TEXAS CONTAMINATED SHARPS INJURIES: 2007
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 2007: where the injuries occurred; when the injury occur by time and date; information about the workers who sustained injuries; 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.
Aggregate reports of contaminated sharps injuries in Texas may be accessed at: Texas Contaminated Sharps Injuries Reports.

Where Injuries Occurred
Contaminated sharps injuries are reported in by Public Health Service Regions: Texas Public Health Service Regions (see map).
The greatest number of injuries was reported in Region 6 (figure 1).

Figure 1. Contaminated Sharps Injuries by Health Service Region 2007

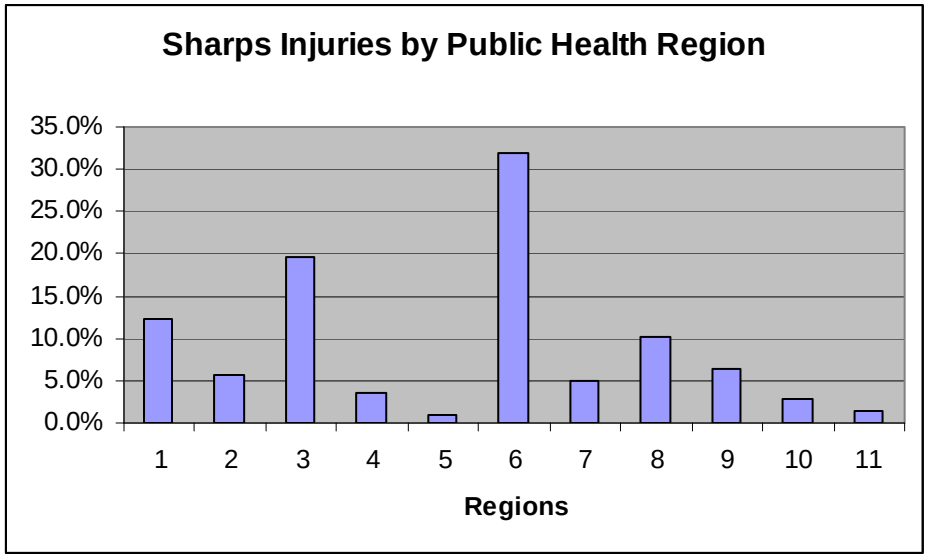


Table 1 reflects the diverse types of governmental entities reporting sharps injuries, table 2 further defines the location within governmental entities, and table 3 lists specific work sites of injuries.

Table 1. Injuries by Entity Type (n=1454)

Governmental Entity	Number	Percent
Hospitals/Medical/Health Centers	808	55.6%
Colleges/Universities	452	31.1%
City/County Services	122	8.4%
State Facilities	43	3.0%
Schools	13	0.9%
Other	9	0.6%
Long Term Care	4	0.3%
Home Health	2	0.1%
Federal	1	0.1%
Total	1454	100.0%

Table 2. Injuries by Type of Facility (n=1454)

Location/Facility	Number	Percent
Hospital	1170	80.5%
Clinic	90	6.2%
Correctional Facility	59	4.1%
EMS/Fire/Police	34	2.3%
School/College	32	2.2%
Dental facility	25	1.7%
Home Health	13	0.9%
Other/Unknown	8	0.6%
Residential Facility	7	0.5%
Long Term Care	4	0.3%
Laboratory	3	0.2%
Medical Examiner Office/Morgue	3	0.2%
Outpatient Clinic	3	0.2%
Hospice	2	0.1%
Blood Bank	1	0.1%
Total	1454	100.0%

As may be noted in table 3, the surgery/operating room and the patient's room are the sites of the most injuries with the emergency department reporting the third highest number.

Table 3. Sharps Injuries by Work Area (n=1454)

Work Area	Number	Percent
Surgery/Operating Room	432	29.7%
Patient/Resident Room	240	16.5%
Emergency Department	134	9.2%
Medical/Outpatient Clinic	81	5.6%
Laboratory	71	4.9%
Critical Care Unit	64	4.4%
Dental Clinic	53	3.6%
L & D/Gynecology	52	3.6%
Procedure/Med Room	46	3.2%
Radiology Department	37	2.5%
Medical/Surgical Unit	32	2.2%
Other/Unknown	33	2.3%
Infirmary/School Clinic	27	1.9%
Ambulance	19	1.3%
Nursery	18	1.2%
Pre-op or PACU	14	1.0%
Home	13	0.9%
Autopsy/Pathology	13	0.9%
Floor (Not Patient Room)	12	0.8%
Field (non EMS)	11	0.8%
Service/Utility Area (Laundry)	9	0.6%
Jail Unit	9	0.6%
Dialysis Room/Center	7	0.5%
Class Room	6	0.4%
Pediatrics	5	0.3%
Telemetry	5	0.3%
Rescue Setting (non ER)	4	0.3%
Central Supply/Sterile Prep	4	0.3%
Blood Bank Center/Mobile	3	0.2%
Total	1454	100.0%

When Injuries Occurred

There continues to be neither seasonal variation (figure 2) nor a change in the time of day (figure 3) when sharps occur from previous years of Texas reporting.

Figure 2. Injuries per Month

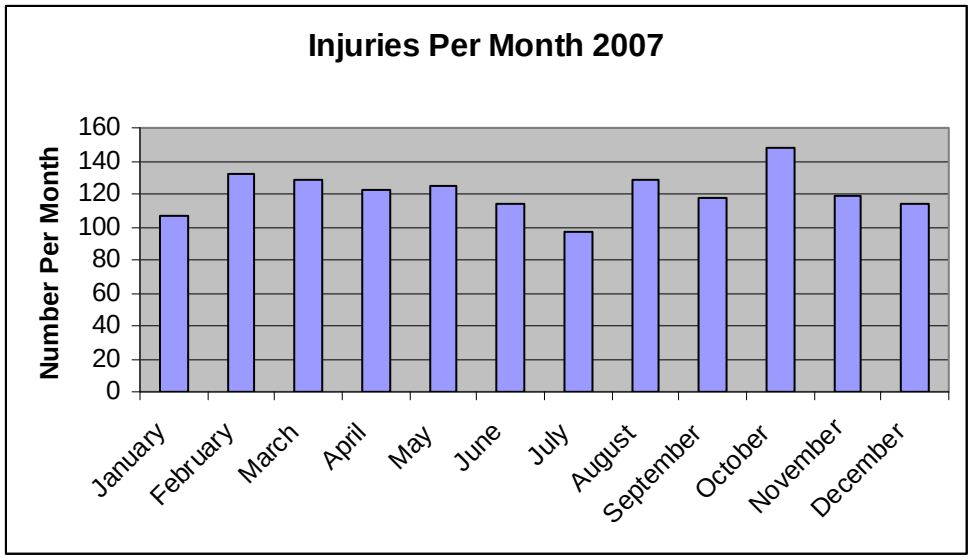
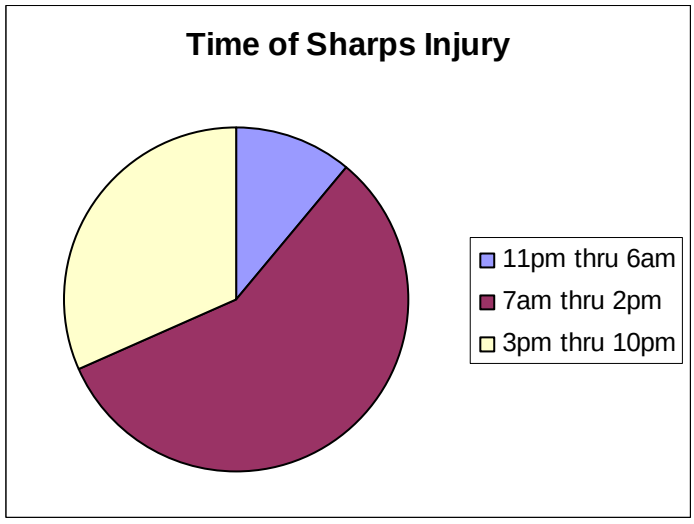


Figure 3. Time of Sharps Injuries



Healthcare Worker Information

Registered nurses and interns/residents reported the greatest number of injuries in Texas governmental entity facilities in 2007 although physicians were third in number of reported injuries (table 4).

Table 4. Sharps Injuries by Job Classification (n=1454)

Job Classification	Number	Percent
Registered Nurse	293	20.2%
Intern/Resident	284	19.5%
MD/DO/Fellows	134	9.2%
OR/Surgical Technician	120	8.3%
Licensed Vocational Nurse	99	6.8%
Phlebotomist/Venopuncture/IV Team	68	4.7%
Medical Student	52	3.6%
Housekeeper/Laundry	39	2.7%
Aide (CNA, CMA, HHA, Orderly)	50	3.4%
Other/Unknown	34	2.3%
Dental Student	29	2.0%
Clinical Laboratory Technician	30	2.1%
EMT/Paramedic	26	1.8%
Law Enforcement Officer	21	1.4%
Respiratory Therapist/Technician	21	1.4%
Radiology Technician	20	1.4%
Physician Assistant	20	1.4%
Nursing Student	15	1.0%
Dentist	15	1.0%
CRNA/NP	10	0.7%
School Personnel	9	0.6%
Dental Assistant/Technician	7	0.5%
Researcher	7	0.5%
Dental Hygienist	6	0.4%
Firefighter	6	0.4%
Other Technicians	5	0.3%
Physical Therapist	5	0.3%
Safety/Security/Maintenance	5	0.3%
Other Students	4	0.3%
Central Supply/Sterile Process	4	0.3%
Emergency Department Technician	3	0.2%
Clerical/Administrative	3	0.2%
Pharmacist	2	0.1%
Dietary	2	0.1%
Morgue/Autopsy Technician	2	0.1%
Hemodialysis Technician	2	0.1%
Wound Care Specialist	2	0.1%
Total	1454	100.0%

Demographics of Injured Workers in Texas

Females continue to suffer the majority (64% in 2007) of injuries and the workers age 25 through 34 years reported the highest number of sharps injuries (tables 5 and 6).

Table 5. Gender of Injured Worker

Sex of Worker	Number	Percent
Female	927	63.8%
Male	509	35.0%
Unknown	18	1.2%
Total	1454	100.0%

Table 6. Age of Injured Worker

Age	Number	Percent
Less than 18	4	0.3%
18 through 24	122	8.4%
25 through 34	632	43.5%
35 through 44	314	21.6%
45 through 54	180	12.4%
55 through 64	75	5.2%
65 through 79	15	1.0%
Missing	112	7.7%
Total	1454	100.0%

Ninety-five percent of the sharps injuries were sustained to the hand of injured workers (table 7).

Table 7. Area of Body Injured

Body Area	Number	Percent
Hand	1378	94.8%
Arm	38	2.6%
Leg/Foot	19	1.3%
Torso	2	0.1%
Face/Head/Neck	1	0.1%
Missing	16	1.1%
Total	1454	100.0%

How Sharps Injuries Occurred

Suturing, giving injections, collecting blood samples, and use of intravenous/central lines accounted for the highest number of injuries in Texas governmental entities as reported for the year of 2007 (table 8).

Table 8. Use of Sharp at Time of Injury (n=1454)

Original Intended Use	Number	Percent
Injection, SC/ID/IM	323	22.2%
Suturing Skin	187	12.9%
Unknown/Not Applicable	179	12.3%
Draw Venous Sample	148	10.2%
Start/Use IV/Central Line	129	8.9%
Cutting	122	8.4%
Suturing Deep	100	6.9%
Surgery/Surgical Procedures	59	4.1%
Obtain Body Fluid/Tissue Sample	46	3.2%
Dental Procedures	42	2.9%
Draw Arterial Blood Sample	35	2.4%
Finger Stick/Heel Stick	20	1.4%
Contain Specimen	13	0.9%
Heparin/Saline Flush	12	0.8%
Shaving	10	0.7%
Drilling	7	0.5%
Electrocautery	7	0.5%
Wiring	6	0.4%
Laboratory Procedure	4	0.2%
Tattoo	3	0.2%
Dialysis	2	0.1%
Total	1454	100.0%

Table 9 displays how the injury occurred by procedure or process.

Table 9. Procedure/Process Involved in Injury (n=1454)		
How Exposed	**Number**	**Percent**
Between Steps of Multistep Procedure	411	28.3%
Other/Unknown	154	10.6%
Suturing	110	7.6%
Interaction With Another Person	101	6.9%
Found In An Inappropriate Place	103	7.1%
Patient Moved During Procedure	97	6.7%
Use of Sharps Container	86	5.9%
Unsafe Practice	84	5.8%
Activating Safety Device	72	5.0%
Recapping	51	3.5%
Disassembling Device/Equipment	36	2.5%
Laboratory Procedure/Process	38	2.6%
Procedure/Environment	28	1.9%
Device Malfunctioned	24	1.7%
Use of IV/Central Line	22	1.5%
Preparation for Reuse of Instrument	20	1.4%
Surgery	17	1.2%
Total	1454	100.0%

Type of Sharp

The type of sharp involved in injuries is displayed in table 10, with syringes/needles and suture needles involved in the greatest percentages of injuries. However, both IV catheter/needles and scalpels each account for 7-8 percent of injuries.

Table 10. Type of Sharp Involved (n=1454)

Type of Sharp	Number	Percent
Suture Needle	297	20.4%
Disposable Syringes/Needles	238	20.4%
Other Syringe/Needle	125	8.6%
IV Catheters/Needles/Stylets	116	8.0%
Scalpel	105	7.2%
Insulin Syringe/Pen	96	6.6%
Winged Steel Needle	93	6.4%
Blood Tube Holder/Needle	44	3.0%
Tuberculin Syringe	38	2.6%
Other/Unknown	29	2.0%
Lancet	25	1.7%
Other Surgical Instruments	24	1.7%
Blood Gas Syringe	22	1.5%
Prefilled Cartridge Syringe	20	1.4%
Skin Hook/Bone Hooks/Retractors	22	1.5%
Dental Instruments	26	1.8%
Razors	16	1.1%
Scissors	15	1.0%
Glass Test Tubes/Slides/Vials	21	1.4%
Sharp Item Not Sure What Kind	12	0.8%
Wire (suture/fixation/guide)	11	0.8%
Trocar	11	0.8%
Spinal/Epidural Needle	10	0.7%
Forceps	10	0.7%
Pin (fixation guide)	10	0.7%
Electrocautery Device	6	0.4%
Towel Clip	5	0.3%
Staples/Steel Sutures	4	0.3%
Drill Bit/Burr	3	0.2%
Total	1454	100.0%

Operating Room Sharps Injuries

Table 11 is a condensed version of Table 10 sharps injuries related to surgical procedures as reported in Texas during 2007. In October 2007, The National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) jointly released a Safety and Health Information Bulletin titled Use of Blunt-Tip Suture Needles to Decrease Percutaneous Injuries to Surgical Personnel.[1] The bulletin emphasizes that sharp-tip suture needles are the leading cause of percutaneous injuries among surgical personnel, causing 51%-77% of injuries.[1] Up to 59% of suture needle injuries occur during suturing of muscle and fascia; blunt-tip suture needles are recommended as an effective alternative for the prevention of injuries.[1,2] The type of suture needle involved in injuries listed in table 10 and 11 is unknown.

Table 11. Operating Room/Surgical Use Sharps Injuries	
Suture Needles/Steel Sutures/Wire/Staples	21.5%
Surgical Instruments/Scissors/Towel Clip/Retractor/Razor/Electrocautery/Pin	8.2%
Scalpels	7.2%
Total	37.2%

Worksite Safety Controls

Safety engineered sharps devices, annual bloodborne pathogen education, glove use, hepatitis B vaccine series, and sharps containers placed appropriately and not overfilled, are required bloodborne pathogen regulations.

Safety Engineered Sharps Devices

As seen in table 12, forty-nine percent of injuries in 2007 occurred with devices that were not safety engineered. From 2006 to 2007, this is a 2% increase in sharps injuries associated with non-safety engineered devices. The American Nurse Association (ANA) released the findings of the 2008 Study of Nurses' Views on Workplace Safety and Needlestick Injuries, an independent nationwide survey of more than 700 nurses.[3] "An overwhelming majority of nurses "87 percent say safety concerns influence their decisions about the type of nursing they do and their continued practice in the field," was reported by ANA president Rebecca M. Pattton.[3] Despite the requirements of the 2001 Needlestick Act mandating the use of safety syringes, 75 percent of the needlestick injuries reported involved a standard (non-safety) syringe.[3]

Tables 13 and 14 display the activation status of devices at the time of the sharps injury. However it must be noted that there is a high percentage of missing information (not submitted) in tables 12, 13, and 14.

Table 12.Was Device Safety Engineered (n=1454)		
Safety Engineered Device	**Number**	**Percent**
Yes	394	27.1%
No	705	48.5%
Unknown	355	24.4%
Total	1454	100.0%

Table 13. Protective Mechanism Activation (n=1454)		
Was Protective Mechanism Activated	**Number**	**Percent**
Yes, Fully Activated	55	3.8%
Yes, Fully Partially	75	5.2%
No	494	34.0%
Unknown	830	57.1%
Total	1454	100.0%

Table 14. When During Device Activation Did Injury Occur (n=1454)		
When During Activation Did Injury Occur	**Number**	**Percent**
Before	247	17.0%
During	151	10.4%
After	86	5.9%
Unknown	970	66.7%
Total	1454	100.0%

Glove Use, Hepatitis B Vaccine, Annual Bloodborne Pathogen Education, and Available Sharps Container

Other worksite safety controls shown in table 15, reflect 90-93 % compliance in glove use at time of injury, hepatitis B series completion, bloodborne pathogen education, and the availability of the sharps container.

Table 15. Worksite Safety Controls Compliance

Compliance With Worksite Safety Controls	Glove Use At Time of Injury		Hepatitis B Vaccine Series Completed		Received Bloodborne Pathogen Education In Last 12 Months		Availability of Sharps Container Near Work Area	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	1302	89.5%	1344	92.4%	1354	93.1%	1333	91.7%
No	121	8.3%	60	4.1%	31	2.1%	36	2.5%
Unknown	31	2.1%	50	3.4%	69	4.7%	85	5.8%

Cumulative Reports of Texas Sharps Injuries Over Seven Years

Table 16. Number of Texas Sharps Injuries Per Year By Public Health Region

Region	2001	2002	2003	2004	2005	2006	2007
1	235	206	200	198	191	205	180
2	122	116	87	102	109	60	81
3	449	411	390	340	355	291	287
4	36	69	52	58	40	33	52
5	8	4	2	17	10	16	15
6	375	343	576	609	579	431	464
7	88	116	131	100	132	101	72
8	309	192	158	96	180	187	148
9	102	107	122	99	115	87	93
10	38	30	44	41	93	38	40
11	27	28	17	9	21	13	22
Total	1789	1622	1779	1669	1825	1462	1454

Table 17. Proportion of Sharps Injuries by Facility Type 2001-2007							
Facility Type	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Hospital	78%	80%	81%	84%	82%	82.1%	80.5%
Clinic	7.4%	8%	9%	6.4%	6.5%	5.5%	6.2%
EMS/Fire/Police	4%	2%	2%	2%	2%	1.6%	2.3%
Correctional Facility	2.3%	2%	1.2%	1.4%	3.1%	4.7%	4.1%
School/College	2.1%	2%	2%	2%	2%	1.4%	2.2%
Residential Facility	0.1%	1.1%	1.4%	1.0%	1.0%	1.2%	0.8%
Laboratory	2%	1.0%	0.8%	.1%	2%	0.4%	0.2%
Outpatient Treatment	1.4%	1.1%	0.7%	1.0%	1.0%	0.7%	0.2%
Dental Facility	1.0%	0.2%	0.5%	1.0%	1.0%	0.7%	1.7%
Home Health	1.0%	0.8%	0.7%	1.0%	1.0%	0.6%	0.9%
Medical Examiner/Morgue	0.2%	1.5%	0.7%	1.3%	1.0%	0.5%	0.2%
Blood Bank/Center/Mobile	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%

Table 18. Percentage of Injuries Per Job Class Per Year							
Job Class	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
RN	25.9%	26.1%	21.6%	23.7%	23.5%	23.6%	20.2%
MD/DO	22.0%	22.1%	27.0%	22.2%	12.2%	10.7%	9.2%
Int./Res.	0.0%	0.2%	0.7%	8.7%	13.3%	16.7%	19.5%
Laboratory	10.0%	9.5%	9.0%	6.3%	8.0%	6.2%	6.8%
Surg. Asst	7.5%	7.2%	7.0%	6.9%	8.4%	7.2%	8.3%
LVN	8.0%	7.2%	7.3%	6.2%	7.8%	8.2%	6.8%
Students	4.4%	3.7%	4.6%	5.1%	4.9%	5.6%	4.6%
Housekeeper	4.5%	3.7%	3.7%	3.1%	3.7%	2.9%	2.7%
First Resp.	4.6%	3.0%	2.4%	2.8%	2.2%	2.0%	3.2%
Aides	2.9%	3.8%	4.1%	2.4%	4.0%	3.9%	3.4%
Dental	1.8%	1.4%	1.5%	1.8%	1.7%	2.0%	1.9%
Other Tech	1.5%	2.2%	2.0%	1.2%	1.7%	2.1%	0.7%
Radiology	1.3%	1.1%	1.2%	1.1%	0.4%	1.0%	1.4%
Respiratory	1.3%	1.5%	1.0%	0.9%	1.3%	0.7%	1.4%
PA	0.5%	0.4%	0.8%	1.2%	1.1%	1.5%	1.4%
Maintenance	0.0%	0.5%	0.2%	0.5%	0.2%	0.3%	0.3%
CRNA/NP	0.4%	1.0%	1.1%	1.0%	0.7%	0.7%	0.7%
Schools	0.7%	0.6%	0.5%	0.4%	1.3%	1.0%	0.6%
C.S.	0.0%	0.4%	0.6%	0.3%	0.8%	0.2%	0.3%
Other/Unknown	2.7%	4.4%	3.9%	4.1%	2.7%	3.3%	2.3%

Table 19. Types of Sharps by Percentage per Year Involved in Injuries							
Type of Sharp	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Syringes/Needles	26.4%	32.4%	32.7%	31.0%	30.6%	26.8%	30.4%
Suture Needle	17.9%	18.1%	21.3%	22.9%	21.2%	22.1%	21.8%
Winged Steel Needles	8.7%	8.9%	9.8%	6.2%	7.8%	6.7%	6.4%
IV Catheter/Needles	6.8%	5.7%	5.4%	6.3%	7.8%	8.7%	8.0%
Surgical Inst.	9.1%	9.5%	8.3%	8.7%	7.4%	5.6%	8.2%
Scalpels	5.4%	6.2%	6.4%	7.7%	7.3%	8.4%	7.2%
Insulin Syringes	4.6%	5.7%	4.0%	4.0%	5.0%	5.8%	6.6%
Blood Tube Holders	4.6%	4.6%	3.3%	3.3%	3.1%	3.4%	3.0%
Other/Unknown	8.2%	1.1%	1.7%	2.1%	2.5%	4.1%	2.8%
Tuberculin Syringes	1.9%	2.0%	2.1%	1.4%	1.6%	2.0%	2.6%
Blood Gas Syringes	1.5%	1.5%	1.1%	1.2%	1.6%	1.0%	1.5%
Lancets	3.5%	2.8%	2.1%	2.7%	1.4%	1.0%	1.7%
Dental Inst.	0.0%	0.0%	0.0%	0.4%	1.2%	1.0%	2.0%
Biopsy/Other Needles	0.0%	0.0%	0.0%	0.4%	0.9%	0.7%	0.7%
Tubes/Glass	1.3%	1.5%	1.0%	1.2%	0.5%	0.5%	1.4%
Huber needles	0.0%	0.0%	0.0%	0.4%	0.4%	0.2%	0.0%

Table 20. Safety Engineered Status of Devices Involved in Injuries per Year							
Safety Engineered	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Yes	14.7%	21.0%	27.0%	22.1%	30.3%	29.8%	27.1%
No	73.9%	68.0%	60.0%	58.6%	50.6%	47.0%	48.5%
Unknown	11.2%	11.0%	13.0%	19.9%	20.2%	23.3%	24.4%

Conclusions:

1. Suture needles and disposable syringes and needles continue to be associated with the greatest number of injuries.
2. Use of non-safety engineered devices continues to be associated with 47% to 49% of the injuries (2006-2007)
3. Registered nurses, interns/residents and physicians continue to sustain the greatest number of injuries.

Recommendations

1. Selection and usage of safety devices that are shown to reduce injuries:
   - Use blunt-tip suture needles for suturing fascia and muscle[1,2]
   - Double gloving may prevent prolonged occult hand contact with patient blood[2]
   - Surgical team should use hands-free techniques instead of passing needles and other sharp items[2]
2. Widespread use of safety devices might be more easily justified on economic grounds when the cost of sharps injuries (51-3,000 U.S. dollars in 2002) is considered.[4]

References

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