



TEXAS CONTAMINATED SHARPS INJURIES: 2003

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 (HB 2085), 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 the year 2003: 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 in device involved in the injury.

Location of Sharps Injuries

Public Health Regions 3 and 6 continue to report the higher numbers of injuries reflecting the large urban populations in those regions (table 1).

Table 1. Sharps Injuries by Public Health Region (*n*=1779)

Sharps Injuries by Public Health

Region	Number	Percent
1	200	11%
2	87	5%
3	390	22%
4	52	3%
5	2	0%
6	576	32%
7	131	7%
8	158	9%
9	122	7%
10	44	2%
11	17	1%
Total	1779	100%

A Study of Percutaneous Injury Patterns in a healthcare system of hospitals compares sharps injuries between rural and urban and among sizes of hospitals. A large midwestern healthcare system consisting of 9 hospitals, both rural and urban, conducted a study of differences in patterns of percutaneous injuries in different hospitals between 1997 and 2001. Average annual injury rates

were determined to be higher at urban hospitals (22.5 vs 9.5 Pis/100 beds; P = .0001). Small rural hospitals had more injuries than small urban hospitals (14.87 vs 8.02 Pis/100 beds; P = .0143). The prevalence of source patients infected with HIV and Hepatitis C was higher at large hospitals. Conclusions of the study were that significant differences in injury rates and patterns among different types of hospitals could be a base for intervention strategies.¹

National Surveillance Data Of Percutaneous Injuries

A study of the 57 healthcare workers with occupationally acquired HIV infection acquired over the past twenty years, showed most of healthcare workers (88%) had percutaneous injuries.² Conclusions of the study listed prevention strategies that included: the avoidance of blood exposures, education about the benefits and limitations of Post Exposure Prophylaxis (PEP), and technologic advances (such as safety engineered devices) to enhance safety in the health care setting.² Three out of 1000 (.3%) health care workers stuck with a needle contaminated with HIV will become infected with HIV, in comparison, a percutaneous injury with a Hepatitis C contaminated device, there is a 1.8% incidence of infection.³ Hepatitis C is the most frequent infection resulting from sharps injuries.⁶ There is no post exposure prophylaxis for Hepatitis C and 75-80% of persons infected will develop active liver disease, cirrhosis 10-20% and 1-5% of cirrhosis cases will develop liver cancer over a period of years.³ Hepatitis B is preventable due to the available vaccine. Regulations requiring vaccination of health care workers, has resulted in the reduction of cases from 17,000 to 400 annually⁶. The transmission rate of Hepatitis B is 2 to 40%⁶.

Texas Percutaneous Injuries in 2003

When injuries are reviewed by type of governmental entity (table 2), hospitals accounted for 73% of the injuries and universities 20%.

Table 2. Injuries By Type of Governmental Entity (n=1779)

Type of Facility Reporting	Number	Percent
Hospital/Medical/Health Centers	1291	73%
Colleges/Universities	355	20%
City/County Services	67	4%
State Facilities	50	3%
Schools	11	1%
Unknown	1	0%
Federal Facilities	1	0%
Total	1776	100%

Missing: 3

In an extended breakdown of the injuries by type of facility (table 3), hospitals report 81% of the total injuries. Likewise, in the previous years of 2001 and 2002, hospital injuries ranged from 78 to 80% of total injuries.

Table 3. Injuries by Type of Facility (*n*=1779)

Injuries by Facility Type	Number	Percent
Hospital	1437	81%
Clinic	154	9%
EMS/Fire/Police	34	2%
School	28	1.6%
Residential Facility	25	1.4%
Correctional Facility	21	1.2%
Laboratory (Freestanding)	15	0.8%
Outpatient Treatment	13	0.7%
Other	12	0.7%
Morgue/Medical Examiner	12	0.7%
Home Health	12	0.7%
Dental Facility	9	0.5%
Bloodbank/Center/Mobile	1	0.1%
Total	1773	100%

Missing: 6

As shown in table 4, the highest number of sharps injuries in 2003 occurred in the operating room. In 2001 and 2002, the highest numbers of injuries were reported in the patient's room.

Table 4. Sharps Injuries by Work Area (*n*=1779)

Sharps Injuries by Work Area	Number	Percent
Operating Room	433	25%
Patient/Resident Room	373	21%
Procedure Room	174	10%
Emergency Dept	167	9%
Laboratory	99	6%
Labor & Delivery	84	5%
Critical Care	80	5%
Medical/Outpatient Clinic	81	5%
Floor, Not Patient Room	41	2%
Other	36	2%
Service/Utility Area	33	2%
Rescue Setting (Non ER)	27	2%
Radiology Department	25	1%
Autopsy/Pathology	22	1%
Pre-Op Or PACU	16	1%
Home	13	1%
Infirmery	12	1%
School	11	1%
Dialysis Room/Center	9	1%
Dental Clinic	8	0%
Seclusion Room	5	0%
Jail Unit	5	0%
Blood Bank/Center/Mobile	4	0%
Total	1758	100%

Missing: 21

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When Sharps Injuries Occurred

As may be noted in Figures 1, sharps injuries do not appear to be related to season. Figure 2 reflects the greater number of employees and procedures performed on the day shift. Fifty-nine percent of the injuries occurred after a procedure as is seen in table 5.

Figure 1. Sharps Injuries by Month during 2003

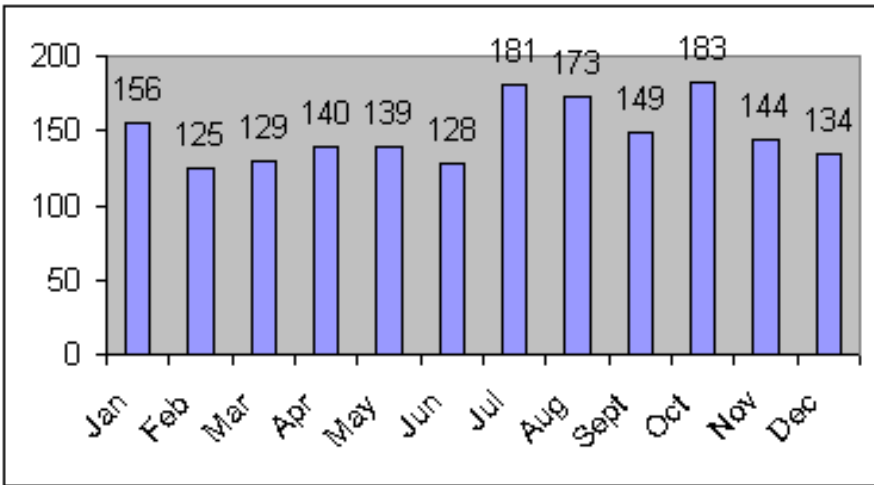


Figure 2. Sharps Injuries by Time of Injury

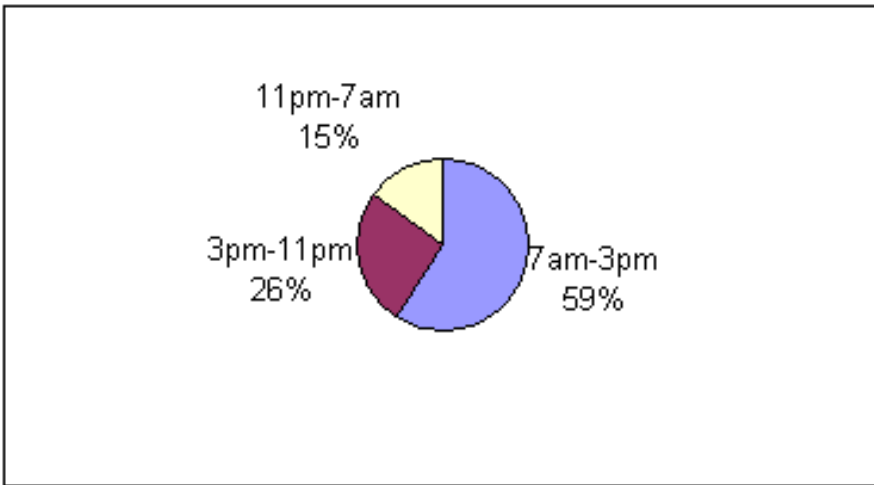


Table 5. Sharps Injuries by Phase of Procedure (n=1779)

When Injury Occurred	Number	Percent
Before Procedure	13	.07%
During Procedure	711	40%
After Procedure	1037	59%
Total	1761	100%

Missing: 18

Texas Health Care Worker Information

Physicians sustained the highest percentage of sharps injuries in 2003 (table 6); this is a change from both 2001 and 2002, in which Registered Nurses had the highest number of injuries (table 7).

Females continue to report the greatest number of injuries (table 8). Table 9 shows that health care

workers 25 thru 34 years of age sustained the greatest number of injuries. Ninety five percent of the injuries were sustained to the hand (table 10).

Table 6. Sharps Injuries By Job Classification (*n=1779*)

Sharps Injuries by Job Classification	Number	Percent
MD/DO	481	27%
RN	384	22%
Laboratory	160	9%
LVN	129	7%
Surgery Assistant/Or Tech	124	7%
Student	81	5%
Aide	73	4%
Housekeeper/Laundry	65	4%
First Responder	42	2%
Other Techs	35	2%
Dental	27	2%
Radiology	22	1.2%
Other	22	1.2%
CRNA/NP	19	1.1%
Respiratory Therapist	17	1.0%
Physician Assistant	15	0.8%
Intern / Resident	13	0.7%
Central Supply	10	0.6%
School / College	9	0.5%
Correctional	8	0.5%
Research	8	0.5%
Unknown	6	0.3%
Maintenance Services	4	0.2%
Pharmacist	4	0.2%
Physical Therapy	3	0.2%
Clerical/Administrative	3	0.2%
Forensic	2	0.1%
Dietary	1	0.1%
Counselor/Social Worker	1	0.1%
Total	1768	100%

Missing: 11

Table 7. Percent of Injuries Per Year by Selected Job Classifications

Job	2001	2002	2003
MD/DO	22%	22%	27%
Registered Nurses	26%	26%	22%

Table 8. Gender of Injured Worker (*n=1779*)

Sex of Worker	Number	Percent
Female	1100	66%
Male	571	34%
Unknown	4	0%
Total	1675	100%

Missing: 104

Table 9. Age Distribution of Injured Workers (*n=1779*)

Age Distribution Categories	Number	Percent
18 thru 24	182	10%
25 thru 34	659	40%
35 thru 44	402	24%
45 thru 54	278	17%
55 thru 64	122	7%
65 thru 81	19	1%
Total	1662	100%

Missing: 117

Table 10. Area of Body Injured (*n=1779*)

Body Area	Number	Percent
Hand	1691	95%
Leg/Foot	38	2%
Arm	34	2%
Torso	4	0%
Face/Head/Neck	4	0%
Unknown	3	0%
Total	1774	100%

Missing: 5

A Needlestick Injuries Survey Among Medical Students in a Missouri university school of Medicine revealed 30% of the third and fourth year students had at least one needlestick injury. Of the total 59 injuries incurred, 24 were not reported.⁴ Most of the needlestick injuries occurred in the operating room during suturing and were most often self-inflicted.⁴

Texas Sharps Injuries And How They Occurred

Suture needles accounts for 21% of injuries in 2003 (table 11), which is an increase from 18% in 2001 and 2002. In the condensed version of table 12, suturing (skin and deep) is 22% of injuries while collection of a blood sample (venous and arterial) and injections (intramuscular, intradermal, and subcutaneous) are both 18% of injuries. In table 13, suturing is the procedure attributed to the highest percentage of injuries.

Table 11. Type of Sharp Involved in Injury (*n*=1779)

Type of Sharp	Number	Percent
Suture Needle	379	21%
Needle Factory - Attached To Syringe	226	13%
Other Syringe With Needle	198	11%
Winged Steel Needle	175	10%
Other Surgical Instrument/Nonglass Sharp	123	7%
Other Nonsuture Needle	118	7%
Scalpel	114	6%
Iv Catheter, Loose	72	4%
Insulin Syringe With Needle	71	4%
Vacuum Tube Collection	58	3%
Lancet	38	2%
Tuberculin Syringe With Needle	37	2%
Syringe, Other	25	1%
Needle Connected To IV Line	24	1.3%
Blood Gas Syringe	19	1.1%
Other Glass	19	1.1%
Unknown	18	1.0%
Wire	18	1.0%
Prefilled Cartridge Syringe	14	0.8%
Blood Tube	14	0.8%
Other	12	0.7%
Trocar	4	0.2%
Staples	2	0.1%
Other Tattooing	1	0.1%
Total	1779	100%

Table 12. Use of Sharp Involved In Injury (*n*=1779)

Original Intended Use	Number	Percent
Draw Venous Sample	281	16%
Suturing, Skin	227	13%
Injection, SC/ID	216	12%
Suturing, Deep	155	9%
Unknown	147	8%
Injection, IM	104	6%
Start Iv Or Set Up Heparin Lock	97	5%
Cutting (Surgery)	94	5%
Obtain Body Fluid/Tissue Sample	69	4%
Injection/Aspiration IV	61	3%
Finger/Heel Stick	54	3%
Surgery/Surgical Procedure	53	3%
Other	46	3%
Draw Arterial Sample	40	2%
Contain Specimen/Pharmaceutical	32	2%
Other Cutting	18	1%
Heparin Or Saline Flush	17	1%
Wiring	17	1%
Drilling	12	0.7%
Dental Procedure	12	0.7%
Electrocautery	7	0.4%
Other Injection	6	0.3%
Tattooing	5	0.3%
Dialysis	1	0.1%
Total	1771	100%

Missing: 8

Condensed version of table 12

Procedure	Number	Percent
Suturing Skin and Deep	381	22%
Collect Venous and Arterial Blood Samples	321	18%
Injections-IM, SC, ID	320	18%

Table 13. Procedure or Process In Use At Time of Injury (*n*=1779)

How Injury Occurred	Number	Percent
Suturing	313	18%
Other	218	12%
Use Of Sharps Container	203	12%
Found In An Inappropriate Place	190	11%
Patient Moved During Procedure	157	9%
Procedure/Environment	109	6%
While Disassembling	107	6%
While Recapping	85	4.9%
Unknown	74	4.2%
Interaction With Another Employee/Patient	62	3.5%
Laboratory Procedure/Process	57	3.3%
Activating Safety Device	52	3.0%
While Carrying/Handling Sharp	33	1.9%
Use Of IV/Central Line	28	1.6%
Cleaning Instruments/Equipment	27	1.5%
Passing Instruments	11	0.6%
Unsafe Practice	8	0.5%
Blade/Scalpel Use	7	0.4%
Surgery	5	0.3%
Device Malfunctioned	5	0.3%
Total	1751	100%

Missing: 28

Worksite Safety Controls

An 89% compliance with glove use, hepatitis B vaccine series, and bloodborne pathogen education annually is depicted in table 14. The sharps container was available in 92% of the injuries.

Table 14. Compliance with Worksite Safety Controls (*n*=1779)

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	1578	89%	1586	89%	1583	89%	1637	92%
No	192	11%	176	10%	177	10%	114	6%
Unknown	9	1%	17	1%	15	1%	15	1%
Not Applicable							11	1%

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Engineered Sharps Injury Protection (ESIP)

Tables 15 and 16 reflect the usage of engineered sharps injury protection among injured workers during 2003. Figure 3 shows how health care providers among governmental entities in Texas have increased engineered sharp injury protection over three years. Injuries do occur with devices that are considered safety engineered, thus a work site quality improvement program with monitoring of work practice controls, process at time of injury, staff competency in procedure, and efficacy of specific devices are needed for injury prevention.

Table 15. Did the Device Have Engineered Sharps Injury Protection?

(*n*=1779)

Engineered sharps injury protection	Number	Percent
No	940	60%
Yes	415	27%
Unknown	203	13%

Missing: 221

Figure 3. Safety Sharps Use Over 3 Years

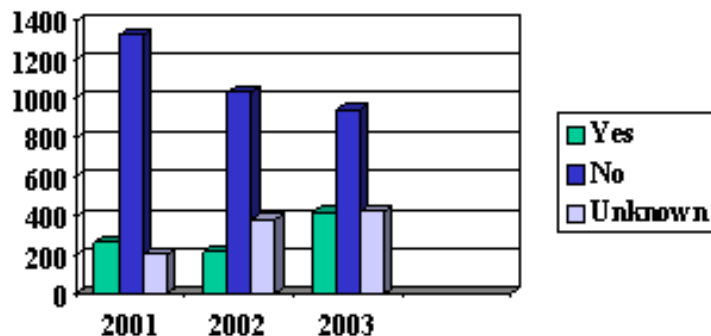


Table 16. Job Classifications of Injured Employees That Occurred With Engineered Sharps Injury Protection Devices

Job Classification	Number	Percent
Registered Nurses	146	8.2%
Laboratory	90	5%
LVN	44	2.5%
MD/DO	29	1.6%
Aide	25	1.4%
Respiratory Therapist	14	.8%
First Responder	13	.7%
Surgery Assistant/OR Tech	11	.6%
Other Techs	10	.6%
Student	9	.5%
Other	7	.7%
Radiology	4	.2%
CRNA/NP	3	.2%
Housekeeping/Laundry	3	.2%
Dental	2	.1%
Physician Assistant	2	.1%
Physical Therapy	2	.1%
Central Supply	1	.1%
Total	415	100%

National Hospital Survey of ESIP

A random sample telephone survey conducted among 494 hospitals November 1999 through February 2000 revealed 83% adoption of ESIP although adoption was inconsistent across various types of devices. Predictors for adoption included a perception that the cost of ESIPs would not be a problem and state legislative activity on the needlestick issue.⁵

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Cost of Sharp Injuries according to the American Hospital Association, one case of serious infection by bloodborne pathogens can cost up to **\$1 million** or more for testing follow-up, lost time and disability costs⁵. A high risk exposure follow-up is almost **\$3,000** per injury, safe needles cost only **28 cents more** than traditional devices.⁶ Additionally, hospitals that do not take the

Needlestick Prevention And Safety Act seriously could face big fines with a maximum penalty of **\$70,000** with possible added fines for deficiencies in the exposure control plan and fill status of the sharps disposal container.⁷

Healthcare Worker Role In Preventing Sharps Injuries

Hospitals can provide safety devices to minimize needlestick injuries, but the rest is up to the employee.⁷ The best way for healthcare workers to protect themselves is learn which devices are higher risk, which devices will reduce risk, and what to do in processes that will always have risks.⁷

Four Year Surveillance from the Northern France Network shows a 30% reduction in needlestick injury (NSIs) incidence rates.⁸ The decrease in bloodborne pathogen exposures is attributed to training in prevention and procedures, access to personal safety equipment, safety containers, safety engineered devices, and focusing health care workers attention through access to post exposure prophylaxis.⁸

Conclusions:

Physicians surpassed nurses in sharps injuries among Texas governmental entities in 2003. The use of engineered sharps injury protection is continuing to increase. Facility screening and selection of better designed safety devices combined with tracking sharps injuries, analyzing injury root causes, and thereafter developing and implementing prevention strategies are recommended.

References/Resources

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