



# **ARIZONA EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM PLAN**

**2002 – 2005**

**Arizona Department of Health Services  
Division of Public Health Services  
Bureau of Emergency Medical Services**



## *Office of the Director*

1740 W. Adams Street  
Phoenix, AZ 85007-2670  
(602) 542-1025  
(602) 542-1062 FAX

JANE DEE HULL, GOVERNOR  
CATHERINE R. EDEN, DIRECTOR

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### Executive Summary: Arizona EMS and Trauma System Plan

The Arizona health care system includes private and public health care delivery systems in urban and rural areas. The Systems are designed to meet state health care needs for ambulatory, prehospital, and hospital care. A comprehensive and distinct statewide Emergency Medical Services and Trauma System is a necessary system component of the overall health care system in Arizona.

The EMS and Trauma System plan formally identifies, organizes, and integrates a continuum of care from prevention and event recognition to full patient recovery, and includes system evaluation and change. The system plan addresses care for adult and pediatric emergent, medical and trauma patients. Due to the epidemic proportion of traumatic injury in Arizona, the number one cause of death for people between 1 and 44 years of age, a significant focus of the system is on trauma care.

Formal organization, integration, and implementation of all of the elements necessary for a comprehensive, statewide, cost effective, statewide EMS and Trauma System for Arizona is the overarching goal of the EMS and Trauma System and the purpose of the system plan. Many elements of the system have been in place and operational at some level in Arizona for decades. Some elements have been formalized; some elements remain informal. Still other elements are in need of development and integration.

Key attributes of the EMS and Trauma System plan include:

- State leadership by the Department of Health Services through the Bureau of Emergency Medical Services;
- An inclusive system design developed to encourage participation by all EMS providers, ambulance services, prehospital agencies, hospitals, and other emergency receiving health care institutions dependent on their resources and capabilities;
- An emphasis on stakeholder participation in developing, implementing, and evaluating the system, through advisory bodies including The State Trauma Advisory Board, EMS Council, and the Medical Direction Commission.
- A network of voluntary state designated trauma centers throughout the state, including in Indian Nations; and
- Multi-tiered system evaluation designed to maintain agency and regional autonomy and patient confidentiality while assuring a statewide system perspective.

Formalization of the Arizona EMS and Trauma System is an exciting addition to the health care delivery systems in Arizona. It is with great pleasure that I approve the EMS and Trauma Plan and endorse it for adoption by Governor Jane D. Hull.

Catherine Eden, PhD  
Director of the Arizona Department of Health Services

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## **ACKNOWLEDGEMENTS**

Many people and agencies have contributed to EMS and Trauma System planning and development in the State of Arizona. Beginning in the 1970's with prehospital system elements and continuing today with trauma system elements, stakeholders from across the state, representing public, non profit, and private prehospital and hospital agencies, and the public at large, have contributed thousands of hours of time toward the ongoing planning, development and incremental implementation of a comprehensive EMS and Trauma system. It is through their efforts that a system of care for emergent patients continues to evolve in Arizona.

Contributing Advisory Committees and Subcommittees representing stakeholder groups include:

- Central EMS Coordinating Council
- Northern EMS Coordinating Council
- Southeastern EMS Coordinating Council
- Western EMS Coordinating Council
- Emergency Medical Services Council
- Medical Direction Commission
- EMS Council Education Committee
- EMS Council Rules Committee
- The 1993 Trauma Task Force
- The State Trauma Advisory Board (STAB)
- STAB Systems Subcommittee
- STAB Data Subcommittee
- STAB Quality Assurance & System Improvement Subcommittee

### Trauma Stakeholder Acknowledgement

Hospital and pre-hospital professional staff and organizations, and interested citizens, participated in state and local trauma system planning forums and assisted in the development of recommendations for the EMS and Trauma System Plan.

### Special Acknowledgement

Bernard (Bing) Grahek, retired hospital administrator and Association of Retired Persons representative on the State Trauma Advisory Board, is recognized posthumously for his tireless, personal dedication to designing a quality system of care.

# **ARIZONA EMS AND TRAUMA SYSTEM VISION & VALUES**

## **VISION**

The vision for the Arizona EMS and Trauma System is a statewide system of high quality, cost effective, emergency medical services and trauma care for all adult and pediatric residents and visitors in the state, and in Indian Nations within the state boundaries. The system will target the prevention of unnecessary death and disability from emergent health problems and improve and enhance the delivery of emergency medical and trauma services. To ensure this capability, an inclusive statewide network of emergency medical services providers, ambulance services, prehospital agencies, state designated trauma centers, hospitals, and other emergency receiving health care institutions will be in place. The system will be formally organized and integrated and will include the elements of a comprehensive system including injury prevention and control, public information and education, prehospital services including patient care resources, hospital patient care resources including medical rehabilitation, and ongoing system evaluation and improvement processes. This system of care will be statewide in design and state and regionally implemented. The system will be led and monitored by the Department of Health Services with ongoing input from the EMS and trauma community, inclusive of EMS providers, ambulance services, prehospital agencies, trauma centers, hospitals, other emergency receiving health care institutions, elected officials, and other system stakeholders.

## **VALUES**

The involvement of stakeholders from across the health care continuum, the public, and Indian Nations is paramount to the success of an Arizona EMS and Trauma System.

## **INTRODUCTION**

### **HISTORY OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM DEVELOPMENT**

The development of comprehensive systems of emergency care delivery for the medically ill and injured began in the United States over four decades ago. Arizona's system development has been ongoing for over three decades. An initial focus on the development of prehospital emergency service capacity has evolved to a focus today on comprehensive and integrated emergency medical services and trauma systems. Key national and state development events include the following:

- During 1966, the national Academy of Sciences "White Paper" titled "Accidental Death and Disability: The Neglected Disease of Modern Society," identified the need for a system of care including prehospital and hospital care.
- In 1973, the national Emergency Medical Services Act (PL 93-154) was enacted to stimulate the development of EMS systems. Fifteen system elements were recognized as essential elements of an EMS system.
- The national Trauma Care Systems Planning and Development Act of 1990 (PL 101-590) encouraged state governments to develop, implement and improve trauma systems. The primary focus of the Act is the development, by each state, of a trauma care plan that includes the development of a system of care.
- Arizona EMS and Trauma System development has been ongoing since the 1970's when enabling statute (Laws, 1974, 2<sup>nd</sup> S.S. Chapter 1. Title. 2) provided for the development and implementation of prehospital system elements.
- In the 1980's hospital elements were added and seven urban hospitals were self-identified or regionally categorized as Level I Trauma Centers to preferentially receive trauma patients from throughout the state.
- In 1990 the National Highway Traffic Safety Administration (NHTSA) was invited to conduct a review of the Arizona system and developed recommendations for future state system development including trauma.
- In 1993 an Arizona house bill (HB 2208) established a Statewide Trauma System Study Committee. The committee was charged with developing recommendations on trauma system elements including a trauma registry, trauma centers, quality oversight, and education and with reviewing trauma system costs.

- From 1995-1999 the State Trauma Advisory Board developed trauma plan recommendations that were presented to the Director of the Department of Health Services.
- In 2001 the Director of the Department of Health Services directed a focus on a comprehensive EMS and Trauma System and completion and implementation of a consolidated, comprehensive statewide EMS and Trauma System plan.
- A collaborative regional planning process, enabled by statute mandating regional EMS and trauma coordinating system plans, was begun in 2001. A common plan format is utilized at the state and regional levels for consistency and to enable the consolidation of the regional plans into a comprehensive statewide EMS and Trauma System plan. A comprehensive statewide plan, including regional plans, is expected to be completed by 2003.
- Comprehensive EMS and Trauma System legislation is required to enable further formal system development and implementation.

## **ARIZONA EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM GOAL**

The overall goal of the Arizona EMS and Trauma System is state and regional implementation of a formal, organized, inclusive, statewide system of high quality, cost effective care for emergent medically ill and emergent injured patients, that:

- Provides leadership and direction for system development, ongoing evaluation, and improvement;
- Prevents unnecessary death and disability due to emergent health problems and improves and enhances the delivery of EMS and trauma services to residents and visitors in Arizona;
- Pursues funding mechanisms for EMS and Trauma System implementation and maintenance, including system administration and uncompensated and under compensated care;
- Pursues public awareness and prevention activities to decrease the incidence of injury;
- Develops consistent, relevant and accessible EMS and trauma education resources statewide;
- Integrates the EMS and Trauma System with Homeland Defense initiatives;

- Designs an integrated system of care from event recognition to full patient recovery, including medical rehabilitation;
- Improves and enhances the delivery of emergent prehospital EMS and hospital trauma services to residents and visitors in Arizona;
- Improves scalable or surge capacity of the statewide system to meet emergent care needs;
- Establishes standards for Arizona EMS and Trauma system participation and mechanisms to ensure continuing compliance with system standards;
- Coordinates the Arizona EMS and Trauma System with surrounding states, countries, and Indian Nations;
- Ensures accountability, objectivity, and relevance of the EMS and Trauma System through information systems and quality management processes; and
- Develops EMS and Trauma System research capacity.

## **ARIZONA EMS AND TRAUMA SYSTEM PLAN**

The purpose of the Arizona EMS and Trauma System Plan is to provide organized and logical guidelines for developing a high quality, cost effective, comprehensive statewide EMS and Trauma System for all citizens and visitors in Arizona. Utilizing the federal Model Trauma Systems format, a national benchmark for comprehensive system design, the Arizona plan provides a description of Arizona's current EMS and trauma service capabilities and identifies major goals and objectives for continued system development. Measurable tactics provide the direction for system development activities. The format supports the development of strategies at state and regional levels to measure incremental system implementation on an annual basis.

The following resources and recommendations were used to provide the basis for the Arizona EMS and Trauma System Plan:

- Current EMS statutes (A.R.S. Title 36, Chapter 21.1) and rules (9 A.A.C. 25 and 9 A.A.C. 13, Articles 10-12)
- 1990 Arizona system assessment by the National Highway Traffic Safety Administration
- 1994 Statute requiring use of the 1993 Trauma System Study Committee recommendations for system direction

- 1999 Arizona State Trauma Advisory Board trauma plan recommendations
- 1997 Arizona Emergency Medical Services for Children strategic plan
- 1999 American College of Surgeon's Committee on Trauma: Resources for Optimal Care of the Injured Patient (with supplemental documents)

# EMS AND TRAUMA SYSTEM ADMINISTRATIVE COMPONENTS

## I. LEADERSHIP

**System Goal 01 – The lead state agency has the authority, responsibility, and resources to plan, implement, and evaluate a comprehensive EMS and Trauma System for Arizona. Indian Nations within state boundaries are partners.**

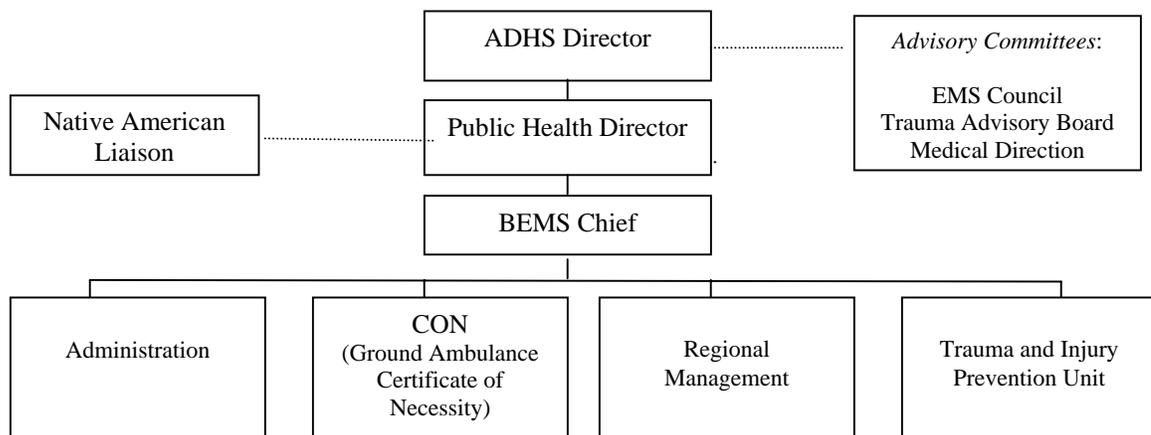
### BACKGROUND

#### Lead Agency/State Leadership

The Arizona Department of Health Services is the lead state agency for the coordination, development, and administration of a comprehensive statewide system of emergency medical services (EMS) and trauma care. The Director of the Department is responsible for the system plan and recommending it to the Governor. The Bureau of Emergency Medical Services is responsible for overall coordination of system development and administration under the direction of the Director of the Division of Public Health of the Department of Health Services. The Bureau works with the EMS and trauma community and advisory committees, for system development and improvement recommendations and planning.

#### ADHS-Public Health Division-BEMS Organizational Structure

The organization structure of the Department of Health Services-Bureau of Emergency Medical Services includes the following chain of authority:



### Advisory Groups

The Department of Health Services – Bureau of Emergency Medical Services utilizes formal and informal advisory groups for input on the coordination and development of a comprehensive statewide EMS and Trauma System. Physicians, emergency services experts, and other healthcare professionals provide medical advice on system needs and patient care through these advisory bodies. Advisory groups identified in statute include the following:

- Emergency Medical Services Council (Council)

- State Trauma Advisory Board (STAB)

- Medical Direction Commission (MDC)

Additional advisory groups include:

- Central EMS Coordinating Council

- Northern EMS Coordinating Council

- Southeastern EMS Coordinating Council

- Western EMS Coordinating Council

- EMS Council Education Committee

- STAB Quality Subcommittee (AZTQ)

Task forces and independent work groups are utilized to advise the Department on targeted issues.

### Regional Leadership for Regional EMS and Trauma System Elements

The involvement of the four regional coordinating systems in providing leadership for regional system elements is supported in statute through the mandate for local emergency medical service coordinating systems that plan and coordinate regional emergency medical and trauma services systems. These systems utilize regional councils that provide local and regional leadership for regional emergency medical and trauma services system coordination. Each region utilizes a corporate structure and has broad-based and active regional stakeholder representation. All of the councils have effectively integrated and coordinated regional prehospital system elements. The integration of hospital and other healthcare institution system elements, particularly trauma center elements, is a newer component of regional system development; and when completed will result in a regional focus on a complete system. Existing regional councils are positioned to encourage active stakeholder participation, and with the addition of hospital and other healthcare institution decision-makers to the councils will become the ideal system planning body for the regions. The Bureau of Emergency Medical Services will work with the regional councils to develop comprehensive Regional Emergency Medical and Trauma Services System plans. The regional plans will provide recommendations to ADHS on the regional EMS and Trauma System needs and direction. Regional plans will become part of the statewide EMS and Trauma System Plan.

### Indian Nation Leadership

The involvement of leaders from the Indian Nations is critical to the comprehensive EMS and Trauma System in Arizona. Numerous sovereign Indian Nations are located within the geographical boundaries of the State of Arizona. Arizona law does not bind these

nations. The Arizona statewide EMS and Trauma Care plan recognizes the Indian Nations as part of the comprehensive system and seeks to integrate tribes and services through state and regional coordinating system involvement.

## **LEADERSHIP OBJECTIVES**

- Objective 01.1 Adopt a comprehensive statewide EMS and Trauma System design that meets statewide needs; revise the system design as needed.

Tactic 1. Finalize the Plan and publish it in 2002.

- Objective 01.2 Develop an EMS and Trauma System implementation timeline that identifies existing system elements and a phased implementation of remaining system elements and resources required.

Tactic 1. In 2001, identify actions (tactics) for the first two years.

Tactic 2. In 2002, determine the advisory committee work for 2002-2003.

- Objective 01.3 Provide mechanisms for continued system input from the EMS and trauma community including Indian Nations on EMS and Trauma System design, operation, and evaluation and develop processes to expeditiously implement changes.

Tactic 1. In 2002, ADHS will establish a process to review all EMS and Trauma System statutory advisory bodies to (1) determine changes necessary to meet advisory needs, and (2) determine work needed from the advisory bodies.

- Objective 01.4 Develop clear and concise state policies, procedures, and standards necessary for EMS and Trauma System administration.

Tactic 1. During 2002-2004, identify needs and formalize necessary policies, procedures, and standards.

- Objective 01.5 Work with regional coordinating systems to develop capacity for the development and implementation of comprehensive regional Emergency Medical and Trauma Services System plans and to utilize the plans for regional system improvement.

Tactic 1. During 2002-2003, assist regional councils in strategic planning and regional EMS and Trauma System plan development and implementation.

- Objective 01.6 Provide information for legislative initiatives on key system needs identified in the comprehensive EMS and Trauma System Plan.
- Objective 01.7 Identify and recommend target financial legislative goals for a comprehensive statewide EMS and Trauma System.
- Objective 01.8 Carry out statutory mandates for certification of emergency medical technicians, approval of medical directors, certification of ALS base hospitals, certification of EMT training programs, issuance of ground ambulance certificates of necessity (CON), registration and registration renewal of ambulance vehicles, regulation of air ambulance, education and training, investigations, and other mandates.

Tactic 1. During 2002-2004, refine internal BEMS processes.

Tactic 2. During 2002-2004, revise administrative Rule to improve efficiency.

- Objective 01.9 Develop an EMS and Trauma System data management system including data from emergency medical services providers, ambulance services, prehospital agencies, trauma centers, hospitals, and other health care institutions, and other data sources that may be available or developed.

Tactic 1. During 2002-2003, the Department will develop data collection and analysis processes related to EMS, Trauma, and Bioterrorism data as part of a data management system for the EMS and Trauma System (trauma registry - database for ambulance and provider data - database for statewide injury prevention tracking.)

- Objective 01.10 Develop an efficient and effective mechanism to (1) Designate Trauma Centers within the EMS and Trauma System, and (2) identify prehospital trauma system participants.

Tactic 1. In 2002, define designation authority.

- Objective 01.11 Monitor the EMS and Trauma System to determine compliance with appropriate state law, rule, policies, procedures, and contracts.
- Objective 01.12 Oversee the state system level quality improvement processes and investigate system issues and problems.

- Objective 01.13 Develop and publish an annual EMS and Trauma System report including regional system status reports.

Tactic 1. In 2002, publish the EMS and Trauma System Plan.

## II. SYSTEM DEVELOPMENT

**System Goal 02** – An inclusive and comprehensive statewide EMS and Trauma System is fully developed and implemented throughout the State of Arizona.

### BACKGROUND

#### System Planning

EMS and Trauma System development has been ongoing since the 1970's when enabling statute provided for the development and implementation of many prehospital system elements. In the 1980's, hospital elements were added as seven urban hospitals self-identified or were regionally identified as Level I Trauma Centers and began to preferentially receive trauma patients from around the state. In the 1990's recommendations on trauma care were developed through outside review and the work of the State Trauma Advisory Board. System recommendations were presented to the Director of the Department of Health Services.

In 2001, the Director directed a focus on development of a comprehensive statewide EMS and Trauma System and the completion and implementation of a consolidated EMS and Trauma System Plan. The Bureau of Emergency Medical Services assumed the previously contracted system development responsibility and now works directly with stakeholder groups including the State Trauma Advisory Board to carry out the Department's direction.

Regional Emergency Medical and Trauma Services systems are components of a statewide system. The existing regional systems have utilized regional advisory bodies to plan and implement prehospital system elements over several decades. Formal regional plans, which have not yet been developed, are needed to guide the regions in further system development as part of a comprehensive statewide EMS and Trauma System.

The Bureau of Emergency Medical Services began working with the four regions on a regional planning process in 2001. The goal of the process is to provide a consistent planning approach across the state that will maintain a statewide focus and will ensure that the unique operational needs of the regions can be met. The regional planning process will identify the current state of system elements and target regional goals and objectives for system development. Formal regional plans will be incorporated into the state plan through use of a common plan format. Regional plans will serve as an ongoing guide for regional contracting with the state.

### System Operations

Some elements of the EMS and Trauma System are well supported in statute and have been operational for decades at the state and regional levels. They are primarily prehospital EMS system elements. Formal integration of prehospital EMS elements and enhanced trauma elements are required for a comprehensive statewide EMS and Trauma System to exist.

The state Emergency Medical Services Council and the Medical Direction Commission advise the Department on the operation and development of the prehospital EMS system. State rules regulate emergency medical technicians, EMT training programs, and ALS base hospitals. State and regional treatment, triage, and communication guidelines dictate prehospital medical care and prehospital patient transport.

EMS prehospital services are provided by EMS providers and ambulance services. These range from highly sophisticated, publicly supported or private, paid departments and agencies in the metropolitan areas, to small, limited budget volunteer departments and agencies in rural areas. Administrative and on-line medical direction for emergency medical technicians performing advanced procedures is provided predominately through certified ALS base hospitals, but also through physicians affiliated directly with EMS providers and ambulance services.

A network of receiving hospitals and other health care institutions accept prehospital transported patients. These health care institutions are regulated by the Department. Seven hospitals in the state, five in Phoenix and two in Tucson, are informally identified as Level I Trauma Centers and receive major trauma patients from throughout the state. One Trauma Center in Phoenix is verified by the American College of Surgeon's as a Level I Trauma Center.

Indian Nations provide prehospital EMS services within their borders, but are not regulated by the state. Some utilize state practice standards. The Department of Health Services has a Native American liaison to assist in facilitating system development between the state and the Indian Nations.

### **SYSTEM DEVELOPMENT OBJECTIVES**

- Objective 02.1 Develop an EMS and Trauma System Plan that is inclusive in scope of all emergent injured and medical patients.

Tactic 1. During 2002-2005, continue to utilize advisory groups to provide input to EMS and Trauma System planning.

- Objective 02.2 Incorporate trauma components into the existing prehospital EMS system.

Tactic 1. During 2002-2005, continue to work with regional coordinating systems to integrate all elements of the system at the regional council level.

- Objective 02.3 Provide resources to enhance prehospital and health care institution system elements.
- Objective 02.4 Develop regional capacity to plan, implement, and manage comprehensive regional Emergency Medical and Trauma Services Systems.

Tactic 1. During 2002-2003, BEMS will work with the regional councils to develop contracts to include regional EMS and trauma system planning, implementation and evaluation consistent with the regional level EMS and Trauma System plans.

- Objective 02.5 Adopt trauma center standards for Level I, II, III and IV Designated Trauma Centers and designate trauma centers including where appropriate to ensure quality care, in Indian Nations and across state lines.

Tactic 1. During 2002-2003, identify designation models that might be used in Arizona for initial trauma center designation.

- Objective 02.6 Assess the number of rural trauma centers needed in rural areas to improve trauma care coverage. Facilitate resource development to meet rural needs.

Tactic 1. In 2003, the ADHS and its advisory groups will utilize the 2002-2003 regional profiles-assessments - to develop recommendations for improved hospital trauma care coverage in the state.

- Objective 02.7 Encourage hospitals that are not designated at some level as Trauma Centers to participate in data collection, submission, public education, training, quality improvement programs, and other mechanisms of system improvement.
- Objective 02.8 Establish a standard of resuscitation and early transfer of major trauma patients from emergency receiving hospitals to a designated Trauma Center, and where appropriate, from rural designated Trauma Centers to tertiary hospitals that are designated for higher levels of trauma patient care.
- Objective 02.9 Establish linkages with EMS and Trauma Systems in surrounding states and with Indian Nations within state boundaries and foreign nations adjacent to Arizona.

Tactic 1. During 2002-2003, identify leaders in Indian Nations and seek input for system development needs.

- Objective 02.10 Collaborate with the University of Arizona's Rural Health Office, Arizona College of Public Health, on the Arizona Rural Hospital Flexibility Program (critical access hospital networks) to ensure access to EMS services and rural receiving health care institutions in rural areas of the state.

Tactic 1. During 2002-2005, partner for grants that assist in system development.

### III. LEGISLATION

**System Goal 03** – Comprehensive statewide EMS and Trauma System legislation defines, enables, and sustains a quality and cost effective EMS and Trauma System for the State of Arizona.

#### BACKGROUND

Statute developed between 1974 and 1981 establishes and defines the regulation of a prehospital EMS system and assigns it to the Department of Health Services and the Bureau of EMS. Regulation includes certification of three levels of emergency medical technicians, approval of medical directors, certification of ALS base hospitals, certification of EMT training programs, issuance of ground ambulance certificates of necessity (CON), registration and registration renewal of ambulance vehicles, regulation of air ambulance, education and training, and investigations.

1994 statute incorporates trauma components of an EMS and Trauma System. References enable planning, coordination, administration and implementation through the system plan. Additional statute is needed to outline comprehensive statewide EMS and Trauma System elements.

#### LEGISLATION OBJECTIVES

- Objective 03.1 Work towards legislation that will include all nationally identified elements of a comprehensive EMS and Trauma System and directs the development of rule to define the elements.

Tactic 1. During 2002-2003, develop a communication format and provide factual information to legislators on EMS and Trauma Systems to assist in their efforts to understand and define a comprehensive EMS and Trauma System.

- Objective 03.2 Seek legislation that will authorize the development of funding mechanisms for development, implementation, and ongoing support of the statewide EMS and Trauma System, including for unreimbursed or undereimbursed care provided by system participants.
- Objective 03.3 Identify existing data confidentiality protection for data utilized in system evaluation and as required, seek additional protections under quality assurance processes for all system participants.

Tactic 1. During 2002-2003, complete a review of current statutes.

## IV. FINANCE

**System Goal 04 –The comprehensive statewide EMS and Trauma System sustains financial stability through current funding mechanisms, the additional allocation of dedicated state funding, the development of new funding mechanisms, and the development of State and industry reimbursement strategies for system participants.**

### BACKGROUND

Funding resources are currently limited for statewide EMS and Trauma System support. The Bureau of Emergency Medical Services receives dedicated funding from the Emergency Medical Services Operating Fund. Monies are allocated for operation of the Bureau in order to meet its statutory mandates, and for regional system support. Regional councils receive funding through state contracts. To date the regions have used their funding primarily for prehospital EMS system support through provider equipment purchases, emergency medical technician training and continuing education, and for council administration operations. Since 2000 several one-time legislative appropriations have resulted from special need identification for rural prehospital services and for trauma center operations.

Stable funding is needed to ensure the overall stability of the statewide EMS and Trauma System. Ongoing funding resources to support the high cost of trauma care at the prehospital or hospital levels have not been identified. Without stable, ongoing funding to support trauma centers there is limited incentive for new hospitals to enter the EMS and Trauma System, or for the current hospitals to remain trauma centers. State systems that have developed reliable funding sources for their EMS and Trauma Systems have developed stable systems with willing participants.

## FINANCE OBJECTIVES

- Objective 04.1 Conduct an assessment of regional coordinating system financial support.

Tactic 1. During 2002-2003, work with regional councils to determine financial support needs for development, implementation and maintenance of regional systems.

- Objective 04.2 Conduct a financial study of prehospital and hospital trauma care costs.

Tactic 1. In 2003, determine how the trauma registry, the hospital discharge database, and other state databases can be used to look at the comprehensive system elements.

Tactic 2. In 2003, work with system participants to determine how additional financial data can be used to look at comprehensive system elements.

- Objective 04.3 Seek legislative appropriation of enhanced trauma center reimbursement.

Tactic 1. During 2002-2003, work with other state agencies to determine models that provide a high level of accountability for the use of state funding

Tactic 2. During 2002-2003, the Department will work with the regional hospital bioterrorism preparedness committees to include data on the cost of providing trauma care as part of their planning process.

- Objective 04.4 Seek integration of the trauma funding with future health care initiatives, managed care initiatives, insurance reform, and AHCCCS.

- Objective 04.5 Provide education on funding sources and strategies for prehospital service providers and healthcare providers.

Tactic 1. During 2002-2005, provide information on the BEMS website on national funding opportunities for Trauma and EMS including for grants and patient care.

- Objective 04.6 Support an ongoing program of injury prevention at the local and state levels to reduce the occurrence of traumatic injury.

Tactic 1. In 2002, develop and propose a funding package for institutionalizing state level injury prevention infrastructure within the Bureau of EMS.

- Objective 04.7 Work to ensure managed care organizations do not deny payment for the care provided to any prudent member layperson requiring prehospital 911 services.
- Objective 04.8 Seek state, federal, and other funding opportunities to address communication issues and improve capabilities for interagency communication as a part of a comprehensive system approach.

# EMS AND TRAUMA SYSTEM OPERATIONAL AND CLINICAL COMPONENTS

## I. INJURY PREVENTION AND CONTROL

**System Goal 05 – An injury prevention and control program that is sensitive to the special needs and epidemiology of Arizona is an integrated component of the comprehensive statewide EMS and Trauma System.**

### BACKGROUND

A special focus of the EMS and Trauma System is on injury prevention and control. There are numerous injury prevention programs and projects in place to educate the public. In the prehospital setting some fire departments employ injury prevention staff that coordinate a variety of primary prevention programs for children and communities. In addition, trauma centers, non-trauma center hospitals, other health care institutions, emergency medical services providers, and ambulance services offer prevention programs for patients, families, and the community.

While individual efforts continue at local levels around the state, currently injury prevention efforts are not coordinated on a statewide basis. The Department of Health Services is working with community stakeholders to develop a state injury prevention plan that will define the State's role in the coordination of injury prevention and control. Identified barriers within the state include lack of a single source for epidemiological data on injury, lack of a resource base for existing injury prevention programs, and lack of local, state, and national alignment of prevention initiatives.

### INJURY PREVENTION AND CONTROL OBJECTIVES

- Objective 05.1 Incorporate EMS and Trauma System prevention objectives into the Department of Health Services state prevention plan.

Tactic 1. During 2002-2003, the Department will submit a Statewide Injury Prevention Plan under a CDC project for state prevention planning. This plan will build out the injury prevention focus of the Arizona EMS and Trauma System Plan.

- Objective 05.2 Develop and publish epidemiology data and an inventory of prevention programs and resources available throughout the state.

Tactic 1. In 2003, the BEMS will complete and publish (in print and on the ADHS-BEMS website) an inventory of injury prevention programs and contacts throughout Arizona. The inventory will be updated annually.

Tactic 2. During 2003-2004 an injury prevention inventory database will be developed.

- Objective 05.3 Evaluate national injury prevention programs for possible implementation in Arizona.
- Objection 05.4 Support the Arizona Division of the American Trauma Society, the efforts of trauma centers, other EMS providers and injury prevention coalitions to implement injury prevention programs and projects.

Tactic 1. In 2003, BEMS will meet with the Arizona Division to determine how the state can collaborate on injury prevention efforts.

- Objective 05.5 During 2002-2005, the BEMS will serve as a statewide resource center for injury prevention information.

Tactic 1. In 2002, develop and injury prevention section of the BEMS website.

Tactic 2. Assist existing injury prevention coalitions and groups is accessing resources.

## II. PUBLIC INFORMATION AND EDUCATION

**System Goal 06 – A highly visible EMS and Trauma System public information and education program is an integrated component of the comprehensive statewide EMS and Trauma System.**

### BACKGROUND

No organized EMS and Trauma System public information and education program exists at a local or state level in Arizona. The Bureau of EMS has a website, but it is not currently designed as a vehicle for education or information sharing with legislators, state departments, system participants, or the public. A public information and education program is critical to the dissemination of EMS and Trauma System information and will require planning and resource allocation.

## **PUBLIC INFORMATION AND EDUCATION OBJECTIVES**

- Objective 06.1 Develop or strengthen collaborative relationships between state agencies, and with outside stakeholder groups, injury coalitions, the media, educational institutions, auto industry, insurance industry, and others to increase vehicles for public information and education on injury, injury prevention, and the EMS and Trauma System.
- Objective 06.2 Incorporate an EMS and Trauma System public information and education focus into the state prevention plan.

Tactic 1. BEMS will be the lead agency for injury implementation of the state prevention plan.

- Objective 06.3 Expand the Bureau of Emergency Medical Services' website to disseminate current information on the EMS and Trauma System including issues and activities. Publicize the website.

Tactic 1. During 2002-2003, add a section in the BEMS website for injury prevention.

Tactic 2. Develop a listserve for dissemination of injury prevention information.

- Objective 06.4 Develop highly visible state events and media campaigns that coincide with national proclamation of special months related to the EMS and Trauma System (e.g. Trauma awareness month, EMS week, etc.)
- Objective 06.5 Develop a marketing approach for the EMS and Trauma System

Tactic 1. In 2003, develop materials to educate legislators and other leaders about the EMS and Trauma System.

Tactic 2. During 2002-2003, develop multicultural materials to educate the public about the EMS and Trauma System.

## **III. HUMAN RESOURCES**

**System Goal 07 – Sufficient numbers of appropriately trained health care professionals are available throughout the state to provide care for emergent medical and trauma patients in the field and in receiving health care institutions.**

## BACKGROUND

There are a number of factors affecting the emergency medical services and trauma system workforce in Arizona. In the rural setting, where many EMS providers and prehospital agencies rely on volunteers, increases in training and education requirements, increases in call volume and its affect on individual work requirements, and general decrease in the number of new volunteers, have resulted in a decrease in the ability of small rural agencies to provide consistent response. Additionally, limited budgets, the cost of supplies and equipment, and limited billing and collection practices have impacted the ability of small agencies to continue to provide services at all. In urban Arizona, the rapid increase in population has resulted in the need for an increase in staff, sometimes in excess of available trained people.

Emergency receiving facilities and trauma centers throughout the state suffer from limited numbers of health care givers. Nurses, particularly those with specialty training in acute care settings for adult and pediatric patients are in demand. The number of new nurses coming into the market in Arizona is limited, and hospitals have resorted to international recruitment to attempt to meet shortages. Additionally, there is a shortage of physicians taking emergency call. An additive factor is limited new physicians coming into the state to practice. Hospitals are significantly affected by decreases in reimbursement and some facilities in rural and urban Arizona have discontinued services or closed down. Trauma center closures in Tucson were averted by emergency stop-gap funding for 2002.

## HUMAN RESOURCES OBJECTIVES

- Objective 07.1 Identify current training and education levels by agency of prehospital providers.
- Objective 07.2 Identify current trauma training levels of prehospital providers, hospital emergency department nurses and physicians, and other receiving health care institution nurses and physicians.

Tactic 1. Include questions in 2002 regional profiles/surveys to identify current status for future planning.

- Objective 07.3 Identify current pediatric training levels of prehospital providers, hospital emergency department nurses and physicians, and other receiving health care institution nurses and physicians.

Tactic 1. Include questions in 2002 regional profiles/surveys to identify current status for future planning.

- Objective 07.4 Determine types and number of trauma and pediatric training courses needed in Arizona.

- Objective 07.5 Develop statewide distance learning capacity and implement distance education including for trauma and pediatric education for prehospital providers and receiving health care institutions.

Tactic 1. Utilize the regional profile/survey process to identify existing resources for distance learning.

- Objective 07.6 Provide funding through regional contracts for basic and additional education of health care professionals with a focus on EMT, trauma, and pediatric education.

Tactic 1. Continue annual regional council appropriation of contract funding for education based on demonstrated need.

- Objective 07.7 Provide opportunities for rural prehospital, hospital, other receiving health care institution, and physician trauma education and training.

- Objective 07.8 Determine 24 hour response capability levels of rural EMS providers, ambulance services, and prehospital agencies.

Tactic 1. In 2002, utilize regional profile/survey results to determine 24 hour response capabilities focused on responder availability.

- Objective 07.9 Identify unserved or underserved prehospital service areas and work with regions to develop a plan for service as part of the regional EMS and Trauma System planning.

Tactic 1. During 2002-2005, identify optimal level of EMS service and proximity of service for rural and wilderness areas.

Tactic 2. In 2003, utilize regional profile/survey results to determine areas of concern and options for enhancement of services.

- Objective 07.10 Work with the Rural Health Office, Arizona College of Public Health, regarding the Arizona Rural Hospital Flexibility Program to target available program funding to assist in building prehospital workforce capacity in rural areas.

Tactic 1. During 2002-2005, offer pediatric education to EMS providers including in designated “Flex” communities through grant funding between the program and BEMS.

- Objective 07.11 Work with other agencies to develop strategies to increase availability of workforce needed for EMS and Trauma System services.

## **IV. DISASTER PREPAREDNESS**

**System Goal 08 — EMS and Trauma System disaster planning is integrated with state, regional, and local disaster planning to ensure consistency and to maximize effectiveness.**

### **BACKGROUND**

Disaster preparedness planning and preparation is an active process in Arizona. It has increased since the disaster events of September 11, 2001. Planning occurs at multiple levels including EMS providers, ambulance services, prehospital agencies, hospitals, other receiving health care institutions, counties, regions, and the state. While there is some coordination within the various disciplines, (e.g. groups of fire departments, groups of hospitals) there is not currently a unified effort in the various disciplines and there is not a central coordinating entity that has been able to catalogue all activities and unite disaster preparedness efforts statewide. The State Department of Emergency Management has the lead state responsibility for disaster planning and preparation in Arizona.

### **DISASTER PREPAREDNESS OBJECTIVES**

- Objective 08.1 Encourage active EMS and Trauma System participant involvement in local, regional, and state disaster preparedness planning.

Tactic 1. During 2002-2003, identify disaster preparedness participants involved in state and regional bioterrorism preparedness planning.

Tactic 2. During 2002-2003, utilize regional profiles to identify prehospital providers and health care institution staff training and personal protection needs and provide the information for state disaster planning.

Tactic 3. During 2002-2003, ensure integration of EMS and Trauma System prehospital and health care institution participants in EMS and Trauma development are represented in the State/Regional bioterrorism preparedness planning and implementation processes.

- Objectives 08.2 Ensure availability of the EMS and Trauma System Plan, including system standards, policies and procedures, for integration into disaster preparedness planning at state, regional, county, and local levels.

- Objective 08.3 Improve coordination between regional EMS provider agencies that respond to disasters.
- Objective 08.4 Work with the State Department of Emergency Management to solicit the participation of more EMS and Trauma System participants in state planning.

## V. PREHOSPITAL CARE

### COMMUNICATION

**System Goal 09 – The prehospital communication networks in urban and rural areas provide prompt access to trained Emergency Medical Dispatchers through 911 and E-911 across the state.**

### **BACKGROUND**

Access to prehospital EMS is guaranteed in most populated areas of the state but 911 and, in particular enhanced 911 is not. There are many remote areas of the state where there is no specific phone access point or a defined pre-hospital provider. Along primary rural roadways there are many areas in which there is no cellular coverage for incident reporting by motorists or cellular or radio coverage for prehospital to hospital communications. The statewide communication (radio) system is aging and must be assessed for its ability to meet the current needs for prehospital communication. Communication center dispatch efforts specific to standards of practice and performance (e.g. call taking, medical management at and the between dispatch centers, data collection, and quality management processes) vary across the state.

### **PREHOSPITAL COMMUNICATIONS OBJECTIVES**

- Objective 09.1 Develop collaborative relationships between Arizona Department of Transportation (ADOT), Department of Public Safety (DPS), regional Emergency Medical and Trauma Services Systems, and the Bureau of Emergency Medical Services to identify current barriers and develop joint strategies for system access improvement (e.g. cellular and wireless access, call boxes, ambulance communications, funding.)
- Objective 09.2 Collaborate with ADOT and regional Emergency Medical and Trauma Services Systems to determine the current level of dispatcher training in emergency medical dispatching (EMD) across the state and identify education and training resources to support training.

Tactic 1. During 2002-2003, utilize regional profiles to determine current level of dispatcher training in EMD.

- Objective 09.3 Include dispatch centers in EMS and Trauma System quality management processes.

Tactic 1. During 2002-2003, utilize regional profiles to determine baseline.

- Objective 09.4 Integrate general prehospital communications planning with overall disaster preparedness planning.

Tactic 1. During 2002-2004, utilize state/regional bioterrorism preparedness planning to address system communication between providers (EMS-hospitals/health care institutions, EMS-EMS, EMS with law enforcement, and other lines of communication.)

- Objective 09.5 Work to ensure managed care organizations do not limit access by any prudent member layperson requiring 911 services.

## **PREHOSPITAL MEDICAL DIRECTION**

**System Goal 10 – Medical direction meets the needs of the system for quality prehospital medical care.**

### **BACKGROUND**

Medical direction of the prehospital component of the EMS and Trauma System encompasses standard setting, monitoring, and medical supervision and discipline of pre-hospital emergency medical technicians at all levels of certification. A state Medical Director, who is a practicing emergency physician, is responsible for recommending to the Director of the Department of Health Services, standards on training, certification, testing, training programs, prehospital care, and for disciplinary processes for individual emergency medical technicians and ambulance personnel. The State Medical Director is the chairman of the Medical Direction Commission, which is composed of practicing physicians and is charged with recommending medical protocols, procedures, medications, training, and techniques administered by emergency medical technicians at all levels. Neither the BEMS Medical Director nor the Medical Direction Commission has a formal role in providing medical direction related to the hospital components of the system. The State Trauma Advisory Board is the current mechanism for medical community input to trauma and trauma centers.

Arizona utilizes a tiered prehospital model of administrative and on-line medical direction that has been in place and functioned effectively for years. Administrative

medical direction relates to the medical standards, standing orders, protocols, and procedures that guide emergency medical technician practice and patient care. On-line medical direction relates to the physician directed patient care guidance or information provided to an EMT through two-way voice communication. On-line medical direction is accomplished through a communication system that links emergency medical technicians, qualified physicians, hospitals, and other receiving health care institutions. Traditionally EMS providers and ambulance services have provided medical direction through ALS base hospital agreements. The ALS base hospitals have provided quality-monitoring education for decades. Within the EMS system, however, there is an emerging medical direction model that provides medical direction outside of the ALS base hospital setting. In this model, EMS providers and ambulance services provide their own administrative or on-line medical direction or use centralized medical direction communications centers.

## **PREHOSPITAL MEDICAL DIRECTION OBJECTIVES**

- **Objective 10.1** Promote strategic alliances within the evolving medical direction model that provides medical direction outside of the ALS base hospital setting, to ensure oversight and relevance for the EMS and Trauma System in the future.
- **Objective 10.2** Determine the role of the Medical Direction Commission in developing interfacility transfer, trauma triage standards, and other standards.

Tactic 1. During 2002-2003, utilize EMS and trauma advisory committees to explore issues and develop recommendations to the Department.

## **PREHOSPITAL TRIAGE**

**System Goal 11 – There is a statewide patient identification and flow process that ensures and monitors appropriate patient destination and appropriate utilization of services for (1) *emergent* medically ill and (2) *emergent* injured patients as identified by the Arizona Trauma Patient Identification and Field Triage Decision Standard – adopted from the 1999 American College of Surgeon’s Field Triage Decision Scheme.**

## **BACKGROUND**

Patient triage standards for emergent patients have been primarily informal in Arizona. The practice for prehospital transport of emergent medically ill patients has been to take the patient to the closest appropriate hospital, unless otherwise instructed through medical direction. In 1992, the Department adopted as a guidance document, *Statewide Medical Standards for Non-Physician Prehospital Treatment and Triage of Patients Requiring Emergency Medical Services*. This guidance document includes triage protocols for

emergency medical technicians to use for patient assessment, patient transport, and determining when on-line medical direction is required in the decision-making process. In 2001, the State Trauma Advisory Board recommended using the 1999 American College of Surgeon's Field Triage Decision Scheme for triage of emergent injured patients. The Department concurs with this recommendation and has adopted the *Arizona Trauma Patient Identification and Field Triage Decision Standard* (Appendix A of the Plan), which is modeled after the 1999 American College of Surgeon's Field Triage Decision Scheme. EMTLA standards guide hospital acceptance of all emergent patients.

Informal trauma triage has been in place for decades. The standard practice is for prehospital providers in urban areas of the state to transport trauma patients directly to hospitals that are trauma centers. Regional trauma triage guidelines that closely follow the American College of Surgeon's trauma triage guidelines have been utilized in urban areas for years. In rural areas of the state, emergent injured patients are generally triaged to urban trauma centers. Some Arizona hospitals that do not formally identify themselves as trauma centers have organized their approach to care of the emergent injured patient in accordance with trauma center practices and receive emergent injured patients.

Concerns about over and under triage resulting from trauma triage practices have been expressed by non-trauma centers in urban and rural Arizona. Additionally the current practice of the use of air medical services and patient destination has been questioned. The absence of standardized statewide prehospital data collection and the limitations of hospital data to determine over or under triage of emergent injured are barriers to exploring these issues.

## **PREHOSPITAL TRIAGE OBJECTIVES**

- Objective 11.1 Develop an education plan for use of the Arizona Trauma Patient Identification and Field Triage Decision Standard tool.
- Objective 11.2 Determine emergent pediatric patient triage needs.
  - Tactic 1. During 2002-2003, utilize EMS and Trauma System advisory groups to develop recommendations to the Department on pediatric trauma triage.
- Objective 11.3 Develop mechanisms for using the Arizona Hospital Discharge Data Base (HDDDB) to monitor emergent patient hospital destinations and admissions.
- Objective 11.4 Explore hospital destinations based on time to definitive care for patients meeting Arizona Trauma Patient Identification and Field Triage Decision Standard for triage of emergent injured patients

Tactic 1. During 2002-2004, utilize EMS and Trauma System advisory groups to explore time frames for transport decisions and develop recommendations to the Department.

- Objective 11.5 Explore additional patient destination schemes for specific medical problems as part of a comprehensive EMS and Trauma System plan for patient care.

Tactic 1. During 2002-2005, explore issues and develop recommendations to the Department on the need for destination planning for additional types of patients.

- Objective 11.6 Study current prehospital triage destinations of emergent injured patients and work with the medical community, ADHS advisory groups, and regional councils to determine state and regional strategies for optimal patient triage destinations.

Tactic 1. During 2002-2004, utilize state trauma registry data and HDDB data to profile where emergent injured patients are triaged.

Tactic 2. During 2002-2003, work with appropriate groups to develop system recommendations to the Department on where emergent injured patient should be triaged to as part of a comprehensive EMS and Trauma System.

- Objective 11.7 When reliable data sources are available, monitor over and under triage of trauma patients and work with stakeholder groups to determine strategies for appropriate patient triage.
- Objective 11.8 Develop state and regional standards for the use of air medical services for patients with emergent medical needs.
- Objective 11.9 Collect and analyze available prehospital data to determine additional patient triage direction needs for medically ill and injured patients.

Tactic 1. During 2002-2003, determine the extent of prehospital patient data collection through the regional profiles.

Tactic 2. In 2003, work with regional coordinating systems to identify agencies interested in collecting and reporting patient data to BEMS. Utilize available funding to support a pilot.

## **PREHOSPITAL TREATMENT AND TRANSPORT**

**System Goal 12 – There is a network of high quality prehospital basic and advanced life support agencies and personnel throughout the state that provide state of the art prehospital treatment and transportation of medically ill and injured patients to appropriate hospital and other health care insitution destinations. Trauma patients are transported to designated Trauma Centers.**

### **BACKGROUND**

A network of EMS providers, ambulance services, and prehospital agencies is in place in each of the regional coordinating systems across the state. Regional councils provide EMS system administration in the regions and work with agencies within the region on system development and issue resolution. Mutual aid exists within and across regional boundaries and includes informal integration with the systems and agencies in the five bordering states. There is a mix of paid and volunteer agencies in urban and rural areas within the regions.

Prehospital EMS services are available across the state, however there are gaps in the level and location of coverage. There are significant needs in rural areas related to access, dispatch, communication, training, equipment resources, ALS services, and other specialized needs for the care of the emergent medically ill and emergent injured patient. There is a Certificate of Necessity (CON) process for ground ambulance services that addresses the geographical need for prehospital transport services. Air medical services are not regulated under the CON process. Statewide, there are 73 ground ambulance agencies and 15 air ambulance agencies. Combined, they provide 633 ground ambulances and 78 fixed-wing or rotary air ambulances. In addition to the ambulance CON holders, there are many EMS providers, ambulance services, and prehospital agencies, in both urban and rural areas, that respond and provide care but do not transport.

### **PREHOSPITAL TREATMENT AND TRANSPORT OBJECTIVES**

- **Objective 12.1** Ensure prehospital treatment protocols and standards reflect the scope of practice of emergency medical technicians and other prehospital personnel appropriate levels of certification and foster effective and efficient care.

Tactic 1. During 2002-2005, review administrative rules, substantive policies, and guidance documents and streamline processes for efficiency.

- **Objective 12.2** Train emergency medical technicians and other prehospital personnel in the use of Arizona Trauma Patient identification and Field Triage Decision Standard.

Tactic 1. During 2002-2003, distribute the tool to advisory committees for dissemination.

- Objective 12.3 Transport emergent injured patients, as identified by the Arizona Trauma Patient identification and Field Triage Decision Standard to a designated trauma center (preferably the highest level within the system).

Tactic 1. During 2002-2004, determine the need for additional criteria for transport. At a minimum, address time to trauma center –ground and air and highest level versus closest designated trauma center.

- Objective 12.4 Recognize EMS providers, ambulance services, and prehospital agencies making a special commitment to trauma care (e.g. trauma training, triage and treatment protocols, data collection and reporting) through a voluntary identification process and priority assistance.

Tactic 1. During 2002-2004, work with advisory committees to determine a method of identifying EMS providers, ambulance services, and prehospital agencies that have a special commitment to trauma patient care.

- Objective 12.5 Collect appropriate prehospital patient data for the purpose of evaluating the EMS and Trauma System at the state and regional levels.

Tactic 1. In 2003, work with regional coordinating systems to identify agencies interested in collecting and reporting patient data to BEMS. Utilize available funding to support a pilot.

- Objective 12.6 Integrate air medical services into the EMS and Trauma System including compliance with state air transport standards and data collection.

Tactic 1. In 2003, include air medical services as candidates for data collection and submission pilot projects.

- Objective 12.7 Work with regional councils to complete regional prehospital resource inventories as part of the regional planning process to determine (1) the status of prehospital care coverage across the region and (2) the status of agency trauma training, pediatric training, patient data collection, quality assurance processes, communication capabilities, and equipment status including for pediatric care.

Tactic 1. During 2002-2003, the four regional coordinating systems will complete and submit regional profiles and data analysis.

Tactic 2. During 2003-2005, work with regional coordinating systems to determine enhancement strategies.

- Objective 12.8 Develop state and regional EMS and Trauma System performance and outcome standards for prehospital care.
- Objective 12.9 Explore state and regional border and Indian Nation treatment and transport issues and develop formal strategies to enhance patient care.
- - Tactic 1. During 2003–2004, facilitate regional and Indian Nation planning.
- Objective 12.10 Work with the Rural Health Office, Arizona College of Public Health, to identify the need to assist rural EMS providers, ambulance services, and prehospital agencies in Critical Assess Hospital catchment areas in order to ensure the capability for treatment and transport of emergent medical and trauma patients to designated Critical Access Hospitals.

Tactic 1. Distribute to EMS regional councils copies of the Rural Health Office – 2001 EMS Needs Assessment Survey of selected rural communities.

## **VI. DEFINITIVE CARE (TRAUMA CENTERS AND OTHER EMERGENCY RECEIVING HEALTH CARE INSTITUTIONS)**

**System Goal 13 – Arizona will have a network of licensed emergency receiving health care insitutions that accept and treat emergent medically ill and emergent injured patients. The network will include trauma centers meeting state developed trauma center standards or verified as a trauma center by American College of Surgeon’s. Rehabilitation facilities will be trauma care participants. Arizona trauma centers will be formally identified in the statewide EMS and Trauma System through a trauma center designation process. Clinics may serve of role in the overall system safety net as non-emergent trauma patient receiving facilities.**

### **BACKGROUND**

There are 78 general acute care hospitals identified as emergency receiving hospitals in Arizona. They accept a mix of emergent medical and trauma patients. There are 50 hospitals located in urban areas and 28 hospitals located in rural areas. Due to the nature of the health care industry, there have been reductions in services and closures of rural hospitals. A voluntary Arizona Rural Hospital Flexibility program is in place to assist rural hospitals in preserving rural hospital services including emergency services. The

program is administrated through the Rural Health Office, and funded through federal funding. Two critical issues in urban areas are diversion of ambulances away from emergency departments and long wait times for acceptance of ambulance patients at hospitals. This affects both general emergent patients and trauma patients. Contributing factors include the public's use of the 911 system as the safety net for medical care, ED overcrowding, staffing shortages (nurses and physician specialists,) patient bed unavailability, and numerous other factors. The urban areas of metro Phoenix and Tucson are addressing the issues with multidisciplinary planning and changes to both prehospital and hospital processes. EMTLA guides the standards for emergency patient acceptance and transfer.

There is limited formal definition of definitive trauma services in Arizona. There is no statute or administrative rule delineating levels of trauma centers. There is a definition in statute of Trauma centers as general acute care hospitals with 24-hour in-house trauma surgical services. A network of self and regionally identified Level I trauma centers has been providing specialized care for emergent injured patients since the early 1980's in Phoenix and Tucson. There are five recognized trauma centers in Phoenix and two in Tucson. One Phoenix trauma center is an American College of Surgeon's verified, Level I trauma center. A Flagstaff hospital has developed formal organized trauma services and routinely provides care for emergent injured patients. Trauma patients, identified through the use of tools similar to the Arizona Trauma Patient Identification and Field Triage Decision Standard, are preferentially taken to these hospitals for trauma care. The placement of trauma centers is based on the location of preexisting hospital services and not necessarily with regard to known geographical need for placement of trauma centers. All of the metropolitan trauma centers are located in population centers and have busy trauma services.

The State Trauma Advisory Board recommended and the Department adopted the initial Arizona Trauma Center Standards outlined in the EMS and Trauma System Plan (Appendix B of the plan). The EMS and Trauma System Plan calls for four levels of trauma centers with Level I trauma centers providing the highest level of resources for trauma patient care. Levels II, III, and IV require decreasing levels of resource commitment respectively. It is envisioned the standards are dynamic and will be updated based on need. American College of Surgeon's Trauma Facilities Criteria (a higher level of standards) as an alternative to Arizona Trauma Center Standards, if accepted would provide hospitals an option for being formally designated at a Level of trauma care. Implementation of the Arizona State trauma center standards is necessary for the formalization of the trauma center component of the comprehensive EMS and Trauma System. This level of formalization will provide data that can assist in determining data based distribution of state or federal funding for trauma center and trauma system support. If the ACS national standards are added as an option for designation, the state would be able to designate trauma centers with few additional resources and a modified process.

Several areas of special focus are part of the definitive care component of the system.

Some criteria for pediatric standards have been integrated into the recommended state trauma center standards developed and recommended by State Trauma Advisory Board. They need to be updated to reflect national norms. Specialty requirements for trauma rehabilitation centers will need to be developed.

Meeting hospital standards will require significant hospital resource allocation, particularly at higher trauma center levels. Stable financial support for trauma center care is a system consideration.

## **DEFINITIVE (HOSPITAL) CARE OBJECTIVES**

- Objective 13.1 Implement Arizona Trauma Center Standards for hospital designation of Level I, II, III and IV trauma centers.
  - Tactic 1. In 2002, utilize trauma experts from within the state to recommend update of initial Arizona Trauma Center Standards, including for pediatrics and rehabilitation.
- Objective 13.2 Adopt American College of Surgeon's trauma center verification standards for hospital designation of Level I, II, III and IV trauma centers as an option for meeting Arizona Trauma Center Standards for hospital designation.
  - Tactic 1. Develop a modified state trauma center designation process for hospitals providing proof of trauma center verification by the ACS. Hospitals will be designated in the state at their level of ACS verification.
- Objective 13.3 Develop an inclusive trauma center designation process for Trauma Center designation to identify hospital capabilities and commitment. Include formal appeal, contracting, and other pertinent processes and develop administrative rule as appropriate.
  - Tactic 1. During 2002-2005, designate trauma centers. Develop initial and long-term processes for designating trauma centers.
- Objective 13.4 Work with the regional councils to identify the need for trauma centers at various levels and locations within the Regional EMS and Trauma Services Systems.
  - Tactic 1. During 2002-2004, utilize regional profiles to determine needs for trauma center resources within the region.
- Objective 13.5 Monitor designated trauma centers through the state trauma registry data and working with regional councils.

Tactic 1. During 2002-2005, work with trauma centers to determine meaningful state level reports to the hospitals. Provide quarterly reporting to hospitals on their submitted data as part of the system QA process.

Tactic 2. During 2002-2005, work with regional councils and hospitals in the regions to determine meaningful state reports on their systems as part of the system QA process.

- Objective 13.6 Develop opportunities for participation in the EMS and Trauma System by non-trauma center hospitals through data collection and participation in quality assurance processes.

Tactic 1. During 2002-2003, utilize hospital discharge database to identify hospitals admitting trauma patients (according to the Arizona Trauma Patient Identification and Field Triage Decision Standard).

Tactic 2. During 2003-2005, develop strategies to include non-trauma centers in regional and state system QA processes.

- Objective 13.7 Provide technical assistance to rural hospitals for trauma center development.

Tactic 1. During 2003-2005, identify grant opportunities for technical assistance support.

- Objective 13.8 Work with bordering states and Indian Nations to ensure emergent care resources, including trauma care resources, are appropriately utilized for optimal and timely patient care.

Tactic 1. During 2002-2003, work with the regional councils to identify tribal leaders and to integrate representation from Indian Nations into their councils.

## **INTERFACILITY TRANSFER**

**System Goal 14 – The prehospital communication networks in urban and rural areas provide prompt access to trained Emergency Medical Dispatchers through 911 and E-911 across the state. The interfacility transfer of emergent patients results in care at the most appropriate hospital for the patients condition. The interfacility transfer of trauma patients is coordinated and timely, moving of patients to appropriate levels of trauma care resources.**

## **BACKGROUND**

Hospitals in the State of Arizona, follow EMTLA guidelines for the interfacility transfer of all patients. Physicians make transfer decisions based on a variety of circumstances. There are no specific guidelines for the transfer of trauma patients in the state. Interfacility trauma transfer guidelines will establish *considerations* for the transfer of trauma patients.

## **INTERFACILITY TRANSFER OBJECTIVES**

- Objective 14.1 Develop guidelines for the *consideration* of transfer of trauma patients (1) from an acute care hospital that is not designated Trauma Centers to a Trauma Center, (2) to a higher level of Trauma Center resources, (3) for specialty care needs, (4) to a medical rehabilitation hospital, (5) from a Trauma Center to a non Trauma Center hospital and for other considerations.

Tactic 1. In 2002, the Department will acquire interfacility transfer guidelines from other state systems.

Tactic 2. During 2002-2004, work with hospital stakeholders to develop recommendations for guidelines for *consideration* of transfer of trauma patients between hospitals.

## **MEDICAL REHABILITATION**

**System Goal 15 – Medical rehabilitation hospitals are an integrated component of the Arizona EMS and Trauma System and meet the need for post-acute care for medical and trauma patients.**

## **BACKGROUND**

Medical rehabilitation is the final critical link in the care continuum of a comprehensive EMS and Trauma System. The early identification of rehabilitation candidates is an integral component of the acute hospitalization phase of patient care for medical and trauma patients, in order to return individuals to the highest possible level of functioning consistent with their medical problem or traumatic injury. A process for including medical rehabilitation hospitals in the EMS and Trauma System will be a component of Trauma Center designation.

## **MEDICAL REHABILITATION OBJECTIVES**

- Objective 15.1 Utilize existing national rehabilitation hospital accreditation standards and processes to identify a model for the designation of rehabilitation centers as part of the trauma center network in Arizona.

Tactic 1. During 2002-2003, acquire other state's medical rehabilitation trauma center designation standards.

Tactic 2. During 2002-2003, convene medical rehabilitation experts in the state to discuss standards for designation of medical rehabilitation hospitals as part of the EMS and Trauma Care System.

- Objective 15.2 Work with acute care hospitals and rehabilitation hospitals to identify the need for and distribution of medical rehabilitation hospitals to meet the need for post-acute trauma medical rehabilitation services.
- Objective 15.3 Integrate designated rehabilitation centers into the EMS and Trauma System.
- Objective 15.4 Ensure that trauma patient flow to rehabilitation facilities is determined based on patient need and facility services as well as payer preference.

# EMS AND TRAUMA SYSTEM EVALUATION

## I. INFORMATION SYSTEMS

**System Goal 16 – Information on the performance of the EMS and Trauma System from current and new state data resources enables data-driven system improvement.**

### BACKGROUND

Information must be obtained to use in evaluating the performance of the EMS and Trauma System. There is no single source of EMS and Trauma System data in the state. While there are sources available, they are primarily related to hospital care or they are specific to groups of patients (e.g. motor vehicle crash data). Arizona has endeavored to link some of the existing databases through the national Crash Outcome Data Evaluation System (CODES) project, however project funding is a barrier to further linkages and analysis.

A state trauma registry has been in existence for over 5 years and trauma centers collected and submitted trauma patient until 2000, when software issues caused collection and submission barriers. New software products were implemented in 2001-2002. Due to concerns about data confidentiality, no system reports have been published. Hospitals are required to submit hospital discharge data for each admitted patient. The focus on that data collection is on cost containment and though coding is included that can be useful in looking at epidemiology, the submission of these data are not enforced. Additionally, hospital discharge data includes only admitted patients and does not capture the many emergency department patients, including those that die.

There is no standardized state prehospital patient care data collection instrument, no mandated data collection process, and no state prehospital database. There are no prehospital outcome or performance standards in place. Data collection does occur in some rural and urban agencies however the extent of data collected and the use of the data varies dramatically. System assessments have been qualitative in nature and not based on a system database at regional or state levels.

### INFORMATION SYSTEMS OBJECTIVES

- Objective 16.1 Develop a statewide injury surveillance system through linkage of existing data bases.
- Objective 16.2 Develop an inclusive EMS and Trauma System quality management process that will encourage system participants to collect and submit patient data to the state.

Tactic 1. During 2002-2003, the Department will work with STAB to further develop the quality management model from the Quality subcommittee work.

- Objective 16.3 Include aggregate system data in the annual EMS and Trauma System report.

Tactic 1. During 2002-2003, determine if prehospital diversion data from the EMS System can be integrated into the EMS and Trauma System information system.

- Objective 16.4 Assist hospitals in the revision of information systems to accommodate trauma reporting requirements.

Tactic 1. During 2001-2003, provide funding assistance for Trauma Center -Trauma Registry *solution* implementation using state supported software products.

- Objective 16.5 Develop a state trauma registry data validation process and resources necessary to support it.

Tactic 1. In 2002, provide reporting to participating hospitals on data completeness.

Tactic 2. During 2002-2003, develop standard trauma reports.

Tactic 3. During 2002-2005, work with trauma centers to test state trauma registry data.

## II. SYSTEM EVALUATION

**System Goal 17 – A fully integrated EMS and Trauma System quality improvement program is sensitive to the unique conditions and needs of prehospital, hospital, and other health care participants and urban and rural areas. It utilizes data guided decisions to continually improve emergent medical and trauma patient care throughout the state.**

### BACKGROUND

Evaluation occurs in some manner at two levels within the current EMS and Trauma System. It occurs at the local agency level including in law enforcement, dispatch, EMS response and transport agencies, and hospitals including medical rehabilitation hospitals. The level of evaluation is defined by law or by business processes. EMS and Trauma System evaluation needs are not specifically integrated into local level evaluation

processes. Evaluation occurs informally at the regional level in regional EMS and Trauma Service Systems through regional issue identification and resolution practice. There is not a formal EMS and Trauma System evaluation process at the state level. The State Trauma Advisory Board's quality committee has developed recommendations for a tiered system evaluation process as part of EMS and Trauma System evaluation. The focus of the process is to maintain local (agency) and regional autonomy while ensuring appropriate overall statewide system performance.

## **SYSTEM EVALUATION OBJECTIVES**

- Objective 17.1 Develop mechanisms that support EMS provider, ambulance services, and prehospital agency collection and submission of a minimum data set to the state on all patients.
- Objective 17.2 Develop appropriate protections from discovery of EMS and Trauma System participant data and state registry data utilized in a formal EMS and Trauma System quality assurance and system improvement process including local (agency), regional, and state review processes.

Tactic 1. During 2002-2003, the Department will review current statutes and administrative rule for existing legal protection of registry data as part of a system QA process.

- Objective 17.3 Develop mechanisms that support independent quality review of designated Trauma Center performance.

Tactic 1. During 2002-2005, the Department will work with advisory committees and health care leaders in Arizona to identify and define opportunities for independent quality review within the EMS and Trauma System, but outside of state government, and to work with system advisory groups to develop recommendations as appropriate.

- Objective 17.4 Ensure designated trauma center participation in the state Trauma Registry.
- Objective 17.5 Develop mechanisms that support EMS provider, ambulance service, and prehospital agency participation through submission of a minimum data set to receiving trauma centers via a patient care run report or the most current technology used by the agency.
- Objective 17.6 Develop mechanisms that support dispatch center participation by tracking and submission of dispatch data.
- Objective 17.7 Develop mechanisms for Medical Examiner participation through tracking and submission of data on all traumatic deaths in Arizona.

Tactic 1. During 2002-2004, explore Department vital records and state Trauma Registry linking capabilities.

- Objective 17.8 Monitor aggregate data on system performance including but not limited to (1) timely submission of data (2) data completeness (3) prehospital response and transport times (4) over and under triage to trauma centers as defined by the triage decision tool (5) patient acuity as defined by Injury Severity Scores (6) the epidemiology of trauma, and other system level data in order to identify opportunities for system improvement.

Tactic 1. During 2002-2003, develop a model for initial ADHS reporting to trauma centers on, at a minimum, data completeness for registry elements.

Tactic 2. During 2002-2004, work with advisory groups to review other state's system evaluation models and develop a model for the use of trauma registry data as a monitoring mechanism for Arizona.

- Objective 17.9 Develop a quarterly system level report for use in system evaluation through the quality assurance process.

Tactic 1. During 2003-2004, develop a model for initial reporting on system level performance.

- Objective 17.10 Provide ongoing monitoring of the quality review processes for compliance with statute and substantive policy on quality assurance.

### III. RESEARCH

**System Goal 18 – The Arizona EMS and Trauma System research agenda parallels the national agendas to maximize opportunities for funded research.**

#### BACKGROUND

A statewide EMS and Trauma System research agenda does not exist at the current time. There are pockets of related research, both qualitative and quantitative, in the state. Several trauma centers have scientific research programs. Some EMS agencies have published research in peer publications. National coalitions of systems and research professionals, led by agencies like the Centers for Disease Control (CDC), are developing research agendas related to injury and injury control. Developing an EMS and Trauma System agenda that parallels the national direction is a logical approach for an expanding EMS and Trauma System.

## RESEARCH OBJECTIVES

- Objective 18.1 Support EMS and Trauma System research through research partnerships between the state and system participants to increase opportunities for federal funding of meaningful research.

Tactic 1. During 2002-2003, work with the Rural Health Office to identify funding opportunities for joint research and evaluation projects.

- Objective 18.2 Develop an EMS and Trauma System research agenda in partnership with prehospital and hospital system participants.

- Objective 18.3 Integrate the EMS and Trauma System research agenda into the State Prevention Plan.

Tactic 1. During 2002-2005, identify research opportunities that combine injury prevention and EMS and Trauma system development and develop proposals for project funding.



## APPENDIX B

### ARIZONA TRAUMA CENTER STANDARDS

Note: These criterion are *adapted for Arizona (STAB recommendations 1999)* from the American College of Surgeons (ACS) Resources for Optimal Care of the Injured Patient 1999 document (Committee on Trauma, American College of Surgeons, 1998, Chicago, IL) including pediatric recommendations and as such only represents a summary of the ACS standards.

E = Essential  
D = Desirable

Trauma Facilities Criterion		Levels			
		I	II	III	IV
<b>1.</b>	<b>Institutional Organization</b>				
2.	Trauma program	E	E	E	-
3.	Trauma service	E	E	E	-
4.	Trauma team	E	E	E	E
5.	Trauma program medical director	E	E	E	D
6.	Trauma multidisciplinary committee	E	E	E	D
7.	Trauma coordinator/TPM	E	E	E	E
<b>8.</b>	<b>Hospital Departments/Division/Sections</b>				
9.	Surgery	E	E	E	-
10.	Neurological surgery	E	E	-	-
11.	Neurosurgical trauma liaison	E	E	-	-
12.	Orthopaedic surgery	E	E	E	-
13.	Orthopaedic trauma liaison	E	E	E	-
14.	Emergency medicine	E	E	E	-
15.	Anesthesia	E	E	E	-
<b>16.</b>	<b>Clinical Capabilities</b>				
17.	Specialty Immediately Available 24 hours/day				
18.	Published on call schedule	E	E	E	D
19.	General surgery	E	E	E	D
20.	Published backup schedule	E	E	D	-
21.	Dedicated to single hospital when on-call	E	E	D	-
22.	Anesthesia	E	E	E	D
23.	Emergency medicine <sup>1</sup>	E	E	E	-
24.	On-call and promptly available 24 hours/day				
25.	Cardiac surgery	E	D	-	-
26.	Hand surgery	E	E	D	-
27.	Microvascular/replant surgery	E	D	-	-
28.	Neurologic surgery	E	E	D	-
29.	Dedicated to one hospital or back-up call	E	E	D	-
30.	Obstetrics/gynecologic surgery	E	E	D	-
31.	Ophthalmic surgery	E	E	D	-
32.	Oral/maxillofacial surgery	E	E	D	-
33.	Orthopaedic surgery	E	E	E	D
34.	Dedicated to one hospital or back-up call	E	E	D	-
35.	Plastic surgery	E	E	D	D
36.	Critical care medicine	E	E	D	-
37.	Radiology	E	E	E	D

Trauma Facilities Criterion		Levels			
		I	II	III	IV
38.	Thoracic surgery	E	E	D	-
<b>39.</b>	<b>Clinical Qualifications</b>				
40.	General/Trauma Surgeons				
41.	Current Board Certification <sup>2</sup>	E	E	E	-
42.	16 hours CME/year	E	E	D	D
43.	ATLS completion	E	E	E	E
44.	Peer review committee attendance > 50%	E	E	E	-
45.	Multidisciplinary committee attendance	E	E	E	-
46.	Credentialed for Pediatric Care <sup>21</sup>	E	E	D	-
<b>47.</b>	<b>Emergency Medicine</b>				
48.	Board certification <sup>1</sup>	E	E	D	-
49.	Trauma education – 16 hours CME/year	E	E	D	-
50.	ATLS completion <sup>4</sup>	E	E	E	E
51.	Peer review committee attendance > 50%	E	E	E	-
52.	Multidisciplinary committee attendance	E	E	E	-
53.	Neurosurgery				
54.	Current board certification	E	E	-	-
55.	16 hours CME/year	E	E	D	-
56.	ATLS completion	D	D	D	-
57.	Peer review committee attendance > 50%	E	E	E	-
58.	Multidisciplinary committee attendance	E	E	E	-
59.	Orthopaedic Surgery				
60.	Board certification	E	E	D	-
61.	16 hours CME in skeletal trauma	E	E	D	-
62.	ATLS completion	D	D	D	-
63.	Peer review committee attendance > 50%	E	E	E	-
64.	Multidisciplinary committee attendance	E	E	E	-
<b>65.</b>	<b>Facilities/Resources/Capabilities</b>				
66.	Volume Performance <sup>5</sup>				
67.	Trauma admissions 1,200/year <sup>3</sup>	E	-	-	-
68.	Patients with ISS > 15 (240 total or 35 patients/surgeon) <sup>3</sup>	E	-	-	-
69.	Presence of surgeon at resuscitation (immediately available) <sup>6</sup>	E	E	-	-
70.	Presence of surgeon at resuscitation (promptly available)	-	-	E	
71.	Presence of surgeon at operative procedures	E	E	E	E
72.	Pediatric Resuscitation Equipment in all Patient Care Areas <sup>21</sup>	E	E	D	-
<b>73.</b>	<b>Emergency Department</b>				
74.	Personnel				
75.	Designated physician director	E	E	E	D
76.	Equipment for Resuscitation for Patients of All Ages <sup>21</sup>				
77.	Airway control and ventilation equipment	E	E	E	E
78.	Pulse oximetry	E	E	E	E
79.	Suction devices	E	E	E	E
80.	Electrocardiograph-oscilloscope-defibrillator	E	E	E	E
81.	Internal paddies	E	E	E	-
82.	CVP monitoring equipment	E	E	E	D
83.	Standard IV fluids and administration sets	E	E	E	E
84.	Large-bore intravenous catheters	E	E	E	E
85.	Sterile Surgical Sets for				
86.	Airway control/cricothyrotomy	E	E	E	E

Trauma Facilities Criterion		Levels			
		I	II	III	IV
87.	Thoracostomy	E	E	E	E
88.	Venous cutdown	E	E	E	E
89.	Central line insertion	E	E	E	-
90.	Thoracotomy	E	E	E	-
91.	Peritoneal lavage	E	E	E	D
92.	Arterial catheters	E	E	D	D
93.	Ultrasound	D	D	D	D
94.	Drugs necessary for emergency care	E	E	E	E
95.	X-ray availability 24 hours/day	E	E	E	D
96.	Cervical traction devices	E	E	E	D
97.	Broselow tape	E	E	E	E
98.	<b>Thermal Control Equipment</b>				
99.	For patient	E	E	E	E
100.	For fluids and blood	E	E	E	E
101.	Rapid infuser system	E	E	E	E
102.	Qualitative end-tidal CO <sub>2</sub> determination	E	E	E	E
103.	Pediatric Emergency Department Area <sup>21</sup>	E	E	D	-
104.	Communication with EMS vehicles	E	E	E	E
<b>105.</b>	<b>Operating Room</b>				
106.	Immediately available 24 hours/day	E <sup>7</sup>	D <sup>8</sup>	D	D
107.	Personnel				
108.	In-house 24 hours/day	E	D	-	-
109.	Available 24 hours/day	-	E	E	D
110.	<b>Age Specific Equipment</b>				
111.	Cardiopulmonary bypass	E	D	-	-
112.	Operating microscope	E	D	D	-
113.	<b>Thermal Control Equipment</b>				
114.	For patient	E	E	E	E
115.	For fluids and blood	E	E	E	E
116.	X-ray capability including C-arm image intensifier	E	E	E	D
117.	Endoscopes, bronchoscope	E	E	E	D
118.	Craniotomy instruments	E	E	D	-
119.	Equipment for long bone and pelvic fixation	E	E	E	D
120.	Rapid infuser system	E	E	E	E
<b>121.</b>	<b>Postanesthetic Recovery Room (SICU is acceptable)</b>				
122.	Registered nurses available 24 hours/day	E	E	E	-
123.	Equipment for monitoring and resuscitation	E	E	E	E
124.	Intracranial pressure monitoring equipment	E	E	D	-
125.	Pulse oximetry	E	E	E	E
126.	Thermal control	E	E	E	E
<b>127.</b>	<b>Intensive or Critical Care Unit for Injured Patients<sup>9</sup></b>				
128.	Registered nurses with approved trauma training	E	E	E	-
129.	Designated surgical director or surgical co-director	E	E	E	-
130.	Surgical ICU service physician in-house 24 hours/day <sup>10</sup>	E	D	D	-
131.	Surgically directed and staffed ICU service <sup>11</sup>	E	D	D	-
132.	Equipment for monitoring and resuscitation	E	E	E	-
133.	Intracranial monitoring equipment	E	E	-	-
134.	Pulmonary artery monitoring equipment	E	E	E	-
135.	Pediatric Intensive Care <sup>21</sup>	E <sup>12</sup>	E <sup>13</sup>		

Trauma Facilities Criterion		Levels			
		I	II	III	IV
<b>136.</b>	<b>Respiratory Therapy Services</b>				
137.	Available in-house 24 hours/day	E	E	D	D
138.	On call 24 hours/day	-	-	E	D
<b>139.</b>	<b>Radiological Services (Available 24 hours/day)</b>				
140.	In-house radiology technologist	E	E	D	D
141.	Angiography	E	E	D	-
142.	Sonography	E	E	E	D
143.	Computerized tomography	E	E	E	D
144.	In-house CT technician	E	D	-	-
145.	Magnetic resonance imaging (available)	E	D	D	-
<b>146.</b>	<b>Clinical Laboratory Service Available 24 hours/day</b>				
147.	Standard analyses of blood, urine, and other body fluids including micro sampling when appropriate	E	E	E	E
148.	Blood typing and cross-matching	E	E	E	D
149.	Coagulation studies	E	E	E	E
150.	Comprehensive blood bank or access to a community central blood bank and adequate storage facilities	E	E	E	D
151.	Blood gases and pH determination	E	E	E	E
152.	Microbiology	E	E	E	D
153.	(Pediatrics) Microsampling <sup>21</sup>	E	E	E	-
<b>154.</b>	<b>Acute Hemodialysis</b>				
155.	In-house	E	D	-	-
156.	Transfer agreement		E	E	E
<b>157.</b>	<b>Burn Care - Organized</b>				
158.	In-house or transfer agreement with burn center	E	E	E	E
<b>159.</b>	<b>Acute Spinal Cord Management</b>				
160.	In-house or transfer agreement with regional acute spinal cord injury rehabilitation center	E	E	E	E
<b>161.</b>	<b>Rehabilitation Services</b>				
162.	Transfer agreement to an approved rehabilitation facility	E	E	E	E
163.	Physical therapy	E	E	E	D
164.	Occupational therapy	E	E	D	D
165.	Speech therapy	E	E	D	-
166.	Social Service	E	E	E	D
<b>167.</b>	<b>Performance Improvement</b>				
168.	Performance improvement programs (including pediatric trauma cases)	E	E	E	E
169.	Trauma Registry				
170.	In-house	E	E	E	E
171.	Participation in state, local, or regional registry	E	E	E	E
172.	Orthopaedic database	D	D	-	-
173.	Audit of all trauma deaths	E	E	E	E
174.	Morbidity and mortality review	E	E	E	E
175.	Trauma conference – multidisciplinary	E	E	E	-
176.	Medical nursing audit	E	E	E	E
177.	Review of prehospital trauma care	E	E	E	D
178.	Review of times and reasons for trauma related bypass	E	E	D	D
179.	Review of times and reasons for transfer of injured patients	E	E	E	E
180.	Performance improvement personnel dedicated to care of injured patients	E	E	D	D
181.	Pediatric Specific Performance Improvement Program <sup>21</sup>	E	E	E	E

Trauma Facilities Criterion		Levels			
		I	II	III	IV
<b>182.</b>	<b>Continuing Education/Outreach<sup>14</sup></b>				
183.	General surgery residency program <sup>15</sup>	E	D	-	-
184.	ATLS provide/participate	E	D	D	-
185.	Programs provided by hospital for:				
186.	Staff/community physicians (CME)	E	E	E <sup>16</sup>	D
187.	Nurses	E	E	E	D
188.	Allied health personnel	E	E	E	-
189.	Prehospital personnel provision/participation	E	E	E	D
190.	<b>Prevention<sup>17</sup></b>				
191.	Injury control studies	E	E	-	-
192.	Collaboration with other institutions	E	E	D	D
193.	Monitor progress/effect of prevention programs	E	E	D	D
194.	Designated prevention coordinator – spokesperson for injury control	E	E	D	-
195.	Outreach activities	E	E	D	D
196.	Information resources for public	E	E	D	-
197.	Collaboration with existing national, regional, and state programs	E	E	E	E
198.	Coordination and/or participation in community prevention activities	E	E	E	D
199.	<b>Research<sup>18</sup></b>				
200.	Trauma registry performance improvement activities	E	E	E	-
201.	Research committee	E	D	-	-
202.	Identifiable IRB process	E	D	-	-
203.	Extramural education presentations	E <sup>19</sup>	D	D	-
204.	Number of scientific publications	E <sup>20</sup>	D	-	-

<sup>1</sup> When emergency medicine specialists are not involved with the care of the injured patient, these criteria are not required.

<sup>2</sup> In rare circumstances, a non-board-certified surgeon may be included in the trauma service. Refer to the ACS “Resources for Optimal Care” Document for a discussion of alternate criteria.

<sup>3</sup> If not Board certified in emergency medicine must be current ATLS verified.

<sup>4</sup> ATLS Exemption – An exemption for this requirement is provided for physicians Board certified in emergency medicine.

<sup>5</sup> Volume Performance/Quality Control. A level I trauma center shall provide quality trauma care equivalent to a trauma center meeting the ACS standards (e.g., an annual volume of 1,200 trauma ED or hospital admissions per year and with 20 percent of the trauma patients with an ISS > 15 (or 35 cases per surgeon {ISS > 15})). Other admission criteria may be substituted accompanied by a quality improvement review process and case-critique methodology approved by the Department of Health Services.

<sup>6</sup> For Level I hospitals, 24-hour in-house availability of the attending surgeon is the most direct method for providing this involvement. A PGY 4 or 5 resident may be approved to begin resuscitation while awaiting the arrival of the attending surgeon, but cannot be considered as a replacement for the attending surgeon in the emergency department. This may allow the attending surgeon to take call from outside the hospital. In this case, local criteria and PI must be established to define conditions requiring the attending surgeon’s immediate hospital presence. For Level I and II hospitals, the attending surgeon is required to participate in major therapeutic decisions, be present in the emergency department for major resuscitations and be present at all operative procedures.

<sup>7</sup> Unless the primary and backup panel is currently involved in a trauma orthopaedic case.

<sup>8</sup> An operating room must be adequately staffed and immediately available in a Level I trauma center. This is met by having a complete operating room team in the hospital at all times, so if an injured patient requires operative care, the patient can receive it in the most expeditious manner. These criteria cannot be met by individuals who are also dedicated to other functions within the institution. Their primary function must be the operating room.

<sup>9</sup> Pediatric ICU requirement – as required for Level Is may be met through onsite capability or transfer agreement with a PICU and QI monitoring of all trauma pediatric transfers. The Pediatric ICU must meet the Pediatric ICU requirements listed in Chapter 10 of the ACS Document.

<sup>10</sup> ICU Physician Requirement. May be served by physicians credentialed in critical care and have back-up coverage for their service when responding to ICU trauma care.

<sup>11</sup> Same as above.

<sup>12</sup> The PICU must be available on site.

<sup>13</sup> This criteria may be satisfied by a transfer agreement.

<sup>14</sup> Outreach. – Outreach commitment is required of Level Is. This requirement may be met by hospitals agreeing to participate in a collaborative effort on outreach assuming this effort would have the same intent and outcome of single hospital-sponsored program. Such a collaborative affiliation must be approved by the Department of Health Services.

<sup>15</sup> Teaching. – The in-house teaching hospital requirement (e.g., residents, trauma fellowship) would be met for any Level I through the provision of a plan calling for active participation with a regional residency rotation program or agreed to participate in a collaborative model approved by the Department of Health Services. Level Is are expected to have a functional and documented teaching commitment.

<sup>16</sup> In areas where the Level III hospital is the lead institution, these educational activities are an essential criteria. When the Level III is in an area that contains other hospital resources, such as a Level I or II, then this criteria is no longer essential.

<sup>17</sup> Prevention. A prevention commitment would be required of the Level I however a collaborative effort could be approved as stipulated in “Outreach” above or may be sponsored or coordinated by the Regional Trauma Councils.

<sup>18</sup> Research. The trauma research requirement would be fulfilled for any Level I that provided a plan to participate with a regional research program or agree to participate in a collaborative model approved by the Department of Health Services. A plan for formal participation and author/co-author publications at the level required by the ACS standard must exist at each Level I hospital.

<sup>19</sup> Four educational presentations per year for the program. These presentations must be given outside the academically affiliated institutions of the Trauma Center.

<sup>20</sup> Publications should appear in peer reviewed journals. Index medicus listing is preferable. In a three-year cycle, the minimum acceptable number is ten for the entire trauma program. This must include a minimal activity of one publication from the physicians representing each of the four following specialties: emergency medicine, general surgery, orthopaedic surgery, critical care and neurosurgery per review cycle.

<sup>21</sup> Pediatric standards apply to adult trauma centers providing trauma care for pediatric patients.

## APPENDIX C

### ARIZONA EMS AND TRAUMA SYSTEM PLAN GLOSSARY OF TERMS

Activation of the Trauma System: Procedures whereby a pre-hospital provider or health care institution identifies the trauma patient by using the Arizona Trauma Patient Identification and Field Triage Decision Standard and resources are mobilized to care for the patient in accordance with regional procedures.

Administrative Medical Direction: Supervision of certified emergency medical technicians by a qualified medical director.

Admission: Admission means the arrival of the patient to the emergency care/trauma treatment area of the hospital.

Advanced Life Support (ALS): Special services designed to provide definitive pre-hospital emergency medical care, including, but not limited to, cardiopulmonary resuscitation, cardiac monitoring, cardiac defibrillation, advanced airway management, intravenous therapy, administration of specified drugs and other medicinal preparations and other specified techniques and procedures administered by authorized personnel under the medical direction of a physician who is a qualified medical director.

Advanced Life Support (ALS) Base Hospital: A health care institution that offers general medicine and surgical services, that is certified by the director as an advanced life support base hospital and that is affiliated by written agreement with a licensed ambulance service, municipal rescue service, fire department, fire district or health services district for medical direction, evaluation and control of emergency medical technicians.

Ambulance: Any publicly or privately owned surface, water or air vehicle, including a helicopter, that contains a stretcher and necessary medical equipment and supplies pursuant to section 36-2202 and that is especially designed and constructed or modified and equipped to be used, maintained or operated primarily for the transportation of individuals who are sick, injured or wounded or who require medical monitoring or aid. Ambulance does not include a surface vehicle that is owned and operated by a private sole proprietor, partnership, private corporation or municipal corporation for the emergency transportation and in-transit care of its employees or a vehicle that is operated to accommodate an incapacitated or disabled person who does not require medical monitoring, care or treatment during transport and that is not advertised as having medical equipment and supplies or ambulance attendants.

Ambulance Attendant: Any of the following: a) A certified emergency medical technician whose primary responsibility is the care of patients in an ambulance and who meets the standards and criteria adopted pursuant to section 36-2204, b) A first responder who is employed by an ambulance service operating under the provisions of section 36-2202 whose primary responsibility is the driving of an ambulance and who meets the standards and criteria adopted pursuant to section 36-2204, c) A physician who is licensed pursuant to title 32, chapter 13 or 17, d) A professional nurse who is licensed pursuant to title 32, chapter 15 who meets the state board of nursing criteria to care for patients in the pre-hospital care system, e) A professional nurse who is licensed pursuant to title 32, chapter 15 and whose primary responsibility is the care of patients in an ambulance during an interfacility transport.

Ambulance Service: A person who owns and operates one or more ambulances.

Ambulance Unit: An ambulance staffed with qualified personnel and equipped with appropriate medical equipment and supplies.

AAAM: A classification of diseases that is a coding system developed by the Association of Automotive Medicine.

Approved: Means approval received from the Department of Health Services.

ATCN: An approved course in advanced trauma care for nurses (Advanced Trauma Care for Nurses)

Arizona Trauma Patient Identification and Field Triage Decision Standard: A written document that defines trauma patients and provides a decision scheme for trauma patient destination in Arizona.

Attending Surgeon: A physician who is Board-certified or Board-eligible in general surgery and who has surgical privileges delineated by the facility's medical staff. The attending surgeon is responsible for the care of the trauma patient, participates in all major therapeutic decisions and is present during operative procedures.

Basic Emergency Medical Technician: A person who has been trained in specific emergency care in a basic emergency medical technician program certified by the director or in an equivalent training program and who is certified by the director as qualified to render services pursuant to section 36-2205.

Board Certified or Board Eligible: Board certified is successful application by the physician specialist with the appropriate Board specialty recognized American Board of Medical Specialties, the Advisory Board for Osteopathic Specialties, a Canadian board, or other appropriate foreign board. All physician specialists are expected to be Board certified or Board eligible in the specialty of practice unless otherwise specified in this document.

Bureau of EMS: The Bureau of Emergency Medical Services of the Arizona Department of Health Services, established by the State of Arizona, to monitor the standards and operation of the State's EMS and Trauma system. The Bureau of EMS is the lead state agency for EMS and trauma system development, implementation and evaluation.

Certificate of Necessity: A certificate that is issued to an ambulance service by the Department and that describes the following: service area, level of service, type of service, hours of operation, effective date, expiration date, legal name and address of the ambulance service, and any limiting or special provisions the director prescribes.

Certified Emergency Medical Technician: An individual who has been certified by the department as a basic emergency medical technician, an intermediate emergency medical technician, or an emergency paramedic.

CODES: Coordinated data records from state accident and other sources to provide a database for injury recognition and planning.

Computer-Aided Dispatch (CAD): A Computer-Aided Dispatch system consists of associated hardware and software that facilitates call taking, system status management, unit selection, ambulance coordination resource dispatch and deployment, event time stamping, creation and real time maintenance of incident database as well as providing management information.

Continuing Medical Education (CME): Ongoing education after initial certification for the purpose of maintaining and enhancing medical skills and knowledge.

Council: The Emergency Medical Services Council (ARS § 36-2203).

Critical Care: Critical care are those services outside the emergency department in a critical care unit that maybe required for critical patient care management.

Department: The Department of Health Services.

Designated Trauma Center: A Level I, II, III, or IV trauma center approved through Department processes as meeting Arizona Trauma Center Standards and being designated at a particular level of care resources or an American College of Surgeon's Verified Level I, II, III, or IV Trauma Center deemed designated at the same level through Department processes.

Designation: A formal Department process for identification of and contracting with trauma centers in Arizona, and where necessary for continuity of trauma patient care, across state boundaries including Indian Nations.

Director: The Director of the Department of Health Services.

Dispatch: To designate and direct an emergency response unit to a service location.

Division: The division of emergency medical services within the Department.

E-code: The external cause code, which is an etiology included in the International Classification of Diseases (ICD).

ED: An emergency department.

Emergency Medical Dispatch (EMD): A course that trains personnel to state and national standards on emergency medical dispatch techniques including call screening, resource priority and pre-arrival instruction.

Emergency Medical Services: Those services required following an accident or an emergency medical situation: a) for on-site emergency medical care, b) for the transportation of the sick or injured by a licensed ground or air ambulance, c) in the use of emergency communications media, d) in the use of emergency receiving facilities, or e) in administering initial care and preliminary treatment procedures by certified emergency medical technicians.

EMS and Trauma System: An integrated and organized arrangement of resources having the specific capability to provide public information and prevention activities, provide system access, perform prehospital triage, treatment and transport, and trauma center care including medical rehabilitation in order to return patients to their highest level of functioning.

EMS Medical Director: A Department of Health Services appointed emergency medical services medical program director.

Emergency Paramedic or Paramedic: A person who has been trained in an emergency paramedic training program certified by the director or in an equivalent training program and who is certified by the director to render services pursuant to section 36-2205.

Emergency Receiving Facility: A licensed health care institution that offers emergency medical services, is staffed twenty-four hours a day, and has a physician on call.

Facility Patient Care Protocols: The written procedures adopted by the emergency receiving facility or trauma center directing the care of the patient. These procedures are based upon the assessment of the patient's medical needs.

First Responder: A person who has been trained in a first responder-training program certified by the department.

Fit and proper: The director determines that an applicant for a certificate of necessity or a certificate holder has the expertise, integrity, fiscal competence and resources to provide ambulance service in the service area.

*Health Care Institution:* Per A.R.S. § 36-401(A), every place, institution, building or agency, whether organized for profit or not, which provides facilities with medical services, nursing services, health screening services, other health-related services, supervisory care services, personal care services or directed care services and includes home health agencies as defined in section 36-151 and hospice service agencies.

*Hospital Trauma Service:* An organized approach to trauma care designed by the hospital within state guidelines for the treatment of trauma patients, including a formal commitment by the hospital and medical staff to participate in the regional/state EMS and Trauma system.

*ICD:* The international classification of diseases that is a coding system developed by the World Health Organization.

*Immediately Available:* The physical presence of the health professional in the stated location at the time of need by the trauma patient (generally considered the time of arrival of emergent patients) that is continuously monitored by the quality improvement process.

*Indicator:* A performance measure used to monitor the quality of important governance, management, clinical and support processes and outcome.

*Injury Prevention:* Any combination of educational, legislative, enforcement, engineering and emergency response initiatives used to reduce the number and severity of injuries.

*Injury Severity Score (ISS) :* An index developed by the Association of Automotive Medicine to objectively rate the severity and impact of injuries and predict patient potential outcome. An index of trauma patient acuity.

*Intermediate Emergency Medical Technician:* A person who has been trained in an intermediate emergency medical technician program certified by the director or in an equivalent training program and who is certified by the director to render services pursuant to section 36-2205.

*Level I, II, III and IV Trauma Centers:* Trauma centers meeting adult, pediatric or medical rehabilitation standards, as delineated in approved Arizona trauma center standards or the American College of Surgeons trauma center verification standards and designated by the Department.

*Local Trauma Transport Policies:* Local trauma transport policies are those regional trauma triage and destination policies that exceed the minimum state standard and have been created to meet specific needs for the local area that are approved by the regional council.

*Major Trauma Patient:* Those patients that are identified in the field or in the hospital setting as meeting steps I (physiologic) and II (anatomic) of the Arizona trauma triage standard.

Medical Record: Any patient record including clinical records, pre-hospital care records, medical reports, laboratory reports and statements, any file, film, record or report or oral statements relating to diagnostic findings, treatment or outcome of patients, whether written or recorded, and any information from which a patient or the patient's family might be identified.

Multidisciplinary: Multidisciplinary means those disciplines that are representative of the clinical trauma care team within the trauma center.

Neurosurgical Liaison: Neurosurgical liaison is a physician assigned to assist in coordination of neurosurgical services to the trauma service.

Paramedic Unit: An ambulance or first-responder unit staffed and equipped to provide advanced life support at the scene of a medical emergency and during transport in an ambulance of a patient(s) and designated as a paramedic unit by the Medical Director.

Pediatric Trauma Patient: Trauma patients meeting the Arizona Trauma Patient Identification and Field Triage Decision Standard who are known or estimated to be 15 years of age or less.

Peer Review: Peer review is the evaluation of services rendered by a health care professional by an appropriate parallel trained and credential health care professional or a team of health care professionals.

Physician: Any person licensed under the provisions of Title 32, chapter 13 or 17.

Promptly Available: The physical presence of the health professional in the stated location within a short period of time, which is defined by the trauma system director and continuously monitored by the quality improvement process.

Public Information / Education: The education of the population at large, targeted groups or individuals on the EMS and Trauma System and efforts to alter their specific injury-related behaviors.

Regional Council: The corporate entity, composed of representatives from the EMS providers, ambulance services, and prehospital agencies, hospitals, and other health care institutions within the geographical region, provides leadership of the regional coordinating system (Regional Emergency Medical and Trauma Services System) and contracts with the Department for that purpose.

Remote (Wilderness) Area: Census tracts or enumeration districts without census tracts, which have a population density of 5 to 9 persons per square mile.

Rural Area: Designation is appropriate for areas, which are not urban, or suburban and which there are less 50,000.

State Trauma Advisory Board (STAB): An advisory board defined in statute and created to advise the Department on the development of a trauma system.

Stretcher Van: A vehicle that contains a stretcher and that is operated to accommodate and incapacitated or disabled person who does not require medical monitoring, aid, care or treatment during transport.

Suboperation Station: A physician facility of location at which an ambulance service conducts operations for the dispatch of ambulances and personnel and that may be staffed twenty-four hours a day or less as determined by the system use.

Trauma Center: Is an acute care hospital that has 24 hour in house trauma surgical services and is required to regularly submit data to the state trauma registry.

Trauma Committee: The trauma committee is an internal multi-disciplinary hospital committee at a trauma center, which meets regularly to provide input to the trauma service and to the hospital's administrative and medical staff hierarchy.

Trauma Nurse Coordinator: An R.N. with experience and special training, who is assigned by a trauma center to manage the internal coordination of the trauma service.

Trauma Patient: Those patients that are identified in the field or in the hospital setting as meeting any step of Arizona trauma triage standard.

Trauma Program: The collective functions and activities of a trauma center that define its organized approach to meeting Arizona trauma center standards at the appropriate level of designation.

Trauma Registry: Data collected by the Department on trauma patients and on the incidence, causes, severity, outcomes and operation of a trauma system and its components.

Trauma Service: An organized structure, personnel, and other resources for clinical trauma care defined by the hospital to ensure functioning at the appropriate level of designation.

Trauma System Evaluation: An organized method of data driven evaluation of performance of the trauma system conducted by the Department using quality management principles and protected under quality assurance provisions.

Trauma Team: An internal hospital clinical team, identified by written trauma program policies, to respond to a trauma resuscitation and operate in an organized and patterned fashion to assess and treat the trauma patient's condition. At a minimum, the trauma team for a major resuscitation shall consist of the assigned in-house team members including the assigned physician and shall meet or exceed the resources defined in Arizona trauma center standards for the level of designation.

Triage: The sorting of patients in terms of disposition, destination or priority. Triage of pre-hospital trauma victims requires use of the Arizona Trauma Patient Identification and Field Triage Decision Standard.

Urban Area: Areas in which there is a population greater than 50,000 persons.

Wheelchair Van: A vehicle that contains or that is designed and constructed or modified to contain a wheelchair and that is operated to accommodate an incapacitated or disabled person who does not require medical monitoring, aid, care or treatment during transport.