**This quick study guide can help teams address the root causes of workplace hazards. By applying these principles, and the other tools in the *Make the Workplace Safer Toolkit*, you can better recognize and act on safety risks in your work area.**

## Why Do Injuries and Illnesses Happen?

> **EXAMPLE**
>
> **Josh, an Environmental Services worker at a hospital, had taken a soiled linen bag from the hamper from the trauma unit and was transferring it to his cart. The bag was full of wet linen so it was very heavy. Since he did not want the bag to rip when he lifted it, he took some linen off the top. He felt a sharp sting in his hand and looked down to see that a needle had stuck him in his hand.**
>
> **He went to report the injury to his supervisor and was told, "You didn't handle the bag right. That's why you got the injury. You know we don't handle soiled linen!"**

### Why did Josh get injured?

The direct cause of an injury is often identified quickly. In this case, Josh had reached into a hamper full of soiled linen, which resulted in the needle stick.

However, this explanation does not usually tell the whole story. You need to look deeper — to do some detective work to identify the underlying or root causes of an injury. You need to ask WHY.

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### Why did Josh reach into the bag to remove some soiled linen?

Because the bag was too heavy and he didn't want it to rip.

### Why was there a needle in the hamper?

Someone did not immediately place a used needle into a sharps container and it ended up in the linen bag.

### Why was the bag so heavy?

It was full of wet linen. Maybe the hamper bags for soiled linen are too big, or maybe it had been filled beyond capacity.

### Why was the hamper filled beyond capacity?

Perhaps there was only one hamper in the room, as the room is not big enough for multiple hampers.

Perhaps there are too few EVS staff, so they can't come around often enough to empty them before they get too full.

In other words, **there are some systemic issues that need to be addressed**. When these are addressed, the work environment itself is safer.



**Direct and Underlying Causes of Injuries**

**DIRECT:**
Josh reached in hamper.

**UNDERLYING:**
» Hamper too big
» Not enough hampers
» Understaffing
» Pressure to work quickly

There are usually multiple factors that contribute to an incident, so examine all the possibilities. Perhaps understaffing contributed to an employee having to rush or take on too much work, or employees didn't have easy access to necessary safety equipment, or there was a work culture that promoted short cuts instead of taking the time to do a task safely.

If human error is identified as the cause of an incident, a good analysis always goes deeper and asks why the error was made. This type of inquiry is often called a systems approach.

The following list may help you look for underlying causes. Look for:

| Job Tasks and Procedures | Work Environment |
|---|---|
| » Is the pace of work and overall workload reasonable?<br>» Are there clear, realistic procedures for job tasks?<br>» Are there conflicts between procedure and practice?<br>» Are short cuts commonly used? | » Are work processes, equipment and tools designed properly?<br>» Is the facility layout and space conducive to safe practices?<br>» Is there easy access to safety and emergency equipment?<br>» Is there regular inspection and maintenance of equipment and work areas? |
| **Management and Organization** | **Workforce Factors** |
| » Is there a safety program with a commitment of resources for safety and accountability?<br>» Does the safety culture promote systems solutions?<br>» Do communication and reporting systems promote worker involvement?<br>» Are staffing levels adequate?<br>» Is scheduling realistic?<br>» Do staff miss breaks or meals? | » Is training adequate?<br>» Do workers suffer from fatigue or stress?<br>» Do workers have attitudes that support safety? How do they perceive their risks?<br>» Does staff have experience with this type of situation? |

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## Coming Up With Solutions

Just as understanding the root causes of an injury involves a systems approach, so does coming up with solutions. In Josh's example, the solutions should involve ways to make the hamper bags less full or heavy.

### WHAT SOLUTIONS WOULD HELP IN THE FOLLOWING CASE?

**Shelly is a nurse at the medical center. One afternoon her co-worker called her over and asked for her help moving a patient to a comfortable upright position on the bed. Shelly went to help, and as she twisted slightly while lifting the patient, she felt something pop in her back. Later, when the pain intensified, she went to see her doctor and found out she had injured a disk.**

### Why did this injury occur?

- **Direct cause:** Shelly was lifting a patient, and in doing so, twisted slightly.
- **Underlying cause:** Common practice is to boost patients without lift assists. Perhaps there wasn't a sliding sheet within easy access or a ceiling lift in the room.

### What are some solutions that would make the work environment safer?
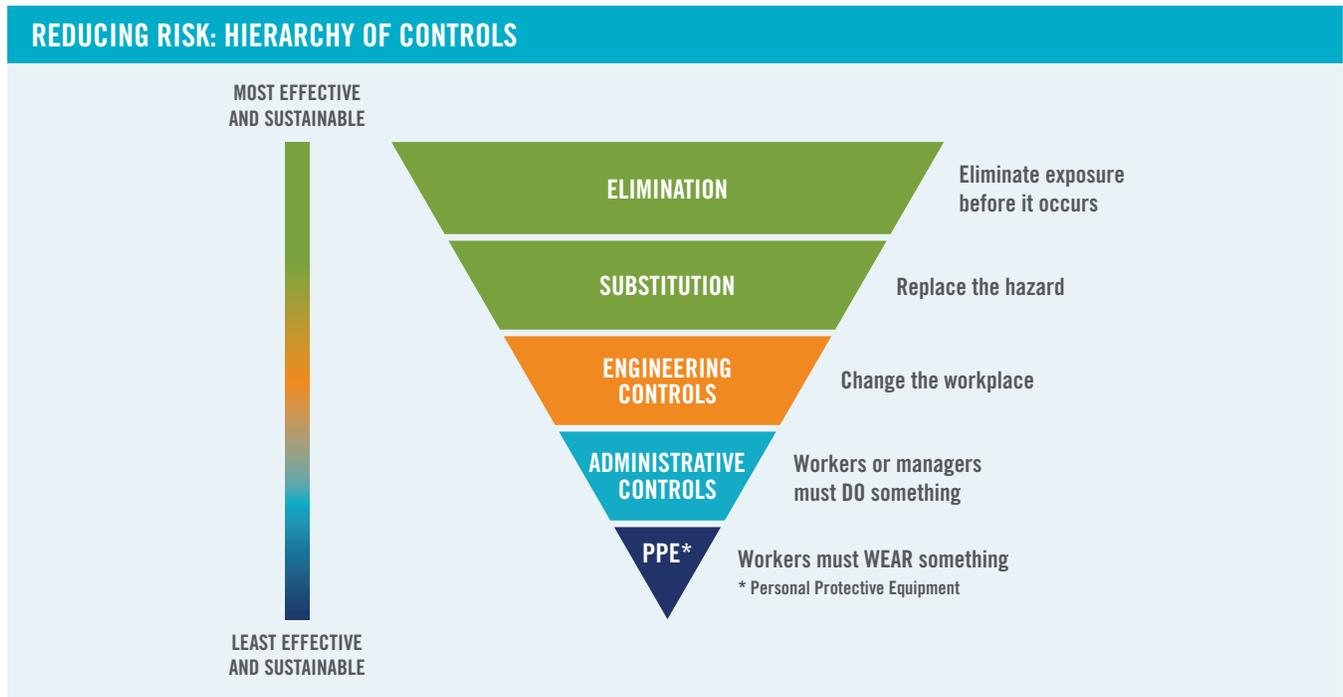
In this case, Shelly probably received training in proper body mechanics and knew what was involved in safe lifting. She could have been as careful as possible, but this task is inherently unsafe — even with proper body mechanics. A better solution would be to use a ceiling lifts or a sliding sheet to boost the patient. These help reduce the amount of force required to do the task.

### Which solutions are most effective?

Various methods can be used to protect employees. These are called hazard controls, and not all controls are equally effective. For instance, those that remove or reduce a hazard are more effective than personal protective equipment, because they can make the workplace itself safer. Removing a hazard is better than having to track compliance with a particular safe practice.

Safety professionals call this the "hierarchy of controls" — the ranking of their effectiveness. Often a combination of methods offers the best protection.

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## REDUCING RISK: HIERARCHY OF CONTROLS

MOST EFFECTIVE
AND SUSTAINABLE

**ELIMINATION** — Eliminate exposure before it occurs

**SUBSTITUTION** — Replace the hazard

**ENGINEERING CONTROLS** — Change the workplace

**ADMINISTRATIVE CONTROLS** — Workers or managers must DO something

**PPE\*** — Workers must WEAR something
\* Personal Protective Equipment

LEAST EFFECTIVE
AND SUSTAINABLE

## Elimination

The best way to protect employees is to remove the hazards from the work environment altogether. Then you directly address the hazard and do not depend on employees' actions to be effective. Examples include:

- Leaky pipe fixed so floor does not have wet spots
- Asbestos removed from a facility
- Facility built without asbestos
- Lead-free paint and plumbing
- Medical equipment without latex or PVC
- Thermometers without mercury

## Substitution

Another way to remove the hazard is to replace it with a safer alternative. Examples include:

- Substitute safer sterilizing process for ethylene oxide
- Use less toxic cleaning products to clean office areas
- Use gloves made with non-latex material instead of latex

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## Engineering Controls

Engineering controls remove the hazard at the source, so that it is kept away from the employees. They directly address the hazard and do not depend as much on employees' actions to be effective.

Examples include:

- Local exhaust ventilation where infectious agents or toxic materials are found
- Using needles with a safety mechanism that is triggered automatically
- Using "no lift" hampers for linen
- Sharps disposal containers
- Equipment used to help lift, mobilize, position or transfer a patient
- Lead-shielded walls surrounding radiation-producing equipment
- Carts for transporting supplies
- Powered cart/truck for moving heavy items
- Beds that change height and position at the touch of a button
- Powered transport chairs
- Non-skid mats or flooring in areas that can be wet
- Microfiber mop
- Telephone headset
- Adjustable height computer workstation

### Improve Work Policies and Procedures

## Administrative Controls

When a hazard cannot be eliminated or engineered out, another option is to change work procedures and safety rules to limit employees' exposure to the danger. These are often called administrative controls. Examples include:

- Assigning enough people to do the job safely
- Providing worker training
- Rotating employees between hazardous tasks and non-hazardous tasks
- Having an established way to send a signal when there is a problem (for example, a panic button)
- Having a policy that tells workers to use lift equipment to lift patients
- Revising procedures for a task to include the steps needed to do it safely
- Posting a quick-reference card near a piece of equipment to remind people how to use it safely
- Installing warning signs, lights and alarms

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## Provide Personal Protective Equipment

Personal protective equipment, or PPE, is worn to help shield people from exposure to a hazard. It is less protective than the options above because it doesn't get rid of or control the hazard itself. Instead, it places an imperfect barrier between the hazard and the worker. Examples include:

- Gloves (exam, surgical, cut-resistant, rubber)
- Respirators (N95, PAPR)
- Lead apron
- Protective clothing (gown, shoe cover, head and neck cover, water-resistant or waterproof apron or gown)
- Face shield
- Eye protection

PPE is sometimes needed even if engineering and work practice controls are in place, as a backup if the other controls fail or don't fully control the hazard.

There are many limitations to PPE, including:

- It can be uncomfortable.
- It depends on all workers using it properly all of the time.
- It must be stocked in a range of sizes and models to get the right fit for each employee.
- It can interfere with doing the work – and this can lead workers to take it off.
- It may not be as protective as you need – for example, you need to know the quantity of chemicals in the air in order to specify the right PPE.
- Some PPE, like respiratory protection, requires medical evaluations.
- If there is one mistake, the worker could be exposed to a serious hazard.

Because of this, OSHA states that employers have to first try to eliminate or reduce hazards before using PPE.

➡ **TIP**
Work towards solutions that control the hazard, not the worker!

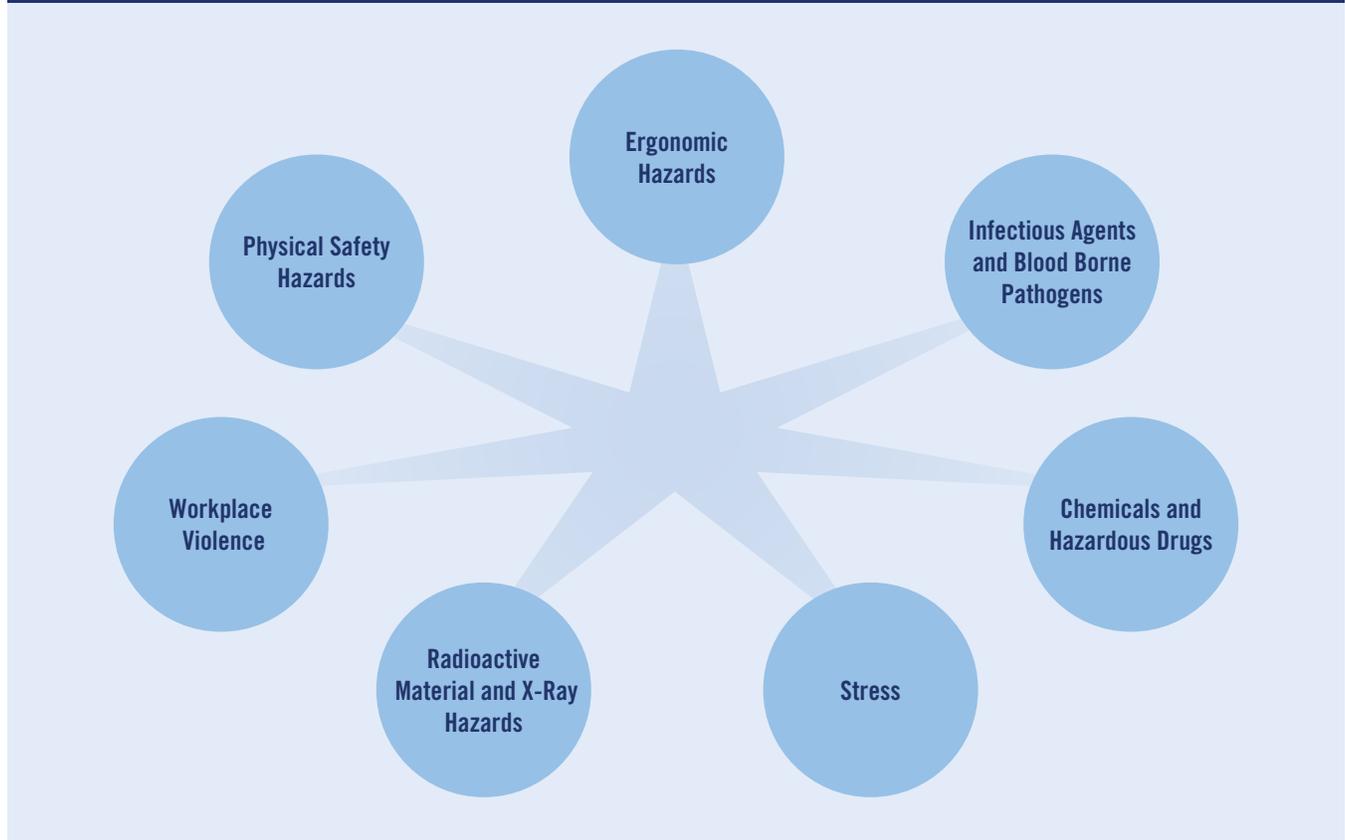**LMP** LABOR MANAGEMENT
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## Job Hazards for Health Care Workers

Health care workers face a number of serious safety and health hazards. Many of them are obvious, like sharp objects, slippery floors and heavy bags or boxes. Other hazards, such as repetitive movements and chemical exposure, may be less obvious. Sometimes it is hard to tell if repetitive movements on the job caused the pain in your arms, hands, or back. It may also be hard to tell if the chemicals at work caused an illness.

It is important to be aware of the variety of hazards to look for on the job.

### HAZARDS COMMON IN HEALTH CARE SETTINGS INCLUDE…

- Ergonomic Hazards
- Infectious Agents and Blood Borne Pathogens
- Physical Safety Hazards
- Chemicals and Hazardous Drugs
- Workplace Violence
- Radioactive Material and X-Ray Hazards
- Stress

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## ERGONOMIC HAZARDS

Ergonomics looks at how people use their bodies at work, and aims to design the job to fit the worker. In health care, tasks associated with ergonomic hazards include: lifting, mobilizing, positioning and transferring patients; working on computers; sitting or standing for long periods; tasks that require reaching, stooping or kneeling; and carrying and lifting materials.

Ergonomic hazards are caused by poor equipment and job design that produce unnecessary wear and tear on the body. The result can be pain and eventual damage to the hands, arms, neck, back, feet, or legs.

Risk factors for ergonomic injuries include:

- **Repetition:** Performing the same motion over and over again

- **Excessive Force:** Using physical effort such as pushing, pulling, and lifting

- **Awkward Posture:** Moving in a way that puts strain on the body, such as stooping, bending, reaching overhead, or staying in one position too long

- **Direct Pressure:** Prolonged contact with a hard surface or edge

- **Vibration:** Working with vibrating tools or equipment

- **Extreme Cold or Heat**.

The more risk factors are present, the greater the chances of developing an ergonomic injury, often called a repetitive strain injury (RSI) or a cumulative trauma disorder (CTD). The best solution is to redesign the job s o the risk factors are reduced.

## INFECTIOUS AGENTS AND BLOODBORNE PATHOGENS

Health care workers may be exposed to a variety of viruses and bacteria, such as the common cold, flu, measles, MRSA, Severe Acute Respiratory Syndrome (SARS), HIV and Hepatitis B. Some are well-known, like tuberculosis, while others – Ebola, West Nile Virus – are emerging hazards. Infectious diseases are often classified by the type of precautions needed to isolate the patient: contact, droplet or airborne. In addition, biological material such as blood, mucus, feces, lab samples or waste needs careful handling to prevent worker exposure. Sharps are a particular hazard because they can easily introduce the infectious agents directly inside the body by a cut or needlestick.

## CHEMICALS AND HAZARDOUS DRUGS

A range of chemicals and hazardous drugs, from cleaning and disinfecting agents to chemotherapy drugs, antiviral treatments and anesthetic gases, are used in health care settings. Other hazards, such as surgical smoke, can be created during certain procedures. While acute (short-term) health effects can be a warning that there is a problem, it is important to be aware of the possible chronic (long-term) effects as well.

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## Stress

Health care delivery is stressful. Workers are exposed to death and disease on a daily basis, and are given responsibility for patients' lives. Staffing shortages, pressure to work quickly, and shift work also contribute to job stress. Stress is not good for health, especially if it continues over a long period. And it can contribute to errors or injuries on the job.

## Radioactive Material and X-Ray Hazards

X-ray technicians, employees in nuclear medicine and some other patient care staff may be exposed to ionizing radiation. Ionizing radiation is a carcinogen and can cause birth defects and miscarriages. Lasers are another type of radiation. When they are improperly used, lasers can cause burns and blindness.

## Workplace Violence

Health care workers have some of the highest rates of workplace assault. According to OSHA, workplace violence is "any act or threat of physical violence, harassment, intimidation or other threatening disruptive behavior that occurs at the work site. Violence ranges from threats and verbal abuse to physical assaults and even homicide."

Violence at work can affect workers, patients, family members, and visitors. Health care workers may experience patient-related violence from combative or disoriented patients or upset family members and outsiders. Bullying at work is also a form of violence, whether from managers who use humiliating tactics or co-workers who threaten or verbally abuse others.

## Physical Safety Hazards

Physical safety hazards are conditions that pose immediate dangers; for instance, things that may lead to slips, trips and falls and result in cuts, bruises, or other injuries. Examples of such hazards include:

- Sharp edges on equipment or furniture
- Lack of safe clearance and walking
- Blocked fire exits
- Hot surfaces
- Slippery floors
- Unsafe ladders
- Working at heights on ladders or roofs
- Unguarded machines
- Knives and other sharp objects
- Hot grease
- Electrical hazards

### Other Hazards

Other hazards include poor indoor air quality, noise, improper lighting, hot or cold outdoor work, and driving.

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