Rural Trauma

A Matter of Perspective
What does the world look like from a Critical Access Hospital?
The CAH perspective

- Isolation
- Resource Limitations
- Staffing shortages
Trauma or Crisis Management

- Exacerbates feeling of isolation
- Highlights resource limitations
- Communication systems become stressed
- Patient flow systems fail
- Weakest link becomes apparent

- In Short “Chaos”
Identify Limitations

• Facility limitations
  – Acute care, ER capacity

• Staffing
  – Shift staffing: Nursing and Providers
  – Ancillary service staffing
    • Respiratory Therapy
    • Lab technicians
    • Radiology Technicians
Limitations

• Transport capacity
  – Local EMS
  – Regional EMS (ALS, BLS)
  – Flight service capacity and availability

• Environmental
  – Time of Day (staffing and on call)
  – Weather (can change all of the above)
What is your Surge Capacity?

Backup Resources:

• Can off duty staff be called?
• What is the over flow plan?
Mass Casualty

• This is a relative term!
• Any patient volume or severity that overwhelms the system:
  – Facility capacity
  – Provider and staff capability
  – Transport capacity
Facility Limitations

- Montana has 48 Critical Access Hospitals (CAH)
Montana CAH Spectrum

• Range of facilities:
  – Single mid-level provider Acute Care
  – Designated Level III Trauma receiving facility with General Surgery and ER/ Hospitalists

• Range of Transport distances and resources which are all weather dependent
Prepare

• Worst case scenario: Train for This!!!
• What can your facility handle?
• Manage the patient according to your capabilities.
• Set in place all of your resources.
• Know how to send a patient
Worst Case Scenario

• Icy roads. Winter fog.
• Thanksgiving weekend
• Pickup vs. car, Front seat occupants unharmed
Rear seat passenger 17 y.o. female lap belt only
ER Presentation

• Shock SBP 80-90
• GCS 4-5 (some tracking with eyes)
• Marked lap belt injury

• Weather would not permit helicopter or fixed wing transport.
• Exploratory laparotomy
• Damage control
• Multiple areas of bowel injury and complete transection (stapled closed not definitive repair) mesenteric bleeding controlled
• Stomach reduced from chest, chest tube
• Pelvic hematoma packed
• Abdomen left open with drains and packing
Transport

• Ground transport with MESI (Life Flight Crew)
• Marked acidosis requiring ongoing resuscitation with fluids and blood products
• Transport stopped at St. Pats ER for more blood and fluids
• Fixed wing transport to Harborview
Harborview

- Prolonged course with multiple returns to OR
- Last report patient was walking

- Surgeon from Harborview indicated the Damage Control Laparotomy in the rural facility was life-saving
“Perfect Storm”

• All of the trauma staff available
  – General Surgeon, Anesthesia staff, ER/ Hospitalist
• PA for ER coverage stopped at scene
• CT was obtained quickly while OR was opening
• Recent ACS review for Level III status
Challenges

- Icy road conditions made transport difficult
- Winter storm conditions “no Life Flight”
- Level of injury required Level 1 Trauma center for definitive management
The Plan

• Mechanism: High suspicion for visceral, spine and diaphragm

• Simultaneous action
  – Resuscitation: IV access, Airway
  – Open the OR, call all staff: Damage Control
  – Planning for Transport
    • Ground crew with ALS (send Doc and nurse)
    • Ground ALS from Trauma center
The CT

• Controversial
  – “don’t look if you can’t fix it” ???
• Must not allow CT to slow resuscitation
• Must not delay Operation or Transport

• May help with planning to prepare next level or to determine destination
• Must be able to send images
Rural Non-Surgical Provider

Assess and control the airway

Chest tube:
  – Recognition of need for Chest Tube
  – Capability of insertion
Non-Surgical skills

• Control external bleeding, recognize shock

• Pelvic wrap for open book pelvic fractures
Non-Surgical Skills

• Recognize Traumatic Brain injury, prevent 2\textsuperscript{nd} injury
  – Oxygen
  – Minimize swelling

• Immobilize extremity fractures
Communicate with Referral Center

- Send all Records
  - Trauma Flow Sheet
  - Labs
  - X-rays (PACS)
Rural Non-Surgical Provider

- Critical Resources and Skill Sets for Resuscitation
- Airway, IV access, Stabilization
- Skillsets crossover from non-trauma
  - Cardiac management
  - Sepsis resuscitation
  - Stroke care
Rural Surgical Provider

• Take a leadership role in Trauma care
• Participate in staff training
• Damage Control when definitive treatment is not an option:
  – Packing a liver injury
  – Staple/resection of bowel without anastomosis
  – Shunting a vascular injury
  – Basic principles of hemostasis
Trauma Laparotomy at Rural Hospital

- Journal of Trauma 2003; 54: 823-828
  - “Trauma Laparotomy in Rural Setting before Transfer to a Regional Center: Does it Save lives?”
  - 56 patients, 82% survival
  - 25% characterized as Damage control procedures
  - 11/14 Damage control survived
Recognize Life Threatening Injuries

- Airway
Recognize Life Threatening Injuries

- Bleeding
Role of Rural Facility

- Prepare for Trauma
  - ATLS for providers
  - TEAM or RTTDC for facility
Prepare

• Set up the ER for Resuscitation
• Chest Tube Cart
• Trauma Bay
Role of Rural Facility

• Stabilize patient to extent of capability
• Communicate with Trauma Center
  – Establish relationship, Transfer agreements
  – Decide early of need for Transport
  – Effectively report injuries and patient condition
• Manage Time efficiently
  – Be aware of the delays you create
Role of the Trauma Center

- Say “YES, we will accept the patient”
- Coordinate the transport
- Provide feedback to the Rural providers
- Participate in Education for rural facilities
- Establish Relationship with Providers
Regional Trauma System

• Integrated EMR
• Mutual PACS systems
• Communications:
  – RTAC representation
  – Facility Trauma Coordinators
• Ongoing Education: Spring Fever Trauma Conference
• Prevention
Prevention

• Trauma is a Recurrent Disease
• Behavior related
  – Alcohol / Drugs
  – High risk activity
    • Motor sports ATV, Motorcycle, Snowmobile
    • High risk activities: Skiing, Skydiving
    • Distracted Driving: Texting
CFVH Experience
ER Data Collection 2004

• More than 70% of the motor vehicle accidents involving a fatality or serious injury were alcohol related

• No motor vehicle accidents were identified where marijuana, narcotics, benzodiazepines or methamphetamine were found without the additional presence of alcohol
CFVH Experience

- 10% of admissions to CFVH during the Summer of 2004 – alcohol was the leading cause for the admission
- In the months of July and August 22% of the admissions to the hospital were alcohol related
CFVH Experience

During the Summer of 2004, alcohol was determined to be a contributing factor in **100%** of ER visits for the following violent acts:

- Rape
- Homicide
- Assault with a deadly weapon (stabbings and shootings)
- Domestic Partner Assault
CFVH Experience

• A significant number of children with injuries (falls, burns, head injuries) arrive at the CFVH emergency room with a caregiver who is under the influence of alcohol.
Trauma Prevention

• The providers in this room
  – EMS
  – Nursing
  – Physicians and Mid-level providers
  – Social Services

• Will have the greatest impact on their community
• A Brief Intervention Reduces Hazardous and Harmful Drinking in Emergency Department Patients

Emergency practitioner–performed brief interventions can reduce alcohol consumption and episodes of driving after drinking in hazardous and harmful drinkers. These results support the use of brief interventions in ED settings.
Summary

• Prepare for Trauma
  – It will happen
• Practice for your “Worst Case Scenario”
• Find Your Resources before you NEED them
• Communicate with the trauma center
  – Training, Transfer Agreements
• Prevent Trauma
  – Initiate a prevention program locally
    • Alcohol, Drug prevention
    • Recreation Safety
    • Distracted Driving Awareness