SAFETY FIRST

Perceptions and recommendations from health care workers on needlestick injuries

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Abbreviations

AD	Auto-disable syringes
ANA	American Nurses Association
CDC	Centers for Disease Control and Prevention
EPINet	Exposure Prevention Information Network
EXPO-S.T.O.P.	Exposure Survey of Trends in Occupational Practice
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HICs	High income countries
ICM	International Confederation of Midwives
ICN	International Council of Nurses
IPC	Infection prevention and control
LMICs	Low- and middle-income countries
NSPA	Needlestick Safety & Prevention Act
OSHA	Occupational Safety & Health Administration
PEP	Post-exposure prophylaxis
PPE	Personal protective equipment
SIP	Sharps injury protection
TDICT	Training for Development of Innovative Control Technologies Project
WHO	World Health Organization

Definition of Terms

AUTO-DISABLE FEATURE (FOR SYRINGES) — a mechanism that prevents the plunger in syringes from being pulled backward to prevent refilling and reuse

HEALTH CARE WORKER — includes clinical staff, medical practitioners and others who work in health services, such as administrators, facilities personnel, and community-based workers

NEEDLESTICK INJURY — the penetration of the skin by a hypodermic needle or other sharp object that has been in contact with blood, tissue or other body fluids before the exposure

REUSE PREVENTION FEATURE (FOR SYRINGES) — an auto-disable feature that includes variable dosing. Other features could include multiple plunger aspirations and a plunger that breaks when pulled back

SAFETY CULTURE — the collective commitment and values that management and employees share to ensure safety within a work environment

SAFETY DEVICES — non-needle sharps or needle devices for extracting body fluids, accessing veins or arteries, or administering medications and other fluids with a built-in safety feature or mechanism that reduces the risk of an exposure incident among health workers

SHARPS — includes syringe needles, scalpels, broken glass and other objects potentially contaminated with blood from a source patient

SHARPS INJURY PROTECTION — a mechanism that covers the needle after the injection is administered in order to prevent exposure to needlestick injuries

SURVEILLANCE — systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health to reduce morbidity and mortality

Introduction

The COVID-19 pandemic has revealed how vulnerable frontline health workers are to infectious diseases. Just months ago, few people were familiar with the term personal protective equipment or PPE. During routine visits to a doctor's clinic or even urgent visits to a community hospital, little thought was given to the equipment that health care workers must use to protect themselves and their patients. It was often just assumed that health care workers had the tools to administer treatment or complete a procedure safely and effectively. Most people also rarely considered the supply chain management necessary to stock medical facilities with supplies or the ongoing training health care workers need to keep up with medical technology advances.

The global COVID-19 crisis has changed the way people look at PPE and other medical equipment and devices designed to protect health care workers from injury or prevent the spread of infection or illness. Once again, the world has witnessed the importance of equipping and training workers on the frontlines of health care delivery, as well as the tragic costs of not doing so. But before the pandemic hit, the global health community was already grappling with one prevalent hazard to health care workers: needlestick and other sharps-related injuries that expose health care workers to bloodborne pathogens.

Little is known about the global burden of percutaneous injury among healthcare workers. However, a 2005 World Health Organization report estimated that worldwide more than 3 million occupation-related percutaneous injuries occur annually.[1] Scalpels, sutures, hypodermic needles, blood collection devices, or phlebotomy devices — all customary tools, each carrying the risk of infecting others. Doctors and nurses are extremely exposed, but so are cleaners, laundry workers, and other medical facility personnel who handle needles and other sharp instruments or inadvertently come into contact with them. Worldwide, an estimated 82,000 health care workers become infected with hepatitis B or hepatitis C, and 1,000 health care workers with HIV each year.[2] The U.S. Occupational Safety and Health Administration estimates that 5.6 million workers in the health care industry are vulnerable to occupational exposure to more than 20 bloodborne pathogens.[3] If the exposed health care worker contracts a communicable disease, the impact is often life changing. Needlestick injuries are largely undocumented in low- and middle-income countries, but can reasonably be assumed to exceed those in more developed countries. Needlestick injuries have the potential to cause long-lasting damage for victims and

their loved ones, including loss of employment, prolonged physical health problems, stigma, and emotional and psychological stress.

To learn more about these issues, Devex, in partnership with BD, tapped into its network of global health professionals and conducted an online survey of more than 1,000 health practitioners around the world. Questions included whether the COVID-19 pandemic has sharpened the focus on PPE use in the workplace, about why needlestick injuries often go unreported, and which occupational policies and strategies can help curb the problem. A series of in-depth interviews with health practitioners, policy experts, and advocates was conducted to gather firsthand perspectives on needlestick injury misconceptions, challenges, best practices, and trends.

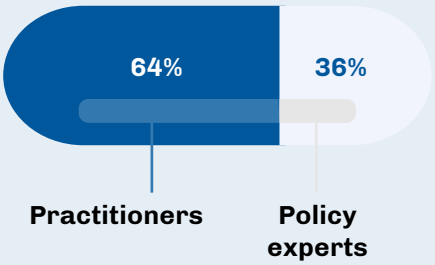
Among many important findings, the survey results confirmed that there is a high level of awareness of needlestick injury among health care workers, which is now more pronounced due to the COVID-19 pandemic. Health care workers highlighted ways product innovation and training can address safety equipment shortages in low-resource settings and defined some of the leading reasons why a needlestick or sharps injury goes unreported. Other findings indicated that reducing and mitigating needlestick injuries requires operationalizing certain protocols and regulations through consistent enforcement and sustained compliance. The report aims to contribute to the global conversation around needlestick injuries and make the case for better and smarter investments to keep health care workers around the world safe and secure.

Methodology

The data and information gathered for this report are based on in-depth interviews with a diverse set of health care workers and sharps safety advocates and an online survey of health care professionals from around the world.

IN-DEPTH INTERVIEWS

To gather firsthand perspectives and insights, Devex spoke to 14 health care policy leaders or practitioners with experience or expertise in sharps safety.

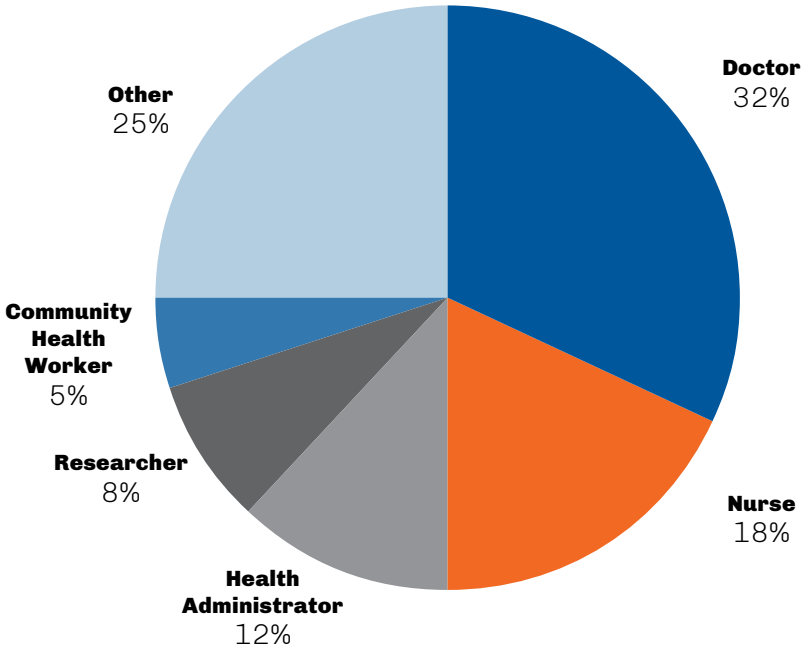


ONLINE SURVEY

Tapping into its network of over one million development professionals, Devex reached out to thousands of health care workers and conducted an online survey with 1,097 respondents from 108 countries. A screener question at the beginning of the survey ensured that participants were health care workers or work in, or deal regularly with, a health care facility.

MEET THE ONLINE SURVEYRESPONDENTS:

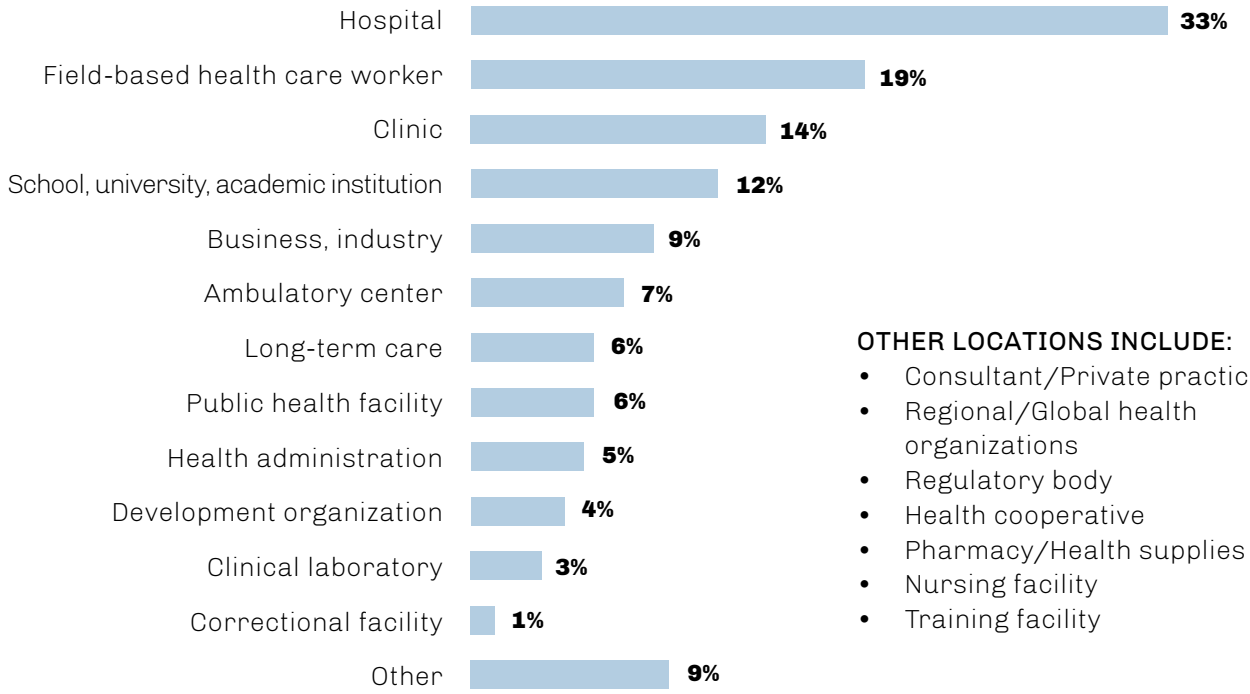
What are their occupations?



OTHER OCCUPATIONS INCLUDE:

- Clinical laboratorian
- Public health professional
- Health program and policy professional
- Paramedic, emergency responder
- Social/development worker
- Midwife
- Medical technologist
- Environmental services worker
- Home health care provider
- Dentist
- Pharmacist
- Occupational health

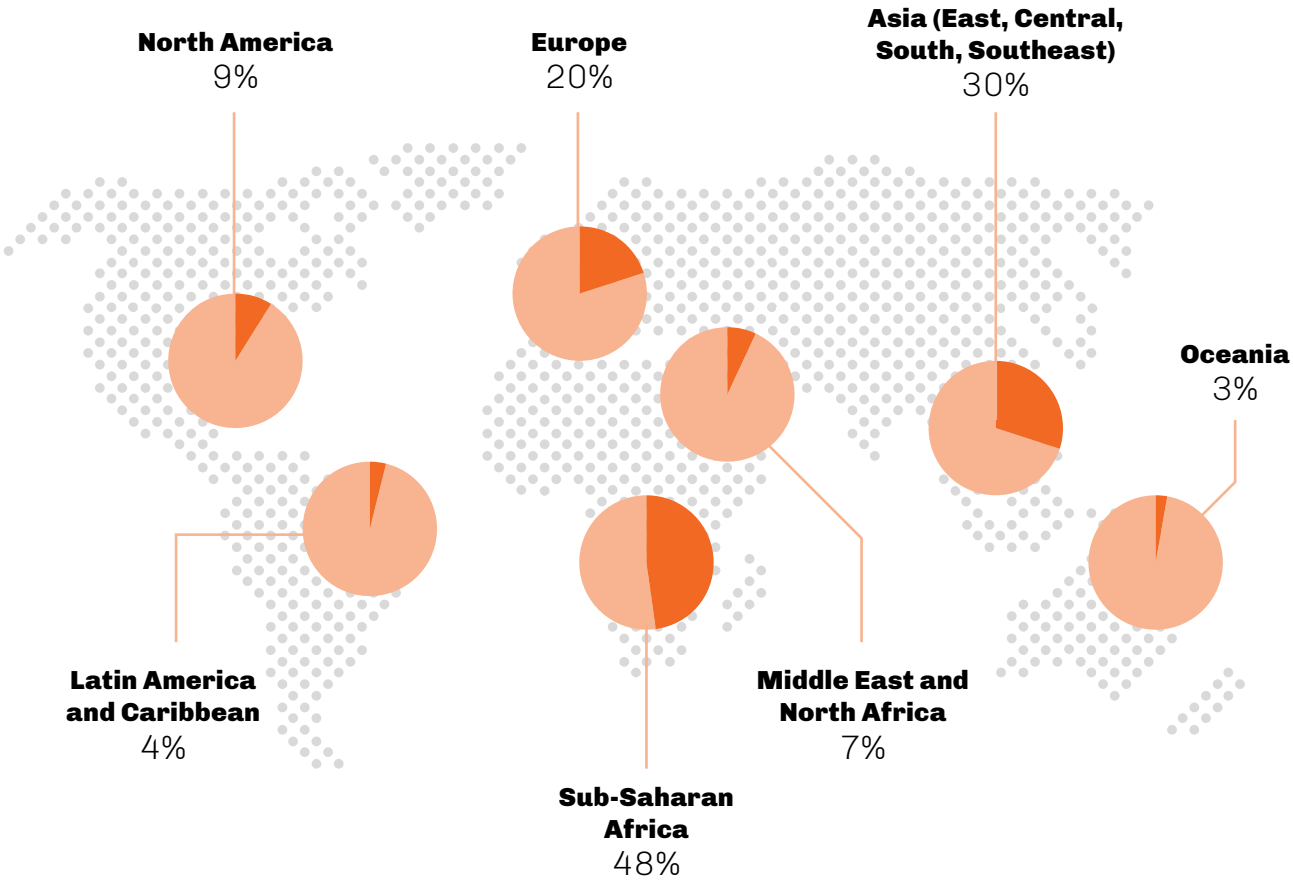
In which location(s) do they work?



OTHER LOCATIONS INCLUDE:

- Consultant/Private practice
- Regional/Global health organizations
- Regulatory body
- Health cooperative
- Pharmacy/Health supplies
- Nursing facility
- Training facility

In which region(s) do they have extensive experience?



Key Findings

Needlestick and other sharps-related injuries are still all-too-common among health care workers

Health care facilities employ approximately **59 million workers** globally, and each is exposed to occupational hazards, including exposure to bloodborne pathogens.[4] Needlestick and sharps injuries are the most common cause of occupational infections among health care workers. Worldwide, about **40% of HBV and HBC infections and 2.5% of HIV infections** that occur on the job can be attributed to occupational sharps exposures, leading to over a thousand deaths annually.[5]

Those working in **operating rooms** and in-patient rooms are at the highest risk.[6] Surgeons and nurses commonly sustain injuries from suture needles and other sharps used in operations. However, non-medical personnel in health facilities are also vulnerable to needlestick injuries. Surveillance data in the U.S. shows that **25% of all injuries in health care facilities occur to the non-original user of the device:**[7] people downstream, such as other members of the clinical team, environmental services staff, waste haulers, and laundry personnel, and other types of hospital support staff.

According to the Devex survey, 65% of health care workers have sustained or know someone who has sustained a needlestick injury. Nurses are especially exposed, with 75% experiencing, or knowing someone who has experienced, a needlestick or sharps injury.

Top needlestick and sharps injury events:

1. Recapping needle: 18%
2. Taking blood: 16%
3. Using a solid sharp (e.g., suture, scalpel blade, hemostat, etc.): 15%
4. Disposing needle: 12%
5. Handling rubbish: 12%
6. Injecting an IV or arterial catheter: 11%
7. Administering percutaneous injection: 8%
8. Activating a safety feature: 6%

Source: Devex survey

Health care workers in low-resource settings are especially vulnerable to sharps injuries

WHO estimates that about **90% of needlestick or sharps-related injuries occur in LMICs**.[8] While this rate can partly be explained by the higher incidence of bloodborne pathogens in the general population, inadequate health funding, poor health care infrastructure, and an overburdened workforce are also significant contributors. For instance, despite accounting for 14% of the world's population, sub-Saharan Africa carries about **70% of the global HIV/AIDS burden but has only 3% of the world's health care workers** and a share of only 1% of global financial resources for health.[9]

71% of Devex survey respondents in sub-Saharan Africa have sustained or know someone who has sustained a needlestick injury, in contrast to 60% of respondents in Europe.

Needlestick injuries are preventable with practical, low-cost measures, but they remain a significant problem for LMICs that lack capacity and access to reliable technologies. For example, among the bloodborne diseases, HBV is not only the most transmissible but also the only one that is **preventable by vaccination**.[10] HBV vaccination coverage varies widely by region – from **18% in Africa to 77% in Australia and New Zealand**.[11]

Why do more needlestick injuries occur in low-resource settings?

- Increased prevalence of HIV/AIDS and other bloodborne pathogens burdens the health infrastructure, as well as increases blood draws for testing and treatment
- Limited concrete knowledge on the transmission of HIV and other bloodborne diseases in health care facilities
- General lack of awareness campaigns
- Lack of resources to procure more safety-engineered equipment and protective gear
- Unsafe practices due to an overburdened workforce
- Gaps in standardized procedures and tested interventions
- Lack of regulation and policy to protect health care workers from exposure

Source: WHO[12]

"In low-resource settings, the health workforce are often not sufficient to deal with the high number of women coming into the maternal and newborn wards. With few staff and many patients, health care workers are often busy trying to look after everybody. Needlestick injuries happen when they're rushed and don't take good care when they're using a needle. In some low-resource settings they may even reuse a needle, so recapping is a practice that can lead to needlestick injuries and is not recommended."

Florence West, midwife advisor, International Confederation of Midwives

Lessons in health worker safety following the Ebola outbreak in Liberia

Following two civil wars, economic crises, and mass emigration of skilled professionals, Liberia had an already strained health workforce when the Ebola outbreak hit in 2014. At the time, the country was ranked 186th in the world in terms of health care delivery systems, with an estimated **50 doctors** (excluding foreign physicians), or one for every 90,000 citizens – far below the WHO-recommended 1:1,000 doctor-patient ratio.[13] The disease was declared eradicated in 2016, but not before killing **8% of Liberia's health care workforce**.[14]

Since then, Liberia has taken strides to **strengthen local capacity**[15] and combat disease transmission, with the Ministry of Health developing protocols for **national infection prevention and control**,[16] as well as information campaigns and training on needlestick injury prevention and proper sharps disposal.

Viola Karanja, deputy director at Partners In Health in Liberia, said that these improvements to health infrastructure and general awareness of infectious disease have better prepared the country for the COVID-19 pandemic response.

However, the country still struggles with a strained medical capacity, poor reporting and data collection, and lack of access to safety equipment such as PPE, sharps disposal units, and incinerators. According to Karanja, cleaning staff are also less informed of both the risks associated with needlestick injuries and the protocols involved in disposing of sharps containers, which are often overfilled. In the face of COVID-19, challenges in procurement coupled with **weak government support** for health care workers threaten the hard-earned gains from the country's experience with Ebola, and significant gaps remain in addressing health care worker safety.[17]

"In Liberia you may have a very good supply of PPE for one month, but use it all up by the month's end and have nothing for the coming month. Where we are, the roads are bad so it takes a while for new supplies to arrive. When we send a request to the Ministry of Health for new supplies, it takes another month or so. Those months where we don't have gloves or other supplies are challenging because we don't have other options to buy."

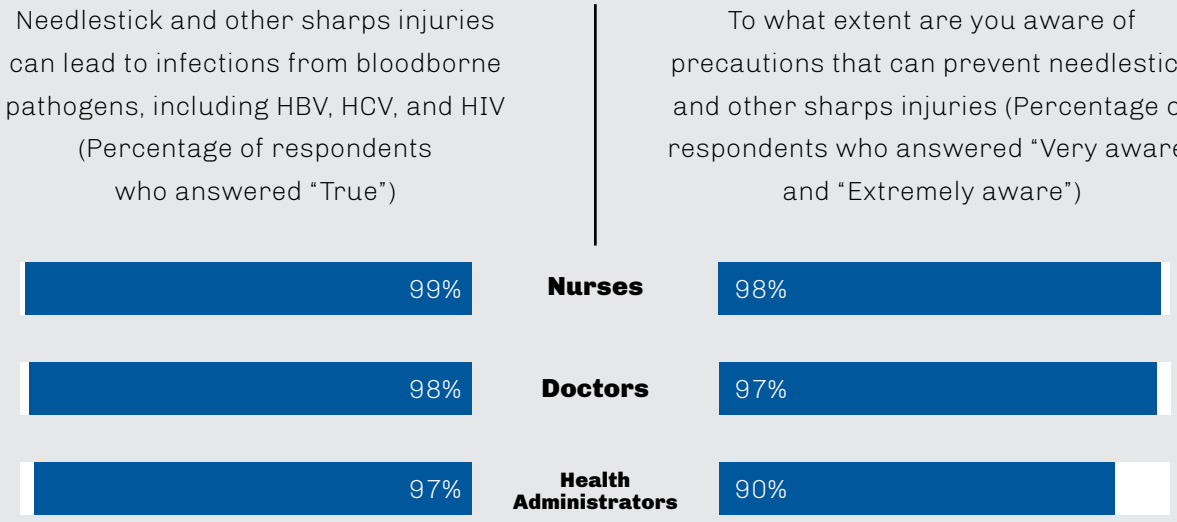
Viola Karanja, deputy director, Partners In Health, Liberia

COVID-19 shines a spotlight on risk awareness and health care worker safety

Awareness of the risks from needlestick and other sharps injuries marks the first step in promoting sharps safety in any health care setting. Occupational exposure to bloodborne pathogens due to sharps injuries is a well-known risk among health care workers and typically covered in pre-service education and regular workplace hazard training. Accordingly, the Devex survey shows that almost all respondents acknowledge that needlestick and other sharps injuries can lead to infections such as HIV, HBV, and HCV.

Linked to this awareness is the knowledge about preventing sharps injuries among health care professionals: a vast majority of Devex survey respondents are either very or extremely aware of the precautions against sharps injury.

Level of awareness among select health care occupations



"I think generally healthcare professionals have a good level of awareness that there is a high rate of sharps injuries. I would say though that it's not always top of mind with so many other competing priorities and we certainly have work to do still in this area."

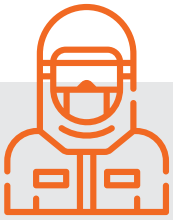
Erica Burton, senior advisor, nursing and health policy, International Council of Nurses

While health care worker protection issues have always been important, the current COVID-19 pandemic has drawn attention to the urgency of protecting health care workers from infections in the workplace. Following the declaration of the pandemic in March 2020, WHO issued interim guidance that highlighted the rights and responsibilities of health care workers.[18] Specifically, it cites the right of health workers to be provided with information, instruction, and training on occupational safety and health, including refresher training on infection prevention and control, as well as adequate IPC and PPE supplies, among others.

"I hope COVID-19 will lead to a new recognition for the work and risks taken by health workers – the majority of whom are women – and the decent work conditions they deserve."

Dr. Roopa Dhatt
co-founder and executive director, Women in Health

The Devex survey also reflects this greater emphasis on health care worker safety:



95% agree that the current pandemic has increased awareness of health care worker protection issues in their workplace, and

93% agree that the current pandemic has sharpened the focus on the availability and proper use of PPE.

Devex survey respondents also note better IPC measures, with 80% agreeing that aside from PPE use, other protection measures, including needlestick and sharps injury prevention, have improved in their workplace since the onset of the pandemic.

Beyond awareness: Cultivating a culture of safety

Consistent with the survey, most Devex interviewees affirm that health care workers are generally aware of needlestick and other sharps-related injuries. But a number of them emphasize the need to regularly communicate, revisit, and reinforce awareness activities, especially because of shifting and competing priorities in high-pressure health care environments. Some point to fatigue and burnout, while others cite instances of rushed care or high caseload as factors that could keep awareness of such risks from being top of mind.

This suggests that simply knowing about risks and precautions is not enough. Programs to prevent needlestick and other sharps injuries should go beyond awareness toward influencing overall safety attitudes and behaviors by cultivating a safety culture. First studied in the manufacturing sector and heavy-industry work settings, safety culture refers to the collective commitment and values that management and employees share to ensure safety within a work environment.

The CDC's **Workbook for Designing, Implementing and Evaluating a Sharps Injury Prevention Program** counts institutionalizing safety culture among the essential activities of any sharps injury prevention program.[19] The CDC also asserts that safety culture measures are linked to reductions in sharps injuries and improved personnel compliance with safe work practices. According to the CDC, factors influencing a culture of safety includes:

- Management commitment to safety
- Health care worker involvement in safety decisions
- Method of handling safety hazards in the work environment
- Feedback on safety improvements
- Promotion of individual accountability

"Health care workers must be protected by employers and the government but in turn workers must also respect regulations and protocols to protect themselves. So it's not just on the side of employers, but also on the side of employees. They must ensure that they are protected as much as possible."

Sheja Innocent, secretary general, Rwanda Nurses and Midwives Union

Access to safety devices and training must be improved

As COVID-19 cases continue to rise globally, the shortage of PPE remains a top concern for frontline health workers. WHO estimates that production needs to be ramped up by 40% in order to meet the global demand.[20] Acquiring protective equipment, tools and devices could also prove challenging for smaller health centers that have limited purchasing power.

As pointed out by Devex interviewees, the slow uptake of safety devices and tools in developing countries can be attributed to the higher cost of safety products. For simple and smart innovations that are available at low price points such as safety blood lancets[23] and syringes with re-use prevention and sharps injury protection features,[24] negative attitudes toward new and unfamiliar medical tools remain a major obstacle. Many health practitioners seek to cut costs by practicing unsafe injection practices and express their reluctance to shift to single-use safety syringes precisely because they cannot be reused.[25] Additionally, health centers in isolated areas have difficulty acquiring these medical supplies, as well as PPE, safety disposal containers and PEP, due to poor infrastructure and the absence of robust supply chains.

PPE, safety devices and the fight against COVID-19

Health experts warn that once a vaccine for COVID-19 becomes available, a global shortage on safety devices needed to administer the vaccine could follow. In the U.S. alone, estimates predict that up to 850 million syringes could be required to deliver the vaccine.[21] Currently, the demand for PPE remains high as concerns over the safety of frontline health workers continue to rise.

Estimated monthly PPE needs for COVID-19 response worldwide

Medical masks
89 million

Examination gloves
76 million

Safety goggles
1.6 million

Source: ***WHO***[22]

"In many settings, nurse to patient ratios are much too high. These heavy workloads can lead to rushed care and cutting corners with safety procedures and protocols and will increase the likelihood of human error during procedures. Safe staffing affects the ability of nurses to deliver safe and high-quality care."

Erica Burton, senior advisor, nursing and health policy, ICN

Bridging the gap: How knowledge and innovation can address safety equipment shortages in low-resource settings

Although safety devices and tools are available in LMICs, supplying protective medical equipment in rural and isolated health centers can be challenging due to the lack of serviceable infrastructure.

Florence West, midwife advisor at ICM, recalls her experience during a monitoring and evaluation visit in Laos where she inspected health centers in different communities: “In the central areas, the bigger hospitals are well-stocked with resources. They have enough sharps containers and they know what to do after exposure if they were to get a needlestick injury. Then you drive seven hours to a smaller health facility and you find out they haven’t received their supplies for two months because their roads have been washed out by rain and the truck couldn’t get through.”

She relates that smaller health facilities in remote communities often have a shortage of sharps containers and struggle with proper sharps disposal. She also notes that safety supplies such as PEP and rapid test kits, as well as laboratories for blood testing are commonly lacking in low-resource settings.

Dr. Janine Jagger, former epidemiologist at the University of Virginia’s School of Medicine agrees that access to safety tools and devices remains uneven. Her university works with the University of Kampala nursing school to address the shortage of protective gear in Uganda by training nurses in PPE production.

“In poor areas, cost will always be an issue. But with medical knowledge, you can make the right decisions to get closer to ensuring health worker safety,” she said. “We’re not just teaching nurses how to sew PPE; we’re teaching them the principles behind PPE, about disease transmission and infection control so that nurses have a clear understanding of how to prevent infections.”

Through proper training and knowledge sharing, Dr. Jagger believes that shortages in safety equipment, whether PPE or safety needles, can be avoided.

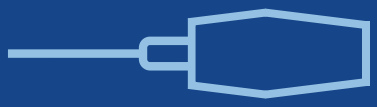
OSHA defines safety-engineered sharps devices as non-needle sharps or needle devices for extracting body fluids, accessing veins or arteries, or administering medications and other fluids with a built-in safety feature or mechanism that reduces the risk of an exposure incident among health workers.[26] For administering immunization services, WHO, UNICEF and UNFPA recommend the use of auto-disable syringes that have built-in mechanisms that disallow repeated use.[27] Similarly, Gavi, the Vaccine Alliance, recommends AD syringes with sharps injury protection features – single-use, disposable syringes with a mechanism that covers the needle after use to reduce the risk of accidental needlestick injury – for administering vaccines in LMICS.[28] Examples of safety devices include:

Auto-disable syringes for immunization

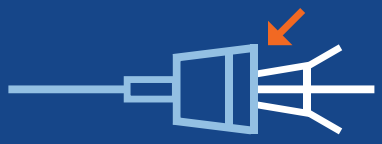
Re-use prevention syringes for therapeutic injections

Sharps injury protection syringes

Manual and automatic retractable syringes



Shielded or retracting catheters for intravenous administration of medication or fluids



Intravenous medication delivery systems that administer medication or fluids through a catheter port or connector site through a needle with protective covering

Blunt suture needles

Plastic capillary tubes (in place of glass tubes)

"Training should not be a one-time exposure; it needs to be revisited. The commitment to injection safety has to be renewed on a regular basis. They need regular training in their facilities, regular education, regular reinvestment of that time in renewing and reviewing the latest technology and the procedure for injection safety, including needlestick injury prevention."

Dr. Evelyn Mc.Knight, principal, Evelyn and Thomas McKnight Family Fund for Patient Safety

Safety tools and devices are just one part of the equation. Training on safety procedures and technological advances is also an essential element of needlestick injury prevention, according to ICN[29] and CDC[30].

However, Devex interviewees point out that the costs discourage some health facilities from prioritizing regular training. Without regular safety training in health facilities, the risk of needlestick injuries for health workers increases as they become more likely to disregard safety protocols that could slow down their work amid high caseloads and understaffing. This is particularly common in LMICs where the shortage in health workers is more pronounced.[31] Facility personnel who have no medical background also need to be oriented with proper disposal guidelines and the risks they face when handling needlesticks and other sharps. Devex interviewees state that health facility administrators should push for mandatory training among health workers and facility personnel, arguing that regular workshops and training helps increase accountability and contribute toward building a culture of safety.

71% of Devex survey respondents agree that their workplace has enough resources and/or personnel to manage needlestick and other sharps injuries, including administering PEP if warranted.

83% of respondents in high-income regions such as North America, Europe, and East Asia agree that their workplace provides, and is adequately stocked with devices equipped with a sharps injury prevention feature (e.g., shield, retracting needle, etc.). Among respondents from LMICs, 72% agree that this is the case.

85% of Devex survey respondents identify establishing clear policies and training programs as the most effective way to address needlestick and other sharps injuries.

"Health workers have the knowledge. But sometimes they want to hurry, they're tired, they are stressed, some lack experience and some may be rushing to do another procedure. All these factors can contribute to non-compliance with standard protocols."

L. Yohgasundary Letchumanan, vice president (education), Malaysian Nurses Association

Investing in safety: The cost of needlestick injuries

While many argue that safety devices and training can be costly, frequent incidence of needlestick and other sharps-related injuries could significantly ramp up expenses for health facilities and reduce productivity among health care workers. CDC estimates that needlestick injuries could cost between $70 and $5,000 depending on the severity of the injury and the treatment required. Costs associated with needlestick injuries include:

DIRECT COSTS

- Baseline and follow-up laboratory testing of an exposed health care worker and testing the source patient
- PEP and other treatment that might be required
- Costs associated with preventing PEP side effects

INDIRECT COSTS

- Lost productivity associated with the time required for reporting and receiving initial and follow-up treatment for the exposure
- Health care provider's time to evaluate and treat an employee
- Health care provider's time to evaluate and test the source patient, including obtaining informed consent for testing if applicable

Source: CDC[32]

"Every health care worker should be armed with the right knowledge, because knowledge is the affordable resource. If they have the knowledge, they can use their knowledge and creativity to find solutions within their own environment."

Dr. Janine Jagger, professor of medicine, University of Virginia School of Medicine

KEY FINDING FIVE

Underreporting and stigma undermine efforts to improve health worker safety

While awareness of the risks associated with needlestick and sharps-related injuries is high among health care workers, underreporting remains a significant issue around the globe. About half of all sharps-related injuries among health care workers in the U.S. go unreported[33], and while difficult to track, it is estimated that up to 75% of needlestick injuries[34] in LMICs are not reported.

Factors contributing to poor reporting levels in LMICs include a lack of awareness on reporting protocols among support staff, difficulty setting aside time to report injuries due to high workloads, and persistent misconceptions on the consequences of acquiring an injury on the job. Without timely reporting of needlestick and other sharps-related injuries, PEP cannot be administered, risking the further spread of bloodborne diseases. Underreporting also leads to a lack of hard evidence on the actual numbers of incidents, compromising prevention efforts.

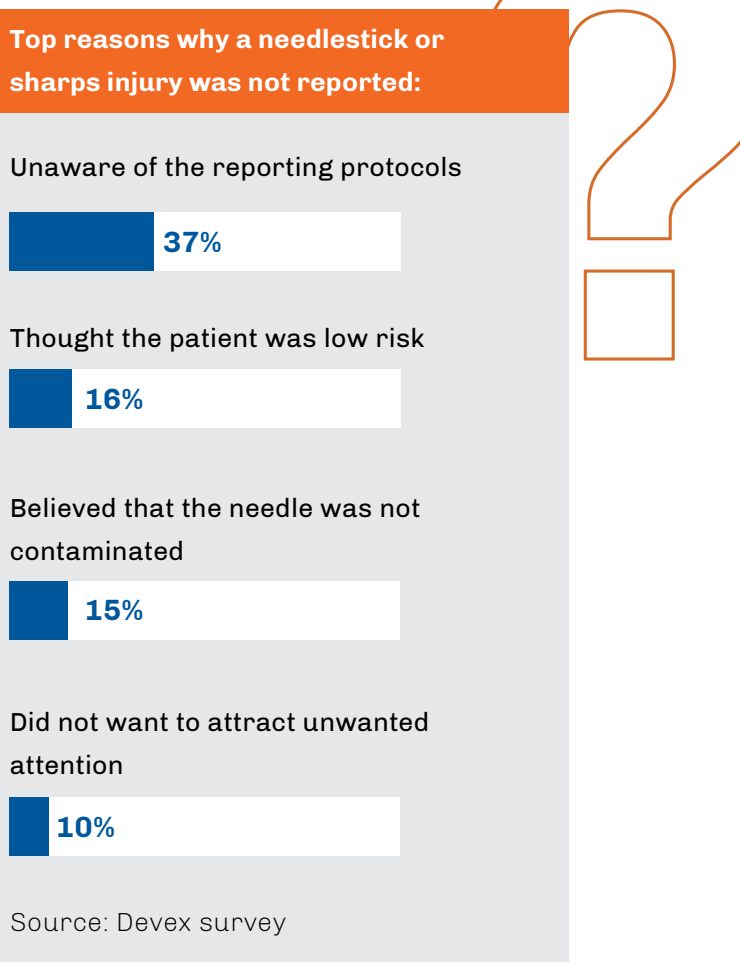
"I was discouraged by management, told there would be a lot of paperwork, that I might be found at fault, and I could be put on unpaid leave for the investigation and outcome."

Devex survey respondent

61% of Devex survey respondents think other health care workers are underreporting needlestick and other sharps injuries.

Among Devex survey respondents who were injured, or know someone who sustained needlestick or other sharps injuries, 21% say they did not report the injury.

Top reasons why a needlestick or sharps injury was not reported:

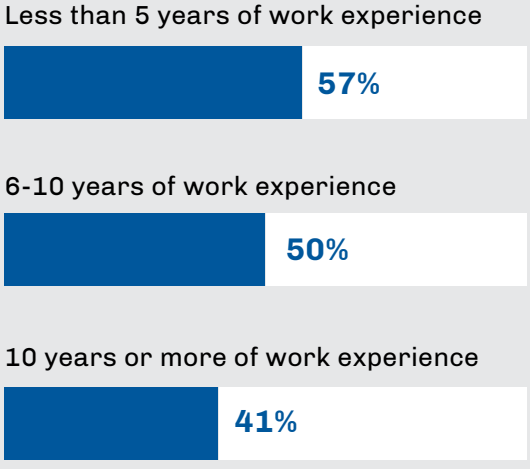


Source: Devex survey

Stigmatization experiences vary

44% of Devex survey respondents believe that there is stigma attached to reporting needlestick injuries in their facility. This perception increases to 53% among respondents with experience working in Central, South, Southeast, or East Asia — societies that tend to value social harmony, deference to authority, and "saving face".[37] Among respondents who have worked in more individualistic societies in Western regions such as North America and Europe, perception of stigma decreases to 36%.

Age and work experience are factors as well, as those starting out in their fields may be more conscious of the professional repercussions of sustaining a needlestick injury. In fact, perception of stigmatization decreases the longer one practices:



The distress and trauma that needlestick and sharps-related injuries cause are real, particularly when factoring in the anxiety of waiting for results and the potential consequences related to infection. Perceived stigma can be a major roadblock to reporting needlestick injuries, which in turn impacts health-seeking behavior.[35] Devex survey respondents believe that the stigma associated with reporting needlestick injuries can be attributed to the fear of judgement from others and the fear of the consequences of testing positive for a disease, such as the loss of job security. As a result, some health care workers downplay the possible consequences, rationalizing the injury event or the statistical likelihood of acquiring a life-threatening disease.

For example, in spite of high prevalence rates, data from CDC's National Surveillance System for Healthcare Workers cite surgeons as the least likely health care worker group to report an injury.[36] According to Dr. Amber Mitchell, president and executive director, International Safety Center, "there's a culture of shame relative to an injury occurring, because that member of the surgical team may feel like it was their fault and therefore do not report it."

"There is still stigma around contracting an infection through a needlestick injury. Health care workers sometimes fear that if they report such an injury, they may lose their jobs."

Dr. Roopa Dhatt, co-founder and executive director, Women in Global Health

To address stigma and encourage post-injury reporting, health care facilities should establish clear and accessible reporting mechanisms for health care workers. This can be achieved through creating reporting mechanisms that are simpler and more direct, eliminating fear of retaliation and focusing more on improving facility-based surveillance. Tools such as the Exposure Prevention Information Network include reporting forms, a pre-programmed report facility, and graphing capabilities that track exposure events, rather than individuals.[38] Because EPINet data is collected in aggregate, reporting can remain anonymous and free of all personal or facility identifiers. Demonstrating how reporting data is used in turn encourages good reporting — for this reason, interviewees recommend incorporating reporting data in information campaigns.

"The onus is on the facility to improve the culture of reporting injuries so that workers can get the care that they need and the facility can assess where the injuries are happening in order to prevent them in the future. It should be less about the worker, and more about the culture of the institution."

Dr. Amber Mitchell,
president and executive director,
International Safety Center

74% of Devex survey respondents are aware of their facilities' protocols on reporting after a needlestick or other sharps injury.

Strengthening post-injury reporting culture in an Indian private hospital

With approximately **3.5 million health care workers**,[39] India has a high incidence of exposure to needlestick injuries. According to Dr. Ekta Gupta, professor at the Institute of Liver and Biliary Sciences in New Delhi, "needlestick injuries in India are most commonly caused by health care workers, and they are grossly underreported because people do not know much about it."

While there are no national reporting systems for needlestick injuries in India, some hospitals, particularly private hospitals with greater resources, have put in place measures to counteract and reduce underreporting.

At Fortis Healthcare hospitals in India, hospital administrators provide around the clock reporting ability to circumvent underreporting due to the unavailability of the reporting officer. They provide an online reporting portal through EPINet, which is also streamlined with data collection and surveillance. The hospitals also provide free PEP to hospital staff that get seroconversion, but only if the incident is reported. Finally, hospital policy also allows for other health care workers to report needlestick and sharps injuries on behalf of another person. According to Dr. Murali Chakravarthy of Fortis Healthcare's department of anesthesia, "reporting is a hospital policy, it is not an incentive."

Surveillance: Connecting the dots between data and action

Public health strategies are only as strong as the data that informs them. Surveillance programs systematically collect information important to the prevention of occupational exposures and infections among health care workers. Aside from facilitating good reporting and mitigating reporting stigma, harnessing tracking data illustrates gaps and bolsters effective policies and standards.

Surveillance systems protect health care workers from occupational injuries by monitoring the prevalence of needlestick injuries and informing policies and strategies at the national and facility levels. Collective data analysis from **accurate reporting and surveillance** provides hard evidence and contributes to studies assessing the injury prevalence at the facility, national, and regional levels.[40] For example, EPINet data informed landmark policy and regulations in the U.S., including the **OSHA Bloodborne Pathogens Standard**[41] and the **Needlestick Safety and Prevention Act**.[42]

"It's a vicious cycle. Health workers don't report needlestick injuries so there's bad data. There's bad data so people don't realize it's a problem."

Kate Tulenko, chief executive officer, Corvus Health

Surveillance is also critical to improving safety-engineered devices. When new generations of safety-engineered devices become widely available, surveillance data and product evaluations are able to confirm their effectiveness in preventing injuries, or illustrate where gaps in design remain. Initiatives such as the **Training for Development of Innovative Control Technologies Project** bring together frontline health care workers, product designers, and industrial hygienists to prevent bloodborne pathogen exposure through evaluating and improving design for medical devices and equipment.[43] TDICT's medical device evaluation forms help pinpoint weaknesses in equipment and protocols, benefiting both health care facilities and manufacturers.

Identifying how and where injuries are happening is key. We can't know how to prevent them unless we know exactly how they're happening, and what devices are causing them."

Dr. Amber Mitchell, president and executive director, International Safety Center

Surveillance systems can record the:

- **Number of health care workers being exposed to bloodborne pathogens**
- **Circumstances contributing to occupational exposures**
- **Clinical management of those exposures, including HIV exposures and the use of PEP**
- **Side effects of HIV PEP and outcomes**
- **Effectiveness of new safety devices**

"Just as with coronavirus, unless you test, you don't know what the level of infection in the general population is or how well you're controlling it. It's no different with sharps injuries. If the number of injuries are not monitored, then we don't know where we are and where the problems exist."

Karen Daley, former president, American Nurses Association

Enforcing safety policies and effective legislation can advance sharps safety

Needlestick and other sharps-related injuries are among the wide, complex, and unique range of hazards health care workers face. While the International Labor Organization lists 124 countries with occupational safety and health legislation,[44] only a few mostly high-income economies — such as the U.S., Canada, Australia, Brazil, Taiwan, the United Kingdom and the European Union member states — have specific government legislation to prevent and manage sharps injuries. These laws require health care employers to provide a safe working environment in relation to sharps injuries, addressing crucial issues such as safety awareness and training, the use of safety-engineered devices, and incident reporting.

To address needlestick and other sharps-related injuries, other governments rely on general sharps injury prevention guidelines and policies from health ministries or health care facilities. Without overarching legislation, sharps safety policies and their enforcement can be inconsistent and further weakened by changing health care priorities and especially by strained resources in the case of LMICs. While certainly important to normalize and regulate sharps safety standards, legislation alone cannot reduce the risks of sharps injuries. Devex interviewees emphasize that even with standards in place, sharps safety outcomes ultimately depend on operationalizing relevant regulations through consistent enforcement and sustained compliance. This is also true for most health care settings that count on facility safety policies to keep sharps injuries in check.

The Devex survey shows that while 71% of respondents believe current legislation, regulations, standards, and/or facility policies

on preventing needlestick and other sharps injuries are effective, 40% believe they are not effectively enforced. It also shows a marked difference of perceptions regarding sharps safety legislation and policies between regions of mostly LMICs (sub-Saharan Africa, Middle East and North Africa, Latin America and Caribbean, Central Asia, South Asia, and Southeast Asia) and regions of mostly high-income countries (North America, Europe, East Asia, and Oceania).

40% of Devex respondents believe current legislation, regulations, standards and/or facility policies on preventing sharps injuries are not effectively enforced.

Perceptions of effectiveness and enforcement of sharps safety legislation and policies in LMICs and HICs

Current government legislation, regulations, standards and/or facility policies are effective in preventing needlestick and other sharps injuries for me and my workplace (Percentage of Devex survey respondents who answered "Strongly agree")

Current government legislation, regulations, standards and/or facility policies on needlestick and sharps safety are sufficiently enforced (Percentage of Devex survey respondents who answered "Strongly agree")

20th anniversary of the Needlestick Safety and Prevention Act: Is complacency setting in?

In November 2000, the **Needlestick Safety and Prevention Act** was signed into law in the U.S., marking the first national legislation in the world mandating the use of safety-engineered sharps to help prevent injuries.[45] Aside from requiring sharps with the best available engineering controls, the landmark legislation also directed health care employers to:

- Ensure the use of the best technology by updating exposure control plans annually,
- Solicit and consider employee input in selecting effective safety devices, and
- Maintain a sharps injury log that tracks, among other things, the type and brand of device used.

In line with the NSPA, OSHA in 2001 revised the country's **Bloodborne Pathogens Standard** to incorporate new employer requirements and specify engineering controls in greater detail.[46] Together, the two laws aim to guarantee the safety of workers against exposure to bloodborne pathogens in the U.S.

Twenty years after the adoption of the NSPA, needlestick and other sharps-related injuries remain a significant occupational hazard for health care workers in the U.S. In the initial years after NSPA implementation, there was a significant decrease in sharps injuries in the country with **one study** citing a greater than one-third drop in hospital sharps injuries immediately following legislation — a reduction sustained through 2005.[47]

However, latest available figures covering 2016 and 2017 from the largest annual survey of sharps injuries and mucocutaneous blood exposures among health care workers in the U.S. — the **Exposure Survey of Trends in Occupational Practice** — point to a rise in cases year-on-year from 2015 to 2017.[48] It marked a significant increase in blood exposure incidence over results in 2011, when EXPO-S.T.O.P. began.

Several factors may explain the trend, but several sharps safety advocates have been warning about complacency setting in over the years since the passage of the NSPA. In 2012, the International Safety Center and the American Nurses Association, which was instrumental to the creation of the legislation, along with other U.S. health care associations, released a **Consensus Statement and Call to Action** to address remaining challenges to reduce the risk of health care worker exposure to bloodborne pathogens.[49] The statement called attention to 5 issue areas, including 2 that were already required in the NSPA: involving frontline workers in the selection of safety devices and addressing gaps in available safety devices.

In a **March 2020 article** to mark the 20th anniversary of the NSPA, International Safety Center President and Executive Director Dr. Amber Mitchell noted that while the procurement of devices with sharps injury prevention features may be increasing, OSHA compliance demands that safer devices are being evaluated, considered, and implemented annually.[50]

Conclusion

The COVID-19 pandemic, like most crises and emergency situations, will continue to offer the world many lessons and improvement opportunities, particularly in the field of health care. Already the pandemic has shown that frontline health care workers deserve the equipment and tools that protect them from disease. Something as basic as drawing blood — one of the most common procedures in health care — should not result in the damage and trauma health care workers too often endure. Investing in continuous and comprehensive sharps education, developing accessible and affordable safety tools and equipment, and strengthening national- and facility-level protocols and standards are a few key ways to prevent needlestick injuries and protect health care workers. We hope this report shed light on some of the critical dynamics around needlestick injuries and defined ways to decrease the occurrence and mitigate the consequences of these events far into the future.

"What we're seeing in these emerging discussions around needlestick injuries is really a reflection of attitudes and larger considerations around health worker safety. The day we talk about patient and worker safety in the same breath is the day I know we've done our job"

Karen Daley, former president, ANA

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