STATE OF COLORADO

Colorado Department
of Public Health
and Environment

# Emergency Medical and Trauma Services System
# Annual Legislative Report

Submitted to the Colorado Legislature
By the Emergency Medical Services and Prevention Division
Colorado Department of Public Health and Environment
November 1, 2001

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| Title: | Report to the Legislature Concerning the Emergency Medical Services and Trauma Services System |
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## EXECUTIVE SUMMARY

Colorado's emergency medical and trauma services system provides immediate care to the sick and injured 24 hours a day, 365 days a year. Patient survival depends on several factors including the availability of appropriately trained health care providers, properly equipped ambulances, trauma centers, and other health care facilities.

Establishment of the *Emergency Medical Services Act of 1978,* the Emergency Medical Services Account in 1989, the *Trauma Act of 1995* and the *Emergency Medical and Trauma Services Act of 2000* provided authority and limited funding for the development of a comprehensive emergency medical and trauma service system for Colorado.

## COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, EMERGENCY MEDICAL SERVICES AND TRAUMA SERVICES ROLE AND RESPONSIBILITIES

The Colorado Department of Public Health and Environment shares regulatory responsibilities for overall system development with the Colorado Board of Medical Examiners and the governing bodies of each of Colorado's counties. Additionally, the State Emergency Medical and Trauma Services Advisory Council (Appendix A) provides recommendations on rules, implementation of program activities and assistance with the identification of system needs and priorities.

### Emergency Medical Services and Injury Prevention Section - Prehospital Care Program

Originally defined by the *Emergency Medical Services Act of 1978,* modified by the *Emergency Medical and Trauma Services Act of 2000,* and again by the passage of Senate Bill 174 in 2001, the department's primary roles in the development of emergency medical services throughout the state are as follows:

- The certification of emergency medical technicians including: processing applications, administering certification exams, issuing emergency medical technician certificates and investigating complaints involving emergency medical technicians.
- The regulation of institutions providing emergency medical technician training involving: developing curricula, approving course content, monitoring the quality of instruction and investigating complaints.
- The administration and management of both the county subsidy and emergency medical services provider grant programs.
- Community and regional technical support for the development and provision of emergency medical services across the state.

### Emergency Medical Services and Injury Prevention Section - Trauma Program

Originally defined by the *Trauma System Act of 1995* and modified by the *Emergency Medical and Trauma Service System Act of 2000,* the program's primary role in the development of the state's emergency medical and trauma care system is:

- Designating health care facilities as trauma centers – Levels I – IV (Level V was

authorized in 2000). Designation of trauma centers began in June 1998 and, currently the department has designated 63 trauma centers.

**Emergency Medical Services and Injury Prevention Section - Injury/Epidemiology Program**

Defined by the *Trauma System Act of 1995,* and modified by the *Emergency Medical and Trauma Service System Act of 2000,* the program's roles in the development of the state's emergency medical and trauma care system are as follows:

- Define the facility requirements for the Colorado Trauma Registry
- Develop a prehospital care data collection system

**Emergency Medical Services and Injury Prevention Section – Injury Prevention Program**

Originally financed from federal funds, identified in the *Trauma System Act of 1995* and modified by the *Emergency Medical and Trauma Service System Act of 2000,* the program's primary activities in the development of the state's emergency medical and trauma care system are as follows:

- Targeted program activities are based on available federal funding.
- In October 2000, the program was a recipient of a two-year, federal Core Capacity Grant. This grant provided funding for the development of an Injury Prevention Plan

**FUNDING**

The Prehospital Care and Trauma Programs are funded from the Emergency Medical Services Account of the Highway Users Tax Fund, from the collection of trauma center designation fees, and limited short-term federal grants. The Injury Prevention Program is funded entirely by federal funds. A combination of federal and Emergency Medical Services account monies fund the Injury-Epidemiology Program. No state general fund monies are provided for any of these programs.

**CHALLENGES**

The existing level of resources limit the system's ability to achieve statewide efficiency. Coordinated, effective and efficient utilization of local emergency medical and trauma services and resources across the state are needed for the continued development of a comprehensive emergency medical and trauma service system in Colorado. These challenges need to be addressed by the emergency medical and trauma services provider community and the department and are expanded upon in Part III of this report.

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## INTRODUCTION

Emergency medical and trauma care services are defined as the immediate health care services needed as a result of an injury or sudden illness, particularly when there is a threat to life or long-term functional abilities. These immediate services must be available 24 hours a day, 365 days a year. The outcome of many of these patients is dependent upon several factors, including the immediate availability of appropriately trained individuals and properly equipped ambulances, trauma centers and other health care facilities. A coordinated emergency medical and trauma service system offers timely health care services for Colorado's residents and visitors regardless of age, socioeconomic status, or special needs.

Components of Colorado's Emergency Medical and Trauma Services System include:

Public information and education
Injury prevention
Communications systems
Prehospital care/provider training and certification
Prehospital care/transport protocols and licensure standards
Health care facilities/acute care /designated trauma centers
Rehabilitative care
Disaster medical care
Education and research
Trauma registry
Prehospital data collection
State and regional continuing quality improvement
Planning - Regional Emergency Medical and Trauma Services Advisory Councils

Each of these components will be discussed in greater depth throughout the body of this report. The first part of the report will focus on the utilization of state resources available for system development. This part is followed by a summary of the status of each system component. The report concludes with a more detailed statement about future and on-going challenges to system development.

## LEGISLATIVE BACKGROUND

The *Emergency Medical Services Act*, passed in 1978, gave the department, the Colorado Medical Board, and individual counties, with advice from the State Emergency Medical Services Advisory Council, limited authority to develop a coordinated emergency medical services system. The department was given the responsibility to certify emergency medical technicians. Department approval is required for course content and curriculum prior to an institution providing training programs for emergency medical technicians. The Colorado Board of Medical Examiners was given supervisory authority over physician advisors who provide medical direction for emergency medical technicians. All emergency medical technicians are required to have a physician advisor. The Colorado Board of Medical Examiners also defines the scope of practice for emergency medical technicians. Counties were given the responsibility for inspecting and licensing ambulances operating in their own county.

In 1989, a stable, minimum level of funding for the state's emergency medical services system was established with one dollar from each annual motor vehicle registration fee being earmarked for the fund. This revenue is deposited into the Emergency Medical Services Account of the Highway Users Tax Fund. The annual appropriation was distributed in three parts:

- 60 percent for distribution as grants to local emergency medical services systems;
- 20 percent for county planning and coordination of emergency medical services; and
- 20 percent for the direct and indirect costs to the department for certifying emergency medical technicians, approving training centers, administration of the county subsidy and provider grant programs and technical assistance in planning, developing, implementing, and maintaining the statewide system.

The *Trauma System Act of 1995* gave authority to the department to assist in the development of a coordinated trauma system. System development was the combined responsibility of the department, the Colorado Board of Health and all Colorado counties, with advice from the State Trauma Advisory Council. The State Board of Health and the department established the trauma system's framework with the development of minimum system standards to include those for hospitals and other healthcare facilities to become designated trauma centers. Funding for the designation of trauma centers is derived from fees paid by facilities seeking designation. This designation fee was intended to address the direct and indirect costs of designation activities. Area Trauma Advisory Councils were formed throughout the state in 1998 and were responsible for establishing area plans for the coordinated delivery of care to trauma patients in their respective areas. The administrative, regulatory and Area Trauma Advisory Councils components of the Trauma Program were funded within the Emergency Medical Services Account appropriations as authorized in an FY98 decision item. In addition, a short-term, state grant provided partial support of the trauma registry and initial development of a prehospital trauma data collection system.

The *Emergency Medical and Trauma Services System Act of 2000* created a merged state advisory council, the State Emergency Medical and Trauma Service Advisory Council (SEMTAC) (Appendix A), and merged the regional efforts of the Area Trauma Advisory

Councils and the voluntary efforts of the Emergency Medical Services Regional Councils creating the Regional Emergency Medical and Trauma Advisory Councils (RETACs) (Appendix B and Appendix C). The act gave the new state council the responsibility of making recommendations for the utilization of the Emergency Medical Services Account funds to begin on July 1, 2002. The 60/20/20 annual appropriation distribution, which is described above, will be removed at that time. The legislation also gave the department authority to designate Level V Trauma Centers and to license aeromedical services.

# Part I
# Emergency Medical Services and Injury Prevention Section - Prehospital Care and Trauma Program Funding

## OVERVIEW OF FISCAL 2002 FUNDING

The Prehospital Care and Trauma Programs are primarily funded from the Emergency Medical Services account and the collection of trauma center designation fees. The Emergency Medical Services account supports the emergency medical services provider grant program, the county subsidy program, and the direct and indirect expenses of the Prehospital Care Program. The Trauma Program is supported in part by Emergency Medical Services Account funds and by fees collected through the trauma center designation process. No state general fund monies are provided to either program. Table 1 outlines the funding for FY02.

| Category | HUTF/ EMS Account | | |
|---|---|---|---|
| | Prehospital Care Program | Trauma Program | Trauma Center Designation Fees |
| EMS provider grants | $ 2,762,976 | * | |
| County subsidy | $ 950,817 | n/a | |
| Program administration | $ 641,126 | $ 150,413 | n/a |
| Trauma center designation (administration & survey team costs) | n/a | n/a | $ 385,261 |
| Indirect cost assessment | $ 161,908 | $ 33,843 | $ 26,005 |
| TOTAL | $ 4,516,827 | $ 184,256 | $ 411,266 |

Table 1: Fiscal Year 02 Funding.

The amount allocated in previous years for Area Trauma Advisory Councils has been combined with the amount previously allocated to Emergency Medical Services Regional Systems grants, into funding for Regional Emergency and Trauma Advisory Councils in the Prehospital Care column.

## EMERGENCY MEDICAL SERVICES PROVIDER GRANTS PROGRAM

Summary of Legislation

In 1989, a stable funding source for the statewide emergency medical services system was established with one dollar from each annual vehicle registration fee being earmarked for the fund. The revenue is deposited in the Emergency Medical Services account of the Highway Users Tax Fund. A minimum of 60 percent of the annual appropriation from the Emergency Medical Services account must be used to upgrade emergency medical services throughout the state. This money is distributed through a grants program. The Emergency Medical and Trauma Services Act of 2000 removes this funding scheme effective on July 1, 2002. A minimum of $150,000 must be used for the training of emergency medical technicians and $100,000 must be reserved in an emergency fund from the total amount set aside for this grant program. The first priority for the remaining grant monies is updating underdeveloped emergency medical services systems and replacing aged equipment, such as ambulances. The remainder of the grant monies is distributed based on substantiated need as defined in each grant application. This grant program requires a local cash match of 50 percent. Based on need, there is an opportunity for applicants to request a waiver for the match.

Funding Distribution

The Colorado Legislature appropriated $2,762,976 from the Emergency Medical Services account for FY02, which includes the allocation of $150,000 for emergency medical technician training and $100,000 for an emergency fund. The grants appropriation for this year also includes funding for Regional Emergency Medical and Trauma Advisory Council development.

The department received 142 provider grant applications for FY02 requesting $4,632,883 million in funding. Emergency vehicles, the most requested and expensive equipment, topped the list of funded items. A complete list of the specific grant awards can be found in Appendix D. The figure below illustrates the distribution of the provider grant funds as of October 2001. Table 2 provides the anticipated funding priorities under each grant category

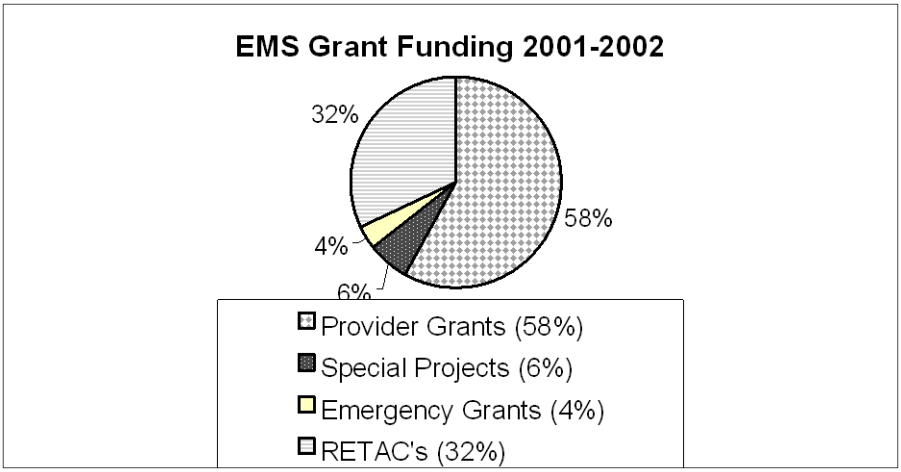


Figure 1: EMS Provider Grant Funding FY02

| Emergency Medical Services Grant Funding 2001-2002 | | |
|---|---|---|
| | **Awarded** | **Award Percentage** |
| **Provider Grants** | | |
| Communications | 138,091 | 5% |
| Emergency medical services equipment | 374,657 | 13% |
| Emergency vehicles | 520,458 | 19% |
| Recruitment and retention | 25,601 | 1% |
| Training | 354,702 | 13% |
| Other | 189,847 | 7% |
| **Provider Grants Subtotal** | **1,603,356** | **58%** |
| | | |
| **Emergency Fund** | **100,000** | **4%** |
| | | |
| **Special Projects** | | |
| Physician advisor course | 3,000 | |
| Data registry project | 150,000 | |
| Instructor course subsidy | 15,000 | |
| Instructor development | 5,000 | |
| Leadership quality improvement conference | 5,000 | |
| **Special Projects Subtotal** | **178,000** | **6%** |
| | | |
| **Regional Emergency Medical & Trauma Advisory Councils** | **883,937** | **32%** |
| **Total** | **2,765,293** | |
| Amount to be obtained from grant recipient turn back* | -2,317 | |
| Reconciliation to appropriation | **$2,762,976** | |

Table 2: Anticipated grants distribution for FY02

*Historically, reversions (the unused amount of the annual appropriation) from the grants program have been large. The program has adopted several strategies to better manage utilization of grant awards. One strategy is to over-budget by a modest amount, with the expectation the difference will be made up through turn back of funds by grant recipients. (Turn back of funds can result from a number of factors, including actual costs being less than budgeted, unavailability of course instructors or equipment, and changes in recipient's needs.) The program is also making a strong effort, and also is urging recipients to identify turn back funds early enough in the year that they can be reallocated to other projects or new grants.

The emergency fund ($100,000) was established to provide immediate financial assistance to emergency medical services provider agencies experiencing unexpected problems causing the degradation or potential elimination of the provision of emergency medical services. This fund is used to address problems when the grant funding processing deadlines have passed. Emergency grants thus far this fiscal year have included assistance given to Northern Saguache County for ambulance replacement.

## Regional Emergency Medical and Trauma Advisory Council Development

Summary of Current Legislation

In 2000, the *Emergency Medical and Trauma Services System Act* created Regional Emergency Medical and Trauma Advisory Councils (RETACs) combining the efforts of the Area Trauma Advisory Councils and the Regional Emergency Medical Services Councils. The Regional Emergency Medical and Trauma Advisory Councils have the responsibility to create a regional implementation plan for delivery of emergency medical and trauma care. In the future, the Regional Emergency Medical and Trauma Advisory Councils must implement and monitor the effectiveness of their plans.

Current Funding Distribution

In FY01, the emergency medical services systems development portion of the grants program was modified to include funds originally targeted for the Area Trauma Advisory Councils and the focus was expanded to include regional level planning for both the emergently ill and injured patient. Regional Emergency and Trauma Advisory Council funding for FY02 is $883,937.

Based on the *Emergency Medical and Trauma Services System Act*, beginning with July 1, 2002, Regional Emergency and Trauma Advisory Councils consisting of a minimum of five counties, will each receive $75,000 to cover administrative costs. Additionally, the equivalent of the county subsidy allocation, of $15,000 per county, will be distributed to the Regional Emergency and Trauma Advisory Councils for planning and to the extent possible the coordination of services in and between counties. These funds will continue to be a part of currently allocated funds from the Emergency Medical Services Account. As of October 2001, 11 Regional Emergency and Trauma Advisory Councils had formed. Each Regional Emergency and Trauma Advisory Council consists of a minimum of five counties. (Appendices B and C)

## Statewide Funding Projects

Summary of Legislation

Legislation allows the department, in consultation with the State Emergency Medical and Trauma Advisory Council, to establish statewide projects that improve emergency medical services and impact all emergency medical service providers in Colorado. The following is a list of these projects slated for implementation in FY02.

Funding Distribution - Statewide Projects for FY02

- Physician Advisor Course - $3,000
  This project provides a one-day workshop for physician advisors who supervise emergency medical technicians. Funds are used to offset the cost of attendees tuition.

- Prehospital Care and Trauma Center Data Collection - $150,000
  Each licensed facility, clinic and prehospital provider that offers service or care to trauma patients is required to submit patient information to the department. Since Colorado had not been collecting the data from prehospital providers or the specific clinical information needed on trauma patients from the facilities and clinics, a project was initiated in 1998 to begin development of a prehospital care and trauma data collection system.

  To supplement internal resources, the department is in the fourth year of a contract for database development, management and analysis. The contract is funded by an additional, one-year extension to a three-year, $150,000 grant awarded to the University of Colorado Health Sciences Center. The expertise and experience of the contractor will assist the department in evaluating the emergency medical and trauma services system in Colorado. Expected outcomes include:
    - A defined minimum prehospital care data set and support for creating a statewide prehospital care data collection system;
    - Completion of a pilot project in which prehospital care data from one Regional Emergency and Trauma Advisory Council is combined with the hospital information on trauma patients;
    - An evaluation of data quality, accuracy, and timeliness of submission; and
    - An assessment of the trauma system and trauma center compliance with established rules and regulations.

  Continuation of these activities is contingent upon finding a long-term funding source.

- Instructor Course Subsidy - $15,000
  Funding for this project reduces the cost of tuition for emergency medical services instructor training by 50 percent. Two series of courses will be offered this fiscal year.

- Instructor Development - $5,000
  The goal of instructor development is to refine the emergency medical services instructor curricula. These curricula provide education to emergency medical service instructors who will be teaching various prehospital educational programs.

- Leadership Quality Improvement Conference - $5,000
  This project will reduce the cost of providing a leadership quality improvement course developed by the emergency medical services section of the National Highway and Traffic Safety Administration. The course provides a one-day training for local emergency medical service providers in the Malcolm Baldrige total quality management model of improvement. Funds are used to offset the cost of tuition to

attendees.

## COUNTY SUBSIDY PROGRAM

Summary of Legislation

Twenty percent of the annual appropriation from the Emergency Medical Services Account is assigned to provide financial assistance to counties for the development, maintenance and provision of emergency medical services. The funding is divided equally among counties meeting specific criteria. A county that does not meet qualifications cannot receive funding until the following fiscal year, and then only under the condition that the identified problem has been corrected. To receive a subsidy each county must:

- Provide evidence that provisions of Part 3 of the Emergency Medical Services Act are being enforced. Part 3 establishes minimum requirements for inspection and licensure of ambulances.

- Require all licensed ambulance services within a county to participate in the statewide data collection program administered by the Emergency Medical Services and Prevention Division.

- Provide a report by October 1 of each year showing fund expenditures, ambulance licensure and inspection information and county emergency medical services plan updates. The report must be reviewed and approved by the State Emergency Medical and Trauma Advisory Council in order to receive funding.

Funding Distribution

In January 2002, individual county plans will be approved, and each county will receive approximately $15,000.

## TRAUMA CENTER DESIGNATION

Summary of Legislation

Each hospital or other health care facility seeking trauma center status is required to be designated as a trauma center by the department. The designation process includes submission of an application and a site survey by a team of trauma clinical providers. The 1995 trauma system legislation created a Trauma System Cash Fund and authorized the State Board of Health to establish a schedule of fees based on the direct and indirect costs incurred in the designation of trauma centers. The fee schedule was adopted in January 1998, with the collection of fees beginning in April 1998. However, the fee has not been able to cover the costs associated with rule development or modification; processing of appeals or waiver requests; attorney fees or the on-going monitoring; and provision of technical assistance.

Funding Distribution

The FY02 budget for designation-related costs and utilization of fee revenue is $185,805 and includes site survey teams estimated at $55,000; administrative costs, including the cost of providing state observer, estimated at $105,000; and the indirect costs assessment estimated at $26,000. The composition of each team and the number of out-of-state team members are based on national standards developed by the American College of Surgeons' - Committee on Trauma and varies depending on the level of designation the facility is seeking. Additionally, a state observer participates in each site survey visit. The state observer's time and travel costs comprise a large share of the administrative budget.

# Part II
# Evaluation of the Emergency Medical and Trauma Service System

Emergency Medical Services systems are defined by the National Highway and Traffic Safety Administration as having the following components: legislation, regulation and finance, integration with other health care systems, public access, human resources and education, medical direction of prehospital personnel, air and ground transportation systems, communication systems, hospitals, public education and prevention, information systems and program evaluation, and emergency medical services research.

The 1978 and 1989 state legislation created several system components, including treatment, transportation, telecommunications, local emergency medical services and documentation.

In 1995, the trauma systems components were defined in state statute as including injury prevention, communication systems, prehospital care, designated trauma centers, rehabilitation care, regional coordination of medical response systems to disasters, trauma education and research, data collection and analysis, quality improvement systems and regional planning councils.

The *Emergency Medical and Trauma Service System Act of 2000* created the Colorado Emergency Medical and Trauma Services System, integrating system development efforts.

This part of the report describes the status of each of Colorado's system components and contributions made toward system development by the department's Prehospital Care Program, Trauma Program, Injury Prevention Program and the Injury/Epidemiology Program.

## PREHOSPITAL CARE PROGRAM ACTIVITIES

### Legislation, Regulation and Finance

To provide an effective system of emergency medical care, comprehensive, enabling legislation is needed, to identify a lead agency responsible for establishing minimum standards for components of the system, and to ensure financial support to implement and administer the system.

The Department of Public Health and Environment has the mandate to certify emergency medical technicians, approve training programs, administer and distribute grants to improve the system, and to coordinate local systems so that they interface with an overall state system to provide effective emergency medical systems. Planning and coordination of the state system is accomplished with advice from the State Emergency Medical and Trauma Services Advisory Council.

- Challenge: No entity is identified in statute as being responsible for ensuring the provision

of prehospital emergency medical services (ambulance services) to the citizens of, or visitors to, the state of Colorado.
- Current Activity: A statewide strategic plan will be completed early in 2002.

Health Care System Integration – Regional Emergency Medical and Trauma Services Advisory Councils

Integration of health care services helps to ensure that the care provided by emergency medical services does not occur in isolation, and that positive effects are enhanced by linkage with other community health resources and integration within the overall health care system.

The department has a regional grant program integrating emergency medical services with trauma service activities. The goal is to promote coordination and create efficiencies in regional activities. Due to variations in the demographics and geography of Colorado, local participation and expertise for identifying problems and designing solutions for local area plans is required. The passage of the *Emergency Medical and Trauma Services System Act of* 2000 created the Regional Emergency Medical and Trauma Advisory Councils, established requirements for regional planning and provided a minimum level of funding beginning in FY02.

- Accomplishment: Eleven Regional Emergency Medical and Trauma Advisory Councils were created across the state in 2001 to ensure local participation and coordination in regional system planning.
- Accomplishment: The Prehospital Care Program assists with implementation of the federally funded Rural Hospital Flexibility Program (also known as the Critical Access Hospital Program) to provide technical assistance in local planning for the provision of emergency medical services.
- Challenge: Given resource constraints, the department is able to provide limited technical assistance to the Regional Emergency Medical and Trauma Advisory Councils.

Public Access

Public access is defined as the ability of an individual to secure prompt and appropriate emergency medical care regardless of socioeconomic status, age or special need. For those individuals who contact emergency medical services with a perceived requirement for care, the subsequent response and level of care provided must be commensurate with the situation.

For nearly 30 years, 911 has been designated as the national emergency telephone number. This basic 911 telephone number covers approximately 99 percent of Colorado. The single most important piece of information provided during an emergency call is the location of the person(s) requiring help. At many 911 communication centers, the caller's telephone number and location are automatically provided. Such systems are called enhanced 911 or E911. Seventy-five percent of the state is covered by E911 services.

- Challenge: There is a need to integrate location identification systems into cellular telephone technology. E911 centers report that close to 50 percent of calls are from cell phones with no location identifiers and that the caller is unable to specifically identify his or her location.

Human Resources and Education – Training and Certification of Prehospital Providers

A dedicated team of individuals with complementary skills and expertise is the Emergency Medical Services system's most valuable asset. These individuals can fulfill their mission only if they are adequately trained and are available in sufficient numbers throughout the state.

The department processes approximately 4,000 applications for certification or re-certification of emergency providers each year. This activity is one of the fundamental requirements for creating and maintaining a state system. Recent modifications made to the statutes require the department to develop rules for the utilization of state and federal criminal background checks in the certification process.

The department also approves all institutions providing emergency medical technician training, provides instructor training programs and curriculum approved by the State Emergency Medical and Trauma Advisory Council and the Colorado Board of Medical Examiners.

The State Emergency Medical and Trauma Advisory Council and the department dedicated a small amount of funds from the provider grant program for a recruitment and retention program designed to assist local emergency medical service agencies in assessing current manpower needs and in establishing a plan for stable and consistent training programs with local and regional support. The ability to train, retain and provide continuing education to rural and frontier services continues to be the primary focus of the recruitment and retention program.

- Accomplishment: Creation of a recruitment and retention grant program to assist local agencies address manpower needs.
- Current Activity: The department has recently undergone a thorough review of the current processes used for certifying emergency medical technicians. Certification process modifications are expected to be made based on the reviewers' recommendations in 2002.

Medical Direction

Emergency medical care involves the delivery of medical care by non-physician providers outside the traditional setting of a hospital or office.

In Colorado, each emergency medical technician is required to have a physician advisor to provide medical direction for the delivery of care. The department currently coordinates with the Colorado

Board of Medical Examiners in the review and approval of physician advisory applications, and provides training for physicians in the supervision of emergency medical services personnel. The Prehospital Care Program's Medical Director position within the department was funded in 1990. The State Medical Advisory Group (Appendix E), founded in 1995, was developed to provide additional physician input to the Prehospital Care Program and the Colorado Board of Medical Examiners.

- Challenge: The shortage of qualified and interested physicians in rural and frontier communities to serve in this advisory capacity continues to be a challenge.

Transportation Systems – Prehospital care/transport protocols and licensure standards

Safe, reliable ambulance transportation is a critical component of an effective emergency medical services system. The transportation component includes the regulation, inspection and licensure of ambulance services and vehicles, provision for uniform coverage 24 hours a day, a protocol for air medical dispatch and a mutual aid plan. Providing a minimum level of emergency medical care to all residents and visitors is the primary objective of a state system.

Authority for the regulation, inspection and licensure of ambulances is currently the responsibility of each of the counties. The department, with advice from the State Emergency Medical and Trauma Advisory Council, has identified a minimum equipment list for ambulances for implementation in each of the counties. For the trauma patient, specific minimum standards have been adopted for ambulance and first response unit staffing, agency response and scene times and patient triage and transport destination algorithms (protocols).

- Challenge: A review of county plans revealed a need in some areas of the state for a standardized approach to the regulation of this sector of Colorado's health care system.
- Accomplishment: The passage of the Emergency Medical and Trauma Services Act of 2000 created the authority for the development of minimum licensure standards for county licensure of ground ambulances and state licensure of air ambulance services.

Communication Systems

A reliable communications system is an essential component of an overall emergency medical service system. Many states have either a regionally or centrally coordinated communications system.

Emergency incidents that may overwhelm local resources in Colorado are generally not coordinated on a regional or statewide basis. There are no standardized or reliable means whereby all ambulance services can communicate directly with health care facilities. The new Digital Trunked Radio system has been, and will continue to be, an asset to local agencies (Appendix F). This system will provide the technical infrastructure for local agencies to access a more reliable and universal communications system. The total cost for all local emergency medical service agencies to upgrade radios to the new system was estimated at $45 million in 1999. The

department, the State Emergency Medical and Trauma Advisory Council and a liaison from the state Division of Telecommunications provide technical assistance and financial resources to local communities in improving radio communications. Additional resources are necessary to plan, implement and coordinate the communications component of the system.

- Challenge: There are no regionally or centrally coordinated communications systems in Colorado. There are no reliable means whereby ambulance services can communicate directly with hospitals.

Health Care Facilities – Acute Care

The seriously ill or injured patient must be delivered in a timely manner to the closest appropriate facility. Colorado designates trauma centers (see page 9), but has not developed a system of designation for other specialty care centers. The trauma designation program provides a model for how facilities can be identified by their capacity to care for patients with specific needs. The state strategic plan will create an opportunity for the emergency medical and trauma care system to consider how to match all patients' needs with the appropriate health care facility in the state.

- Challenge: Not all seriously injured or ill patients are delivered to the closest appropriate hospital in a timely manner.
- Accomplishment: Colorado designates Trauma Centers and requires that seriously injured patients are transported to a trauma center.

Public Information, Education and Prevention

To serve the public, an effective public information, education and relations program is needed.

The Colorado Emergency Medical Services for Children program, funded by a Maternal and Child Health Grant, has provided limited and targeted resources and information to communities regarding pediatric emergencies. The department, with advice from the council, provides technical assistance and resources to local agencies in developing their own public education, information and Emergency Medical Services for Children programs. Other department efforts in this area are described later in this report.

- Accomplishment: The Emergency Medical Services for Children grant, through a contract with St. Mary's Hospital in Grand Junction, provided a significant number of school districts with Pediatric First Aid Kits as a part of the **First Care for Schools** program.
- Current Activity: The department has partnered with The Children's Hospital to conduct a pediatric needs assessment of prehospital providers.

## TRAUMA PROGRAM ACTIVITIES

The *Trauma Care Act of 1995* provided a focus on the state health care system's response to trauma (injured) patients. The number of injury deaths in Colorado was 2,226 in 1998, making trauma the leading cause of death for Coloradans age 1 – 44. Estimates from state data sources suggest during 1998 nearly one in 10 Coloradans received medical care in a hospital setting for injury, including an estimated 370,000 emergency department visits and 27,000 admissions. Colorado injury death rates include those for unintentional injuries, motor vehicle crashes and suicides.

The large number of patients, the high cost of care, the need for ongoing rehabilitation, and loss in productivity are significant contributors to medical and societal costs. Deaths due to injury significantly contribute to the state's lifetime earnings lost due to premature death, because, studies show, trauma deaths disproportionately involve younger populations.

Studies indicate that 30 to 40 percent of all trauma deaths occur within one hour of injury, and that 30 to 40 percent of these deaths are preventable if timely, appropriate care is received. National experience clearly demonstrates that a coordinated and well-developed emergency medical and trauma services system can result in a reduction of the number of preventable deaths.

- Challenge: In 1997, based on trauma registry data, the department estimated the lifetime earnings lost due to premature deaths from injury in Colorado was $1.5 billion.

Acute Care - Trauma Center Designation

The designation of hospitals and other health care facilities as trauma centers identifies those facilities making a commitment to maintain a level of trauma care resources, including trained staff, equipment and policies and procedures. Level I and Level II Trauma Centers provide the comprehensive specialty clinical services and resources required by patients with major injuries who may need comprehensive medical support over an extended period of time. Level III and Level IV Trauma Centers are community-based facilities that triage, stabilize and transfer those patients needing specialty services and resources unavailable at that facility or unavailable for an extended period of time. Minimum standards have been adopted for Level I - IV trauma centers, and for those trauma centers that care for pediatric or burn patients. The department began facility designation in June 1998 and has designated 63 trauma centers since that time. The need for a Level V trauma center was identified during this process to recognize and differentiate the role of our smaller hospitals utilizing mid-level practitioners, including physician assistants and nurse practitioners, and of the clinics not open 24 hours a day. The passage of the *Emergency Medical and Trauma Services Act of 2000* created the authority for the development of Level V Trauma Centers. Appendices G and H provide a list and maps depicting geographic distribution of current designated trauma centers.

In 1998, an initial review of trauma registry data generated some assessments of trauma patients, trauma centers and trauma related hospital designations. The individuals who would most benefit from a trauma system are those with more severe injuries. In comparing pre- to post-legislation

time periods, there has been a statistically significant increase in the percent of patients with severe injuries who are directly admitted to a Level I or Level II Trauma Center. The number increased from 61 percent in 1993-1994 to 70 percent in 1997-1998. Also, a higher percentage of severely injured trauma patients initially admitted to a Level III, IV or undesignated facility are now being transferred to a Level I or II Trauma Center.

- Accomplishment: The department has designated 63 trauma centers since June 1998.
- Accomplishment: There has been a statistically significant increase in the percent of patients with severe injuries who are directly admitted to a Level I or Level II Trauma Center.

Rehabilitation Care

A critical measure of a trauma system is patient access to rehabilitation care. The goal for each trauma patient is a return to a productive life.

In Colorado's system, rehabilitation services are either provided by the trauma center or the trauma center transfers the patient to an appropriate facility.

- Challenge: As is prevalent across the country, the lack of adequate insurance coverage for rehabilitation in most health plans continues to hinder patient access to these services.

Disaster Medical Care

Regional coordination of the medical care component of local disaster plans helps ensure the effective utilization of resources to meet patients' needs in the event of a mass-casualty or bio-medical disaster. Coordination of these resources is specifically the responsibility of the counties and is rarely done on a regional scale. The Regional Emergency Medical and Trauma Advisory Councils will continue to work toward coordinating the medical components of these local plans and assist in creating them where needed, for both mass-casualty and bio-terrorism response. Regional planning will mitigate the impact of the lack of centralized and coordinated communication systems and community responses to either of these types of events.

- Challenge: Coordination of local, regional and state medical responses throughout the state to either a mass-casualty or bio-terrorism event.
- Current Activity: Regional Emergency Medical and Trauma Services Advisory Councils are working to generate regional management plans for the medical component of a mass-casualty or bio-terrorism response.

Education and Research

Education and research in trauma clinical care are the responsibilities of the teaching hospitals

that are also trauma centers. This component of a trauma system ensures both the continuous identification of improvements to trauma patient care as well as the information dissemination in the training of trauma care clinicians. In Colorado, trauma education and research are requirements of the Level I and Regional Pediatric Trauma Centers.

State and Regional Continuing Quality Improvement Systems

System assessment and evaluation at the state, regional and provider levels ensures appropriate patient care and identifies best practice models to be used to further reduce death and long term disability as a result of an injury or serious illness. Minimum continuing quality improvement requirements were defined for trauma centers, and are being developed for statewide and regional implementation. The Colorado Trauma Registry data, which will continue its work as long as resources exist to manage the registry, will evaluate both the regional and the statewide trauma systems. Confidentiality was secured for trauma system assessments during the 1999 legislative session. The *Emergency Medical and Trauma Services System Act of 2000* broadened this evaluation and assessment system to include evaluation of the system's response to the medical patients.

- Challenge: Operating capacity of the Trauma Registry is contingent upon finding longer term funding. Current capacity is supported by a short-term grant that expires in June 2002.

## INJURY PREVENTION PROGRAM ACTIVITIES

Injury prevention activities should be based on analysis of available Colorado injury data although current program activities are limited to specific federally funded and targeted programs. Some Regional Emergency and Trauma Advisory Councils have implemented limited public information, education and injury prevention programs utilizing existing local funding or through coordination of activities with relatively high success. Coordinated state, community and individual efforts to reduce the injury rate in Colorado are the initial step in the control and reduction of trauma morbidity and mortality. The department's efforts to coordinate statewide injury prevention activities are limited due to the limitations on funding. The program recently received a Center for Disease Control and Prevention Core Capacity grant with funding to develop an injury prevention plan for the department with the goal of setting the direction for future activity.

## INJURY/EPIDEMIOLOGY PROGRAM ACTIVITIES

A comprehensive evaluation program is needed to effectively plan, implement and monitor a

statewide emergency medical and trauma care system. This can be done with an effective and sufficiently funded Trauma Registry and prehospital data collection system.

Each licensed facility, clinic or prehospital provider that provides service or care to trauma patients is currently required to submit a limited set of patient specific information to the department. These data will be used to evaluate and monitor the trauma system. The data set will also provide profile information on the continuum of care provided for trauma patients and the systems' response to the trauma patient's needs.

The Colorado Trauma Registry is a unique database designed to capture information about the mechanisms of injury and the care of the trauma patient. Discharge data from the Colorado Health and Hospital Association, death files from the department's Health Statistics and Vital Records Section and a unique patient care data set gathered from each Level I - III Trauma Center are merged to create the registry.

Collection and analysis of information from emergency medical service agencies will allow some of this analysis to be conducted. The department and the State Emergency Medical and Trauma Advisory Council have provided technical assistance and resources to local and regional programs to develop their information systems. The department has made progress in empowering local agencies to collect and analyze data at the local level. The Injury Epidemiology Program is assessing the capacity of agencies to implement a pilot program in which prehospital and trauma registry information will be used regionally to assist with local planning efforts.

- Challenge: Continuation of these important evaluation activities is contingent upon finding a long-term funding source.

# Part III
# Challenges for the Colorado Emergency Medical and Trauma Services System

**METRO-AREA DIVERT**

## Background

There are three reasons why patients are taken to a facility other then the closest emergency department. These are patient choice, a prehospital protocol for specialized care, such as trauma care, and when a hospital requests to be by-passed. When a hospital requests to be by-passed, the ambulance transporting the patient is sent to, or is "diverted", to another facility.

There is growing evidence that ambulance divert is a problem with national scope. In the last year, both the national and local news media have reported on divert and emergency department overcrowding in Denver, Boston, Las Vegas, Fredericksburg, Virginia and Brunswick County, North Carolina. The diversion of ambulances from the closest appropriate hospital may negatively effect patient care and stresses local prehospital resources.

Factors affecting hospitals requesting "by-pass" of divert status include:

1. Lack of appropriate staff in critical areas of the hospital. A nursing shortage exists nationwide and all projections show the shortage is expected to reach crisis levels in the next few years.
2. Lack of available beds, due to the lack of staffed beds or physical hospital capacity.
3. Use of the emergency department as primary care facility.
4. Increased severity of the illnesses in overall inpatient population.
5. Lack of resources for patients with specialty needs, such as psychological and long-term care facilities.
6. A population that is increasing in both size and age.

## Current Status

Hospitals in the Denver metropolitan area have reported an increase in total emergency department patient visits and increased patient severity. Preliminary analysis of available data has shown a trend in the total number of hours hospitals have gone on divert.

The primary diversion problem in Colorado is in the Denver metropolitan area and involves the 17 licensed acute care hospitals. The secondary diversion problem is that of the outlying facilities that traditionally send patients to the Denver metropolitan area for services.

Patient destination for metro-area residents is determined in part by the Denver metropolitan

protocols or on-line medical control by physicians.

The Colorado State Health and Hospital Association has purchased and installed a WEB based tracking system that allows each metropolitan area facility to enter its own divert status information into a database. The database then compiles and makes accessible to all of the metropolitan area facilities and dispatch centers a "live" report on the divert status of all the participating facilities at any given time.

Related issues being addressed by other community based groups include:

- Divert definitions to establish a common set of guidelines and criteria
- Management by "zone-masters", a single facility within a geographic area identified as the sole source for a patient destination decision when all facilities in a "zone" are on divert

Currently, the department is a recipient of a read-only version of the data in the WEB based tracking system. We are unable to compile reports or perform other monitoring activities. Many other communities have had to face this issue and have developed some innovative ideas for management of the available resources. The State Emergency Medical and Trauma Services Advisory Council's Divert Committee met in August and upon hearing the committee report the council requested that this issue be presented to the State Board of Health. The board held an informational hearing in October to begin consideration of a role for the board in responding to this pressing and difficult issue.

## EMERGENCY MEDICAL AND TRAUMA SYSTEM ACT OF 2000

## Technical Fix Needed

Certain key sections of Senate Bill 00-180 failed to take effect on July 1, 2001, because a decision item offered by the Department of Public Health and Environment was not approved during the 2001 legislative session. The effective date section of Senate Bill 00-180 states that "[S]ections 7, 8, 9, 14, and 18 of this act shall take effect July 1, 2001, provided that sufficient monies are appropriated by the General Assembly during the first regular session of the sixty-third General Assembly." Late May 2001, the Office of Legislative Legal Services informed the department of its interpretation that Sections 7, 8, 9, 14, and 18 could not take effect as amended because their revision was contingent upon passage of sufficient funding during the 63rd session of the General Assembly.

When the department learned of the Office of Legislative Legal Services' opinion that none of the enumerated sections could take effect on July 1, 2001, the department began efforts to mitigate the impact caused by such an interpretation. The State Revisor of Statutes agreed to include an editor's note at the end of each of the impacted sections of Title 25, Chapter 3.5 of the Colorado Revised Statutes. The editor's note explains the interpretation that Sections 7, 8, 9, 14, and 18 did not take effect July 1, 2001, but states that the effect of the effective date section is the subject of

differing interpretations. It continues that "[F]urther clarification may be sought through the legislative process or through appropriate litigation." The sections are then printed as they would have appeared in the code had they taken effect on July 1.

The consequences of not having these sections of Senate Bill 00-180 in place are significant although not immediate, and there is great concern among officials at both the regional and county level that the organization and funding of the emergency medical and trauma services system will be in disarray if a solution is not implemented as soon as possible.

State Representative Brad Young of Lamar extensively researched the options for resolving this issue and has committed to restoring the modifications to Sections 7, 8, 9, 14, and 18 of Senate Bill 00-180 in a new bill that would not be contingent on an appropriation by the General Assembly. The proposed curative legislation would be effective on the Governor's signature and would restore organization and continuity to the statewide emergency medical and trauma services system.

## EVALUATION AND MODIFICATION OF THE EMERGENCY MEDICAL TECHNICIAN CERTIFICATION PROCESS

The department contracted with an outside vendor to conduct a thorough analysis of the department's processes related to the certification of emergency medical technicians. The department's resources for certification have not changed in since 1989 despite the increase in the number of individuals seeking certification; the most recent changes to rules modifying the certification process; and new legislation regarding utilization of criminal history checks. The department is reviewing the findings and developing a timeline for implementation of both short and long-term modifications in our utilization of current resources.

## PROGRAM FUNDING

The annual appropriation from the Emergency Medical Services account is statutorily required to allocate 60 percent of the funds to the emergency medical services provider grants program, 20 percent to county subsidy, and 20 percent to the department for program administration until July 2002. Although the Prehospital Care and Trauma Programs have experienced real increases in staff and operating costs, the fixed ratio prevents any increases in the dollar amount of the administrative allocation. As a result, the programs face significant challenges in continuing to meet community needs, including the level of assistance requested by the Regional Emergency and Trauma Advisory Councils, local emergency medical service agencies and trauma centers. Beginning on July 01, 2002, the fixed ratio will be removed, and the State Emergency Medical and Trauma Services Advisory Council will have the responsibility to make recommendations regarding the use of Emergency Medical Services account funds. However, the appropriation will still be subject to the annual state budgeting process. The Trauma Center designation fee was

designed to cover the expected direct and indirect costs related to designating health care facilities as trauma centers. The fee does not cover costs related to rule development or modification, processing of appeals or waiver requests, attorney fees nor staff time associated with on-going monitoring or responding to requests for technical assistance. Currently, the Emergency Medical Services account is covering these additional program costs.

Revenue from the Emergency Medical Services account is projected at this time to be adequate to fund future annual appropriations at the current level until 2004. However, the current fee cannot support the current level of effort or cover additional resources that would be needed to fully develop all components of the emergency medical and trauma service system. Some system components have not been implemented due to a lack of resources. The department, in conjunction with the community, is evaluating its priorities and options for partial or full system implementation.

# *Appendices*