BD Global Public Policy Position
Preventing Needlestick Injuries and Blood Exposure Incidents

ISSUE: Occupational exposure to bloodborne pathogens poses a serious risk to healthcare workers.

Globally, healthcare workers (HCWs) are at risk for occupational exposure to dozens of bloodborne pathogens including hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).\(^1\) The smallest skin puncture caused by a contaminated needle or other sharp device or contact with a patient’s blood or body fluid to a HCW’s eyes, nose, mouth, or nonintact skin (i.e., mucocutaneous) can expose HCWs to pathogens which can cause serious and potentially life-threatening infections.\(^1,2\) Despite advancements protecting HCWs, the World Health Organization estimates that 3 million HCWs experience percutaneous exposures to bloodborne pathogens each year.\(^3\) Over the past four decades, BD has been at the forefront of designing technologies to protect HCWs from needlestick injuries (NSIs) and blood exposure incidents and remains committed to addressing this issue.

While nurses and physicians are subject to the largest number of NSIs and blood exposure incidents, other healthcare staff are also at risk. Lab professionals and technicians, environmental services and cleaning staff, medical waste haulers, sterile processing professionals, and others are vulnerable to blood exposures before, during, and after use when contaminated products are not properly handled and disposed. These exposures and the associated burdens they cause are preventable with the use of safety-engineered devices, safe disposal, and the application of infection prevention best practices.\(^4\) Despite legislative, regulatory, advocacy, and awareness efforts in many countries, these injuries and exposures continue to occur. Incidents are often unreported or underreported because of the stigma associated with these diseases.

### BD Global Public Policy Position

**PREVENTING NEEDLESTICK INJURIES AND BLOOD EXPOSURE INCIDENTS**

In our effort to advance the world of health, BD supports the following objectives that are aligned with best practices to reduce the risk of needlestick injuries and blood exposure for HCWs:

1. **Raise awareness, develop and execute infection prevention initiatives, and educate stakeholders on the risks of blood exposure and needlestick injury**

   **Policy Makers, Regulators, and Ministries of Health:** Raising awareness of the clinical, emotional, and economic burdens of blood exposure and needlestick injury is critical to informing policies that protect HCWs. BD supports the development of policies, guidelines, and training programs that cover bloodborne pathogens and associated risks, infection prevention practices, post exposure procedures, reporting and surveillance, and safety-engineered devices.

   **Healthcare Facilities and HCWs:** BD supports initiatives that provide HCWs and other stakeholders with the information and resources they need to protect themselves from NSIs and other blood exposures. BD is committed to supporting the development of end-
to-end training on best practices, products, and reporting and surveillance to ensure compliance with infection prevention and control guidelines.

2. **Implement reporting and surveillance procedures to monitor the prevalence of needlestick injury and blood exposure in all healthcare facilities**
   
   It is essential that healthcare facilities adopt protocols on needlestick injury and blood exposure reporting to enhance surveillance and ensure exposures are reported accurately. Governments should oversee and work with healthcare facilities to improve compliance with laws, regulations, and guidance designed to prevent exposure to bloodborne pathogens.

3. **Mandate safer working practices for all HCWs**
   
   Governments should set national targets, and acute and non-acute healthcare facilities must regularly conduct internal audits and engage with frontline HCWs to identify opportunities to adopt safer practices. Employers should be required to develop an exposure control plan to eliminate or minimize the risk of exposure to bloodborne pathogens resulting from a needlestick injury or mucocutaneous blood exposure.

4. **Accelerate the adoption of safety-engineered devices**
   
   Governments should promote legislation mandating the use of safety-engineered devices to reduce the risk of HCW exposure to bloodborne pathogens. Healthcare systems should prioritize funding for safety-engineered devices, including safety vascular access devices, safety needles and syringes, needle-free systems, and appropriate sharps disposal containers. Efforts must be made to raise awareness of existing standards, guidance on available technologies, and enforcement to support compliance.

**BACKGROUND:** **Exposure to Bloodborne Pathogens Causes Serious Health Concerns for Healthcare Workers and Avoidable Costs to the Healthcare System**

Exposure to bloodborne pathogens and the corresponding risk of infection to HCWs is a problem around the world. In 2019, the Centers for Disease Control and Prevention (CDC) estimated that 385,000 needlesticks and other sharps-related injuries occur every year in the United States (U.S.). A meta-analysis reported that one-year global prevalence of NSIs among HCWs was 44.5%, with highest prevalence observed in Southeast Asia at 58.2%, followed by 53.5% in the Eastern Mediterranean, 41.7% in Africa, 39.4% in the Americas, and 30.9% in the Western Pacific.

Although these statistics reflect a very serious HCW safety concern, there are challenges in obtaining full and accurate reporting across healthcare settings, and the problem’s true magnitude may be much greater. Underreporting of injuries is significant, and a study estimates that over 40% of injuries go unreported. Additionally, the infrastructure to collect data across healthcare settings varies, with challenges in non-hospital settings.

Percutaneous injury from hollow bore blood-filled needles (i.e., when a needle punctures the skin) is the primary route through which HCWs become exposed to bloodborne pathogens and potentially fatal diseases. While many different types of devices are associated with NSIs, non-safety hypodermic needles are found to be the most common cause of NSI, being responsible for 32%-36% of all NSIs. These needles are used in high-risk procedures including blood collection and vascular access. Even small amounts of infected blood can result in a life-threatening infection.
In addition, the literature indicates that blood and other body fluid mucocutaneous exposures largely occur to the HCW’s eyes, nose, mouth, and nonintact skin followed by their hands.10

The cost of NSI and blood exposures – both direct and indirect – is substantial. Direct costs include screening, post-exposure prophylaxis and treatment, as well as associated lab and office visits. Estimates of direct costs vary per incident but can range from several hundred to several thousand dollars (U.S.).6,11 Blood exposures that result in hepatitis or HIV can cost hundreds of thousands of dollars in medical expenses over the life of an injured HCW. The CDC estimates the cost of a single NSI event can range up to $5,000 accounting for the direct cost of initial follow-up and treatment level.8 Extrapolating this to 385,000 sharp injuries in the U.S. alone results in a significant cost burden of $1.9 billion. The economic burden of NSIs among HCWs in the European Union is estimated to be between €273 to €1,794 per incident. The national cost burden of in-hospital NSIs in Japan is estimated to be ¥33.4 billion (US$302 million) annually, with average cost per NSI of ¥63,711 (US$577).12 The economic burden of NSIs among HCWs in China was estimated to be ¥5.8 billion (US$859 million).13 An independent study demonstrated that introducing NSI prevention measures, including medical devices that incorporate needlestick protection technology, can significantly reduce these costs.14

Apart from the serious physical risks associated with NSIs and blood exposures, HCWs and their families face significant emotional pain, including anxiety, anger, feelings of guilt, and high stress levels due to the personal health impacts of HIV, hepatitis, and other dangerous bloodborne diseases or infections.6,15 Where post-exposure treatment is prescribed, the HCW may also suffer unpleasant side effects associated with some antiretrovirals or antibiotics, such as gastroenterological symptoms, liver dysfunction, and fatigue.16

With the use of safety-engineered devices, the majority of NSIs and blood exposure incidents are preventable. The CDC defines an NSI as a penetrating stab wound from a needle that may result in exposure to blood or other body fluids.17 Globally, the use of safety-engineered devices that cover the needle-tip after hypodermic injection lowers the risk of NSI per HCW by 43.4% compared to non-safety devices.6 In France and Australia, individual hospitals that adopted safety-engineered devices experienced similar reductions in needlestick and sharps injuries.18,19,20

To be clinically as well as cost effective, an NSI prevention program must combine education and training, work practice controls, and mandated and enforced use of safety-engineered devices.21,22 Although 124 countries have occupational safety and health legislation, only a few mostly higher-income economies such as the U.S., Australia, and European Union (EU) member states have specific government legislation to prevent and manage NSIs.23 In the U.S., several studies have demonstrated a significant reduction in NSIs after the implementation of the Needlestick Safety and Prevention Act of 2000. Although more progress is needed, reductions ranged from 34-88%, depending on the device type and procedure.4,6,8,24,25,26 NSIs also continue to occur in Europe despite the EU 2010 Directive (EU Sharps Directive 2010/32/EU). The implementation of the new Medical Device Regulation (MDR) in the EU aims to further protect HCWs from NSIs. However, without mandating its use, its effectiveness may be blunted.

The COVID-19 pandemic and other public health emergencies created heightened awareness of infectious diseases and brought renewed focus on protecting HCWs from workplace risks. Ensuring the mental and physical safety of HCWs is a key component to maintaining public health systems. While safety legislation and educational initiatives are essential to protecting HCWs, more must be done to mitigate the daily risks HCWs face while caring for patients. We must implement effective reporting and surveillance mechanisms, regularly conduct stakeholder outreach, enforce compliance with legislative guidance and local policies, and accelerate the adoption of safety-engineered devices to ensure HCWs are safe from needlestick injuries and blood exposure.


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