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## Cost of Needle Stick Injuries

### 1. The Centers for Disease Control and Prevention (CDC) estimate that the rates of sero-conversion are:

Hepatitis B (HBV) – 6% to 30% after needle stick injuries

Hepatitis C (HCV) – average of 1.8% after needle stick injuries

HIV – 0.3% after needle stick injuries

### 2. Frequencies of needle stick injuries in Healthcare.

Panlilio, et al. (2004) estimated that 384,325 needle stick and sharps-related injuries occur every year to healthcare workers (HCW) in hospital settings in the US.

The National Institute of Occupational Safety and Health (NIOSH) estimated that up to 800,000 needle stick injuries occurred in 2004 in the US for both hospital and non-hospital healthcare workers (HCW) in the US. Miller, et al. (1999) from the World Health Organization (WHO) estimated that the cause of more than 1.3 million deaths and the cost of US\$535 million for treatment are due to unsafe injection practices (using contaminated needles and syringes) in the world.

Hauri, et al. (2004) from WHO estimated that contaminated injections caused an estimated 21 million HBV infections, two million HCV infections and 260,000 HIV infections in the year of 2000.

Experts agree that many needle stick injuries are underreported.

### 3. Frequencies of Needle Stick Injuries in *Dentistry*

Shah, et al. (2006) reviewed workers' compensation claims submitted to the Department of Labor and Industries State Fund during a 7-year period (1995 through 2001) in Washington State in the US. Of a total of 4,695 accepted State Fund percutaneous injury claims, **924 (20%)** were submitted by dental professionals, including **dental assistants (667, 75%), dental hygienists (161, 18%)** and **dentists (66, 7%)**. The absolute number of injuries reported increased progressively each year, from 78 in 1995 to 216 in 2001. The majority of those reporting were **females (638, 71%)** and **the mean age was 30 years (95% CI: 29-31)**. Dental assistants sustained most of the injuries while cleaning instruments and trays (n = 160, 24%), followed by changing a local anesthetic carpule (n = 125, 19%) and recapping a needle (n = 118, 18%). Of the 894 dental health care workers with percutaneous injuries, there was evidence of **HBV in 6 persons, HCV in 30 persons, HIV in 3 persons** and both HBV and HCV (n = 2) exposures.

McCarthy, et al. (2000) investigated non-sterile occupational injuries and infection control practices reported by final-year dental, medical and nursing undergraduates at the University of Western Ontario, Canada. Non-sterile occupational injuries in the previous year were reported by **82% of dental students**. Leggat, et al. (2006) surveyed a random sample of 400 dentists in Queensland, Australia. A total of 285 surveys (73.1%) were completed and returned. More than three-quarters (78.5%) reported damaging their gloves at least once during a clinical procedure in the previous 12-months period. The most common devices to cause 'sharps' injury in the previous 12 months were needles (14.4%) and burs (10.2%).

**4. Costs associated with needle stick injuries.**

- A. CDC (2004) estimated that the direct costs, associated with an initial follow-up and treatment of healthcare workers (HCW) who have sustained a needle stick injury, range from \$500 to \$3,000 depending on the type of treatments.
- B. Leigh, et al. (2007) estimated 644,963 needle sticks in the HCW for 2004 of which 49% generated costs. Testing revealed 96% had prophylaxis and the remaining 4% were suffering from long term infections (34 persons with chronic HBV, 143 with chronic HCV, and 1 with HIV). The medical expenses totaled up to \$107.3 million. Lost-work productivity generated \$81.2 million, for which 59% involved testing and prophylaxis and 41% involved long-term infections. The total sum of combined medical and work productivity costs was \$188.5 million in the US.

**5. Psychological trauma associated with needle stick injuries.**

Exposures to blood-borne pathogens via needle stick injuries cause a significant emotional and psychological toll on victims, the cost of which is difficult, if not impossible, to quantify. Healthcare workers who are injured by needle stick injuries face the uncertainty of their infection status in the immediate period following the injury, and, once the news is known, face whatever life-changing, long-term consequences are associated with the disease they may have contracted.

Psychological trauma affects them not only at work; trauma goes beyond the work place to such an extent that they fear to tell their partners that they had needle stick injury and they are exposed to HBV, HCV, HIV infection. Explaining to their families that they are taking antiretroviral (ARV) drugs for possible HIV from a needle stick injury is causing additional trauma. The side effects of ARV drugs are significant. Trauma also impacts their families since they have to abstain from sexual activities for a few months until that they know they did not contract HIV.

In their study of the economic impact of needle stick injuries, Lee, et al. (2005) found that 29 out of 110 nurses sought emotional counseling in the year following the injury.

In a more detailed case study, Worthington, et al. (2006) described two nurses who received needle stick injuries from an HIV-infected patient. Despite testing negative for HIV antibodies for more than 22 months after their injuries, both nurses displayed symptoms consistent with posttraumatic stress disorder (PTSD): insomnia, ongoing depression and anxiety, nightmares, and panic attacks upon returning to the work environment where the injuries were received. The authors maintained that the long-term emotional consequences of needle stick injuries are likely unappreciated.

**6. Ignorance and/or apathy among HCW**

AORN (2005) reported that some HCW's abide by an "it-won't-happen-to-me attitude" and resist making changes to their daily routines simply because old habits are hard to let go.