Health and Human Services
- ED**----- means Emergency Department
- EDAT** ----- means Emergency Department approved for Trauma
- EMS** ----- means Emergency Medical Services
- EMSTS/OEMSTS** -- means Southern Nevada Health District Office of Emergency Medical  
Services & Trauma System
- EMTALA**----- means Emergency Medical Treatment and Active Labor Act
- FARS**----- means Fatality Analysis Reporting System
- FEMA** ----- means Federal Emergency Management Agency
- GCS**----- means Glasgow Coma Scale
- Health Officer** ----- means Chief Health Officer of the Southern Nevada Health District or the  
Chief Health Officer’s designee
- HRSA** ----- means U.S. Department of Health and Human Services  
Health Resources and Services Administration
- ICU** ----- means Intensive Care Unit
- ID** ----- means Internal Disaster
- ISS** ----- means Injury Severity Score
- MAB**----- means Medical Advisory Board
- MIS** ----- means Management Information System
- NAC** ----- means Nevada Administrative Code

## **TERMS AND ACRONYMS (Cont.)**

- NRS**----- means Nevada Revised Statutes
- NTDB** ----- means National Trauma Data Bank
- NTDS**----- means National Trauma Data Standard
- OPHP** ----- means the Southern Nevada Health District Office of Public Health Preparedness
- OR** ----- means Operating Room
- PAIS** ----- means Bureau of Preparedness Assurance Inspection and Statistics
- PCR**----- means Patient Care Record
- PHP**----- means Public Health Preparedness
- PIPS** ----- means Performance Improvement and Patient Safety
- PSAP** ----- means Public Safety Answering Point
- QI** ----- means Quality Improvement
- RTAB** ----- means Regional Trauma Advisory Board
- RTAC** ----- means Regional Trauma Advisory Committee
- SNHD** ----- means Southern Nevada Health District
- SNHPC**----- means Southern Nevada Healthcare Preparedness Coalition
- SNIPP** ----- means Southern Nevada Injury Prevention Partnership
- TBP**----- means Trauma Bypass
- TFTC**----- means Trauma Field Triage Criteria
- TIIDE** ----- means the CDC-sponsored Terrorism Injuries: Information, Dissemination, and Exchange Project
- TMAC**----- means Trauma Medical Audit Committee
- TRUG** ----- means the Trauma Registry User Group

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# EXECUTIVE SUMMARY

## Overview

Intentional and unintentional injuries are the leading causes of death and disability for those between the ages of 1 and 44 in the United States each year and generate significant social and economic expenses for medical treatment and lost productivity of victims. Further, natural and man-made disasters are capable of producing large numbers of injured patients. The recognition of the significant impact that traumatic injury has on the individual and society has led to a greater emphasis on the development of trauma systems of care. Trauma systems conduct daily operations to optimize patient outcome and can readily adapt to manage an influx of injured patients resulting from a mass casualty incident.

### What is Trauma?

Trauma is a disease process that has identifiable causes, established treatment procedures, and defined methods of prevention. The trauma patient is a person who requires timely diagnosis and treatment of their injuries by a multidisciplinary team of health care professionals, supported by the necessary resources, to reduce or eliminate the risk of death or permanent disability.<sup>1</sup>

### What is a Trauma System?

A trauma system is an organized, coordinated, comprehensive injury response network of essential resources that promotes injury prevention and control initiatives and provides specialized care for those who are injured. The system facilitates appropriate triage and transportation of trauma patients through the emergency medical services system to designated health care facilities that possess the capability, competence, and commitment to provide optimum care for the victims of trauma. It also promotes rehabilitation services to decrease the likelihood of long-term disability and maximize the potential for injured patients to return to their prior level of functional capacity and reintegration into the community.

The goals of a trauma care delivery system are to:

- reduce the incidence and severity of injuries;
- improve the health outcome of those who are injured by ensuring equitable access to the most appropriate health care resources in a timely manner;
- promote efficient, cost-effective delivery of care;
- implement performance improvement activities to ensure quality care throughout the system; and
- advocate for sufficient resources to meet the needs of the injured in the community.

During the past few decades there has been mounting evidence to support the fact that seriously injured persons are best served by a well-organized and integrated system of care that activates specialized resources on a moment's notice. The "golden-hour" rule that makes definitive care a critical component in reducing preventable deaths and disabilities has resulted in a need for highly trained prehospital and trauma teams ready to receive seriously injured patients. It is now recognized that a trauma system must have more than just definitive care. A sample of important other components include prehospital care, prevention programs, rehabilitation services, and performance improvement initiatives. Further studies have concluded that consistent demonstrated improvements in the survival of hospitalized patients takes place when a coordinated trauma care system is provided for these patients. Clark County has taken on the challenge of building a framework for ensuring the priority for creating a coordinated system to provide consistent, high-quality trauma care to injured patients throughout the region.

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<sup>1</sup> 2002 Trauma System Agenda for the Future. U.S. Department of Transportation, National Highway Traffic Safety Administration

## History and Background

Clark County's trauma program began with the initial designation of University Medical Center (UMC) as a Level II trauma center in 1988. In January 1999, UMC was designated as a Level I and is now one of only five dedicated and free-standing Level I trauma centers in the United States.

In October 2003, Sunrise Hospital and Medical Center and St. Rose Dominican Hospital - Siena Campus notified the State Health Division of their intent to seek designation as a Level II and Level III trauma center, respectively. The State Health Division requested input from the Clark County Health District (CCHD), now known as the Southern Nevada Health District (SNHD), regarding the expansion of the trauma system in the county. The District Board of Health established a Trauma System Development Committee to explore the issue. The Committee directed staff to contract with The Abaris Group, a private consulting firm that specializes in evaluating trauma systems, and the American College of Surgeons, Committee on Trauma (ACS-COT) to assist in the process. The Abaris Group performed an assessment of the county's population, existing resources, and projected trauma care needs. The ACS-COT conducted a trauma system consultation.

To promote an objective and transparent approach to system assessment, CCHD created a Citizen's Trauma Task Force of experienced community stakeholders to receive information from The Abaris Group and ACS-COT and to make recommendations to the Trauma System Development Committee and, in turn, to the Board of Health for its consideration. The Citizen's Trauma Task Force met for seven months, beginning in January 2004. During that time, The Abaris Group and ACS-COT completed their work and reported their findings. At the June 2004 Board of Health meeting, the Trauma System Development Committee recommended that the Board direct CCHD staff to pursue creating an interlocal agreement with the State Health Division to delegate authority to plan, develop, and implement a comprehensive trauma system in Clark County. Specifically, the Citizen's Trauma Task Force prepared the following recommendations as noted in the July 22, 2004 Board of Health minutes:

1. That the State Board of Health delegate to the CCHD the designation process for trauma centers as well as the development of patient catchment areas and that the CCHD establish fees for trauma system participation.
2. That there be adequate resources to develop and implement the system plan in Southern Nevada and that those funds be collected from participants, as well as exploring other funding opportunities.
3. That the recommendations from the ACS-COT regarding a durable commitment from a health care facility, measured in several years, to be determined by a regional oversight committee, be adopted and that substantive analysis of financial, medical, and operational issues consistent with designation be undertaken to include the past performance of any entity seeking designation.
4. That the State Board of Health make appropriate changes to the administrative code to allow a trauma center applicant's access to trauma patients based on recommendations to be made by the CCHD.
5. That the ACS-COT and Abaris reports be carefully considered by the District Board of Health in its deliberations.

The District Board of Health accepted the recommendations of the Trauma System Development Committee and Citizen's Trauma Task Force and voted to send the final recommendations and copies of The Abaris Group's Southern Nevada Trauma System Needs Assessment 2004 Report (<http://www.southernnevadahealthdistrict.org/download/trauma/ABARISassessment05-21-04.pdf>) and the 2004 ACS-COT Clark County Trauma System Consultation Report to the State Health Division. (<http://www.southernnevadahealthdistrict.org/download/trauma/ACSfinal.pdf>)



During this same period, Sunrise Hospital and Medical Center informed the State Health Division that during their ACS-COT trauma center consultation visit it was advised that in order to obtain final verification by the ACS-COT, the site review team would need to evaluate actual trauma cases. Sunrise Hospital and Medical Center requested a decision on its request for provisional trauma center designation. A letter was issued by the State Health Division granting provisional licensure for Sunrise Hospital and Medical Center to provide trauma services beginning no sooner than January 2005 provided certain conditions were met. This occurred just prior to the District Board of Health finalizing its recommendations and submitting them to the State Health Division. The District Board of Health requested clarification from the Health Division regarding the decision. The response from the Health Division included an explanation of the State Board of Health's responsibility to act on the application for provisional licensure submitted by Sunrise Hospital. During this time, St. Rose Dominican Hospital - Siena Campus initiated the application process with the State Health Division to become designated as a Level III trauma center.

In August 2004, the District Board of Health committed to the planning, development, and implementation of the Clark County trauma system, which included addressing the recommendations of The Abaris Group and ACS-COT to develop an inclusive system to serve the needs of residents and visitors in Southern Nevada and the surrounding areas. The planning process was to assure evidence-based development of regulations, protocols, and procedures to minimize adverse effects on the existing Level I trauma center, as well as to allow sufficient volume to the new Level II and Level III centers to meet the ACS-COT verification criteria. CCHD contracted with The Abaris Group to seek input from community stakeholders and develop a comprehensive trauma plan, which was completed and endorsed by the District Board of Health in February 2006.

In August 2005, Sunrise Hospital and Medical Center was granted full designation as a Level II trauma center and St. Rose Dominican Hospital - Siena Campus was designated as a Level III trauma center. In October 2007, UMC was granted designation as a Pediatric Level II trauma center, in addition to their Level I status.

**A summary of these and other key events related to the development of the Southern Nevada Trauma System can be found in Appendix I.**

**Since the initial draft of this trauma plan was published, many community stakeholders have contributed to the development of the Southern Nevada Trauma System, including the creation of the following documents:**

**SNHD Emergency Medical Services Regulations:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/ems-regs.pdf>

**SNHD Trauma System Regulations:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/cc-trma-sys-regs.pdf>

**SNHD Trauma System Performance Improvement Plan:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/trauma-performance-imprv-plan.pdf>

**Clark County Emergency Medical Care Protocols:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/bls-ils-als-protocol-manual.pdf>

### Key Trauma Plan Recommendations

The key recommendations that started the formation of this plan are:

- 1) SNHD and the trauma system stakeholders should adopt as their mission:  
*“To promote public awareness and information regarding trauma services and advocate for optimal injury prevention, acute care, and rehabilitation for trauma patients of all ages.”*
- 2) SNHD must collaborate with stakeholders to define and establish support processes and mechanisms in order to fulfill its mandate to develop an inclusive and comprehensive trauma system.
- 3) The trauma system should promote patient safety and quality outcomes as its highest priority through accountable and objective performance improvement activities including a peer review process, an integrated trauma data collection process, and data analysis.
- 4) The trauma system plan should promote the development of an inclusive trauma system to assure delivery of quality trauma care for all patients who present to area emergency departments and to encourage development of interfacility transfer guidelines between trauma centers and other facilities.
- 5) The trauma system should promote public awareness and information regarding trauma services and targeted injury prevention initiatives.
- 6) The trauma system plan should promote integration of rehabilitation services into the trauma care system through improved interaction between trauma centers and rehabilitation service providers.
- 7) SNHD should promote system cost-effectiveness, economic viability, institutional collaboration, and continue to pursue funding sources to support the trauma system.
- 8) The trauma system plan should promote further studies that should be undertaken regarding optimal care of pediatric and geriatric patients.

# **TRAUMA SYSTEM PLAN SUMMARY**

## Plan Objectives

This section defines the objectives of the Southern Nevada Trauma System, the proposed action to measure the objective, and implementation of system changes where appropriate.

## Compliance with State Regulations

This section provides an overview of the organizations and state statutes concerning trauma care and monitoring in Nevada.

## Organizational and Administrative Structure

This section describes the administrative structure of the trauma system in relation to the overall EMS and trauma system.

## Needs Assessment

This section describes the unique needs of the Southern Nevada Trauma System. The findings of the initial needs assessments completed by The Abaris Group and the ACS-COT are reviewed and compared to the findings in subsequent needs assessments performed. Necessary system changes to meet these needs are also addressed.

## Trauma System Design

This section provides a summary of the trauma care system design and the various required system components. It identifies the facilities involved in the care of the acutely injured patients and how the system interfaces with neighboring agencies. Catchment zone maps are provided to serve as guidelines for EMS trauma transports.

## Catchment Areas

This section provides an explanation about how the trauma center catchment areas were designed and will be monitored.

## Policy Development

This section identifies the policies that define the structure of the trauma system plan. Policies are listed in this section and additional system documents are referenced in Appendix D.

## Data Collection

This section describes data management instruments, and the implementation of the data management system for trauma care.

## Trauma System Performance Improvement and Patient Safety

This section defines the evaluation process used to monitor system effectiveness.

## PLAN OBJECTIVES

The trauma system is an integral part of the existing Clark County EMS delivery system. A continuing goal of the Southern Nevada trauma care system is to assure a well-prepared, coordinated, and appropriate response to persons who incur traumatic injuries in Clark County and the surrounding areas. System objectives have been developed to provide a means to measure the effectiveness of the trauma system plan.

The following guiding principles are proposed in this plan and their associated performance measures will be monitored as a measure of system effectiveness:

- 1) SNHD is the agency responsible for developing the Southern Nevada Trauma System, and ensuring the provision of comprehensive and inclusive trauma services for the residents and visitors of Clark County and the surrounding areas. The highest priority of the trauma system will be patient safety and quality outcomes.
- 2) Impartial and objective administration of the EMS and Trauma System will be provided through SNHD. SNHD will monitor the system by review based upon compliance with established policies and system standards.
- 3) Trauma centers will collaborate with SNHD to define their respective relationships, to ensure support services are available from SNHD for the trauma system, and act as a vehicle for funding sources to the monitoring process. SNHD will also seek all other appropriate funding sources.
- 4) A high quality system that is concerned with cost-effectiveness, economic viability, and institutional collaboration will be accomplished at the facility level by continuous review for cost effective care delivery practices. Issues of concern will then be shared through the Regional Trauma Advisory Board (RTAB).
- 5) Accountability and objective evaluation of the trauma care system will be provided through the performance improvement and patient safety (PIPS) process supported by data analysis utilizing the trauma registry and other mutually agreed upon data sources. This will be accomplished through audit by the Trauma Medical Audit Committee (TMAC) and the designation and re-designation review process at the trauma facility.
- 6) Improving the integration of and support for quality rehabilitation services and care along with meeting the long-term care needs of major trauma patients are also goals of this plan. These will be accomplished through monitoring audit filters for length of stay, discharge dispositions, and by using discharge planners to follow-up on patients. Access to rehabilitation services will be monitored through the comprehensive trauma PIPS process registry data.
- 7) Public awareness and information regarding trauma services and injury prevention will be promoted. This will be accomplished through brochures, trauma program personnel presentations, development of a trauma system annual report, injury prevention outreach programs, and coordinated public education and media campaigns.
- 8) The community desires a trauma system that provides for trauma coverage but does not saturate and thus risk destabilizing the trauma center system. Periodic study of the number and location of needed trauma centers should occur.
- 9) Pediatric trauma needs will be further evaluated as part of this plan to define pediatric needs.
- 10) Trauma center interfacility specific guidelines will be developed as part of this plan's objectives to address the relationship with non-trauma center hospitals. This will be evaluated through monitoring of interfacility transfer by EMS and the TMAC. Specific interfacility guidelines will be drafted and approved by the RTAB.

## COMPLIANCE WITH STATE STATUTES AND REGULATIONS

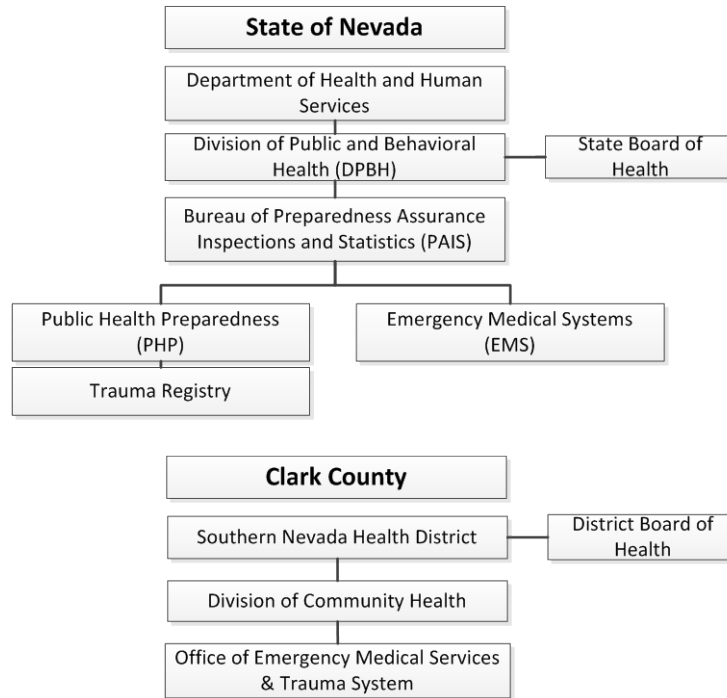
### Authority

SNHD is governed by a 14-member policy-making board composed of representatives from each of the region's six governmental entities, as well as two physicians, a registered nurse, an environmental health specialist, and a representative of a nongaming business or from an industry that is subject to regulation by the Health District. As such, it represents a unique consolidation of the public health needs of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, and Clark County into one regulating body. The District Board of Health, through policy development and direction to staff, identifies public health needs and, as mandated by County Ordinance 163, establishes priorities on behalf of local taxpayers, residents, tourists/visitors, and the commercial service industry, to establish and conduct a comprehensive program of health to prolong life and promote the well-being of the people of Clark County.

The Division of Public and Behavioral Health (DPBH) of the Nevada Department of Health and Human Services, formerly known as the Nevada State Health Division, is designated by Nevada Revised Statutes as having primary authority over emergency medical services (EMS) in counties whose populations are less than 700,000. The District Board of Health is the health authority for EMS in Clark County. (NRS 450B.060, 450B.077, 450B.082, 450B.120, 450B.130) Prior to 2005, the statutes identified the State Board of Health as the regulatory authority responsible for establishing a trauma program and for designating centers for the treatment of trauma throughout the state (NRS 450B.237). The oversight of the trauma center application and designation process and ongoing monitoring of the trauma program were performed by the State Health Division (Nevada Administrative Code (NAC) 450B.817 - 450B.875). An important component of designation is the verification process conducted by the ACS-COT (NAC 450B.820). The Health Division is also responsible for maintaining a statewide trauma registry for patients requiring trauma care in a hospital (NRS 450B.238, NAC 450B.764).

During the 2005 legislative session, NRS 450B.237 was amended to require both the administrator of the Health Division and the District Board of Health, in a county whose population is 400,000 or more, to approve a proposal to designate a hospital as a trauma center in the county. The population level was increased to 700,000 during the 2011 legislative session. The proposal may not be approved unless the county's District Board of Health has established and adopted a comprehensive trauma system plan and regulations which include consideration of and plans for the development and designation of new trauma centers in the county, based on the demographics of the county, and the manner in which the county may most effectively provide trauma services. Prior to this time, neither the State of Nevada nor Clark County had developed a formal trauma system or trauma plan. The designation of trauma centers is now a collaborative process with the DPBH and SNHD. Applicants for trauma center designation or renewal of designation in Clark County must now be given authorization from the District Board of Health to seek designation as a trauma center by the DPBH (NAC 450B.819). Since 2005, the District Board of Health has adopted this plan, a trauma performance improvement plan (Appendix D), trauma system regulations (Appendix D), and trauma system procedures (Appendix E-G).

The following entities collaborate in regulating the Southern Nevada Trauma System:



Data Collection Regulations

The State requires all hospitals to record and maintain, on a system or format as approved by the DPBH, certain trauma information.

**NRS 450B.238**

**Regulations requiring hospitals to record and maintain information.** The State Board of Health shall adopt regulations which require each hospital to record and maintain information concerning the treatment of trauma in the hospital. The Board shall consider the guidelines adopted by the American College of Surgeons which concern the information which must be recorded. (Added to NRS by 1987, 1043; A 1993, 2836)

NAC 450B.764 - 450B.768 requires the DPBH to develop a standardized system for the collection of information concerning the treatment of trauma and to carry out a system for the management of that information. Hospitals are required to submit to the DPBH quarterly reports which comply with the criteria prescribed by the Health Division.

Trauma System Regulation 200.100 requires the Office of Emergency Medical Services & Trauma System (OEMSTS) to develop a trauma performance improvement plan to provide continuous assessment of the structure, function, and effectiveness of the system. The plan must include the adoption and implementation of a standardized system to collect and manage data specific to trauma system evaluation and planning from permitted EMS agencies, trauma centers, hospitals, and other health care organizations. All EMS agencies, trauma centers, and hospitals that receive trauma patients are required to provide data when requested.

A key component to the success of the trauma system is the ability to maintain an accurate and up-to-date trauma registry. With assistance from the registry, system evaluation, planning, and improvements can be made with reliable data.

## **ORGANIZATIONAL AND ADMINISTRATIVE STRUCTURE**

### Mission Statement

The mission of the Southern Nevada Health District (SNHD) is to protect and promote the health and well-being of the residents and visitors of Clark County, Nevada. SNHD is one of the largest local public health organizations in the United States, serving more than 2 million residents which represent 70 percent of the state's total population. SNHD is also responsible for safeguarding the public health of more than 43 million visitors to Las Vegas each year. One of SNHD's primary responsibilities is providing regulatory oversight of the EMS and Trauma System in Clark County.

### Authority

SNHD has the legal authority to manage and supervise the EMS delivery system in Clark County. The State of Nevada and SNHD have the authority to designate trauma centers, establish a comprehensive trauma system, and to develop and monitor a trauma registry. The following information defines the organization and administration of SNHD, of which EMS and trauma system monitoring is a component.

### **Organizational Structure**

The OEMSTS is a part of the Division of Community Health and is overseen by the EMSTS Manager who reports to the Division Director. The Community Health Director reports to the Chief Health Officer.

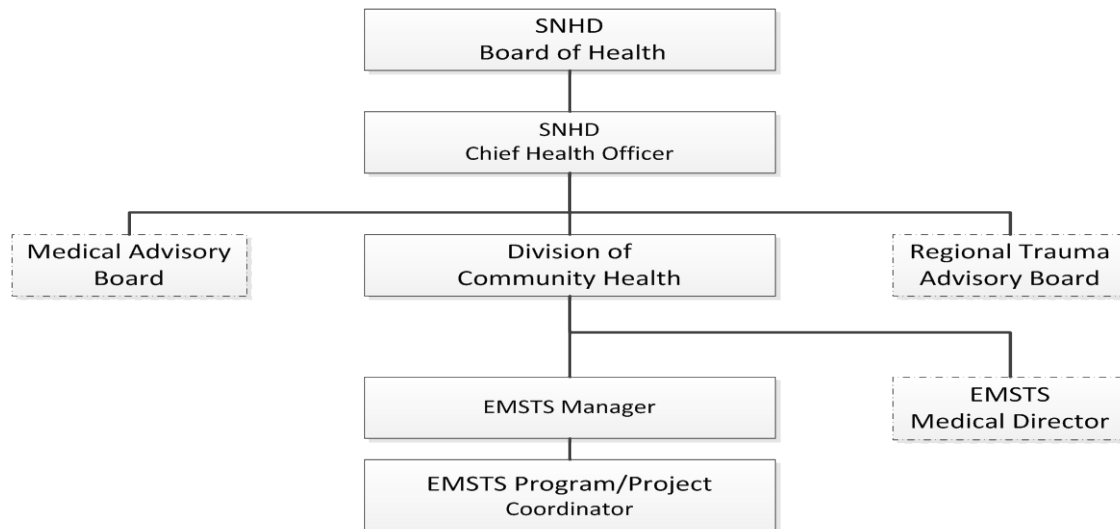
The OEMSTS is responsible for establishing and enforcing regulations related to the structure and operation of the EMS and trauma system, including creation of a program for planning, developing, monitoring, and improving the system. This includes setting minimum standards for permitting the operation of ambulances, air ambulances, and fire-fighting agency vehicles; certifying and licensing emergency medical personnel; defining educational requirements; promulgating treatment protocols for individuals in need of emergency care; establishing peer review committees to review, monitor, and evaluate system performance; and developing and implementing a process for authorizing hospitals to seek trauma center designation from the DPBH.

By regulation, SNHD created the EMS Medical Advisory Board (MAB) and Regional Trauma Advisory Board (RTAB) to support the Chief Health Officer's role to ensure a high quality system of patient care within the Clark County EMS and Trauma System. The boards make recommendations and assist in the ongoing design, operation, evaluation, and improvement of the system from initial patient access to definitive patient care.

The MAB and RTAB established the EMS Quality Improvement Directors Committee and the Trauma Medical Audit Committee (TMAC), respectively, as medical peer review committees to review, monitor, and evaluate EMS and trauma system performance and to make recommendations for system improvements. When functioning as a peer review committee, the committees derive their authority and privilege from NRS 49.117 - 49.123 and NRS 49.265.

Both boards have created subcommittees to review and provide recommendations on specific matters falling within their areas of authority. A complete description of the functions, authority, and responsibilities of the trauma committees may be found in Appendix B.

The organizational chart for the EMS & Trauma System Program is provided below:



By SNHD Trauma Regulation 400.000, membership on the RTAB includes:

Members	How Appointed
Trauma medical directors	One from each trauma center
Trauma program managers	One from each trauma center
Medical Advisory Board chair	Appointed by MAB
Administrator from a non-trauma hospital system	Appointed by SNHD
Public EMS transport representative	Appointed by SNHD
Private EMS transport representative	Appointed by SNHD
Injury prevention/education representative	Appointed by SNHD
Payer representative	Appointed by SNHD
Public member	Appointed by SNHD
Rehabilitation representative	Appointed by SNHD
Legislative/Advocacy representative	Appointed by SNHD
Public Relations/Media representative	Appointed by SNHD
Funding/Financing representative	Appointed by SNHD
EMSTS Manager or designee (Ex officio)	Appointed by SNHD

By SNHD regulation membership on the TMAC includes:

Members	How Appointed
Trauma medical directors	One from each trauma center
Trauma program managers	One from each trauma center
County medical examiner or designee	Appointed by SNHD
Neurosurgeon	Appointed by SNHD
Anesthesiologist	Appointed by SNHD
Orthopedic surgeon	Appointed by SNHD
ED physician from a non-trauma center hospital	Appointed by SNHD
EMS QI Directors Committee representative	Selected by committee chair
EMSTS Manager or designee	Appointed by SNHD



## Trauma System Structure

There are three state designated and ACS-COT verified trauma centers in Clark County. Two hospitals, the existing Level I and Pediatric Level II trauma center (University Medical Center) and the Level II trauma center (Sunrise Hospital and Medical Center), are located in the metropolitan area of Las Vegas. These two facilities receive the majority of trauma patients as well as any transfers from other counties. Sunrise Hospital and Medical Center began service as a Level II trauma center in February 2005. St. Rose Dominican Hospital - Siena Campus, located in Henderson, began service as a Level III trauma center in August of 2005. St. Rose Dominican Hospital - Siena Campus has indicated that they desire to upgrade to a Level II status at some point in the future.

Designated trauma centers have a trauma medical director and a program manager to oversee the function of their respective trauma services. The trauma director must be a Board-certified surgeon with experience in trauma care and trained in Advanced Trauma Life Support (ATLS). The trauma program manager is a registered nurse who has emergency and trauma experience and additional trauma/critical care training. These individuals provide the administrative and clinical support for their trauma center. The trauma medical director and program manager serve as liaisons between the trauma center, SNHD and the other trauma stakeholders.

With the addition of two new trauma centers in 2005, major pediatric trauma victims were triaged and transported to the designated adult trauma centers that also had pediatric and critical care units. UMC, Sunrise Hospital and Medical Center, and St. Rose Dominican Hospital - Siena Campus all have pediatric intensive care capability. In October 2007, UMC became designated as a Pediatric Level II trauma center. In November 2012, following the recommendations of the 2011 ACS-COT Clark County trauma system consultation team and the 2011 CDC Guidelines for the Field Triage of Injured Patients, the SNHD EMS “Trauma Field Triage Criteria Protocol” was revised to require pediatric patients who meet physiological and anatomical criteria to be transported to a designated pediatric trauma center.

## Trauma System Challenges

- With the addition of Sunrise Hospital and Medical Center (February 2005) and St. Rose Dominican Hospital - Siena Campus (August 2005) as trauma centers, it was necessary to create **a more comprehensive and inclusive trauma system plan**.
- **Clear leadership roles** are needed for the trauma system to be successful. The various individuals and committees formed to evaluate and make recommendations for the trauma system plan must promote clear administrative roles and boundaries. Trauma leadership should be designed to assure significant stakeholder input and buy in.
- Determining the appropriate **number of trauma centers** requires periodic study and analysis of trauma center designation and of the number and location of new or potential trauma centers. Previous needs assessments documented that the community desires trauma coverage but does not want to be saturated with trauma centers or to have too many trauma centers so as to destabilize the existing centers. Periodic study of the number and location of trauma centers is needed.
- It is important to receive more **involvement from the non-trauma centers**. Conceptually, it is possible that the non-trauma centers could voluntarily participate in system performance improvement, prevention, data collection, or even receive a voluntary designation of minor injury care (e.g. Emergency Department approved for Trauma – EDAT).

## NEEDS ASSESSMENT

### Background

The most complete summary of the background leading to the development of the Southern Nevada Trauma System Plan can be found in the ACS-COT Trauma System Consultation report of May 2004 (<http://www.southernnevadahealthdistrict.org/download/trauma/ACSfinal.pdf>) and Abaris Group's Southern Nevada Current Trauma System Needs Assessment report of April 2004. (<http://www.southernnevadahealthdistrict.org/download/trauma/ABARISassessment05-21-04.pdf>)

A second ACS-COT Clark County Trauma System consultation was performed in July 2011. The final report summarizes the status of the system at the time; including the advantages and assets, challenges and vulnerabilities, and priority recommendations for system improvements. (<http://www.southernnevadahealthdistrict.org/download/trauma/acs-report-2011.pdf>)

In April 2013, SNHD conducted a U.S. Department of Health and Human Services, Health Resources and Services Administration, "Self-Assessment for Trauma System Planning, Development, and Evaluation." The process involved assessing the status of the Clark County Trauma System based on a set of selected indicators considered to be representative measures of the core functions of assessment, policy development, and assurance within the system. The goal was to examine the current strengths and opportunities for improvement in the system using the same benchmarks, indicators, and scoring methodology employed in the 2007 and 2011 trauma system assessments conducted by SNHD. (<http://www.southernnevadahealthdistrict.org/ems/documents/ems/clark-county-trauma-system-self-assessment-2013.pdf>)

The ACS-COT trauma system consultation experts recommend that trauma systems perform a BIS needs assessment at least every three years. The details of the Southern Nevada Trauma System assessments conducted in 2007, 2011 and 2013 can be found in Appendix J.

# TRAUMA SYSTEM DESIGN

## System Management

By adoption of this plan and with the concurrence of the trauma system stakeholders, SNHD will have the responsibility for planning, implementing, and monitoring the trauma care system.

SNHD responsibilities will include but not be limited to:

- Establishing regulations for the designation of future trauma centers, including a needs assessment of the community prior to designation
- Establishing policies, procedures, and protocols for trauma system operations
- Developing, implementing, and maintaining a trauma system plan
- Collaborating with prehospital providers and the trauma centers for support services (e.g. system oversight, meeting preparation, special studies, etc.)
- Developing guidelines, standards, and protocols for the triage, prehospital treatment, and transfer of trauma patients
- Working with designated trauma centers to assure coordination, outreach, and mutual aid
- Working with the non-trauma centers to create a more “inclusive” system
- Maintaining a multidisciplinary performance improvement monitoring system that assures trauma service quality outcomes and patient safety

As the lead organization, SNHD will commit the necessary resources to fulfill its obligation to provide regulatory oversight of the Southern Nevada Trauma System as defined in the statutes, regulations and the trauma system plan. The expenses are expected to be covered through a variety of funding sources which include SNHD general funds, fees, grants, and future legislative appropriations. The RTAB assists the Chief Health Officer with identifying needs, setting priorities and advocating for sufficient funding to support trauma system planning, implementation, and maintenance. The annual budget is prepared by the EMSTS Manager under the direction of SNHD administration and adopted by the District Board of Health.

## System Design and Operations

### Introduction

The Southern Nevada Trauma System is comprised of components that facilitate appropriate triage and transportation of the injured through the EMS system to designated health care facilities that possess the capacity, capability, and commitment to provide optimal care for trauma victims. SNHD regulations and EMS protocols direct transport of patients who meet trauma field triage criteria to a specified trauma center based on catchment areas approved by the RTAB.

### Overall System

The greater Clark County region has 15 acute care hospitals (see table below) that provide 24-hour ED coverage. The non-trauma center hospitals do not receive patients transported by EMS that are identified by trauma field triage. An exception is made if, in the provider’s judgment, the inability to adequately ventilate the trauma patient might result in an increased risk of mortality unless the patient is transported to the closest facility, which may be a non-trauma center hospital.

The catchment areas for the trauma centers are based on geographic considerations, as well as other factors affecting access (i.e., traffic conditions). The plan endorses trauma patients being transported to a designated trauma center, depending on where the injury occurred and severity. (Appendix C)

CLARK COUNTY HOSPITALS	TRAUMA DESIGNATION
Boulder City Hospital	
Centennial Hills Hospital Medical Center	
Desert Springs Hospital Medical Center	
Mesa View Regional Hospital	
MountainView Hospital	
North Vista Hospital	
Southern Hills Hospital & Medical Center	
Spring Valley Hospital Medical Center	
St. Rose Dominican Hospital - Rose de Lima Campus	
St. Rose Dominican Hospital - San Martin Campus	
St. Rose Dominican Hospital - Siena Campus	Level III
Summerlin Hospital Medical Center	
Sunrise Hospital & Medical Center	Level II
University Medical Center	Level I, Pediatric Level II
Valley Hospital Medical Center	

In October 2007, UMC became designated as a Pediatric Level II trauma center. In November 2012, following the recommendations of the 2011 ACS-COT Clark County Trauma System consultation team and the 2011 CDC Guidelines for the Field Triage of Injured Patients, the SNHD EMS “Trauma Field Triage Criteria Protocol” was revised to require pediatric patients who meet physiological and anatomical criteria to be transported to a designated pediatric trauma center.

#### Prehospital Phase

The prehospital component of the trauma system is designed to provide initial assessment and management of injured patients at the scene of an emergency, and safe, efficient transport to the most appropriate health care facility. SNHD provides regulatory oversight of a coordinated system for the delivery of prehospital health care to the residents and visitors of the county. The EMS system is accessed by dialing 9-1-1 where the call is received by one of four public safety answering points (PSAPs), which determines if law enforcement, fire, rescue, ambulance, or any combination of these services is needed. The call is forwarded to (if not already answered by) the fire service agency within the jurisdiction it has occurred. The closest available first responder unit is dispatched, which is staffed by personnel who are either Paramedic or Advanced Emergency Medical Technician providers. In addition, the call is routed to the appropriate private ambulance communication center for dispatch of the nearest available ALS ambulance if the fire department does not transport.

Ground ambulances providing advanced life support (ALS) services are strategically placed throughout the county by geographic jurisdiction and contract. These ambulances provide transport to a trauma center for most major trauma victims. Occasionally, due to travel times or other circumstances, the patient may require transport by helicopter air ambulance service. All trauma centers have helicopter landing zones and structured air medical safety programs. By SNHD protocol, trauma patients requiring transport from the scene by an air ambulance service will be flown to UMC. Coordination of the use of helicopter ambulances is handled through the Fire Alarm Office.

All prehospital providers operate under protocols established by SNHD. Trauma cases are triaged in the field based on the SNHD EMS Trauma Field Triage Criteria Protocol. The triage criteria are based on four categories: 1) Physiological; 2) Anatomical; 3) Mechanism of Injury; or 4) Special Considerations. (Appendix C) Patients meeting the physiologic or anatomic criteria are transported to the Level I or II trauma center in the catchment area where the injury occurred. Patients meeting the mechanism of injury or special consideration criteria only are transported to the Level I, Level II or Level III trauma center in the catchment area where the injury occurred. While on scene or en route, paramedics notify the receiving trauma center of their pending arrival, along with the trauma patient information that will elicit

a level of trauma team activation determined by the trauma team members in the facility. The SNHD EMS protocols do not preclude transport to any trauma facility if, in the EMS provider's judgment, the time to transport to the designated trauma center would be unduly prolonged due to traffic and/or weather conditions and might jeopardize the patient's condition.

The performance improvement programs of the private ambulance services, fire departments, hospital EDs, and trauma programs monitor patient care in the field on both a concurrent and retrospective basis. Response times for private ambulance services are monitored for compliance with standards set forth in franchise agreements and through case review.

<b>CLARK COUNTY EMS PROVIDERS</b>
<b>PUBLIC PROVIDER AGENCIES (6)</b>
Boulder City Fire Department (BCFD)
Clark County Fire Department * (CCFD)
Henderson Fire Department (HFD)
Las Vegas Fire & Rescue (LVFR)
Mesquite Fire & Rescue (MFR)
North Las Vegas Fire Department (NLVFD)
<b>PRIVATE PROVIDER AGENCIES (3)</b>
American Medical Response (AMR) - Las Vegas
Community Ambulance (CA)
MedicWest Ambulance (MWA)
<b>AIR AMBULANCE SERVICES (3)</b>
Life Guard International, Inc. (LG) - Fixed Wing
Mercy Air Service, Inc. (MA) - Helicopter
TriState CareFlight (TSCF) - Fixed/Helicopter
<b>SPECIAL PURPOSE AMBULANCE AGENCIES (2)</b>
Guardian Elite Medical Services (GEMS)
Las Vegas Motor Speedway (LVMS)
<b>OTHER AGENCIES</b>
Department of Defense
EMS Agencies from Other States
<b>* CCFD RURAL VOLUNTEER AMBULANCE AGENCIES (11)</b>

#### EMS Dispatch

There is no base hospital in Clark County that has dedicated capabilities to coordinate all direction to EMS field personnel and maintain online 24-hour medical control. During the 2004 trauma system assessment, this was identified as a significant opportunity for improvement within the EMS and trauma system.

There are four PSAPs and three dispatch centers that receive and dispatch EMS calls in Clark County. EMResource serves as the primary means of communicating information related to ambulance transports and ED status between these agencies; however, it is limited in its ability to allow dispatchers to respond to real-time system surges and to manage ambulance flow in a coordinated manner. While SNHD EMS protocols limit the need for frequent radio contact for on-line medical control, receiving facilities are available 24/7 to provide essential advice to the field personnel when necessary. If they do not need to contact the hospital for medical orders, EMS personnel are still required by protocol to notify the receiving facility by radio, telephone, or EMResource that they are en route with a patient.

<b>PUBLIC SAFETY ANSWERING POINT (PSAP)</b>	<b>JURISDICTION</b>
BCFD	Boulder City
Fire Alarm Office	Clark County, Las Vegas, North Las Vegas*
HFD	Henderson
<b>Dispatch Centers</b>	<b>Response Area</b>
AMR	Per franchise agreement
CA	Per ordinance
MW	Per franchise agreement
* MA and TSCF are dispatched through the Fire Alarm Office	

One of the recommendations from the 2004 ACS trauma system consultation visit was to improve communication and create redundancy to allow for continuous and uninterrupted conveyance of information. In 2009, SNHD participated in a study conducted by Fitch & Associates to examine the feasibility of creating a unified medical coordination base station to improve interoperability of communication, and more effectively manage patient flow throughout the EMS and trauma system. The findings showed Clark County needs an integrated, centralized communication center; however the existing political and economic environment would not allow the project to move forward. The trauma plan recommends continuing to work toward improving the coordination of the existing components of the current communication system.

Additional systems utilized in Southern Nevada that provide communication redundancy by sharing information during an emergency or disaster include the State’s HAvBED and Health Alert Network systems, state and local web-based emergency operation center tools, and local Emergency Notification Systems. The HAvBED system is monitored by the U.S. Department of Health and Human Services and FEMA Region IX Regional Emergency Operations Center. Nevada shares regional access to this system with our neighboring states of California, Arizona, Idaho, New Mexico, Oregon and Colorado.

#### Trauma Centers

Patients whose injuries have the potential to be fatal or produce disability are preferentially transported by EMS to trauma centers based on NRS 450B.237, NAC 450B.770, SNHD Trauma Regulation 200.200, and the SNHD EMS Trauma Field Triage Criteria Protocol. The three state designated and ACS-COT verified trauma centers in the Southern Nevada Trauma System are University Medical Center (Level I and Pediatric Level II), Sunrise Hospital and Medical Center (Level II) and St. Rose Dominican Hospital - Siena Campus (Level III).

A state designated trauma center must meet the requirements outlined in NAC 450B.819. The state by reference has adopted the ACS-COT standards for trauma centers. Compliance with the standards is monitored internally by the hospital and externally by the DPBH and SNHD. Every three years, the hospital is required to undergo an ACS-COT verification survey. Additional monitoring occurs through a collaborative, peer review, regional performance improvement process regularly conducted by the TMAC. During the TMAC meetings, trauma cases are reviewed for adequacy of care and for educational opportunities. For a summary of trauma center standards, reference the most recent publication of *ACS-COT Resources for Optimal Care of the Injured Patient*.

#### Inclusive Trauma Program

The 2004 ACS-COT site visit report for Clark County recommended the development of an inclusive trauma system. An inclusive and integrated trauma system addresses the needs of all patients requiring emergency department treatment and/or hospitalization for injury and utilizes all qualified medical resources. The trauma system plan promotes incorporation of all facilities into an inclusive system or network of definitive care facilities to provide a spectrum of care for all injured patients. This integration could take the form of participation in special protocols, the trauma quality review process, data

collection, and injury prevention programs. Inclusive hospital participation is voluntary and is strongly encouraged.

EMS agencies, non-trauma center hospitals, and trauma centers are all important components of an inclusive and integrated trauma system that is capable of matching the right patient, to the right resource, in the right amount of time to optimize their outcome.

## Disaster Preparedness

For many years, the SNHD OEMSTS and Office of Public Health Preparedness (OPHP) have worked collaboratively with public and private stakeholders in the public safety, emergency management, health care, and emergency medical communities to address longstanding concerns regarding Southern Nevada's vulnerability to man-made or natural disasters capable of producing large numbers of casualties.

In 2006, Clark County was recognized as a "model community" by the CDC-sponsored Terrorism Injuries: Information, Dissemination, and Exchange (TIIDE) Project because public health and emergency care community leaders had demonstrated meaningful partnerships which created opportunities to work collaboratively, share resources, and accomplish the goals of improving the emergency response capabilities within our region.

The OEMSTS continues to work collaboratively with the OPHP staff, specifically the health care facility liaison and public health preparedness educators, to identify resource and training needs within health care facilities in Clark County. The Southern Nevada Healthcare Preparedness Coalition (SNHPC), which includes broad representation from the hospital safety officers, emergency preparedness coordinators, Office of Emergency Management, OPHP, and the Nevada Hospital Association, is involved in coordinating preparedness activities in the community. Some of their recent activities include statewide standardization of codes for overhead emergency announcements in all hospitals and adoption of standardized memorandums of understanding for resource sharing in the event of a disaster. These collaborations have proven to be mutually beneficial as the members address issues related to the availability of personnel, equipment, supplies, and pharmaceuticals; medical surge and hospital evacuation capabilities, and mass fatality management. The exchange of information has strengthened relationships, improved communication, and assisted with developing a well-coordinated emergency response.



## **CATCHMENT AREAS**

### Overview

The initial catchment areas were constructed using 2002 trauma registry data with input from the hospitals and EMS providers. Catchment areas were proposed and adopted in 2005 for the existing trauma center at UMC and the two new centers at Sunrise Hospital and Medical Center and St. Rose Dominican Hospital - Siena Campus. These trauma catchment areas will be continually reviewed and adjusted, as needed. This will consist of the review of the volume, acuity and distribution of trauma transports in the system. Analysis will be accomplished to ensure each center's viability. Input will be sought from the EMS community to decrease the likelihood of conflicts arising from EMS experiences of traffic and road conditions that would not be compatible with efficient patient delivery methods. The RTAB and MAB will also have input in the process for determining appropriate catchment areas for each trauma center.

### Flexibility

EMS will exercise discretion in transporting cases that lie adjacent to catchment boundaries. It is important to remember that these catchment areas are guidelines based on geographical boundaries intended to provide UMC, Sunrise Hospital and Medical Center, and St. Rose Dominican Hospital - Siena Campus with the necessary volumes to remain financially viable while providing excellent patient care. If the initial catchment areas prove to be problematic in achieving this goal, they can be modified pursuant to SNHD protocols.

### Trauma Bypass

The trauma system is designed to ensure that trauma centers rarely go on bypass and when they do, only for significant issues that affect patient care. Designated trauma centers have a commitment to meet the challenges of patient volume as long as there are no serious problems that endanger patient safety. However, in the event of a catastrophic event that saturates one trauma center, a trauma bypass plan will go into effect that will allow trauma patients to be transported to the other trauma center(s). A similar system will be developed for physical disasters (e.g. fire, power failure, flooding, etc.). Although extremely rare, if a trauma center does go on bypass, this plan will backup the trauma system. In the event of complete system overload by mass casualties, all trauma centers and non-trauma hospitals will function under the trauma bypass plan guidelines. (Appendix G)

The Southern Nevada Trauma System will strive to establish a unified medical coordination base station in the future to assist in the load leveling of the system based on matching capacity with patient acuity to ensure optimum patient distribution and outcomes.

## **POLICY DEVELOPMENT**

The Southern Nevada Trauma System Plan and supporting documents provide a clear understanding of the structure of the trauma system and the manner in which resources are utilized.

Policies are developed with provider input and implemented on a systemwide basis once approved by Southern Nevada Health District.

The following is a list of the available regulations, plans, protocols, and procedures to support trauma system operations:

- I. SNHD Emergency Medical Services Regulations (Appendix D)
- II. SNHD Trauma System Regulations (Appendix D)
- III. Clark County EMS System Emergency Medical Care Protocols (Appendix D)
- IV. SNHD Trauma System Performance Improvement Plan (Appendix D)
- V. Bylaws for Regional Trauma Advisory Board and related subcommittees (Appendix B)
- VI. District Procedure for Authorization as a Center for the Treatment of Trauma or Pediatric Center for the Treatment of Trauma (Appendix E)
- VII. District Procedure for Renewal of Authorization as a Center for the Treatment of Trauma or Pediatric Center for the Treatment of Trauma (Appendix F)
- VIII. Trauma Bypass Plan
- IX. District Procedure for Trauma Bypass/Internal Disaster (Appendix G)

The following policies are intended to provide the trauma system with guidance related to issues not covered elsewhere in the plan or related documents.

### **I. TRAUMA CARE COORDINATION WITH NEIGHBORING JURISDICTIONS**

#### **A) EMS Providers**

SNHD EMS regulated agencies have established mutual aid agreements with adjacent counties in conjunction with the delivery of ALS services for trauma patients. Each EMS agency practices under the protocols promulgated by their EMS authority and medical director.

#### **B) Trauma Care Coordination Oversight**

The TMAC has accepted responsibility to evaluate appropriate care for trauma patients for Southern Nevada trauma centers for the neighboring counties including:

- Lincoln (NV)
- Nye (NV)
- Mohave (AZ)
- San Bernardino (CA)

This activity will include providing feedback to transporting agencies and strongly encouraging a collaborative exchange of information to promote trauma system performance improvement.

### **II. TRAUMA CENTER FEES**

Fees, as approved by the District Board of Health, will be charged per designated trauma center to support the activities of the system trauma program, including quality performance, trauma registry management, and trauma program personnel. SNHD will evaluate the OEMSTS budget on at least an annual basis and seek all available funding sources to support the system.

### III. TRAUMA CENTER AGREEMENTS

A trauma center agreement will be executed between all designated trauma centers and the Southern Nevada Health District and be actively maintained on a continuous basis to ensure compliance with the roles and responsibilities of the Health District and designated trauma centers as outlined in the SNHD Trauma Regulations.

The agreement requires commitment, personnel, and resources necessary to provide optimum medical care of the trauma patient. The agreement requires compliance with all trauma related policies and procedures. The agreement requires the trauma center to comply with the identified trauma center standards in the agreement and the trauma plan for their specified level of trauma center designation.

### IV. INTERFACILITY TRANSFER OF THE TRAUMA PATIENT

#### A) Transfer Criteria

Trauma patients who are transported to a non-trauma center hospital, or to a Level III trauma center without the necessary resources to handle the injury, must be transferred to a trauma center specifically dedicated to a higher level of trauma care. The following patients are to be considered for early transfer to a higher-level trauma center after basic evaluation and emergency stabilization.

- Major Head/Neck Injury or Spinal Cord Injury  
(Penetrating or depressed skull fractures, GCS deterioration)
- Major Chest Injuries  
(Penetrating injury, wide mediastinum, cardiac injury, protracted ventilation)
- Pelvic Injuries  
(Ring disruption or instability, open pelvic injury, penetrating injuries)
- Multiple System Injuries

B) Criteria for consideration of transfer from Level III trauma centers to Level I or II trauma centers will be adopted by reference from Chapter 4 of the ACS-COT *“Resources for Optimal Care of the Injured Patient.”*

#### C) Physician to Physician Communication

Referring physicians are responsible to make direct contact with the receiving physician. The accepting trauma surgeon should review the current physiologic status of the injured patient and discuss the initial management and the optimal timing of transfer. Trauma centers shall maintain a "toll-free" telephone number that can be used to facilitate rapid access to an on-site physician for consultation with community physicians and other providers regarding care of major trauma victims and coordination of interfacility transfers.

#### D) Patient Care

The patient's condition should be stabilized before transfer, within the capabilities of the institution, and without unnecessary delay. An appropriate mode of transport to provide the level of care required should be selected by the referring physician. All required COBRA/EMTALA records should be completed with copies provided to the receiving facility.

The receiving physician should assure that their facility is able to accept the patient and is in agreement with the intent to transfer.

E) The interfacility transfer of trauma patients should be monitored and evaluated by the TMAC.

## V. TRAUMA BYPASS PLAN

Should a trauma center be severely compromised in terms of capacity and capability such that it cannot function safely as a trauma center, it should declare Trauma Bypass (TBP).

1. Typical conditions resulting in TBP include, but are not limited to:
  - a. Arrival of greater than four critical trauma cases in one hour
  - b. Three or more “crash” trauma cases going to the operating room within 30 minutes
  - c. Major mechanical breakdowns (e.g. all CTs including backups are down)
  - d. Major infrastructure emergency (e.g. flooding of the OR, ED, etc.)

Note: These conditions do not require a trauma center to declare TBP if patient safety is not compromised.

2. Upon declaring a TBP, the hospital shall:
  - a. Notify all dispatch agencies (i.e., FAO, Boulder City, Henderson, Mesquite, AMR, Community Ambulance, MedicWest)
  - b. Notify the other trauma centers directly and assess capacity at other facilities
  - c. Input status change within EMResource
  - d. Notify SNHD when practical
3. Upon the process of a hospital declaring a TBP, EMS personnel with trauma transports from that catchment area shall contact that hospital for destination and patient care directions.
4. It is assumed that a TBP for trauma will last no more than four hours and the hospital will automatically come off TBP at that time unless there are extenuating circumstances.
5. The hospital shall follow the TBP reporting and review process as listed in the Trauma Bypass/Internal Disaster Review Procedure.
6. Frequent TBPs shall be evaluated by the RTAB for trending and rectification purposes.
7. A unified medical coordination base station could prospectively affect system flow to avoid TBP conditions.

## DATA COLLECTION

*“The ideal trauma care system has an information system which provides 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 that allow and facilitate evaluation of the structure, process, and outcomes of the entire system, all phases of care, and their interactions. An important use of this information is to develop, implement, and influence public policy.”*

- American College of Surgeons, Clark County Trauma System Consultation, May 2004

### Data Sources

1. Trauma Field Triage Criteria (TFTC) Data: The EMS providers, for each run resulting in patient transport, provide prehospital patient care records (PCR) to ED and trauma centers. The majority of permitted EMS agencies use electronic patient care reporting. The reporting process provides valuable information to SNHD for trauma system data analysis efforts. These data elements should be relevant, functional, and at minimum include:
  - Date of Arrival
  - Time of Arrival
  - Incident Location
  - Specific Trauma Field Triage criterion used to determine transport destination
  - Receiving Hospital
  - Patient Disposition (Admitted, Discharged, Immediate OR, ICU, Deceased from the trauma centers)

Additionally, the trauma system plan should seek to add a TFTC tracking mechanism to all electronic patient care reports from EMS.

2. Nevada Trauma Registry: NRS 450B.238 and NAC 450B.768 require each hospital to record, maintain, and submit to the DPBH information concerning the treatment of trauma in the hospital. The purpose of the Nevada Trauma Registry is to collect, analyze, and report on data related to the treatment of blunt and penetrating injuries within trauma systems statewide. Trauma patients are defined using inclusion criteria written by the ACS-COT. The data collected include details about injury incidents, patient demographics, prehospital care, diagnoses, treatments, patient outcomes, and costs associated with trauma care. Using a standardized set of data elements allows individual health care facilities to assess their internal operations and provides opportunities for comparative analysis and benchmarking of performance within the system, across the region, or the nation.
3. National Trauma Data Bank: Data must be collected in compliance with the National Trauma Data Standard (NTDS) and submitted to the National Trauma Data Bank (NTDB) annually so that it can be aggregated and analyzed at the national level. At a minimum, trauma centers and the state registry should collect the NTDS data set. Trauma centers in the Southern Nevada Trauma System will be required to collect and transmit data to the ACS-COT as part of the NTDB/Trauma Quality Improvement Program.
4. Medical Examiner Data: Medical examiner reports are included as part of the review of all trauma deaths in Clark County. Autopsy reports provide the detail of injury information required to determine the AIS Score and subsequent ISS Score used in the analysis of preventable deaths.

The primary data source will be the aggregation of the trauma registry. Other sources for data will include death certificates or information obtained from hospital discharge data.

## Reporting

Trauma centers will submit their TFTC data electronically to SNHD every month. A central repository of trauma data will be maintained at SNHD on all trauma patients that have been transported to the designated trauma centers. To enhance local data collection efforts, the OEMSTS may require trauma centers to submit quarterly state trauma registry reports to the OEMSTS in addition to the DPBH.

## **TRAUMA SYSTEM PERFORMANCE IMPROVEMENT AND PATIENT SAFETY**

Trauma system performance improvement activities are critical features for assuring optimal system operations and patient outcomes. The level and extent of a trauma system's performance improvement process is dependent on the expectations of the system, the individual trauma centers, and the public that they serve. In the Southern Nevada Trauma System, expectations for quality monitoring, evaluating, and improving trauma care are very high. In evaluating the trauma system's performance improvement program, it is important to distinguish between patient care issues and system performance issues. Contemporary trauma systems should include system performance improvement initiatives that evaluate system operations, changing trauma epidemiology, market conditions, and trends.

The mission of the SNHD Trauma Performance Improvement and Patient Safety Program is to protect the public by assuring optimal trauma system operation and high quality trauma care resulting in the best possible patient outcomes. The Trauma System Performance Improvement Plan provides a framework that establishes objective mechanisms to determine whether medical care rendered to patients requiring the resources of the trauma system is safe, appropriate, and meets acceptable local and national standards. A continuous, comprehensive, multidisciplinary, evidence-based, performance improvement process promotes monitoring and evaluation of the trauma system; identification of opportunities for improvement; and development of corrective strategies. It is an essential component of the trauma system. (Appendix D)

Trauma System Regulation 200.100 requires the OEMSTS to develop a trauma performance improvement plan to provide continuous assessment of the structure, function, and effectiveness of the system. The plan must include the adoption and implementation of a standardized system to collect and manage data specific to trauma system evaluation and planning from permitted EMS agencies, trauma centers, hospitals, and other health care organizations. All EMS agencies, trauma centers, and hospitals that receive trauma patients are required to provide data when requested.

The Southern Nevada Trauma System Plan directs that trauma system performance improvement is a high priority and should promote public safety and quality patient outcomes through accountable and objective performance improvement activities. The trauma system performance improvement process consists of three major elements: 1) the internal process within each trauma center; 2) the external process, which includes periodic audits of each trauma center by the DPBH and/or SNHD; scheduled independent evaluations of trauma care and the trauma system by trauma care experts from the ACS-COT; and system review and analysis by the TMAC, including confidential evaluation of the quality and efficiency of actual medical services when the TMAC functions as a peer review committee; and 3) ongoing data collection, monitoring, and analysis of trauma data at the local, state, and national level to identify trends, gaps, and needs.

The SNHD, as the lead regulatory agency in Clark County, plays a central role in the acquisition and analysis of trauma system data. In addition, the RTAB and TMAC share responsibility for interpreting the data to evaluate the efficiency and effectiveness of the trauma system and for determining progress in meeting identified performance goals and benchmarks.

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## Appendix A

### SECTION 400 REGIONAL TRAUMA ADVISORY BOARD

#### 400.000 REGIONAL TRAUMA ADVISORY BOARD.

- I. The primary mission of the Southern Nevada Health District Regional Trauma Advisory Board (RTAB) is to support the Health Officer's role to ensure a high quality system of Patient care for the victims of trauma within Clark County and the surrounding areas by making recommendations and assisting in the ongoing design, operation, evaluation and revision of the system from initial Patient access to definitive Patient care.
- II. The RTAB shall consist of members appointed by the Health Officer.
  - A. Standing members of the RTAB shall be:
    1. One (1) trauma medical director from each designated trauma center;
    2. One (1) trauma program manager from each designated trauma center;
    3. The chairman of the Medical Advisory Board; and
  - B. Upon request of the Health Officer, organizations and associations that have an interest in the care of the victims of trauma shall submit to the Health Officer written nominations for appointment to the RTAB.
  - C. After considering the nominations submitted pursuant to paragraph B, the Health Officer shall appoint to the RTAB:
    1. One (1) administrator from a non-trauma center hospital system;
    2. One (1) person representing the public providers of advanced emergency care;
    3. One (1) person representing the private franchised providers of advanced emergency care;
    4. One (1) person representing health education and prevention services;
    5. One (1) person representing the payers of medical benefits for the victims of trauma;
    6. One (1) person representing the general public;
    7. One (1) person representing rehabilitation services;
    8. One (1) person with knowledge of legislative issues/advocacy;
    9. One (1) person involved in public relations/media; and
    10. One (1) person with knowledge of system financing/funding
  - D. In addition to the members set forth in paragraphs A. and C., an employee of the Health District whose duties relate to the administration and enforcement of these Regulations will be an ex officio member of the RTAB.

- III. Each standing member may designate an alternate member to serve in his/her place should he/she be temporarily unable to perform the required duties of this section. The Health Officer will designate or approve the alternates for the other members of the Board.
- IV. Appointed members of the RTAB shall serve two (2) year terms, from July 1 through June 30 of the second year. The Health Officer may appoint persons to fill the unexpired portion of the terms of vacant positions on the RTAB in the manner prescribed in this section. The members shall elect their chairman from amongst the body.
- V. Voting shall be done by roll call vote. The chairman of the RTAB may vote on all issues before the body. Issues shall be passed by a simple majority.
- VI. Members of the RTAB may establish subcommittees to study specific matters falling within the area of responsibility of the RTAB.
- VII. The RTAB shall:
  - A. Review and advise the Health Officer regarding the management and performance of trauma services in this county;
  - B. Advise the Health Officer on matters of policy relating to trauma care;
  - C. Advise the Board and the Health Officer with respect to the preparation and adoption of regulations regarding trauma care;
  - D. Evaluate the effectiveness of the trauma system based on statistical analysis of EMS/trauma data collected; and
  - E. Establish a trauma peer review committee to review, monitor, and evaluate trauma system performance and make recommendations for system improvements. When functioning as a peer review committee, the committee derives its authority and privilege from NRS 49.117 through NRS 49.123 and NRS 49.265;
- VIII. The RTAB shall meet on a quarterly basis unless the chairman determines that more or less frequent meetings are necessary.
- IX. Members of the RTAB shall serve without pay.
- X. The RTAB members shall disclose any direct or indirect interest in or relationship with any individual or organization that proposes to enter into any transaction with the Board (NRS 281A.420).
- XI. Nothing contained herein shall be construed as making any action or recommendation of the RTAB binding upon the Health Officer or the Board.

## Appendix B

### Southern Nevada Trauma System Committee Descriptions

**Regional Trauma Advisory Board (RTAB):** The RTAB is an advisory board with the primary purpose of supporting the Health Officer's role to ensure a high quality system of patient care for the victims of trauma within Clark County and the surrounding areas by making recommendations and assisting in the ongoing design, operation, evaluation, and revision of the system from initial patient access to definitive patient care. The membership of RTAB is multidisciplinary in nature to assure that all stakeholders are afforded the opportunity for input.

**Trauma Medical Audit Committee (TMAC):** The TMAC is a multidisciplinary medical review committee of the District Board of Health that will meet regularly, including as a peer review committee, to review and evaluate trauma care in the system, monitor trends in system performance, and make recommendations for system improvements.

**Pre-Trauma Medical Audit Committee (Pre-TMAC):** The Pre-TMAC review team is a multidisciplinary subcommittee of the TMAC that is responsible for the initial screening of cases for referral to the TMAC. The Pre-TMAC shall meet no less than quarterly, preceding the TMAC meeting, at times arranged by the members of the Pre-TMAC and the OEMSTS.

**Trauma Registry Users Group (TRUG):** The TRUG is composed of the trauma program managers and trauma registrars within the community and the OEMSTS staff. The TRUG will meet at least annually or more frequently as necessary to plan, implement, and monitor the trauma registry.

**Ad-Hoc Committees:** Ad Hoc Committees, assisted by OEMSTS staff, are time-limited committees with specific functions designed to assist the RTAB achieve its overall objectives.

**Southern Nevada Injury Prevention Partnership (SNIPP):** The Southern Nevada Injury Prevention Partnership (SNIPP) was established under the authority of the RTAB to:

1. advise and assist the RTAB in the structure and development of the injury prevention component of the Southern Nevada Trauma System Plan;
2. assure the provision and/or initiation of a full spectrum of injury prevention efforts in Southern Nevada, with emphasis on those that directly impact the Trauma System (i.e., motor vehicle related injuries);
3. develop a quantitative community health and injury assessment in order to provide evidence based and specific injury prevention program recommendations specific to Southern Nevada;
4. facilitate and promote collaboration and coordination of available resources to meet identified needs;
5. facilitate and promote coordination and collaboration to evaluate program outcome data to modify existing programs and create new programs to meet identified needs;
6. promote heightened awareness of injury prevention issues and concerns to the community and recognition of injury prevention as a legitimate public and governmental service.

**Trauma Procedure/Protocol Review Committee:** The purpose of the Trauma Procedure/Protocol Committee is to assist the Southern Nevada Health District's Office of Emergency Medical Services and Trauma System, the Regional Trauma Advisory Board, and the Trauma Medical Audit Committee in reviewing, researching, editing and/or developing new and existing procedures and/or protocols.

**Trauma Rehabilitation Committee:** The purpose of the Trauma Rehabilitation Committee is to collect and review trauma rehabilitation data and documentation to conduct outcomes assessment and performance improvement activities.

**Trauma Research Committee:** The purpose of the Trauma Research Committee is to identify research priorities, develop policies and procedures to facilitate trauma data-sharing, identify potential funding sources, and create opportunities for research collaboration.

**Trauma System Advocacy Committee:** The purpose of the Trauma Advocacy Committee is to promote trauma system development by advocating for sustainable financial, legislative, and public support for the trauma system serving the residents and visitors of Southern Nevada.

The RTAB and committee bylaws are on file in the OEMSTS.

# TRAUMA FIELD TRIAGE CRITERIA

A licensee providing emergency medical care to a patient at the scene of an injury shall use the following procedures to identify and care for patients with traumas:

**1. Step 1 – Measure vital signs and level of consciousness. If the patient's:**

- A. Glasgow Coma Scale is 13 or less;
- B. Systolic blood pressure is less than 90 mmHg; or
- C. Respiratory rate is less than 10 or greater than 29 breaths per minute (less than 20 in infant aged less than 1 year), or is in need of ventilatory support

the adult patient **MUST** be transported to a Level 1 or 2 center for the treatment of trauma in accordance with the catchment area designated. The pediatric patient **MUST** be transported to a pediatric center for the treatment of trauma.

**2. Step 2 – Assess anatomy of injury. If the patient has:**

- A. Penetrating injuries to head, neck, torso, or extremities proximal to elbow or knee;
- B. Chest wall instability or deformity (e.g. flail chest);
- C. Two or more proximal long-bone fractures;
- D. Crushed, degloved, mangled, or pulseless extremity;
- E. Amputation proximal to wrist or ankle;
- F. Pelvis fractures;
- G. Open or depressed skull fractures; or
- H. Paralysis

the adult patient **MUST** be transported to a Level 1 or 2 center for the treatment of trauma in accordance with the catchment area designated. The pediatric patient **MUST** be transported to a pediatric center for the treatment of trauma.

**3. Step 3 – Assess mechanism of injury and evidence of high-energy impact, which may include:**

- A. Falls
  - 1) Adults: greater than 20 feet (one story is equal to 10 feet)
  - 2) Children: greater than 10 feet or two times the height of the child
- B. High-risk auto crash
  - 1) Motor vehicle was traveling at a speed of at least 40 miles per hour immediately before the collision occurred;
  - 2) Intrusion, including roof: greater than 12 inches occupant site; greater than 18 inches any site;
  - 3) Ejection (partial or complete) from automobile;
  - 4) Motor vehicle rolled over with unrestrained occupant(s);
  - 5) Death in same passenger compartment
- C. Motorcycle crash greater than 20 mph
- D. Auto vs pedestrian/bicyclist thrown, run over, or with significant (greater than 20 mph) impact

the patient **MUST** be transported to a Level 1, 2, or 3 center for the treatment of trauma in accordance with the catchment area designated. For patients who are injured outside a 50-mile radius from a trauma center, the licensee providing emergency medical care shall call and consider transport to the nearest receiving facility.

## TRAUMA FIELD TRIAGE CRITERIA (Cont.)

### 4. Step 4 – Assess special patient or system considerations, such as:

- A. Older adults
  - 1) Risk of injury/death increases after age 55 years
  - 2) SBP less than 110 mmHg might represent shock after age 65 years
  - 3) Low impact mechanisms (e.g. ground level falls) might result in severe injury
- B. Children should be triaged preferentially to a trauma center.
- C. Anticoagulants and bleeding disorders: Patients with head injury are at high risk for rapid deterioration.
- D. Burns
  - 1) Without other trauma mechanisms: transport in accordance with the Burns protocol
  - 2) With trauma mechanism: transport to UMC Trauma/Burn Center
- E. Pregnancy greater than 20 weeks
- F. EMS provider judgment

The person licensed to provide emergency medical care at the scene of an injury shall transport a patient to a designated center for the treatment of trauma based on the following guidelines:

#### St. Rose Dominican Hospital - Siena Campus (Level 3 Trauma Center) Catchment Area

All trauma calls that meet Step 3 or in the provider's judgment meet Step 4 of the Trauma Field Triage Criteria Protocol and occur within the City of Henderson or the geographical area bordered by Interstate 15 to the west and Sunset road to the north, and the county line to the east, are to be transported to St. Rose Dominican Hospital - Siena Campus and the medical directions for the treatment of the patient must originate at that center;

#### Sunrise Hospital & Medical Center (Level 2 Trauma Center) Catchment Area

All adult trauma calls and pediatric Step 3 trauma calls that meet the Trauma Field Triage Criteria Protocol and occur within the geographical area bordered by Paradise Road to the west, Sahara Avenue to the north, Sunset Road to the south, and the county line to the east, are to be transported to Sunrise Hospital & Medical Center and the medical directions for the treatment of the patient must originate at that center;

In addition, adult trauma calls that meet Step 1 or 2 of the Trauma Field Triage Criteria Protocol and occur within the St. Rose Dominican Hospital - Siena Campus Catchment Area, City of Henderson, or the geographical area bordered by Paradise Road to the west continuing along that portion where it becomes Maryland Parkway, Sunset Road to the north, and the county line to the east, are to be transported to Sunrise Hospital & Medical Center and the medical directions for the treatment of the patient must originate at that center.

#### University Medical Center (Level 1 Trauma Center and Pediatric Level 2 Trauma Center) Catchment Area

All trauma calls that meet the Trauma Field Triage Criteria and occur within any other area of Clark County are to be transported to University Medical Center/Trauma and the medical directions for the treatment of the patient must originate at that center.

All pediatric Step 1 and Step 2 trauma calls that occur within Clark County are to be transported to University Medical Center/Trauma and medical directions for the treatment of the patient must originate at that center.

In addition, adult trauma calls that meet Step 1 or 2 of the Trauma Field Triage Criteria Protocol and occur in the geographical area bordered by Paradise road to the east, Sunset Road to the north, Interstate 15 to the west, and the county line to the south, are to be transported to University Medical Center/Trauma and the medical directions for the treatment of the patient must originate at that center.

## TRAUMA FIELD TRIAGE CRITERIA (Cont.)

All trauma calls that meet the Trauma Field Triage Criteria Protocol, regardless of location, that are transported by air ambulance are to be transported to University Medical Center/Trauma and the medical directions for the treatment of the patient must originate at that center.

**EXCEPTIONS:**

1. Nothing contained within these guidelines precludes transport to any trauma facility if, in the provider's judgment, time to transport to the designated center would be unduly prolonged due to traffic and/or weather conditions and might jeopardize the patient's condition.
2. Additionally, nothing contained within these guidelines precludes transport to the closest facility if, in the provider's judgment, an ability to adequately ventilate the patient might result in increased patient mortality.

SNHD Trauma Field Triage Criteria protocol adapted from the "2011 Guidelines for Field Triage of Injured Patients" published in: Sasser SM, Hunt RC, Faul M, et al. Centers for Disease Control and Prevention. Guidelines for field triage of injured patients: recommendations of the National Expert Panel on Field Triage, 2011. MMWR.2012; 61 (RR-1):1-20.

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## **Appendix D**

### **SNHD Regulations, Plans, Protocols**

**SNHD Emergency Medical Services Regulations:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/ems-regs.pdf>

**SNHD Trauma System Regulations:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/cc-trma-sys-regs.pdf>

**SNHD Trauma System Performance Improvement Plan:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/trauma-performance-imprv-plan.pdf>

**Clark County Emergency Medical Care Protocols:**

<http://www.southernnevadahealthdistrict.org/ems/documents/ems/bls-ils-als-protocol-manual.pdf>

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## Appendix E

### **DISTRICT PROCEDURE FOR AUTHORIZATION AS A CENTER FOR THE TREATMENT OF TRAUMA OR PEDIATRIC CENTER FOR THE TREATMENT OF TRAUMA**

(Trauma Regulations Section 300.000 and 300.100)

**PURPOSE:** To define the process for a hospital in Clark County to obtain authorization as a center for the treatment of trauma or pediatric center for the treatment of trauma by the Southern Nevada District Board of Health.

**DEFINITION:** Authorization means the process by which the Board confirms a hospital has met the requirements of the trauma regulations, which demonstrates the facility's capacity, capability and commitment to pursue designation as a center for the treatment of trauma or pediatric center for the treatment of trauma by the Nevada Division of Public and Behavioral Health (DPBH).

**PROCEDURE:**

- I. Submit a completed application packet, in the form specified, to the OEMSTS, with the appropriate fee(s), no less than six (6) months prior to initiating the process for designation as a center for the treatment of trauma or pediatric center for the treatment of trauma by the DPBH. In addition to the Southern Nevada Health District (SNHD) written application, the hospital shall document the following:
  - A. 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. If requested, the OEMSTS will provide interpretation, guidance or clarification of the trauma regulations, procedures and protocols, and public domain trauma system data to aid the applicant in the process.
  - B. The hospital's capacity, capabilities and longitudinal commitment to provide trauma services.
  - C. The hospital's commitment to:
    1. comply with the requirements of the graduated process for authorization and designation as a center for the treatment of trauma or pediatric center for the treatment of trauma as defined in Trauma Regulations 300.000, subsections IV-VI (Note: Initial entry into the trauma system must be as a Level III center for the treatment of trauma);
    2. submit trauma data to SNHD, State Trauma Registry and American College of Surgeons National Trauma Data Bank/Trauma Quality Improvement Program;
    3. actively participate in the Regional Trauma Advisory Board and trauma system performance improvement activities;
    4. provide standard financial information to assist in the assessment of the financial stability of the trauma system; and
    5. comply with all applicable SNHD regulations and DPBH requirements for authorized and designated centers for the treatment of trauma.

- II. Upon receipt, the OEMSTS will review the application packet and will notify the applicant if any section of the application is incomplete or unclear. The applicant will be afforded the opportunity to complete the application within thirty (30) business days of the date of notification.
- III. Upon successful completion of the review process, the OEMSTS will make a recommendation to the Board to approve or deny the application for authorization based on the merits of the application and the demonstrated need for additional trauma services, as determined by the OEMSTS and the Board. Authorization shall be granted for a one (1) year period pending the completion of the DPBH designation process. If necessary, the authorization may be extended for one (1) year. If at that time the applicant has not met the requirements for designation, the authorization shall be revoked and the hospital may reapply for authorization.
- IV. Upon approval by the Board, a letter of authorization will be issued signifying the hospital has met the requirements for authorization outlined in the trauma regulations, and the applicant may apply to the DPBH for designation.
- V. Upon successful completion of the DPBH designation process, including verification by the ACS, the DPBH will issue written notification of designation as a center for the treatment of trauma or pediatric center for the treatment of trauma at the level verified by the ACS.
- VI. If authorization is denied by the Board, the applicant may file an appeal as outlined in Trauma Regulations 300.500.

## Appendix F

### **DISTRICT PROCEDURE FOR RENEWAL OF AUTHORIZATION AS A CENTER FOR THE TREATMENT OF TRAUMA OR PEDIATRIC CENTER FOR THE TREATMENT OF TRAUMA**

(Trauma Regulations Section 300.200)

**PURPOSE:** To define the process for a hospital in Clark County to renew their authorization as a center for the treatment of trauma or pediatric center for the treatment of trauma by the Southern Nevada District Board of Health.

**DEFINITION:** Renewal of authorization means the process by which the Board confirms a hospital continues to meet the requirements of the trauma regulations, which demonstrates the facility's capacity, capability, and commitment to continue designation as a center for the treatment of trauma or pediatric center for the treatment of trauma by the Nevada Division of Public and Behavioral Health (DPBH).

**PROCEDURE:**

- I. Submit a completed application packet, in the form specified, to the OEMSTS, with the appropriate fee(s), at least sixty (60) days prior to the Board meeting where the application will be considered and prior to initiating the process for renewal of designation as a center for the treatment of trauma or pediatric center for the treatment of trauma by the DPBH. If requested, the OEMSTS will provide interpretation, guidance or clarification of the trauma regulations, procedures and protocols and public domain trauma system data to aid the applicant in the process.
- II. Upon receipt of the application for renewal of authorization, the OEMSTS staff will review the documentation to determine the hospital's ongoing demonstration of their capacity, capability and commitment to provide trauma services, and to contribute to the current and future needs of the trauma system as evidenced by their willingness to:
  1. submit trauma data to SNHD, State Trauma Registry and American College of Surgeons National Trauma Data Bank/Trauma Quality Improvement Program;
  2. actively participate in the Regional Trauma Advisory Board and trauma system performance improvement activities;
  3. provide standard financial information to assist in the assessment of the financial stability of the trauma system; and
  4. comply with all applicable SNHD regulations and DPBH requirements for authorized and designated centers for the treatment of trauma.
- III. The OEMSTS will notify the applicant if any section of the application is incomplete or unclear. The applicant will be afforded the opportunity to complete the application within five (5) business days of the date of notification.
- IV. Upon successful completion of the review process, the OEMSTS will make a recommendation to the Board to approve or deny the application for renewal of authorization based on the merits of the application.
- V. Upon approval by the Board, a letter of authorization will be issued signifying the hospital has met the requirements for renewal of authorization outlined in the

trauma regulations, and the applicant may apply to the DPBH for renewal of their designation.

- VI. Upon successful completion of the DPBH renewal of designation process, including renewal of verification by the ACS, the DPBH will issue written notification of designation as a center for the treatment of trauma or pediatric center for the treatment of trauma at the level verified by the ACS.
- VII. If renewal of authorization is denied by the Board, the applicant may file an appeal as outlined in Trauma Regulations 300.500.

## Appendix G

### **DISTRICT PROCEDURE FOR TRAUMA BYPASS/INTERNAL DISASTER** (Trauma Regulations Section 200.100)

**PURPOSE:** The Trauma Bypass/Internal Disaster Review Procedure is designed to allow trauma centers in the community the opportunity to learn about and improve upon procedures and operations that may have contributed to, prevented, or improved the situation leading to the declaration of Trauma Bypass (TBP) or Internal Disaster (ID).

**DEFINITION:** Any trauma center declaring TBP or ID will, within 48 hours, submit a written report to the Southern Nevada Health District EMSTS office describing the circumstances leading to, occurring during, and after TBP/ID status has been declared. The information will be shared with members of the Trauma Bypass/Internal Disaster Review Committee to provide an opportunity for feedback and identification of strategies to prevent or assist in the management of similar situations in the community in the future.

**PROCEDURE:**

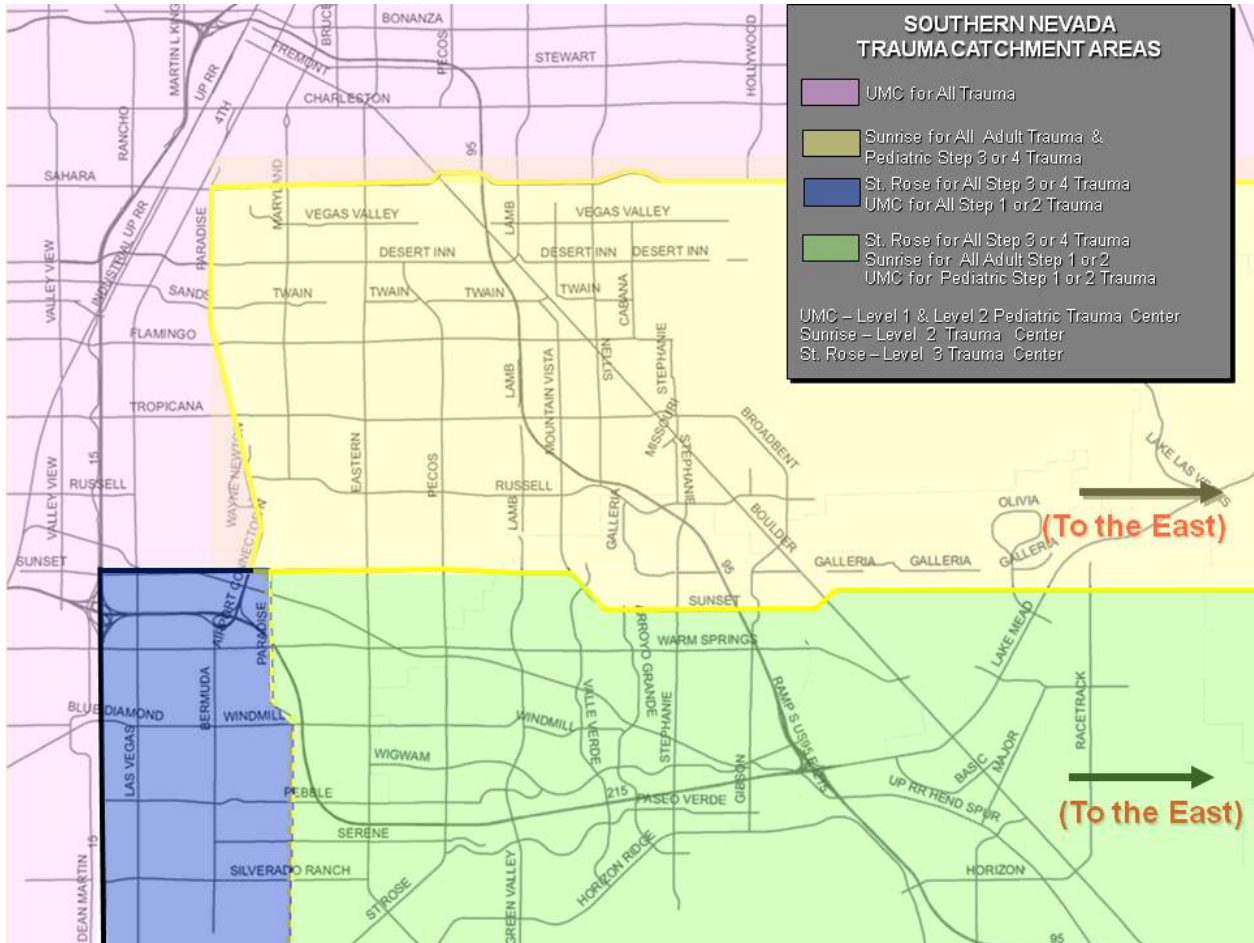
- I. The membership of the TBP/ID Review Committee will consist of the following members of the Regional Trauma Advisory Board (RTAB): A medical director from a non-affiliated trauma center; a trauma program manager from a non-affiliated trauma center; chairman of the Medical Advisory Board (if from a non-affiliated facility); an EMS transport agency representative; and an administrator from a non-trauma hospital.
- II. The following procedure will occur upon receipt of the report from the trauma center declaring TBP/ID:
  - A. The members will review the report and identify any issues that are relevant, including but not limited to, deviation from the declaring trauma center's own TBP/ID policy and/or emergency plans.
  - B. After the report review, the TBP/ID Review Committee may ask for the declaring hospital to provide additional information to clarify any concerns and to ensure compliance with the TBP/ID Plan and the trauma center's own emergency plan.
  - C. The report will then be presented at the next scheduled Trauma Medical Audit Committee (TMAC) meeting to allow the declaring hospital an opportunity to participate in the review process.
  - D. A summary will be completed by the Southern Nevada Health District EMSTS office from the information gathered by the TBP/ID Review Committee and TMAC. The summary report will be given at the next scheduled RTAB meeting.
  - E. The Southern Nevada Health District will retain copies of each report and will track frequency and types of incidents to assist in identifying trends or problems in the future. An annual report of all incidents may be forwarded to the District Board of Health and the Nevada Bureau of Preparedness Assurance, Inspections and Statistics.

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# Appendix H

Map of Southern Nevada Trauma Catchment Areas



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## Appendix I

### Southern Nevada Trauma System Summary of Key Events

The following is a historical summary of key events in trauma program development in the region:

- January 1988, UMC underwent first ACS-COT consultation review for Level II trauma center designation.
- September 1988, UMC designated as a Level II trauma center.
- October 1989, Sunrise Hospital and Medical Center designated as a Level III trauma center.
- December 1989, UMC verified as a Level II trauma center.
- December 1991, Sunrise Hospital and Medical Center Level III designation renewed for one year.
- April 1992, Sunrise Hospital and Medical Center designated as Level III trauma center.
- January 1993, UMC extended Level II trauma center verification on a provisional basis.
- May 1993, UMC re-verified as a Level II trauma center.
- June 1993, UMC designated as a Level II trauma center.
- January 1995, Sunrise Hospital and Medical Center's health facility certificate issued without notation of designation as a Level III trauma center.
- April 1996, UMC received nine-month extension of Level II trauma center designation.
- February 1997, UMC re-verified as a Level II trauma center.
- January 1999, UMC received Level I trauma center designation.
- January 2002, UMC re-verified as a Level I trauma center.
- July 2002, UMC trauma center closed for a 10-day period during the medical liability insurance crisis.
- October 2003, Sunrise Hospital and Medical Center and St. Rose Dominican Hospital - Siena Campus notified the Nevada State Health Division of their interest in becoming trauma centers (Level II and Level III, respectively).
- October 2003, the Nevada State Health Division asked the CCHD to facilitate a trauma system needs assessment, leading to the engagement of The Abaris Group to assist with the study and ACS-COT to conduct a trauma system consultation visit.
- November 2003, the Clark County District Board of Health recommended the creation of a Citizen's Task Force on Trauma System Development in Clark County.
- January 2004, Citizen's Trauma Task Force established.
- March 2004, ACS-COT conducted a trauma center consultation review at Sunrise Hospital and Medical Center.
- April 2004, Sunrise Hospital and Medical Center requested provisional trauma center designation from the State Health Division in order to receive trauma patients before ACS-COT verification visit. Advised by ACS-COT that they would need to review actual trauma cases during the verification process.
- June 2004, the ACS-COT and The Abaris Group's consultation reports were completed and the Citizen's Trauma Task Force made recommendations to the Clark County District Board of Health and to the State Health Division.
- June 2004, the State Health Division agreed to permit Sunrise Hospital and Medical Center to operate as a trauma center with some conditions.
- October 2004, first Regional Trauma Advisory Committee (RTAC) meeting held. CCHD began the process of developing a comprehensive trauma system for the region through the preparation of a trauma system plan.
- November 2004, UMC re-designated as Level I trauma center.
- January 2005, RTAC formally established in the Clark County EMS Regulations.
- February 2005, Sunrise Hospital and Medical Center was granted access to EMS-transported trauma patients when they opened as a provisional Level II trauma center.
- February 2005, the RTAC was convened to formalize the process of developing a comprehensive trauma system for the region.

- June 2005, the 73<sup>rd</sup> Session of the Nevada Legislature passed SB120, effective July 1, 2005, amending NRS 450B.237 to prohibit the Administrator of the Health Division from approving a proposal to designate a hospital as a center for the treatment of trauma (in counties with a population of 400,000 or more) unless approved by the county or District Board of Health where it is located. The proposal may not be approved unless the county or District Board of Health has established and adopted a comprehensive trauma system plan which includes consideration of and plans for the development and designation of new centers for the treatment of trauma in the county based on the demographics of the county and the manner in which the county may most effectively provide trauma services.
- June 2005, the 73<sup>rd</sup> Session of the Nevada Legislature passed AB555, effective October 1, 2005, amending NRS 49.117 to 49.123 to include a medical review committee of a county or District Board of Health that certifies, licenses or regulates providers of emergency medical services, when functioning as a peer review committee, to be protected from discovery procedures.
- July 2005, first official meeting of RTAC held.
- August 2005, Sunrise Hospital and Medical Center granted designation as a Level II trauma center.
- August 2005, St. Rose Dominican Hospital - Siena Campus granted designation as a Level III trauma center.
- October 2005, Clark County District Board of Health approves RTAC name change to Regional Trauma Advisory Board (RTAB).
- February 2006, Clark County District Board of Health name changed to Southern Nevada District Board of Health.
- February 2006, the first Clark County Trauma System Plan adopted by the Southern Nevada District Board of Health.
- October 2006, the first Clark County Trauma System Regulations adopted by the Southern Nevada District Board of Health.
- December 2006, the first Trauma System Performance Improvement Plan adopted by the Southern Nevada District Board of Health.
- January 2007, first Trauma Medical Audit Committee (TMAC) meeting held.
- February 2007, SB58 introduced during the 74<sup>th</sup> Session of the Nevada Legislature to provide for the imposition of administrative assessments for certain traffic violations to be used to support emergency medical services and services for the treatment of trauma. The bill did not pass.
- October 2007, UMC re-designated as a Level I and initially designated as a Pediatric Level II trauma center.
- June 2008, St. Rose Dominican - Siena Campus re-designated as a Level III trauma center.
- August 2008, Sunrise Hospital and Medical Center re-designated as a Level II trauma center.
- October 2008, first Clark County Trauma System Report published (<http://www.southernnevadahealthdistrict.org/ems/documents/ems/2008-ccts-report.pdf>).
- May 2010, Clark County Trauma System Status Report published (<http://www.southernnevadahealthdistrict.org/ems/documents/ems/2010-trauma-system-review.pdf>).
- October 2010, UMC re-designated as a Level I and Pediatric Level II trauma center.
- June 2011, St. Rose Dominican Hospital - Siena Campus re-designated as a Level III trauma center.
- July 2011, Sunrise Hospital and Medical Center re-designated as a Level II trauma center.
- July 2011, ACS-COT Trauma System Consultation conducted and report published (<http://www.southernnevadahealthdistrict.org/download/trauma/acs-report-2011.pdf>).
- March 2013, SB205 introduced during the 77<sup>th</sup> Session of the Nevada Legislature to create a fund for the State Trauma Registry and support the State Health Division in developing and managing a standardized system for the collection of data related to the treatment of traumatic injuries before and after admission to a hospital. The bill did not pass.
- April 2013, Self-Assessment for Clark County Trauma System Planning, Development, and Evaluation conducted and report published (<http://www.southernnevadahealthdistrict.org/ems/documents/ems/clark-county-trauma-system-self-assessment-2013.pdf>).

- October 2013, UMC re-designated as a Level I and Pediatric Level II trauma center.
- April 2014, St. Rose Dominican - Siena Campus re-designated as a Level III trauma center.
- May 2014, Sunrise Hospital and Medical Center re-designated as a Level II trauma center.
- May 2014, Southern Nevada Trauma System “Serious Injuries • Superior Care • Trauma Systems Matter” slogan/logo introduced during press conference to kick-off public information campaign.

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## Appendix J

### Southern Nevada Trauma System Needs Assessment

In April 2013, SNHD conducted a U.S. Department of Health and Human Services, Health Resources and Services Administration, “Self-Assessment for Trauma System Planning, Development, and Evaluation.” The process involved assessing the status of the Southern Nevada Trauma System based on a set of selected indicators considered to be representative measures of the core functions of assessment, policy development, and assurance within the system. The goal was to examine the current strengths and opportunities for improvement in the system using the same benchmarks, indicators, and scoring methodology employed in the 2007 and 2011 trauma system assessments conducted by SNHD.

The following definitions found in the 2006 HRSA Model Trauma System Planning and Evaluation document provide a common framework for understanding each component of the evaluation tool:

- Benchmarks are global overarching goals, expectations, or outcomes. In the context of the trauma system, a benchmark identifies a broad system attribute.
- Indicators are those tasks or outputs that characterize the benchmark. Indicators identify actions or capabilities within the benchmark. Indicators are the measurable components of a benchmark.
- Scoring breaks down the indicator into completion steps. Scoring provides an assessment of the current status and marks progress over time to reach a certain milestone.

Although each indicator has different details for scoring, the scoring follows this common theme:

Score	Progress on Achieving Indicator
1	No
2	Minimal
3	Limited
4	Substantial
5	Full
0	Not Known

The following are the 16 core functions, benchmarks, and indicators, selected from the complete BIS assessment instrument, that were assessed in 2007, 2011 and 2013.

#### **Core Function 100:**

**Assessment: Regular systematic collection, assembly, analysis, and dissemination of information on the health of the community.**

**BENCHMARK 101: There is a thorough description of the epidemiology of injury in the system jurisdiction using both population-based data and clinical databases.**

#### **Essential Service: Monitor Health**

**Indicator 101.2** There is a description of injuries within the trauma system jurisdiction including the distribution by geographic area, high-risk populations (pediatric, elder, distinct cultural/ethnic,

rural, and others), incidence, prevalence, mechanism, manner, intent, mortality, contributing factors, determinants, morbidity, injury severity (including death), and patient distribution using any or all the following: vital statistics, ED data, EMS data, hospital discharge data, state police data (those from law enforcement agencies), medical examiner data, trauma registry, and other data sources. The description is updated at regular intervals.

NOTE: Injury severity should be determined through the consistent and system-wide application of one of the existing injury scoring methods, for example, Injury Severity Score (ISS).

1. There is no written description of injuries within the trauma system jurisdiction.
2. One or more population-based data sources (e.g., vital statistics and medical examiner data) describe injury within the jurisdiction, but clinical data sources are not used.
3. One or more population-based data sources and one or more clinical data sources are used to describe injury within the jurisdiction.
4. Multiple population-based and clinical data sources are used to describe injury within the jurisdiction, and the description is systematically updated at regular intervals.
5. Multiple population-based and clinical data sources (e.g., trauma registry, ED data, and others) are electronically linked and used to describe injury within the jurisdiction.
0. Not known

Indicator 101.2 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	3.0	3.3

**BENCHMARK 102: There is an established trauma management information system (MIS) for ongoing injury surveillance and system performance assessment.**

**Essential Service: Monitor Health**

**Indicator 102.2** Injury surveillance is coordinated with statewide and local community health surveillance.

1. Injury surveillance does not occur within the system.
2. Injury surveillance occurs in isolation from other health risk surveillance and is reported separately.
3. Injury surveillance occurs in isolation but is combined and reported with other health risk surveillance processes.
4. Injury surveillance occurs as part of broader health risk assessments.
5. Processes of sharing and linkage of data exist between EMS systems, public health systems, and trauma systems, and the data are used to monitor, investigate, and diagnose community health risks.
0. Not known

Indicator 102.2 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
2.0	2.0	2.0



**Indicator 102.3** Trauma data are electronically linked from a variety of sources.

Note: Deterministically means with such patient identifiers as name and date of birth. Probabilistically means computer software is used to match likely records through such less certain identifiers as date of incident, patient age, gender, and others.

1. Trauma registry data exist but are not deterministically or probabilistically linked to other databases.
  2. Trauma registry data exist and can be deterministically linked through hand-sorting processes.
  3. Trauma registry data exist and can be deterministically linked through computer-matching processes.
  4. Trauma registry data exist and can be deterministically and probabilistically linked to at least one other injury database including: EMS data systems (i.e., patient care records, dispatch data, and others), ED data systems, hospital discharge data, and others.
  5. All data stakeholders (insurance carriers, FARS, and rehabilitation, in addition to typical trauma system resources) have been identified, data access agreements executed, hardware and software resources secured, and the “manpower” designated to deterministically and probabilistically link, analyze, and report a variety of data sources in a timely manner.
- 0 Not known

Indicator 102.3 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	1.0	1.9

### **Core Function 200:**

**Policy Development: Promoting the use of scientific knowledge in decision making that includes building constituencies; identifying needs and setting priorities; legislative authority and funding to develop plans and policies to address needs; and ensuring the public’s health and safety.**

**BENCHMARK 201: Comprehensive state statutory authority and administrative rules support trauma system leaders and maintain trauma system infrastructure, planning, oversight, and future development.**

### **Essential Service: Develop Policies**

**Indicator 201.4** The lead agency has adopted clearly defined trauma system standards (e.g., facility standards, triage and transfer guidelines, and data collection standards) and has sufficient legal authority to ensure and enforce compliance.

1. The lead agency does not have sufficient legal authority and has not adopted or defined trauma system performance and operating standards, nor is there sufficient legal authority to do so.
2. Sufficient authority exists to define and adopt standards for trauma system performance and operations, but the lead agency has not yet completed this process.

3. There is sufficient legal authority to adopt and implement operation and performance standards including enforcement. Draft process procedures have been developed.
4. The authority exists to fully develop all operational guidelines and standards; the stakeholders are reviewing draft policies and procedures; and adoption by the lead agency, including implementation and enforcement, is pending.
5. The authority exists; operational policies and procedures and trauma system performance standards are in place; and compliance is being actively monitored
0. Not known

Indicator 201.4 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	3.0	3.7

**BENCHMARK 203: The state lead agency<sup>2</sup> has a comprehensive written trauma system plan based on national guidelines. The plan integrates the trauma system with EMS, public health, emergency preparedness, and incident management. The written trauma system plan is developed in collaboration with community partners and stakeholders.**

<sup>2</sup> The respondents were advised to consider SNHD as the lead agency for the Southern Nevada Trauma System when rating this benchmark.

**Essential Service: Inform, Educate, Empower**

**Indicator 203.1** The lead agency, in concert with a trauma-specific multidisciplinary, multi-agency advisory committee, has adopted a trauma system plan.

1. There is no trauma system plan, and one is not in progress.
2. There is no trauma system plan, although some groups have begun meeting to discuss the development of a trauma system plan.
3. A trauma system plan was developed and adopted by the lead agency. The plan, however, has not been endorsed by trauma stakeholders.
4. A trauma system plan has been adopted, developed with multi-agency groups, and endorsed by those agencies.
5. A comprehensive trauma system plan has been developed, adopted in conjunction with trauma stakeholders, and includes the integration of other systems (e.g., EMS, public health, and emergency preparedness).
0. Not known

Indicator 203.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	4.0	4.4

**Indicator 203.4** The trauma system plan clearly describes the system design (including the components necessary to have an integrated and inclusive trauma system) and is used to guide system implementation and management. For example, the plan includes references to regulatory standards and documents, and includes methods of data collection and analysis.

1. There is no trauma system plan.
2. The trauma system plan does not address or incorporate the trauma system components (prehospital, communication, transportation, acute care, rehabilitation, and others), nor is it inclusive of all-hazards preparedness, EMS, or public health integration.
3. The trauma system plan provides general information about all the components including all-hazards preparedness, EMS, and public health integration; however, it is difficult to determine who is responsible and accountable for system performance and implementation.
4. The trauma system plan addresses every component of a well-organized and functioning trauma system including all-hazards preparedness and public health integration. Specific information on each component is provided, and trauma system design is inclusive of providing for specific goals and objectives for system performance.
5. The trauma system plan is used to guide system implementation and management. Stakeholders and policy leaders are familiar with the plan and its components and use the plan to monitor system progress and to measure results.
0. Not known

Indicator 203.4 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	3.0	3.4

**BENCHMARK 204: Sufficient resources, including those both financial and infrastructure related, support system planning, implementation, and maintenance.**

**Essential Service: Develop Policies**

**Indicator 204.2** Financial resources exist that support the planning, implementation, and ongoing management of the administrative and clinical care components of the trauma system.

1. There is no funding to support the trauma system planning, implementation, or ongoing management and operations for either trauma system administration or trauma clinical care.
2. Some funding for trauma care within the third-party reimbursement structure has been identified, but ongoing support for administration and clinical care outside the third-party reimbursement structure is not available.
3. There is current funding for the development of the trauma system within the lead agency organization consistent with the trauma system plan, but costs to support clinical care support services have not been identified (transportation, communication, uncompensated care, standby fees, and others). No ongoing commitment of funding has been secured.
4. There is funding available for both administrative and clinical components of the trauma system plan. A mechanism to assess needs among various providers has begun. Implementation costs and ongoing support costs of the lead agency have been addressed within the plan.
5. A stable (consistent) source of reliable funding for the development, operations, and management of the trauma program (clinical care and lead agency administration) has been identified and is being used to support trauma planning, implementation, maintenance, and ongoing program enhancements.
0. Not known

Indicator 204.2 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
2.0	3.0	2.0

**Indicator 204.3** Designated funding for trauma system infrastructure support (lead agency) is legislatively appropriated.

Note: Although nomenclature concerning designated, appropriated, and general funds varies between jurisdictions, the intent of this indicator is to demonstrate long-term, stable funding for trauma system development, management, evaluation, and improvement.

1. There is no designated funding to support the trauma system infrastructure.
2. One-time funding has been designated for trauma system infrastructure support, and appropriations have been made to the lead agency budget.
3. Limited funds for trauma system development have been identified, but the funds have not been appropriated for trauma system infrastructure support.
4. Consistent, though limited, infrastructure funding has been designated and appropriated to the lead agency budget.
5. The legislature has identified, designated, and appropriated sufficient infrastructure funding for the lead agency consistent with the trauma system plan and priorities for funding administration and operations.
0. Not known

Indicator 204.3 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
1.0	1.0	1.9

**BENCHMARK 208: The trauma, public health, and emergency preparedness systems are closely linked.**

**Essential Service: Mobilize Community Partnership**

**Indicator 208.1** The trauma system and the public health system have established linkages including programs with an emphasis on population-based public health surveillance, and evaluation, for acute and chronic traumatic injury and injury prevention.

1. There is no evidence that demonstrates program linkages, a working relationship, or the sharing of data between public health and the trauma system. Population-based public health surveillance, and evaluation, for acute or chronic traumatic injury and injury prevention has not been integrated with the trauma system.
2. There is little population-based public health surveillance shared with the trauma system, and program linkages are rare. Routine public health status reports are available for review by the trauma system lead agency and constituents.
3. The trauma system and the public health system have begun sharing public health surveillance data for acute and chronic traumatic injury. Program linkages are in the discussion stage.

4. The trauma system has begun to link with the public health system, and the process of sharing public health surveillance data is evolving. Routine dialogue is occurring between programs.
5. The trauma system and the public health system are integrated. Routine reporting, program participation, and system plans are fully vested. Operational integration is routine, and measurable progress can be demonstrated. (Demonstrated integration and linkage could include such activities as rapid response to and notification of incidents, integrated data systems, communication cross-operability, and regular epidemiology report generation.)
0. Not known

Indicator 208.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	2.0	2.7

**Core Function 300:**

**Assurance:** Assurance to constituents that services necessary to achieve agreed-on goals are provided by encouraging actions of others (public or private), requiring action through regulation, or providing services directly.

**BENCHMARK 301:** The trauma management information system (MIS) is used to facilitate ongoing assessment and assurance of system performance and outcomes and provides a basis for continuously improving the trauma system, including a cost-benefit analysis.

**Essential Service: Evaluation**

**Indicator 301.1** The lead trauma authority ensures that each member hospital of the trauma system collects and uses patient data as well as provider data to assess system performance and to improve quality of care. Assessment data are routinely submitted to the lead trauma authority.

1. There is no system-wide management information data collection system that the trauma centers and other community hospitals regularly contribute to or use to evaluate the system.
2. There is a trauma registry system in place in the trauma centers, but it is used by neither all facilities within the system nor the lead trauma authority to assess system performance.
3. The trauma management information system contains information from all facilities within a geographic area.
4. The trauma management information system is used by the trauma centers to assess provider and system performance issues.
5. Hospital trauma registry data are routinely submitted to the lead trauma authority, are aggregated, and are used to evaluate overall system performance.
0. Not known

Indicator 301.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	3.0	2.5

**BENCHMARK 302: The trauma system is supported by an EMS system that includes communications, medical oversight, prehospital triage, and transportation; the trauma system, EMS system, and public health agency are well integrated.**

**Essential Service: Link To Provide Care**

**Indicator 302.1** There is well-defined trauma system medical oversight integrating the specialty needs of the trauma system with the medical oversight for the overall EMS system.

Note: The EMS system medical director and the trauma medical director may, in fact, be the same person.

1. There is no medical oversight for EMS providers within the trauma system.
2. EMS medical oversight for all levels of prehospital providers caring for the trauma patient is provided, but such oversight is provided outside of the purview of the trauma system.
3. The EMS and trauma medical directors have integrated prehospital medical oversight for prehospital personnel caring for trauma patients.
4. Medical oversight is routinely given to EMS providers caring for trauma patients. The trauma system has integrated medical oversight for prehospital providers and routinely evaluates the effectiveness of both online and offline medical oversight.
5. The EMS and trauma system fully integrate the most up-to-date medical oversight and regularly evaluate program effectiveness. System providers are included in the development of medical oversight policies.
0. Not known

**Indicator 302.1 Results**

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	2.0	3.0

**Indicator 302.6** There are mandatory system-wide prehospital triage criteria to ensure that trauma patients are transported to an appropriate facility based on their injuries. These triage criteria are regularly evaluated and updated to ensure acceptable and system-defined rates of sensitivity and specificity for appropriately identifying the major trauma patient.

1. There are no mandatory universal triage criteria to ensure trauma patients are transported to the most appropriate hospital.
2. There are differing triage criteria guidelines used by different providers. Appropriateness of triage criteria and subsequent transportation are not evaluated for sensitivity or specificity.
3. Universal triage criteria are in the process of being linked to the management information system for future evaluation.
4. The triage criteria are used by all prehospital providers. There is system-wide evaluation of the effectiveness of the triage tools in identifying trauma patients and in ensuring that they are transported to the appropriate facility.
5. System participants routinely evaluate the triage criteria for effectiveness. There is linkage with the trauma system, and sensitivity and specificity (over- and under-triage rates) of the tools used are regularly reported through the trauma lead authority. Updates to the triage criteria are made as necessary to improve system performance.

0. Not known

Indicator 302.6 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	4.0	3.9

**BENCHMARK 303: Acute care facilities are integrated into a resource-efficient, inclusive network that meets required standards and that provides optimal care for all injured patients.**

**Essential Service: Link To Provide Care**

**Indicator 303.1** The trauma system plan has clearly defined the roles and responsibilities of all acute care facilities treating trauma and of facilities that provide care to specialty populations (e.g., burn, pediatric, spinal cord injury, and others).

1. There is no trauma system plan that outlines roles and responsibilities of all acute care facilities treating trauma and of facilities that provide care to special populations.
  2. There is a trauma system plan, but it does not address the roles and responsibilities of licensed acute care and specialty care facilities.
  3. The trauma system plan addresses the roles and responsibilities of licensed acute care facilities or specialty care facilities, but not both.
  4. The trauma system plan addresses the roles and responsibilities of licensed acute care facilities and specialty care facilities.
  5. The trauma system plan clearly defines the roles and responsibilities of all acute care facilities treating trauma within the system jurisdiction. Specialty care services are addressed within the plan, and appropriate policies and procedures are implemented and tracked.
0. Not known

Indicator 303.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
3.0	3.0	3.8

**BENCHMARK 307: To maintain its state, regional, or local designation, each hospital will continually work to improve the trauma care as measured by patient outcomes.**

**Essential Service: Evaluation**

**Indicator 307.1** The trauma system engages in regular evaluation of all licensed acute care facilities that provide trauma care to trauma patients and designated trauma hospitals. Such evaluation involves independent external reviews.

1. There is no ongoing mechanism for the trauma system to assess or evaluate the quality of trauma care delivered by all licensed acute care facilities that provide trauma care to trauma patients and designated trauma hospitals.
2. There is a mechanism for the trauma system to evaluate trauma care services in designated trauma hospitals through internal performance improvement processes.

3. There is a mechanism to evaluate trauma care services across the entire trauma care system through performance improvement processes.
4. Review of trauma care quality is both internal (through routine monitoring and evaluation) and external (through independent review during re-designation or re-verification of trauma centers).
5. Quality of trauma care is ensured through both internal and external methods. Internal review is regular, and participation is routine for trauma stakeholders. External independent review teams provide further assurance of quality trauma care within all licensed acute care and trauma facilities treating trauma patients.
0. Not known

Indicator 307.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	1.0	3.2

**BENCHMARK 308: The lead agency ensures that adequate rehabilitation facilities have been integrated into the trauma system and that these resources are made available to all populations requiring them.**

**Essential Service: Link To Provide Care**

**Indicator 308.1** The lead agency has incorporated, within the trauma system plan and the trauma center standards, requirements for rehabilitation services including interfacility transfer of trauma patients to rehabilitation centers.

1. There are no written standards or plans for the integration of rehabilitation services with the trauma system or with trauma centers.
2. The trauma system plan has incorporated the use of rehabilitation services, but the use of those facilities for trauma patients has not been fully realized.
3. The trauma system plan has incorporated requirements for rehabilitation services. The trauma centers routinely use the rehabilitation expertise although written agreements do not exist.
4. The trauma system plan incorporates rehabilitation services throughout the continuum of care. Trauma centers have actively included rehabilitation services and their programs in trauma patient care plans.
5. There is evidence to show a well-integrated program of rehabilitation is available for all trauma patients. Rehabilitation programs are included in the trauma system plan, and the trauma centers work closely with rehabilitation centers and services to ensure quality outcomes for trauma patients.
0. Not known

Indicator 308.1 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
2.0	1.0	2.0



**BENCHMARK 311: The lead agency acts to protect the public welfare by enforcing various laws, rules, and regulations as they pertain to the trauma system.**

**Essential Service: Enforce Laws**

**Indicator 311.4** Laws, rules, and regulations are routinely reviewed and revised to continually strengthen and improve the trauma system.

1. There is no process for examining laws, rules, or regulations.
2. Laws, rules, and regulations are reviewed and revised only in response to a “crisis” (e.g., malpractice insurance costs).
3. Laws, rules, and regulations are reviewed and revised on a periodic schedule (e.g., every 5 years).
4. Laws, rules, and regulations are reviewed by agency personnel on a continuous basis and are revised as needed.
5. Laws, rules, and regulations are reviewed as part of the performance improvement process involving representatives of all system components and are revised as they negatively impact system performance.
0. Not known

Indicator 311.4 Results

2007 BIS SCORE	2011 BIS SCORE	2013 BIS SCORE
4.0	4.0	3.6

A more detailed description of the consensus scores can be found in the 2013 Self-Assessment for Clark County Trauma System Planning, Development, and Evaluation Report (<http://www.southernnevadahealthdistrict.org/ems/documents/ems/clark-county-trauma-system-self-assessment-2013.pdf>).