U.S. TRAUMA CENTER CRISIS

Lost in the Scramble for Terror Resources



FEBRUARY 2004

NATIONAL FOUNDATION FOR TRAUMA CARE

***MISSION**: TO ASSURE ACCESS TO EXCELLENT CARE THROUGHOUT THE NATION FOR THE SERIOUSLY INJURED*

The National Foundation for Trauma Care is a non-profit association organized to secure the economic viability of the nation's trauma centers. The NFTC develops solutions to common problems, assists trauma centers with the challenges they encounter, and advocates for trauma care at the state and national level.

FEBRUARY 2004

Can you imagine your Fire Department closing? Of course not, yet closures of trauma centers are frequently in the news.

Oklahoma City is on the verge of closing its only trauma center, which would require the seriously injured to be transported to Kansas or Texas. Had this happened before the horrifying 1995 Oklahoma City terror attack, even more people would have died.

Thirty trauma centers have closed since 2001, and many others are considering closure or are restricting access to the seriously injured.

Trauma centers are in crisis! They are located in cities where terrorists are most likely to strike. We are losing critical infrastructure in the very places we need them most!

America cannot allow this to continue. ***U.S. TRAUMA CENTER CRISIS: Lost in The Scramble for Terror Resources*** is a wakeup call for this nation. We need the Federal Government to take notice and act.

NATIONAL FOUNDATION FOR TRAUMA CARE

BOARD OF DIRECTORS

Co-Chairman
Ronald Anderson, MD
President & CEO
Parkland Memorial Hospital

Co-Chairman
Donald Trunkey, MD, FACS
Professor, Dept. of Surgery
Oregon Health Sciences Univ.

Mark Ackermann
SVP & Chief Corp. Services Officer
St. Vincent Catholic Med. Ctr.

Robert Falcone, MD, FACS
Senior Operations Officer
Grant Medical Center

Suzanne Gray
Trauma System Administrator
Illinois Dept. of Public Health

David Hoyt, MD, FACS
Vice Chairman, Dept. Surgery
UCSD Medical Center

David Jaffe
Executive Director
Harborview Medical Center

Jorie Klein, RN, MA
Trauma Program Administrator
Parkland Memorial Hospital

Ronald Maier, MD, FACS
Professor/Vice Chair of Surgery
Harborview Medical Center

Wayne Meredith, MD, FACS
Chair, Div. of Surgical Services
Wake Forest Univ. Med. Ctr.

John Mootry
CEO
Barrett Hospital and HealthCare

President
Greg Bishop, MBA
President
Bishop+Associates

Secretary/Treasurer
Connie Potter, RN, MBA
Director
Trauma Resource Network

Pictures reproduced with permission from St. Vincent Hospital and OU Medical Center. HCA Health Services of Oklahoma, Inc. (d.b.a. OU MEDICAL CENTER) is not part of, nor operated by, the University of Oklahoma.

U.S. TRAUMA CENTER CRISIS
Lost in the Scramble for Terror Resources

On April 19, 1995, a fuel-air explosive was detonated in front of the Murrah Federal Building in Oklahoma City with a blast force equivalent to two tons of TNT, killing 162 people immediately. Another 83 were triaged to local hospitals; the most seriously injured were rushed to Oklahoma University Medical Center's (OUMC) Level I Trauma Center. Six died, the rest survived.

Today the OUMC Level I Trauma Center itself is on life support in a trend accelerating across the nation. Experiencing high operating losses, it is hoping for a bailout from a state government facing its own budget crisis. Without a major infusion of state funds, it will close down in June.

Since all other regional trauma centers in Oklahoma have already shut down, this closure will require the most seriously injured from motor vehicle crashes, falls and assaults to be taken to Texas or Kansas, and some will not survive the long transport. In the event of a major terrorist attack, many people with serious injuries who would otherwise survive will die.

THREATS TO TRAUMA CENTER VIABILITY

This report focuses on the deteriorating economic viability of the nation's trauma centers at a time when the threat of terror in America requires their strengthening. These critical public services are threatened by converging problems:

Deteriorating Trauma Medical Staff Support
Maintaining medical staff participation in trauma care is increasingly difficult in both community and academic hospitals. There are many contributing factors:

- Reductions in Resident Support
- Shortage of Trauma Surgical Specialists
- Incompatibility with Private Practice
- Increasing Burden of Uninsured Patients
- Undesirable Lifestyle Due to Trauma Call
- Demise of Community ED Call Panels
- Specialty Hospital Trend
- Increasing Physician Sub-Specialization
- Malpractice Market Turmoil
- EMTALA Changes Encourage Dumping
- Physician Payments Penalize Trauma
- Managed Care Does Not Pay Its Share

Inadequate Trauma Center Financing
Trauma centers collectively experience a $1 billion loss, and with increasing costs, this problem will worsen over time. Key factors in this crisis:

- A Disproportionate and Increasing Share of Patients Without the Means to Pay
- Cost Shifting to Finance Trauma Center Operations is No Longer Working
- Problematic Relationships with Managed Care
- Medicare Does Not Cover High Standby Costs
- Poor Reimbursement Rates Under State Medicaid Programs
- Auto Insurance Does Not Pay Its Share

Trauma Centers Already Under Siege
The fundamental economic threats faced by trauma centers need to be addressed to assure they are available in the event of a terrorist attack. These threats are continuing and will result in a significant portion of the nation's trauma centers closing unless they receive increased support.

Without corrective action, the current rate of closures among the nation's 600 regional trauma centers will increase and **10-20% will close within 3 years**. Trauma centers provide an essential public service that affects everyone. They treat all patients within a common system of care, so if a trauma center closes, it closes to all.

NO TERROR SUPPORT FOR TRAUMA

Virtually all terrorist events result in traumatic injuries and trauma centers need to be prepared. While some trauma hospitals have received a small amount of funding to prepare for biological and chemical attacks, no funding for their role specific to treating serious injuries resulting from terrorist attacks has been forthcoming. Major needs for funding are:

- Additional Trauma Center Capacity to Accommodate Large Numbers of Injuries
- Support for Critical Access Trauma Centers in Unserved Regions
- Planning Activities to Assure Preparedness of all Available Resources
- Personnel/Training to Assure Continual State of Readiness and Resource Coordination

"Despite the crisis many of America's Trauma Centers are facing in this age of terror, the Federal government has yet to take notice and provide any level of support."

A CHALLENGING ENVIRONMENT

THE REGIONAL TRAUMA CENTER

When a regional trauma center is established, paramedics/EMT's transport injury victims meeting special triage criteria past local hospitals to a waiting trauma team. These teams are composed of a trauma surgeon, emergency physician, several trauma nurses, personnel from radiology, blood bank, and others. Up to 16 physicians in specialties ranging from neurosurgery to OB/GYN are on standby, and nursing teams are ready in the operating room and critical care unit as well.

The table below shows the type of injuries treated by the nation's trauma centers. A majority of trauma center patients are victims of motor vehicle crashes, and significant numbers are injured in falls and assaults.

Trauma Center Patient Cause of Injury	% of Patients
Motor Vehicle Crash	59%
Fall	13%
Assault (Gun Shot, Stabbings)	12%
Other Accident	10%
Burn	3%
Recreation Accident	2%
Suicide	1%

Consolidating major injury patients into a small number of hospitals serving as trauma centers produces a high level of expertise and supports the specialized resources required for optimum care. This approach is highly effective in saving lives. In fact, a recently released study credits it as a contributing factor to lowering the U.S. death rate from assaults by 70%.

Across the U.S., there are about 600 regional trauma centers that are the epicenter of regional trauma systems. They coordinate emergency medical services (paramedics, air medical transport, etc.) and the region's referral hospitals into a systematic approach to caring for the seriously injured at all stages of treatment. Driven by the senseless human carnage they witness on a daily basis, regional trauma center personnel also strive to prevent serious injury in the communities they serve.

A BRIEF ECONOMIC HISTORY

The U.S. military learned lessons during the Vietnam War that led to dramatic changes in the care of the seriously injured in America in the 1970's and 80's. Upon returning home, medical personnel pointed out that a soldier wounded in the jungles of Southeast Asia had a better chance of survival than those injured in auto crashes in communities across this nation.

In those two decades, the first trauma centers were established, trauma center standards were identified by the American College of Surgeons, training programs were created, and regional trauma systems developed in a few States.

Trauma centers proliferated in the 80's, led by a passionate group of physicians, nurses and emergency personnel committed to saving injured lives. By the end of the 80's, development stalled and trauma centers began closing due to several political and economic factors.

The difference between the severity and type of injuries treated by an emergency department and a regional trauma center is indicated in the adjacent table. Paramedics/EMT's use formal triage criteria to determine whether injury victims will be transported to a local hospital's emergency department or to a regional trauma center.

Typical Patient Injuries Treated	
EMERGENCY ROOM	**TRAUMA CENTER**
Broken Leg	Multiple Fractures
Back Sprain	Paralysis
Broken Rib	Punctured Lung
Laceration	Stab Wound
Concussion	Brain Injury

Key factors that contributed to these closures:

- Adverse financial impacts of consolidating large numbers of uninsured trauma patients into one facility were underestimated.
- Trauma center medical staffs, faced with new requirements, demanded payment from the hospital for their support.
- The process for selecting hospitals to serve as trauma centers was divisive and resulted in widespread opposition by State hospital associations to trauma system development.

Sixty-one regional trauma centers closed from 1988 to 1991 for these reasons, along with high costs and poor reimbursement. While trauma system progress was slow during the 90's, the decade proved relatively stable with only one trauma center closure. Since 2000, this situation has changed dramatically for the worse, but to date only eight States have provided any significant trauma center support.

A MICROCOSM OF A PROBLEMATIC HEALTHCARE SYSTEM

As a sub-system of health care, trauma care relies upon a complex, dysfunctional parent system and must cope with its problems. Current challenges:

- The national nursing shortage, particularly in urban settings where large trauma centers are located, is seriously restricting the ability to staff emergency, surgery and intensive care units.
- Overloaded emergency departments, critical care units and operating rooms at many hospitals' regional trauma centers are at or near capacity.
- Hospital overload creates bottlenecks in emergency medical services, stretching their resources and reducing their ability to respond emergently to serious injuries.

TRAUMA CENTERS PLAY A CRITICAL ROLE IN TERROR

The essential role trauma centers play in treating the seriously injured among mass casualties due to terrorist attacks was clearly demonstrated on September 11, 2001. With clear prospects for more terrorist threats in the U.S., they must preserve and expand their capacity to care for the injured, including in unique circumstances created by terrorist attacks (e.g., nuclear/radiological weapon).

Despite trauma centers' central role in terror response, the Federal government has not supported this at-risk essential public service in the nation's preparedness for terror.

"Detroit Receiving Hospital is steadily losing money providing care to the uninsured. This financial strain has threatened their capability to provide trauma services to the community. Their Level I trauma center closure would seriously compromise access to trauma care in Detroit."

Trauma Centers – A Lesson from Vietnam

Trauma Centers developed in the U.S. when the emergency medical service (EMS) system built by our military in Vietnam was brought home to America. They now anchor an EMS system that has lowered the U.S. death rate from assaults by 70%. Most patients taken to trauma centers are injured in motor vehicle crashes, where advances in treatment have had even more impact.

ECONOMIC CRISIS IN TRAUMA CARE

TRAUMA CENTERS BLEEDING RED INK

Key volume and cost characteristics of the nation's trauma centers, estimated in the National Foundation for Trauma Care's 2003 Report, "U.S. Trauma Center Economic Crisis" are as follows:

- There are about 678,000 injury victims across the nation who benefit from evaluation and treatment in a regional trauma center.
- The severity adjusted national norm for per patient costs in a trauma center is $14,896.
- Total trauma center **costs** are estimated at $10.1 billion.
- Total trauma center **losses** are estimated at $1 billion.

National trauma center costs and payments, estimated by payer class, are profiled below. Surpluses are indicated in green, losses in red, and recovered costs in yellow. Health insurance, auto, and work comp patients generate surpluses, while Medicare, Medicaid, "other" and uninsured patients generate losses.

U.S. trauma center losses are estimated at 14% of costs, or about $1 billion. This amount does not include losses physicians incur for treatment of uninsured trauma center patients.

TRAUMA CENTER CLOSURES ACCELERATING ACROSS THE NATION

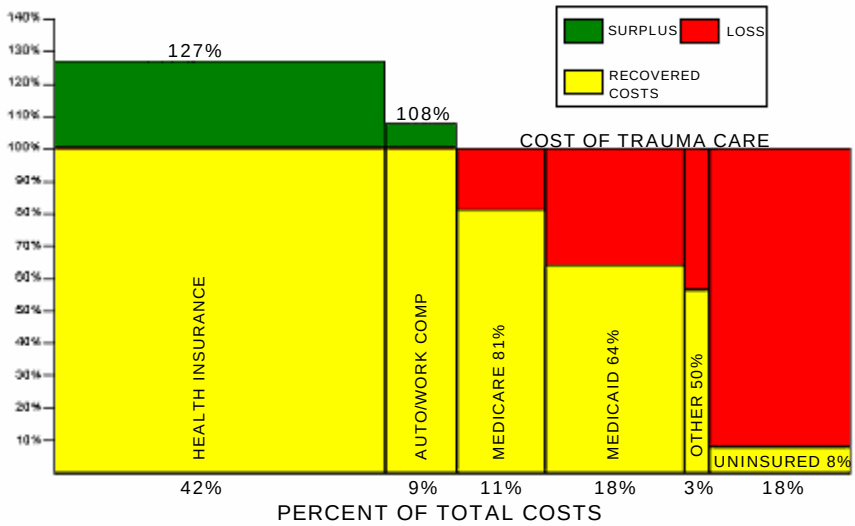
Recent trauma center closures have stunned communities where access to trauma was taken for granted. These closures have caused serious disruptions to EMS and shifted the burden of trauma care to poorly prepared community hospitals. Rural hospitals are especially effected, becoming less able to rapidly transfer critically injured patients, straining their extremely limited resources.

When a trauma center closes, trauma patients are transported to the next closest trauma center. There, the added burden on its resources creates a domino effect, causing it to close as well. If trauma center closures continue, the care provided to seriously injured patients will deteriorate, and unnecessary deaths and avoidable complications will occur.

DIMINISHING TRAUMA CENTER ECONOMIC VIABILITY

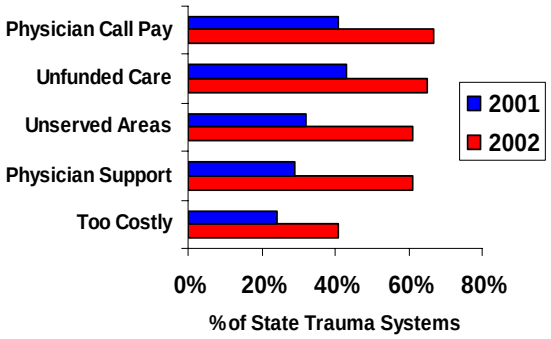
States are experiencing major economic challenges that threaten their trauma systems' viability or impede trauma system development. Between 2001 and 2002, State trauma center economic conditions deteriorated considerably, as indicated in the figure of NFTC's Top Economic Threats.

National Trauma Center Reimbursement Profile



In 2001, 17 State trauma systems reported that their trauma centers were confronting five top economic threats. While alarming in itself, in 2002, this rose to 30 States. The escalating severity of trauma center economic challenges has seriously jeopardized organized trauma care across the nation.

Top Economic Threats 2001-2002



Major economic problems cited by State trauma system lead agencies:

Trauma Physician Compensation
Rapidly increasing costs for trauma physician compensation (see page 7, Failing Trauma Physician Support) are the highest priority problem facing trauma centers. In 34 States (67%), call pay issues are forcing some existing trauma centers to re-examine their commitment to trauma care and preventing other hospitals from becoming trauma centers.

Unfunded Care
Over 65% of Trauma Lead Agencies feel that uncompensated care is a serious trauma center issue, up from 44% over one year. Uncompensated care concerns include high numbers of "self pay" patients as well as low reimbursement from public sources such as Medicaid.

Medical Staff Support
Thirty-one States (61%) report a lack of medical staff support for trauma system development. Underlying causes are inadequate funding, an inability to acquire the necessary staffing, and resistance from private practice physicians. In addition, community physicians who practice in hospitals without Residency programs find trauma unduly burdensome and financially draining.

Underserved Regions
Thirty-one States (61%) report underserved areas with too few trauma centers. These areas are mostly rural and serve a high proportion of indigent patients. Rural hospitals, already burdened with serious financial problems, have little incentive to undertake the additional costs and requirements for trauma center designation/verification.

EMERGING CHALLENGES

Preparing for Terror
Although trauma is integrally involved with virtually every terrorist response, the relationship between bioterrorism resources and State trauma funding has not materialized. Of the 50 States, only four report any amount of terrorism funding directly to trauma centers or systems. The amounts reported are mostly meager.

EMTALA Changes Encourage Dumping
Recent EMTALA changes have lifted the mandate that surgeons be on emergency call panels in non-trauma hospitals. An unintended consequence is that trauma centers are being overwhelmed by patients with low severity injuries. Also, patients requiring surgery from non-injury conditions are transferred to trauma centers at the convenience of community specialists, particularly at night and on weekends.

EMTALA Designed to Help, Not Hurt

The Emergency Medical Treatment and Labor Act (EMTALA) was established to ensure universal access to emergency services. It also facilitates inappropriate transfers of patients to trauma centers by placing on them the burden of determining the patient's condition prior to the patient's arrival. The trauma center has no recourse once the patient is transferred based upon exaggerated severity claims.

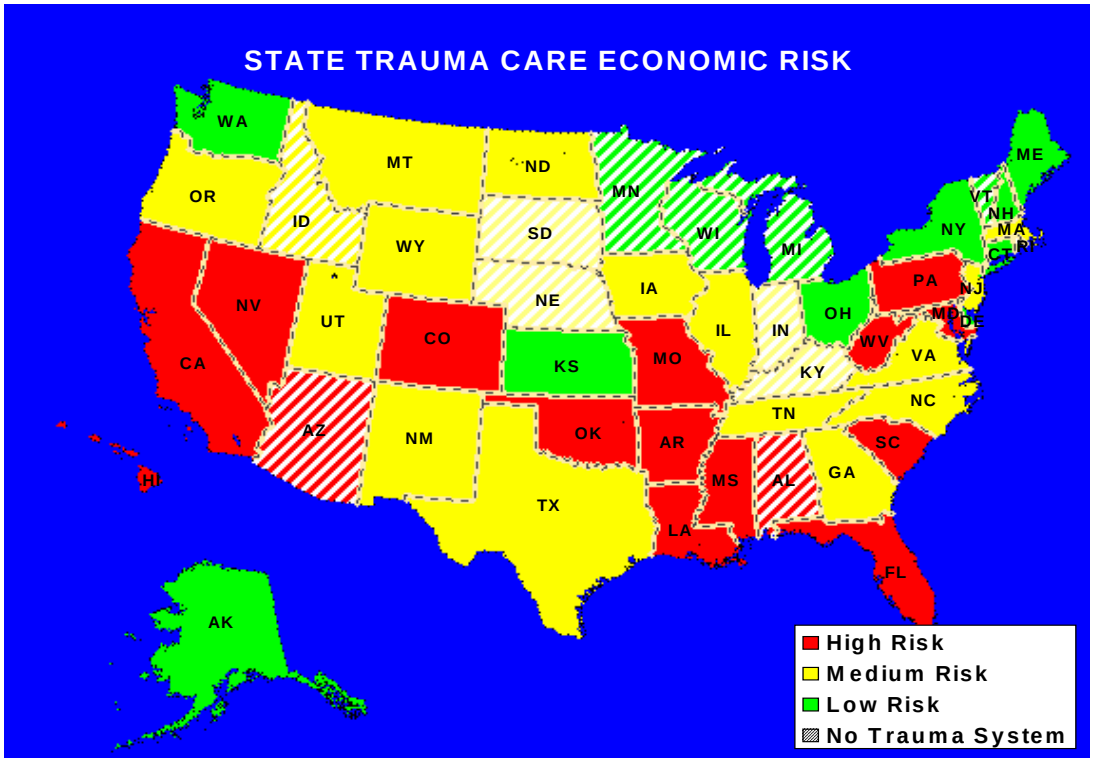
"A study conducted on the impact of ED overcrowding and ambulance diversion on the Houston regional trauma system found a 25% increase in mortality among severely injured patients kept at referral hospitals due to restricted access to regional trauma centers."

ESCALATING STATE ECONOMIC RISKS

Sixty-one regional trauma centers closed between 1988 to 1991 due to economic factors. Under today's even more challenging economic conditions, the current rate of closures among the nation's 600 regional trauma centers will increase. **Over the next three years, without corrective action, it is highly likely that 10-20% of the nation's trauma centers will close.**

This map shows States in varying degrees of economic risk and trauma system development according to factors assessed by the NFTC in 2002. These risks are not limited to a geographic region and have been found not only in states with no trauma structure but in organized trauma systems as well.

When a trauma center closes, it closes to all. Other hospitals in the area, which may not have the expertise and resources of a regional trauma center, must accept seriously injured patients and provide treatment. While their nursing and medical staffs struggle to do their best, they lack the necessary skills, training and resources of a trauma center. As a result, more patients will die, and others will face prolonged recoveries and poor outcomes.



FAILING TRAUMA CENTER PHYSICIAN SUPPORT

PROBLEMATIC PHYSICIAN STRUCTURES

The overall impact of economic factors is creating a "perfect storm" that is destroying physician support for trauma care. The divisive process for dealing with trauma call issues is seriously eroding the commitment and collaboration with medical staffs upon which a regional trauma center is built. This is pitting hospitals against its medical staffs, resulting in conflict and adversarial negotiations over payment. Increasingly, temporary disruption of trauma medical staff support by one or more specialties is the result, leaving communities without essential trauma care.

Due to the large variety of medical problems potentially resulting from serious injury, up to 16 medical staff specialists must be available in-house or on-call at each regional trauma center at all times. If one key specialty is unavailable, the trauma center must close or divert patients requiring specialty care. This occurred in Las Vegas when the region's only trauma center was forced to close after its orthopedic surgeons resigned from the trauma call panel over problems with malpractice insurance.

Trauma Center Medical Specialists	
Trauma Surgery	Emergency Medicine
Anesthesiology	Neurosurgery
Orthopedic Surgery	Ophthalmology
Plastic Surgery	Micro Surgery
Hand Surgery	Cardiac Surgery
Thoracic Surgery	Critical Care Medicine
Oral Surgery	Radiology
Pediatric Surgery	Ob/Gyn Surgery

Up to 200 physicians are needed to support a regional trauma center. They must meet requirements not expected of non-trauma hospital practitioners, including:

- Participation in trauma quality assurance
- Participation in trauma education programs
- Short response time to the emergency department (ED) when called
- Commitment to trauma call which precludes other activities such as elective surgery

For most participating physicians, trauma care is a small and often problematic part of their practice, interfering with their elective practices and personal lives. It is a burdensome responsibility that they have taken over from other regional hospitals who have suspended specialist coverage on nights and weekends. As a result, they are increasingly opting out of trauma call or demanding payment for their time.

Physicians in hospitals considering trauma center status increasingly are opposing the hospital's efforts to do so. As medical staff support deteriorates, existing trauma centers restrict access and trauma center development in unserved regions stalls.

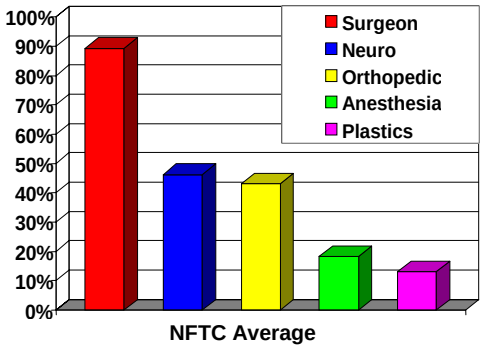
Serious Shortages Emerging

Although trauma specialties have developed to fill gaps in trauma coverage, demand exceeds supply for the foreseeable future. Currently, twice as many trauma surgeon positions are advertised as there are available surgeons. Trauma fellowships, now only half filled, will need to increase four-fold to fill these gaps.

Increasing Demands for Payment

Trauma medical staff demands for call support payments are sweeping the nation. Currently estimated at $485 million, or about $800,000 per regional trauma center, these payments are expected to triple over the next three years. However, trauma centers are extremely limited in their ability to recover these escalating payments.

Percent of Physicians
Receiving Call Pay by Specialty



"Trauma centers like fire departments and police services are required to be available 24 hours a day, 7 days a week."

Air Force Pilots

In 1994, the re-enlistment rate among air force pilots was 81%. By 1999, it had dropped to 30% primarily because the pilots wanted to spend more time with their families.

MULTIPLE CONTRIBUTING FACTORS

Maintaining medical staff participation in trauma care is increasingly difficult. Private physicians are rejecting the notion that trauma call is an obligatory service and are demanding that it be voluntary and compensated, making it very challenging to maintain support in each required specialty.

Academic trauma center clinical departments have suffered from reduced payments from all sources and are losing colleagues to higher salary offers by community trauma centers. As a result, fewer faculty physicians are available to take call, threatening the teaching trauma center's viability as well as its ability to train the surgeons of the future. Other adverse factors include:

- **Increasing Burden of Uninsured Patients**
  Regional trauma centers' share of uninsured patients is expanding along with the overall uninsured population. Recent studies report that 75% of Texas' and 83% of South Carolina's trauma centers receive patients transferred for financial or convenience factors, such as unwillingness of community specialists to take weekend call.
- **Incompatibility with Private Practice**
  Most regional trauma centers depend on surgeons in elective practice to provide trauma care. Leaving a busy office to treat a trauma patient or staying up all night in emergency surgery is onerous and undesirable, undermining the participation of private practice physicians in trauma care.
- **Undesirable Lifestyle**
  As physicians place a higher emphasis on time with their families, trauma is an increasingly undesirable career choice. The newest generation of physicians question the traditions and sacrifices of their predecessors and are seeking alternatives, as are many others (e.g., Air Force pilots) across society.
- **Reductions in Resident Support**
  Senior surgery Residents are on the frontline in academic trauma centers. They provide initial treatment, assist in surgery, and monitor patient status. A national shortage of physicians selecting a trauma career, coupled with new Resident work hour limits, are crippling academic trauma centers' ability to provide trauma care.
- **Outpatient Surgery/Specialty Hospitals**
  Specialty physicians are placing surgical suites in their offices and establishing specialty hospitals (cardiac, orthopedics, etc.), effectively severing their hospital ties and obligations. Other surgeons required for trauma call panels (i.e., plastic and oral surgeons) who rarely need the hospital's OR and find required trauma call onerous, can simply resign their hospital privileges with few adverse consequences.
- **Increasing Physician Sub-Specialization**
  The trend of medical specialties dividing into sub-specialties is further complicating trauma call systems. Plastic surgeons practicing mostly cosmetic surgery have little desire for trauma care; orthopedic surgeons performing hand, joint or sports medicine are increasingly uneasy with complex trauma cases. The result is that trauma care is being left to a rapidly shrinking number of physicians.
- **Malpractice Market Turmoil**
  Skyrocketing malpractice costs and lack of available coverage are derailing regional trauma center operations nationwide. Mississippi reports a trauma system meltdown as neurosurgeons close their practices and relocate to other states where malpractice insurance is affordable and available. Nevada drafted legislation to reopen Las Vegas' Level I trauma center shortly after malpractice issues drove its specialists out of state.
- **Physician Payment Penalizes Trauma**
  Payment is inequitable because billing codes do not reflect the time and skill required to resuscitate and care for seriously injured patients. The payment system rewards performing procedures above the time-consuming critical care and monitoring that is the majority of a trauma surgeon's practice. Emergent, night, and weekend care are paid at the same rate as routine, scheduled care despite the disruptive nature of trauma to elective practices. The net result is very low payment for highly skilled and onerous work, particularly compared to other surgical specialists.
- **Managed Care Escapes Paying its Share**
  Physicians contract at heavily discounted rates to attract enough patients to make their practices viable. Their contracts include trauma care at the same low payment rate as other care, but it is much more difficult and disruptive to their elective practices. Managed care's abdication of responsibility for emergency/trauma call systems results from the inequitable physician payment system; but by not paying its share, trauma physicians get shortchanged and access to trauma care declines.

UNSTABLE TRAUMA CENTER FUNDING

TRAUMA CENTERS ARE OPEN TO ALL

Regional trauma centers treat all patients who arrive at their doors, regardless of their ability to pay. There is no attempt to identify payment sources before treatment, as the patient's evaluation and treatment are priorities. A substantial portion of trauma patients are ultimately determined unable to pay for their care. Those with insurance have a multiplicity of funding sources, some overlapping and conflicting, and each presenting problems that need to be addressed on a national basis.

FINANCING FRAGMENTED

Trauma centers are financed through a bewildering array of payment sources:

- Commercial/private health insurers
- Managed care plans
- Federal Medicare program
- State Medicaid programs
- State Worker Compensation programs
- Auto insurance systems
- Victims of crime programs
- Medicaid disproportionate share funds
- Patients and families
- Personal injury lawsuits
- Public funding from State/local sources
- Donations and grants
- Losses covered by sponsoring hospital

Each patient's payment source must be explored and multiple sources (i.e., health insurance and auto insurance) must be coordinated. With many payors having negotiated arrangements, the higher costs of treating trauma center patients must be negotiated separately. These "carve-outs" are often resisted by payors.

Factors in Trauma Center Financing

A fundamental trauma center financing mechanism, **cost-shifting**, means charging insured patients more to cover the uncompensated costs of treating un/under insured patients.

Trauma centers attract a **disproportionate share** of patients without the means to pay for their care. Young adults, predominantly male and poor, have an increased propensity for injury but are unlikely to have commercial insurance or be eligible for public assistance.

Trauma systems channel the sickest and highest cost patients to trauma centers in a classic example of **adverse selection**. This is exacerbated by insured patients whose care is paid prospectively by using case rates (e.g., Medicare DRGs) or daily rates (e.g., per diems) based on general hospital patients rather than the more costly trauma patient population.

PROBLEMATIC FUNDING SOURCES

Due to high and unreimbursed costs for uninsured patient care and trauma physician support, regional trauma centers must be aggressive in collecting revenues, where possible, in order to remain economically viable. Since many healthcare payors are equally aggressive in avoiding payment, there is a high degree of variability in the amount paid in relation to patient costs. There are serious issues specific to major payors:

Managed Care Shortchanges Trauma

Managed care typically asserts control by offering providers substantial patient care business if they agree to heavily discounted payment rates. In trauma care, patients are triaged to regional trauma centers regardless of their health plan membership. They cannot be readily transferred to a health plan's "network" facility due to their high injury severity.

On the other hand, some health plans direct substantial patient care business to trauma hospitals, which provides the plan with decisive leverage in the same contract negotiations. As a result, the largest health plans pay substantially less for trauma care than smaller ones. Not only is this inequitable, it is spreading due to the market consolidation among health plans in which the larger plans are buying smaller plans.

"A recent Texas study found 54% of rural hospitals reporting obstacles in transferring seriously injured patients to regional trauma centers; this rose to 100% in the Houston region. "

Medicare Not Covering Costs

Medicare patients receive about 11% of the care provided by trauma centers, but Medicare payment to trauma centers covers only 85-90% of direct patient treatment costs, exclusive of standby costs. This is worsened by adverse selection, inherent in trauma care, of the most seriously injured being directed to trauma centers. While several DRG's implemented in the early 90's improved Medicare cost recovery rates on trauma care, their impact was limited to a few specific trauma patient conditions.

While most insurers are now paying trauma surcharges to cover the fast-rising standby costs of trauma centers (e.g., trauma physician call support), Medicare does not. The importance of doing so is heightened by the impact Medicare policies have on other payors.

Medicaid Payment Declining

Medicaid patients receive about 18% of the care provided by trauma centers, although there is wide diversity in this proportion due to States' differing Medicaid eligibility rules.

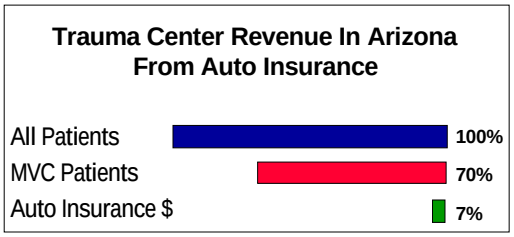
Medicaid payment to trauma centers covers about 2/3^{rds} of actual patient treatment costs, again with a high degree of variability among States. Another issue is retroactive eligibility provisions, since one of the most common events that results in meeting Medicaid income criteria is a serious injury that eliminates earning capacity. Many States are eliminating retroactive eligibility as well as raising income requirements, to reduce Medicaid payments, worsening the situation.

In addition to poor reimbursement rates under many State Medicaid programs, a significant number of trauma patients covered by Medicaid are injured or transported out of state for treatment, but their home State's Medicaid program often refuses or otherwise attempts to avoid payment. Medicaid also does not pay trauma center surcharges associated with standby costs.

Auto Insurance Covers Cars, Not People

Auto insurance is a unique factor in trauma care finance. Motor vehicle crashes account for the majority of trauma center patients in most regions, with U.S. auto insurers paying out about $18 billion annually for medical care of the injured. However, the amount of these funds reaching trauma centers varies considerably depending upon a State's auto insurance system. As much as 50% or as little as 2% of trauma center revenues can be derived from auto insurance in different States, but in otherwise similar circumstances.

A recent study in Arizona addressing its trauma center economic stability found that while 70% of trauma center patients were injured in motor vehicle crashes, auto insurance accounted for only 7% of trauma center revenue.



Of all health care providers, only trauma centers treat a substantial portion of motor vehicle crash victims, and therefore auto insurance represents a unique and important economic opportunity. However, other than a successful effort to avoid cutbacks in auto insurance payment rates in Pennsylvania a decade ago, there have been no initiatives among trauma centers to obtain a higher proportion of the billions spent by auto insurers on medical treatment.

In a backward step, Colorado's legislature recently rescinded it's no-fault auto insurance reverting to a tort system. This has placed Colorado's trauma centers at economic peril as there is no alternative funding source for trauma.

TRAUMA OVERLOOKED IN TERROR PREPAREDNESS

September 11, 2001, established that trauma centers play a critical role in treating victims of terrorist acts. With clear prospects for more attacks in the U.S., strengthening our capability to save the lives of the seriously injured must be part of this nation's response to terrorist threats. By doing so, we also improve our trauma centers' capacity for treating disaster victims, as well as assaults, falls, recreational accidents and motor vehicle crashes that already occur daily.

Although approximately $1 billion of Federal funds has been authorized for State bioterrorism preparedness, the nation's trauma centers have received little or nothing. Only four states have given any specific bioterrorism funds directly to trauma centers or systems, and most amounts are meager.

Federal Bioterrorism Funds to State Trauma System

State	Amount
State A	$15,000
State B	$80,000
State C	<$100,000
State D	$500,000*

* for website development

TERRORIST ATTACKS RESULT IN TRAUMATIC INJURIES

Virtually all world major terrorist events result in traumatic injuries, and these events are ever-increasing in our society. There was a ten-fold increase in terrorist bombing incidents worldwide between 1968 and 1980. Between 1973 and 1983, 5,075 events were documented causing 3,689 deaths and 7,991 injuries. This trend is continuing to grow despite the unfortunate consequences: mass casualties and numerous critically injured survivors. Survivors of major world disasters sustain multiple burn and/or traumatic injuries and require immediate medical assistance in trauma centers.

TRAUMA CENTERS MUST BE PREPARED

New York's trauma centers played a crucial role in terror response and demonstrated that trauma centers need to be well prepared for future terrorist attacks. Trauma centers are often the only facilities organized to immediately respond during the "Golden Hour", and they must be ready to handle all risks and forms of terrorist attacks in a flexible and scalable fashion.

9-11 Lessons Lost

After the 1993 World Trade Center Bombing, St. Vincent Hospital's Level I trauma center learned that the key to an effective, organized response is being prepared. This led them to build communication networks between EMS, police, fire, medical suppliers and other hospitals which proved to be invaluable on September 11, 2001.

This prepared them to designate triage areas and command centers in advance and enabled them to screen unknown medical personnel and supplies for potential security risks. Unfortunately, these invaluable lessons have not been widely disseminated to other trauma centers.

World Trade Center Bombing (2001)

The collapse of the twin towers of the World Trade Center in New York City on September 11, 2001, was devastating. The jetliners crashing into these buildings are estimated to have imparted the equivalent of 12,500 tons of force. The subsequent building collapse is believed to have released the equivalent explosive force of 900 tons of TNT, resulting in approximately 3,000 deaths and 7,316 survivors. Of the survivors, the lessor injured were treated by trauma teams near the scene while the severely injured were treated by nearby trauma centers. St. Vincent's, Level I trauma center treated a total of 848 victims, of whom 450 were seen in the first two hours. Bellevue, the next nearest Level I trauma center, treated 114 victims and Cornell University's Burn Center received 18 critically burned survivors.

Oklahoma City Bombing

In 1995, an ammonium nitrate bomb designed as a fuel-air explosive was detonated in front of the Murrah Federal building in Oklahoma City, Oklahoma, with a blast force equivalent to two tons of TNT. This caused a partial collapse of the building and damage to several surrounding buildings. There were 759 total casualties, 162 immediate deaths, 83 hospitalized survivors with 52 critically injured, among whom were five late deaths.

North Carolina Integrates Trauma and Bioterrorism

In North Carolina, an emergency medical response drill was performed to inventory hospital beds and resource availability after a terrorist event. The results were that the Federal bed allocation team responded in two (2) weeks, the State public health department responded in two (2) days, and the trauma system responded in two (2) hours.

Trauma Centers Have Lead Role in Mass Casualties

Trauma centers are able to amass the needed resources to respond to major disasters and mass casualties by scaling up their everyday operations. Their ongoing relationships with emergency medical services and community hospitals result in rapid and organized patient treatment and destination decisions in times of community crisis of all types.

Because trauma centers have larger capacities, appropriate staffing, and enhanced training programs, they are the logical base for regional coordination and organization for terror response. Working within trauma systems encourages trauma centers with shared interests to solve problems and coordinate local transfer patterns during any type of disaster.

TRAUMA CENTER SUPPORT IS CRITICAL

Trauma centers need to be better equipped and staffed, have control of the distribution of patients for their region, and be able to immediately assemble medical teams for any type of terrorist event. Major needs include:

Additional Trauma Center Capacity

In the event of terrorist attack resulting in mass casualties, trauma centers must be able to increase surgical capacity to accommodate large numbers of patients. The current condition of U.S. trauma centers makes it challenging to meet the everyday needs for trauma care, much less develop surge capacity. Trauma centers need the space and equipment to meet the demands of mass casualty situations. With the majority already functioning at or near capacity, adding ED space and equipment, operating rooms, and critical care beds is essential. Technology to communicate between emergency control, first responders, and trauma centers is needed to assess hospital resources within a system at a moment's notice so that patients are distributed appropriately.

Connecticut Web Application for Bioterrorism Preparedness

The Connecticut Department of Public Health (DPH) decided to utilize the existing trauma system to prepare for possible bioterrorism attacks. The DPH added a new web application to the existing trauma system to enhance information sharing among the hospitals and local and State healthcare agencies as well as to coordinate with federal agencies (i.e. Centers for Disease Control and Prevention).

Aid for Critical Access Trauma Centers

Trauma center closures since the 1980's have left some communities without expedient access to trauma care and their surgical specialists. Those "Critical Access" trauma centers remaining open have severe limits on their resources and capabilities. Fighting for economic survival has taken precedence over offering full services which might be rarely used. Trauma services are expensive to operate and maintain, and present significant stress on the hospital's management and staff. As terror preparedness costs escalate, hospitals will be deterred from developing trauma services in unserved areas and more trauma centers will opt out of their current commitment.

Planning Activities to Assure Preparedness

Trauma centers need to coordinate planning activities in the event of a terrorist attack, especially for the initial 6-12 hour period. This vital time is when survivors are the most vulnerable and external resources (e.g. FEMA) are unavailable. Without support, trauma centers lack the resources to coordinate the transfer of patients, staff, equipment and supplies with neighboring facilities in times of emergency.

Personnel and Specialized Training

An adequate response to events of mass scale requires additional and highly trained personnel. To assure a continual state of readiness, caregivers need to know where and how to respond after a terrorist attack. They must be trained to protect themselves from dangerous biological/chemical agents and other hazards such as were found at "Ground Zero". Caregivers deal with unique circumstances that need to be well practiced prior to being needed.

Trauma centers must prepare an effective plan to mobilize self-sufficient disaster teams into a field setting. These teams need specialized medical and pharmaceutical supplies and large scale structural support when the size and severity of the event would otherwise overwhelm the facility.

REFERENCES

The report is drawn primarily from the "U.S. Trauma Center Economic Status" report issued by the National Foundation for Trauma Care in 2003.

Anderson R, Dearuati SR, Olsen T, et al. Role of Socio-Economic Status and Injury Morbidity Risk in Adolescents. Archives of Pediatric and Adolescent Medicine. 1994, Mar 148(3):245-9.

Blackston ME, Miller RS. Lowering Hospital Charges in the Trauma I Care Unit While Maintaining Quality of Care by Increased Resident and Attending Awareness. J Trauma. 1995, Dec 39(6):1041-4.

Brent T. Cost of Wound Care in Community. J Wound Care. 1995, Nov 4 (10):447-51.

Bond AE, Thomas FO, et al. Scoring Acuity Hours and Cost of Trauma Care. AJCC. 1993, Nov 2(6):436-43.

Bonnie RJ, Fulco CE, Liverman CT. Reducing the Burden of Injury, Advancing Prevention and Treatment. 1999. Washington DC, National Academy Press.

Bosse MJ, Brumback RJ, et al. Medical Cost Containment: Analysis of Dual Orthopaedic/ Radiologic Interpret of X-rays on the Trauma Patient. J Trauma. 1995, Feb 38:220-2.

Buckley SL, Gotschall C, et al. The Relationship of Skeletal Injury with Trauma Score, Injury Severity Score, LOHS, Hospital Charges and Mortality on Charges. J Pediatric Orthopaedics. 1994, Jul-Aug 14(4):4549-53.

Campbell AR, Villinghoff E, Shagoury C, et al. Trauma Centers in a Managed Care Environment. J Trauma. 1995, Aug 39(2):246-51.

Champion H, Sacco W, Copes W, et al. The Major Trauma Outcome Study: Establishing National Norms for Trauma Care. J Trauma. 1999; 30: 1356-1365.

Clancy TV, Mesick LN, et al. Financial Impact of Intentional Violence on a Community Hospital; J Trauma. 1994, Jul 37(1):1-4.

Cooper A, Hannan EL, Bessey PQ, et al. An Examination of the Volume-Mortality Relationship for New York State Trauma Centers. J Trauma. 1999, Vol. 48(1):6-24.

Covington DL. Hospital Resources Used to Treat the Injured Elderly at Trauma Centers. J American Geriatric Society. 1993, Aug 41(8):847-52.

Esposito TJ. Trauma and Trauma Care Systems: In the Throes of an Identify Crisis. Archives of Surgery. 2000, Vol. 135:716-719.

Esposito TJ, Sanddal ND, Hansen JD, et al. Analysis of Preventable Deaths and Inappropriate Trauma Care in a Rural State. J Trauma. 1995, Vol. 39(5):955-962.

Esposito TJ, Conn A. Complications in the Development, Operation, and Improvement of Trauma Systems. Systemic Complications. 1994, Ch. 13:116-133.

Esposito TJ, Maier RV, Rivara FP, et al. The Impact of Variation in Trauma Care Times: Urban versus Rural. Pre-hospital and Disaster Medicine. 1994, Vol. 10(3):161-167.

Esposito TJ, Maier RV, Rivara FP, et al. Why Surgeons Prefer Not to Care for Trauma Patients. Archives Surgery. 1991, Vol. 126:292-297.

Esposito TJ, Nania J, Maier RV. State Trauma System Evaluation: A Unique and Comprehensive Approach. Annals of Emergency Medicine. 1992, Vol. 21(4):351-357.

Gerndt SJ, Conley JL, Lowell MJ, et al. Pre Hosp Classification Combined with an In-hospital Trauma Radio System Response Reduces Cost, Duration of Evaluation of the Injured Patient. Surgery. 1995, Oct 118(4):789-94.

Hannan EL, Mendeloff J, Szypulski Farrell L, et al. Multivariate Models for Predicting Survival of Patients with Trauma from Low Falls: The Impact of Gender and Preexisting Conditions. J Trauma. 1995, Vol. 38(5):697-704.

Hannan EL, Mendeloff J, Szypulski Farrell L, et al. Validation of TRISS and ACSOT Using a Non-MTOS Trauma Registry. J Trauma. 1995; Vol. 38(1):83-87.

Hannan EL, Szypulski Farrell L, Bessey PQ, et al. Accounting for Intubation Status in Predicting Mortality for Victims of Motor Vehicle Crashes. J Trauma. 2000, Vol. 48(1):76-81.

Hannan EL, Szypulski Farrell L, Cayten CG. Predicting Survival of Victims of Motor Vehicle Crashes in New York State. Injury. 1997, Vol. 28(9-10):607-615.

Hannan EL, Szypulski Farrell L, Huang Gorthy S, et al. Predictors of Mortality in Adult Patients with Blunt Injuries in New York State: A Comparison of the TRISS and ICISS. J Trauma. 1999, Vol. 47(1):8-14.

Hannan EL, Szypulski Farrell L, Meaker PS, et al. Predicting Inpatient Mortality for Pediatric Trauma Patients with Blunt Injuries: A Better Alternative. J Pediatric Surgery. 1999, Vol. 35 (2):155-159.

Hannan EL, Szypulski Farrell L, Mottley L. Motor Vehicle Crashes in New York State: Importance of Accounting for Emergency Department Deaths When Assessing Differences in In-Hospital Mortality by Level of Care. J Trauma. 2001, Vol. 50(6):1117-1124.

Harris AR, Thomas SH, Fisher GA, et al. Murder & Medicine: The Lethality of Criminal Assault 1960 – 1999. Permission by author.

Hoyt DB, Moore EE, Shackford SR, et al. Trauma Surgeon's Leadership Role in the Development of Trauma Systems. J Trauma. 1999, Vol. 46(6):1142.

Hunt JP, Baker CC, Fakhry SM, et al. Accuracy of Administrative Data in Trauma. Surgery. 1999, 126 (2): 193-197.

Inch LR, Koenig W, Pinette V, et al. California's Trauma Care: In Crisis. January 2001.

Joy DA, Lechtig LG, et al. Identification of Categories of cost for care of Trauma Patients. J Trauma. 1994, Aug 37(2):303-8.

Jurkovich GJ, Mock C. Systemic Review of Trauma System Effectiveness Based on Registry Comparisons. J Trauma. 1999; 43: S46-55.

Kerridge RK, Glasziou PP, et al. Use of "Quality Adjusted Life Years" (QALY's) to Evaluate Treatment in Intensive Care. Anesthesia & Intensive Care. 1995, Jun 23(3):322-31.

Kizer KW, Vassar MJ, et al. Hospital Charges, Costs and Income for Firearm Related Injuries at a University Trauma Care. J Am A. 1995, Jun 14, 273(22):1768-73.

Laskowski JL. Will It Become Extinct? A Review of Factors Affect Trauma Centers Viability. JEN. 1993, Apr 19(2):121-6.

Legorreta AP, Mikos J, et al. The High Cost of Hospital Trauma Care Analysis of Hospital LOS, ISS< Case Mix and Reimbursement to Cost Rates. J Association for Academic Minority Physicians. 1993, 4(2):52-5.

Levy EN, Griffith JA, et al. Pediatric Trauma Care is Cost Effective; A Compilation of Pediatric and Adult Trauma Care Reimbursement. J Trauma. 1994, Apr 36(4):504-7.

Mann NC, Mullins RJ, Hedges JR, et al. Mortality Among Seriously Injured Patients Treated in Remote Rural Trauma Centers Before and After Implementation of a Statewide Trauma System. Medical Care. 2001, Vol. 39(7):643-653.

Maull KI, Esposito TJ. Trauma System Design. Trauma Overview. 1995, Ch. 4:57-68.

Miller TR, Blincor LJ, et al. Incidence and Cost of ETOH Involved Crashes in US. Accident Analysis and Prevention. 1994, Oct 26(5):583-91.

Miller TR, Cohen MD, et al. Victim Costs of Violent Crime Resulting Injuries. Health Affairs. 1993, Winter 12(4):186-97.

Miller TR, Galbraith M, et al. Injury Prevention Counseling by Pediatricians: A Cost-Beneficial Corp. Pediatrics. 1995, Jul 96(1 Pt 1):1-4.

Miller TR, Lestina DC. Patterns in US Medical Expenditures and Utilization for Injury. AJ of PH. 1996, Jan 86:89-93.

Miller TR, Levy DT, et al. The Effect of Regional Trauma Care System on Costs. Archives of Surgery. 1995, Feb 130(2):188-93.

Miller TR, Pindus NM, et al. Medically-related MV Injury Costs by Body Region and Severity. J Trauma. 1993, Feb 34(2):270-5.

Mitchell F, Thal E, Wolferth C. Analysis of American College of Surgeons Trauma Consultation program. Arch Surg. 1995, 130: 583-84.

Mullins RJ, Mann NC, Hedges JR, et al. Adequacy of Hospital Discharge Status as a Measure of Outcome Among Injured Patients. JAMA. 1998, Vol. 279(21):1727-1731.

Mullins RJ, Mann NC, Hedges JR, et al. Preferential Benefit of Implementation of a Statewide Trauma System in One of Two Adjacent States. J Trauma. 1998, Vol. 44(4):609-617.

Mullins RJ, Veum-Stone J, Helfand, M, et al. Outcome of Hospitalized Injured Patients after Institution of a Trauma System in an Urban Area. JAMA. 1994, Vol. 271(24):1919-1924.

Nathens AB, Jurkovich GJ, Cummings P, et al. The Effect of Organized Systems of Trauma Care on Motor Vehicle Crash Mortality. JAMA. 2000, Vol. 283(15):1990-1994.

Nathens AB, Jurkovich GJ, Maier RV, et al. Relationship Between Trauma Center Volume and Outcomes. JAMA. 2001, Vol. 285(9):1164-1171.

Nathens AB, Jurkovich GJ, Rivara FP, et al. Effectiveness of State Trauma Systems in Reducing Injury-Related Mortality: A National Evaluation. J Trauma. 2000, Vol. 48(1):25-31.

Nathens AB, Maier RV, Copass MK, et al. Payer Status: The Unspoken Triage Criterion. J Trauma. 2001, Vol. 50(5): 776-783.

Newman JA, Tylko S, Miller T, et al. Toward a Comprehensive Bio-Mechanical Injury Cost Model for Accident Analysis. Prevention. 1994, June 26(3):305-14.

Ordog GJ, Wasserberger J, et al. Hospital Cost of Firearm Injuries. J Trauma. 1995, Feb 38(2):291-8.

Pasquale MD, Peitzman AB, Bednarski J, et al. Outcome Analysis of Pennsylvania Trauma Centers: Factors Predictive of Non-survival in Seriously Injured Patients. J Trauma. 2001, Vol. 50(3):465-474.

Rice DP, Max W. High Cost of Injuries in the US. AJ of PH. 1996, Jan:14-5.

Rogers FB, Osler TM, Shackford SR, et al. Population-Based Study of Hospital Trauma Care in a Rural State without a Formal Trauma System. J Trauma. 2001, Vol. 50(3):409-414.

Rowland J, Rivera F, Salzberg. Motorcycle Helmet Use and Injury Outcome/hospitalization Costs from Crashes on Western States. American Journal of Public Health. 1996, Jan 86:41-5.

Runge JW. Cost of Injury. EM Clinics of NA. 1993, Feb 11(1):241-53.

Schuster M, Cohen BB, et al. Overview of Causes and Costs of Injury in Massachusetts: A Methodology for Analysis of State Data. PH Reports. 1995, May-Jun 110(3);246-50.

Siegel JH, Gonzalez M, et al. Causes and Costs of Injury in Multi-trauma Patients Requiring Extrication from Motor Vehicular Crashes. J Trauma. 1993, Dec 35(6):920-31.

Siegel JH, Shafi S, et al. A Quantitative Method for Cost Reimbursement and LOS QA in Multiple Trauma Patients. J Trauma. 1994, Dec 37(6):928-37.

Sirvontkowski MD, Davis JW, et al. High Risk Behavior and the Public Burden for Funding the Cost of Acute Injury. Archives of Surgery. 1995, Aug. 130(8):844-9.

Sloan EP, Rydman RJ, et al. Relationship Between Hospitals Per Diem Billing and DRG for Urban Trauma Patients. J Medical Systems. 1995, Aug. 19(4):353-7.

Southard P. Trauma Economy: Suggestions for the Cost of Trauma Care. JEN. 1993, June 19(3):262-3.

Southard PA. Trauma Economies: Real and Strategic. CC Nursing Clinics of NA. 1994, Sept 6(3):435-40.

Taheri P.A., Butz D.A., et al. The Cost of Trauma Center Readiness. American Journal of Surgery. 187 (2004) 7-13.

Tengs TO, Adams ME, et al. Five Hundred Life Saving Interventions and Their Cost Effect. Risk Analysis. 1995, Jun 15(3):369-90.

Trauma System Agenda For The Future, Final Draft. NHTSA. 2002 April.

Trauma Systems, Skamania Symposium. J Trauma. 1999, Vol. 47(3) Supplement.

Trunkey DD, et al. Impact of Violence on the Nation; Trauma Care Health Affairs, Winter 12(4):162-70, 1993

Trunkey DD, Lewis FR. Current Therapy of Trauma, Fourth Edition. 1999. St. Louis. Mosby.

Waller JA, Skelly JM, Dairs JH, et al. Characteristic Hospital Changes and Effects of Road Transportation Injuries in Vermont. Accident Analysis and Prevention. 1994, Oct 26(5):635-45.

Waller JA, Skelly JM, Davis JH, et al. Treatment Charges Payment Sources Disability from ETOH-related Trauma. J Trauma. 1995, Nov 39(5):963-7.

Weaver LD, Hansraj KK, et al. GSW Injuries, Freq and Cost Analysis in South Central LA. Orthopaedic Clinics of North America. 1995, Jan 26(1):1-7.

Ziedel F, Pletschen B, et al. Development of a New Dry Cost Scale. Accident Analysis and Prevention. 1993, Dec 25(6);675-87.

For more information on this report or for NFTC membership information, please contact us at info@traumacare.com.

National Foundation for Trauma Care
230 Commerce
Suite 210
Irvine, CA 92602
(714) 838-9024

© Copyright 2004 National Foundation for Trauma Care