

**Trauma System Consultation
Clark County
Nevada**

May 16 – 19, 2004

**American College of Surgeons
Committee on Trauma**

This document was prepared by a multidisciplinary working group, May 16-19, 2004 and included the following members:

*Robert C. Mackersie, MD, FACS
Chair, Trauma Systems Consultation Committee
American College of Surgeons
San Francisco, CA 94110*

*A. Brent Eastman, MD, FACS
N. Paul Whittier, Chair of Trauma
Scripps Memorial Hospital
San Diego, CA 92121*

*Kathy J. Rinnert, MD, MPH
University of Texas Southwestern Medical Center
Assistant Professor, Division of Emergency Medicine, Department of Surgery
Associate EMS Medical Director
EMS/GEMSS Fellowship Director
EMS Curriculum Coordinator
Dallas, Texas 75390-8890*

*Suzy Baulch, RN, BSN, MHA
Administrator, Trauma and Injury Prevention Services,
Bureau of Emergency Medical Services
Peoria, AZ 85345*

*Mr. Wade Spruill
Chief Executive Officer of AAA Ambulance Service
Hattiesburg, MS 39404*

*Gail Cooper
Technical Advisor-TSC
Public Health Administrator-Retired
San Diego, CA 92101*

*Nels D. Sanddal, MS, REMT-B
Technical Advisor TSC
President, Critical Illness and Trauma Foundation
Bozeman, MT 59715*

Table of Contents

Table of Contents	3
Executive Summary	6
Methodology	6
Overview	7
Strengths	8
Challenges	9
Opportunities	9
Key Recommendations	9
Administrative Components	12
Leadership	12
CURRENT STATUS	12
RECOMMENDATIONS	14
System Development	15
CURRENT STATUS	15
RECOMMENDATIONS	17
Legislation	18
CURRENT STATUS	18
RECOMMENDATIONS	19
Finances	20
CURRENT STATUS	21
RECOMMENDATIONS	21
Operational and Clinical Components	23
Injury Prevention and Control	23
CURRENT STATUS	24
RECOMMENDATIONS	25
Human Resources	27
Workforce Resources	27
CURRENT STATUS	28
RECOMMENDATIONS	29
Education	30
CURRENT STATUS	30
RECOMMENDATIONS	31
PREHOSPITAL CARE	32
Emergency Medical Services Management Agency	32

CURRENT STATUS	33
RECOMMENDATIONS	33
Ambulance and Non-Transporting Medical Unit Guidelines	34
CURRENT STATUS	35
RECOMMENDATIONS.....	37
Communications System	38
CURRENT STATUS	38
RECOMMENDATIONS	39
Emergency/Disaster Preparedness Plan	39
CURRENT STATUS	40
RECOMMENDATIONS.....	40
Definitive Care Facilities	42
Trauma Care Facilities	42
CURRENT STATUS	43
RECOMMENDATIONS	46
Inter-facility Transfer.....	47
CURRENT STATUS	48
RECOMMENDATIONS	48
Medical Rehabilitation.....	49
CURRENT STATUS	50
RECOMMENDATIONS	50
Information Systems	51
CURRENT STATUS	51
RECOMMENDATIONS	53
Evaluation.....	54
CURRENT STATUS	55
RECOMMENDATIONS	55
Research	57
CURRENT STATUS	57
RECOMMENDATIONS.....	58
Focused Questions	59
Appendix A: Site Visit Team – Biographical Sketches.....	66
Appendix B: List of NV ACS Participants	71
Appendix C: Newspaper Article Regarding Site Visit	87
Appendix D: Top Ten Data Tables to Assess Trauma System Performance/Needs.....	90
Appendix E: Distribution of Primary Insurance for Trauma Patients.....	92

Executive Summary

American College of Surgeons, Committee on Trauma

Trauma System Consultation

**Clark County
Nevada
May 16–19, 2004**

METHODOLOGY

The Clark County Health District requested this trauma system consultation, which was conducted under the auspices of the American College of Surgeons (ACS), Trauma System Consultation program (TSC). The multi-disciplinary Site Visit Team (SVT) consisted of: three trauma surgeons, one emergency physician, a former State EMS director, and a trauma program manager. In addition, there were two consultants to the ACS Trauma Systems program in attendance, both of whom have extensive experience in trauma system development. Biographical sketches for team members are included as Appendix A of this report.

Prior to the visit, the SVT reviewed the ACS *TSC* Pre-Review Questionnaire (PRQ). The PRQ was completed by the Abaris Group who was contracted to perform this function by the Clark County Health District. The format of this report correlates with the components outlined in the *ACS Trauma Systems Consultation* document. The SVT also reviewed the “*Draft Current Trauma Status Report*” from April 2004 which was compiled by the Abaris Group. In addition to these documents, the American College of Surgeons trauma center verification and review committee reports of UMC (2002) and Sunrise Hospital (2004) were made available to the team leader. These institutions, on a voluntary basis, provided copies of these summaries prior to this report being written.

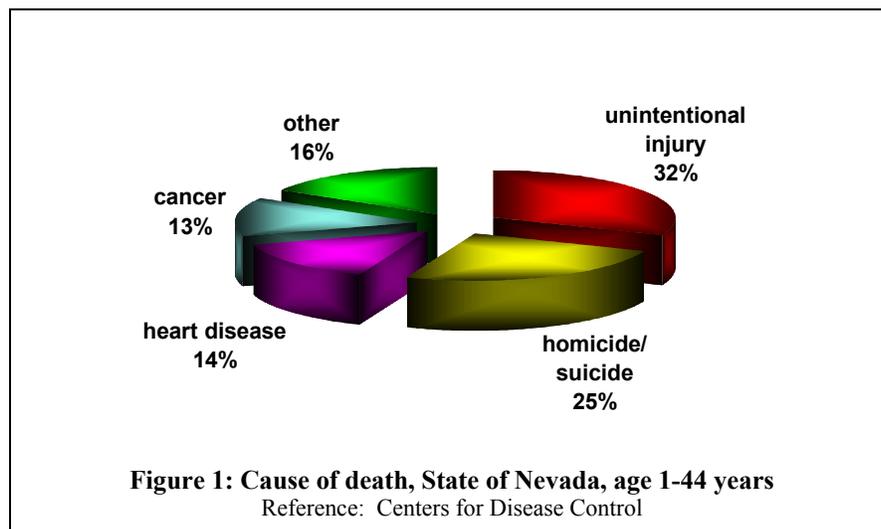
The SVT convened in Las Vegas, Nevada on May 16 – 19, 2004, to review the Clark County Trauma System. In meetings over three days, the SVT engaged in interactive dialogue with a broad range of representative trauma system participants. There was also an opportunity for public comment, informal discussion with the participants, and time devoted to questions and answers. The final session (exit interview) provided the opportunity for a summary statement and recommendations by the SVT. At this session, the elements and structure of an “inclusive

trauma care system” were outlined, as well as the magnitude of the injury problem in the State of Nevada. A list of participants that were involved in the discussions and deliberations is included as Appendix B of this report.

During portions of the visit, the SVT met in private for more detailed review and discussion, and for the purpose of developing a team consensus on the various issues and recommendations involved in the survey. On the last day of the site visit the SVT wrote the first draft of this consensus-based report. This report was based on the information contained in the PRQ, the information obtained during the formal interactive dialogue, and the information obtained in the course of informal interviews during the site visit. The process by which this report was developed was independent of any other trauma system consultations or assessments. The report has been reviewed, revised and edited by members of the ACS Committee for Trauma Systems Consultation. It has been approved by the American College of Surgeons.

OVERVIEW

The primary objective of this ACS trauma systems consultation was to guide and help promote a sustainable effort in the graduated development of an inclusive trauma system for Clark County, Nevada. Clark County, which includes the city of Las Vegas, is the most populous county in the State of Nevada with a population of approximately 1.6 million spread over a total area of roughly 8000 square miles. This population comprises roughly 72% of the State of Nevada. The population in Clark County has been growing rapidly, with a growth rate averaging 4.7% annually. The geographic characteristics of the region has pushed most of this growth to the south, including the city of Henderson, and to the north.



As a state, Nevada faces a number of challenges related to the health of its citizens. In a recently reported study from the Fordham Institute for Innovation in Social Policy, Nevada was ranked 50th in the nation for suicide among the elderly, 46th in homicides, 44th in teenage suicides, and 43rd in child abuse. Injury in the state of Nevada accounts for 57%

of deaths in ages 1-44, more than double that of cancer and heart disease combined (Figure 1). These statistics underscore the seriousness of traumatic injury as a public health problem in the state. The data provide a strong argument for a concerted public health commitment in the development of an inclusive trauma system. Such a system must serve the current needs of the

Clark County area, and yet have the capability to expand in order to accommodate the needs generated by high population growth in the years to come.

The trauma system in Clark County has centered, until recently, on its sole designated Trauma Center at University Medical Center (UMC), a teaching facility of the University of Nevada. UMC became a designated Level II facility in 1988 and developed into one of four free-standing, dedicated Level I trauma centers in the United States. UMC receives virtually all the major trauma from Clark County in addition to transfers from surrounding regions. Until 2002, when rising malpractice rates precipitated a closure of UMC for ten days, UMC has provided uninterrupted trauma care for Clark County.

In 2003, two additional Clark County facilities notified the Nevada State Health Division of their interest in becoming designated trauma facilities. One of these facilities, Sunrise Hospital, is part of the Columbia / HCA and is located approximately 3.6 miles from UMC. There is no discrete trauma plan for Clark County and no process in place for the development of additional trauma centers within the county. The need to respond to a request for trauma center designation by Sunrise Hospital prompted Clark County Health District to undertake a comprehensive evaluation of regional trauma care. This evaluation included consideration of existing inter-institutional relationships, proximity of existing and proposed centers and potential adverse effects from decreased volume at UMC. This included a “*Current Status Report*” drafted by the Abaris Group in April 2004, a more formal trauma system needs assessment, completed in May 2004 by the same group, and this American College of Surgeons trauma system consultation.

The following consensus recommendations are based on data collected in the PRQ, on site reference materials, and information obtained during the opening session on May 16th, and the interactive plenary sessions on May 17th and 18th. The narrative information contained in the “*Current Status*” sections of this report was based on a combination of written documents, and opinions and facts provided by the Clark County Trauma System stakeholders during the survey sessions. The recommendations contained in the report reflect the team’s consensus opinion, based on this information. The factual information contained in this report has been thoroughly reviewed and corrected to the extent possible. Occasional minor inconsistencies related to the communication and transcription of information passed on to the surveyors during interactive sessions will not affect the assessment and key recommendations made in the report. Our goal has been to produce a highly accurate and cogent report that will help guide the further development of the system of trauma care in Clark County.

The following summarizes principal strengths, challenges, opportunities identified by the ACS site visit team. Additional detail may be found in the narrative portions of the report sections. This summary also includes the key consensus recommendations generated by the SVT, with additional, more focused recommendations included at the end of each report section.

STRENGTHS

- Excellent Level I trauma center
- Demonstrated leadership in trauma care: Dr. Fildes, Dr. Metzler

- Limited jurisdictional overlap for trauma care
- Commitment on the part of other hospitals to serve as trauma centers
- Commitment to injury prevention and research
- Prosperous local economy with stable payor mix

CHALLENGES

- Limitations in hospital capacity with prolonged off-load times and delayed treatment
- System status management within the hospital setting contributing to prolonged ambulance off-load times and delayed emergency treatment.
- The limited recognition of trauma as a public health priority
- Explosive population growth
- Geographic isolation
- Dependence for trauma care on single Level I trauma center
- Apparent lack of grass roots support for trauma system from the public, medical community and elected officials
- Diffusion of central lead agency responsibility between state and local agencies
- Historical aversion to “monitoring” and “compliance”

OPPORTUNITIES

- Interest of two acute care facilities in developing trauma capacity
- To build as sound regional financial base for trauma system development
- Developing School of Public Health
- Collaborative creation of a trauma system care plan
- Community interest in building a trauma system of care
- Shared medical expertise among trauma professionals
- To formally evaluate the impact of the current “no divert” policy

KEY RECOMMENDATIONS

- Actively support the development and passage of broad enabling legislation concurrent with the development of the trauma system plan.
- Develop a comprehensive trauma system plan for both the State and Southern Nevada region.

- Include in the trauma system plan, a specific process whereby non-trauma acute care facilities may become designated trauma centers within the system. This process (an “alternative pathway” to designation) might contain the following steps:
 - ACS verification of all non-volume sensitive trauma center requirements
 - Provisional trauma center designation for no more than 12 months
 - ACS focused re-visit to verify that all remaining volume-sensitive trauma center requirements, including satisfactory quality of care, have been met
 - Full designation by the State agency
- Modify the Nevada Administrative Code (NAC) to be consistent with this “alternative pathway” for trauma center designation.
- Establish a Southern Nevada Trauma Advisory Committee to advise the regional lead agency and guide the development and execution of a regional trauma plan.
- Pursue a contract between the State Department of Health and Clark County Health District to serve as a regional trauma coordination entity for Southern Nevada. This contract would provide operational authority for the trauma system by the Clark County Health District and system oversight by Nevada Department of Health. This should be done in a manner that continues to support the State’s exercise of its statutory authority in trauma system development.
- Create a formal all written agreement between the lead agency (Clark County Health District) and trauma center that clearly articulates the roles and responsibilities of that center, within the context of a regional trauma plan, in providing trauma care and participating in the operation of the regional trauma system.
- Expand trauma care capacity in Clark County by the designation of additional trauma centers. This should be done in a manner consistent with population growth and location, but with primary consideration given to the commitment and resources of existing facilities.
- Implement the following steps before trauma center(s) are added to the system:
 - Complete a specific needs assessment including the durable commitment to care for the injured patient

- Establish performance improvement processes to resolve the inordinate delays experienced by EMS personnel in off-loading patients taken to acute care facilities and trauma center(s)
- Document progress in addressing ambulance off-load times
- Develop and execute a comprehensive trauma system quality improvement plan that includes:
 - Appropriate protections for quality improvement activities as part of the trauma system legislation
 - The establishment of a collegial multidisciplinary trauma system medical audit committee
 - The identification of key indicators for prehospital care which are concordant with systems-wide quality assurance initiatives
- Conduct a complete and thorough inventory of the number and type of providers necessary for care of the injured, and assess and categorize their level of competence and willingness to treat injured patients.
- Create an injury prevention and control coalition under the aegis of the trauma system
 - Develop a comprehensive injury control plan for Southern Nevada.
- Create communications redundancy to allow for continuous and uninterrupted conveyance of information.
- Develop comprehensive emergency planning to address all phases of the disaster response.
- Develop system-wide research capacity in conjunction with the trauma plan and system PI

Administrative Components

Leadership

Purpose

There should be a trauma system lead agency with an identified key person. The lead agency will usually be a government agency with the authority, responsibility, and resources to lead the development, operations, and evaluation of the trauma system. The statutes, regulations, policies, or guidelines should direct that the lead agency will:

- *Ensure the integration of the EMS system, including all prehospital components*
- *Coordinate system design*
- *Establish minimum standards for system performance and patient care*
- *Create a Trauma System Advisory Committee that is composed of prehospital personnel, hospital personnel, rehabilitation personnel, payors, consumers, and public interest groups. This committee should serve to guide system planning activities, define system criteria (number of centers, volume), recommend system standards (triage, timelines), and review system performance*
- *Have sufficient staffing, including a trauma system coordinator experienced in trauma system development and implementation*
- *Identify the key person in the lead agency*

The trauma system should have a strong role for a trauma physician(s) as an integral part of its leadership component. This physician, Trauma Medical Director, should be qualified to participate in the planning of the trauma system, work with the lead agency, be incorporated into the system, and be responsible for design and implementation of the trauma system, medical accountability, and ensuring an appropriate medical response to the trauma patient.

CURRENT STATUS

Under Nevada Revised Statutes (NRS 450B, et seq), the responsibility for establishing a statewide trauma system/program for the treatment of trauma and designation of trauma centers rests with the State Board of Health. The trauma statutes are administered by the State Health Division. The State agency's role includes the following:

- Trauma center application process
- Trauma center verification and designation

- Trauma center monitoring
- Trauma patient destination policies
- Statewide trauma registry

The Nevada State Health Division has statewide authority over the development of emergency medical services with the exception of Clark County. Under state statute (NRS 450B.077), administration of the prehospital EMS system has been delegated to the Clark County Health District and its 13-member Board of Directors. Additionally, the District is mandated by County Ordinance 163 “to establish and conduct a comprehensive program of health to prolong life and promote the well-being of the people of Clark County.” As part of that mandate, the Health District establishes Public Health priorities on behalf of local taxpayers, residents, tourists/visitors, and the commercial service industry. State and District EMS system standards are similar.

Neither the State of Nevada nor Clark County has a formal trauma system or trauma plan. No State level or District level medical or administrative trauma program director/manager positions exist. Although there is no formal Trauma System Advisory Committee, an EMS-Trauma Stakeholders group (14 members) was established in Clark County through the University based, non-profit organization called the Trauma Institute. This stakeholders groups was formed in conjunction with grant from the Health Resources and Services Administration (HRSA) to focus on trauma planning. Reports from this group are currently forwarded to the Nevada Trauma Institute which has injury control as its primary focus. To date, no outstanding progress on trauma system planning has been made. Additional progress is expected on the HRSA grant after the ACS trauma consultation visit and the current needs assessment activities conducted by a trauma system’s consulting group.

Other groups (“a public and unbiased constituency group” and the Citizens’ Trauma Task Force) have been organized to assist in the establishment of a trauma system and to provide leadership for trauma system development in Clark County / Southern Nevada. The relationship and authority of these groups with those previously mentioned is not clear. Some governmental and non-governmental entities are responsible for certain aspects of the trauma system (grant administration) while additional entities have responsibilities for others (Clark County Health District EMS). This has resulted in a lack of leadership and the fragmentation of effort in establishing a trauma system for Clark County / southern Nevada. There is currently no strong statewide or county governmental leadership in the establishment, planning or monitoring of a trauma system. There has been an apparent reluctance to ‘take ownership’ for developing and managing of the overall trauma system, and no agency with the expertise or political will ready, willing or able to assume leadership. Trauma system development, or injury control in its broadest application, does not appear to be a high priority in spite of the high risk of premature death due to injury in Nevada. This may stem from the reliance of the region on the trauma care provided by the sole Trauma Center in Clark County, University Medical Center.

Some of the organizations involved in trauma systems in Nevada and Clark County are:

State Department of Human Resources
 State Board of Health, Nevada Department of Health, State Health Division

- Bureau of Licensing and Certification
- EMS Program
- Bureau of Health Planning and Statistics
- Bureau of Family Services
- University of Nevada School of Medicine – Trauma Institute

Clark County

- Clark County Health Division
- Medical Advisory Board
- Facilities Advisory Board
- Quality Improvement Committee

There appears to be only limited efforts to create an advocacy group for trauma. Most of the grassroots efforts relate to various injury prevention initiatives.

RECOMMENDATIONS

- Develop a job description for a CCHD trauma program manager, and part time trauma medical director, recruit and hire these persons.
- Pursue a contract between the State Department of Health and Clark County Health District to serve as a regional trauma coordination entity for Southern Nevada. This contract would provide operational authority for the trauma system by the Clark County Health District, and system oversight by Nevada Department of Health. This should be done in a manner that continues to support the State’s exercise of its statutory authority in trauma system development.
- Describe in the contract between the State and CCHD the roles, responsibilities, and expectations of CCHD and of the NDH EMS Program.
- Monitor the contract for compliance and opportunities for trauma systems performance improvement.
- Establish a Southern Nevada advisory group comprised of representation from key agencies and organizations involved in trauma. This group should provide input, advice and serve as the nucleus for all advocacy groups for trauma.
- Support the development of a Nevada Trauma Advisory Committee for similar purposes in further developing an inclusive system of trauma care throughout Nevada.

System Development

Purpose

The trauma system lead agency should have a defined planning process for trauma system development that addresses:

- *Identifying trauma care resources, including resource deficits within the defined area of the trauma system*
- *Developing and implementing trauma care plans and systematically reviewing plans over time*
- *Including health professionals, consumer groups, and payors in trauma system planning*
- *Approving the trauma system plan*
- *Establishing, reviewing, and revising trauma system standards of care, including policies, procedures, and protocols for both the prehospital and hospital personnel*
- *Analyzing the financial impact of developing and implementing the trauma system.*

The trauma system should be integrated with the EMS system and should include a mechanism to interface with and incorporate other EMS plans, such as disaster and mass casualty. It should also have a mechanism to integrate managed care entities in the area.

CURRENT STATUS

Although no formal state trauma plan has been prepared, Nevada has begun the development of some of the necessary trauma system components. State law provides authority for trauma center designation, monitoring, patient destination criteria, and the establishment of a statewide trauma registry to the Nevada State Division of Health.

There are 12 hospitals in the Clark County Health District. All of these facilities have active emergency departments. However, UMC serves as the only southern Nevada trauma center. Currently, there are several new hospitals under construction. Two hospitals have been verified by ACS and formally designated by the State as trauma centers. A Level I trauma center (University Medical Center) is located in Clark County in the south and a Level II center is located in Washoe County (Washoe Medical Center) to the north. In southern Nevada, two additional hospitals have requested consideration for designation as trauma centers. One of these

hospitals, Sunrise Hospital, was previously state designated as a Level III trauma center in 1989 but its designation lapsed in 1995. In 2003, Sunrise Hospital requested consideration for designation as a Level II trauma center; in March 2004, ACS conducted a Level II trauma center consultation for this facility. In turn, Sunrise Hospital requested “provisional” trauma center designation from the State of Nevada. Also in 2003, St. Rose Dominican Hospital in Henderson requested consideration for designation as a Level III trauma center. Both of these facilities have had severe and chronic emergency department overcrowding issues resulting in long wait times for prehospital personnel to off-load patients in the emergency department.

During 2003, the Nevada State Health Division requested that Clark County Health District conduct a trauma system needs assessment. Through a contractual arrangement with a trauma consulting group (Abaris Group), the Clark County Health District conducted this trauma system needs assessment and is currently developing a proposed action plan for trauma system implementation. A Citizens’ Trauma Task Force was established to make trauma system recommendations on behalf of the public. A Trauma System Advisory Committee (“a public and unbiased constituency group”) is being developed to make final trauma system recommendations to the Clark County Health District. Other trauma system component groups (prehospital providers, etc.) also provided comments and recommendations as part of the needs assessment.

Some trauma care guidelines and system standards have been adopted. The Clark County Health District has adopted prehospital trauma patient triage and destination standards which mirror language in Nevada Administrative Code (NAC) 450B. These standards are based, to some degree, on the *American College of Surgeons Optimal Resources* document for trauma centers. UMC has developed trauma clinical protocols and quality assurance monitoring. No other trauma system standards have been developed.

The Nevada State Health Division has overall authority to develop the emergency medical services (EMS) program and trauma centers, Clark County Health District has statutory authority over the development of its (local) EMS system, i.e., licensure of ambulance services and EMS personnel. An inventory of prehospital resources within the District is available. Because there is currently no formally structured trauma system within the District, EMS resources have not been fully integrated as part of a system of trauma care. It is notable that UMC is active in the provision of training, education, and limited quality improvement with area prehospital providers. However, no formal plans exist for prehospital response to trauma-related mass casualty / disasters.

Major issues exist in the prehospital arena with the off-load times for patients delivered to emergency departments for care. It was reported that off-load times can be as long as 12 hours and routinely are 2-4 hours. A new diversion strategy for hospital emergency departments which is designed to ‘level-load’ prehospital volume and reduce overall off-load times is being tested but the results of this strategy were not available at the time of this visit. According to information provided to the ACS review team, managed care entities have provided input regarding their role as part of the future trauma system. However, no specific information regarding this evaluation process was presented to the team. Likewise, no information was

provided regarding the financial impact on these entities and other healthcare institutions associated with the development and implementation of a trauma system.

The development of both a statewide and Southern Nevada trauma system plan is essential to the long-term success of the evolving system. The Southern Nevada planning process should not be delayed while a state plan is being developed. However, adjustments and modifications of the Southern Nevada plan may be necessary to ensure consistency and compatibility with the state plan once it is finalized.

Also essential is the development of a broad-based constituency group that will support trauma system development and legislative processes. This group should include representation from influential groups representing hospital facilities, medical personnel, firefighters, public and private prehospital personnel, consumers and other key organizations.

RECOMMENDATIONS

- Develop a trauma system plan for Southern Nevada. Use the 1992 Draft Model Trauma Care Systems Plan developed by HRSA and other key resource documents in the development of the plan.
- Establish a Southern Nevada advisory group comprised of representation from key agencies and organizations involved in trauma. This group advise the lead agency (CCHD) and serve as the nucleus for all advocacy groups for trauma. Consideration should be given to develop a state-wide Nevada Trauma Advisory Committee for similar purposes.
- Provide this advisory / advocacy committee with an orientation to the background, rationale, structure and process associated with trauma system development, such as the Development of Trauma Systems (DOTS) course available through the National Highway Traffic Safety Administration.
- Use the most recent needs assessment to drive development of the Southern Nevada trauma plan; implement cooperatively with Nevada Department of Health (NDH) the plan.
- Work with the Nevada State Health Division to promote the development of a trauma systems plan for the State that takes into consideration the unique geography and population centers within the state.

Legislation

Purpose

- *Comprehensive legislation is essential for trauma system development. The creation of statutes and regulations to develop the trauma system sets in place the necessary legal authority to move forward without concerns about anti-trust issues. Comprehensive statutes and regulations can provide for the process of planning, implementing, and funding the trauma system. Key provisions in trauma legislation include the ability to work through constituency groups to:*
- *Develop a comprehensive trauma system plan*
- *Integrate the trauma program with the existing EMS system*
- *Incorporate prevention programs and activities*
- *Establish or adopt guidelines for the prehospital, acute hospital, and the rehabilitation phases of trauma care*
- *Collect data and evaluate system performance*
- *Provide for confidentiality of trauma records, reports, and quality of care reviews*
- *Establish authority to designate trauma centers*
- *Provide authority for the inter/intrastate and international planning and implementation of trauma systems, without regard to jurisdictional boundaries.*

Additionally, trauma legislation should include a dedicated funding mechanism and an administrative structure for trauma management and should ensure fiscal support for all components of the system, including the legal authority to ensure that third-party payment is coordinated within the trauma system.

CURRENT STATUS

Nevada has neither comprehensive trauma care legislation nor the associated regulations necessary for the development of a statewide trauma system. Current statutes and regulations are limited to the trauma center designation process and trauma registry (data) components. No specific language in state law exists regarding the authority to plan, develop, and implement a

comprehensive trauma system. Current statutes address EMS components, such as licensure, certification, treatment data, patient destination standards, and prehospital triage criteria. Nevada law fragments authority between the State (overall trauma development) and the Clark County Health District (prehospital components). Other comprehensive trauma system components are not specifically outlined in existing state law, i.e., trauma funding, state and regional administrative structures, inter / intrastate and international planning, confidentiality protection, etc.

RECOMMENDATIONS

- Actively support the development and passage of broad enabling legislation concurrent with the development of the trauma system plan. At a minimum the legislation should include:
 - Leadership designation
 - Authority to plan, implement and monitor the system
 - Authority to designate, renew and de-designate trauma centers
 - Authority to enter into contractual agreements with regional entities or trauma centers
 - Confidentiality of quality/performance improvement processes
- Seek Southern Nevada constituency support for the proposed legislation.
- Work in a cooperative spirit with the NDH for the passage of the legislation.
- Assist NDH in developing supporting rules and regulations to implement the comprehensive trauma legislation.

Finances

Purpose

Evaluating the health of a trauma system's finances is still in its early development stages. This section outlines generally accepted business financial principles that are used as baseline.

At all levels of evolution, the trauma system should demonstrate through its trauma system lead agency financial accountability. This accountability should first include lead agency reporting of financial stability. Second, the lead agency should show the development of routine financial reporting by component, which reflects the financial health of the system. Trauma system components include system management, prehospital, trauma facilities, acute care, rehabilitation, and prevention programs. The lead agency should have established the following processes:

Lead Agency Financial Accountability

- *A standardized model accounting report that lists costs and is used consistently with standardized definitions throughout the system*
- *A process to develop, review, approve, and monitor expenditures and revenues by line item*
- *A process to develop, review, approve, and monitor each component's costs over time*
- *A process that allows the trauma system financial costs to reflect its relationship to the trauma plan outcome measures*
- *A process for maintaining at least two years of audited financial records that meet accepted financial accounting principles*
- *A process to audit the financial health of the trauma system over time*

Component Financial Accountability

- *A process that defines how trauma centers integrate alternative delivery systems (payor systems) into the trauma program*
- *A process that defines how rehabilitation centers integrate alternative delivery systems (payor systems) into the trauma program*

- *A process that defines the incremental component costs associated with trauma system participation*

Overall, the lead agency financial component should be integrated with other existing plans of the emergency medical service system to include, but not be limited to, disaster, prehospital, trauma facilities, acute care, rehabilitation, and prevention programs.

CURRENT STATUS

While the state level (lead agency) financial accountability is monitored as part of governmental process. Little is known about the true expenditures related to trauma system development on a statewide basis. According to state and county officials, no trauma specific budgets exist within either the State or Clark County Health District. Because there is no organized trauma system for southern Nevada, no related financial statements exist. The general payor mix for southern Nevada relating to injury hospitalizations can be extrapolated from the UB 92 data. In general terms the rate of uncompensated care is relatively low at about 15%. More succinct data concerning trauma costs are not available since most Clark County hospitals do not actively participate in the statewide trauma registry. UMC does report its trauma center costs through its normal accounting procedures. Costs versus charges of the facility and its staff were not presented and are generally not reported to any outside agency. The only reported fees supporting trauma center operations at UMC were those collected from patients for trauma care rendered. Federal grants (HRSA) for trauma have been received by the Trauma Institute within the University of Nevada School of Medicine. (See Appendix E, Dist. of Primary Insurance for Trauma Patients.)

Previous attempts to create a funding mechanism such as adding fees to motor vehicle registration did not fare well in State administrative review processes. There have been no thoughtfully organized or strongly supported plans to establish a source of revenue for trauma system planning, development or implementation.

Little is known about the financial impact of ambulance diversion and off-load times. One EMS entity estimated the direct costs (related to increases in vehicles, equipment and personnel) of the significant off-load times at emergency departments to be more than \$500,000 annually. If these figures are correct and were aggregated with other EMS transporting agency costs in the area, the total could well exceed the costs of trauma system development and management each year.

RECOMMENDATIONS

- Develop a budget based on the strategies and needs identified in the Southern Nevada and the Nevada State trauma system plans when these plans are completed.
- Develop a strategy for approaching the legislature with NDH to secure funding to support

trauma system development both at a regional and state level; identify and cultivate the necessary political support to increase likelihood of passage, e.g. hospital association, firefighters, prehospital care providers, consumers, etc.

- Collect inclusive data through the system trauma register and other appropriate data sources to determine system costs and future financial demands. For example: determine the actual costs of existing diversion and off-load delays.

Operational and Clinical Components

Injury Prevention and Control

Purpose

A comprehensive injury control system includes prevention and rehabilitation in addition to acute care. The ultimate goal of an organized trauma care system is to prevent injuries, just as the ultimate goal of medicine is to prevent disease. Consequently, the trauma care system should participate in the establishment of a system-wide injury control coalition (SICC). One form is an IPC or injury prevention center. Composed of members from public and private sectors interested in prevention activities, this coalition will create prevention partnerships to reduce fragmentation and intensify community interventions.

- *Jointly with the SICC, a plan to promote injury control should be developed and implemented that will:*
 - a) *Heighten awareness of injury as a public health problem*
 - b) *Educate elected officials and the public about the need for trauma care systems and injury control to promote the passage and implementation of legislation aimed at reducing injury*
 - c) *Educate the public about current trauma system development*
 - d) *Educate the public about how to safely approach an injury scene, access the trauma care system, and provide assistance to the injured person until professional help arrives*
 - e) *Involve public/voluntary organizations to aid system financing*
 - f) *Conduct injury surveillance*
 - g) *Develop a system-wide consensus approach to injury control interventions using needs assessment and intervention evaluation*
 - h) *Communicate key trauma prevention strategies.*
- *The trauma care system should do a needs assessment to identify priority injury problems (including identification of high-risk groups and environmental factors)*
- *With the support of the trauma care system, the SICC should develop and implement priority injury control interventions that follow the injury control plan*

- *The SICCC should carry out a public information program that follows the injury control plan*
- *The SICCC should evaluate the success of injury control interventions. Outcome evaluations using trauma system data are preferable*
- *The SICCC should integrate the potential of an organized entity to promote prevention activities within the system.*

CURRENT STATUS

Within the State of Nevada, unintentional injury is the leading cause of death for persons ages 1 to 44 years and the fifth leading cause of death overall (2001 National Center for Health Statistics (NCHS) Vital Statistics System (<http://cdc.gov/nchs/vitalstatisticsystem>). In addition, *Healthy People (HP) Nevada 2010* (2003 Edition) reports an unintentional injury death rate of 35.6 people per 100,000 residents; HP Nevada sets a target death rate of 17.5 by the year 2010.

Key participants for injury prevention include those in academic medicine through the non-profit Trauma Institute a part of the University of Nevada School of Medicine Department of Surgery; and two community based groups, the Clark County Safe Communities and Clark County Safe Kids Coalition. The Trauma Institute resources are focused on grant sponsored activities such as crash outcomes, domestic violence, and suicide prevention, among others. Clark County identified three high priorities for injury control measures. These included a program to prevent drowning in children 1-4, suicide prevention and a program to reduce motor vehicle crashes. These programs were prioritized from a review of local data bases. The Henderson Fire Department has implemented a National Fire Protection Agency program known as Risk Watch that addresses a number of injury prevention topics.

Safe Kids, is a local branch of the National Safe Kids program. Selected national programs concerning teenage suicide prevention, pediatric drowning, and use of infant car seat restraints have been implemented. In addition the Safe Kids program is in the process of developing a strategic plan to help guide future activities.

There has been limited or no evaluation of the effectiveness of the injury prevention interventions, although it has been recognized by the injury stakeholders that evaluation is a need for existing and future programs.

The Nevada Report on Injury, 2000-2002, is a comprehensive report on injury that brings together information from four primary data sources (<http://health2k.state.nv.us/nihds/center.htm>). These sources include:

- Nevada Trauma Registry
- Nevada Death Registry
- Nevada Inpatient Hospital Discharge (UB92)
- Behavioral Risk Factor Surveillance System (BRFSS).

Additional potential databases represent rich sources of information and include:

Fatality Analysis Reporting System (FARS)
Nevada Emergency Room and Outpatient Data
Uniform Crime Reporting (UCR)

Each database provides a different point of view on the state of injury in Nevada. While this does not include information from all potential sources for injury surveillance it provides a detailed analysis of the main realms of injury reporting in Nevada. These robust datasets may be exploited in order to identify regional injury trends, prioritize resource utilization, develop programmatic interventions, and implement monitoring and evaluative processes.

A state level injury prevention and control task force has acknowledged that significant deficiencies exist in current state databases relative to incomplete hospital reporting. While the Nevada State Health Division is responsible for these data bases (Trauma Registry, E-codes and Emergency Department discharge data) it seems as though reporting is not mandatory nor is the State enforcing reporting mechanisms.

RECOMMENDATIONS

- Establish a mechanism and process for review and ongoing monitoring of applicable databases (public health, health, medical, law enforcement, transportation, etc.) relative to state and local morbidity and mortality. Ensure the limitations of the databases are well known to the person's using the data.
- Create a trauma system injury coalition, under the leadership of Clark County Health District, with the active engagement of all elements of the system (public health, emergency medical services, community based organizations, acute care hospitals, trauma center(s), and rehabilitation facilities). The purpose of this coalition would be to monitor local morbidity and mortality (assessment), identify prevention intervention strategies and implement programs (policy development), and monitor those programs for effectiveness in reducing the burden of injury in Clark County (assurance).
- Develop a comprehensive injury control plan for Southern Nevada.
- Encourage the Nevada State Health Division to enforce mandates for the complete and timely reporting of the Trauma Registry, hospital E-codes and the standardization of reportable emergency department data elements to improve the accuracy and reliability of statewide databases.
- Assess the ability of current databases to identify health status indicators that are both sensitive and specific relative to local injury prevention and control activities. Collaborative with stakeholders to build a strong evaluative component for all injury prevention and control programs.

- Incorporate a strong roll for media advocacy (print, radio, television) and the dissemination of injury prevention awareness and prevention strategies throughout Clark County.
- Pursue funding sources for injury prevention and control activities from both public (grants, fees, registrations) and private entities (local industry, philanthropic agencies, etc.).

Human Resources

Workforce Resources

Purpose

The trauma system should have a distinct process for evaluating the adequacy of human resources available (within and outside the hospitals) to support normal system activity. The process should:

- *Match resources with patient needs*
- *Define the optimal number and type of prehospital personnel and resources to be available to care for trauma patients*
- *Define the optimal number and type of hospital personnel and resources to be available to care for patients in all areas of the hospital*
- *Address periodic reevaluation of resources through an initial needs assessment and identification of trauma care work force resources and matching resources to patient care*
- *Determine a plan for dynamic flexible response for optimal management of patients during peak periods of activity that stress the system (both prehospital and hospital resources should be included in the plan)*
- *Address recruitment and retention of qualified personnel*
- *Identify current numbers of certified prehospital personnel and their level of certification*
- *Identify current hospital personnel resources, including physicians and their specialties, nurses, and other health care personnel*
- *Evaluate resources and personnel in trauma specialty care units for pediatric, burn, spinal cord, head injury, and rehabilitation centers*
- *Identify the number and severity of injured patients cared for by hospitals and individual surgeons*
- *Assess the impact of system operations on existing levels of professional resources within the community, including limited physician specialists, such as neurosurgeons, orthopedic surgeons, anesthesiologists, and so on*
- *Identify the number and severity of injured patients cared for by emergency physicians.*

CURRENT STATUS

There are approximately 3,500 certified EMT providers in Clark County and 1,500 are licensed as EMT-P, EMT-I, or EMT-B. The remaining 2,000 EMT providers, certified through training programs but not licensed by Clark County Health District, generally work as casino security personnel. The participants stated that there has been a shortage of paramedics, but for the last 6 months, staffing has been stable. Recruitment for prehospital personnel is on-going among both public and private prehospital providers. There is active recruitment of prehospital personnel from other states. A process for reciprocity is in place as well as a process to ensure out-of-state personnel are oriented to both local and state policies and procedures.

The largest hurdle facing ambulance services in Clark County are the long patient off-load times that prevent public and private prehospital providers from getting back into service to meet other 9-1-1 call requirements. These long off-load times preclude efficient operation and maintenance of an adequate number of units available for service at all times.

The approximate number of general and subspecialty surgeons on staff at hospitals throughout the county is known. Their commitment and level of competence with regard to the treatment of trauma patients is uncertain. Reportedly, a majority of these surgeons have no interest in participating in a trauma system. In 2002, a malpractice crisis and withdrawal from trauma care by physician groups resulted in the temporary closure (10 days) of the Level I trauma center at UMC. A number of anecdotal and conflicting reports on both the competency and availability of surgical specialists in response to this crisis during these 10 days were encountered during the survey. The true response and resulting outcomes has not been studied and no reliable data was collected during the time of the facility closure. The overall interest and availability of physician providers for trauma care is still not well known.

The number of neurosurgeons is known but functional numbers for purposes of trauma care is not. The number of neurosurgeons with craniotomy privileges could not be determined by reviewers during the site visit. There was some evidence of general availability of neurosurgeons and orthopaedic surgeons, as well as other pertinent specialist, to the emergency department. However, it was unclear as to whether this specifically referred to responsiveness in treating the severely injured patients. Additional medical and ancillary staff such as radiologists and radiology technicians, anesthesiologists and CRNAs, etc. have not been considered within the context of an inclusive trauma system as a potential human resources deficiency.

Emergency Department physician's workforce numbers are generally known or easily attainable. Information on the number of physicians who are board certified in Emergency Medicine was not provided to the review team. Data on specialty physician providers, including Emergency Medicine physicians, was not available. The general level of commitment within Clark County acute care hospitals to evaluate and treat trauma patients could not be determined.

It is reported that the nursing shortage is prevalent in the state, as in the rest of the nation. Critical care units and emergency departments are most effected by nursing shortages. Hospitals

appear to rely on traveling nurses and temporary nursing agencies to augment staffing. There are currently 46 licensed temporary nurse agencies in the State, with six additional ones pending in Southern Nevada. Hospitals are recruiting nurses from out-of-country to provide coverage within their facilities. The requirements of these agencies and the individual qualifications of staff and temporary nurses with regard to trauma are not known.

It is not known if the number of agency nurses utilized in the emergency department and critical care units is greater than that used in other specialty areas throughout the hospital. Trauma Nurse Core Course appears to be the most prevalent course for nurses in Clark County. However, attendance and completion rates among trauma specialty nurses working in acute care facilities, was not known.

Attention has not been given to the utilization of physician extenders (PA, NP, etc.) as well as physician hospitalists in the care of the injured in the emergency department, critical care unit or other units within the acute care setting. It was reported that the use of physician extenders has not been a popular idea in Clark County. Efforts to introduce these additional personnel categories to assist with the overcrowding, especially in the emergency departments, have been met with resistance.

RECOMMENDATIONS

- Conduct a complete and thorough inventory of the number and type of providers (within the acute and post hospital phase of care) necessary to provide care to the severely injured patient (other than UMC). This inventory should include an assessment and categorization of training, experience and particularly commitment to the care of the injured patient.
- Perform periodic reviews to reassess the status of trauma care workforce issues and to be able to match changes in patient care needs with personnel and equipment resources. Assessments of personnel resources for the trauma system could be done in conjunction with the annual report for Homeland Security or other annual state reporting requirements so as to not require a new process.

Education

Purpose

The trauma system should have adequate education for all levels of trauma care personnel, both hospital and prehospital. The trauma plan should address:

Standards for the credentials, educational preparation, certifications, and continuing education requirements (including injury prevention and control) for all personnel

- *Incorporation of injury control information in educational standards for all trauma care personnel*
- *Quality management monitoring of courses and instructors*
- *Processes for state credentialing, certification, recertification, and decertification of trauma care personnel*
- *An organized needs assessment prior to developing new or additional educational activities.*

CURRENT STATUS

Prehospital Education

The education, certification and assurance of competence for prehospital providers seemed adequate and generally comparable to that in other existing systems nationally. Training courses are approved by the EMS Department for all prehospital providers. Initial education and continuing education require course work in trauma. There is no requirement for recertification in PHTLS or BTLS. Training programs and continuing education records are available for audit annually. Provider agencies maintain their own records of course attendance and completion.

Nursing Education

An additional method of assuring competence is through an organized PI program at both the hospital and system levels. Such a process does not exist, with the exception of limited internal performance improvement within UMC. It is not clear, even within UMC, that provider specific standards are identified with the clinical care responsibilities to enable an accurate measurement of performance.

The information regarding additional trauma education both initially and on a continuing basis, is more prevalent but still not complete. Issues regarding the flux in temporary nurses on staff and their trauma care credentials and expertise have not been examined.

Physician Education

Trauma Education and assurance of competency, both initial and continuing, are essentially not evident for physician professions except those practicing within the UMC Level I Trauma Center. The number of those providers having successfully completed ALTS, and/or other trauma educational offerings was not completely available to the review team.

RECOMMENDATIONS

- Shift the focus from the assessment and assurance of provider education to the assessment and assurance of provider competency.
- Conduct a full inventory of providers and their educational credentials in all acute care hospitals especially those desiring to provide care to the injured patient.
- Conduct an inventory of available trauma educational offerings in the greater Clark County Region and publicize their availability to the general medical community.
- Establish benchmarks, based on national standards, for the percentage of providers in general acute care hospitals involved with trauma care who must have specialized trauma education.
- Set specific trauma system credentialing and educational requirements for physician extenders (e.g. nurse practitioners, physician assistants) who care for injured patient.
- Establish a performance improvement program which addresses provider specific clinical and process outcomes both at the hospital and system levels.
- Reexamine current policies and set specific trauma system credentialing and educational requirements for prehospital providers, physicians (including ED physicians, anesthesiologists, orthopedists, and neurosurgeons) and nurses with regard to trauma patients.
- Facilitate participation in multidisciplinary educational activities for all providers.

Prehospital Care

Emergency Medical Services Management Agency

Purpose

Each system should identify an agency that is ultimately responsible for prehospital care. The administration of this agency should include:

- *A medical director familiar with, experienced in, and currently involved in prehospital care*
- *A medical director whose qualifications are commensurate with his/her scope of responsibility in the EMS system*
- *Quality improvement education and monitoring functions performed by the medical director or designee*
- *Sufficient support staff, including a system administrator experienced in prehospital management*

Educational programs should include:

- *Trauma education integrated with the prehospital training program*
- *Continuing education tied to the quality improvement system*

Criteria evaluated by the agency should include:

- *Triage, patient delivery decisions, treatment, and transfer protocols integrated with the EMS and trauma system*
- *Ongoing quality improvement of triage/treatment/transfer criteria*
- *Policies, procedures, and/or regulations regarding on-line and off-line medical direction*

Certification to provide patient care by the agency should be based on standardized written and practical examinations given at regular intervals.

A system-wide quality improvement program should be established by the lead agency.

CURRENT STATUS

The lead Emergency Medical Services Agency is the Clark County Health District (CCHD) EMS Department. The authority for this activity is delegated to CCHD by the Nevada State Health Department as provided in Nevada Revised Statutes Chapter 450B, the NAC-EMS regulations, and local ordinances for Clark County. The administration of the CCHD occurs via the Chief Health Officer with a physician EMS medical director who performs administrative and medical oversight functions with the assistance of an EMS Manager. In addition, EMS Medical Direction and Quality Improvement activities are overseen by the Medical Advisory Board (MAB) and the Quality Improvement Directors Committee (QIDC).

EMS providers within Clark County include six first response agencies (Boulder City FD, Clark County FD, Henderson FD, Las Vegas FR, Mesquite FR, and North Las Vegas FD), three ground transport agencies (AMR Las Vegas, AMR Laughlin, and Southwest Ambulance), and one primary air medical provider (Mercy Air). In addition, four special purpose ambulance agencies and eleven volunteer agencies provide out-of-hospital care.

Standardized county-wide policies, procedures and processes which encompass 9-1-1 access, patient triage, hospital destination, treatment, transport, and inter-hospital transfer are developed based on national standards and revised via a complaint-based system. Off-line medical control, via standing-orders (written protocols) is permissive with well defined, albeit limited utilization of, on-line medical control.

The QIDC meets monthly and includes a representative from each provider agency. The focus of the meetings is on safety and compliance issues in the prehospital environment. The committee also reviews new protocols and establishes clinical performance measures. Quality of care activities typically occur in reactionary (complaint-based) process. It is unclear if key performance indicators are identified and tracked or if trends are identified with an eye towards proactive systems improvement. Chart review is not a routine part of the QIDC process but is part of special studies. Additionally, acute care facilities and the trauma center cite problems with the acquisition of EMS patient care information. There appears to be a disconnect in data transference and quality assurance activities.

Both private providers of ambulance service are accredited by the Commission on Accreditation of Ambulance Services. The air ambulance provider is Commission on Accreditation of Air Medical Services accredited. This is a best practice standard.

RECOMMENDATIONS

- Develop a comprehensive EMS plan that includes the prehospital response to trauma. The planning team should engage in multidisciplinary systems review (in concert with public health, acute care facilities, trauma center(s), rehabilitation services, and injury prevention efforts) to leverage the diverse expertise available within the local arena.

- Develop a comprehensive quality improvement plan that encompasses the continuum of care to include; 9-1-1 access, dispatch, pre-arrival instructions, triage, treatment, and transport aspects of care for the injured patients (beyond chart review).
- Identify key benchmarks/indicators for prehospital care which are concordant with systems-wide quality assurance initiatives. This would involve the establishment of common key indicators between prehospital and hospitals using standard benchmarking and evaluative processes. This collaborative activity would promote; 1) robust system improvements, 2) improved patient care, and 3) improved cooperation and understanding between healthcare personnel (EMS and hospital personnel).
- Develop linkages between prehospital and hospital databases so as to provide timely and accurate patient care information as well as providing a data base for EMS quality assurance.
- Develop collated, standardized reporting mechanisms to include data from both first responder and transporting agencies allowing the passage of comprehensive patient care data to personnel at the destination hospital.

Ambulance and Non-Transporting Medical Unit Guidelines

Purpose

Each system should establish guidelines for non-transporting medical units (for example, quick response units) and for ground and air transportation that consider regulations, medical control, geographic boundaries, and topography.

- *Personnel should, at a minimum, be trained and certified/licensed at the EMT-basic level and should have off-line medical direction. On-line medical direction should be available.*
- *Safe, reliable ambulance transportation, whether by ground, air, or water, is a critical component of an effective system. The type of transport should be matched to the system's topography and demography. Distribution of ambulances should facilitate appropriate and timely emergency response for the trauma patient.*
- *Standards, policies, or procedures governing hospital destination must be in place.*
- *Protocols concerning the mode of transport of the trauma patient (air or ground) should exist. The method of coordination between air and ground and procedures for rendezvous*

should be specified by protocol. These protocols should be carefully coordinated between the emergency medical services system and the trauma system.

- *Protocols should exist concerning the interface between transporting and non-transporting units.*
- *A process for ambulance certification/licensing and decertification must be in place to ensure that vehicles and services meet minimum standards, including the minimum equipment recommended by the American College of Surgeons and/or state lead agencies.*
- *Mutual aid agreements must be in place among emergency medical services providers to provide adequate ambulance coverage when resources within a system have been exhausted.*
- *There must be interagency agreements with public safety agencies (for example, police and fire) that address security and safety of the injury scene.*

Medical Non-Transporting Unit Guidelines

- *A process for medical non-transporting unit (for example, quick response units, rescue units providing a medical response, and so on) certification/licensing and decertification must be in place to ensure that vehicles and services meet minimum standards.*
- *Personnel should, as a minimum, be trained and certified/licensed at the first-responder level and should have off-line medical direction.*
- *Protocols should exist concerning the interface between transporting and non-transporting units.*
- *There should be a placement strategy for non-transporting medical units to ensure they are located in areas where ambulance response may be delayed.*
- *There should be written agreements between non-transporting and transporting units clarifying, among other things, when non-transporting unit personnel ride with transporting units.*

CURRENT STATUS

EMS regulations for both Northern Nevada (State EMS) and Clark County address the licensing requirements for ground and air ambulance transport units. State statutes only govern counties with populations of less than 400,000 population. Sections 800 through 1000 of the EMS

regulations for Clark County address the licensing requirements. There are no defined regulations for watercraft rescue in the Southern Nevada EMS region.

The staffing requirements for all levels of ambulances are defined in EMS Regulations Section 900.300. The minimum requirement for all ambulances is two attendants. Basic ambulances must have two attendants certified at the EMT-Basic level. If they are a Rural Volunteer Ambulance Service at a basic level they may be staffed with one ambulance driver and one attendant. An intermediate ambulance must be staffed with at least one EMT-I and one EMT-Basic. Rural Ambulance providers may be staffed with an ambulance driver and one EMT-I. An advanced ambulance must be staffed with 2 attendants, one of which is an EMT-P or an EMS RN. Critical care ambulances must be staffed with at least one critical care transport nurse who has met the requirements stipulated in Section 900.010 of the EMS Regulations and a second EMS RN or EMT-P.

The minimum level of staffing required for the transfer of major trauma patients is two paramedic level EMTs, unless the transferring physician deems it necessary to have a RN and or Respiratory Therapist. The requirements are defined in the “*Paramedic Protocols*” page 22, “Inter-Hospital Transfer of Patients by Ambulance.”

Specific policies and protocols delineate what procedures and medications a paramedic and an EMT-Intermediate may perform prior to contacting a Telemetry Physician or a Nurse Intermediary. These policies also specify which procedures and medications require a voice order prior to implementation. The majority of care is off line and driven by protocol.

While there are adequate vehicles for timely transport of patients to the appropriate facilities, a major impact on the resources for ambulance services is the lengthy delays incurred at the hospitals to off-load patients. The County has implemented “*EMSystem*” software to track real time hospital capacity/closures and ambulance wait time. This critical issue (hospital resources and ambulance off-load times) has been evaluated by prehospital agencies as well as hospital entities for a number of years. However a long-term solution has not been identified. The stakeholders have appeared to taken a position of tolerance and acceptance to excessive ambulance off-load times and back log of patients in the emergency departments. While the Facilities Advisory Board (FAB) has reviewed, and studied this issue for years, a workable solution to the long wait/off load times for ambulance within Clark /County remains a critical deficiency to system performance. The continuation of this situation leads to patient care inconsistent with national practice standards, and potentially creates problems with delayed diagnosis and treatment, patient satisfaction, efficiency of system management, liability, demoralized personnel, and excessive financial burden on prehospital service providers. It was reported that at least one private ambulance company spends in excess of \$500,000 per year providing staff to stand beside gurneys in the hallway of hospitals waiting to off-load patients. This extended off-load situation may also be an EMTALA violation.

Mutual aid agreements exist between all prehospital providers. An Automatic Aide System established for Clark County ensures that a satellite GPS system allows the closest unit to be dispatched to the scene.

RECOMMENDATIONS

- Establish performance improvement processes to resolve the inordinate delays experienced by EMS personnel in off-loading patients taken to acute care facilities and the Level I trauma center. This would encompass the following activities:
 - Measure current off load wait times,
 - Establish target benchmarks in accordance with nationally accepted standards, with an initial target of 20 minutes or less.
 - Develop hospital-wide procedures to bring local practice into alignment with national benchmarks, and reassess
- Standardize the use of an electronic patient care report for all prehospital providers and develop a single repository for this data which is readily accessible system-wide for the purpose of quality improvement and required state reporting.
- Form a new task group to replace the FAB's involvement in excessive ambulance wait times. The purpose of the new group would be to tackle and resolve the off-load wait times for ambulances. The new task group (made up of mostly ambulance providers) should study alternative destination and transport guidelines for ambulance providers considering such things as:
 - Transporting non-critical patients to urgent care, primary care or other locations where a physician is available to see and treat the patient.
 - Hiring physician extenders (Physician Assistant or Nurse Practitioner) to make house calls in lieu of long waits in the emergency department to off load patients.

Communications System

Purpose

Each system should develop a prehospital communications system that is fully integrated with the remainder of the EMS and emergency/disaster preparedness systems. Beginning with the universal systems access number, the communications network should provide for prioritized dispatch, postdispatch instructions, dispatch-to-ambulance communication, ambulance-to-ambulance communication, ambulance-to-hospital communication, and hospital-to-hospital communication to ensure adequate EMS system response and coordination.

- *Medical direction and dispatch should be coordinated.*
- *An EMS dispatch protocol should be utilized.*
- *A 9-1-1 or enhanced 9-1-1 systems should be in place and should receive all public calls that request EMS response to trauma patients.*
- *All dispatch centers, vehicles, aircraft, and base stations should be equipped with adequate communications systems. Equipment must ensure that there are minimal geographic areas where communications cannot be established and that at least 95% of communications attempts are successful.*
- *Priority dispatch and post dispatch instruction protocols should be in place.*
- *A quality improvement program should be in place.*

CURRENT STATUS

The EMS communication network includes a universal access number through the use of enhanced 9-1-1 (E9-1-1). There are a few telephone companies that do not subscribe to the enhanced service and cell phone users are not included in the universal access number. Clark County has implemented prioritized dispatch and pre-arrival emergency medical instructions. All dispatch centers use a prioritized system. State regulation requires all dispatchers to be Emergency Medical Dispatch (EMD) certified. Communication between dispatch and the ambulance is provided by the 800 MHz link for fire departments and by UHF for private ambulances. Similarly, ambulance to ambulance communication is provided by the 800 MHz for fire departments and by UHF for private ambulances. VHF provides ambulance to hospital communication, and within six months there will be hospital-to-hospital communication through

the use of the 800 MHz system. Aeromedical units are able to communicate with ground ambulances.

The current system does not allow for all prehospital and hospital personnel to communicate directly through radio or other mechanisms. However, there is a movement toward the development of a uniform communication system the backbone being the 800 MHz system which would allow for more efficient communication operations and integration.

Hospitals report that they are not always aware of the impending arrival of ambulances. The current hospital notification system requires emergency department personnel to monitor a video screen where a flashing display alerts personnel to an incoming patient. This current system does not appear to be adequate to ensure that emergency department personnel receive appropriate and timely notification.

RECOMMENDATIONS

- Devise a standardized hospital notification system (direct voice communication) which consistently apprises personnel in acute care or trauma facilities of an incoming patient so as to allow for timely and efficient pre-arrival notification and consequently the assembly of appropriate hospital resources for each patient.
- Incorporate communications redundancy so as to allow for continuous and uninterrupted conveyance of information for the purposes of 9-1-1 access, dispatch, pre-arrival instructions, ambulance to hospital, ambulance to ambulance, hospital to hospital and pre-arrival hospital notification.
- Institute a comprehensive quality assurance program for the 9-1-1 public safety access point (PSAP) and for call takers engaged in the provision of pre-arrival instructions.
- Continue to update and upgrade the EMS communication system to assure all EMS stakeholders the ability to communicate for routine and disaster emergencies

Emergency/Disaster Preparedness Plan

Purpose

Each system should develop a prehospital emergency/disaster preparedness plan that is fully integrated with the remainder of the EMS system, local government, private sector, and acute care facilities.

- *The system should have periodic educational exercises with post exercise review.*

CURRENT STATUS

The Local Emergency Planning Committee (LEPC) serves as the Clark County multi-jurisdictional group that facilitates all hazard emergency preparedness issues including SARA Title III, hazardous materials, and related public safety matters as determined appropriate by LEPC membership. In Clark County, the LEPC is comprised of approximately 40 agencies with representation including public health, acute care facilities, emergency medical services, fire/rescue services, law enforcement agencies, emergency planners, government services, elected officials, and business entities among others. The area-wide Mass Casualty Care Plan was last reviewed and updated in September 2003.

Periodic disaster drills are conducted in an effort to test and evaluate various aspects of the disaster response (mitigation, planning, preparedness, response, recovery). Post-exercise reviews are performed; however it is unclear if feedback loops are utilized to make improvements in the disaster plan. Periodic exercises (greater than once per year) are a relatively new operation for Clark County. During the most recent exercise not all hospitals or ambulance agencies participated.

Las Vegas is a designated MMRS (Metropolitan Medical Response System) city and as a result has received federal assistance in the area of training, equipment, and drills relative to preparedness for acts of terrorism. In addition, Las Vegas has been identified as an “area of interest” as the region contains a number of potential terrorist targets. Funding from a number of federal agencies (DOJ, HRSA, and CDC) have allowed the region to obtain “*EMSystems*”, a web-based program which tracks hospital capacity.

RECOMMENDATIONS

- Develop comprehensive emergency planning to address all phases of the disaster response, to include mitigation, planning, preparedness, response, and recovery. The plan should be developed in collaboration with other multidisciplinary groups including response plans which exist among acute care facilities, local business, and municipal entities, etc. The integration of the this Emergency preparedness plan with regional and state Trauma System Plans is essential.
- Perform a county wide hazard analysis in and effort to focus disaster preparedness resources and planning efforts.
- Optimize the use of public health surveillance methods and incorporate the utilization of new techniques (water and air filtering detection systems) to ensure a robust early warning system for monitoring the mass outbreak of infectious diseases.

- Conduct regular and routine exercises for mass casualty and disaster response including responses to acts of terrorism. A goal of one disaster exercise a quarter would not be unreasonable for a county the size of Clark County. Include explosions/blast injuries, not just bioterrorism, in these preparatory exercises.

Definitive Care Facilities

Trauma Care Facilities

Purpose

Injured patients should be delivered in a timely manner to the nearest appropriate facility. Regionalization of trauma care involves participation of hospitals that have the resources necessary to provide care for injured patients. A needs assessment study will provide an inventory of available resources, both human and physical, in the area to be regionalized. Trauma systems should be “inclusive” in nature, which means that the trauma care system will:

- *Address the needs of all injured patients requiring hospitalization for injury*
- *Utilize all qualified medical resources*

The trauma system plan should integrate all facilities into an inclusive system or network of definitive care facilities to provide a spectrum of care for all injured patients.

Trauma Centers

- *The trauma system lead agency should provide uniform standards for trauma centers (The criteria established by the American College of Surgeons Committee on Trauma and the Resources document are examples.)*
- *The trauma system lead agency should determine the optimal level and number of trauma centers, based on anticipated volume, available resources, and geography. This determination should be based on the needs assessment study. Reevaluation should be based on the quality management process plus volume and need.*

Other Trauma Care Facilities

- *The role and responsibility of other acute care facilities within the system should be defined and integrated in the evaluation process.*
- *The role and responsibility of specialty centers (pediatric, burn, spinal cord injury) should be defined and integrated in the evaluation process.*

Designation Process

- *Describe the process for selecting and designating trauma centers.*

- *Describe the process for monitoring all treatment.*
- *Describe process for re-designation and de-designation.*
- *Describe the process for adding other centers or deleting existing centers.*

CURRENT STATUS

The State of Nevada Administrative Code (NAC), under authority of Nevada Revised Statutes (NAS) 450.120 and 450.237 has established designation standards based on the American College of Surgeons (ACS) Optimal Care document. The major trauma patient has been defined in the NAC (450B.796): “Patient with a major trauma means a person who has sustained an acute injury which has 1) the potential of being fatal or producing a major disability and 2) a revised trauma score of less than 11 or an ISS > 15”. There is an established process for the designation, de-designation, and renewal of trauma centers (NRS 450B.120). While there is no specific language in the NAC allowing restriction of trauma centers, the Code states the following: That addition of centers to a system of providing treatment for trauma (NAC 450B.828) “*may be added on the basis of demonstrated change in need, including a change in population and the number of patients in the area being served*”.

The authority to designate trauma centers rests with the Nevada Department of Human Resources, Health Division, Bureau of Licensing and Certification. A designation process has been well established and requirements have been written for:

- Level I center (NAC 450B.838)
 - Pediatric Regional Resource Center (NAC 450B.845)
- Level II center (NAC 450B.852)
- Level III center (NAC 450B.866)
- Level IV center (NAC 450b.871)

Hospitals must submit an application to the Health Division in a form approved by the Division, and submit a request for verification made to the American College of Surgeons or another equivalent medical organization or agency approved by the Board. Provision is made for the survey process (NAC 450B.820) for the designation of trauma centers and pediatric regional resource center. Designation of a Level I, II, III, IV, and Pediatric Regional Resource Center requires current verification by the ACS or an equivalent medical organization or agency approved by the State Board of Health. Currently, Levels I and II require an ACS verification site visit, however at Level III and Level IV centers, the surveys may be done by members of the staff of the State Health Division. There are currently only two designated trauma centers in the State of Nevada: Washoe Level II – Reno, and UMC Level I – Las Vegas. UMC also serves as a Pediatric Regional Resource Center for trauma, and the sole designated trauma center for Clark County.

All acute care hospitals are required to provide at least a minimum data set on trauma patients. This requirement is based on NAC (NRS 450B.120 and 450B.238). The State provides clear definitions on patient types and data fields. These reports are to be submitted quarterly. The State

Health Division publishes an annual report by July 1 of the previous calendar year. However, review of these data reveal that there is less than full compliance by acute care facilities with this requirement, and therefore they do not provide an accurate picture of the extent of injury treatment within Clark County nor an accurate database for the whole county except for UMC.

The UMC trauma registry provides a summary of the number of trauma patients seen at UMC for years 1998 to 2003. Although this represents the vast majority of trauma patients in Clark County it does not account for those trauma patients seen and treated (without transfer to UMC) at other acute care facilities. UMC is one of four free-standing trauma centers in the United States and sees a large volume of trauma patients (3,089 admitted in 2003), and a high volume of more severely injured patients (902 patients with ISS >15 in 2003).

Clark County is relatively unique in its geographic isolation, large and growing population, and its dependence on a single Level I center (UMC) for the provision of virtually all its acute trauma care. Recently, there have been two additional acute care facilities who have expressed interest in becoming designated as trauma centers. Sunrise Hospital, located 3.6 miles from UMC, has hired a trauma medical director and nurse coordinator that are working to meet Level II criteria for ACS verification and designation by the State. In anticipation of an application for designation, Sunrise Hospital has completed an ACS verification consultative visit. The results of this consultative visit reflect the difficulties for the ACS in evaluating a center receiving an insufficient volume of major trauma patients, and suggests that complete ACS verification may not be possible in the absence of sufficient trauma volume. The second facility, Saint Rose/Dominican, is approaching eventual trauma center designation by capacity building and “gearing up” prior to applying for designation. They have been working with the Level I Trauma Center at UMC to determine the best course of action to become a designated Level III facility.

While it appeared that the anticipated addition of Level III facility located to the south in an area of large population spread and growth was generally supported by all the stakeholders. The proposed addition of a Level II facility in proximity to the existing Level I facility was considerably more controversial. This controversy was central to the purpose of this trauma systems consultation visit. There was a consensus among the system stakeholders that the current single-trauma center system is neither dysfunctional nor significantly overwhelmed, but that existing vulnerabilities and population growth warrant an expansion of trauma capacity. The key issue is: 1) whether or not to allow Sunrise Hospital the opportunity to develop as a Level II center, and 2) if so, how might this be accomplished given the regulatory conundrum that requires ACS verification, with presumably sufficient trauma volume, prior to designation? Some of the considerations in developing Level II capabilities at Sunrise Hospital are as follows:

POTENTIAL NEGATIVE IMPACT:

- Loss of some patient volume with possible adverse effects on finances and research at UMC.
- Potential loss of volumes-performance on UMC
- Potential for lower volumes-performance if certain very-high acuity patients are treated at a relatively lower volume Level II center.
- Additional system resource requirements (personnel and facilities), which may be less cost-effective

POTENTIAL POSITIVE IMPACT:

- Increased operating and surge capacity: resources, personnel, expertise
- Enhanced system resilience (redundancy)
- Enhanced service at upgraded center(s)
- Improved opportunities for system development (facilitates further development of trauma centers within the system)
- Improved distribution of system patients (inclusive system)
- Promotes system cohesiveness among acute care facilities (avoids exclusivity)

There is no system-wide quality improvement process. UMC does conduct an internal multidisciplinary quality improvement meeting for trauma case review (trauma deaths and adverse events). Attendance is mandatory for all UMC trauma surgeons. This meeting is not open to other physicians or surgeons within Clark County.

The prolonged off-load times described in previous sections of this report appear to affect all the acute care facilities and providers reported delays in access to hospital-based emergency medical care. Considerable time (>50%) on by-pass and diversion exists in the system. Both facilities (Sunrise & St. Rose Hospitals) that have expressed an interest in becoming trauma centers also experience prolonged off-load times for incoming ambulance patients. While the issue has been studied for years, a workable resolution has yet to be determined. A new diversion policy has been implemented but the impact of that policy on correcting the long-standing problem had not yet been determined.

The general level of commitment among the non-trauma center facilities in Clark County to provide routine trauma care to patients with more minor injuries is uncertain. The position that all acute care hospitals would be willing to participate in an inclusive system was articulated by the representative from the Facilities Advisory Board (representing all the acute care hospitals). Confirmation of this commitment is central to the creation of an “Inclusive Trauma System”. The assurance of optimal care commensurate with the needs of any given patient requires adherence to standards at all hospitals and transfer agreements between all acute care hospitals and the designated trauma centers. There does not appear to be consensus on whether most of the acute care hospitals, in the context of an inclusive system, would commit to providing basic care to the less severely injured patients who do not meet trauma triage criteria.

Inter-facility Transfer

Transfer agreements in the county are evident between UMC and other acute care facilities. In the absence of system performance improvement it is impossible to determine the effectiveness of such transfer in regards to the transfer of the injured patient.

Medical Rehabilitation

UMC has a rehabilitation hospital (Rancho Rehabilitation Center). The Director of Physical Medicine and Rehabilitation sees all trauma patients who require a rehabilitation consult early in their trauma center admission. This director organizes a rotation of community physiatrists through the trauma center. There are transfer agreements for rehabilitation patients, and there is follow-up for those patients who are admitted to the Rancho Rehabilitation Center. Follow-up is incomplete for those patients admitted to the other three rehabilitation centers, HealthSouth Rehabilitation Hospital, Las Vegas and Henderson, Sunrise Hospital and Medical Center Rehabilitation Unit.

Rehabilitation is not fully integrated into the definitive care facilities. However, within the UMC trauma center there are both in-house consultations as well as transfer agreements to rehabilitation centers upon discharge.

RECOMMENDATIONS

- Expand trauma care capacity in Clark County under the authority of the state and regional (county) lead trauma agencies. The need to expand is based on the anticipated continued high population growth, an vulnerabilities inherent in a single center trauma system. This expansion of trauma centers would serve to augment the capacity of the current single center model and includes considerations such as:
 1. Providing redundancy and surge capacity not available in the current single center arrangement.
 2. Providing capacity for the care of increasing numbers of major trauma patients which are predictable on the basis of the population growth
 3. Triage of less injured patients from UMC to community hospitals that are equipped, staffed and committed to managing less severely injured trauma patients. This would allow UMC to focus its resources and expertise on the most critically injured patients in the region.
 4. Providing the incentive to create an Inclusive Trauma System in Clark County and possibly extend this plan to the entire state.
- Complete the following tasks before trauma capacity is expanded OR any trauma center(s) are added to the system:
 - Conduct a specific needs assessment, including categorization of each hospital's capacity, capability and durable commitment to care for the injured patient.
 - Create a trauma system plan that includes consideration of resources, geographic, population, and demographic characteristics, etc. following the guidance from the 1992 Model Trauma System Care Plan.
 - Fix the emergency department overcrowding, diversion and offloading challenges ensuring no EMTALA violations exist.
 - Clearly delineate a process (formulated under a contractual relationship with the lead agency) for providing a waiver for the monitored (or provisional) designation of a Clark County hospital as a trauma center. This 'alternative pathway' to full trauma center designation should be incorporated into the Trauma System Plan.

- Develop a formal written agreement between the lead agency and the trauma center that articulates the roles and responsibilities of the trauma center to perform in this system as a designated trauma center.
 - Explore a possible mechanism whereby there can be trauma center proctoring by medical and ancillary staff from UMC.
 - Ensure an absolute commitment by any additional centers for contributing to the trauma database and to fully participate in a system wide quality improvement process a medical audit type committee regular review.
- Work with the State to extend the independent external verification process to include all trauma facilities.
 - Work with the State to investigate possible EMTALA violations in acute care hospitals who do not provide a prompt screening exam of patients brought to the emergency department by ambulance personnel.

Inter-facility Transfer

Purpose

Central to the concept of an inclusive trauma system is the provision for appropriate and expeditious transfer, when necessary, of injured patients between acute care facilities. The decision to transfer a trauma patient should be based on objectively agreed upon criteria that pertain to transfers to both higher and, where appropriate, lower levels of care. Established transfer criteria will minimize discussions about individual patient transfers and ensure optimal patient care. It is essential that the transfer agreements include provisions required under the Consolidated Omnibus Reconciliation Act (COBRA) and subsequent revisions of the Act.

Interfacility transfer is particularly important in the following situations:

- *Linkage between the urban and rural components of a trauma system*
- *Patients requiring specialty facilities, such as pediatrics, burns, and spinal cord injury, or the need for further rehabilitation*
- *Movement of patients between acute care facilities and trauma centers*
- *Appropriate transfer of patients between trauma facilities*

- *Movement of patients from trauma facilities back to local communities when appropriate*

The process of transferring injured patients from acute to rehabilitation care facilities will be facilitated by establishing written transfer agreements between acute and rehabilitation care facilities in the system. The decision to transfer spinal cord injury (SCI) and traumatic brain injury (TBI) (severe/ moderate TBI) patients to rehabilitation facilities that provide specialized programs in SCI and TBI should be based on objectively agreed upon criteria.

Inherent in the transfer of any trauma patient is feedback from the receiving to the transferring facility.

- *The trauma system should ensure that interfacility transfers occur in a timely fashion commensurate with patients= clinical needs*
- *The trauma system should establish standards for the mode of transportation and qualifications of transport personnel*
- *The trauma system should have a model transfer agreement*
- *The trauma system should ensure that all interfacility transfers are based on patient needs and are in the best interest of the patient*
- *Trauma centers should have transfer agreements with rehabilitation centers that provide specialized programs in SCI and TBI*
- *Trauma centers should have transfer agreements with rehabilitation centers that provide inpatient and intensive outpatient rehabilitation for patients with diagnoses other than SCI or severe/moderate TBI, such as mild TBI, amputations, burns, or other major injuries deemed appropriate for rehabilitation*
- *The trauma system should be cognizant of the cost issues and ensure the most cost-effective strategies that are consistent with optimal care*
- *A process (CQI) to measure patient outcome as it relates to transfer should be in place.*

CURRENT STATUS

See above

RECOMMENDATIONS

See above

Medical Rehabilitation

Purpose

As an integral component of the trauma system, rehabilitation centers provide coordinated post-acute care for trauma patients who have sustained catastrophic injuries, resulting in permanent or long-standing impairments.

The trauma system should demonstrate strong linkages and transfer agreements between designated trauma centers and rehabilitation centers located in its geographic region (in or out of state).

- *The trauma system should convene a joint liaison committee to be comprised of appropriate health professionals from designated trauma centers and rehabilitation centers (for example, trauma surgeon, physician with expertise in rehabilitation, physical therapist, occupational therapist, nurse case manager, hospital administrator, and so on).*
- *Input from payors should be sought.*
- *The trauma system should ensure that the rehabilitation process begins in the acute care facility as soon as possible.*
- *To maintain clinical expertise and skills, each rehabilitation center that provides specialized programs in SCI and TBI should have a critical mass of patient volume in SCI and TBI.*
- *Each rehabilitation center that provides a specialized program in TBI should have an appropriately qualified Medical Director for TBI. It is recommended that the Medical Director of the TBI Program meet all of the following requirements: (a) have two years of experience in brain injury rehabilitation and/or completed a fellowship in brain injury, and (b) have board certification in a specialty field of medicine.*
- *Each rehabilitation center that provides inpatient and intensive outpatient rehabilitation for trauma patients should have an appropriately qualified Medical Director for Rehabilitation. It is recommended that the Medical Director of Rehabilitation meet the following requirements: (a) have two years of experience in rehabilitation and/or completed a fellowship in a rehabilitation specialty, and (b) have board certification in a specialty field of medicine.*
- *The trauma system should encourage clinical pathways for the major traumatic diagnoses that affect patients' rehabilitation outcomes.*

- *The trauma system should identify and collect, at appropriate times, the necessary data elements for analyzing patient outcomes and evaluating the effectiveness of the trauma system. Data to be collected may include:*
 - *New injury admissions per year of SCI, TBI, and dual-diagnosis patients to each rehabilitation center*
 - *Indicators of patient severity, including complications (for example, ASIA classification system for SCI, Glasgow coma scale for TBI)*
 - *Time between acute care and initiation of rehabilitation*
 - *Acute care length of stay*
 - *Length of stay at rehabilitation center*
 - *Functional independence measure (FIM) score*
 - *Facility or location to which patient was discharged*
 - *Type of outpatient rehabilitation care received (for example, hospital-based, home, nursing home).*

- *The trauma system should have data exchange procedures that will provide feedback (for example, patient outcomes, effectiveness of delivery system, and so on) to the trauma, acute care, and rehabilitation care providers.*

- *The trauma system should conduct long-term outcome research in rehabilitation of trauma patients and provide for appropriate dissemination of research results.*

CURRENT STATUS

See above

RECOMMENDATIONS

See above

Information Systems

Purpose

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. Policies and procedures to facilitate and encourage injury surveillance and trauma care research should be developed, including:

- *System-wide plan for collection and collation of trauma care data and cost data should be encouraged*
- *Definition of minimum data sets*
- *Well-defined roles and responsibilities for agencies and institutions regarding data collection*
- *Process to evaluate the quality, timeliness, and completeness of data*
- *Process to ensure appropriate patient and provider confidentiality*
- *Data acquisition from all the appropriate sources. These can include:*
 1. *Law enforcement, crash, and incident reports*
 2. *Prehospital care reports \ run sheets*
 3. *Emergency department data*
 4. *Trauma registry*
 5. *Hospital discharge data, including rehabilitation and specialty care facility*
 6. *Medical examiner/coroner records*
 7. *Death certificates*
 8. *Payor records*

CURRENT STATUS

Trauma information is collected from two primary sources: prehospital data and trauma registry data. Compliance by providers in the State appears to be inconsistent. The data that is received by the State are not linked nor is there evidence that the information provided is consistent or accurate. There does not appear to be a state or local information plan.

Clark County Health District in cooperation with the Nevada State Health Division has adopted standards for prehospital data collection (NRS 450B.810, NAC 450B.620, NAC 450B.645, NAC 450B.766). Software for collecting and storing prehospital run reports has been made available to Nevada EMS / fire agencies. However, not every agency is required to utilize the provided software. Additionally, requirements are in place that define common data elements. These common data elements must be capable of being uploaded into the provided web-based server. Some public and private EMS agencies have not adopted the state software system. However, attempts are underway to allow for the uploading of information from these disparate data sources through the web-based collection portal. While the provide ambulance providers currently maintain paper patient care records, the fire providers maintain electronic databases. The prehospital data are not currently being linked to any hospital / trauma registry data. Information provided to the ACS team suggests that UMC and other hospitals may deterministically link some data.

In Southern Nevada, there are two separate trauma registries – Nevada State Health Division registry and the registry of the UMC Level I Trauma Center. Separately maintained, the State registry is monitored by the Center for Health Data and Research, while UMC's trauma registry is monitored by the staff trauma registrar. Data captured by UMC (trauma center mandate) surpasses Nevada State Health Division requirements. While all hospitals are required by NAC (NRS 45B.120 and 45B.238) to submit data to the State on trauma patients, hospitals in Southern Nevada, with the exception of UMC, are not consistently compliant. Some hospitals fail to comply, alleging insufficient staff for data collection and submission. Additionally, some hospitals find the criteria for data entry into the trauma registry to be unclear. Data received by the Nevada State Health Division, although incomplete, is reported annually. This information includes payor data captured through the trauma registry. Additionally, the State mandates that all hospitals submit the Uniform Billing 92 Hospital Discharge data set, which includes information regarding payors.

Emergency department information is reported on a voluntary basis, while trauma care information is mandated by state regulation. Materials submitted to the ACS team suggested that these data are incomplete due to the fact that some hospitals do not comply with the trauma requirements or the voluntary emergency department reporting. Discussions are underway concerning the development of an electronic system for the reporting of emergency department visits.

A database exists from information obtained through police reports. This information is captured from motor vehicle crashes that occur on roads and highways throughout Nevada. Data are also available from the Nevada coroner system; this includes demographic information, toxicology reports, and data contained on death certificates. The Nevada Office of Vital Statistics maintains and publishes reports from the death certificate database.

While there is no central database for rehabilitation data, UMC does maintain databases on rehabilitation as well as burns.

It does not appear that compliance with existing data reporting statutes and regulations have been verified or validated. NRS 629.061 provides for confidentiality and protection of records held in the state's trauma registry.

RECOMMENDATIONS

- Assist the NDH to develop a statewide plan for the collection, analysis and reporting of injury data, including trauma register, emergency department, prehospital, law enforcement and others that are linked, timely and accurate.
- Support the state's exercise of its authority to verify and validate all data, including ICD-9 CM E-codes as outlined in all statutes and regulations, e.g. trauma register, emergency department data collection and UB 92. In cooperation with appropriate state agencies and officials establish a method to maintain the accuracy, completeness, timeliness and quality of the data submitted.
- Establish methods for linking data by deterministic or probabilistic methods, including the development of common data dictionaries.
- Map inclusionary criteria for the statewide trauma registry with field triage criteria and the trauma team activation criteria. Establish a mechanism whereby prehospital data can be linked electronically with the Trauma registry information.
- Develop a streamlined set of data for the trauma registry for Level III, Level IV and other acute and post-acute care hospitals.

Evaluation

Purpose

The trauma care system should monitor its own performance and the performance of its components. This evaluation should include continual reassessment of system operations and goals as they relate to patient needs, availability of appropriate resources, and costs. It is essential to measure compliance to standards, document system effectiveness, and identify quality improvement opportunities. System evaluation should include:

- *System-wide quality management plan*
- *Lead agency responsible for system quality management plan*
- *Monitoring of system performance and performance of individual components*
- *A periodic review and update of system standards as they relate to patient needs, system resources, and costs*
- *Periodic review and update of trauma facility standards*
- *A quality improvement process that assesses the effectiveness of the trauma system*
- *A quality improvement process that measures the compliance to standards by each agency and institution*
- *A process to ensure patient and provider confidentiality*
- *A process to require and ensure appropriate facility quality management programs and appropriate interaction between facility quality management programs*
- *A process to determine the changes and incentives (risks and benefits) in caring for trauma patients*

CURRENT STATUS

Under Nevada Revised Statutes (NRS 450B, et seq), the responsibility for establishing a trauma program for the treatment of trauma and designation of trauma centers rests with the State Board of Health. This includes the oversight of this process for trauma center application; the State Health Division performs designation and monitoring. The State EMS Section, with the exception of Clark County, is authorized by NRS 450B to establish and enforce standards for the overall provision of quality for hospital emergency medical care, operation of ambulance services, certification of EMS personnel, licensure of attendants and the delivery of trauma care. Under state statute (NRS 450B.077) Clark County Health District is delegated to monitor and enforcement of the EMS personnel and supervises prehospital clinical care.

A Quality Improvement Committee that reports to the Medical Advisory Board (MAB) of the Clark County Health District, meet to review prehospital-related issues. There is no centralized submission of data that would promote a formal quality improvement process with loop closure.

Currently in Clark County, there is no specific system-wide quality improvement plan to evaluate the trauma system (one center, acute care facilities that transfer patients and the prehospital providers). The only process currently in place is the external review of University Medical Center by the ACS/COT, for reverification as a Level I trauma center. UMC performs weekly QI committee meetings that review deaths and other complications of care. If an EMS issue is identified, it is forwarded to MAB, for review and resolution. UMC's trauma medical director is a member of MAB. There is little feedback to the prehospital providers on quality issues discussed in weekly meetings..

There are no standardized audit filters to assist in identifying systems issues in an objective manner. There is no formal process for feedback to the acute care hospitals from the trauma center.

Although it is mandatory (NRS 45B.120 and 45B.238) for all trauma receiving hospitals to participate in the trauma data collection program, it is inconsistent in its usage and has very limited oversight for compliance or data validation. At this time, the state trauma registry does not appear to be an effective means for evaluating the trauma system.

RECOMMENDATIONS

- Establish a collegial trauma medical audit/review committee between the Level I University Medical Center and future trauma center representatives (and other interested physician specialists) to afford an opportunity to initiate a trauma systems review process.
- Encourage and strongly support a state initiative to transfer oversight responsibility of the State Trauma Registry to the EMS Section of the Bureau of Licensing Certification, Health Division, to enable further integration of the EMS and trauma system.

Compliance of mandated trauma data collection by all acute care hospitals should be upheld.

- Establish the position of trauma registrar with the assistance of a part-time epidemiologist for data collection and analysis within Clark County Health District.
- Define and clearly articulate within the State and local trauma system plan the role and responsibility of a trauma medical audit/review committee.
- Promote at the state level appropriate protections for quality improvement activities as part of new comprehensive trauma system legislation.
- Develop key clinical and system indicators (benchmarks) for designated trauma centers, acute and post acute care facilities and prehospital agencies to monitor system performance.

Research

Purpose

The system should facilitate and encourage trauma-related research. The system should facilitate epidemiological research in pre-hospital care, acute care, rehabilitation, and prevention.

- *There should be a process to facilitate access to data for trauma-related research, including, but not limited to:*
 - a. *Cost-effective research*
 - b. *Outcomes research*
 - c. *Epidemiology*
 - d. *Injury control research*
 - e. *Quality-of-life research*
- *There should be a process to acquire funding for research.*
- *There should be a definition of the research requirements from each system component and for each type of facility.*

CURRENT STATUS

As yet, there is no established program for coordinated, system-wide trauma research in Clark County. There are a number of trauma-related research activities currently underway within the “system”, but most of this research is conducted in conjunction with the University Medical Center. In addition to individual research projects conducted by the faculty at UMC, several research projects are run through the Trauma Institute (TI) of the Department of Surgery at UMC. This organization is directed by Dr. Tom Shires and conducts studies on the cellular response to injury as well as administrators a series of contracts and grants including HRSA/NHTSA projects, Trauma grant, EMS-Children, and to investigate suicide deaths in the region. The TI has been able to procure private funding for their research as well as for their injury prevention projects. Outside of UMC and the Trauma Institute, there are additional research projects conducted through individual institutional injury prevention programs and as part of the EMS and Emergency Medicine programs.

A number of opportunities to develop system-wide research capacity are anticipated, including the development of a Public Health College at UNLV, and the existence of a statewide trauma registry with capture of UMC data and that from Washoe Medical Center in Reno. The state trauma registry, managed by Dr. Wei Yang, appears to be easily accessible to trauma system investigators, and Dr. Yang appears to be capable of providing related statistical support for system investigators. The extent to which the State Trauma Registry has been utilized to assess

statewide process or system variables however, appears to be very limited. Further, while compliance is mandatory for all hospitals, the state has not exercised its enforcement of this mandate and therefore few hospitals in Clark County actually contribute to the registry database. In addition to studies conducted using the state trauma registry, there may be a unique opportunity to undertake a population-based study of trauma volume and severity provided the state can obtain complete and accurate registry information from all hospitals.

RECOMMENDATIONS

- Develop system-wide research capacity in conjunction with development of the trauma plan, and system performance improvement processes.
- Seek compliance with submission of trauma registry data by all Clark County hospitals and utilize this expanded injury data set to identify injury-related problems. Link this information to the development of system-wide research projects.
- Explore a research partnership with University, particularly as they develop a School/College of Public Health.
- Integrate any additional system trauma centers that may develop into a system-wide research program.
- Investigate the potential for developing population-based indices of injury type & severity based from trauma registry data in the Clark County area, including those of special populations.
- Undertake a preliminary analysis of statewide trauma data for purposes of benchmarking and the assessment of trauma system processes (see Appendix D for suggested data tables).
- Relocate administrative responsibility for the HRSA Trauma-EMS grant under the aegis of the State EMS Agency as the Trauma System lead agency.

Focused Questions

Questions 1-3

1. Is there a need to develop a comprehensive regional trauma system for Clark County and the surrounding region?
2. What would the components be for that system and what is their current status as they relate to national standards for trauma system?
3. What entity should be the lead for establishing such a system and what steps should be taken to accomplish this system development?

Surveyor Response:

There is a clear need to develop a comprehensive regional trauma system in Clark County and the surrounding area. There are three compelling reasons why the greater Clark County region should commence with establishing a comprehensive and inclusive trauma system are:

- A. Population growth throughout the region exceeds that of the rest of the state. While the resident population has experience tremendous growth the number of visitors each year to the region is also exploding.
- B. The resident population, while clustered in the central city region of Las Vegas, is expanding in all directions but predominately to the north and south. The significant resident and visitor growth is not accommodated under the current one trauma center system.
- C. Injury represents the leading cause of death in ages 1-44. The rate of unintentional injury along with the high incidence of suicides and homicides provides a clear mandate toward comprehensive trauma system development in the region. This trauma system should be the foundation of an inclusive injury prevention and control system focused on decreasing the number of intentional and unintentional injuries in this region with a significant reduction in injury morbidity and mortality.

The medical and health science literature has many references to the efficacy, effectiveness and community health improvements realized because of the development of a comprehensive trauma system. The components of such systems are also well described in the literature including the HRSA 1992 Model Trauma Care Plan, 2001 NHTSA Trauma Systems Agenda for the Future, and the 1996 ACS Trauma System Consultation program. A program that might benefit the Clark County region in better understanding of the need and efficacy of developing a comprehensive trauma system is the NHTSA Development of Trauma Systems: A State and Community Guide course. This one day course provides a framework from which to begin the development of the comprehensive system.

The EMS Section of the Bureau of Licensing within the Division of Health should be responsible for the oversight and regulation of the trauma care system for the entire State of Nevada. They should contract operational authority to the Clark County Health District for management,

oversight, development and implementation of a comprehensive trauma system. However, it should be noted that there did not yet appear to be an entity or group, within Clark County, that was ready, willing or able to assume operational leadership, (and “ownership”) of the process necessary for regional trauma system development and implementation. Furthermore, although there is clearly an interest, there seemed to be a limited understanding of what a trauma system entails, how it should operate, and what benefit it would have to the residents and visitors among the stakeholders present during the team interviews.

What is needed to develop a truly effective comprehensive and inclusive trauma system are system advocates that serve as system leaders, build consensus, and can help develop sound public health policy on injury, trauma systems, and trauma as **a major public health priority** throughout all levels of government.

Questions 4-5

4. Should the number of trauma centers be expanded and if so on what basis?
5. If there is an expansion, what levels of trauma care expansion should be encouraged (e.g. Levels I, II, III, IV) and where ideally, from a geographical standpoint, should the expansion occur?

Surveyor Response:

The number of trauma centers in Clark County should be expanded. The basis for this expansion has been outlined previously in the survey report and includes population growth and spread, associated increases in transport times, and the multiple vulnerabilities associated with a single center trauma system in an area quite geographically isolated from any trauma centers in close proximity.

This necessary expansion in trauma acute care facilities, however, should only occur in the context of an inclusive trauma care system. The expansion process for adding trauma centers to the existing system should involve a lead agency with authority and responsibility to manage the trauma system in a plan that includes all the components of an inclusive system (see *HRSA 1992 Model Trauma Care System Plan*).

Commitment, both financial and philosophical, is the most important element in the development of trauma centers. In the absence of being able to provide and sustain substantive financial incentives for participation as a trauma center, government agencies rely on individual institutional commitment typically derived from financial or marketing incentives. In the case of University affiliated centers, incentives may also be financial, related to academic goals, or inherent to the mission of a publicly supported institutions. If sufficient financial incentives can be provided in Clark County against a background of general and strong philosophical commitment to provide trauma care, then some degree of “choice” in the strategic placement of trauma centers could exist. In such an environment, the development of a Level II center in the southern area of population growth (Henderson) coupled with the eventual development of a

Level III facility to the north would likely be sufficient to meet Clark County trauma needs for a number of years. It appears, however, the degree of “choice” in this matter is considerably more limited.

Of the 11 non-trauma centers hospitals in Clark County, institutional interest and apparent commitment in developing trauma center capabilities currently exists at only two centers: Sunrise Hospital, Level II (central region) and St. Rose Hospital, Level III (southern region). Need, resources, leadership and a durable commitment must drive the expansion of centers beyond the existing Level I trauma center. In this context, optimal geographical location should be subordinated to commitment, resources, and overall system needs in regards to trauma center location.

Question 6

6. What would the impact of expansion and trauma system development be on the current Level I trauma center at University Medical Center?

Surveyor Response:

While the precise impact of trauma center expansion on the single existing Level I facility can not be determined, the short term effects of trauma center expansion would involve a diversion of trauma patients from UMC. The magnitude in terms of volume and severity of injury that this diversion would engender would depend on a variety of factors including delineated trauma center catchment areas, the payer mix for the diverted patients, the injury severity of the injured patients, and the capacity and capabilities of new trauma centers added to the system.

The potential positive and negative impacts on the addition of trauma centers to the Clark County system were listed in the section on Definitive Care Facilities in the main body of the survey. The economic loss to UMC would depend on the payor mix for diverted patients, and the marginal costs to UMC accrued in caring for this additional cohort. Precise determination of this economic impact will require a detailed and independently verified analysis of relevant UMC financial data, not available to the ACS survey team. It should be noted, however, that any short-term financial impacts may be offset over time as the population growth continues. Given that UMC has seen an average 9.2% increase in trauma patients from 2000 to 2002, the diversion of 600-700 of these patients to other trauma centers would simply roll back UMC trauma volume to year 2000 levels.

The impact of high ISS (>15) volume loss to UMC in terms of diminished volumes-performance is an additional consideration. Based on recent data, it appears that volumes-performance is important for only a subset of the most critically injured patients, and occurs at relatively high levels of volume, exceeding 650 (high ISS) patients/year. If a cohort of patients with high ISS and at a volume approximating the average for Level II centers in the United States (160-170) was diverted from UMC, it would have little or no effect on volumes performance based on these numbers.

Other potential adverse effects of the diversion of high ISS patients from UMC include the loss of these patients to research projects (research not required at Level II and Level III centers), and the expected lower volumes-performance for a critical subset (coma, shock) of patients transported to a <650/year Level II center. In order to minimize these effects, it may be necessary to develop more stratified field triage protocols that direct a limited cohort of the most critically injured patients to the existing Level I center.

It will be important in developing the Trauma System Plan to provide mechanisms for evaluating the impact (both negative and positive) on additional and existing definitive care facilities given the rapid growth in the area.

Question 7

7. What steps should be taken to improve the system effectiveness as it relates to the Level I trauma center at University Medical Center and its roles, duties and capabilities?

Surveyor Response:

The leadership, currently constrained to the activities of a single trauma center, should be expanded to support the lead agency in the development of the system in issues of performance improvement, research, outreach, teaching, etc. Clark County has experts in trauma center management and trauma system development within the Level I facility and elsewhere. That expertise should be sought and acknowledged as it relates to the components of building a model trauma system in Clark County.

Question 8

8. Are there improvements needed in any of the existing system capabilities such as triage, trauma registry, quality improvement initiatives, prevention, and training and continuing education? Which of these components are considered essential versus desirable?

Surveyor Response:

Yes. Improvements are needed across all system elements. These improvements can be prioritized and can be addressed incrementally. Initial focus should be on issues that are necessary for quality improvement and systems performance. The PI process should guide activities in terms of subsequent trauma system activities.

ALL components of the trauma system are important. Quality of care should drive the system and that quality is dependant on a well functioning EMS system including dispatch, response and

transportation. Also essential are a well functioning acute care facilities and a trauma center system. At the current time given the back log of EMS providers in emergency departments of acute care facilities, Clark County has neither a well functioning EMS system nor a well functioning hospital emergency medicine system.

Further, a goal of the system should be a reduction in morbidity and mortality and a significant reduction in injuries given an effective injury control and prevention system. Any and all of these components are essential to the development of the comprehensive trauma system for Clark County.

Question 9

9. Is there a role for “provisional” designation of a new trauma center to achieve trauma volume history and what level of ACS verification should be achieved to permit the provisional designation?

Surveyor Response:

The current requirements in Clark County for trauma center designation at the Level I, II levels involve ACS (or equivalent) verification of capabilities, processes, and quality of care commensurate with national standards. It will be difficult if not impossible to verify processes and quality of care in the absence of a significant trauma patient volume, and trauma patient volume cannot be accrued in Clark County hospitals in the absence of designation (and verification). A “Catch 22” exists which effectively prevents the addition of trauma centers to the existing single-center Clark County system. To overcome this problem, either the relaxation of existing regulatory requirements for trauma centers, or the development of a ‘alternative pathway’ for trauma center designation will be necessary. It would be inadvisable to reduce or relax current regulatory requirements for external verification applicable to all trauma centers. An ‘alternative pathway’ to trauma center designation could be developed which would permit an institution to admit trauma patients and accrue demonstrable trauma experience in a monitored environment prior to full ACS verification. Such as process would overcome the “Catch 22” and ensure public safety. An alternative pathway would involve a temporary and conditional waiver of the usual requirements for trauma center designation, the term “provisional” might be applied to this type of designation.

The system planners, in an effort to ensure optimal patient care, should employ a graduated process as a method of gaining trauma experience and demonstrating institutional competence. This approach will allow facilities to demonstrate commitment, capability and capacity across the trauma center level continuum. These incremental steps should be well defined in an Memorandum of Understanding between the lead agency (state or county) and the individual facility. The steps involved in an ‘alternative pathway’ to Level II or Level III trauma center designation might involve the following:

1. Verification, through a formal ACS Consultative visit, of all non-volume dependent criteria normally required for full verification. Specific non-volume dependent criteria would be recommended by the COT Trauma Verification Committee and presumably include all relevant aspects of facilities, personnel, education, policies, trauma service organization, prehospital involvement, and demonstrated institutional commitment.
2. Once partial ACS verification was completed, an institution would be eligible for provisional designation for a period of time limited to 12 months or less during which full ACS verification would be achieved.
3. Participation in a regular monthly Medical Trauma Audit type committee (led by the Level I trauma center medical director or other physician leadership) process where all care is reviewed, discussed and major teaching opportunities are expressed and brought back to the general surgical physician population.
4. During the period of provisional designation, structured external monitoring of trauma outcomes, on at least a quarterly basis, would be performed. This could be done in conjunction with a Medical/Trauma Audit Committee as described above. This monitoring should include a process for chart review based on established audit filters, and a review of the trauma performance improvement activities.
5. Successful completion of full ACS verification at the designated level by the . correction of criteria deficiencies.
6. Formal and full designation by the State as a trauma center at the verified level.

Question 10

10. If your recommendations include adding trauma system components not currently authorized by State law, should these components be held until the state law is adopted or implemented on a voluntary basis until the State law is adopted?

Surveyor Response:

There are limitations in the current trauma statute. However, improvements in the system can and should continue as these statutory and regulatory deficiencies are being addressed. As the trauma system planning process begins and the various components are identified, they should be checked against existing statute and regulation. This should be done with an eye toward the development of broader enabling piece of legislation in the future. Clark County has authority

now to improve and enhance it's EMS system and the state has authority to improve it's compliance with current statutes and regulations (data collection, EMTALA). While improvements are being made in these areas, the system should evolve on a voluntary basis. Esposito, et al, has demonstrated the efficacy of such a voluntary effort. (1)

Question 11

11. If local hospitals are willing to fund system monitoring (e.g. governance structure) and trauma system component costs (e.g. prevention, quality improvement, EMS education) costs on a voluntary basis, should this be encouraged?

Surveyor Response:

No. Such a system could be perceived as self-serving and leads to potential, perceived or real conflicts in management and oversight. However, other sources of funding should be identified and solicited. There are foundations, government and non-government grants, and certainly entertainment industry opportunities that should be explored. Ideally the State legislature should, through its enabling legislation, define a steady source of reliable funding to support the trauma system. This imperative is especially true in Clark County where the Public Health need is so clear. Remember, trauma represents the leading cause of death for persons between 1-44.

1. Esposito, T.J., Sanddal, T.L., Reynolds, S.A., and Sanddal, N.D. (2003) Effect of a Voluntary Trauma System on Preventable Death and Inappropriate Care in a Rural State. *J. Trauma* 54 (4) 663-670

Appendix A: Site Visit Team – Biographical Sketches

ROBERT C. MACKERSIE, M.D., F.A.C.S.

Dr. Mackersie is the Director of Trauma Services and Acting Chief of Surgery at San Francisco General, a Professor of Surgery at the University of California, and the Chair of the American College of Surgeons Committee on Trauma Systems Consultation. He is an actively practicing trauma and general surgeon with an interest in surgical critical care and post-traumatic inflammatory lung injury.

Dr. Mackersie received his undergraduate degree in Mechanical Engineering from the University of California, Berkeley; his medical degree from Michigan State University, and completed his residency in General surgery at the University of California San Francisco, including a two year NIH sponsored lab fellowship.

He previously served on the faculty of the University of California, San Diego. Dr. Mackersie lectures extensively in the United States as well as internationally in Canada, Australia, Brazil, Argentina. He has had a long involvement in the educational aspects of trauma, and has supervised fellowship programs in trauma, critical care, and violence prevention. He regularly serves as a surveyor for the ACS-COT Trauma Verification & Review Committee and recently assumed chairmanship of the Trauma System Consultation Committee for the American College of Surgeons.

Dr. Mackersie has authored or co-authored over 100 publications, mostly on trauma-related topics. He has had a long involvement in academic and professional aspects of trauma and surgical care, including:

1. Governor, American College of Surgeons
2. Chairman, COT Committee on Education, American College of Surgeons
3. Chairman San Francisco Trauma Systems Audit Committee
4. Chairman, Publications Committee, Western Trauma Association
5. Board of Managers, Western Trauma Association
6. Secretary/Treasurer, HC Naffziger Surgical Society - UCSF
7. Chief of Staff, San Francisco General Hospital
8. President, Northern California Chapter, American College of Surgeons
9. Member, Committee on Trauma Executive Committee, ACS

Professional & Academic societies including: American Association for the Surgery of Trauma, Western Trauma Association, Society of Critical Care Medicine, Society of University Surgeons, Pacific Coast Surgical Association, Southwestern Surgical Association, and others.

BRENT EASTMAN, M.D., F.A.C.S.

Dr. Eastman is currently the Chief Medical Officer of Scripps Health and N. Paul Whittier Chair of Trauma (Endowment – 1991 –Present) Clinical Professor of Surgery, UCSD. He previously served as the Medical Director of Trauma Services at Scripps Memorial Hospital, La Jolla from 1984 – 2002. He has recently been appointed to the American College of Surgeons Board of Regents. He is also a Clinical Professor of Surgery & Trauma - UCSD (1994 to present), Adjunct Professor for the National Resource on Aging & Injury – SDSU, and a principal investigator for the San Diego (Crash Injury Research Engineering Network) CIREN Project. Dr. Eastman served as Chairman of the Committee on Trauma for the American College of Surgeons from 1990 to 1994. This organization sets the standards for trauma care in the United

States and abroad. This position has led to his involvement nationally and internationally in the development of trauma systems. These have included: United States, Canada, England, Ireland, Australia, Brazil, Argentina, Mexico and South Africa. He currently chairs the Trauma System Consultation Committee for the American College of Surgeons.

Dr. Eastman received his medical degree from the University of California San Francisco where he also did his general surgical residency and served as Chief Surgical Resident from 1971 to 1972. He spent one year abroad doing surgical training in England from 1969 to 1970.

Dr. Eastman has authored or co-authored more than 25 publications principally relating to trauma.

Dr. Eastman has held numerous appointments and chairmanships over the last two decades, among them are:

Board Member, American College of Surgeons - Board of Regents.

Chairman, Committee on Trauma, American College of Surgeons.

Chairman, Medical Audit Committee, San Diego County Trauma System.

Chairman, Grant Review Committee, Center of Injury Prevention & Control at the Center for Disease Control.

Trauma Systems Advisory Committee, California Emergency Medical Services.

Board of Directors, Board of American Association for the Surgery of Trauma.

Editorial Board, Journal of Trauma.

Chairman, Trauma Systems Committee for the Department of Health & Human Services (U.S. Government).

Elected to Membership, American Surgical Association, 1995.

Advisor, SDSU National Resource Center on Aging and Injury.

KATHY J. RINNERT, MD, M.P.H.

Kathy J. Rinnert, MD, M.P.H., began her career in emergency medicine and emergency medical services (EMS) in the early 1980's as a Nationally Registered Paramedic in a five-county, rural EMS agency located in the Allegheny Mountains of Southeast Ohio. She later completed medical school at the Ohio State University, followed by an internship in Internal Medicine at Loyola University, and residency training in Emergency Medicine at the University of Chicago. Following residency, Dr. Rinnert obtained a Master's in Public Health (MPH) during a two-year fellowship in EMS at the University of Pittsburgh.

Dr. Rinnert currently serves as Assistant Professor in Emergency Medicine at the University of Texas Southwestern Medical Center at Dallas (UTSWMC). She is also the Associate Medical Director for the UTSW/BioTel EMS system, encompassing thirteen municipalities and their fire-based EMS and Public Safety agencies. In this capacity she oversees the out-of-hospital practice of over 1500 paramedics operating in urban, suburban, and rural environments. Dr. Rinnert directs the Center for Government Emergency Medical Security Services (GEMSS) at the UTSWMC, which provides academic and clinical tactical support to government agencies. At the Center she directs both the EMS and GEMSS fellowship programs, which provide post-doctoral training in these subspecialty areas of emergency medicine.

Dr. Rinnert has special interest and expertise in trauma, injury prevention and control, air medical transport, tactical EMS, urban search and rescue, and domestic preparedness for weapons of mass effect (WME) and counterterrorism. She is an active site reviewer for both the

Commission on Accreditation of Ambulance Services (CAAS) and the Committee on Accreditation of Educational Programs for the EMS Professions (CoAEMSP).

SUZY BAULCH, RN, MHA

Suzy is widely recognized for her many years and expertise in EMS and trauma systems planning, development and implementation. Ms. Baulch, 30-year veteran registered nurse, has served in many capacities in various state and regional trauma systems as a designated trauma center program manager, regional EMS/trauma system manager, and as a state trauma program/prevention systems director. She has been instrumental in developing start-up trauma system programs for rural states and directing enhancements in establish trauma systems. She is an experienced emergency department nurse, nurse-paramedic, trauma care educator, and has presented on many trauma care and systems topics. Ms. Baulch has also served as a consultant for trauma systems development, trauma center site reviewer, and participated on regional, state, and Federal committee in addressing trauma care systems issues. Ms. Baulch received a Bachelor of Nursing from Creighton University, Omaha, Nebraska, and a Masters in Health Care Administration, Chapman University, Orange County, California.

WADE N. SPRUILL, Jr.

Wade N. Spruill, Jr., CPM, serves as the Chief Executive Officer of AAA Ambulance Service, Southeast Mississippi Air Ambulance District, and the Southeast Trauma Care Region. He is a graduate of the University of Mississippi and is a 30-year veteran of the Mississippi State Department of Health. He served as Director of the Division of Emergency Medical Services from 1974 to 2000. He authored and steered the legislative adoption of the Mississippi EMS Act of 1974 and all subsequent amendments which include Advanced Life Support, EMS Fees, EMS Operating Fund, the Good Samaritan law, The Mississippi Trauma System Law; he also assisted in the passage of the seat belt, road numbering system, and the telecommunications laws. Currently, he is the Governor's appointed representative of the Mississippi Hospital Association, to the Mississippi State EMS Advisory Council, and to the Mississippi Trauma Advisory Committee. Nationally he is faculty for the National Highway Traffic Safety Administration's Development of Trauma Systems curriculum, consultant to NHTSA for the Emergency Vehicle Operators Training Program, member of the NHSTA Technical Assessment Program, and former member of the National Association of State EMS Directors.

GAIL F. COOPER, PUBLIC HEALTH ADMINISTRATOR (RETIRED)

Ms. Cooper retired from the County of San Diego, Health and Human Services Agency in March 2002, and since that time has worked on special projects in EMS, Trauma, and Public Health Preparedness. Prior to retiring from the County of San Diego she served as the Public Health Administrator for the County of San Diego and was responsible for over 500 employees and a budget of over \$71 million. This includes not only the EMS Division but also the Epidemiology

Section, Emerging Diseases, Chronic diseases, Communicable Diseases, Disaster Medical Response, Vital Records, Public Health Laboratory, Maternal and Child Health, Tobacco Control, Medical Health Quality, Immunizations, Office of AIDS Coordination, Border Health, Public Health Nursing and Public Health Preparedness.

For over 25 years Ms. Cooper has been assisting in the establishment of Emergency Medical Service Systems, Trauma Systems, Injury Control programs, Disaster medical response/Public Health Preparedness and Public Health policy at the local, state and national level. She has been involved in major trauma legislative agendas in numerous states while assisting states in implementing statewide and regional systems of trauma care. She has also assisted state and local communities in further development and refinement of their respective EMS systems, strengthened data collection and evaluation components of EMS and Trauma systems, and formulated policies allowing for the integration of EMS, Trauma, and Injury programs. As part of the EMS, Trauma and Injury agenda she has implemented programs to assess data/evaluation for injury mechanisms, triage criteria, car crash statistics, bicycle injuries, helmet use, pedestrian safety and bioterrorism.

NELS D. SANDDAL, MS, REMT-B

Mr. Sanddal is currently the president of the Critical Illness and Trauma Foundation, in Bozeman, Montana. CIT is a non-profit organization dedicated to improving the outcomes of people who are injured in rural America through programs of prevention, training and research. He also serves as the Director of the Rural EMS and Trauma Technical Assistance Center which is funded by the Department of Health and Human Services, Health Resources and Services Administration. He received his EMT training in Boulder, Montana, in 1973 and has been an active EMT with numerous volunteer ambulance services since that time. He currently responds with the Gallatin River Ranch Volunteer Fire Department where he serves as the Medical Officer and Assistant Chief. Nels worked as the training coordinator for the EMS and Injury Prevention Section of the Montana Department of Public Health and Human Services in the late 1970's. He has served as the Chairperson of the National Council of State EMS Training Coordinators and as the lead staff member for that organization, as well as the National Association of EMT. He has been a co-investigator for six state or regional rural preventable trauma mortality studies and has conducted research in the area of training for prehospital and nursing personnel as well as in rural injury prevention and control. He is a core faculty member for the NHTSA Development of Trauma Systems course and has conducted several statewide EMS assessments for NHTSA.

He completed his undergraduate work at Carroll College, received his Master's degree in psychology from Montana State University and is currently completing his doctorate in Health and Human Behavior from Walden University.

Appendix B: List of NV ACS Participants

<u>Name</u>	<u>Representing/Affiliation</u>
Donald S. Kwalick, MD Chief Health Officer	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 383-1201	dkwalick@cchd.org
<u>Name</u>	<u>Representing/Affiliation</u>
Rory Chetelat EMS Manager	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 359-1054	chetelat@cchd.org
<u>Name</u>	<u>Representing/Affiliation</u>
Vince Leist	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
3186 Maryland Parkway	Las Vegas, NV 89134
Work Phone	<u>Email</u>
(702) 731-8012	Vince.Leist@hcahealthcare.com
<u>Name</u>	<u>Representing/Affiliation</u>
Connie Clemmons-Brown	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>

(702) 383-2092	Connie.brown@umcsn.com
<u>Name</u>	<u>Representing/Affiliation</u>
Melinda Hursh, RN	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
3186 Maryland Parkway	Las Vegas, NV 89109
Work Phone	<u>Email</u>
(702) 784-7943	Melinda.hursh@hcahealthcare.com
<u>Name</u>	<u>Representing/Affiliation</u>
Joseph Heck, DO EMS Operational Director	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 759-1056	heck@cchd.co.clark.nv.us
<u>Name</u>	<u>Representing/Affiliation</u>
Philis Beilfuss, RN Healthcare Coordinator	North Las Vegas Fire Department
<u>Address</u>	<u>City/State/Zip</u>
Central Fire Station No. 51 2626 East Carey Avenue	North Las Vegas, NV 89030
Work Phone	<u>Email</u>
(702) 633-1102	beilfussp@co.clark.nv.us,jum@co.clark.nv.us
<u>Name</u>	<u>Representing/Affiliation</u>
Matt Koschmann Vice President	St. Rose Dominican Hospital
<u>Address</u>	<u>City/State/Zip</u>
3001 St. Rose Parkway	Henderson, NV 89052
Work Phone	<u>Email</u>

(702) 616-4320	mkoschmann@chw.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Mary Henson-Luera, RN, BSN, CEN Trauma Program Manager	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702) 383-2092	Mary.Henson-Luera@umcsn.com
<u>Name</u>	<u>Representing/Affiliation</u>
Merlinda Gallegos Director of Community Development	Tang Foundation
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>
(702) 873-3647	Merlinda7@cox.net
<u>Name</u>	<u>Representing/Affiliation</u>
Gerry Hart Director of Operations	AMR
<u>Address</u>	<u>City/State/Zip</u>
1200 S. Martin Luther King Blvd	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702) 671-6902	Gerry_hart@AMR-EMS.com
<u>Name</u>	<u>Representing/Affiliation</u>
Sydney Seutzky	HFD
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>

(702) 267-2293	
<u>Name</u>	<u>Representing/Affiliation</u>
Jane Shunney Assistant to CHO	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 383-1211	Shunney@cchd.org
<u>Name</u>	<u>Representing/Affiliation</u>
Stephanie Smith Councilwoman	NLV
<u>Address</u>	<u>City/State/Zip</u>
2200 Civic Center Drive	North Las Vegas, NV 89030
Work Phone	<u>Email</u>
(702) 633-1010	
<u>Name</u>	<u>Representing/Affiliation</u>
Fergus Laughridge Program Manager	EMS
<u>Address</u>	<u>City/State/Zip</u>
1550 E College Parkway, Suite 158	Carson City, NV
Work Phone	<u>Email</u>
(775) 687-3065	flaughridge@ems.state.nv.net
<u>Name</u>	<u>Representing/Affiliation</u>
John Fildes, MD, FACS Medical Director	UMC
<u>Address</u>	<u>City/State/Zip</u>
2040 W. Charleston Blvd. #501	Las Vegas, NV
Work Phone	<u>Email</u>

(702) 383-2092	trfildes@umcsn.org
<u>Name</u>	<u>Representing/Affiliation</u>
Michael Metzler, MD, FACS Director, Trauma	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
3186 Maryland Parkway	Las Vegas, NV 89109
Work Phone	<u>Email</u>
(702) 731-8595	michael.metzler@hcahealthcare.com
<u>Name</u>	<u>Representing/Affiliation</u>
Elizabeth Snavelly	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702) 383-2092	Elizabeth.snavelly@umcsn.com
<u>Name</u>	<u>Representing/Affiliation</u>
Juliana Boyle	The Abaris Group
<u>Address</u>	<u>City/State/Zip</u>
700 Ygnacio Valley Road, Suite 270	Walnut Creek, CA 94596
Work Phone	<u>Email</u>
(925) 933-0911	jboyle@abarisgroup.com
<u>Name</u>	<u>Representing/Affiliation</u>
Deborah A. Kuhls, M.D. Chief, Section of Critical Care	University of Nevada School of Medicine
<u>Address</u>	<u>City/State/Zip</u>
2040 West Charleston Blvd., Suite 601	Las Vegas, NV 89102
Work Phone	<u>Email</u>

(702) 671-2201	dkuhls@med.unr.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Steve Hill President	Silver State Materials Corp
<u>Address</u>	<u>City/State/Zip</u>
4005 Industrial Rd	Las Vegas, NV 89103
Work Phone	<u>Email</u>
(702) 893-6557	shill@ssmaterials.com
<u>Name</u>	<u>Representing/Affiliation</u>
Craig Preston CEO	Lake Mead Hospital
<u>Address</u>	<u>City/State/Zip</u>
1409 East Lake Mead Blvd	North Las Vegas, NV 89030
Work Phone	<u>Email</u>
(702) 657-5504	
<u>Name</u>	<u>Representing/Affiliation</u>
Otto Ravenholt Ex- chief health officer for the Clark County Health District	
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>
(702) 363-1040	
<u>Name</u>	<u>Representing/Affiliation</u>
Sterling M. Doubrava, MD Anesthesiology	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>

(702) 656-1911	
<u>Name</u>	<u>Representing/Affiliation</u>
Jackie Beaman	SAFE Community Partnership
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway, Box 4007	Las Vegas, NV 89154
Work Phone	<u>Email</u>
(702) 895-1980	JackieNIPI@aol.com
<u>Name</u>	<u>Representing/Affiliation</u>
Steve M. Hanson Director	CCFD
<u>Address</u>	<u>City/State/Zip</u>
Fire & Police, Blue Diamond, Fire	Las Vegas, NV 89101
Work Phone	<u>Email</u>
(702) 455-7311	Steve.Hanson@cityofhenderson.com
<u>Name</u>	<u>Representing/Affiliation</u>
Trent Jenkins EMS Coordinator	CCFD
<u>Address</u>	<u>City/State/Zip</u>
Fire & Police, Blue Diamond, Fire	Las Vegas, NV 89101
Work Phone	<u>Email</u>
(702) 219-7541	
<u>Name</u>	<u>Representing/Affiliation</u>
Michael Bernstein Health Educator	CCHD
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>

(702) 759-1268	Bernstein@cchd.org
<u>Name</u>	<u>Representing/Affiliation</u>
Barbara Ludwig RN , M.Ed. Safe Kids Board President	Safe Kids
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway, Box 4007	Las Vegas, NV 89154
Work Phone	<u>Email</u>
(702) 363-4162	bludwig@mindspring.com
<u>Name</u>	<u>Representing/Affiliation</u>
Val Baciarelli President	St. Rose Hospital
<u>Address</u>	<u>City/State/Zip</u>
102 East Lake Mead Drive	Henderson, NV 89015
Work Phone	<u>Email</u>
(702) 616-4319	vbaciarelli@chw.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Stephen Jones, MD Chief Medical Officer	St. Rose Hospital
<u>Address</u>	<u>City/State/Zip</u>
102 East Lake Mead Drive	Henderson, NV 89015
Work Phone	<u>Email</u>
(702) 616-4319	szjones@chn.edu
<u>Name</u>	<u>Representing/Affiliation</u>
John Wilson Executive Partner	Southwest Ambulance
<u>Address</u>	<u>City/State/Zip</u>
4640 Arville St	Las Vegas, NV 89103
Work Phone	<u>Email</u>

(702) 650-9900	John.Wilson@swalv.com
<u>Name</u>	<u>Representing/Affiliation</u>
Kathy Kepka Director ED	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway, Box 4007	Las Vegas, NV 89154
Work Phone	<u>Email</u>
(702) 731-8903	Kathy.kopka@hcahealthcare.com
<u>Name</u>	<u>Representing/Affiliation</u>
Derek Cox CES Manager	AMR
<u>Address</u>	<u>City/State/Zip</u>
1200 S. Martin Luther King Blvd	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702) 671-6973	<u>Derek_Cox@amr-ems.com</u>
<u>Name</u>	<u>Representing/Affiliation</u>
Brian Rogers Vice President	Southwest Ambulance
<u>Address</u>	<u>City/State/Zip</u>
4640 Arville St	Las Vegas, NV 89103
Work Phone	<u>Email</u>
(702) 650-9900	
<u>Name</u>	<u>Representing/Affiliation</u>
Randy Howen Division Chief	HFD
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>

(702) 267-2292	Randy.howen@cox.net
<u>Name</u>	<u>Representing/Affiliation</u>
Karla Perez CEO	Spring Valley Hospital
<u>Address</u>	<u>City/State/Zip</u>
620 Shadow Lane	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 853-3335	kperez@uhsinc.com

<u>Name</u>	<u>Representing/Affiliation</u>
Mary Ellen Britt EMS QI Coordinator	Clark County Health District
<u>Address</u>	<u>City/State/Zip</u>
P.O. Box 3902	Las Vegas, NV 89106
Work Phone	<u>Email</u>
(702) 759-1055	britt@cchd.org

<u>Name</u>	<u>Representing/Affiliation</u>
Jeane Cosgrove Director	Clark County Safe Kids/Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
3101 S. Maryland Pkwy	Las Vegas, NV 89101
Work Phone	<u>Email</u>
(702) 731-8666	Jeane.cosgrove@hcahealthcare.com

<u>Name</u>	<u>Representing/Affiliation</u>
Matt Koschmann Director of Business Development	St. Rose Dominican
<u>Address</u>	<u>City/State/Zip</u>
102 East Lake Mead Drive	Henderson, NV 89015
Work Phone	<u>Email</u>

(702) 616-4320	mkoschmann@chn.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Sandy Rush CNO	St. Rose Dominican
<u>Address</u>	<u>City/State/Zip</u>
102 East Lake Mead Drive	Henderson, NV 89015
Work Phone	<u>Email</u>
(702) 616-5370	srush@chn.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Ed Pasimo, MD Rehab Director	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702) 366-0909	
<u>Name</u>	<u>Representing/Affiliation</u>
Ben Davis, MD Trauma Surgeon	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway	Las Vegas, NV 89154
Work Phone	<u>Email</u>
(702) 731-8530	
<u>Name</u>	<u>Representing/Affiliation</u>
Michael Evans Trauma Registrar	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway	Las Vegas, NV 89154
Work Phone	<u>Email</u>

(702) 784-7983	
<u>Name</u>	<u>Representing/Affiliation</u>
Susie Cram COO	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway	Las Vegas, NV 89154
Work Phone	<u>Email</u>
(702) 731-8845	
<u>Name</u>	<u>Representing/Affiliation</u>
Gregg Fusto, R.N Clinical Manager	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
<u>Name</u>	<u>Representing/Affiliation</u>
Lisa Jones HFS IV	Nevada State Of, Human Resources Department Of, Health Division, Bureau Of Licensure & Certification
<u>Address</u>	<u>City/State/Zip</u>
	Las Vegas, NV 89101
Work Phone	<u>Email</u>
(702)486-6515	
<u>Name</u>	<u>Representing/Affiliation</u>
Pilar Weiss	Culinary Institute
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>

<u>Name</u>	<u>Representing/Affiliation</u>
Rose McKinney-James Co-Chair	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway	Las Vegas, NV 89154
Work Phone	<u>Email</u>
<u>Name</u>	<u>Representing/Affiliation</u>
Ann Lynch Vice President	Sunrise Hospital
<u>Address</u>	<u>City/State/Zip</u>
4505 Maryland Parkway	Las Vegas, NV 89154
Work Phone	<u>Email</u>
<u>Name</u>	<u>Representing/Affiliation</u>
Jacqueline Taylor Chief Administrative	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
<u>Name</u>	<u>Representing/Affiliation</u>
Bobbette Bond Participant Services Manager	Culinary Health Fund
<u>Address</u>	<u>City/State/Zip</u>
Work Phone	<u>Email</u>

702 892-7327	
<u>Name</u>	<u>Representing/Affiliation</u>
Andy North Services Manger	St. Rose Dominican Hospital
<u>Address</u>	<u>City/State/Zip</u>
102 East Lake Mead Drive	Henderson, NV 89015
Work Phone	<u>Email</u>
(702) 616-7531	aznorth@chw.edu
<u>Name</u>	<u>Representing/Affiliation</u>
Lynn S. Fulstone Attorney	Lionel Sawyer & Collins
<u>Address</u>	<u>City/State/Zip</u>
1700 Bank America Plaza	Las Vegas, NV 89101
Work Phone	<u>Email</u>
(702)383-8912	lfulstone@lionelsawyer.com
<u>Name</u>	<u>Representing/Affiliation</u>
Richard Bunker	Bunker & Associates
<u>Address</u>	<u>City/State/Zip</u>
4918 Evergreen Ave	Las Vegas, NV 89107
Work Phone	<u>Email</u>
(702) 259-0022	
<u>Name</u>	<u>Representing/Affiliation</u>
Melissa Trammell Assistant to President	Bunker & Associates
<u>Address</u>	<u>City/State/Zip</u>
4918 Evergreen Ave	Las Vegas, NV 89107
Work Phone	<u>Email</u>

(702) 259-0022	
<u>Name</u>	<u>Representing/Affiliation</u>
Lacy Thomas CEO	UMC
<u>Address</u>	<u>City/State/Zip</u>
1800 W. Charleston Blvd.	Las Vegas, NV 89102
Work Phone	<u>Email</u>
(702)383-3860	
<u>Name</u>	<u>Representing/Affiliation</u>
M. Keary	Guest

Appendix C: Newspaper Article Regarding Site Visit

Tuesday, June 08, 2004

Copyright © Las Vegas Review-Journal

Group ponders trauma center ideas

Panel wants more time to devise ways to meet valley's needs

By JULIET V. CASEY

REVIEW-JOURNAL

After struggling for six hours, a citizen task force determined it needed more time and information before it could recommend ways to improve trauma care in Clark County. The members, appointed by the Clark County District Board of Health, considered a list of questions to help them formulate recommendations but reached consensus on only a few generalities.

The task force continued the meeting to next Monday and asked officials with University Medical Center and Sunrise Hospital and Medical Center to provide them more financial information.

The task force members agreed that the valley's single level-one trauma center at UMC soon will not be enough to meet all of the trauma needs in the valley and that more centers would have to be added.

But they disagreed on whether a plan for a comprehensive trauma system should be created before adding more centers or whether hospitals wanting to provide trauma care should be allowed to work toward that goal before a plan is in place.

They disagreed on whether new centers should include a level-two trauma center as proposed by Sunrise Hospital and a level-three trauma center as proposed by St. Rose Dominican Hospitals or just a level-three center. A level-one center provides the most comprehensive care.

Task force member Dr. Max Doubrava said the group should recommend some form of provisional designations for hospitals that want to provide trauma care while state and local health officials organize an inclusive trauma system.

"If a player steps up and wants to play, they should be given the opportunity," he said.

But task force member Danny Thompson said a hospital's desire to offer trauma care should not be the only consideration.

"There's a lot more at stake here," he said. "We have an opportunity to do the right thing or the wrong thing. And if we do the wrong thing, taxpayers and employers will pay the bill."

Much of the discussion focused on whether adding a level-two trauma center would hurt the area's existing taxpayer-subsidized trauma center at UMC.

Task force members said they did not have enough financial information to determine the full effect a level-two trauma center would have on the existing trauma center.

"I'm willing to go forward with more centers as long as UMC is not going to be damaged," task force member Richard Bunker said.

In recent weeks, the task force received reports on the area's trauma care needs from the American College of Surgeons and a California-based consulting firm called the Abaris Group. The Abaris Group's study favored a proposal by St. Rose Dominican Hospitals for a trauma center that would care for less seriously injured patients at the southern end of the county. The study opposed Sunrise's proposal for a level-two trauma center three miles from the center at UMC.

The report by the American College of Surgeons did not offer recommendations regarding specific proposals.

Both reports praised UMC's trauma center for readily handling all of the trauma needs of the region. Both said the valley needs a more inclusive trauma system to curb deaths by injury, the leading cause of death among those 1 to 44 years old in the state.

Both stressed the need to establish the governance and oversight of the trauma system before adding new trauma centers.

Sunrise has tried to get "provisional designation" as a trauma center, but state officials have said they are awaiting the conclusions of the citizen task force.

Appendix D: Top Ten Data Tables to Assess Trauma System Performance/Needs

Appendix: Top Ten Data Tables to Assess Trauma System Performance/Needs

These tables may be produced by the state (or two designated trauma centers) and made available to constituents. Their purpose is to identify areas of trauma system care that would be affected by the formalization of a statewide (or regional) trauma system.

Tables generated using Trauma Center Registry Data (NTRACS)

1. Injury characteristics of patients transported to a Level 1 Center (via EMS) and discharged from the emergency room.
2. Injury characteristics of patients admitted to local hospitals then, shortly thereafter, transferred to Level 1 Center.
3. Elapsed time in ED of local hospital before interhospital transfer to Level 1 Center stratified by hospital (blinded if necessary).
4. Average “on-scene” time for patients transported by EMS with an ISS greater than 15 stratified by injury type and/or EMS service (blinded if necessary).
5. Characteristics of patients who are over-triaged to a Level 1 Center based upon field EMS triage criteria.
6. Mapped GeoCode for local patients with transport times (from scene to Level 1 arrival) greater than 30 minutes.
7. Transport characteristics (e.g., transport time) of patients arriving (via EMS) hypotensive or hypoxic, based upon presenting ED vital signs.
8. Injury and patient characteristics for patients dying in a Level 1 Trauma Center stratified by mode of arrival (interfacility transfer vs direct transport).

Tables generated using State Data (e.g., UB-92, state trauma registry)

1. Injury and geographic characteristics (e.g., zipcode or county) of patients discharged (alive or dead) from non-trauma centers with ISS greater than 15.
2. Average EMS “off-load” time at ED arrival for injured patients by hospital (blinded if necessary). This elapsed time could be estimated using “hospital arrival time” and “back in service” time as collected by EMS.

Table to Validate the Completeness of the Statewide Trauma Registry

1. Comparison of patients contained in the state trauma registry with patients contained in the UB-92 data meeting trauma registry inclusion criteria. This database comparison will estimate how many patients fulfilling registry inclusion criteria are not included statewide registry.

Appendix E: Distribution of Primary Insurance for Trauma Patients

Distribution of Primary Insurance for Trauma Patients

