Needlesticks and sharps injuries (NSIs) are the most efficient method for transmitting bloodborne infections from patients to healthcare workers. Although some physician occupational groups (e.g., surgeons) may have higher rates of NSIs, nurses are generally at greater risk for HIV infection because of the frequency with which they handle hollow-bore, blood-filled needles, which are considered highest risk for bloodborne pathogen transmission. Although NSIs often follow predictable patterns, little research has been conducted on this occupational risk in Chinese healthcare settings and, despite educational programs, many cases continue to go unreported.

Given that there are at least 1 million nurses working in China, it is important to gather and analyze data on the prevalence and risk factors for NSIs, particularly for this occupational group, so that appropriate interventions and prevention programs can be developed.

For this study, two large teaching hospitals were selected from the same medical university in Shijiazhuang, China, which is the capital of Hebei province and located approximately 280 kilometers south of Beijing. A total of 509 nurses were recruited, representing all hospital departments: 22% were from internal medicine, 21% from intensive care, 18% from surgery, 13% from orthopedics, 10% from gynecology, and 16% from other departments. An anonymous Chinese-language survey was distributed via senior management, and collected within three days. Data on respondents’ age, length of employment, hospital department, and shift were collected. To maximize convenience and encourage a higher response rate, our survey was short, including basic questions about NSIs, such as whether the respondent had experienced a needlestick or sharps injury in his or her current job, and whether the device causing injury had been previously used on a patient. Informed consent was implied when nurses completed and returned their surveys. Data was entered into a spreadsheet program and evaluated statistically to determine NSI prevalence rates and distribution. Factors correlated with NSIs were also investigated using logistic regression. To compare NSI rates for different departments, we used as a denominator the number of staff in each department.

The response rate for the survey was 97.9%, with no difference in response rates for different departments. The majority of nurses were young females (95%), with an average age of 34, a work week of 42 hours and average employment duration of 12 years. Most (95%) had experienced an NSI while working in their current job. Of the devices involved, 67% were contaminated (previously used on a patient), 15% were not, and the status of the remaining 18% was unknown.

Respondents were asked a series of questions about their work environment, including whether they perceived their department as being understaffed. Nurses who indicated their departments were understaffed were 7.6 times more likely to have incurred a NSI than nurses who said their departments were adequately staffed (odds ratio 7.6, 95% confidence interval 2.5-33.3, P = 0.001).

In the hospitals we surveyed, a “mixed shift” comprised one day shift, followed by one night shift, followed by a day off. Nurses working mixed shifts were 3.5 times more likely to have sustained a NSI than those who did not (OR 3.5, 95% CI 1.4-9.0, P = 0.007).

Nurses working in the gynecology department were only 0.3 times as likely to report an NSI as nurses in other areas (OR 0.3, 95%CI 0.1-0.9, P = 0.033). However, the meaning of this finding is difficult to ascertain; it may simply reflect differences in reporting behavior between gynecology and other departments.

Overall, our research supports previous studies that found a correlation between NSIs and low staffing and/or worker morale. Our data also support the notion that NSIs do not simply occur at random among nursing staff. In order to develop an appropriate strategy for preventing these events, a standardized NSI data collection system needs to be implemented in Chinese hospitals. The data yielded by such a program would provide valuable information on the kinds of devices that most frequently injure Chinese healthcare workers and on injury patterns for specific settings, such as surgery.

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Occupational HIV/HCV Co-Infection from Non-Intact Skin Exposure in Nursing Home Worker

In 2003, the Centers for Disease Control and Prevention (CDC) reported a case of occupational co-infection with HIV and HCV from an exposure to non-intact skin. Although there have been previous reported cases of occupational HIV transmission via exposure to non-intact skin, the CDC noted that this was the first documented case of occupational HCV transmission by this route.

In January 2000, a 35-year-old nursing home aide was found to be co-infected with HIV and HCV during a routine blood donor screening. The worker had tested negative for HIV and HCV six weeks earlier during a previous screening (the worker gave blood regularly). The worker reported having numerous exposures to an HIV-infected patient’s body fluids while caring for the patient in December 1999 and January 2000, but sustained no sharps injuries during that period and had no other risk factors for HIV or HCV. The patient had severe dementia resulting in urinary and fecal incontinence. According to the CDC report, “The worker recalled that the patient was ill with diarrhea and ‘coffee ground’-like vomiting at the end of December 1999. The [healthcare worker (HCW)] reported wearing gloves while providing care for the patient but stated that the gloves tore easily. The worker recalled numerous exposures of chapped and abraded hands to the patient’s emesis, feces, and urine. During interviews, the HCW’s hands were noted by investigators to be ‘cracked, abraded and lacerated,’ reportedly a result of outside employment as a landscaper. The HCW also reported a history of psoriasis.”

The CDC noted that “Feces, urine, and vomitus are not considered potentially infectious unless they contain blood. Although none of these body fluids were documented to be visibly bloody, it is possible that the emesis contained some blood and transmission most likely occurred through nonintact skin exposure to the emesis.” The CDC says that transmission may have been prevented by “unfailing use” of barrier precautions—but it appears that it was the gloves themselves that failed, if the worker’s claim to regular glove use was accurate. Employers should ensure that barrier garments and personal protective equipment, particularly gloves, are resistant to tearing and provide adequate protection from blood and body fluid exposures.

- Jane Perry