

## TRAUMA REGISTRIES AS A POTENTIAL SOURCE FOR FAMILY VIOLENCE AND OTHER CASES OF INTIMATE PARTNER VIOLENCE FOR BORDER COMMUNITIES: INDICATOR DATA TRENDS FROM 2000-2002

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In developing a measured public health response to Intimate Partner Violence (IPV) and other manifestations of family violence in U.S.-Mexico Border communities, there is a need for substantive, valid and reliable data. While in the past decade, border gateway cities have drawn national media and policymakers' attention and interest; this attention has been largely on narco-trafficking and drug related violence. In El Paso and Ciudad Juarez, attention has been drawn to serial killings of young Mexican women. Yet, little or next to nothing is reported in terms of IPV and other manifestations of family violence in these communities. There is a clear need for behavioral health data attending to IPV and other manifestations of family violence: its etiology, epidemiology and consequences.

For the last fifty years, the U.S.-Mexico border region's communities have been seen largely as gateway cities for Mexican nationals and Mexican-Americans to other parts of the U.S. The region's *distinct communities along the U.S.-Mexico border* have experienced great growth and change. These communities have areas and families that may be viewed as underserved. The border twin cities pose special political problems for policymakers and those seeking to meet public health and social service needs. These border cities and communities have longstanding and emerging problems. Yet, these problems are missing from national and state policymakers' agendas and priorities (Texas Department of Human Services 1998). This invisibility has left social services programmers and public health practitioners with limited options or alternatives for addressing old, new and re-emerging public health agenda issues.

Violence is one of those issues (Paulozzi, Saltzman, Thompson, & Holmgreen 2001; National Research Council 1996; Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss, & Marks 1998; Wisner et al

1999). IPV and related family violence are among the more common manifestations of violence. IPV incidents and their consequences are more commonly experienced by border community's residents than others. Yet, border communities IPV issues and concerns are missing from major national and state efforts (FBI 2001; US Department of Justice 1998; Center for Policy Research Stalking in America 1997; Trapped by Abuse; The Taylor Institute 1997), especially data which could be used to inform preventive and intervention IPV services. These monitoring and surveillance data could be used to inform preventive and intervention services for border communities (Mata, Rocha, Blough, & Lopez 1999).

In Texas, family violence incidents have not increased from 1997 to 2001. But the number of women killed by an intimate partner has increased about 10 percent from 1997 to 2001. Most batterers were 20 to 24 years of age followed by 25 to 29. Yet, in Texas, 35 percent of female homicide victims are murdered by an intimate partner. This is a rate that is substantially higher than reported by the Federal Bureau of Investigations (FBI) (Texas Department of Public Safety 2001). To date, there are no major reports of border cities' IPV incidents and consequences similar to those being reported to the state by non-border cities.

There is a clear need for data and data systems that attend to major aspects of IPV and related family violence manifestations (Tjaden & Thoennes 2000; Gazmararian, Petersen, Spitz, Goodwin, Saltzman, & Marks 2000; Straus & Gelles 1990; APA Taskforce on Violence and Family 1996; Tolman & Raphael 2000). Medical centers' Trauma Registries (TR) can play a pivotal role in identifying key IPV and other related family violence issues, vulnerability and other consequences (Wisner, Gilmer, Saltzman, & Zink 1999; National Research Council 1996; Felitti et al 1998; Gazmararian et al 2000; AMA Medi-

cal News 1992).

In this paper, we will explore the role of hospitals TRs, their use and limitations for identifying family violence cases and the data implications for border communities' policy and programming efforts. In short, what is the role and nature of hospital TRs for border IPV surveillance & monitoring systems? What are these TR data promises and limitations? What is the overlap between "IPV" cases to "drug" and "alcohol-related" trauma and to "other trauma" in general? What alternative perspective and implications do TR monitoring systems pose? What is the possibility for border-wide IPV surveillance systems? The data highlighted in this article is from the TR in El Paso, Texas at Thomason Hospital.

Family Violence and other IPV issues remain a key concern among communities along both sides of the U.S.-Mexico border. Intimate partner violence-or IPV-is defined as threatened physical or sexual violence or psychological and emotional abuse directed toward a spouse, ex-spouse, current or former boyfriend or girlfriend, or current or former dating partner. Intimate partners may be heterosexual or of the same sex. Some of the common terms used to describe intimate partner violence are: domestic abuse, spousal abuse, domestic violence, family violence, courtship violence, battering, marital rape, and date rape (Saltzman, Fanslow, McMahon, & Shelley 1999). The Centers for Disease Control and Prevention (CDC) use the term intimate partner violence as it describes violence that occurs within a range of intimate partner relationships. Some of the other terms are overlapping and may be used to mean other forms of violence including abuse of elders, children, siblings, and other family members (CDC 2003). National, state and Third Sector effort's need to assist local communities seeking to provide IPV and related family violence services. The continued use and improvement of TRs by state and national health and mental health services could serve to give policymakers, researchers and practitioners the important data they need to address the IPV problem.

#### **THE NEED TO REDEFINE IPV AND RELATED FAMILY VIOLENCE IN BORDER COMMUNITIES**

Periodically, the U.S.-Mexico border communities' health problems are "rediscov-

ered." Yet, the problems of IPV and related family violence largely remain outside the scope and interest of national and state public health policy and programming efforts (US Department of Justice 2001; FBI 2001).

Most concerns about violence remain linked to drug-related sexual assault and to drug-related violence, thus placing them largely within the criminal justice perspective. Border communities IPV and related family violence have been outside the scope of the Department of Justice's (DOJ) Victimization studies. They have also been outside CDC's special reports or other Department of Health and Human Services (DHHS) IPV monitoring and surveillance efforts. In border communities, comprehensive, coordinated and effective IPV services are missing and unaddressed (Trapped by Poverty Trapped by Abuse, Taylor Institute 1997).

While subject to occasional studies, these fail to adequately address IPV and related family violence issues and its public health consequences. Many health and human service professionals in border communities recognize the serious, impacting nature and consequences of IPV and family violence—yet there is little data or assessment of the problem nor is there information about how border communities compare to non-border cities. While recognizing the potential and limitations of border communities' IPV data, there is a clear need to expand and enhance its use as well as measures of its health consequence (National Institute of Justice 1998; US Department of Justice 1994a, 1994b, 2001; and National Research Council 1996). Border hospitals TR's are in unique positions to fill this IPV gap.

We suggest that TRs have great potential for addressing IPV and related family violence health consequences. Here we suggest the importance and limits of Texas-based TRs for monitoring, surveillance and policy research. Second, we will discuss how utilizing TRs in border communities will help redefine the U.S.-Mexico Border IPV and related family violence issues. Then, we will present data that profiles key patterns and trends for major border gateway cities. These are data that need to be compared and contrasted to other border cities. Lastly, we discuss the potential of the borders' IPV data for monitoring, reporting and service planning. Here we will suggest that TR data are available for all border cities and can provide im-

**Table 1: Trauma Essential and Desired Reporting Data Items as Per The Texas Department of Health**

<b>ESSENTIAL</b>	<b>DESIRED</b>
Facility Number	Trauma Number
Medical Record Number	Patient Name
Race/Ethnicity	Social Security Number
Sex	Pulse
Date of Birth	Revised Trauma Score
Date of Injury	Length of Stay
County of Injury	ICU Days
Cause of Injury	Five AIS Codes
Time of Injury	Five ICD9 Procedure Codes
County of Residence	Five ICD9 Pre-existing Condition Codes
Place of Injury	Body Region X Severity
Date of Arrival	Body Region X Surgery
Time of Arrival	Revised Trauma Score at Scene
Alcohol Level Tested	Ambulance Firm Number
Alcohol Level	Total Reimbursement
Blood Pressure	Vehicle Extrication
Respiration Rate	For First Hospital: Date of Arrival
Glasgow Coma Scale	Time of Arrival
Discharge Destination	Date of Departure
Discharge Condition	Time of Departure
Date of Discharge or Death	
Time of Discharge or Death	
If Discharge to Facility, Facility Number	
Five ICD9 Diagnostic Codes	
Injury Severity Score	
Payor Category	
Billed Hospital Charges	
Systolic Blood Pressure at Scene	
Glasgow Coma Score at Scene	
Dispatch Time	
Arrival Time	
Leave Scene Time	
Protective Devices	
Transfer	
Referral Facility	

Source: Texas Department of Health, 2002

portant IPV health consequences data. These data are useful not only for applied and administrative research but they can serve as a basis for prospective basic and policy research.

#### **TR AND FAMILY VIOLENCE AND IPV CASE MONITORING: PROMISE AND LIMITATIONS**

In Texas, TRs have been established for nearly twelve years (Rocha, Mata, Tyroch, McLean, & Blough 2005). While data for this essay was generated from Thomason Hospital's TR which was initiated in 1994, this paper only covers the year 2001. As in other parts of the country, hospitals used TRs to measure the quality of trauma care and to evaluate the effectiveness on health outcomes. A second major utility of TRs is for injury surveillance, patient care and patient cost. The data collected varies by local TR.

State mandated reporting usually includes patient demographics, injury severity, medical care procedures, health outcomes, and medical costs. In terms of injury surveillance and monitoring purposes for the U.S.-Mexico Border region, TRs have important potential for the highlighting of IPV and related family violence issues.

Since the first TR in Chicago in the 1950's<sup>1</sup>, their role has been to monitor and evaluate trauma patient care for healthcare entities and the regional EMS systems that they belong to; to identify and report major trauma injuries and outcomes; and to provide a sense of how to prevent, treat and reduce trauma costs. TRs are databases that collect, archive and report information about patients that they receive through a trauma care services system. Patient inclusion into a TR system generally requires that the pa-

tient population meet specific criteria:

- ICD Codes (967.0-967.9)
- Admission to ICU or hospital floor
- ICD9 Code<sup>2</sup>
- Injury Severity Score<sup>3</sup>

In 1989, the Texas legislature recognized the need and challenge that collecting standardized trauma data from over 450 hospitals would present and allowed reporting entities to file their data electronically either on a quarterly or annual basis. In Texas, four regions ranging from El Paso to Brownsville cover the Texas border (TDH 2001). In 1990, the state legislature mandated the reporting of certain trauma cases. On August 31, 1996, the Texas state legislature required the state's Department of Health and hospital trauma units to gather data about trauma in Texas. One objective was to identify severely injured trauma patients within each health-care agency. Others monitoring patient care within each hospital unit and regional emergency medical services network were required to identify the total amount of uncompensated trauma care delivered each fiscal year. All medical facilities needed to report to the Texas Department of Health (TDH) Injury and Control Division. Minimal data sets consist of TR data that is required by the Texas Department of Health (TDH). Due to the need for confidentiality, all public health reports of data are reported in the aggregate. Also, security measures and guidelines were developed to limit access to registry data. Generally, TRs include all cases with ICD 9 codes of 800 to 959. It must be recognized that the collecting of standardized data is set by the state legislature and corresponding state agency(s).<sup>4</sup>

The actual collection of TR data is guided by state and hospital reporting guidelines. This mandate has allowed hospitals to report required essential elements as well as desired optional elements. In a sense, there are minimal required reportable and desired data elements. Desired data elements are variables, which state, professional, and some local agencies would like to see collected, but are not mandatory. In Texas, Table 1 lists the hospital data items and whether their collection is essential or desirable.

Thomason Hospital is an American College of Surgeons verified Level I-trauma facility. Thomason initiated the TR in 1994 and

has continued since then to provide TDH-mandated minimal trauma level data and serve as the lead hospital for the Far West Texas and Southern New Mexico Regional Advisory Council on Trauma (FWT & SNM RAC). The state of Texas is divided into 11 RACs. The RAC for the Far West Texas and Southern New Mexico region has eight hospitals which participate in pooling TR data on an ongoing basis<sup>5</sup>. The FWT & SNM RAC is unique, in that it covers four Texas counties and seven New Mexico counties<sup>6</sup>. Trauma care is provided through a four-tier system of providing care to acute and injured patients. Level one trauma centers are tertiary care facilities central to any Trauma Care System (TCS). Level twos provide initial definitive care regardless of severity of injury. They can be academic, community, public or private facilities located in rural, suburban and urban settings. The following describes each of the four tiers of this trauma core system.

#### Level I:

A Level I facility is a regional resource trauma center serving as the area's tertiary care facility. Tertiary Care Centers are central to the trauma care system. Each facility must have the capability of providing leadership and total care for every aspect of injury, from prevention through rehabilitation. In its central role, a Level I center must have adequate Emergency Care facilities and personnel. Because of the large number of personnel and facility resources required for patient care, education, and research, most Level I trauma centers are university-based teaching hospitals. Other comprehensive hospitals willing to commit these resources, however, may meet the criteria for achieving a Level I certification recognition.

In addition to acute care responsibilities, Level I trauma centers have the major responsibility of providing leadership in education, research and system planning. This responsibility extends to all hospitals caring for injured patients in their regions. Medical education programs include residency program support and postgraduate training in trauma for physicians, nurses, and pre-hospital providers. Education can be accomplished through a variety of mechanisms, including classic continuing medical education (CME), training institutes, preceptorships, personnel exchanges, and other ap-

**Table 2: Number of Total Trauma Admissions by Year for Drugs and Alcohol for Thomason Hospital and the Far West Texas and Southern New Mexico Regional Advisory Council on Trauma Between 1996-2001**

	Thomason Hospital						Far West Texas and Southern New Mexico Regional Advisory Council on Trauma Between 1996-2001					
	1996	1997	1998	1999	2000	2001	1996	1997	1998	1999	2000	2001
<b>Total Admissions</b>	1031	1145	1496	1663	1595	1653	1046	1769	2031	2299	2789	2735
<b>Drugs Only</b>	151	200	264	219	248	207	151	270	333	265	248	208
Males	117	153	198	179	212	161	117	214	252	209	212	162
Females	34	47	66	40	36	46	34	56	81	56	36	46
<b>Alcohol Only</b>	439	330	420	413	382	338	439	504	629	510	484	441
Males	349	280	348	347	333	285	349	419	502	427	412	371
Females	90	20	72	66	49	53	90	85	127	83	72	70

Source: Thomason Hospital Trauma Registry

proaches appropriate to the local situation. Research and prevention programs are essential for a Level I trauma center. These hospitals provide important services and data to community outreach and education as it concerns serious injuries and trauma (CTACS 1999).

#### Level II:

The Level II trauma center is a hospital that is also expected to provide initial definitive trauma care, regardless of the severity of injury. However, depending on geographic location, patient volume, personnel, and resources, the Level II trauma center may not be able to provide the same comprehensive care as a Level I center (for example, patients requiring extended surgical critical care). Level II trauma centers, however are the most prevalent type of facility in a community that manages the majority of trauma patients (CTACS 1999).

#### Level III:

The Level III trauma center serves communities that do not have immediate access to a Level I or II institution. Level III trauma centers can provide prompt assessment, resuscitation, emergency operations, and stabilization; and may also arrange for possible transfer to a facility that can provide definitive trauma care. General surgeons are required in a Level III facility. Planning for care of injured patients in these hospitals requires transfer agreements and standardized treatment protocols. Level III trauma centers are generally not appropriate in an urban or suburban area with adequate Level I and/or Level II resources (CTACS 1999).

#### Level IV:

Level IV trauma facilities provide trauma life support prior to patient transfer in remote areas where no higher level of care is available. Such a facility may be a clinic rather than a hospital and may or may not have a physician available. Because of geographic isolation, however, the Level IV trauma facility should be an integral part of the inclusive trauma care system. As at Level III trauma centers, treatment protocols for resuscitation, transfer protocols, data reporting, and participation in system performance improvement (PI) are essential.

A Level IV trauma facility generally has a good working relationship with the nearest Level I, II, or III trauma center. This relationship is vital to the development of a rural trauma system in which realistic standards must be based on available resources. Optimal care in rural areas can be provided by skillful use of existing professional and institutional resources supplemented by guidelines that result in enhanced education, resource allocation, and appropriate designation for all levels of providers. Also, it is essential for the Level IV facility to have the involvement of a committed health care provider, who can provide leadership and sustain the affiliation with other centers. These facilities are key to providing critical care in many border communities (CTACS 1999).

Along the border, there are few of these key critical care institutions. Thus levels III & IV hospitals are the major community trauma resource for their respective border communities. In most major cities substance abuse injury surveillance is possible through TR, the state respective transportation depart-



Table 3: Thomason Hospital Trauma Patient Profile for Selected Categories in 2001

Characteristic	2001			
	IPV 26	Drug Only 201	Alcohol Only 25	Other 207
<b>Number (N)</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>
<b>Charges</b>				
Average Charges	\$9,068	\$36,555	\$18,614	\$12,247
Sum Charges	\$226,698	\$913,886	\$465,361	\$306,183
<b>Injury Severity Score</b>				
Avg ISS	7	15	7	6
Range	25	37	18	23
<b>Type of Injury</b>				
Blunt	44%	84%	80%	92%
Penetrative	52%	12%	16%	4%
Other	4%	4%	4%	4%
<b>Site of injury*</b>				
Street/highways	12%	60%	56%	52%
Home	64%	8%	20%	16%
Specified other	12%	28%	20%	12%

\*Top three site of injuries will not total to 100%.

Source: Thomason Hospital Trauma Registry

ment and criminal justice arrests and conviction reports. All of these data systems reflect various aspects of substance abuse consequences.

#### BACKGROUND AND CONTEXT SUBSTANCE ABUSE AMONG TRAUMA ADMISSIONS-THOMASON HOSPITAL: A profile of the selected groups

During the 2001 calendar year, there were 1,653 trauma admission cases as compared to 1,031 in 1996 (Table 2). Since 1996, there has been a 35 percent increase in total trauma admissions. During the 2001 calendar year, over three-fourths (81%) were Hispanic, 2 percent were African-American, and 1 percent were members of other racial/ethnic groups. There was a 39 percent increase between 1996 to 2001 of drug-related admissions. In terms of alcohol-related admissions, the number has decreased significantly each year from 1996 to 2000. In 1996, there were 439 alcohol-related admissions, which decreased to 382 cases in 2000, representing a 13 percent decrease.

Forty percent of these admissions had used drugs or alcohol, whereas 16 percent of the admissions had used "drugs only" (Table 2). Eighty-five percent were male. A majority (27%) of trauma patients in 2000 were between the ages of 18-25 and male. Between 1997-2000, there was a 21 percent increase in the total number of drug-related cases seen at Thomason Hospital. Also, there was an 8 percent increase in the number of males being admitted to Thomason

Hospital for drug-related issues. There was a 3 percent increase in males being admitted for alcohol-related cases between 1997-2000.

However, for females there was a 2 percent decrease for alcohol-related trauma and an 8 percent increase for drug-related cases. There was no significant age increase when examining the data by individuals being admitted since 1997.

Yet, while blunt trauma (Table 3) has been increasing penetrative trauma has been decreasing (39%) since 1997, and blunt has increased by 3 percent.

These data suggest variations in cases presenting to Thomason's Trauma Center. Marked differences may be observed between drug, alcohol and non-substance abuse-related trauma care patients. It is unclear how these patterns maybe related to IPV cases. However, it does raise the question: how are IPV cases similar to other types of trauma? We next will discuss the study's methodology and its results.

#### Methodology

The cases examined in this pilot study were derived from female trauma admissions at Thomason Hospital during 2001. This analysis only includes females between the ages of 18-60 years. The variables included were as follows: *category of subjects, age, ICD9 codes (one to seven codes per patient), Injury Severity Score, county of residency, hospital charges, insurance payor (insurance paying the hospital charges), date of admis-*

**Table 4: Injury Severity Score Calculation**

Region	Injury Description	AIS	Square	Top Three
Head & Neck	Cerebral Contusion	3		9
Face	No Injury	0		
Chest	Flail Chest	4		16
Abdomen	Minor Contusion of Liver	2		
	Complex Rupture Spleen	5		25
Extremity	Fractured femur	3		
External	No Injury	0		
<b>Injury Severity Score:</b>				<b>50</b>

Source: Center for Disease Control, 2003

sion, blood alcohol level, positive for alcohol, positive for illicit drugs, number of illicit drugs in system, medical record number, ethnicity, etiology, type of injury (blunt or penetrating) and other recorded variables. This pilot study's total sample size is 100 trauma cases (Table 3). The design utilized a case control methodology. A case-control study can identify risks and trends, and can suggest some possible causes for particular outcomes of a program. The trauma cases for alcohol, drug and other trauma were randomly selected. The IPV cases were selected from an unscreened population. The cases were then followed-up by pulling the trauma registry record and verifying these were documented IPV cases.

The ISS is an anatomical scoring system that provides an overall score for patients with multiple injuries. Each injury is assigned an Abbreviated Injury Scale (AIS) score and is allocated to one of six body regions (Table 4) (Head, Face, Chest, Abdomen, Extremities, including Pelvis, External). ISS range from 1-75, with 1-14 being stable and 15 or higher being critical. Only the highest AIS score in each body region is used. The 3 most severely injured body regions have their score squared and added together to produce the ISS score. We now will turn to specific measures and protocols (CDC 2003).

An example of the ISS calculation is shown below:

ICD-9-CM is the official system of assigning codes to diagnoses and procedures associated with hospital utilization in the United States. The ICD-9 is used to code and classify mortality data from death certificates (CDC 2003).

The ICD-9-CM consists of:

- a tabular list containing a numerical list of the disease code numbers in tabular

form;

- an alphabetical index to the disease entries; and

- a classification system for surgical, diagnostic and therapeutic procedures (alphabetic index and tabular list).

The process (Figure 1) begins by abstracting trauma patients, then entering them into Thomason's TR. The TR utilizes the Collector (a TR software package) and is critical to the development and maintenance of this database. The Collector software version utilized was 3.28, 1997-2002. Collector is one of the commercial software packages used in the state of Texas for trauma registries. Then, after abstracting, we used the Statistical Package for Social Sciences (SPSS). Specifically, we selected a random sample using SPSS to compare to the IPV cases (SPSS 1999, Ver. 10).

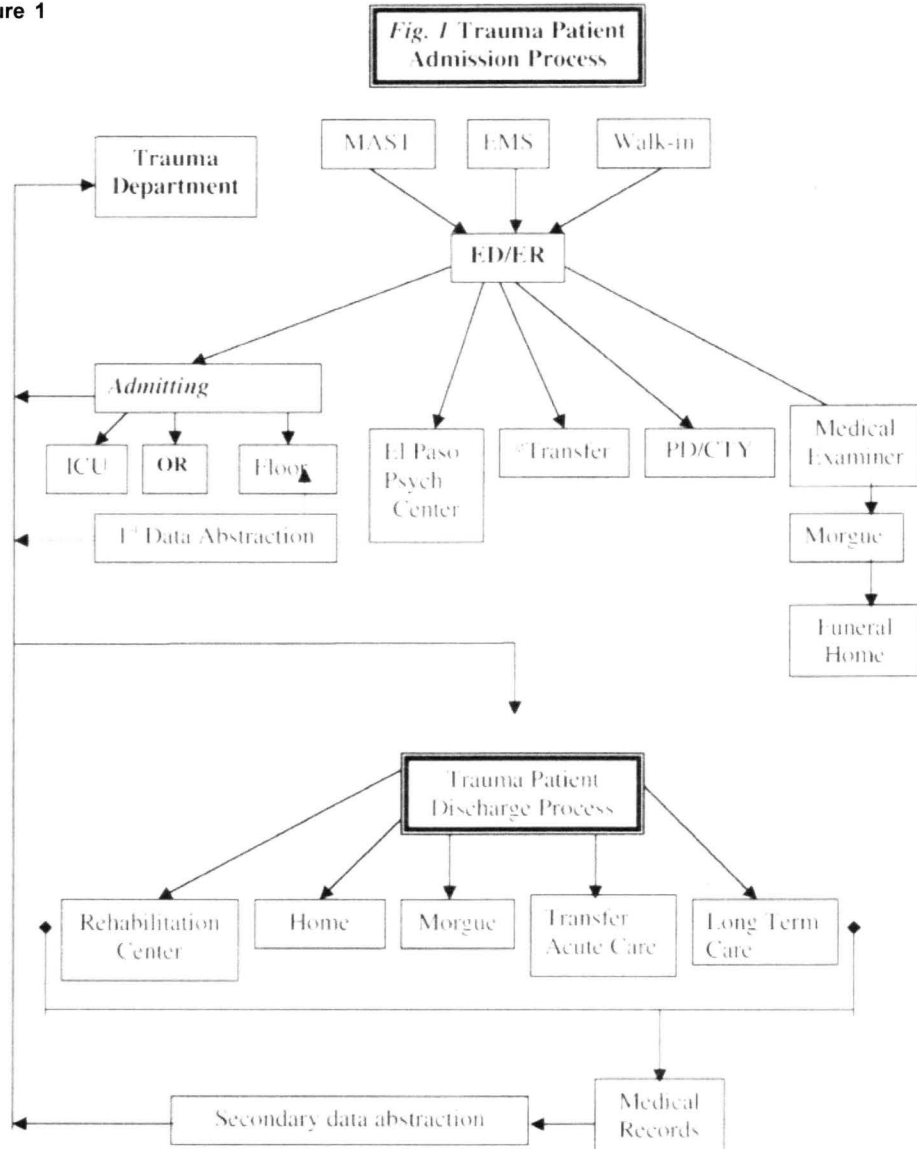
The sample was then categorized into four groups: 1) self reporting and/or ED staff identification of IPV cases; 2) female trauma admissions to Thomason Hospital who subsequently tested positive for alcohol; 3) female trauma admissions to Thomason who were under the influence of illicit drugs and finally 4) females who were admitted to Thomason for Trauma and who were not under the influence of any illicit drugs or alcohol. These categories allow one to compare and better understand how IPV cases differs from other types of trauma. Moreover, it also other similar types of trauma.

## FINDINGS

### Overall Sample Characteristics

Almost half of the TR's IPV cases are females between the ages of 18-24 (26%) or 31-40 (24 %). As this is a major Texas-Mexico border community, a majority of the patients were Hispanic (79%). Followed by White, Non-Hispanic 19 percent. The two most common sites of injury were motorways (45%)

Figure 1



followed by domicile (27%). When examining the type of injury (blunt or penetrative injuries) three quarters of all cases reported blunt injuries. Only 21 percent of cases reported penetrating trauma with 4 percent being unknown. The crucial distinction when examining ISS is as follows: 1-14 considers the patient to be stable and 15 to 75 are critical. Using the ISS, 78 percent of the trauma cases ranged from 1 to 14, with an average of 7. There was a median response of 1. Among alcohol trauma care patients, there

were three major modalities. Of all cases, 60 percent cost between \$1-\$10,000. In the second modality, 16 percent ranged from \$10,001-\$20,000. In the last, 12 percent ranged from \$20,001-\$40,000. The average ISS was 8.67; yet most ISS reported a 1. Twenty-seven percent report at least one illicit drug in their system at the time of admission, with 11 percent having two or more drugs in their system at the time of admission. Cocaine (14%) was the most frequently used illicit substance. Heroin and Benzodi-



**Table 5: Thomason Hospital Trauma Patient Profile for Selected Categories in 2001**

Characteristic	IPV 26	Drug Case 201	Alcohol Case 338	Other 207
<b>Number (N)</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>
<b>Age</b>				
18-25	32%	32%	28%	32%
26-35	36%	24%	28%	20%
36-46	20%	40%	40%	12%
47+	12%	4%	4%	36%
<b>Race/Ethnicity</b>				
Hispanic	72%	88%	68%	88%
White-non-Hispanic	24%	12%	28%	12%
African-American	4%	0%	0%	0%
Other	0%	0%	4%	0%
<b>Primary Payor*</b>				
Bluecross/Blueshield	40%	36%	36%	40%
Medicaid/Medicare	24%	36%	36%	36%
Self pay	32%	16%	12%	8%

\*Will not total 100%

Source: Thomason Hospital Trauma Registry

**Table 6: Site of Injury for Thomason Hospital Trauma Patients 2001**

Site	IPV 25	Drugs 25	Alcohol 25	Other 25
<b>Number (N)</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>
Street/Highway	12%	60%	56%	52%
Home	64%	8%	20%	16%
Public Building /Residential Institution	0%	4%	4%	8%
Other (specified & unspecified)	24%	28%	20%	12%
Unspecified	0%	0%	0%	12%

Source: Thomason Hospital Trauma Registry

azepines were the next most often used substances.

Trauma patients' payment of trauma care hospital charges were largely through private health insurance (38%) followed by public health insurance (30%). The remainders were self-paying patients. Trauma care (Table 5) is primarily paid for by the private and commercial health insurance companies. We will now turn to closer examination of this overall sample by comparing IPV patients to drug, alcohol and the other trauma cases.

The only group whose site of trauma did not occur most often on the motorways was IPV cases which happened at home (64%). The other three subgroups had the majority of trauma case occurring on the motorways ranging from 52 percent to 60 percent. For IPV cases the next most often site of occurrence was "Other" (specified & unspecified) (Table 6).

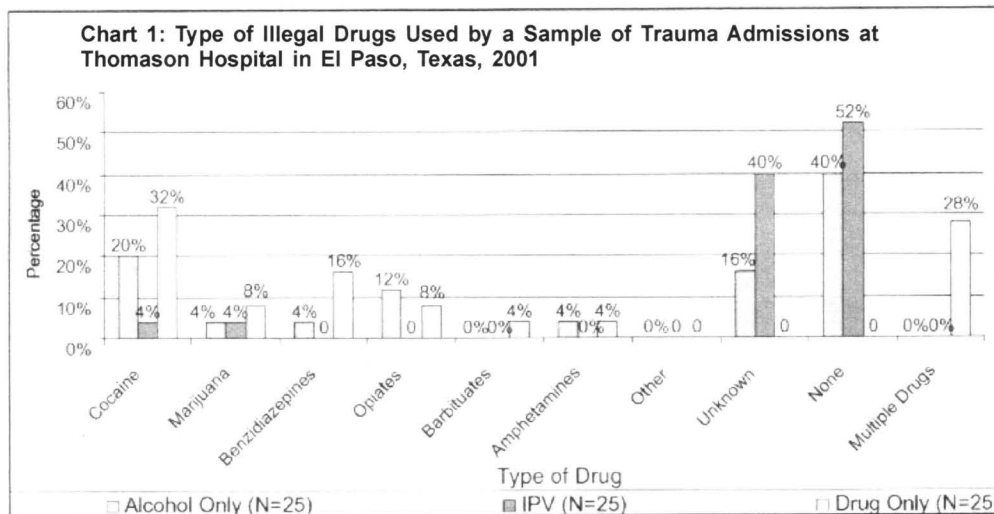
#### IPV Related Cases

The first sub-group consists of all IPV (but one) cases presenting to the Thomason

Trauma Center in 2001. The racial/ethnic composition was: 1) 72 percent Hispanic; 2) 24 percent White and 3) 4 percent African-American. While the average age was 32 years of age; the ages ranged from 19 to 58 years of age. Among IPV cases the average ISS was 7, and the scores ranged from 1 to 26. A majority of cases (88%) were from El Paso County with only 12 percent of cases being out of state.

These cases were identified at admission with a trauma-related ISS that required further injury examination and treatment. While blunt injuries comprised 44 percent, penetrating cases consisted of 52 percent, with only 4 percent reporting unspecified type of injuries. The most frequently reported cases involved lacerations of the chest (3), followed by laceration of the anterior abdomen and traumatic hemothorax. A few cases involved multiple blunt and penetrative injuries that made categorizing difficult. Among these latter cases they could have involved both blunt and penetrative injuries.

The majority of cases occurred at their domicile (64%), followed by 24 percent at



unspecified location(s) and 12 percent occurring on motorways. There were more penetrative injuries than blunt injuries among IPV cases. Among the IPV trauma cases only two tested positive for drugs. The first case involved a female patient who had used cocaine. The second case involved a female who had used marijuana.

The average charge for IPV-related injuries at Thomason was \$12,247.31. The range was \$1,160.61-\$119,871.10. Among IPV cases, 40 percent were private health insurance, while 32 percent were self-paying and 28 percent utilized public health insurance. A little less than a third of all IPV cases were self-paying patients.

### Illegal Substance Abuse Related Trauma Cases

Females admitted to Thomason for traumatic injuries while under the influence of illicit drugs ranged in ages from 31-40 with the average age of 32. Forty percent were between 31-40, 28 percent were 18-24. The average ISS was 14.84 with others reporting scores from 1 to 38. These patients generally suffered from either a closed skull base fracture or intra cranial injury or pelvic fracture. A majority of trauma patients were from El Paso County (68%). Thirty-two percent of substance abuse cases were from out of state.

Among these cases, 60 percent occurred on motorways and 28 percent occurred in unspecified places, while the remaining 12 percent occurred at home or in a public build-

ing. The ethnic composition was (88%) Hispanic and (12%) White, Non-Hispanic. The most commonly reported type of trauma involved blunt trauma - 84 percent. The remaining were penetrative injuries (12%) followed by 6 percent for unknown cases.

Fifty-two percent of women admitted were found to be legally intoxicated. Thirty-eight percent of alcohol-related cases were found to have used cocaine (Chart 1). Additionally, thirty-two percent had used benzodiazepines. Slightly more than 72 percent had used only one drug while 28 percent had two or more illicit substances.

The average charge for a female who was admitted to Thomason Hospital for traumatic injuries while under the influence of illicit substances was \$35,499.99, with charges ranging from \$2,023 to \$182,649.33. A majority of trauma care charges were covered by private health insurance (36%) and public health insurance (26%) respectively. Only one percent of these cases was self-paying. Examining Table 7, the data details each of the subgroup's use of various substances - cocaine was the most commonly used with 32 percent. For the alcohol subgroup, the largest drug use group was cocaine. For IPV cases the largest drug use cases were cocaine and marijuana. Yet even among alcohol only cohorts who also tested positive for drugs—cocaine was the preferred substance.

### Alcohol-Related Trauma Cases

The majority of the population (68%), were

**Table 7: Type of Illegal Drugs Used by a Sample of Trauma Admissions at Thomason Hospital in El Paso, Texas, 2001**

*Drugs	IPV	Drugs	Alcohol
Number (N)	25	25	25
Cocaine	4%	32%	20%
Marijuana	4%	8%	4%
Benzodiazepines	0%	16%	4%
Opiates	0%	8%	12%
Barbituates	0%	4%	0%
Amphetamines	0%	4%	4%
Other	0%	0%	0%
Unknown**	40%	0%	16%
None	52%	0%	40%
Multiple Drugs*	0%	28%	0%

\*Multiple drugs comprised of Cocaine+THC, Cocaine+Opiates, Cocaine+THC+Opiates, Opiates+Benzo, Opiates+THC.

\*\*Not tested

Source: Thomason Hospital Trauma Registry

Hispanic with 28 percent being White non-Hispanics and other ethnic groups comprised of 4 percent. Their ages ranged from 21 to 52 years of age. Among alcohol-related trauma cases, the average age was 34. The ISS ranged from 1 to 19 with the mean ISS being 6.76. Only 16 percent were penetrative injuries. Nearly a quarter of cases (24%) had an ISS above 15. Most ISS were 14 or below. Eighty percent of cases were from El Paso. Sixteen percent came from New Mexico. Also, there was 1 case (4%) from Webb County.

Most alcohol-related trauma cases occurred on motorways (56%), followed by 20 percent occurring at home. The remainder occurred elsewhere. Eighty percent of the blunt injuries tested positive for alcohol. Among alcohol patients, 56 percent of the sample did not have any illicit drugs in their system. Moreover, 18 of these patients (72%) were found to be over the legal limit of intoxication — the lowest being .02 and the highest being .34 or four times over the legal limit. The presence of illicit drugs in this sub-group was evident upon subsequent toxicology examinations. Overall, 44 percent of this sub-group had used illicit substances. Among these cases, 28 percent tested positive for a drug. Cocaine was the most frequently used substance. It was followed by heroin, marijuana, Benzodiazepines and amphetamines. The rest of these women did not test positive for illicit drugs. Eighty percent had used at least two illicit substances. Moreover, 8 percent tested positive for having used three or more illicit drugs. Again, among alcohol patients 56 percent of the sample did test positive for any illicit drugs.

The average charges (Chart 2) for cases

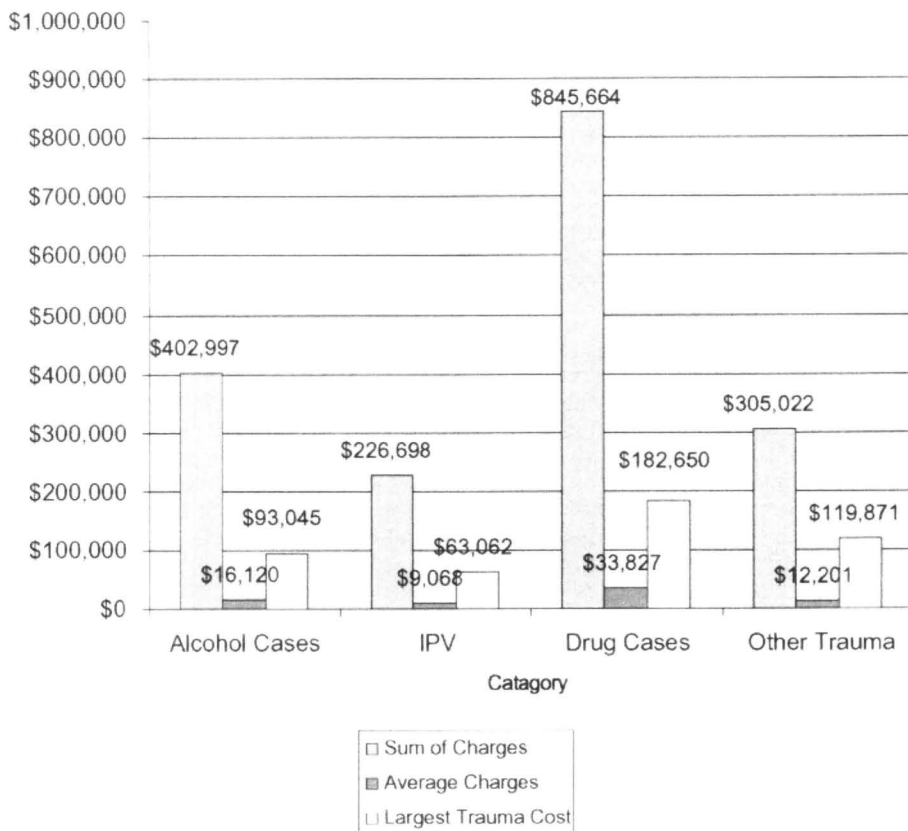
involving alcohol were \$18,096.21. The costs of treatment ranged from \$2,023.25 to \$93,044.62. Among alcohol-related trauma patients, there were three major cost modalities. Sixty percent of patients' costs ranged from \$1-\$10,000, 16 percent ranged from \$10,001-\$20,000, and 12 percent ranged from \$20,001-\$40,000. Among alcohol-related trauma cases, most patients had private (36%) or public insurance (39%). The remainder (25%) was self-paying patients.

#### Other Trauma-Related Cases

"Other" trauma (OT) is defined as any other trauma which entered the ED and did not have alcohol or illegal substances in their system at the time of admission. This also excluded any IPV cases. A majority of these individuals were Hispanic (88%), 12 percent were of White, non-Hispanic origins. Forty-eight percent of the sample were between the ages of 18-24 or 31-40 years of age. The other half of the cases were between the ages of 25-30 or 31-50. The average age for other trauma cases was 36 years of age. The youngest case was 18 and the oldest being 57 years of age. While 80 percent of this sub-group was from El Paso, 16 percent of all cases were from out of state. Only four percent were from Hidalgo County.

Fifty-two percent of these trauma injuries occurred on the motorways. Trauma injuries at home comprised only 16 percent. A majority of these injuries were blunt (92%) with only 8 percent being penetrative. The mean ISS was 6, although they ranged from 1 to 24. The crucial distinction when examining ISS is as follows: 1-14 considers the patient to be stable and 15 to 75 are critical. The

Chart 2: Thomason Hospital Trauma Patient Cost Indicator Data, 2001



focus on ISS is that they reflect the probability of survival. Twelve percent had an ISS above 15. Eighty-eight percent had an ISS between 1-9.

The average costs were \$9,067.91 with charges ranging from \$400 to \$63,061.72. Among OT-related cases, (40%) relied on private health insurance, 36 percent on public health insurance, the remainder was self-paying.

#### CONCLUSION

The current findings are tentative yet suggestive. There is a need for further social science research on IPV cases in border communities. Continuing and comparative studies need to be conducted. The criminal justice perspective needs to be augmented by public health and social service perspectives, as well. The main findings of this pa-

per are:

Trauma data suggest that Border hospitals' TR admissions can identify and provide substantive, reliable data about IPV & other family violence issues. Since the problem is extensive, it is important to compare IPV cases to other types of injuries and trauma in these communities. IPV cases seem to be distinct from these other types of trauma. Yet, the IPV case sample is too limited to speak about trends. For example, the patterns for drug abuse cases seem to be increasing and alcohol abuse cases are decreasing. Yet marked profile differences may be observed when one compares IPV cases to other trauma (OT), drug cases and alcohol cases. IPV cases seem to be younger than OT, alcohol cases and drug cases. IPV cases are more likely to reflect OT cases and alcohol cases are more likely

to reflect drug use case patterns. While IPV ISS are comparable to OT and alcohol case's, they are half of drug cases. In terms of costs of trauma services, IPV average case costs are slightly less than OT, alcohol and drug trauma cases. In fact, IPV cases seem to be almost half of these data. Alcohol cases cost a third of the drug cases.

Only a few IPV patients had used either drugs or alcohol. It is unclear if their partner's had used drugs or alcohol. These data are outside the scope of trauma registry data collection protocols.

Yet among drug and alcohol cases use of other drugs is common, nonetheless one finds distinct patterns. Moreover, Blood Alcohol Concentration (BAC) levels seem higher among drug cases, than among alcohol cases or IPV cases. Most injuries for IPV occur at home or other locations. Yet for drug and alcohol cases the most common sites are motorways and other specified and unspecified places.

In short, there is tremendous potential in using TRs for IPV and related family violence research. Thomason's TR data allows for measuring IPV, as well as drug and alcohol-related violence. Illicit substances and alcohol use are captured in some TRs. This allows for measuring the extent of alcohol and drug use in TR cases. While tentative, this TR data suggest IPV trauma cases are distinct from illicit drug-related trauma, alcohol-related trauma but also other trauma. As pilot data, these differences need to be further studied and examined. There are limitations to the TR, but as collected today, they still could be used to help identify, profile and serve as baseline data for prospective studies.

- In Texas, TRs can be linked statewide to assess substance abuse if data is collected on a continuous basis. While some RACs collect substance abuse data, many have yet to focus on IPV and family-related violence. These data are not currently being reported to state trauma registries. TR data can capture the cost of trauma care services, we strongly urge that TRs include IPV data. This would allow for establishing cost of trauma care services to IPV cases on a statewide basis.
- Some RAC regions collect substance abuse data, others do not.
- In this pilot study substance abuse related

IPV cases were lower than drug or alcohol categories. It is unclear if this is the case for other border communities or is the case for Hispanics throughout the state.

The data and approach presented herein needs to be compared to other data from other border hospitals. Border cities research may suggest which strategy is more likely to bear fruit and meet changing and future demands. Some effort needs to be spent on assessing and improving the quality of TR data as related to IPV, alcohol and drug abuse cases. TRs hold a major promise for ascertaining health consequences of IPV cases. We recognize the need not to oversell or over-extend Trauma Center programs, staff and capabilities. However, this is a key cornerstone institution that allows us to measure serious health consequences of IPV behavior.

#### **SUMMARY: THE NEED FOR A BORDER SUBSTANCE ABUSE IPV TR PROJECT**

Just as there is a clear need to develop, cultivate, and evaluate drug abuse monitoring systems in Border communities, there is also a need for the data that will be generated by those systems to include Family Violence and IPV incidence, vulnerability and consequences. While this administration, like past administrations' has expressed an interest in Border drug abuse issues, public health issues have been left wanting. The need for Border public health surveillance and monitoring systems can be partially met by taking advantage of Border TRs.

Thomason Hospital's TR has suggested useful social indicators of drug abuse patterns and trends. This also applies to IPV and related manifestations of family violence. Moreover, closer examination of these data also suggest that pilot studies need to be undertaken to enhance and expand the validity and reliability of IPV data. Efforts must be undertaken to improve IPV TR case identification and followup. Perpetrator data has been clearly established for ED prospective studies, but have not been developed for border TR-wide systems. There is a need to establish collaborative projects along the Border to collect and analyze trauma data related to substance abuse and violence. These data can be useful in:

- Developing area and regional surveillance

systems

- Establishing the need for and the range of services required for Border communities
- Demonstrating the ways drug problems impact Border communities
- Demonstrating the ways IPV and family violence impact Border communities
- Demonstrating the costs related to substance abuse and IPV problems
- Serving as a baseline for prevention and allowing for specialized studies of Border communities

Border Epidemiology Health Data Workgroups would benefit greatly by involving trauma registry programs and staffs in their efforts. While border-wide monitoring and surveillance projects have long been touted, Trauma Centers and TRs represent an improved operating vehicle to provide important monitoring and surveillance data. IPV baseline and trend data is lacking from the Criminal Justice System, Public Health System and social service agencies.

Most attention to violence in Border communities remains focused on drug-related, including narco-trafficking violence. In Border communities, public health concerns about IPV and related family violence issues have emerged as important state and federal public health policy and programming issues. To date, most programming has been limited to cursory outreach and educational campaigns. The seriousness of family violence in Border communities has yet to be adequately recognized by either the federal or state governments as a major public health initiative. Social Services and public health researchers have yet to conduct serious continuing and systematic IPV research as it concerns border communities and populations.

#### ENDNOTES

<sup>1</sup>Pollock, D. and P. McClain. 1989. Trauma registries. Current status and future prospects. *JAMA* 262 16: 2280-3. Hospital trauma registries are evolving rapidly as a result of a renewed focus on trauma care evaluation and recent advances in microcomputer technology. In theory, trauma registries can serve as the principal tool for the systematic audit of the quality of patient care provided by a hospital or a trauma system and as a potential source of part of the data needed for injury surveillance. In practice, however, there is a tendency to

underestimate the resources needed to initiate and maintain a registry. Herein, we describe the purposes, resource requirements, and limitations of trauma registries.

<sup>2</sup>The *International Classification of Diseases* (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of *mortality statistics*. This includes providing a format for reporting causes of death on the death certificate. The reported conditions are then translated into medical codes through use of the classification structure and the selection and modification rules contained in the applicable revision of the ICD, published by the World Health Organization. These coding rules improve the usefulness of mortality statistics by giving preference to certain categories, by consolidating conditions, and by systematically selecting a single cause of death from a reported sequence of conditions. The single selected cause for tabulation is called the underlying cause of death, and the other reported causes are the non-underlying causes of death. The combination of underlying and non-underlying causes is the multiple causes of death. The ICD has been revised periodically to incorporate changes in the medical field. To date, there have been 10 revisions of the ICD.

<sup>3</sup>The Injury Severity Score (ISS) takes values from 0 to 75. If an injury is assigned an AIS of 6 (unsurvivable injury), the ISS score is automatically assigned to 75. The ISS score is virtually the only anatomical scoring system in use and correlates linearly with mortality, morbidity, hospital stay and other measures of severity. Its weaknesses are that any error in AIS scoring increases the ISS error, many different injury patterns can yield the same ISS score and injuries to different body regions are not weighted. Also, as a full description of patient injuries is not known prior to full investigation & operation, the ISS (along with other anatomical scoring systems) is not useful as a triage tool. (CDC 2003)

<sup>4</sup>Pollock, D. and P. McClain. 1989. Trauma registries. Current status and future prospects. *JAMA* 262 16: 2280-3. As of August 31, 1996, Section of 157.129 of the state trauma registry rule established Texas hospital standard data set requirements, TR case inclusion, and what constituted major trauma.

<sup>5</sup>These hospitals are William Beaumont Army Medical Center (WBAMC), Providence, Sierra, Las Palmas, Culberson, Del Sol Medical Center, Southwestern General and Thomason Hospital.

<sup>6</sup>The Texas counties are Hudspeth, Culberson, Presidio, and El Paso. The New Mexico Counties are Hidalgo, Luna, Grant, Dona Ana, Sierra and Otero.



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