

**Young Worker Safety and Health Training
Healthcare Industry Training Module
The Southeast Center for Young Worker Safety and Health
Georgia Tech OSHA Consultation Program**

Information Provided under OSHA Susan Harwood Capacity Building Grant: # SH-22227-11-60-F-13

Objectives:

The students will be provided with a basic overview of the hazards of working in the healthcare industry. In particular, training will focus on infection control, respiratory protection, ergonomics, workplace violence and emergency response.

Enduring Understanding(s):

1. The student will be able to identify potential occupational hazards associated with the Healthcare industry.
2. The student will be able to discuss possible solutions to control job hazards found in the Healthcare industry.
3. The student will be able to demonstrate competency with proper protective glove use.

Essential Question(s):

- What are the main health and safety hazards associated with working in the healthcare industry?
- What are the potential solutions to control job hazards in the healthcare industry?
- What are the various types of personal protective equipment that would protect employees from job hazards that cannot be controlled with engineering or other formal controls?

Total Duration: 1hour

Materials and Equipment:

- Dry erase board or flip chart and markers. (Alternatively, a chalkboard and chalk may be used.)
- Use PowerPoint slides with a laptop and LCD projector. (Alternatively, PowerPoint slides may be printed onto Overhead transparencies and used with an overhead projector)
- Where possible, provide a computer with Internet access
- Fake contamination material (example: GloGerm™ powder or liquid, chocolate or strawberry syrup)
- Disposable gloves (latex and/or nitrile gloves)
- Surgical masks/N95 masks
- Box of No. 2 pencils (enough for half the class)

Notes for instructor:

This lesson is meant to educate students, teachers, employers, and parents about the importance of young worker safety and training. This lesson is meant to last approximately one hour depending on the level of interaction and discussion with class participants. Before teaching this lesson:

1. Determine the technology capabilities at the location of training. Where possible, use a laptop, LCD projector, and screen.
2. Review the “Glossary of Terms” in preparation for this lesson.
3. Obtain markers and either a flipchart, cling sheets, or a dry erase board to be used for activities.
4. Obtain disposable gloves (latex and/or nitrile), fake contamination material, surgical masks and N95 filtering facepieces (respirators), No. 2 pencils.
5. Determine Internet access capabilities for the training location.
6. Define the audience: employers, educators, young workers, parents to emphasize each group’s focus to reduce young worker injuries and illnesses during the training.

Lesson Plan

Activity	Time	Materials	Description
A. Introduction to Healthcare Industry Hazards	8 minutes	Slides 1-9	<p>Begin by introducing the course and the learning objectives. Explain that this is an awareness level training. Ask students if they can brainstorm some of the occupational hazards of the Healthcare industry. Explain the differences in laws and regulations for protection of the public and those performing the work.</p>
B. Infection Control and Bloodborne Pathogens in the Healthcare Industry	15 minutes	Slides 10-19	<ol style="list-style-type: none"> 1. Discuss with the class the definition of a pathogen. Review how in the Healthcare industry, employees may be exposed to common viruses and bacteria due to the close proximity required for patient procedures and care. Use Slide 12 as an example. 2. Review the most common ways an employee might have an exposure to a biological pathogen. Ask the class what “sharp objects” might be used in Healthcare procedures. Review the terms “body fluids” and “mucous membranes” in the context of Healthcare procedures. 3. Ask the class to list common medical or dental procedures or activities that could create a potential exposure to a biological pathogen. 4. Review with the class that there are often several ways to control a hazard, but that some methods are better than others. Go over with the class the three main control methods: remove the hazards, improve work policies and procedures, and use protective clothing and equipment. Either use the examples provided on Slide 15, or ask the class to provide suggestions for controlling a specific Healthcare-industry hazard related to infection control, and either write them on the white board/flip chart, or use sticky notes. 5. Discuss with the class the requirement to adequately clean medical or dental tools and work surfaces to remove potential biological pathogens. Review the differences between decontamination, disinfection, and sterilization. Review the typical procedures (devices and chemical compounds) used in the industry to achieve the required level of decontamination. Here is a case study from NIOSH: use this story as an example CASE REPORT—Several nurses were working in an area where glutaraldehyde was stored in 1-liter baths on countertops and was used to disinfect bronchoscopes. They complained of hives, chest tightness, and watery eyes. Evaluation of the work area indicated that there was a separate (independent) recirculating ventilation system

			<p>designed to provide 10 percent outside air. The nurses used no personal protective equipment (such as gloves). Measures were then taken to reduce exposures. These included changing glutaraldehyde containers to air-tight models, using appropriate gloves, and installing local ventilation hoods for glutaraldehyde stations. One month after the implementation of these measures, the nurses' symptoms subsided [Charney 1991]. http://www.cdc.gov/niosh/docs/2001-115/</p> <ol style="list-style-type: none"> 6. Using slide 17, discuss the importance of reporting any exposure or suspected exposure to bloodborne pathogens to a supervisor, teacher, or other advisor. All medical facilities are required, under the bloodborne pathogens standard, to have a detailed post-exposure evaluation plan and to provide follow-up care at no cost to employees. It should be noted that any cases and outcomes from exposure must be kept confidential and not included in a public written report. 7. Discuss how for certain medical or cleaning procedures, disposable gloves may be used to protect an employee from chemicals (e.g., radioactive dyes/medicine, applying topical medications, using disinfectants or cleaning solutions) or contact with patient body fluids. Remind students that removing gloves properly once they are contaminated is important and sometimes difficult. Hand out a pair of disposable gloves to all students, and ask them to put them on. Apply a quarter size amount of chocolate or strawberry syrup to the palm of one glove, and ask the student to rub their hands together to distribute the syrup. (Alternatively, apply Glo-Germ powder or liquid in the same manner). Review the proper glove removal procedure (slide 18) with students, and then ask students to remove the gloves without contaminating their hands, wrists, or fingers with the syrup (or Glo-Germ product). 8. Remind students that hand washing (with soap and water) is the most appropriate method to decontaminate their hands following a medical or dental procedure. Using an anti-bacterial, alcohol-based hand sanitizer does NOT remove chemicals from the hands, nor does hand sanitizer kill all harmful bacteria or viruses. Discuss with students the importance of taking the time to wash their hands for 20 seconds with water and soap at the end of any cosmetic procedure that might expose their skin to chemicals or bloodborne pathogens.
C. Respiratory	10	Slides 20-	1. Define the term “respirator” and the difference

Protection in the Healthcare Industry	minutes	26	<p>between a surgical mask and/or non-approved respirator and an approved respirator.</p> <ol style="list-style-type: none"> Discuss situations when a healthcare worker might need a respirator. Address the importance of understanding the limitations of respirators including fit, type, contamination, etc. Discuss the specific contaminants of most concern in healthcare settings.
D. Ergonomic Hazards in the Healthcare Industry	10 minutes	Slide 27-32 Flipchart Markers	<ol style="list-style-type: none"> Review with students the common postures and body positions that medical/dental personnel use for certain tasks, and how these positions are unnatural for how the body would “like” to be. Discuss how doing these tasks with these movements over and over again can cause injury to the body. Discuss how using the proper body postures and muscles can actually prevent injury. Have the students divide into pairs, and hand out one pencil to each student pair (slide 29). Have Student A hold the pencil using the grip shown in Figure 1. Have Student B try to pull the pencil out of Student A’s hand. Have Student B return the pencil to Student A. Have Student A hold the pencil using the grip shown in Figure 2. Have Student B try to pull the pencil out of Student A’s hand again. Have Student B hold the pencil using the grip in Figure 2. Have Student A try to pull the pencil out of Student B’s hand. Return the pencil to Student B and hold it using the grip shown in Figure 3. Have Student A try to pull the pencil out of Student B’s hand again. Discuss the results as a group. Explain the differences between the grip strengths and the number of muscles engaged. (<i>Source: OSHA’s 11: An OSHA 10-hour curriculum for Young Workers developed by the University of Washington Environmental and Occupational Health Sciences.</i>) Review the definition of “ergonomics” and then review the list of questions on Slide 31. Discuss as a group, and then review the prevention strategies pyramid. Either use the examples provided (slide 32), or ask the class to provide suggestions for controlling a specific Healthcare-industry hazard related to ergonomic or repetitive motion injuries, and either write them on the white board/flip chart, or use sticky notes.
F. Workplace Violence	5 minutes	Slides 33-36	<ol style="list-style-type: none"> Discuss statistics on prevalence of workplace violence within healthcare industry. Ask the class to provide examples of risk factors. (See instructor’s notes on slide 35 for examples.) Brainstorm some hazard prevention strategies to

			prevent workplace violence.
G. Emergency Response	5-7 minutes	Slides 37-40	<ol style="list-style-type: none"> 1. Discuss the three different main categories of emergencies. 2. Brainstorm with the students on what some common types of emergencies might dramatically affect the healthcare industry in their community. Have the students write three examples on sticky post-it notes. Examples may include: <ul style="list-style-type: none"> - Loss of essential services - Loss of infrastructure, including facilities or electronic information - Shortage of workers due to lack of transportation, worker or worker family illness/injury, unwillingness to report to work - Size of affected population, requiring triage at a community level - Sudden increase in the number of patients - Relocation of care to an alternate facility not equipped for patient care. 3. As an exercise: place three sheets of flip chart paper on the wall and put one of the three headings on each and ask students to put their post-it notes on the appropriate piece of paper. Make sure to point out that some emergencies might fit in more than one category (e.g., a train wreck could be man-made and a hazardous chemical spill).
H. Your Rights as an Employee	1-2 minutes	Slide 41	<ol style="list-style-type: none"> 1. Explain that employees have a right to a safe and healthy workplace 2. OSHA regulates workplace safety and health.
I. Conclusions and Additional Resources	3 minutes	Slides 44-48 Internet Access	Review the summary slides (44 and 45) and if there is time and you have Internet access, click on some of URLs provided to show the students the additional information available on the Web.

References

- ▶ <http://www.health.state.mn.us/index.html>
- ▶ <http://www.osha.gov/SLTC/etools/hospital/index.html>
- ▶ <http://www.osha.gov/SLTC/etools/nursinghome/index.html>
- ▶ <http://www.cdc.gov/nhsn/hps.html>
- ▶ <http://www.mtpinnacle.com>

NIOSH and CDC. (2010), Youth@Work Talking Safety: Teaching Young Workers about Job Safety and Health. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health. NIOSH Publication No.2007-136.

OSHA. (2010), Introduction to OSHA Presentation. United States Department of Labor, Occupational Safety and Health Administration.

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Appendix A: Glossary

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Glossary of Terms

Term	Definition
Bloodborne Pathogen	Means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
Body Fluid	Fluids originating from inside the body, such as blood or saliva
Decontamination	A process to eliminate contamination; but doesn't necessarily kill a biological pathogen. May include cleaning, disinfection or sterilization.
Disinfection	A process (either chemical or physical) that destroys pathogens. The correct disinfectant must be chosen depending on the type of pathogens present.
Ergonomics	Is the science of fitting the workplace conditions and job demands to the capabilities of the working population.
Ethyl Alcohol	Common alcohol used for disinfection of surfaces or objects.
Formaldehyde	A colorless, strong-smelling chemical often found in aqueous (water-based) solutions. Commonly used as a preservative in medical laboratories and mortuaries, formaldehyde is also found in many products such as chemicals, particle board, household products, glues, permanent press fabrics, paper product coatings, fiberboard, and plywood. It is also widely used as an industrial fungicide, germicide and disinfectant.
Glutaraldehyde	A liquid disinfectant used for sterilization of objects or surfaces that cannot be treated with heat.
Hazard Communication Standard	This OSHA standard is based on a simple concept—that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working. They also need to know what protective measures are available to prevent adverse effects from occurring.
Hepatitis B	Infectious disease affecting the liver. Spread through blood and contact with bodily fluids from someone infected with the hepatitis b virus. A vaccination is available.
Hepatitis C	Infectious disease affecting the liver. Spread through blood contact with someone infected with the hepatitis c virus. There is no vaccine available.
HIV	Human Immunodeficiency Virus, the virus that causes AIDS.
Hospital Grade Disinfectant	The Environmental Protection Agency (EPA) regulates and registers disinfectants that have been tested against 3 pathogens (<i>Staphylococcus aureus</i> , <i>Salmonella cholera</i> , and <i>Psuedomonas aeruginosa</i>). A hospital grade disinfectant must prove that it can kill at least these 3 organisms.
Impetigo	Highly contagious bacterial skin infection. Creates red, oozing sores. Most common in children.
Material Safety Data Sheet (MSDS)	Means written or printed material (form) concerning the hazards associated with a particular chemical.
Mucous Membrane	Body tissue the lines the body cavities that have contact with the air. Examples: eye, inside skin of nose, inside of mouth, inside of lungs
Other Potentially Infectious Materials (OPIM)	(1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal

	fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
Pathogen	A biological agent/organism that can cause illness.
“Quats”	Quarternary ammonium compounds. Typically listed as an ingredient on the chemical label as some form of “alkyl dimethyl ammonium chloride.” Can be used for cleaning and sanitizing, but needs longer contact time with contaminated surface.
Respiratory Protection	<p>A respirator is a personal protective device that is worn on the face, covers at least the nose and mouth, and is used to reduce the wearer’s risk of inhaling hazardous airborne particles (including dust particles and infectious agents), gases or vapors. Respirators should only be used as a "last line of defense" in the Hierarchy of Controls when engineering and administrative controls are not feasible or are in the process of being put in place.</p> <p>There are two basic categories of respirators – one type cleans the air as it is breathed in, the second type provides clean air to the wearer from a safe source. The first type of respirator removes contaminants from the air, and are called air-purifying respirators (APR). APRs include particulate respirators, which filter out airborne particles, and “gas masks,” which filter out chemicals and gasses. Other respirators protect by supplying clean air from another source. Air-supplying Respirators (ASR) comprise this category of respirators. They include airline respirators, which use compressed air from a remote source; and self-contained breathing apparatus (SCBA), which include their own air supply.</p>
Sanitization	Destruction or removal of pathogens
“Staph” Infections	Refers to a type of infection caused by the <i>Staphylococcus</i> bacteria. <i>Staphylococcus</i> bacteria are often commonly found on skin (and do not cause infection or problems). However, it can cause serious illness if it moves deeper into the body. The most dangerous “Staph” infections are those caused by bacteria that are resistant to antibiotics.
Sterilization	A process that removes or destroys ALL forms of microbial life (including spores)
“Universal Precautions”	Treating all human blood and bodily fluids as if they contained infectious materials (viruses or bacteria).