

## EPINet Report:

# 2007 Percutaneous Injury Rates

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IN 2007, THE INTERNATIONAL Healthcare Worker Safety Center at the University of Virginia collected data on percutaneous injuries and blood and body fluid exposures from 29 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 2007 percutaneous injury report and blood and body fluid exposure report are presented on pages 3 and 4, and a list of the facilities that contributed data can be found on page 2.

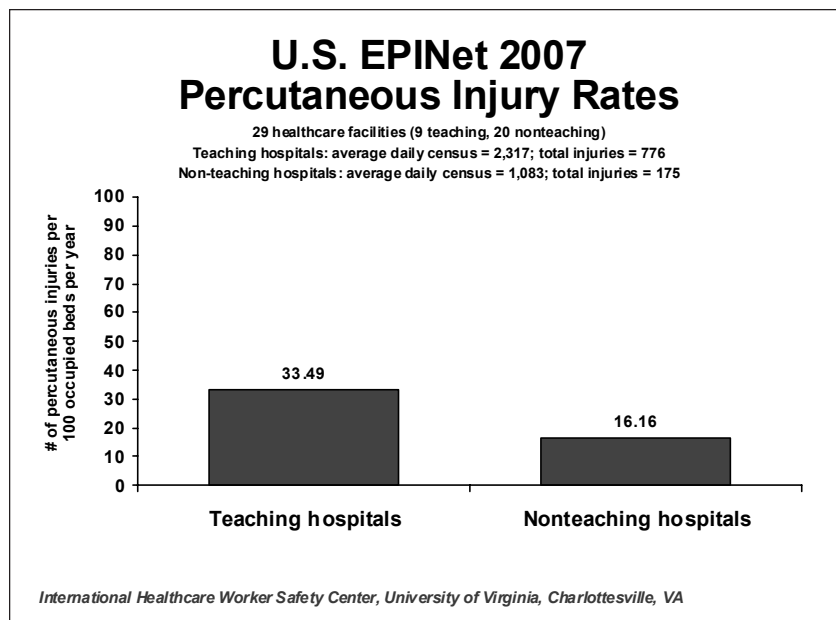
Most of these facilities are part of a state-wide network in South Carolina coordinated by Palmetto Hospital Trust Services; the others are located in Virginia, Pennsylvania, and Nebraska. Nine of the facilities are teaching hospitals, and 20 are nonteaching facilities.

Most of the facilities are acute-care or tertiary-care hospitals or medical centers, some of which have physicians' offices, home health agencies or other outpatient settings affiliated with them. Among the participating facilities is an alcohol and drug abuse agency, a long-term acute-care facility, a skilled nursing facility, and a rehabilitation hospital.

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

### 2007 EPINet Data Findings

In 2007, a total of 951 percutaneous injuries (PIs) were reported by network facilities. The 2007 data yielded these findings (the following rates *exclude* injuries that occurred before use):



• **The overall percutaneous injury rate for all network hospitals was 27.97 PIs per 100 occupied beds.**

• **The average PI rate for teaching hospitals was 33.49 injuries per 100 occupied beds.**

• **The average PI rate for nonteaching facilities was 16.16 injuries per 100 occupied beds**

By comparison, in 2006 the average PI rate for teaching hospitals was 33.42 per 100 occupied beds, and for nonteaching facilities, 16.88 per 100 occupied beds. Thirty-three facilities reported data in 2006; the total number of PIs was 950.

EPINet data from 2007, as in previous years, revealed great variation among individual facilities in PI

rates: four facilities had rates under 10 PIs per 100 occupied beds, while four facilities had rates over 50 PIs per 100 occupied beds. The reasons for such variation are not fully understood, but may include the mix of patients, injury underreporting rates, the extent to which a facility has implemented safety-engineered devices (as per OSHA requirements), 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 needlestick prevention measures are implemented.

### Blood and Body Fluid Exposures

In 2007, a total of 247 blood and body fluid exposures (BBF) were reported by network facilities. The 2007

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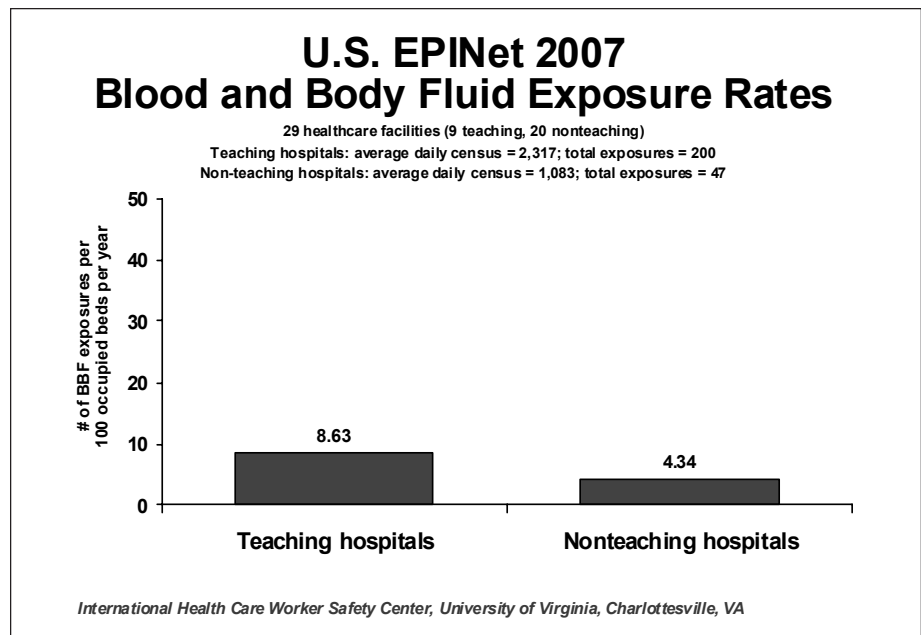
## EPINet 2007 Percutaneous Injury Rates

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data yielded these findings:

- The average blood and body fluid (BBF) exposure rate was 7.26 per 100 occupied beds.
- The average BBF exposure rate for teaching hospitals was 8.63 per 100 occupied beds.
- The average BBF exposure rate for non-teaching hospitals was 4.34 per 100 occupied beds.

By comparison, in 2006 the average BBF rate for teaching and non-teaching facilities was 7.35 per 100 occupied beds. Thirty-three facilities reported BBF data in 2006; the total number of BBF exposures was 250. □



# EPINet Network Hospitals and Healthcare Facilities, 2007

In 2007, 29 hospitals and healthcare facilities participated in a voluntary EPINet data-sharing network coordinated by the International Healthcare Worker Safety Center. For each year of data, we publish an updated list of the participating facilities; we gratefully acknowledge their efforts and contributions.

**Martha Jefferson Hospital** (Charlottesville, VA); **Medical University of South Carolina** (Charleston, SC); **Saint Joseph Hospital** (Omaha, NE); **Saint Vincent Health Center** (Erie, PA).

**Palmetto Hospital Trust Needlestick Prevention Demonstration Project, South Carolina** (Ed Hall, Rebecca Bender, network coordinators)  
**Abbeville County Memorial Hospi-**

**tal** (Abbeville, SC); **AnMed Health** (Anderson, SC); **Bamberg County Memorial Hospital** (Bamberg, SC); **Beaufort Memorial Hospital** (Beaufort, SC); **Cannon Memorial Hospital** (Pickens, SC); **Conway Medical Center** (Conway, SC); **Fairfield Memorial Hospital** (Winnsboro, SC); **Greenville Memorial Hospital** (Greenville, SC); **Greenville Hospital System (GHS)-Allen Bennett Memorial Hospital** (Greer, SC); **GHS-Cottages at Bushy Creek** (Greenville, SC); **GHS-Hillcrest Memorial Hospital** (Simpsonville, SC); **GHS-Marshall I. Pickens Hospital** (Greenville, SC); **GHS-Roger C. Peace Rehabilitation Hospital** (Greenville, SC); **Kingston Nursing Center** (Conway, SC); **Laurens County Hospital** (Clinton, SC); **Lexington/Richland Alcohol & Drug Abuse Council** (West Columbia, SC); **Loris Community Hospital** (Loris,

SC); **Marion Regional Healthcare System** (Marion, SC); **Newberry County Memorial Hospital** (Newberry, SC); **The Regional Medical Center of Orangeburg and Calhoun Counties** (Orangeburg, SC); **Self Regional Healthcare** (Greenwood, SC); **Spartanburg Hospital for Restorative Care** (Spartanburg, SC); **Spartanburg Regional Healthcare System** (Spartanburg, SC); **Tuomey Regional Medical Center** (Sumter, SC); **Union Hospital District-Wallace Thomson Hospital** (Union, SC). □

# Needlestick and Sharp-Object Injury Report

## U.S. EPINet Network 2007; 29 healthcare facilities\*

Total cases = 951 (excludes injuries before use); total avg. daily census = 3,400 (\*9 teaching/20 nonteaching hospitals)

### JOB CATEGORY:

M.D. (attending/staff)	137	14.4%
M.D. (intern/resident/fellow)	171	18.0%
Medical student	9	0.9%
Nurse RN/LPN	322	33.9%
Nursing student	6	0.6%
Respiratory therapist	19	2.0%
Surgery attendant	59	6.2%
Other attendant	15	1.6%
Phlebotomist/venipuncture/ I.V. team	44	4.6%
Clinical laboratory worker	12	1.3%
Technologist (non-lab)	39	4.1%
Dentist	0	0%
Dental hygienist	1	0.1%
Housekeeper	14	1.5%
Paramedic	8	0.8%
CNA/HHA	12	1.3%
Laundry worker	2	0.2%
Security	1	0.1%
Other student	15	1.6%
Other	64	6.7%

### WHERE INJURY OCCURRED:

Patient room	221	23.3%
Outside patient room	10	1.1%
Emergency department	82	8.6%
Intensive/critical care unit	82	8.6%
Operating room	341	35.9%
Outpatient clinic/office	61	6.4%
Venipuncture	2	0.2%
Dialysis facility	8	0.8%
Procedure room	39	4.1%
Clinical laboratories	6	0.6%
Autopsy/pathology	10	1.1%
Service/utility area	8	0.8%
Labor and delivery	32	3.4%
Home-care	2	0.2%
Other	46	4.8%

### ORIGINAL PURPOSE OF SHARP DEVICE:

Unknown, N/A	49	5.2%
Injection, IM/subcutaneous	224	23.6%
Heparin or saline flush	4	0.4%
Other injection/aspiration I.V.	12	1.3%
Connect I.V. line	1	0.1%
Start I.V. or heparin lock	35	3.7%
Draw venous blood sample	109	11.5%
Draw arterial blood sample	18	1.9%
Obtain body fluid/tissue sample	17	1.8%
Fingerstick/heel stick	10	1.1%
Suturing	228	24.0%
Cutting (surgery)	80	8.4%
Electrocautery	12	1.3%
Contain specimen/pharmaceutical	5	0.5%
Place arterial line	16	1.7%
Drilling	7	0.7%
Other	122	12.9%

### WHEN INJURY OCCURRED:

During use of device	450	47.5%
Between steps of multistep procedure	134	14.1%
Disassembling device	23	2.4%

Preparing instrument for reuse	12	1.3%
Recapping device	32	3.4%
Withdrawing device from resistant material	15	1.6%
Other after use, before disposal	99	10.5%
Putting device into disposal container	38	4.0%
After disposal, from device:		
- protruding from disposal container	10	1.1%
- piercing side of disposal container	1	0.1%
- left on/near disposal container	2	0.2%
- left on floor, table or other inappropriate place	50	5.3%
- protruding from trash bag or inappropriate disposal container	6	0.6%
Restraining patient	6	0.6%
Other	69	7.3%

### TYPE OF DEVICE CAUSING INJURY:

Disposable syringe	289	30.8%
Prefilled cartridge syringe	27	2.9%
Blood gas syringe	12	1.3%
Syringe, other type	3	0.3%
Needle on I.V. tubing	1	0.1%
Winged steel needle	52	5.5%
I.V. catheter (stylet)	27	2.9%
Vacuum tube blood collection needle	16	1.7%
Spinal or epidural needle	5	0.5%
Unattached hypodermic needle	4	0.4%
Arterial catheter introducer needle	9	1.0%
Central line catheter introducer needle	7	0.7%
Drum catheter	2	0.2%
Other non-vascular catheter needle	3	0.3%
Needle, unknown type	16	1.7%
Needle, describe	42	4.5%
Lancet	12	1.3%
Suture needle	224	23.9%
Scalpel, reusable	35	3.7%
Scalpel, disposable	35	3.7%
Razor	1	0.1%
Pipette, plastic	1	0.1%
Scissors	4	0.4%
Bovie electrocautery device	14	1.5%
Bone cutter	6	0.6%
Towel clip	2	0.2%
Microtome blade	1	0.1%
Trocar	5	0.5%
Retractors, skin/bone hooks	7	0.7%
Staples/steel sutures	1	0.1%
Wire	7	0.7%
Pin	5	0.5%
Drill bit	7	0.7%
Pickups/forceps/hemostats	3	0.3%
Sharp item, not sure what kind	10	1.1%
Other sharp item (describe)	31	3.3%
Medication ampule	2	0.2%
Medication vial	1	0.1%
Pipette, glass	1	0.1%
Glass item, unknown type	2	0.2%
Other glass item	6	0.6%

### SOURCE PATIENT IDENTIFIABLE?

Yes	901	95.1%
No	36	3.8%
Unknown	9	1.0%
Not available	1	0.1%

### INJURED WORKER ORIGINAL USER OF SHARP ITEM?

Yes	642	67.9%
No	279	29.5%
Unknown	10	1.1%
N/A	14	1.5%

### SHARP ITEM CONTAMINATED?

Yes	873	92.8%
No	10	1.1%
Unknown	58	6.2%

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

Yes	341	37.4%
No	529	58.0%
Unknown	42	4.6%

### IF YES, WAS SAFETY FEATURE ACTIVATED?

Yes, fully	38	11.9%
Yes, partially	55	17.2%
No	226	70.8%

### IF YES (NEEDLE WAS SAFETY DESIGN), DID INJURY HAPPEN:

Before activation of safety feature	204	66.2%
During activation of safety feature	65	21.1%
After activation of safety feature	39	12.7%

### DEPTH OF INJURY:

Superficial (little/no bleeding)	651	69.3%
Moderate (skin punctured, some bleeding)	257	27.3%
Severe (deep stick/cut, profuse bleeding)	32	3.4%

### BODY PART INJURED:

Arm	29	3.1%
Face/head	1	0.1%
Foot	6	0.6%
Front	2	0.2%
Hand, left	574	60.9%
Hand, right	324	34.4%
Leg	7	0.7%

### GLOVES—Did sharp item penetrate:

Single pair of gloves	627	68.8%
Double pair of gloves	176	19.3%
No gloves	108	11.9%

# Blood and Body Fluid Exposure Report

## U.S. EPINet Network 2007; 29 healthcare facilities\*

Total cases = 247; total avg. daily census = 3,400 (\*9 teaching/20 nonteaching hospitals)

### JOB CATEGORY:

M.D. (attending/staff)	19	7.7%
M.D. (intern/resident/fellow)	19	7.7%
Medical student	4	1.6%
Nurse RN/LPN	120	48.6%
Nursing student	4	1.6%
Respiratory therapist	9	3.6%
Surgery attendant	5	2.0%
Other attendant	6	2.4%
Phlebotomist/venipuncture/ I.V. team	3	1.2%
Clinical laboratory worker	6	2.4%
Technologist (non-lab)	11	4.5%
Housekeeper	0	0%
Paramedic	7	2.8%
CNA/HHA	8	3.2%
Security	3	1.2%
Other, describe	23	9.3%

### WHERE EXPOSURE OCCURRED:

Patient room	73	29.6%
Outside patient room	4	1.6%
Emergency department	29	11.7%
Intensive/critical care unit	49	19.8%
Operating room	39	15.8%
Outpatient clinic/office	5	2.0%
Blood bank	2	0.8%
Dialysis	0	0%
Procedure room	14	5.7%
Clinical laboratories	4	1.6%
Service/utility area	1	0.4%
Labor and delivery	5	2.0%
Home-care	1	0.4%
Other, describe	21	8.5%

### BBF<sup>1</sup> INVOLVED IN EXPOSURE:

(more than one item can be checked)<sup>2</sup>

Blood or blood products	195	78.9%
Vomit	5	2.0%
Sputum	21	8.5%
Saliva	16	6.5%
Cerebrospinal fluid (CSF)	2	0.8%
Peritoneal fluid	4	1.6%
Pleural	1	0.4%
Amniotic fluid	5	2.0%
Urine	9	3.6%
Other body fluid	37	15.0%

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

Yes	177	79.7%
No	31	14.0%
Unknown	14	6.3%

### EXPOSED PART(S):

(more than one item can be checked)<sup>2</sup>

Intact skin	74	30.0%
Non-intact skin	30	12.1%
Eyes (conjunctiva)	168	68.0%
Nose (mucosa)	12	4.9%
Mouth (mucosa)	26	10.5%
Other exposed parts	7	2.8%

### DID THE BLOOD OR BODY FLUID:

(more than one item can be checked)<sup>2</sup>

Touch unprotected skin	194	87.0%
Touch skin through gap between protective garments	22	9.9%
Soak through protective garment	3	1.3%
Soak through clothing	4	1.8%

### BARRIER ITEMS WORN AT TIME OF EXPOSURE:

(more than one item can be checked)<sup>2</sup>

Single pair latex/vinyl gloves	181	73.3%
Double pair gloves	19	7.7%
Goggles	6	2.4%
Eyeglasses (not protective)	27	10.9%
Eyeglasses with sideshields	1	0.4%
Faceshield	11	4.5%
Surgical mask	39	15.8%
Surgical gown	48	19.4%
Plastic apron	3	1.2%
Lab coat, cloth (not protective)	3	1.2%
Lab coat, other	4	1.6%
Other item	15	6.1%

### CAUSE OF EXPOSURE:

Direct patient contact	113	46.5%
Specimen container leaked/ spilled	16	6.6%
Specimen container broke	5	2.1%
IV tubing/bag/pump leaked	21	8.6%
Other body fluid container spilled/leaked	12	4.9%
Touched contaminated equipment/surface	1	0.4%
Touched contaminated drapes/ sheets/gown	1	0.4%
Feeding/ventilator/other tube separated/leaked/spilled	13	5.3%
Other, describe	58	23.9%
Unknown	3	1.2%

### SOURCE PATIENT IDENTIFIABLE?

Yes	239	97.6%
No	3	1.2%
Unknown	2	0.8%
N/A	1	0.4%

### LENGTH OF TIME BBF IN CONTACT WITH SKIN OR MUCOUS MEMBRANE:

Less than 5 minutes	193	79.1%
5-14 minutes	30	12.3%
15 minutes-1 hour	16	6.6%
More than 1 hour	5	2.0%

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

Small amount (up to 5 cc)	232	94.3%
Moderate amount (up to 50 cc)	13	5.3%
Large amount (more than 50 cc)	1	0.4%

### EXPOSURE LOCATION

#### Largest exposure:

Arm	8	3.3%
Face/head	196	80.3%
Front	1	0.4%
Hand, left	13	5.3%
Hand, right	21	8.6%
Leg	3	1.2%
Foot	2	0.8%

#### Medium-sized exposure:

Arm	6	5.6%
Face/head	87	80.6%
Front	3	2.8%
Back	1	0.9%
Hand, left	4	3.7%
Hand, right	5	4.6%
Leg	1	0.9%

#### Smallest exposure:

Arm	10	40.0%
Face/head	2	8.0%
Front	6	24.0%
Back	1	4.0%
Hand, left	4	16.0%
Hand, right	1	4.0%
Leg	1	4.0%

<sup>1</sup>BBF = blood or body fluids

<sup>2</sup>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 3-4 are based on 2007 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 2.)