

ceiving an agent with a 72-hour restriction and criteria are not met within the window, prescribers receive direct feedback from our clinical pharmacists recommending discontinuation of the agent, tailoring of therapy, or obtaining ID approval for continuation. An initial postintervention analysis of AU, measured by defined daily doses per 1,000 patient-days, showed a 14.8% decrease in use from the preintervention period (Figure 1).

In summary, this analysis provides insight into the value of ASP activities. First, a quality analysis providing baseline information on antimicrobial prescribing practices reveals opportunities for improving antimicrobial therapy. We identified that 33% of antimicrobial-days were unnecessary, and 42% of patients required escalation of antimicrobial therapy when deescalation was not performed. Second, without direct provider feedback, healthcare providers are less likely to modify an antimicrobial plan. Support for this concept has been realized with other ASP initiatives, understanding that key clinicians and hospital management must be involved to implement targeted interventions.^{9,10} Finally, these data will be used to develop additional ASP initiatives, and a follow-up analysis will be conducted to evaluate the effectiveness of the new initiatives. This report supports the application of the quality metrics defined by Morris et al¹ to evaluate AU. ASPs can use this information to develop and support QI initiatives, monitor program effectiveness, and benchmark performance with other healthcare facilities.

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Needlestick Injuries among Healthcare Workers of a Tertiary Care Hospital in South India

To the Editor—Globally, about 35 million healthcare workers (HCWs)—including doctors, nurses, laboratory staff, and housekeeping attenders—are at risk of sharps injury every year.¹ A sharps injury is a penetrating stab wound from a

needle, scalpel, or other sharp object that may result in exposure to blood or other body fluids.² Needlestick injury (NSI) remains the most common cause of sharps injury and is frequently responsible for transmission of more than 20 bloodborne pathogens.³ Hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) are the most common and serious bloodborne pathogens that are transmitted by NSIs. The risk of transmission of HBV, HCV, and HIV following an NSI from a contaminated needle is 2%–40%, 2.7%–10%, and 0.3%, respectively.³ The serious consequences associated with these bloodborne pathogens—including long-term illness, disability, and death—has led to increasing concern about the risks to HCWs posed by NSIs.

In a 600-bed tertiary care multispecialty hospital and teaching institute in South India, we studied NSIs among HCWs from May 2012 to February 2013. Overall, 1,320 HCWs were working at this hospital, of which 450 (34.1%) were doctors, 337 (25.5%) were nurses, 180 (13.6%) were housekeeping staff, 168 (12.7%) were nursing students, 142 (10.8%) were hospital attenders, and 43 (3.3%) were laboratory technicians. During the study period, a total of 48 NSIs were reported.

The majority (43.8%) of NSIs were observed among nurses, since they are often involved in administration of injections and collection of blood samples. Similarly, in another study from South India, 28.4% of NSIs were reported by nurses.⁴ In another study conducted among nurses in a regional hospital in Thailand, 55.5% of the 250 nurses reported sharps injuries.¹ Nurses are therefore the most vulnerable of all HCWs to NSIs. Housekeeping workers were the second major group of HCWs who are at risk of NSIs, accounting for about 16.7% of the injuries in our study. Similarly, in a study from a teaching hospital in Nigeria, about 25.6% of the hospital waste handlers were found to be injured with sharps.⁵ Another study from South India reported that 21.6% of NSIs occurred among cleaning staff.⁴ Surgeons are also common victims of NSIs by virtue of their profession, since they are daily at risk of injury in the operating theatres.⁶ Similarly, interns and newly graduated medical and nursing students are at high risk of NSIs because of occupational exposure. In a study from Palestine, about 40% of interns and medical students experienced at least 1 NSI, with the highest incidence (55.5%) in the emergency room.⁷

Most (89.6%) of the NSIs in our study were due to hollow-bore needles; only 5 out of 48 (10.4%) NSIs were attributed to surgical suture needles. The causes of NSIs among our HCWs are depicted in Figure 1. The majority (28%) of NSIs occurred during the collection of hospital wastes. In a report by the Hospital Infection Control Committee of a tertiary care hospital in South India, 18.6% of NSIs were due to improper disposal of sharps.⁴ This clearly shows that the major preventable cause of NSI is improper waste disposal and emphasizes the need for proper disposal of biomedical wastes. Recapping used needles was found to be the second leading cause of NSIs. Several studies have shown that 8%–25% of NSIs occurred when recapping.^{4,8}

The majority of NSIs were reported by our HCWs within

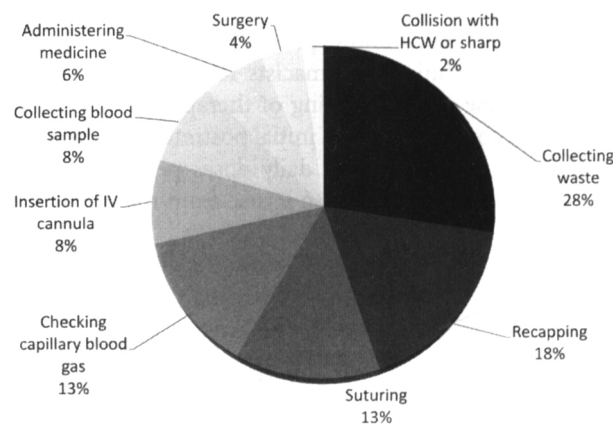


FIGURE 1. Causes of needlestick injuries among healthcare workers (HCWs). IV, intravenous.

24 hours. The time of reporting of NSI is very important because it aids in early administration of postexposure prophylaxis. Postexposure prophylaxis should be started within 24 hours following exposure to an HBV-positive blood sample, while it should be started at least within 72 hours following exposure to HIV-positive blood.³ All of the 18 HCWs who had NSIs from either a known HIV/HBV-positive source or an unknown source were administered postexposure prophylaxis, but 6 of them discontinued antiretroviral prophylaxis because of adverse effects. On follow-up at 6 weeks, 1 month, and 6 months, none of the HCWs who had an NSI were found to be infected with HIV, HBV, or HCV. About 27% of the HCWs who had NSIs had not received hepatitis B vaccine before the incident. Hepatitis B vaccine plays a major role in the prevention of transmission of HBV; therefore, all HCWs should be routinely vaccinated to decrease the risk of transmission following NSI.³

Although administration of preexposure or postexposure prophylaxis to HCWs can dramatically reduce the risk of acquiring HBV, the transmission of other common bloodborne pathogens—such as HIV and HCV—poses a big challenge. Therefore, prevention of NSIs is the best approach to prevent these bloodborne infections in HCWs.⁸ The following measures have been suggested by the Centers for Disease Control and Prevention for the prevention of NSIs: (1) avoid the use of needles when safe and effective alternatives are available, (2) use devices with safety features, (3) avoid recapping, (4) plan safe handling and disposal before beginning any procedure involving sharps, and (5) promptly dispose of used needle devices in appropriate sharps disposal containers.⁸

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