GOALS

- The scope of the problem.
- How best to care for seriously injured patients
- How we care for them now in Alaska
- How we can do better- examples
- Recommendations
Trauma in Alaska

The leading cause of death under age 44.

- Alaska- second highest trauma mortality in the US
- 400-500 alaskans die each year.
- ~ 5000 hospital admissions.
- Over 1000 with permanent disabilty.
<table>
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<tr>
<th>Rank</th>
<th>Age Groups</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
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<td>Diabetes Mellitus</td>
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<td>Septicemia</td>
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<td>Influenza &amp; Pneumonia</td>
<td>Alzheimer's Disease</td>
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<td>Three Tied</td>
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<tr>
<td>10</td>
<td>Six Tied</td>
<td>1</td>
<td>Three Tied</td>
<td>2</td>
<td>Three Tied</td>
<td>Three Tied</td>
<td>Septicemia</td>
<td>Parkinson's Disease</td>
<td>Influenza &amp; Pneumonia</td>
<td>44</td>
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</table>
Trauma Mortality in Alaska

Age Adjusted Trauma Mortality

- US
- ALL ALASKANS
- ALASKA NATIVES
Trauma in Alaska

- Motor vehicle crashes leading cause of death.
- Firearm related injuries, second.
- 2009 hospital costs - Alaska trauma patients over $121 million.
- Medicaid & Workmans Comp 26 million hospital costs. (900 admissions)
- ~ 20% trauma admissions uncompensated.
Death from Trauma

![Bar Chart]

- Immediately
- Hours
- Days - Weeks
A trauma system consists of hospitals, personnel, and public service agencies with a preplanned response to caring for the injured patient.
Trauma Systems

“Getting the right patient to the right place in the right amount of time.”

- Facilities (trauma center designation)
- Personnel (training)
- Patient transport
- Triage
Trauma Systems

- “15-20% improvement in survival of the seriously injured.” NEJM 1999
- Increase productive working years
- Improve statewide disaster preparedness.
- Inclusive systems - best
Trauma Systems
Facilities-Trauma Centers

- Level I - Definitive subspecialty care, research.

- Level II – Definitive subspecialty care, surgery, orthopedics, neurosurgery.

- Level III- General surgery, orthopedics, no neurosurgery

- Level IV- Stabilization, limited or no surgical capacity
Trauma Systems- Training

- ATLS: MDs, Midlevels
- TNCC: Nurses
- RTTDC: Rural MDs, Nurses, Prehospital
- PHTLS: Prehospital
- ABLS: Burn care
- ETT: General public, Health aides
Trauma Systems - Transport

- EMS system
- Triage guidelines
- Injury protocols
Preventable Deaths: The impact of trauma systems

Before trauma system

After trauma system

San Diego
L.A.
Tampa, FLA

%
Trauma Systems & crash mortality
Nathens et.al. 2000
Trauma systems & crash mortality
Nathens et.al. 2000

The diagram shows the percentage changes in trauma mortality with the implementation of trauma systems, restraint laws, ETOH speed limit increase, and other measures.
Anchorage Mortality Rate 2005-2007
Excludes DOAs

Designated: 0.8%
20/2377

Non-Designated: 3.1%
130/4201

Alaska Trauma Registry (p<.01)
Designated vs Nondesignated Facilities - Anchorage

Trauma Mortality Rates
Status 1 Patients

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<tr>
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<th>3 Year period 2004-2006</th>
<th>3 Year Period 2007-2009</th>
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<tr>
<td>Designated TC (ANMC)</td>
<td>10.3%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Non-Desgnated TC (PAMC/ARH)</td>
<td>32.3%</td>
<td>32.2%</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Deaths</th>
<th>Total Patients</th>
<th>Deaths</th>
<th>Total Patients</th>
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<tbody>
<tr>
<td>Designated TC (ANMC)</td>
<td>16</td>
<td>156</td>
<td>266</td>
<td>10.3%</td>
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<tr>
<td>Non-Desgnated TC (PAMC/ARH)</td>
<td>86</td>
<td>239</td>
<td>77</td>
<td>16.8%</td>
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## USA Trauma Center Growth Over Time

<table>
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<tr>
<th></th>
<th>1991</th>
<th>2002</th>
<th>2009</th>
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<tr>
<td>Level I</td>
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<td>190</td>
<td>199</td>
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<tr>
<td>Level II</td>
<td>209</td>
<td>263</td>
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<td>Level III</td>
<td>76</td>
<td>251</td>
<td>362</td>
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<tr>
<td>Level IV-V</td>
<td>21</td>
<td>450</td>
<td>748</td>
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<tr>
<td>Total</td>
<td>471</td>
<td>1,154</td>
<td>1,578</td>
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<td>Pediatric Only</td>
<td></td>
<td></td>
<td>41</td>
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</tbody>
</table>

Courtesy Anthony Carlini ATS TIEP
Updated Trauma Center Status
July 2009

Legend
# Level I
" Level II
! Level III-V

Courtesy Anthony Carlini, ATS, TIEP
Alaska Trauma System - Beginnings

- 1993 statute - EMS authority for designating trauma centers created.

- Hospital participation voluntary.

- Standards for trauma center designation follow American College of Surgeons criteria.

- Outside review for Level I, II, and III
Current Status - 18 Years Later

Twenty-four hospitals in Alaska

**Verified / Designated**
- 1 Level II ANMC
- 4 Level IV centers - NSH - MEH - YKHC - SCH
- 9 other facilities with reviews or consultations.

**Non-Verified**
- 2 centers providing care for multiple trauma patients
- 6 centers that provide surgical capabilities
- 2 military hospitals
Alaska Trauma Facilities

- **Alaska** - Only state without a designated Level I or II trauma center (that serves the majority of the population.)

- **Anchorage** - the largest city in the US without a designated Level I or II center (that serves the majority of the population.)
Insanity

“Insanity is doing the same thing in the same way and expecting a different outcome”
- Old Chinese Proverb
State of Alaska Dept of Health and Social Services: Trauma System Consultation
November 2-5 2008
ACS-COT Site Visit Team

- Reginald A. Burton, MD FACS  Team Leader, Trauma Surgeon
- Jane Ball, RN, DrPH   ACS Consultant
- Samir M. Fakhry, MD FACS  Trauma Surgeon
- Holly Michaels  ACS Program Coordinator
- Drexdal Pratt, CEM  State EMS Director
- Nels Sanddal, PhDc, REMT-B   ACS Consultant
- James D. Upchurch, MD  Emergency Physician
Objective

- To help promote a sustainable effort in the graduated development of an inclusive trauma system for Alaska.

- Multidisciplinary review of the trauma system

- 17 states have been reviewed
Executive Summary
Advantages & Assets

- Committed individuals who use their expertise every day to serve Alaska citizens
- Extensive networks for transport
- 3 large medical centers with extensive subspecialty expertise within the state
- Large Level I trauma center in Seattle which freely accepts adult and pediatric trauma patients
Advantages & Assets

- One center maintains ACS Level II verification standards (others have obtained consultations and are working toward verification.)

- **Alaska Trauma Registry** - all 24 acute care hospitals provide data.

- Injury prevention activities are well established.

- Initial efforts at legislative change.
Challenges and Vulnerabilities

Public not aware of trauma system issues.

Limited human resources.

Few incentives for hospitals to participate.

No statewide evaluation of system performance.
Executive Summary

“Several Alaska Native facilities have sought and achieved verification and designation as trauma centers. …… To date few of the facilities serving the majority population have made a similar commitment to achieving nationally recognized standards of trauma care.”

ACS-COT Alaska Trauma Systems Review
11/2008
Recommendations: Definitive Care Facilities

- **Establish**, as soon as practical, a second Level II Trauma Center in Anchorage in accordance with ACS COT verification criteria to meet the existing volume and acuity demands.

- **Mandate** participation of all acute care hospitals in the trauma system within a 2 year time frame with trauma center designation appropriate to their capabilities.
Recommendations: Definitive Care Facilities

- **Study** pediatric trauma care needs and **establish** one or more in-state centers of excellence in pediatric trauma care.

- **Determine a method of providing financial support for hospitals designated/certified by the state as trauma centers** to assist with uncompensated care and the cost of readiness.
Recommendations: System Coordination and Patient Flow

- Implement standardized prehospital triage and trauma activation protocols customized to the three response areas (Anchorage, Southeast, and the bush).

- Provide state funding to hire a fulltime trauma system manager.
ACS Recommendations- State Actions

- DHSS has created and filled the trauma manager position who is facilitating development of a statewide trauma plan.

- Trauma Systems Review Committee working to develop metrics to measure trauma system performance.

- Legislation to create incentives for facilities to participate was passed in 2010.
Alaska Trauma Systems Review Committee

- MDs, nurses, administrative, prehospital, and public representation
- Meets twice a year

Oversight - Trauma Registry
- Level IV Trauma verification
- EMS triage and interfacility transfer guidelines
- Trauma system performance improvement.
Legislation - House & Senate Bills 168, 169

- Introduced - Rep John Coghill (R) and Sen Bettye Davis (D) March 2009
- Passed unanimously April 2010
- Signed Governor Parnell June 2010

Created trauma fund to support trauma care given at designated trauma centers.

Completely Voluntary
Trauma Fund

- Encourages facilities to become designated trauma centers by providing financial incentive and helps offset the costs of training, personnel and equipment.
- Money only for facilities that have been designated by the state.
- Since passage 17/19 undesignated facilities have sought applications or consultations.
Patients with minor head injuries are often evaluated at rural and remote facilities without CT scanners.

Very few <1% will require neurosurgery.

Guidelines were developed and validated to recommend which patients could be safely observed.
Implementation- Guidelines

Ad Hoc committee of TSRC- Private and tribal MDs including neurosurgery, emergency, surgical and pediatric specialists. 2003

ATLS courses 2003
Mailings to ER directors 2003
EMS symposium 11/2003
Published “Alaska Medicine” 8/2004
Outcome after Implementation at tribal facilities.

- Total transfers (head injuries GCS 14-15)
- Unnecessary transfers

Outcomes

- No inappropriately transferred patients required surgery
- No patients observed required transfer and surgery
- Prevented 12 unnecessary medevacs
- ~$300,000 dollars savings
Many patients are transferred because of abnormal head CT after minor trauma.

Very few of those patients need neurosurgery < 5%.

High quality digital studies are easily transferred by telemedicine.

Having the CT scan reviewed by neurosurgeon allowed 42% of patients with abnormal scan to be observed locally.
Trauma Center Designation


- Decreased LOS
- Decreased in hospital mortality
- Decreased costs 5%

Looked at the impact of Level II designation on a large community hospital in Idaho.
Public Awareness - Harris Poll 2004

- After hearing a description of a trauma center, almost all Americans feel it is extremely or very important to be treated at a trauma center in the event of a life-threatening injury.
Almost 9 out of 10 of Americans feel that having a trauma center nearby is as important as or more important than having a Fire Department or Police Department.
The majority of the public thinks it is important to have a trauma system. (nonpartisan issue.)

Most people think they have it already.

Many who think they are covered by a regional system are not.
An integrated system that addresses trauma from injury prevention through acute care and rehabilitation.
Acute Care Facilities in Alaska

Population

Figure 1.005
Map of Alaska Census Areas, 2006

Barrow - Samuel Simmonds Memorial Hospital

Kotzebue – Maniilaq Medical Center

Nome – Norton Sound Regional Hospital (L IV)

Bethel – Yukon-Kuskokwim Delta Regional Hospital (L IV)

Dillingham – Kanakanak Hospital

Kodiak – Providence Kodiak Island Medical Center

Anchorage Facilities
Alaska Native Medical Center (L II)
Providence Alaska Medical Center
Alaska Regional Hospital
Elmendorf Regional Medical Center

Fairbanks – Fairbanks Memorial Hospital
Fort Wainwright – Bassett Army Community Hospital

Palmer – Mat-Su Regional Medical Center

Kenai Peninsula
Soldotna – Central Peninsula General Hospital
Seward – Providence Seward Medical Center
Homer – South Peninsula Hospital

Valdez – Providence Valdez Medical Center
Cordova – Cordova Community Medical Center

Southeast Alaska Facilities
Juneau – Bartlett Regional Hospital
Sitka – Sitka Community Hospital (L IV)
Mt. Edgecumbe Hospital (L IV)
Wrangell – Wrangell Medical Center
Petersburg – Petersburg Medical Center
Ketchikan – Ketchikan General Hospital
Trauma Systems as Paradigm for Emergency or Acute Care System

- Readiness and training
- Preplanning
- Best practices
- Performance review
- Communication
Trauma Systems as Paradigm

- Acute time dependant conditions
  - Cardiac- STEMI programs
  - Stroke
  - GI bleeding
  - Obstetrical emergencies

Disaster Preparedness
Barriers to Trauma System Development

Hospital Administration concerns
- Extra cost especially at Level IIs
- Lack of physician support.
- Lack of demand from the community.

Provider Concerns
- Not needed “we do fine”
- No financial incentive.
- More rules and regulations.

Stability and health of Prehospital System
Conclusions

- Trauma is a major health burden for Alaskans and state government.
- Trauma systems save lives and money.
- Alaska has made limited progress in developing an inclusive statewide system.
- The creation of the trauma fund seems to be having the desired effect.
Action Items for 2011-12

1. Trauma Fund will need to be replenished.  
   1.1 million paid out to date.  
   If all hospitals designated ~ 5 million/yr.

2. Trauma Registry support  -$80,000/year.

3. Prehospital system-  ??? cost  
   - diverse, large volunteer component.  
   -essential to the functioning of an inclusive trauma system.

4. Prevention and Rehabilitation integration of these programs  
   with the acute care and prehospital programs.
Trauma

- Ultimately as a state we will take care of injured patients.

- The question today is not if we will take care of injured alaskans, it is how are we going to do it?
Why is this important?

Because it makes a difference and it is the care we all want for our family and neighbors if they are seriously injured.