



TEXAS CONTAMINATED SHARPS INJURIES: 2005

Report

This report contains the aggregate contaminated sharps injury data submitted to Texas Department of State Health Services as required by Texas Health and Safety Code, Chapter 81, Subchapter H (HB2085), 76th Legislature.

Texas Bloodborne Pathogen regulations require governmental entity reporting of contaminated sharps injuries. This report summarizes contaminated sharps injuries reported by governmental entities in Texas during 2005: where the injuries occurred; when did the injury occur by time and date; information about the workers who sustained injuries; what was the original intended use of sharps device involved in the injury; how the injury occurred; type of sharps device in use at time of injury; worksite safety controls; and safety engineered sharps protection status of device involved in the injury. Comprehensive reports of contaminated sharps injuries in Texas are published at: [Contaminated Sharps Injury Reports](#)

Contaminated sharps injuries in Texas have ranged from 1622 injuries in 2001 to 1858 in 2005. Centers for Communicable Disease Control and Prevention (CDC) and other sources indicate that 50% or more of sharps injuries go unreported.^{1,2,3}

Where Sharps Injuries Occurred in Texas

High percentages of sharps injuries in Regions 3 and 6 reflect the higher populations and greater number of health care facilities in those Health Service Regions (table 1). [Texas Regional Map](#)

Table 1. Injuries by Health Service Regions

Region	Number	Percent
1	191	10.3%
2	109	5.9%
3	355	19.1%
4	40	2.2%
5	10	0.5%
6	579	31.2%
7	132	7.1%
8	180	9.7%
9	115	6.2%
10	93	5.0%
11	21	1.1%
Missing	33	1.8%
Total	1858	100.0%

Governmental entity hospitals, medical centers, and health centers continue to report the greatest number of injuries as shown in table 2.

Table 2. Injuries by Type of Governmental Entity

Facility Type	Number	Percent
Hospitals/Medical/Health Centers	1268	68.3%
Colleges/Universities	423	22.8%
City/County Services	66	3.6%
State Facilities	64	3.4%
Schools	16	0.9%
Long Term Care	3	0.2%
Home Health	1	0.1%
Missing	17	0.9%
Total	1858	100.0%

Review of location/facility type shows hospital report the greatest number of injuries (table 3).

Table 3. Site of Injury by Location/facility

Location/facility	Number	Percent
Hospital	1514	81.5%
Clinic	120	6.5%
Correctional	58	3.1%
School/College	31	1.7%
Laboratory	29	1.6%
EMS/Fire/Police	28	1.5%
Residential Facility	16	0.9%
Dental Facility	13	0.7%
Outpatient Clinic	13	0.7%
Home Health	12	0.6%
Other	12	0.6%
Morgue	10	0.5%
Blood Bank	2	0.1%
Total	1858	100.0%

In 2001, the highest number of injuries was in the patient/resident's room. In contrast, reports for years 2003, 2004, and 2005 list the surgery/operating room setting for the highest number of injuries.

Table 4. Area Within Facility In Which Injury Occurred

Work Area	Number	Percent
Surgery/Operating Room	434	23.4%
Patient/Resident Room	376	20.2%
Emergency Department	181	9.7%
Procedure Room	143	7.7%
Laboratory	119	6.4%
Medical/Outpatient Clinic	110	5.9%
Critical Care Unit	87	4.7%
L & D/Gyn Unit	75	4.0%
Other/Unknown/Missing	53	2.9%
Dental Clinic	27	1.5%
Floor, not Patient Room	23	1.2%
Infirmery	20	1.1%
Service/Utility Area	20	1.1%
Medical/Surgical Unit	19	1.0%
Radiology Department	19	1.0%
Autopsy/Pathology	18	1.0%
Nursery/Pediatrics	17	0.9%
Pre-op or PACU	15	0.8%
Central Supply/Sterile Prep	15	0.8%
Ambulance	14	0.8%
Jail Unit	12	0.6%
Home	11	0.6%
Blood Bank/Dialysis	10	0.5%
Field (non EMS)	7	0.4%
Rescue Setting	6	0.3%
School	6	0.3%
Restroom	5	0.3%
Psych Unit	5	0.3%
Cath Lab	4	0.2%
Rehab Unit	3	0.2%
Medication Room	2	0.1%
Research	2	0.1%
Total	1858	100.0%

When Injuries Occurred

There continues to be no real seasonal variation in the reporting of sharps injuries (figure 1) and the time when more injuries occur are as expected during the daytime (figure 2). The reports of numbers per month and time of day have been consistent over 5 years of reporting in Texas.

Figure 1. Sharps Injuries Per Month 2005

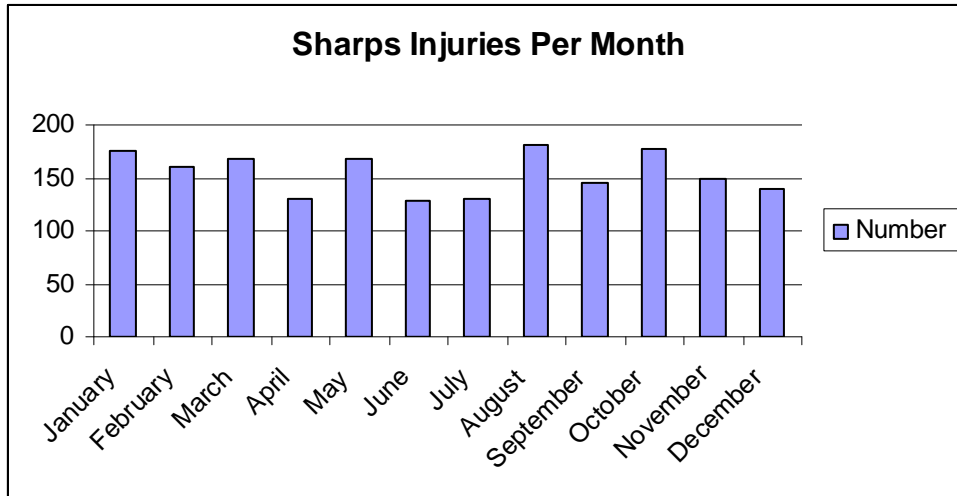
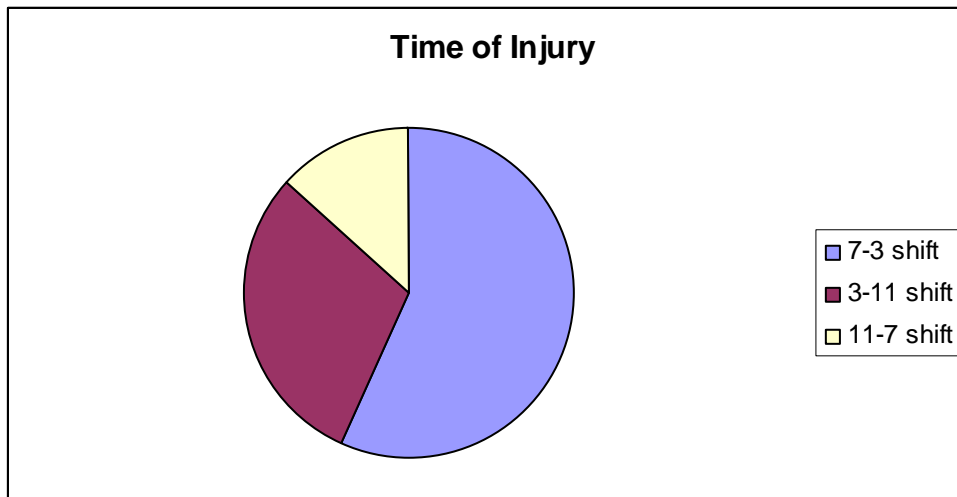


Figure 2. Time of Sharps Injuries



Since the critical times for injuries seems to be predominately during and after the use of the sharp (table 5), healthcare workers focus on sharp handling and the avoidance of environmental distractions could potentially help in the prevention of injuries.

Table 5. Sharps Injuries by Phase of Procedure

When	Number	Percent
After	1093	58.8%
During	638	34.3%
Unknown	106	5.7%
Before	21	1.1%
Total	1858	100.0%

Texas Health Care Worker Information

Registered nurses and physicians have reported the highest number of injuries over four years of Texas reporting; however in 2005 the number of injuries reported by interns/residents surpassed the number of physician injuries (table 7). A study conducted by a network of facilities in 2003, reported an overall annual percutaneous injury (PI) rate of 23.87 per 100 occupied beds, for teaching hospitals in the network, the PI rate was 26.8 per 100 occupied beds, and the average PI for non-teaching hospitals in the network was 18.7 per occupied per 100 occupied beds.⁴ Researchers also have found that interns working during the day after having worked also during the previous night sustained 61% more needlesticks and other sharp object injuries.⁵ In 2003, the Accreditation Council for Graduate Medical Education introduced a maximum 30 consecutive work hours (known as the 30-hour rule) limit and a prohibition from working more than 80 hours per week (averaged over 4 weeks).⁶

Table 6. Sharps Injuries By Job Classification

Job Classification	Number	Percent
Registered Nurse	437	23.5%
Intern/Resident	247	13.3%
MD/DO/Fellow	227	12.2%
OR/Surgical Technician	157	8.4%
Lab Tech/Phlebotomist//IV Team	148	8.0%
Licensed Vocational Nurse	144	7.8%
Students	91	4.9%
Aide (CNA, HHA, Orderly)	75	4.0%
Housekeeper/Laundry	68	3.7%
First Responders	41	2.2%
Other/Unknown	35	1.9%
Dentist/Hygienist/Assistant	32	1.7%
Other Techs	31	1.7%
School Personnel/Research	25	1.3%
Respiratory Therapist/Technician	24	1.3%
Physician Assistant	21	1.1%
Central Supply	15	0.8%
CRNA/NP/Nurse Midwife	13	0.4%
Forensic	8	0.4%
Radiology	7	0.3%
Physical Therapist	5	0.2%
Maintenance/Safety Security	4	0.2%
Food Service	3	0.2%
Total	1858	100.0%

Table 7 depicts injuries by students with interns/residents sustaining more than 70% of the student injuries and medical students reporting the second greatest number of injuries in 2005.

Table 7. Students/Interns/Resident Injuries

Type of Student	Number	Percent
Interns/Residents	247	73.1%
Medical Students	52	15.4%
Other Students	18	5.3%
Nursing	12	3.6%
Dental	9	2.7%
Total	338	100.0%

Female healthcare workers reported the greatest number of injuries (table 8). Workers 25 through 34 years of age consistently report the highest number of injuries (table 9). Injuries to the hand occurred in 90% of reported injuries in 2005 (table 10).

Table 8. Gender of Injured Worker

Sex of Worker	Number	Percent
Female	1251	67.3%
Male	570	30.7%
Unknown/Missing	37	2.0%
Total	1858	100.0%

Table 9. Age Distribution of Injured Workers

Age	Number	Percent
Less Than 18 years	6	0.3%
18 thru 24	176	9.5%
25 thru 34	712	38.3%
35 thru 44	410	22.1%
45 thru 54	283	15.2%
55 thru 64	102	5.5%
65 and older	8	0.4%
Missing	161	8.7%
Total	1858	100.0%

Table 10. Area of Body Injured

Injured Area	Number	Percent
Hand	1745	93.9%
Arm	44	2.4%
Leg/foot	37	2.0%
Unknown	22	1.2%
Face/Head/Neck	5	0.3%
Torso	5	0.3%
Total	1858	100.0%

How Sharps Injuries Occurred

Table 11 displayed how the sharps injuries occurred. As shown, between steps of a procedure and suturing were the most frequent processes involved in injuries. Devices found in an inappropriate place and during the use of the sharps container also continue to be involved in sharps injuries.

Table 11. Procedure or Process Involved in Injuries

How exposed	Number	Percent
Between Steps Of A Multi-step Procedure	273	14.7%
Suturing	243	13.1%
Other/Unknown	175	9.4%
Found In An Inappropriate Place	154	8.3%
Use Of Sharps Container	146	7.9%
Patient Moved During The Procedure	146	7.9%
Unsafe Practice	136	7.3%
Disassembling Device Or Equipment	86	4.6%
Activating Safety Device	72	3.9%
Interaction With Another Person	71	3.8%
Laboratory Procedure/Process	70	3.8%
Recapping	60	3.2%
Use Of IV/Central Line	57	3.1%
Surgery	42	2.3%
Blade Scalpel Use	39	2.1%
Preparation For Reuse Of Instrument	34	1.8%
Device Malfunctioned	18	1.0%
Dental Process	15	0.8%
Procedure/Environment	13	0.7%
Stuck Self	8	0.4%
Total	1858	100.0%

Sharps Device Information

Disposable syringes accounted for 30% of the injuries in 2005, however if combined with insulin syringes and tuberculin syringes they then sum to 37.1 %. Suture needle injuries comprised 21% of injuries but when combined with surgical instruments and scalpels they total to 35.8% of injuries related to surgery. Winged steel needles and IV catheter needles were each involved in 8% of injuries, however when they are combined with blood tube holder/needle, lancets, blood gas syringes, and Huber needles they sum to 21.1% of injuries associated with collection of blood sample/other central lines processes.

Table 12. Type of Sharp Involved in Injuries

Type of Sharp	Number	Percent
Disposable Syringe/Needle	567	30.5%
Suture Needle	392	21.1%
Winged Steel Needle	144	7.8%
IV Catheter/Needles	144	7.8%
Other Surgical Instruments	138	7.4%
Scalpel	136	7.3%
Insulin Syringe	92	5.0%
Blood Tube Holder/Needle	58	3.1%
Other/Unknown	46	2.5%
Tuberculin Syringe	30	1.6%
Blood Gas Syringe	29	1.6%
Lancet	26	1.4%
Dental Instruments/Other	22	1.2%
Biopsy/Other Needles	16	0.9%
Test Tubes/Other Glass	10	0.5%
Huber needle	8	0.4%
Total	1858	100.0%

Original Use of Sharp

Injections and suturing (tables 13 and 14) display the highest percentages of sharps injuries with collection of a venous blood sample as the third highest percentage.

Table 13. Use of Sharp At Time of Injury

Original Use	Number	Percent
Injection, SC/ID/IM	438	23.6%
Draw Venous Sample	244	13.1%
Suture Skin	210	11.3%
Start IV or Set Up Heparin Lock	179	9.6%
Cutting	171	9.2%
Suture Deep	155	8.3%
Unknown/Not Applicable	91	4.9%
Obtain Body Fluid/Tissue Sample	81	4.4%
Surgery/Surgical Procedure	55	3.0%
Draw Arterial Blood Sample	52	2.8%
Dental	37	2.0%
Contain Specimen	30	1.6%
Finger Stick/Heel Stick	29	1.6%
Other Suturing	29	1.6%
Wiring/Stapling	19	1.0%
Place/Remove Central Line	17	0.9%
Shaving	7	0.4%
Tattoo	5	0.3%
Dialysis	4	0.2%
Fetal Monitor	3	0.2%
Autopsy	2	0.1%
Total	1858	100.0%

Table 14 Suturing Injuries

Original Use	Number	Percent
Suture Skin	210	11.3%
Suture Deep	155	8.3%
Other Suturing	29	1.6%
Total	394	21.2%

Safety Engineered Sharps Use

Both Texas bloodborne pathogen regulations and OSHA standards require the use of safety engineered sharps devices in the healthcare setting. As may be noted in table 15, fifty percent of the sharps injuries occurred with devices that were not safety engineered. However, the 31% of injuries that were reported with safety engineered sharps is also of concern, especially the nine percent in which the safety feature was fully or partially activated (table 16). Does the occurrence of sharps injuries with safety engineered devices denote both an inadequate design of the safety engineered sharps device and inadequate education of staff prior to use of the device, or are there are reasons such as worker distraction during usage, etc? Facility tracking and investigation of the root causes of sharps injuries may provide a clearer understanding of how the injury occurred and promote prevention of injuries. Improvements in the design of sharps devices and staff education in device usage are safety steps for employee safety.

Table 15. Was Device Safety Engineered?

Safety Sharp	Number	Percent
Yes	560	30.3%
No	925	50.1%
Other/Unknown	373	20.2%
Total	1858	100.5%

Table 16. Was Safety Feature Activated?

Activated	Number	Percent
Unknown	1254	67.4%
Yes, Fully	69	3.7%
Yes, Partially	97	5.2%
No	438	23.5%
Total	1858	100.0%

Worksite Safety Controls

Worksite safety controls continue to reflect 88 to 95% compliance in glove use, hepatitis B vaccine series, required annual bloodborne pathogen education, and availability of the sharps container.

Table 17. Worksite Safety Controls_(n=1858)

Compliance With Worksite Safety Controls At Time Of Injury	Glove Use At Time Of Injury		Hepatitis B Vaccine Series Completed		Received Bloodborne Pathogen Education In Past 12 Months		Availability Of Sharps Container	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Yes	1626	88.5	1687	90.8	1723	92.7	1758	94.6
No	208	11.1	101	5.4	56	3.0	42	2.2
Unknown	24	1.2	70	3.7	79	4.2	58	3.1

Recommendations:

- 1. Continue to screen, test and use appropriate safety devices.**
- 2. Track injuries that occur by type of device and procedure in an effort to determine root causes of injury.**
- 3. Provide staff education and follow up in the use of new safety devices at the worksite.**
- 4. Monitor efficacy of new devices.**
- 5. Institute and maintain a culture of safety supported from administration throughout facility with all staff.**

References:

1. CDC Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program, *Overview: Risks and Prevention of Sharps Injuries in Healthcare Person*. Retrieved June 7, 2004 from http://www.cdc.gov/sharpssafety/wk_overview.html
2. Elmiyeh, B. Whitaker, S. James, M. J. Chahal, C. A. Galea, A. Alshafi, K. Needle-stick in the National Health Service: a culture of silence. *Journal of the Royal Society of Medicine*: July 2004: volume 97.
3. Patterson, J. M. Novak, C. B. Mackinnon, S. E. Ellis, R. A. Needlestick injuries among medical students. *AJIC*: June 2003 31 (4) 226-230.
4. Perry, J. Parker, G. Jagger, J. EPINET Report: 2003 Percutaneous Injury Rates. *Advances in Exposure Prevention*-Vol. 7, No. 4, 2005.
5. Ayas, N.T. Barger, L.K. Cade, B.E. Extended duration work and the risk of self-reported percutaneous injuries in interns. U.S. Department of Health and Human Services Agency for Healthcare Research and Quality. *Research Activities* No. 313, September 2006: 2.
6. National studies examine excess work hours among medical interns and the risk for needlestick injuries. U.S. Department of Health and Human Services Agency

for Healthcare Research and Quality *Research Activities* No. 313, September
2006: 1-2.

Questions or comments may be directed to:
Kathryn Gardner DrPH, RNC, CIC, CPHQ
Texas Department of State Health Services
512-458-7111 Ext. 3773
kathryn.gardner@dshs.state.tx.us