SECTION 2: OVERVIEW OF TRAUMA CARE

Overview

In this section, we define trauma care, provide a brief history of trauma care centers, and describe the background of Wyoming trauma care, including a profile of trauma care patients.

Trauma centers in the United States found their origins during the Vietnam War[1]. During the war, the U.S. military developed emergency medical services, which were then established as trauma centers in the U.S. during the 1970s and 1980s because of their ability to treat patients efficiently. Following the creation of these trauma centers, the American College of Surgeons developed standards for trauma care programs and ultimately the creation of training programs and regional trauma systems.

While trauma care programs grew tremendously in the 1980s, development slowed at the end of the decade and some trauma centers had even shut down for political and economic reasons, including:

- The cost of uncompensated trauma care
- Increased duties for trauma care staff that did not include additional pay
- Hospital administrative burden associated with becoming a trauma center
- Initial opposition from state hospital associations

Trauma care is generally defined as care required to treat sudden and severe illnesses or injuries. Some patients will need more intensive or specialized care depending on their condition. For this reason, many states recognize different levels of trauma centers based on the level of care the facility is capable of providing to trauma patients. Trauma care centers are especially important because of their ability to provide quick and effective response during major catastrophes. Trauma care centers, unlike many other facilities, have the ability to increase capacity and staffing while serving as a regional base for coordination and organization. In most states, there are up to four levels of trauma centers. The following table lists each trauma service level as outlined by the American College of Surgeons Committee on Trauma.

[1] U.S. Trauma Center Crisis, "Lost in the Scramble for Terror Resources" (National Foundation for Trauma Care, May 2004). Available online: http://www.traumacare.com/NFTC_CrisisReport_May04.pdf.

Table 3: Trauma Care Service Level Descriptions

Trauma Care Service Level	Description
Level I	A facility that serves as a regional trauma resource and has the capability of providing total trauma care from prevention through rehabilitation. Level I trauma centers have dedicated resources available 24 hours a day, seven days a week. "Level I centers are usually university based teaching hospitals because of the large personnel and equipment resources necessary to sustain the required teaching an research commitments."[2]
Level II	A facility that also provides initial trauma care regardless of the severity of injury. A Level II trauma center may not be able to provide the same dedicated resources as a Level I trauma center.
Level III	A facility that provides trauma care to a community that does not have a Level I or Level II trauma center. A Level III trauma center provides 24 hour per day access to an on-duty trauma physician or nurse.
Level IV	A facility that is able to provide initial care to trauma patients in less populated areas. A Level IV trauma center may not be able to provide emergency surgical treatment; however, the center can provide access to an on-call trauma physician or nurse.

Source: U.S. Department of Health and Human Services, "Model Trauma Care System Plan" (Health Resources and Services Administration, September 30, 1992).

Some states have specialized trauma centers that do not fall into general categories. Florida, for example, has a specialized pediatric trauma center. Maryland has a shock trauma center that provides the most highly specialized trauma services in the state, and may also provide services to patients from neighboring states that are in need of specialized care not available in their own states.

Trauma Care in Wyoming

Wyoming's trauma system is legislatively-mandated and the only trauma system in the U.S. where all hospitals must go through trauma care certification and participate in the trauma care system. After legislative authorization of the program in 1993, the Wyoming Department of Health's Office of Emergency Medical Services developed a statewide trauma system with the goal of reducing the epidemic of injury, disability and death in Wyoming for all ages.[3]

Using federal funding assistance from the Health Resources and Services Administration, the Office of Emergency Medical Services implemented a trauma registry software program in

[2] U.S. Department of Health and Human Services, "Model Trauma Care System Plan" (Health Resources and Services Administration, September 30, 1992).
[3] Wyoming Trauma Care, "Trauma Rules." Available online: http://wdhfs.state.wy.us/ems/trauma.htm.

every hospital in the state.[4] In 1996, the Wyoming legislature provided funding for this program.

Wyoming currently has 24 fully designated trauma hospitals and one provisional hospital (Platte Valley Medical Center) in the process of obtaining full designation. Even though there are 25 trauma facilities in the state, for many of Wyoming's rural residents, out-of-state facilities are more accessible.

Wyoming has modeled its trauma care designations after the designations established by the American College of Surgeons and has added an additional level. The four Wyoming trauma care designations are:

- Regional Trauma Center (Level II)
- Area Trauma Hospital (Level III)
- Community Trauma Hospital (Level IV)
- Trauma Receiving Facility (Level V)

Regional trauma centers have the staff and facilities to provide advanced care to trauma patients, while area trauma hospitals have the staff and facilities to provide care for a majority of trauma patients. Regional trauma centers are also different in that they must have a neurosurgeon on staff. Community trauma hospitals do not typically have 24-hour emergency department coverage and may have only one surgeon on staff. Trauma receiving facilities provide the lowest level of trauma care in the state, and are either hospitals without surgical coverage or a small rural clinic. These facilities provide resuscitation and stabilization before transferring trauma patients to a higher-level facility.[5]

Appendix D provides a listing of Wyoming hospitals by trauma care level.

Profile of Trauma Care Patients in Wyoming

A review of national data and Wyoming-specific data indicate that the characteristics of Wyoming trauma patients are consistent with those nationwide. Although about 40 percent of Wyoming's trauma care patients fall between the ages of 10-29, the percentage of trauma care patients is equally distributed among the other age groups (Appendix E, Figure 2.1). The NTDB

[4] Wyoming Trauma Care, "Trauma Rules." Available online: http://wdhfs.state.wy.us/ems/trauma.htm.
[5] Ibid.

2004 Report shows that individuals aged 10 to 34 years of age account for 42 percent of all trauma patients nationwide.[6]

The NTDB 2004 Report also confirms Wyoming's Trauma Registry data, showing that males represent the greater portion of trauma care patients but they are not an overwhelming majority (Appendix E, Figure 2.2).[7] The vast majority of trauma care patients nationwide and in Wyoming are Caucasian and experience traumatic events involving transportation or a fall. The age and ethnicity of Wyoming trauma care patients, as well as the corresponding traumatic event, vary, however (Appendix E, Figures 2.1, 2.3 and 2.,4). Additionally:

- Automobile accidents make up the majority of all transportation trauma events and the percentage of motorcycle accidents (14 percent) is about equal to that of bicycle, pedestrian and other transportation events combined (Appendix E, Figures 2.4 and 2.5).

- After transportation, the next largest proportion of traumatic events is from falls (18 percent)(Appendix E, Figure 2.4). National data shows about half of trauma events are motor vehicle related, and injuries by falls account for 17 percent of trauma events.[8]

- Within the smaller categories of traumatic events, assault events represent seven percent of all traumatic events, whereas burns, explosions, electrocution, poisoning, suffocation, and drowning all make up less than four percent of all traumatic events (Appendix E, Figure 2.4).

- The majority of trauma care patients have hospital stays and intensive care unit stays that are one week or less (Appendix E, Figures 2.6 and 2.7).

A detailed review of patient county of origin for trauma care discharges indicates that a large portion of trauma patients receiving care from Wyoming's Regional Trauma Centers (United Medical Center and Wyoming Medical Center) live in other counties. Over twenty percent of trauma discharges from the Wyoming Medical Center live in other counties and approximately nine percent of United Medical Center's trauma discharges live in neighboring counties. In another example, 40 percent of trauma patients from St. John's Hospital are from out-of-county, which may be due to large numbers of tourists in the area.

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[6] American College of Surgeons, "National Trauma Data Bank Report 2004." Available online: http://www.facs.org/trauma/ntdb/ntdbannualreport2004.pdf.

[7] Ibid.

[8] American College of Surgeons, "National Trauma Data Bank Report 2004." Available online: http://www.facs.org/trauma/ntdb/ntdbannualreport2004.pdf.

Trauma-Specific Cost Factors

Trauma care patients, while they are highly resource-intensive due to the nature of their injuries, use few hospital assets that are specialized to trauma care (e.g., trauma patients require the use of ICU beds, but this is no different than other patients).[9] However, hospitals that provide trauma care may experience additional costs that are specific to this care.

As the nature of trauma care involves occasional but certain increase in demand for key hospital assists, trauma care hospital – in particular Level I and II designations – must maintain the standby capacity to meet this type of need.[10] This might involve, for example, investing in additional hospital beds or human resources. One human resource that is required for trauma care is having highly trained trauma physicians on-site or on-call, many of whom may divide their time between the trauma centers and other hospitals or private practices. On-site physicians may not see any patients during their shift at the trauma center, which could mean a financial loss equal to what they would have earned at another facility or practice. While this is not a hospital loss, it may provide disincentives to physicians to provide trauma care.

According to a study by the Florida Department of Health, round-the-clock physician on-call coverage is a significant cost.[11] As many physicians and surgeons have relaxed their hospital affiliations, on-call coverage is more difficult and more costly to maintain. Stipends for on-call coverage vary greatly from region to region, state to state and hospital to hospital.

Trauma centers also must be certified, requiring two initial on-site reviews and re-certification every three years. Certification can be timely and costly; however it is an essential step in verifying that a trauma center is prepared for the types of injuries it may receive. Trauma centers must participate in a Trauma Registry to document the trauma care provided. Costs involved in submitting data to this Registry include hardware and software, training to learn how to use the software, and the salary and training costs of the trauma registrar.

Other financial concerns for providers of trauma care include the increasing burden of uninsured patients, increased medical malpractice rates that discourage certain subspecialities such as neurosurgeons, and nursing and physician shortages.

For reference purposes, we have included a report provided by the Wyoming Healthcare Commission (that was based on a report by the Wyoming Medical Center); this report details Wyoming-specific concerns regarding trauma care (Appendix F).

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[9] Florida Department of Health and MDContent. "The Costs of Trauma Center Readiness, " (July 17, 2002). Available online: http://www.orhs.org/trauma/report/AppendixF.pdf.
[10] Florida Department of Health and MDContent. "The Costs of Trauma Center Readiness, " (July 17, 2002). Available online: http://www.orhs.org/trauma/report/AppendixF.pdf.
[11] Ibid.

Summary

Of Wyoming residents that used in-state facilities, we found that trauma care patients are evenly distributed among age groups and that the majority of them were Caucasian. Furthermore, transportation events, in particular automobile incidences, made up an overwhelming majority of trauma events. In general, there are specific costs for trauma care that include hospital standby capacity and program administration.