California’s Trauma Care System Capacity and Demand

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Background
In recent years, California’s system of 46 trauma centers increasingly has been reported as being in financial jeopardy. In October 2000, five of Los Angeles County’s ten private trauma centers were threatened with closure due to financial hardship, prompting the County Board of Supervisors to allocate $8.5 million in emergency funds to prevent any centers from shutting their doors. In July 2002, faced with continuing fiscal crises in their trauma care system, the Los Angeles County Supervisors voted to place a $175-million ballot measure before county voters to help fund the county’s trauma care centers and emergency departments.

In January 2001, the Sierra-Sacramento Valley Emergency Medical Services Agency released a report that suggested that large areas of the state are without trauma care and said this was due to trauma center closures. In January 2002, Governor Gray Davis withdrew a budget proposal to pare $25 million from state trauma centers after state lawmakers from both parties indicated their opposition to the plan.

The apparent crisis in trauma care has led public officials to consider legislative solutions. In September 2000, Los Angeles County Supervisor Zev Yaroslavsky announced plans to author a statewide ballot issue to divert a portion of the state’s $2 billion annual tobacco settlement toward trauma-care networks. In addition, state Senator Gloria Romero (D-Los Angeles) authored an unsuccessful bill in the 2001 legislative session that would have provided $11 million for startup of a statewide trauma care system.

In spite of these reports of crisis and proposed solutions, no comprehensive examination of California’s trauma centers exists. This study evaluates California’s trauma system, and provides the public, health professionals, and legislators with data to make informed decisions about trauma services in the state.

Methodology
This project was commissioned by the California HealthCare Foundation, and conducted by researchers at the University of California, Los Angeles. The study employed three data sources. Data from the California Office of Statewide Health Planning and Development (OSHPD) provided trends in use and capacity of emergency departments at trauma centers. Emergency department patient waiting times were obtained directly by trained data collectors during 800 hours of observation in a random sample of 30 California hospitals. Finally, observations and
opinions of trauma providers were gathered during a series of eight focus groups with 57 professionals, including trauma directors, trauma nurse coordinators, trauma system administrators, and pre-hospital care coordinators.

The primary research questions were:

- How do trends in emergency department use and capacity differ at trauma and non-trauma centers?
- How are emergency department waiting times different at trauma and non-trauma centers?
- What do trauma professionals say about the trauma system in California?

California’s trauma centers provide the highest levels of emergency care to the most critically ill and injured patients, maintaining the highest level of service in terms of specialized equipment, and a wider array of specialized medical personnel, including panels of on-call specialist physicians. Under state law, hospitals with trauma centers also must maintain emergency departments.

The California Emergency Medical Services Authority (EMSA) establishes the standards for trauma care systems. EMSA reviews and approves trauma care system plans developed by local emergency medical services agencies. Local agencies also are responsible for the designation of trauma centers based on an approved plan. Trauma centers receive their patients under stringent formulas of patient condition assessment and geographic service areas.

Among non-trauma center hospitals in California, there are three types of emergency departments:

- **Standby.** The hospital maintains a designated area for emergency services and a physician is only on call;
- **Basic.** The hospital has physician and staff on duty at all times for urgent medical problems; and
- **Comprehensive.** The hospital has in-house capability for managing all medical conditions on a definitive and ongoing basis. This is typically associated with a large tertiary and/or academic medical center, with specialty programs such as burn centers and psychiatric units.

For this study, the types of visits to emergency departments fall into three categories:

- **Critical.** Acute injuries or illnesses that could result in permanent damage, injury, or death without immediate intervention, such as head injuries, vehicular accidents, and gunshot wounds;
- **Urgent.** Acute injuries or illnesses where loss of life or limb is not an immediate threat, such as broken bones or lacerations; and
- **Non-urgent.** Relatively minor injuries or illness, such as toothaches or colds.

**Major Findings**

The study found a number of differences between hospitals with trauma centers and non-trauma center hospitals, with trauma centers not experiencing the increases in volume and patient acuity seen in non-trauma center hospital emergency departments. Focus groups conducted with trauma system professionals report growing concerns with the state’s lack of a coordinated trauma care system and with inadequate funding for California’s existing trauma centers, which care for large numbers of uninsured and underinsured patients.
Changes in Use and Capacity

The number of trauma centers in California rose from 44 to 46 between 1990 and 2001 (a 5 percent increase) while the number of non-trauma center emergency departments declined by 12 percent between 1990 and 1999 (Figures 1 and 2).

The total number of emergency department beds grew at both trauma and non-trauma centers between 1990 and 1999 but the gains differed in magnitude. At trauma centers, emergency department beds increased 15 percent from 896 to 1,030 while at non-trauma center hospitals ED beds rose 16 percent from 3,391 to 3,944 total beds. The increase in total ED beds, both trauma and non-trauma beds, was 19 percent per trauma center, while the increase was 30 percent at non-trauma center hospitals (Figure 3).

Total patient visits per ED did not increase significantly at trauma centers between 1990 and 1999, while at non-trauma center hospitals, patient visits per ED grew by 27 percent during the study period.

Trauma centers did not experience a rise in emergency department patient acuity between 1990 and 1999. In contrast, critical visits to non-trauma emergency departments increased during that time period by 75 percent.
Waiting Times
There is no significant difference between waits at trauma and non-trauma centers when the statistics are adjusted for other hospital characteristics. At both, the typical patient waits an average of 56 minutes to see a physician.

Focus Group Concerns
- There is no statewide system for trauma care in California, thus large areas of the state, such as Central California, are without access to specialized trauma care.
- Some trauma centers are disproportionately burdened with the care of uninsured and underinsured patients.
- Trauma centers need financial support, but in order to address the problems they face, the money needs to fund a coordinated system.

Conclusions and Implications
Unlike other California emergency departments, trauma centers have not experienced a marked increase in emergency patient visits or acuity. Waiting times are similar at trauma and non-trauma centers.

In light of this, consideration might be given to elements of trauma care beyond the emergency department. In addition, attention should be directed at improving care for the increasing numbers of high acuity emergency patients at non-trauma hospitals.

Also, recent revelations of financial problems in the trauma system of Los Angeles have confirmed the focus groups' findings regarding trauma care's tenuous fiscal future. Further analysis of the necessity and feasibility of a statewide trauma system, and a more detailed assessment of the financial viability of existing trauma centers are also warranted.

FOR MORE INFORMATION
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