

The background of the cover is a photograph of a hospital laundry cart in a hallway. The cart is filled with white linens and is positioned in the foreground, slightly out of focus. The hallway extends into the background with other carts and medical equipment visible.

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**SPECIAL DIGITAL PULSE ISSUE:  
Laundry Insights**

**PREVENTING  
SHARPS  
INJURIES &  
BLOODBORNE  
PATHOGEN  
EXPOSURES  
IN THE HEALTHCARE LAUNDRY**



# PREVENTING SHARPS INJURIES & BLOODBORNE PATHOGEN EXPOSURES IN THE HEALTHCARE LAUNDRY

By Kelly M. Pyrek

When it comes to protecting hospital personnel from the transmission of infectious diseases, the patient-care delivery worker is often the person thought of first; however, infection preventionists must be aware that the handling of healthcare textiles poses risks to another population of hospital worker. Laundry personnel are responsible for processing hundreds of thousands of pounds of contaminated reusable linens annually and can be at risk for injury if precautions are not taken. Of all the potential hazards in the healthcare laundry environment, sharps injuries and bloodborne pathogen exposures can be some of the most injurious to workers in terms of long-term treatment required.

## Occupational Hazards in the Laundry Environment

Exposure to bloodborne pathogens occur when contaminated laundry that contains sharps is handled by laundry personnel, or if personnel come into contact with healthcare textiles that are contaminated with blood or other potentially infectious body fluids.

Contaminated sharps, as defined by the Occupational Safety and Health Administration (OSHA), refer to any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wire.

Contaminated laundry, as defined by OSHA, is considered to be “laundry which has been soiled with blood or other potentially infectious material or may contain sharps.”

Occupational hazards in the laundry environment are numerous. The most common accidents in industrial laundries involve chemical exposure, sharp objects left in soiled linen, slips from wet floors, exposure to pathogens in contaminated linen, among others. Exposure to soil and potentially infectious pathogens can be limited by the use of personal protective equipment: barrier gowns, gloves, eyewear, foot coverings and face masks. These items should be worn when handling soiled linen. Infections can

also be eliminated by proper handwashing. Employees should wash their hands after handling any linen, whether soiled or clean.

From a safety manager point of view, how sharps injuries rank among occupational hazards occurring in a healthcare laundry depends on the size and type of laundry (onsite, off-site, or commercial third-party vendor), says James Tweedy, MS, CHSP, CPSO, CHEP, CHCM, executive director of the International Board for Certification of Safety Managers (IBCSM) and author of the book, *Healthcare Hazard Control and Safety Management*. “Generally speaking there are a number of hazards in laundries including some other infection exposure such as MRSA,” Tweedy says. “There are the hazardous material exposure risks, slips and falls, hot worker areas, equipment hazards, and lifting/ergonomics issues as well. Hazard drug (chemo) exposures are also a risk.”

Tweedy points to bloodborne pathogen exposure rates from the Centers for Disease Control and Prevention (CDC) as being less than 1 percent of all healthcare exposures. “Remember, among healthcare workers there is a large number of Occurred But Not Reported (OBNR) incidents. However, I don’t believe that the number is high for needlestick incidents,” he says. “The sharps/needle-related risks appear to have been reduced since the late 1990s and early 2000s. Needle risks have been introduced because of negligence in the nursing, surgery and other clinical areas of the hospital. When those areas improve their disposal methods, then the risk to laundry workers goes way down.”

Experts say that airborne transmission notwithstanding, the real threat posed by contaminated linen is avoiding injuries from sharps like needles, razor blades and surgical instruments being swept up in patient-room or surgical linens. Proper linen handling can help eliminate these kinds of injuries, and that healthcare workers must be in-serviced on how to look for sharps buried in linen and how to remove and contain them.

“Contamination of laundry is expected—needles are not,” Tweedy emphasizes. “Hospitals have to reduce the number of sharps that stay in the laundry. The CDC’s Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program (2013) course instructs hospitals how to run a sharps disposal function.”

According to OSHA, “The best way to prevent cuts and sticks is to minimize contact with sharps. That means disposing of them immediately after use. Puncture-resistant containers must be available nearby to hold contaminated sharps—either for disposal or, for reusable sharps, later decontamination for re-use. When reprocessing contaminated reusable sharps, employees must not reach by hand into the holding container. Contaminated sharps must never be sheared or broken.”

OSHA further notes that “Containers for used sharps must be puncture resistant. The sides and the bottom must be leakproof. They must be labeled or color coded red to ensure that everyone knows the contents are hazardous. Containers for disposable sharps must have a lid, and they must be maintained upright to keep liquids and the sharps inside. Employees must never reach by hand into containers of contaminated sharps. Containers for reusable sharps could be equipped with wire basket liners for easy removal during reprocessing, or employees could use tongs or forceps to withdraw the contents. Reusable sharps disposal containers may not be opened, emptied or cleaned manually. Containers should also be available wherever sharps may be found, such as in laundries. The containers must be replaced routinely and not be overfilled, which can increase the risk of needlesticks or cuts.”

## Laundry Operations That Pose a Risk

Let's review a certain subset of laundry operations to identify the opportunities for injury. In industrial laundry operations, when linen is sent to be laundered, it goes through a number of stages. The first stages are called "soiled side" operations, since they occur before the linen is actually washed. The last stages are called "clean side" operations, since they involve the handling of clean linen. In retrieval of soiled healthcare textiles, the institution's linens are collected by laundry personnel and returned to the laundry facility. Laundry workers collect the soiled linen, place it in carts reserved for soiled linen and transport it to the sorting area. Because soiled linen can be contaminated with bloodborne and airborne pathogens, employees who retrieve soiled linen are required to use personal protective equipment and follow standard safety precautions. During soil sorting, the healthcare textiles are unloaded and sorted according to item type. Large institutions and off-site laundry facilities often use a production-line method for soil sorting, with several full-time employees assigned to the task. Since soiled linen may be contaminated with biohazards or sharp objects, employees involved in the sorting process are required to use personal protective equipment and standard safety precautions.

Foreign objects are commonly found in linens that are sent to the laundry. They can be as benign as flatware caught up in bed sheets, or as dangerous as used scalpels, syringes and broken glass vials caught up in healthcare textiles coming from a busy emergency department. Sharps of all kinds can be mistakenly and/or carelessly mixed in with the soiled linens when they are gathered for laundering.

While not all sharps injuries can be prevented, there are steps that can be taken to ensure a minimal number of sharps get through to the laundry service. Clinicians should be reminded of the dangers that those who work in the soil-sort process face, and they should also be educated about the importance of proper sharps handling and disposal following patient care. This can help keep sharps out of healthcare textiles sent to the laundry. At the same time, laundry personnel should be educated and trained in the proper methods for shaking out and separating soiled and contaminated healthcare textiles. They should also know how to pick out and remove sharps by utilizing grasping devices and then disposing of them properly.

Tweedy says that progress is being made. "The CDC, in its recently published Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program, indicates that the percentage of sharps injuries is only 1 percent for waste, laundry, and central sterile functions of a hospital. The CDC indicates in that publication that the average number of needle injuries nationwide is 385,000; less than 1 percent occur in laundry facilities. I estimate between 1,250 and 1,700 annually based on the CDC numbers. Frequency is down but the severity remains a real concern. Severity is the possibility of being infected, and is about a 20 percent risk for hepatitis B virus (HBV) infection according to some studies. HBV vaccinations could impact that 20 percent figure since conversion would depend on who was exposed. I would classify needlesticks as a real risk because of the potential severity."



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## Meeting Federal Mandates

It's essential that clinicians, risk management, the infection preventionist and the laundry director/manager (or representative from the offsite healthcare laundry) meet regularly to discuss issues and conduct root cause analyses should an incident take place. All incidents should be documented and the appropriate parties notified of any sharps injuries. The laundry maintains a log — according to OSHA mandates — that details the date and location of the incident as well as the type of sharp implement involved. These meetings may also be an appropriate place and time during which to discuss guidelines and recommendations to prevent occupational exposures, as well as discuss the use of sharps safety devices and engineering controls designed to decrease the risk of employee exposure.

Federal law requires diligence in this regard. In 1991, OSHA passed the Bloodborne Pathogens (BBP) Standard, requiring employers to develop a written exposure control plan, implement universal precautions, provide personal protective equipment, use preventive engineering and work practices controls, and prohibit bending, recapping, and removing contaminated needles and sharps.

As Belkin (2010) reminds us, OSHA's Final Standard on the Transmission of Bloodborne Pathogens “mandates the use of personal protective equipment (PPE), proper work practices, containment labeling, hazard communication and ergonomics. The regulations also require that PPE be provided to those healthcare workers who may be exposed to contaminated laundry. In addition to PPE, requirements involve training, sharps disposal, device accessibility and written institutional procedures to reduce risks of exposure. Although enforceable with the proviso that violators can be fined, the importance of the provisions is enhanced by the CDC guidelines that maintain that they be an integral part of the facility's overall infection control program. In general, the focus and intent of the portion of the laundry section is to protect the healthcare worker from the hazards associated with exposure to potentially infectious materials during the collection, handling and sorting of contaminated textiles.”

Tweedy advises that healthcare professionals consult the best-practice protocols that are found in in both CDC guidelines and OSHA standards and informational documents. “Some suggestions include: establish a true safety culture, educate and train employees (not just orienting with some video on hire), teach safety awareness, provide proper personal protective equipment and clothing, and mandate reporting of exposures,” he says.



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## Creating a Culture of Safety

According to the CDC, to create a culture of safety, organizations must address those factors known to influence employees' attitudes and behavior. Organizations must also direct measures to reduce hazards in the environment. Let's review the recommended steps:

- 1 Ensure Organizational Commitment. Organizations can use three important strategies to communicate their involvement in and commitment to safety:
  - ✦ Include safety-related statements (e.g., zero tolerance for unsafe conditions and practices in the healthcare environment) in statements of the organization's mission, vision, values, goals and objectives.
  - ✦ Give high priority and visibility to safety committees, teams, and work groups (e.g., occupational health, infection control, quality assurance, pharmacy, and therapeutics), and ensure direct management involvement in the evaluation of committee processes and impact. Patient safety climate surveys have consistently demonstrated that managers often have a more positive view of the safety climate at their facility than do frontline workers.
  - ✦ Require action plans for safety in ongoing planning processes. (e.g., an action plan for improving the culture of safety for sharps injury prevention could be one element in an overall safety culture initiative.)

Management can also communicate a commitment to safety indirectly by modeling safe attitudes and practices. Healthcare professionals in positions of leadership send important messages to subordinates when they: Handle sharp devices with care during procedures; take steps to protect co-workers from injury, and properly dispose of sharps after use. Similarly, managers should address sharps hazards in a non-punitive manner as soon as they are observed and discuss safety concerns with their staff on a regular basis. This will positively reflect the organization's commitment to safety and build safety awareness among staff.

- 2 Involve Personnel in the Planning and Implementation of Activities That Promote a Safe Healthcare Environment. Involving personnel from various areas and disciplines while planning and implementing activities improves the culture of safety and is essential to the success of such an initiative. Those personnel who participate on committees or teams created to institutionalize safety serve as conduits of information from and to their various work sites. They also legitimize the importance of the initiative in the eyes of their peers.

- 3 Encourage Reporting and Elimination of Sharps Injury Hazards. Another strategy for institutionalizing a culture of safety is to create a blame-free environment for reporting sharps injuries and injury hazards. Healthcare personnel who know that management will discuss problems in an open and blame-free manner are more likely to report hazards. Healthcare organizations can also actively look for sharps injury hazards by performing observational rounds and encouraging staff to report near misses and observed hazards in the work place. Once identified, hazards should be investigated as soon as possible to determine the contributing factors, and actions should be taken to remove or prevent the hazard from occurring in the future.

- 4 Develop Feedback Systems to Increase Safety Awareness. A number of communication

strategies can provide timely information and feedback on the status of sharps injury prevention in the organization. One strategy incorporates findings from hazard investigations, ongoing problems with sharps injuries, and prevention improvements into articles in the organization's newsletter, staff memoranda, and/or electronic communication tools. It is important to communicate the value of safety by providing feedback when the problem is first observed and commending improvements. Another strategy is to create brochures and posters that enhance safety awareness. Such materials can reinforce prevention messages and highlight management's commitment to safety.

**5** Promote Individual Accountability. Promoting individual accountability for safety communicates a strong message about the organization's commitment to a safe healthcare environment. In order for accountability to be an effective tool, all levels in the organization must comply. An organization can promote individual accountability for safe practices in general -- and sharps injury prevention in particular -- in many ways. One way is to incorporate an assessment of safety compliance practices in annual performance evaluations; for managers and supervisors, this might include evaluating methods used to communicate safety concerns to their subordinates. Organizations might also consider having staff sign a pledge to promote a safe healthcare environment. This could be incorporated into hiring procedures and/or as part of an organization-wide safety campaign.

## Operational Processes

There are key operational processes that must be followed. "Onsite and off-site laundries should have their own bloodborne pathogens exposure plans that are reviewed and updated annually," Tweedy emphasizes. "Establish detailed work controls and detail in the Exposure Control Plan (ECP). If possible code the laundry containers or bags at the collection point. This brings accountability to medical and nursing units. The OSHA Standard and the Training Program can provide an excellent road map. Bloodborne pathogen ECPs must be living, breathing documents that guide actions to prevent exposure. Control plans are more than an OSHA mandate and therefore, they must be living, breathing documents."

The CDC instructs healthcare organizations to take the following steps:

**1** Develop an Injury Reporting Protocol and Documentation Method

Every healthcare organization should have a written protocol that describes where and how healthcare personnel should seek medical evaluation and treatment after an occupational exposure to blood or body fluids, including percutaneous injury. To ensure timely medical treatment, the protocol should encourage prompt reporting and describe procedures for the rapid provision of medical care during all work hours (day, evening, and night shifts). In some cases, this will require designating different places for exposure evaluation and care at different times. The reporting system should ensure that records of exposed employees and non-employees (e.g., students, per diem staff, volunteers) are maintained in a confidential manner. Exposure reports should be maintained in a designated area (e.g., occupational health, infection control) for purposes of follow-up and record keeping. It is important that all staff responsible for treating bloodborne pathogen exposures have been trained in the facility's post exposure protocol, including which baseline tests to conduct, whom to contact to follow-up with the source patient, and where records are maintained (generally in employee health or infection control).

**2** Develop a Process for Hazard Reporting

Many organizations take a proactive approach to injury prevention. They seek and identify hazards in the work environment and encourage all personnel to report observed hazards (e.g., improperly discarded sharps), including the occurrence of near misses. A defined process for reporting hazards empowers personnel to take action when there is a risk for a sharps injury.

### 3 Compile and Analyze Sharps Injury Data

Data on sharps injuries can be compiled by hand or with a computerized database. Injury data can be analyzed with very simple statistical tools, such as frequency distributions and cross-tabulation. Large databases can perform more sophisticated analyses (e.g., multivariate analysis). The first step in the analysis of data is to generate simple frequency lists, by hand or computer, on the variables that make up the following data elements: Occupations of personnel reporting injuries; work locations where reported injuries occur; types of devices involved in reported injuries; types of procedures or tasks during which injuries occur; timing of occurrence of injuries; and circumstances of injuries.

### 4 Calculating Injury Incidence Rates

Injury incidence rates provide information on the occurrence of selected events over a given period of time or other basis of measurement. The calculation of injury incidence rates for specific occupations, devices, or procedures can be useful for measuring performance improvement.

In 2000, the BBP Standard was amended to include the Needlestick Safety and Prevention Act which additionally required employers to use or provide safer devices and engineering controls, document NSI in a separate injury log—in addition to the OSHA 300 Log, and involve frontline employees in device evaluation and selection.

Infection control manuals and the exposure control plan should be written to allay fears regarding the processing of contaminated linen, and standard precautions, if followed correctly and consistently can significantly decrease the chance of disease transmission. According to OSHA, the following steps should be taken to address the issue:

- ✦ A safety and health program must be established that includes procedures for appropriate disposal and handling of sharps and follows required practices outlined in the BBP Standard.
- ✦ Contaminated needles and sharps shall not be bent, recapped or removed. No shearing or breaking is permitted.
- ✦ Sharps Containerization: Immediately or as soon as feasible, contaminated sharps need to be discarded in appropriate containers. Needle containers need to be available, and in close proximity to areas where needles may be found, including laundries.

A safety and health program that includes procedures for appropriate disposal and handling of sharps and follows required practices is outlined in the BBP Standard.

Per OSHA mandates, the sharps injury log must contain:

- ✦ The type and brand of device involved in the incident
- ✦ The department or work area where the exposure incident occurred.
- ✦ An explanation of how the incident occurred.

This log is part of the bloodborne pathogens exposure control plan which is designed to

eliminate or minimize employees' occupational exposure to bloodborne pathogens or other potentially infectious materials while performing their normal tasks, duties and responsibilities. For in-house laundry departments, it is the responsibility of the director of laundry operations to verify that the exposure control plan is followed in accordance with the institution's bloodborne pathogens policies and procedures. The infection preventionist may consult with the laundry director if institutional policy encourages this kind of collaboration.

There are several methods of compliance with OSHA mandates:

- ◆ **Standard Precautions:** These can help prevent an employee from coming into contact with blood or other potentially infectious materials. Standard precautions apply to all employees who come into contact with soiled healthcare linen and/or carts or bags that store and transport soiled healthcare linen. All employees are required to handle and treat all soiled healthcare linens as if such linen is known to be contaminated with bloodborne pathogens or other infectious materials.
- ◆ **Engineering Controls:** These are defined by OSHA as controls that isolate or remove the bloodborne pathogens hazards from the workplace. Engineering controls are used whenever possible to eliminate or reduce the potential of employee exposure to bloodborne pathogens or other potentially infectious materials. Engineering controls will be examined, maintained and replaced on a regular schedule to ensure their effectiveness. Examples of engineering controls include contaminated sharp containers in place in areas where sharps may be found and replacing sharps containers when they are approximately 75 percent full, among others.
- ◆ **Work Practice Controls:** These are defined by OSHA as controls that reduce the likelihood of exposure by altering the manner in which a task is performed. Examples of work practice controls to eliminate or minimize employee exposure to bloodborne pathogens or other infectious materials include handling and disposing of sharps container with extreme care when found in soiled laundry. Also, when found in soiled laundry, needles shall not be bent, recapped, removed, broken or sheared by employees.
- ◆ **Personal Protective Equipment:** PPE is defined by OSHA as "specialized clothing or equipment worn by an employee for protection against a hazard." Examples of personal protective equipment may include, but is not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices. When occupational exposure to bloodborne pathogens or other potentially infectious materials remains after the implementation of engineering and work practice controls, personal protective equipment shall also be used by employees at risk of exposure. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.



Onsite and off-site laundries should have their own bloodborne pathogens exposure plans that are reviewed and updated annually.

## General Laundry Safety

Sharps-safety awareness is just one part of the larger picture of safety in the healthcare laundry environment. The CDC's Guidelines for Laundry in Healthcare Facilities say that, "Although soiled linen has been identified as a source of large numbers of pathogenic microorganisms, the risk of actual disease transmission appears negligible. Rather than rigid rules and regulation, hygienic and common-sense storage and processing of clean and soiled linen are recommended." While there is ongoing debate as to how big a role healthcare linens play in the transmission of disease, this fomite has been indicted in a number of recent studies.

OSHA says healthcare facility laundry poses exposure to blood or other potentially infectious materials through contaminated linen that was improperly labeled or handled. It suggests the following solutions to healthcare workers and laundry personnel to avoid occupational exposure:

- ◆ Handle contaminated laundry as little as possible with minimal agitation.
- ◆ Bag contaminated laundry at the location of use. Do not sort or rinse laundry at the location where it was used.
- ◆ Place wet contaminated laundry in leak-proof, and color-coded or labeled containers, at the location where it was used.
- ◆ Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through or of leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.
- ◆ Contaminated laundry must be placed and transported in bags or containers labeled with the biohazard symbol or put in red bags.
- ◆ In a facility that utilizes standard precautions in the handling of all soiled laundry alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with standard precautions.
- ◆ Use red bags or bags marked with the biohazard symbol, if the facility where items are laundered does not use SP for all laundry.
- ◆ Contaminated laundry bags should not be held close to the body or squeezed when transporting to avoid punctures from improperly discarded syringes.
- ◆ Normal laundry cycles should be used according to the washer and detergent manufacturer's recommendations.

All healthcare workers and laundry personnel must follow SP when handling contaminated linen, including donning personal protective equipment (PPE) including gloves and gowns that provide adequate barrier properties. Handwashing facilities, including a hygienic sink, soap dispensers and paper towels, must be provided in the soiled-linen processing facility.



Every healthcare organization should have a written protocol that describes where and how healthcare personnel should seek medical evaluation and treatment after an occupational exposure to blood or body fluids, including percutaneous injury.

## References:

Belkin NL. Laundry day. Healthcare Facilities Management. March 1, 2010. Accessible at: [http://www.hfmmagazine.com/display/HFM-news-article.dhtml?dcrPath=/templatedata/HF\\_Common/NewsArticle/data/HFM/Magazine/2010/Mar/1003HFM\\_FEA\\_ES](http://www.hfmmagazine.com/display/HFM-news-article.dhtml?dcrPath=/templatedata/HF_Common/NewsArticle/data/HFM/Magazine/2010/Mar/1003HFM_FEA_ES)

Centers for Disease Control and Prevention (CDC). Workbook for Designing, Implementing and Evaluating a Sharps Injury Prevention Program. Accessible at: [http://www.cdc.gov/sharpssafety/pdf/sharpssworkbook\\_2008.pdf](http://www.cdc.gov/sharpssafety/pdf/sharpssworkbook_2008.pdf)

Occupational Safety and Health Administration (OSHA). Hospital eTool: Laundry. Accessible at: <https://www.osha.gov/SLTC/etools/hospital/laundry/laundry.html>

Tweedy JT. Healthcare Hazard Control and Safety Management, Third Edition. Accessed at: <https://books.google.com>



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