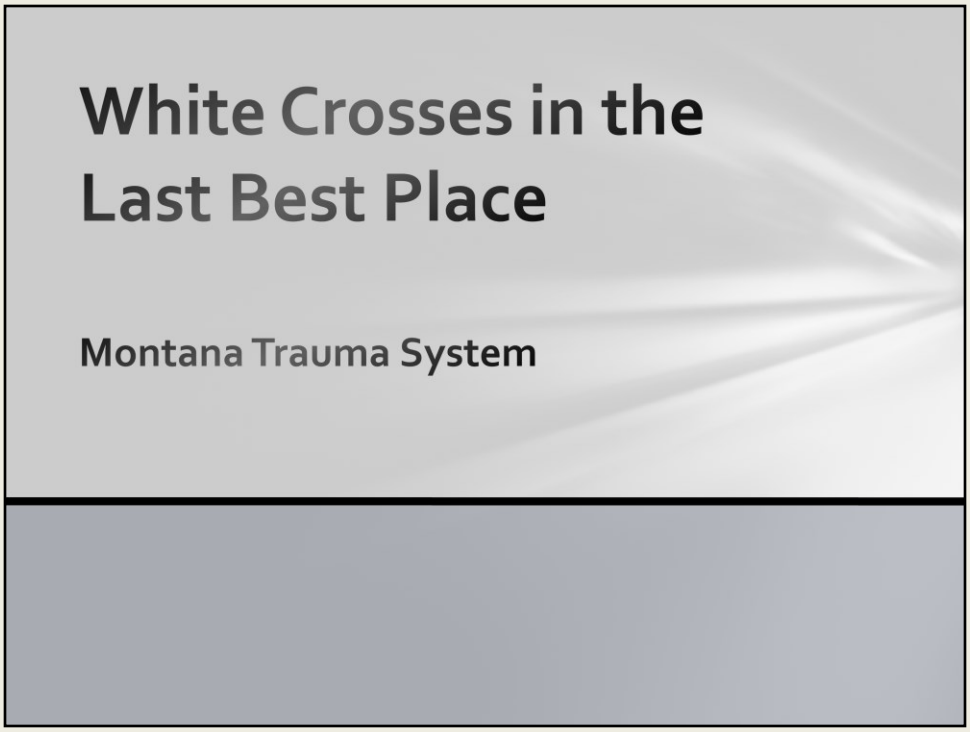



**WHITE CROSS INFORMATION**

- They are numerous enough to notice, yet placed infrequently enough to be startled at seeing them. They stimulate reverence, sorrow, sympathy, curiosity, and caution. They affect us all, to one degree or another. They are the white crosses that mark the sites of fatal traffic crashes along the highways of Montana. For 50 years, these white crosses have reminded passing motorist of the dangers of the road, as well as the lives which have been lost on the highways.

- The Montana American Legion White Cross Highway Fatality Marker Program began in 1953. The unique idea of marking fatal traffic crash sites with a white cross was the brain child of Floyd Eaheart, a member of the American Legion Hellgate Post #27, Missoula, Montana; after six lives were lost in the Missoula area over the 1952 Labor Day Holiday. The safety program started out as a county and later a district project for the Missoula American Legion Post. However, the idea was so well-received that it was soon adopted as a statewide program. The Montana Highway Commission (now Department of Transportation) approved the program in January 1953, with the blessing of the then 13th governor of Montana, J. Hugo Aronson (the "Galloping Swede"). E.A. "Gene" King from Livingston was the American Legion Department Commander at that time.

- Louis Babb was the Assistant Adjutant for the Department of Montana during this period, and was instrumental in getting the program started. He appeared before the Montana Highway Commission and convinced them to adopt the American Legion White Cross Safety Program. With this authorization, most of the 132 Montana American Legion Posts participated in the White Cross Program. Floyd Eaheart, the man who conceived the program, served as the state White Cross Program chairman for the first several years.

- The program is intended as a highway safety, not a memorial, program. Still, many families place wreaths or other decorations on the white crosses, which may be considered a memorial to a loved one lost in a crash. Obstruction of the white cross with these decorations defeats the purpose of the safety program. Attaching them below the cross on the metal pole is acceptable. The white crosses serve as a public service message, reminding drivers to "Please Drive Carefully." They are a sobering reminder of a fatal traffic crash in a place where a human being lost his/her life.

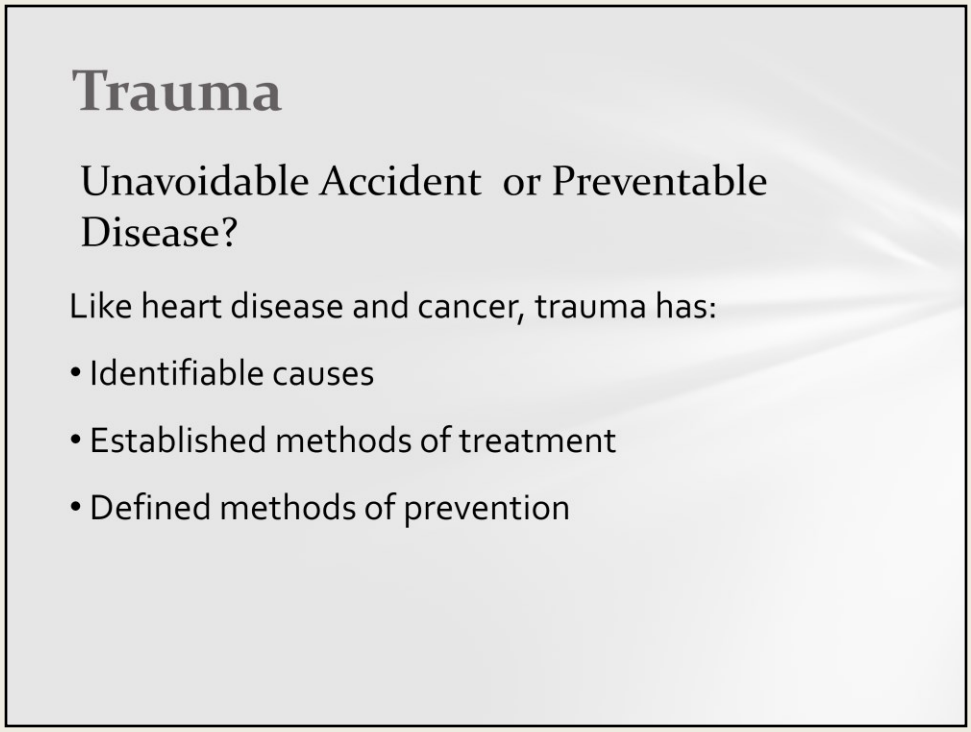
# Why Focus on Trauma?

Trauma is the leading cause of death for all Montanans between the ages of 1 and 44

- Motor vehicle crashes remain the number one cause of trauma
- In the older population, falls equal motor vehicle crashes as the leading cause of trauma

Trauma is the fourth leading cause of death for Montanans of all ages following heart disease, cancer, and stroke

Trauma causes more potential years of life lost than any other cause in Montana




- This is probably the crux of the matter.
- Often in the past, trauma has been referred to as an “accident” so many have thought there was really nothing you could do about it.
- But that thinking is very far from the truth.
- The new thinking is that trauma is a disease for these reasons and there is much for us to do.
- The term “accident” implies that there is nothing you can do to prevent it when in fact, most trauma is very preventable.

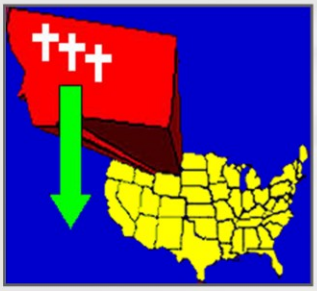
## Trauma is a Preventable Disease

Studies reveal 90% of trauma deaths are preventable

- In fact, injury is America's most expensive disease process, costing nearly $406 billion/year in 2014
- According to the Centers for Disease Control, reduction of trauma provides the greatest potential for health improvement

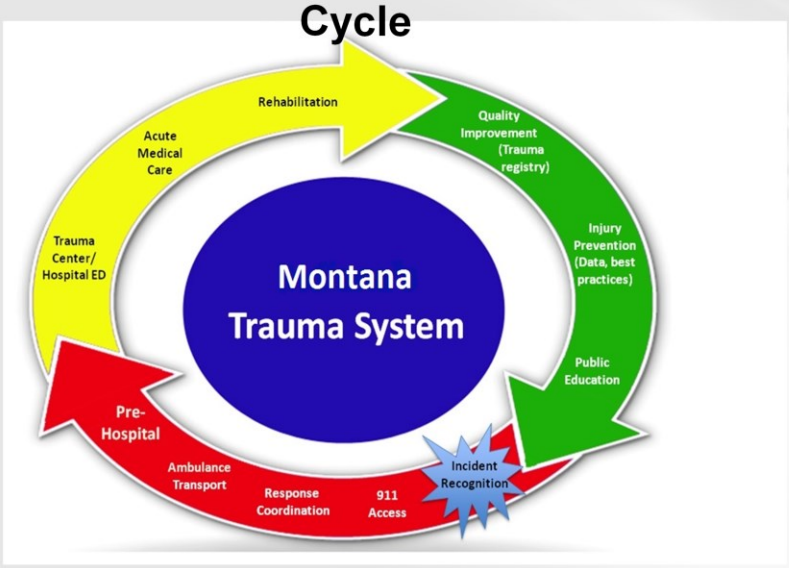
# Trauma Systems

Effective trauma systems can dramatically improve survival rate by providing the right care to the right patient at the right time

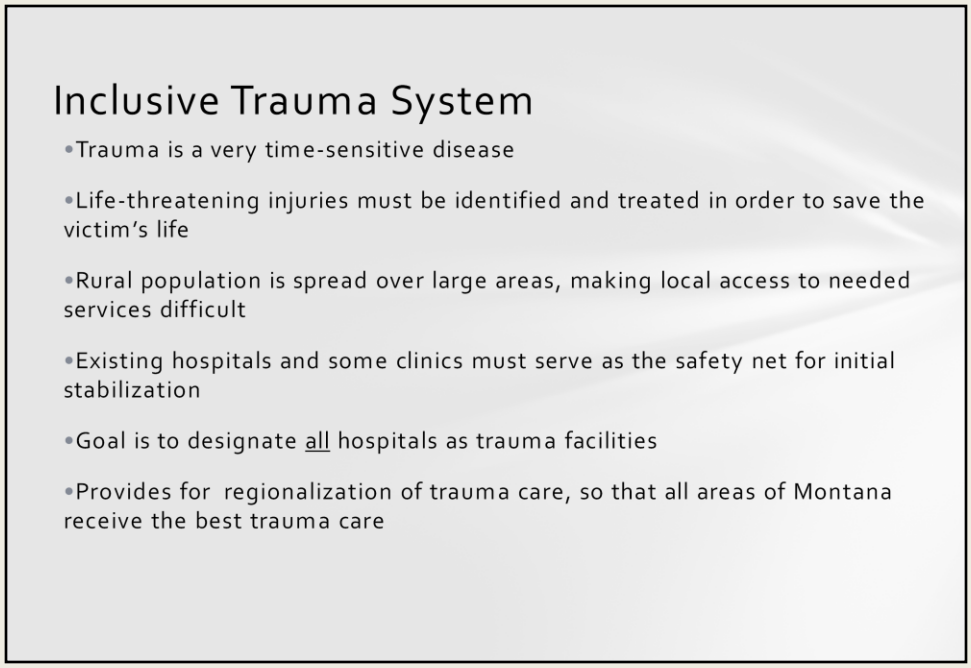


Implementing an effective trauma system can result in a (50 to 80%) reduction in preventable deaths

## Think of Trauma as a Continuous Cycle




- Pt goes from a member of the community to being injured and enters the trauma circle.
- Resuscitation – pre-hospital to ED.
- Hospital – operative, critical, intermediate, acute
- Rehab, step down
- End goal to allow the patient to get back into the community and with optimal functioning to best of pts ability
- Prevention…at many opportunities




- Trauma is a very time-sensitive disease for which the term "the golden hour" was coined; referring to how quickly life-threatening injuries must be identified and treated in order to save the victim's life. Whether the "golden hour" specifically stands up over time and with research, the concept of rapid, timely, appropriate care after injury continues to be an essential premise.

- The population in non-urban areas is spread over large areas, making local access to needed services difficult.

- In rural areas, the existing hospitals and some clinics must serve as the safety net for initial stabilization of the time-critically injured prior to transfer to definitive care.

- The goal is to designate all hospitals and those rural health clinics that receive injured patients from local ambulances as trauma facilities. Designation level is based on the resources available at the facility.

- An inclusive trauma care system provides for regionalization of trauma care, so all areas of Montana receive the best possible initial and definitive trauma care as we "connect the dots" up the chain of available care.

# Benefits of a Successful Trauma System

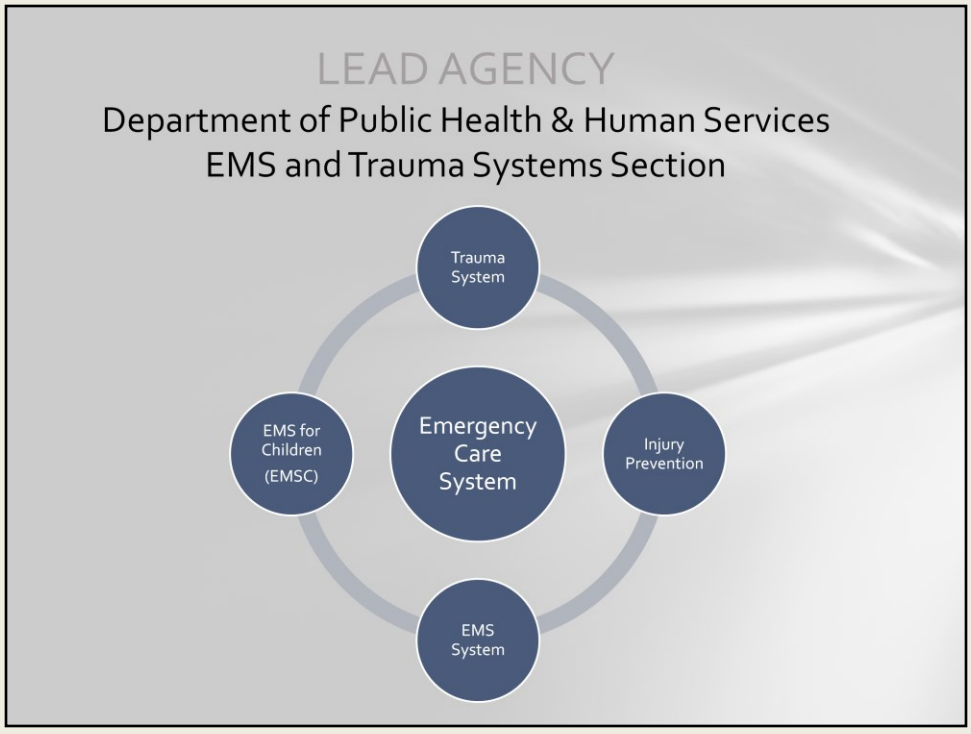
A reduction in trauma deaths

A reduction in the number and severity of disabilities

A reduction of the burden on our communities

A reduction of the burden on the tax payer

Decreases the impact of the disease on the "second trauma victim" ; the families




- The Montana Trauma System has EMS & Trauma Systems as the lead agency that employs a trauma system manager responsible for leading the trauma system. Within the leadership and governance structure of the trauma system, there is an essential role for strong physician leadership. This role is currently being filled by the American College of Surgeons (ACS) Chairman of the Montana Committee on Trauma (COT).

- The lead agency (usually a government agency in most states) is the EMS and Trauma Systems Section of the Montana Department of Public Health and Human Services. This agency is responsible for the oversight of the emergency care system, components of which include the Trauma System, EMS System, Injury Prevention, and EMS for Children (EMSC) programs.

- The lead agency should have the authority, responsibility, and resources to lead the planning, development, operations, and evaluation of the trauma system throughout the continuum of care.

- The lead agency, empowered through legislation, ensures system integrity and provides for program integration with other health care and community-based entities, including public health, EMS, disaster preparedness, emergency management, law enforcement, fire and other community-based organizations.

- The lead agency works through a variety of groups to accomplish the goals of trauma system planning, implementation, and evaluation. The ability to bring multidisciplinary, multiagency advisory groups together to accomplish trauma system goals is essential in developing and maintaining the trauma system and is part of providing leadership to evolving and mature systems.

# Trauma System Leadership

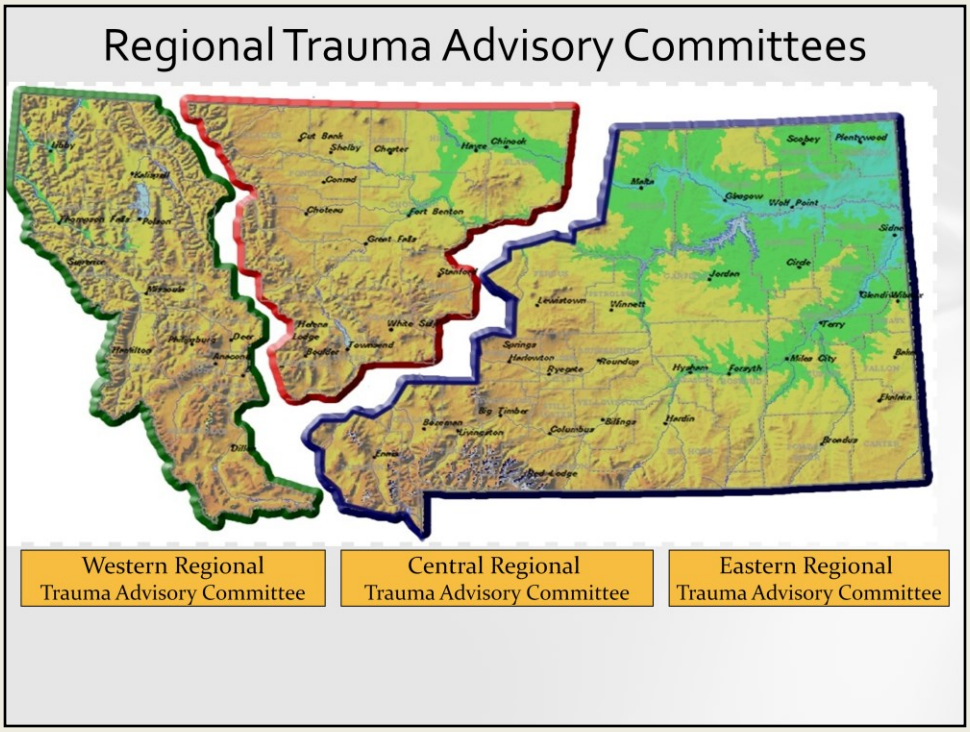
Trauma legislation passed in 1995

Trauma statute link:
http://leg.mt.gov/bills/mca/50/6/50-6-402.htm

The Montana State Trauma Care Committee (STCC) was created by the Montana Legislature to advise the Department of Public Health and Human Services on trauma-related issues


- Montana passed trauma legislation in 1995. This trauma system legislation included the formation of the State Trauma Care Committee to evaluate state-wide trauma issues.
- This committee advises the Department of Public Health and Humans Services Emergency Medical Services and Trauma Systems Section on trauma system issues.
- This true partnership between the public and private sectors (and in particular, the hospitals) provides the leadership structure of the Montana Trauma System.


- Membership of the State Trauma Care Committee (STCC) is determined by statute and individuals are appointed by the Governor.




- The regional approach to healthcare has been utilized in the development of the MT Trauma System. Three regions were identified based on current referral patterns to the Regional Trauma Centers in each region.

- The trauma regional advisory committees are referred to as the RTACs. The Western RTAC is based around Missoula with Butte and Kalispell. The Central RTAC is centered around Great Falls with Helena. And the Eastern RTAC is centered around the Regional Trauma Centers in Billings with Bozeman.

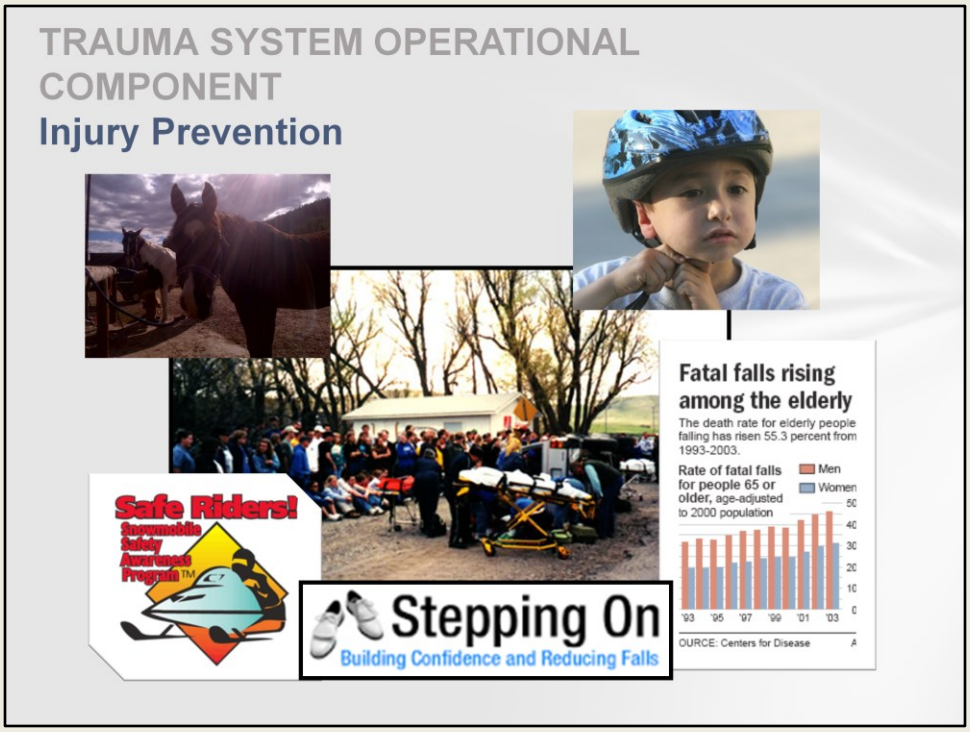
- Each Regional Trauma Advisory Committee meets quarterly to:

  (a) identify specific regional trauma needs and to define corrective strategies
  (b) propose trauma care guidelines or protocols, backed by evidence and research showing their efficacy, to the State Trauma Care Committee.
  (c) develop a Regional Trauma Plan.
  (d) address system and clinical issues; patient care reviews have become most popular RTAC activity to evaluate care, identify issues, provide education & collaborate on strategies for improvement.

# Fundamental Components

- Injury Prevention
- Pre-Hospital Care
- Acute Hospital Care
- Post Hospital Care / Rehabilitation
- Performance Improvement (PI) for every link in the chain
- Disaster Preparedness
- Research


- These are the operational components of a trauma system. Optimal care for the trauma patient involves a TEAM approach by health care professionals working together to provide for a coordinated continuum of care. We will next review each component briefly.




- We cannot overemphasize importance of injury prevention: Most traumatic injury is preventable. Trauma is considered a disease—Not an ACCIDENT! Often in the past, trauma has been referred to as an accident because many believed there was really nothing that could be done to prevent it. We now know this is not true and that most trauma is very preventable.

- Trauma systems must develop prevention strategies that help control injury as part of an integrated, coordinated, and inclusive trauma system. The lead agency and providers throughout the system should be working with business organizations, community groups, and the public to enact prevention programs and prevention strategies that are based on epidemiologic data gleaned from the system.

- Efforts at prevention must be targeted for the intended audience. Collaboration with public service agencies is essential to successful prevention program implementation. Such partnerships can serve to synergize and increase the efficiency of individual efforts. Alliances with multiple agencies within the system, hospitals, and community associations working together is beneficial.

- This slide depicts just one of the many prevention activities currently being done in the state.
- **This is "Your Choice"** which is a car crash demonstration that is done for the high schools. It is a cooperative effort between local prehospital emergency medical providers, police, fire department, the medical facility/hospital, coroner's office, the medical helicopter service for the region, the school, and others.

TRAUMA SYSTEM OPERATIONAL COMPONENT

## Prehospital Care

- If we are unable to prevent injury from occurring, the next operational component of the trauma system is pre-hospital care.
- The care of the trauma patient in a trauma system begins at the scene of the incident and this care is provided by the pre-hospital emergency medical care providers. EMS is often the critical link between the injury-producing event and definitive care at a trauma center.
- It is a complex system that not only transports patients, but also includes public access, communications, personnel, triage, the provision of care prior to arrival at the hospital, data collection, and quality improvement activities. EMS agencies should have a critical role in ensuring that communication systems are available and have sufficient redundancy so that trauma system stakeholders will be able to assess and act to limit death and disability at the single patient level and at the general population level in the case of multiple or mass casualty incidents (MCIs).
- In most areas Montana, this care is delivered by dedicated individuals who volunteer to provide this emergency care. EMS is the only component of the emergency health care and trauma system that depends on a large cadre of volunteers. In order to maintain and improve this invaluable component of the trauma system we must keep this work force and provide them with current trauma care education.
- In some smaller facilities, EMS personnel also become part of the emergency resuscitation team, augmenting hospital personnel. The trauma care system program should reach out to these volunteer agencies to help them achieve their vital role in the optimal outcome of care for trauma patients.
- A mechanism for case-based review of trauma patients that involves pre-hospital and hospital providers allows bidirectional information sharing and continuing education, ensuring that expectations are met at both ends. Ongoing review of triage and treatment decisions allows for continuing quality improvement of the triage and pre-hospital care protocols. It is critical that trauma system leaders work to ensure that
- pre-hospital care providers at all levels attain and maintain competence in trauma care.
- Ambulance Transport Plans may be developed to assist the ambulance crew on scene and the staff of rural hospitals to move the seriously injured trauma patient through the system to definitive care as quickly as possible.
- The TEAM course (Together Everyone Achieves More) was developed specifically to speak rural trauma care in Montana. It is taught around the State in all trauma regions and incorporates care of the patient from dispatch to transfer to definitive care.

TRAUMA SYSTEM OPERATIONAL COMPONENT

## Acute Care Facility

- This component of the trauma system refers to all the medical facilities that provide primary emergency patient care.
- The trauma system provides for systematic way of providing emergent life saving care through an organized Team approach.
- This picture shows a Trauma Team caring for an injured patient in the emergency department. They are providing critical life saving interventions as quickly as possible for the trauma patient in an effort to reduce death and disability.
- The emergency department is the first department of the acute care facility where the trauma patient is usually cared for, but this is not the only part of the facility that is the trauma center. Included are all departments and services involved in the care of the injured patient such as Lab, Diagnostic Imaging, surgery, ICU, rehabilitation, etc.
- Designation as a trauma facility in the State of Montana is a process for the acute care facilities. The process of trauma center designation is voluntary. The trauma program staff complete an application sent to the EMS and Trauma Systems Section of the Montana Department of Public Health and Human services. The application is reviewed and followed by an on-site survey by an experienced trauma physician and trauma coordinator to evaluate the trauma program processes.
-

# Levels of Trauma Facility Designation

**Regional Trauma Center**

- Capable of providing advanced trauma care for a region, all major surgical services readily available

**Area Trauma Hospital**

- Capable of handling most trauma patients within their service area, surgeon always available

**Community Trauma Hospital**

- Able to provide limited emergency and intermittent surgical coverage

**Trauma Receiving Facility**

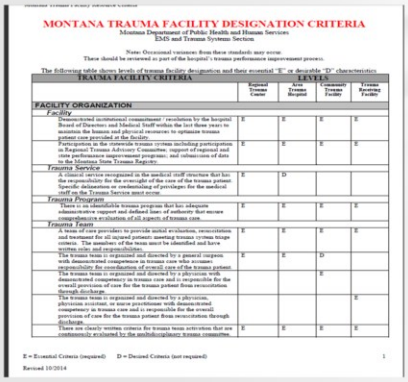
- Able to provide limited emergency care with no surgical coverage

Four levels of trauma facility designation are defined in Montana.

# Montana Designation Criteria

Montana Trauma Resource Facility Criteria:

- Trauma Facility Designation Criteria 10/2014;
  http://dphhs.mt.gov/publichealth/EMSTS/traumasystems/designation.aspx



MONTANA TRAUMA FACILITY DESIGNATION CRITERIA

Montana Department of Public Health and Human Services
EMS and Trauma Systems Section

Note: Occasional variances from these standards may occur.
These should be reviewed as part of the hospital's trauma performance improvement process.

The following table shows levels of trauma facility designation and their essential "E" or desirable "D" characteristics

| TRAUMA FACILITY CRITERIA | LEVEL I Regional Trauma Center | LEVEL II Area Trauma Hospital | LEVEL III Community Trauma Facility | LEVEL IV Trauma Receiving Facility |
|---|---|---|---|---|
| **FACILITY ORGANIZATION** | | | | |
| *Facility* | | | | |
| Documented institutional commitment / resolution by the hospital Board of Directors and Medical Staff within the last three years to maintain the human and physical resources to optimize trauma patient care provided at the facility. | E | E | E | E |
| Participation in the statewide trauma system including participation in Regional Trauma Advisory Committee, support of regional and state performance improvement programs, and submission of data to the Montana State Trauma Registry. | E | E | E | E |
| *Trauma Service* | | | | |
| There is a service recognized in the medical staff structure that has the responsibility for the oversight of the care of the trauma patient. Specific delineation or credentialing of privileges for the medical staff on the Trauma Service must occur. | E | D | | |
| *Trauma Program* | | | | |
| There is an identifiable trauma program that has adequate administrative support and defined lines of authority that ensure comprehensive evaluation of all aspects of trauma care. | E | E | E | E |
| *Trauma Team* | | | | |
| Hospital provides to provide initial evaluation, resuscitation and treatment for all injured patients meeting trauma system triage criteria. The members of the team must be identified and have written roles and responsibilities. | E | E | E | E |
| The trauma team is organized and directed by a general surgeon with demonstrated competence in trauma care who assumes responsibility for coordination of overall care of the trauma patient. | E | E | D | |
| The trauma team is organized and directed by a physician with demonstrated competency in trauma care and is responsible for the overall provision of care for the trauma patient from resuscitation through discharge. | | | E | |
| The trauma team is organized and directed by a physician, physician assistant, or nurse practitioner with demonstrated competency in trauma care and is responsible for the overall provision of care for the trauma patient from resuscitation through discharge. | | | | E |
| There are clearly written criteria for trauma team activation that are continuously evaluated by the multidisciplinary trauma committee. | E | E | E | E |

E = Essential Criteria (required) D = Desired Criteria (not required)

Revised 10/2014

1

- These four levels represent levels of available resources and capabilities. The four levels are defined through the Montana Facility Resource Criteria, describing “Essential” or “Desirable” characteristics within trauma program components for each level of trauma facility.

## Montana Trauma System

The trauma system includes a network of acute care facilities that provide a spectrum of care for all injured patients

The system emphasizes the need for various levels of trauma centers to cooperate in the care of injured patients to effectively utilize precious medical resources

## TRAUMA SYSTEM OPERATIONAL COMPONENT

# Rehabilitation

- Another important component of the trauma system is rehabilitation or post hospital acute care.
- This phase of care starts in the pre-hospital setting and continues through the acute care phase. Initial field interventions greatly affect outcomes for every injured patient.
- Just getting patients there alive is not enough! The ultimate outcome for each patient may well be dependent on those decisions made in the first hours, especially if pre-agreed upon guidelines are in place:
    - ❖ Timely dispatch of appropriate resources
    - ❖ Efficient, well-prioritized patient management on-scene and in-hospital
    - ❖ Early recognition of injuries with expeditious transfer to a higher level of care when appropriate
    - ❖ Timely transfer to appropriate facility by most appropriate means
- The goal of trauma care is to maintain/regain a productive member of society and in order to achieve this goal, many trauma patients require significant rehabilitation. The key to making this happen is excellent pre-hospital, nursing, and medical care throughout the continuum of care. All of us working together can make a real difference!

## Emergency Preparedness

An effective disaster response is built upon a robust day-to-day Trauma System

"Prepare well for one and be well-prepared for many"

- The American College of Surgeons, Committee on Trauma Report: Trauma & EMS systems are designed to be an organized response to injury. As such, they have many elements needed for disaster response, including:
    - ❖ Identification and transport of the injured
    - ❖ Communications network and designated facilities to receive the injured
    - ❖ Specific medical care necessary for the injured
    - ❖ "Stretching" the current system works better than creating a new one.
- Excellent care for one critically injured patient provides the structure for enhanced capabilities when presented with multiple or even "mass" numbers of casualties. "Ramping it up" works well when built on processes teams use routinely.
- A well-developed trauma system truly is the "back-bone" of an effective Emergency Response/Disaster System.

## Trauma System Principles

An effective trauma care system will be part of, and interrelate with, many other components of the health care system

Duplication must be avoided and existing resources integrated

Can adapt trauma system principles, pre-planned team structure with evidence based guidelines in preparation for ED responses to many "time-sensitive" patients such as:

- Hemorrhagic shock not related to injury (GI bleed, etc.)
- Strokes
- Acute myocardial infarctions

- The organized team approach in a system of regional care currently used for care of the injured can be expanded to include the various responses required during many emergency care situations.
- Many time-sensitive patients can benefit from the trauma system organization of patient identification, triage, resources, staff, capabilities and transfer processes already utilized for trauma patients.
- Adaptation and extension of the existing systems mechanisms rather than creating parallel systems offers further system efficiencies and improved utilization of limited resources for patient benefit.

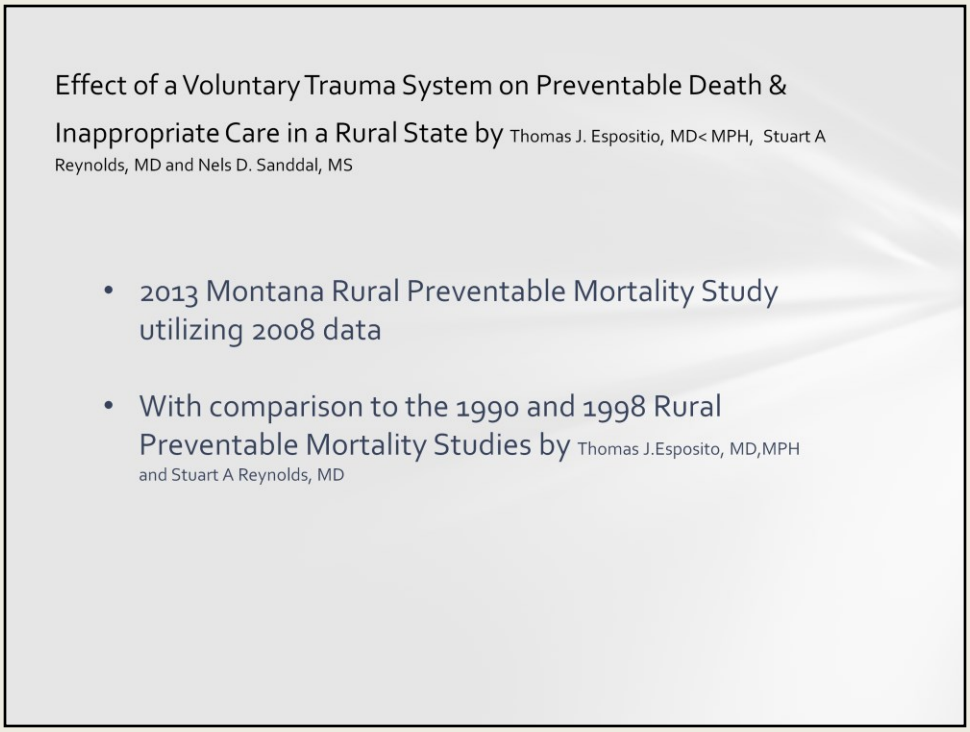
## Benefits of a Successful Trauma System

- A reduction in trauma morbidity & mortality
  - Montana Preventable Mortality Study
    - 1990, 1998, 2008
- A reduction in the number and severity of disabilities
- A reduction of the burden on our communities
- A reduction of the burden on the government

Decreases the impact on the "second trauma victim" – the families

**MT preventative Mortality Study percentage of preventable deaths**

- 1990 – pre- trauma system 13%
- 1998 – two years after trauma system legislation passed – 8%
- 2008 – 10 years after trauma system development and 2 years after the state of Montana began to designate facilities – 5%




- A second Montana preventable mortality study was conducted in 2000, 8 years after the initial Montana preventable mortality study was completed in 1992 and a third was completed in 2013 using 2008 data.
- The initial study was completed prior to implementation of the Montana Trauma system.
- The second study was conducted after initial efforts to implement components of the Montana Trauma System had been made and the third study was looking at the trauma system after 10 years of development.
- Opportunities for improvement were evaluated along with preventable mortality in an effort to see if trauma system development was making a difference.
- These are some of the major issues related to trauma and trauma care in a rural state such as Montana.
- Rural medical centers see a limited number of trauma patients, provided limited opportunities to develop proficiency in care of infrequently seen patients.
- The key to improved proficiency is education but with limited health care dollars available, education of the health care providers is often very limited.

## Study Findings

- Overall PREVENTABLE DEATH RATE (PDR) was
- 5% in 2008 compared with 8% in 1998 and 13% in 1990
- In a mandated and funded trauma system in Oregon the PDR dropped to 4.7%

- Montana is a voluntary state and inclusive trauma system which means that facilities volunteer if they choose to be designated as a trauma center. Inclusive means that we include all facilities in Montana have a role in the state trauma system not just the bigger facilities, recognizing that having all facilities involved increased organizational response to trauma at smaller facilities and there was less over triage and selective triage.

## PM Study: Prehospital Phase of Care

INAPPROPRIATE CARE 37% in 1990 → 22% in 1998 → 27% in 2008

2008 – now focused on opportunities for improvement

Issues reviewed

Airway management
Bleeding control
C-spine stabilization
Fluid resuscitation
Fracture Stabilization


- In the Preventable Mortality Studies, all phases of care were evaluated for clinical care issues. While improvements were noted, care components continue to require our attention and efforts for improvement in all phases of patient care.

- In the Pre-hospital phase of care, issues related to these listed patient care interventions were identified:

  - ❖ Management of the patient airway
  - ❖ Control of bleeding
  - ❖ Implementation and maintenance of C-spine immobilization
  - ❖ Fluid resuscitation
  - ❖ Splinting and stabilization of potential fractures

## PM Study: Emergency Department Phase of Care

INAPPROPRIATE CARE 68% in 1990 → 40% in 1998 ⟶

43% in 2008

2008- Opportunities for improvement

Issues reviewed

Airway management

Chest injury care

Fluid resuscitation

Vasoactive drug use

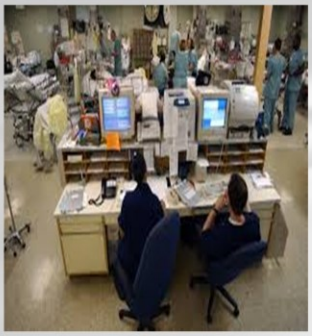
- In the Emergency Department phase of care, issues related to these listed patient care interventions were identified;
  - ❖ Management of the patient airway, in particular endotracheal intubation.
  - ❖ Management of identified chest injuries, in particular implementation of chest tubes.
  - ❖ Fluid resuscitation for patients requiring it.
  - ❖ Recognition of the need for and implementation of timely, adequate intravenous access.
  - ❖ Issues related to use of vaso-active medications rather than use of trauma resuscitation procedures (ACLS vs ATLS).

## PM Study: Post Emergency Department Phase of Care

Opportunities for Improvement were; 49% in 1990 → 29% in 1998

34% in 2008

2008 – Opportunities for improvement



Issues reviewed

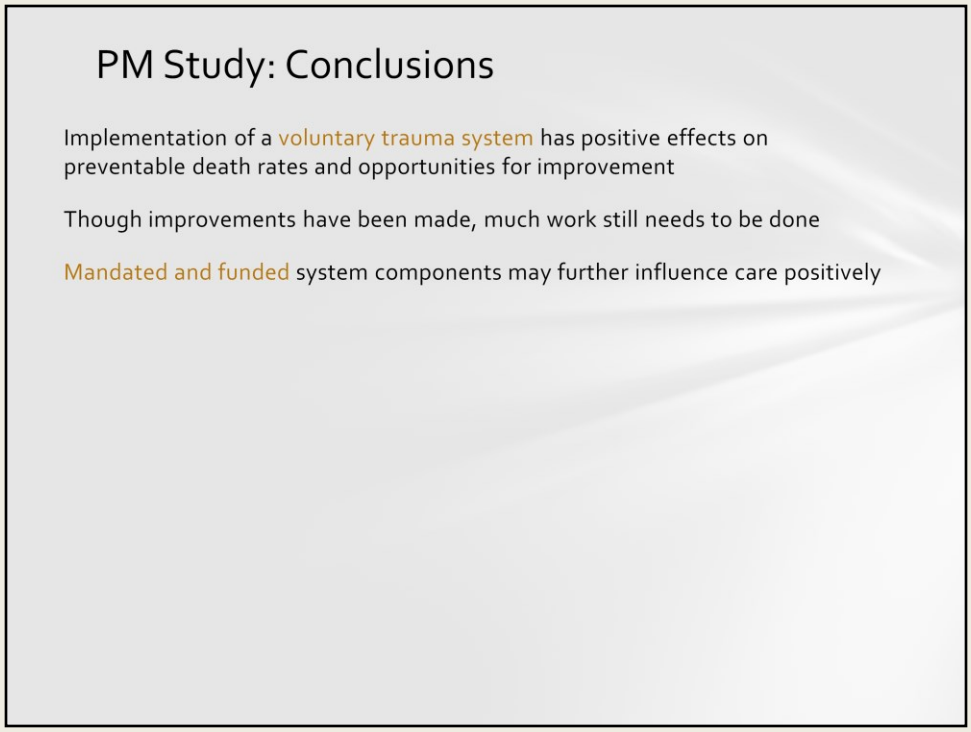
Ventilator Management

Head Injury Management

Inappropriate Operation

Treatment of hypothermia, acidosis and coagulopathy in the ICU

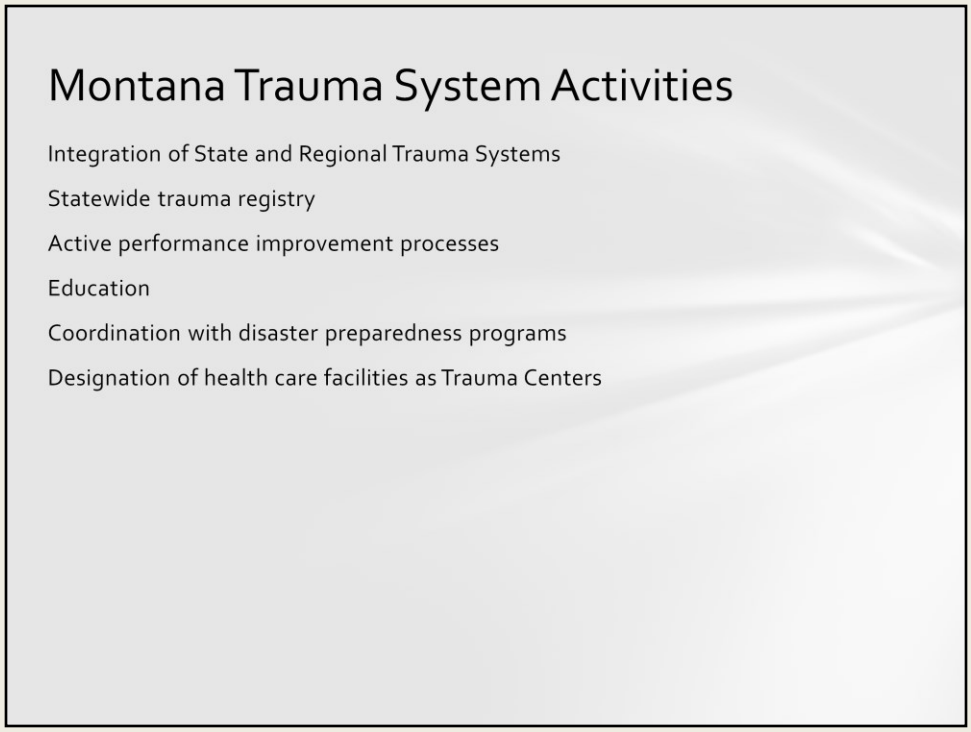
- **In the Post-Emergency phase of care, issues related to these listed patient care interventions were identified:**
  - ❖ Management of the patient on ventilator support
  - ❖ Traumatic Head Injury management.
  - ❖ Inappropriate surgical operations.
  - ❖ Treatment of hypothermia, acidosis and coagulopathy in the ICU
- **In the 2013 study using 2008 data inappropriate care was dropped in favor of opportunities for improvement. Which does not impart blame or fault but rather areas that need further attention.**




- The 2008 study once again demonstrates an encouraging trend toward decreasing the preventable death rate which corresponds with the increasing maturity of the trauma system including maturation of the performance improvement process.

- However, it also shows persistent opportunities for improvements in many categories.

- Our system and patients may best be served by recognizing that focusing on the basics of optimal trauma care through education as an on-going permanent strategy which is a component of rigorous performance improvement.




- Trauma system legislation was passed in 1995 that set up the State Trauma Care Committee and Regional Trauma Advisory Committees.
- Education for everyone involved is a critical element of the Montana Trauma System.
- We all need “refreshers” in how to provide optimal trauma care as timing of critical interventions makes a significant life-saving difference and can decrease related disabilities for the severely injured trauma patient.


- The EMS &Trauma systems website has many resources for you to EASILY access and use.
- Click on “Medical Folder”; “ Trauma System”.
- There, you will find an ever-growing number of tools, forms and resources to assist you and your trauma program

# TEAMWORK SAVES LIVES

# JOIN THE MONTANA TRAUMA TEAM