

EPINet Report:

2002 Percutaneous Injury Rates

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IN 2002, THE INTERNATIONAL HEALTHCARE Worker Safety Center at the University of Virginia collected data on percutaneous injuries and blood and body fluid exposures from 47 healthcare facilities in the United States that use the EPINet surveillance program to track exposure incidents.

These facilities voluntarily participate in the collaborative EPINet network coordinated by the Center, and their exposure data are combined into an aggregate database. The 2002 percutaneous injury report and blood and body fluid exposure report are presented on pages 20 and 21, and a

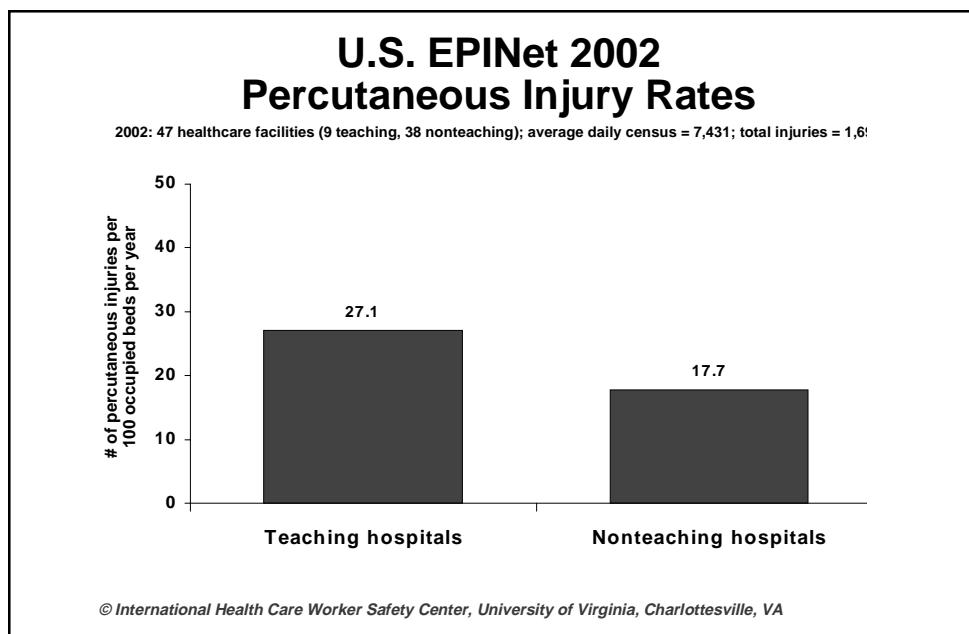
list of the facilities that contributed data can be found on page 19.

Most of these facilities (43) are part of a state-wide network in South Carolina coordinated by Palmetto Hospital Trust Services; the other four facilities are located in the eastern half of the U.S., except for St. Joseph Hospital in Omaha, Nebraska. Nine of the facilities are teaching hospitals, and 38 are nonteaching hospitals. In 2002, 28 facilities

had an average daily census (ADC) of less than 100 occupied beds*; 11 facilities had an ADC of 100 to 300; and 8 facilities had an ADC of greater than 300. Most of the facilities are acute-care or tertiary-care hospitals or medical centers, some of which have physicians' offices, home health

2002 data yielded these findings:

- The average percutaneous injury (PI) rate for teaching hospitals was 27.1 injuries per 100 occupied beds.
- The average PI rate for nonteaching facilities was 17.7 injuries per 100 occupied beds.
- The average PI rate for hospitals with an ADC of less than 100 was 19.1 per 100 occupied beds; for hospitals with an ADC of 100-300, 22.5 per 100 occupied beds; and for hospitals with an ADC of greater than 300, 22.9 per 100 occupied beds.



agencies and other outpatient settings affiliated with them. Among the participating facilities is an alcohol and drug abuse agency with a detoxification unit, a home hospice agency, a long-term acute-care facility, a skilled nursing facility, and a rehabilitation hospital.

2002 EPINet Data Findings

In 2002, a total of 1,693 percutaneous injuries (PIs) were reported by network facilities. The

total number of PIs was 1,929.

EPINet data from 2002, as in previous years, revealed great variation among individual facilities in PI rates: 5 facilities had a zero PI rate, while 3 facilities had rates over 50 per 100 occupied beds. The reasons for such variation remain unclear, but they may include the mix of patients, injury

(* "Occupied beds" is defined as the ADC for the same year in which the data were collected.)

EPINet 2002 Percutaneous Injury Rates

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underreporting rates, the extent to which a facility has converted to safety devices, and whether it is a teaching or nonteaching institution.

Because of these variables, we cannot assume that a healthcare facility with a low PI rate necessarily has a better safety record than a hospital with a higher rate. For example, a hospital with a high PI rate may do a better job of educating its employees about the need to report needlestick injuries or may have

more patients requiring invasive procedures than another facility with a lower rate. For that reason, comparing rates among hospitals may not be very meaningful. It is more reliable to track injury trends within a single institution over several years, and make historical comparisons as prevention measures are implemented.

Blood and Body Fluid Exposures

In 2002, a total of 469 blood and body fluid exposures (BBF) were reported by network facilities. The 2002 data yielded these findings:

- *The average blood and body fluid (BBF) exposure rate was 6.3 per 100 occupied beds.*
- *The average BBF exposure rate for teaching hospitals was 7.1 per 100 occupied beds.*
- *The average BBF exposure rate for non-teaching hospitals was 5.2 per 100 occupied beds.*

By comparison, in 2001 the average BBF rate for teaching and non-teaching facilities was 6 per 100 occupied beds. Forty-nine facilities reported BBF data in 2001; the total number of BBF exposures was 463. □

EPINet Network Hospitals, 2002

In 2002, 47 hospitals participated in a voluntary EPINet data-sharing network coordinated by the International Healthcare Worker Safety Center. The research data published in *AEP* come largely from this network. Each year we publish an updated list of the participating hospitals; we gratefully acknowledge their efforts and contributions.

Florida Hospital Orlando (Orlando, FL); **Saint Joseph Hospital** (Omaha, NE); **Saint Vincent Health Center** (Erie, PA); **University Hospitals of Cleveland** (Cleveland, OH).

PHTS Hospitals, South Carolina; **Ed Hall**, network coordinator. **Abbeville County Memorial Hospital** (Abbeville, SC); **Allendale County Hospital** (Fairfax, SC); **Anderson Area Medical Center** (Anderson, SC); **Bamberg County Memorial Hospital** (Bamberg, SC); **Barnwell County Hospital** (Barnwell, SC); **Beaufort Memorial Hospital** (Beaufort, SC); **Cannon**

Memorial Hospital (Pickens, SC); **Carolinas Hospital System Lake City** (Lake City, SC); **Chester County Hospital** (Chester, SC); **Conway Medical Center** (Conway, SC); **Fairfield Memorial Hospital** (Winnsboro, SC); **Georgetown Memorial Hospital** (Georgetown, SC); **Greenville Memorial Hospital and Medical Campus/Greenville Hospital System** (Greenville, SC); **GHS-Allen Bennett Memorial Hospital**, Greer, SC; **GHS-Hillcrest Hospital** (Simpsonville, SC); **GHS-Marshall I. Pickens Hospital** (Greenville, SC); **GHS-Roger Huntingdon Nursing Center** (Greenville, SC); **Hampton Regional Medical Center** (Varnville, SC); **Kershaw County Medical Center** (Camden, SC); **Laurens County Hospital** (Clinton, SC); **Lexington Medical Center** (West Columbia, SC); **Lexington Richland Alcohol & Drug Abuse Council** (Columbia, SC); **Loris Community Hospital** (Loris, SC); **Marion County Medical Center** (Mullins, SC); **Mary Black Memorial Hospital** (Spartanburg, SC); **McLeod Regional Medical Center** (Florence, SC); **Mercy Care**

(Myrtle Beach, SC); **Mullins Nursing Center** (Mullins, SC); **Newberry County Memorial Hospital** (Newberry, SC); **Oconee Memorial Hospital** (Seneca, SC); **Palmetto Health Baptist** (Columbia, SC); **Palmetto Health Baptist Easley** (Easley, SC); **Palmetto Health Richland** (Columbia, SC); **The Regional Medical Center of Orangeburg and Calhoun Counties** (Orangeburg, SC); **Roger C. Peace Rehabilitation Hospital** (Greenville, SC); **Saint Eugene Medical Center/McLeod Health** (Dillon, SC); **Self Regional Healthcare** (Greenwood, SC); **Spartanburg Hospital for Restorative Care** (Spartanburg, SC); **Spartanburg Regional Medical Center** (Spartanburg, SC); **Tuomey Regional Medical Center** (Sumter, SC); **Wallace Thomson Hospital/Union Hospital District** (Union, SC); **Williamsburg Regional Hospital/Carolinas Hospital System** (Kingstree, SC); **Women's Center of Carolinas Hospital System** (Florence, SC) □

Uniform Needlestick and Sharp-Object Injury Report U.S. EPINet Network, 2002, 47 healthcare facilities*

Total cases = 1,693 (excluding injuries before use); total avg. daily census = 7431 (*9 teaching/38 nonteaching hospitals)

JOB CATEGORY:

M.D. (attending/staff)	138	8.2%
M.D. (intern/resident/fellow)	139	8.3%
Medical student	16	1.0%
Nurse RN/LPN	683	40.7%
Nursing student	8	0.5%
Respiratory therapist	37	2.2%
Surgery attendant	165	9.8%
Other attendant	46	2.7%
Phlebotomist/venipuncture/ I.V. team	77	4.6%
Clinical laboratory worker	33	2.0%
Technologist (non-lab)	97	5.8%
Dentist	2	0.1%
Dental hygienist	1	0.1%
Housekeeper	56	3.3%
Paramedic	12	0.7%
CNA/HHA	27	1.6%
Laundry worker	3	0.2%
Security	2	0.1%
Other student	33	2.0%
Other	103	6.1%

WHERE INJURY OCCURRED:

Patient room	519	30.8%
Outside patient room	38	2.3%
Emergency department	155	9.2%
Intensive/critical care unit	116	6.9%
Operating room	489	29.0%
Outpatient clinic/office	76	4.5%
Blood bank	4	0.2%
Venipuncture	14	0.8%
Dialysis facility	10	0.6%
Procedure room	80	4.7%
Clinical laboratories	29	1.7%
Autopsy/pathology	9	0.5%
Service/utility area	28	1.7%
Labor and delivery	34	2.0%
Home-care	11	0.7%
Other	75	4.4%

ORIGINAL PURPOSE OF SHARP DEVICE:

Unknown, N/A	115	6.8%
Injection, IM/subcutaneous	324	19.3%
Heparin or saline flush	24	1.4%
Other injection/aspiration I.V.	74	4.4%
Connect I.V. line	15	0.9%
Start I.V. or heparin lock	96	5.7%
Draw venous blood sample	243	14.5%
Draw arterial blood sample	46	2.7%
Obtain body fluid/tissue sample	26	1.5%
Fingerstick/heel stick	27	1.6%
Suturing	318	18.9%
Cutting (surgery)	142	8.4%
Electrocautery	8	0.5%
Contain specimen/pharmaceutical	6	0.4%
Place arterial line	35	2.1%
Drilling	10	0.6%
Other	172	10.2%

WHEN INJURY OCCURRED:

During use of device	537	31.9%
Between steps of multistep procedure	222	13.2%

Disassembling device	65	3.9%
Preparing instrument for reuse	38	2.3%
Recapping device	57	3.4%
Withdrawing device from resistant material	57	3.4%
Other after use, before disposal	281	16.7%
Putting device into disposal container	107	6.4%
After disposal, from device:		
- protruding from disposal container	28	1.7%
- piercing side of disposal container	1	0.1%
- left on/near disposal container	5	0.3%
- left on floor, table or other inappropriate place	108	6.4%
- protruding from trash bag or inappropriate disposal container	29	1.7%
Restraining patient	16	1.0%
Other	132	7.8%

TYPE OF DEVICE CAUSING INJURY:

Disposable syringe	576	35.0%
Prefilled cartridge syringe	19	1.2%
Blood gas syringe	16	1.0%
Syringe, other type	15	0.9%
Needle on I.V. tubing	8	0.5%
Winged steel needle	112	6.8%
I.V. catheter (stylet)	76	4.6%
Vacuum tube blood collection needle	43	2.6%
Spinal or epidural needle	6	0.4%
Unattached hypodermic needle	18	1.1%
Arterial catheter introducer needle	10	0.6%
Central line catheter introducer needle	11	0.7%
Drum catheter	1	0.1%
Other vascular catheter needle	5	0.3%
Other non-vascular catheter needle	1	0.1%
Needle, unknown type	35	2.1%
Needle, describe	58	3.5%
Lancet	20	1.2%
Suture needle	304	18.4%
Scalpel, reusable	60	3.6%
Scalpel, disposable	62	3.8%
Razor	14	0.8%
Scissors	10	0.6%
Bovie electrocautery device	8	0.5%
Bone cutter	2	0.1%
Bone chip	3	0.2%
Towel clip	8	0.5%
Microtome blade	2	0.1%
Trocar	4	0.2%
Fingernails/teeth	15	0.9%
Retractors, skin/bone hooks	11	0.7%
Staples/steel sutures	5	0.3%
Wire	11	0.7%
Pin	7	0.4%
Drill bit	8	0.5%
Pickups/forceps/hemostats	9	0.5%
Sharp item, not sure what kind	9	0.5%
Other sharp item (describe)	46	2.8%
Medication ampule	1	0.1%
Pipette, glass	1	0.1%
Vacuum tube, glass	5	0.3%

Specimen/test tube, glass	6	0.4%
Capillary tube	1	0.1%
Glass item, unknown type	3	0.2%
Other glass item	3	0.2%

SOURCE PATIENT IDENTIFIABLE?

Yes	1540	91.5%
No	94	5.6%
Unknown	39	2.3%
Not available	10	0.6%

INJURED WORKER ORIGINAL USER OF SHARP ITEM?

Yes	968	57.9%
No	648	38.8%
Unknown	18	1.1%
N/A	37	2.2%

SHARP ITEM CONTAMINATED?

Yes	1511	90.2%
No	25	1.5%
Unknown	139	8.3%

IF INJURY WAS CAUSED BY A NEEDLE, WAS IT A SAFETY DESIGN?

Yes	461	29.2%
No	1038	65.7%
Unknown	80	5.1%

IF YES, WAS SAFETY MECHANISM ACTIVATED?

Yes, fully	24	5.6%
Yes, partially	84	19.6%
No	320	74.8%

IF YES, DID INJURY HAPPEN:

Before activation	253	64.9%
During activation	91	23.3%
After activation	46	11.8%

DEPTH OF INJURY:

Superficial (little/no bleeding)	835	50.0%
Moderate (skin punctured, some bleeding)	761	45.5%
Severe (deep stick/cut, profuse bleeding)	75	4.5%

BODY PART INJURED:

Arm	49	3.0%
Back	4	0.2%
Face/head	3	0.2%
Foot	8	0.5%
Front	4	0.2%
Hand, left	924	55.6%
Hand, right	640	38.5%
Leg	29	1.7%

GLOVES—Did sharp item penetrate:

Single pair of gloves	1060	66.0%
Double pair of gloves	222	13.8%
No gloves	324	20.2%

TYPE OF FACILITY:

Non-teaching hospital	511	30.2%
Teaching hospital	1182	69.8%

Uniform Blood and Body Fluid Exposure Report U.S. EPINet Network, 2002, 47 healthcare facilities*

Total cases = 469; total avg. daily census = 7,431 (*9 teaching/38 nonteaching hospitals)

JOB CATEGORY:

M.D. (attending/staff)	25	5.4%
M.D. (intern/resident/fellow)	31	6.6%
Medical student	3	0.6%
Nurse RN/LPN	210	45.0%
Nursing student	5	1.1%
Respiratory therapist	17	3.6%
Surgery attendant	22	4.7%
Other attendant	15	3.2%
Phlebotomist/venipuncture/ I.V. team	8	1.7%
Clinical laboratory worker	16	3.4%
Technologist (non-lab)	30	6.4%
Housekeeper	4	0.9%
Laundry worker	1	0.2%
Paramedic	6	1.3%
Other student	3	0.6%
CNA/HHA	26	5.6%
Security	3	0.6%
Other, describe	42	9.0%

WHERE EXPOSURE OCCURRED:

Patient room	177	37.8%
Outside patient room	10	2.1%
Emergency department	54	11.5%
Intensive/critical care unit	41	8.8%
Operating room	75	16.0%
Outpatient clinic/office	6	1.3%
Blood bank	1	0.2%
Venipuncture	1	0.2%
Dialysis facility	1	0.2%
Procedure room	33	7.1%
Clinical laboratories	19	4.1%
Service/utility area	2	0.4%
Labor and delivery	23	4.9%
Home-care	0	0%
Other, describe	25	5.3%

BBF[†] INVOLVED IN EXPOSURE:

(more than one item can be checked)[‡]

Blood or blood products	356	75.9%
Vomit	11	2.3%
Sputum	42	9.0%
Saliva	34	7.2%
Cerebro-spinal fluid	1	0.2%
Peritoneal fluid	2	0.4%
Pleural fluid	6	1.3%
Amniotic fluid	12	2.6%
Urine	14	3.0%
Other body fluid	48	10.2%

WAS THE BODY FLUID, OTHER THAN BLOOD, VISIBLY CONTAMINATED WITH BLOOD?

Yes	270	72.2%
No	76	20.3%
Unknown	28	7.5%

EXPOSED PART(s):

(more than one item can be checked)[‡]

Intact skin	201	42.9%
Non-intact skin	71	15.1%
Eyes (conjunctiva)	265	56.5%
Nose (mucosa)	10	2.1%
Mouth (mucosa)	43	9.2%
Other exposed parts	11	2.3%

DID THE BLOOD OR BODY FLUID:

(more than one item can be checked)[‡]

Touch unprotected skin	376	83.9%
Touch skin through gap between protective garments	46	10.3%
Soak through protective garment	11	2.5%
Soak through clothing	15	3.3%

BARRIER ITEMS WORN AT TIME OF EXPOSURE:

(more than one item can be checked)[‡]

Single pair latex/vinyl gloves	287	61.2%
Double pair gloves	31	6.6%
Goggles	17	3.6%
Eyeglasses (not protective)	50	10.7%
Eyeglasses with sideshields	7	1.5%
Faceshield	23	4.9%
Surgical mask	64	13.6%
Surgical gown	60	12.8%
Plastic apron	2	0.4%
Lab coat, cloth (not protective)	26	5.5%
Lab coat, other	9	1.9%
Other item	53	11.3%

CAUSE OF EXPOSURE:

Direct patient contact	211	46.0%
Specimen container leaked/ spilled	22	4.8%
Specimen container broke	5	1.1%
IV tubing/bag/pump leaked	28	6.1%
Other body fluid container spilled/leaked	23	5.0%
Touched contaminated equipment/surface	11	2.4%
Touched contaminated drapes/ sheets, gown	4	0.9%
Feeding/ventilator/other tube separated/leaked/spilled	55	12.0%

Other, describe	98	21.4%
Unknown	2	0.4%

SOURCE PATIENT IDENTIFIABLE?

Yes	440	95.7%
No	14	3.0%
Unknown	4	0.9%
N/A	2	0.4%

LENGTH OF TIME BBF IN CONTACT WITH SKIN OR MUCOUS MEMBRANES:

Less than 5 minutes	372	80.5%
5-14 minutes	52	11.3%
15 minutes-1 hour	32	6.9%
More than 1 hour	6	1.3%

AMOUNT OF BBF THAT CAME IN CONTACT WITH SKIN OR MUCOUS MEMBRANES:

Small amount (up to 5 cc)	406	88.5%
Moderate amount (up to 50 cc)	40	8.7%
Large amount (more than 50 cc)	13	2.8%

EXPOSURE LOCATION

Largest exposure:

Arm	26	5.8%
Face/head	326	72.6%
Front	8	1.8%
Hand, left	39	8.7%
Hand, right	43	9.6%
Leg	5	1.1%
Foot	1	0.2%
Back	1	0.2%

Medium-sized exposure:

Arm	14	7.2%
Face/head	142	73.2%
Foot	0	0%
Front	12	6.2%
Hand, left	8	4.1%
Hand, right	12	6.2%
Leg	5	2.6%
Back	1	0.5%

Smallest exposure:

Arm	12	27.3%
Face/head	4	9.1%
Front	11	25.0%
Hand, left	9	20.5%
Hand, right	4	9.1%
Leg	2	4.5%
Foot	2	4.5%

TYPE OF FACILITY:

Non-teaching hospital	154	32.8%
Teaching hospital	315	67.2%

[†]BBF = blood or body fluids

[‡]Because more than one item can be checked in this category, percentages total more than 100%.

NOTE: The needlestick and sharp-object injury report and blood and body fluid exposure report that appear on pages 20-21 are based on 2002 data from the EPINet data-sharing network coordinated by the International Healthcare Worker Safety Center at the University of Virginia. (A list of hospitals participating in the network appears on page 19.)