

NOTES FOR TRAINERS (TRAINER'S MANUAL)

Enfermedades infecciosas

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TRAINING TOOLS AND STRATEGIES

This *Trainer's Manual* is a companion document to help trainers prepare for and lead a productive discussion about the case study and associated questions by providing additional information. The document also shares online resources and content to extend group discussions on various topics in the case study.

Before training, the trainer should read the trainee's and trainer's manuals. The reading helps the trainer fully understand the content and prepare for discussions.

TRAINING DELIVERY

The trainees should be given the *trainee manual* before or at the beginning of the training. Then, divide the trainees into small groups (e.g., approximately four students per group) based on their prior construction experience level. For example, a group may have a new intern, a male worker with over 15 years of work experience, and a woman with about seven years of work experience. Ideally, each group will consist of trainees with diverse training experience.

Trainees should read the manual in sequential order for each topic. Four topics are included in the trainee manual based on real-world cases and scenario-based activities. In addition, each topic has an exercise that offers several discussion questions in the overview section. These activities and questions will help trainees discuss infectious diseases on construction job sites.

The manual also contains sample discussion questions for each section to engage the trainees in active participation. Depending on the trainer's approach, each question may take three to ten minutes during discussion. Since the trainees will likely have prior construction experiences, their engagement will result in an excellent learning environment.

OBJECTIVES

This case study aims to prepare trainees to recognize infectious diseases and develop relevant prevention, control, and protection strategies in the construction industry. After the case study training, trainees should be able to:

- Describe construction project scenarios with potential exposures to infectious diseases.
- Identify common types of infectious diseases transmitted on construction projects.
- Develop precaution and prevention strategies for infectious diseases.
- Prepare control and protection plans for infectious disease exposures.

The information in this document is intentionally succinct, with references to resources that offer more details. Trainees are encouraged to share their knowledge and previous experiences related to infectious diseases in the construction industry so that others may benefit from their valuable input.

INTRODUCTION SECTION

Trainers should begin by introducing infectious diseases. Then, trainers can provide an overview of common infectious diseases in the construction industry and emphasize the importance of prevention measures to ensure a safe and healthy work environment. The non-exhaustive list below provides various infectious diseases caused by fungi, bacteria, and viruses. The list serves as an example.

Infectious Diseases caused by Fungi (especially air- or blood-borne)

- Histoplasmosis
- Coccidioidomycosis
- Blastomycosis
- Aspergillus

Infectious Diseases caused by Bacteria (especially air- or blood-borne)

- *Mycobacterium tuberculosis* (TB)
- *Clostridium botulinum*, *c. botulinum*, *butyricum*, or *baratii*
- *Clostridium tetani* (Tetanus)
- *Salmonella typhi* (Typhoid Fever)
- *Streptococcus*

- *Escherichia coli*
- *Rickettsia* (Typhus)
- *Yersinia pestis* (The Plague)
- *Legionella*
- *Bacillus cereus* (Welder's Anthrax)
- Cat-Scratch Fever (Lymphoreticulosis) caused by a kind of bacteria called *Bartonella henselae*
- Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections
- MDRO - Multidrug-resistant Organisms

Infectious Disease caused by Viruses (especially air- or blood-borne)

- Polio
- Measles
- Hantavirus
- West Nile/Zika/Dengue/Yellow Fever
- Hepatitis A, B, C, D & E
- Human Immunodeficiency Virus (HIV)
- Rabies
- Influenza A, B, C & D
- Novel influenza, such as avian influenza
- Norovirus
- Ebola
- Severe Acute Respiratory Syndrome (SARS)
- Middle East Respiratory Syndrome (MERS)
- COVID-19 (SARS CoV-2)
- Mpox

Conditions in construction that increases the risk of infectious disease

- Inadequate or lack of General Hygiene and Sanitation
- Silica exposures
- Occupational exposure to dirt, soil, mold, and non-portable water.

POTENTIAL EXPOSURE TO INFECTIOUS DISEASES

This section provides an overview of the construction industry's potential exposure to infectious diseases. Construction workers are at risk of exposure to various infectious diseases due to their work environment, including exposure to 1) contaminated soil, water, and air, 2) infectious people or animals, 3) infectious body substances from people or animals, and 4) bites or scratches from animals, such as domestic or wild insects or arthropods. In addition, proper personal protective equipment and hygiene practices can help minimize the risk of infection.

Exercise #1 Describe Potential Exposures

You are working on a project to build a quarantine and treatment facility for COVID-19 patients. The project is a one-story building with 200 quarantine rooms. The project has an accelerated and staggered schedule. About 100 rooms are built and opened first. Then, the rest of the rooms will be built and opened. What are potential exposures to infectious diseases on the construction job site?

There are several potential exposures to infectious diseases on the construction job site for a project to build a quarantine and treatment facility for COVID-19 patients. These exposures may include:

1. Exposure to COVID-19: Construction workers may be at risk of exposure to COVID-19 while building a quarantine or treatment center, where they may be exposed to aerosols with the virus.
2. Exposure to other infectious diseases: The construction site may also expose workers to other infectious diseases if they come into contact with contaminated materials, tools, or surfaces.
3. Exposure to hazardous materials: The construction of the quarantine and treatment facility may also involve using hazardous materials, such as chemicals or asbestos, which can pose additional health risks to workers.

4. Poor indoor air quality: With the construction of a quarantine and treatment facility, there may be a risk of poor indoor air quality due to the use of building materials and the potential for inadequate ventilation.

It is important to mitigate these potential exposures by implementing appropriate infection control measures, such as providing personal protective equipment (PPE), practicing good hygiene, following appropriate waste disposal procedures, and ensuring proper ventilation. In addition, providing workers with appropriate training and education on infection control and safety measures is also important.

Resources

- CDC Outbreak List. <https://www.cdc.gov/outbreaks/index.html>

COMMON TYPES OF INFECTIOUS DISEASES

Exercise #2 Identify Infectious Diseases

You are renovating an existing building that has not been occupied in the last ten years. You took the following pictures during the first site visit with a coworker. Accidentally, your coworker stepped on the bat droppings and then stepped into the water. A few days later, he started feeling headaches, sore muscles, and a low fever. What were possible hazards and infectious diseases on the job site? Would it be possible that your coworker contracted an infectious disease? If so, what might it be?



Possible hazards and infectious diseases on the job site include:

- Bat droppings: Bat droppings can contain *Histoplasma capsulatum*, a fungus that can cause histoplasmosis, a lung infection. *Histoplasma* is not a common infectious disease in Washington. There have been 6 locally acquired cases from 2016 to 2021
- Standing water: Standing water can be a breeding ground for bacteria, such as *Legionella*, which can cause Legionnaires' disease, a severe form of pneumonia, when inhaled or ingested.
- Vector-borne: Standing water is also a risk for infection breeding mosquitos. Training and protecting against bites of mosquitos, ticks, fleas, and mites should be considered.
- Mold: The presence of mold in the building can cause respiratory problems, especially in individuals with allergies or asthma.
- Asbestos: The building may contain asbestos, a fibrous mineral that can cause lung cancer and mesothelioma.

It is possible that your coworker contracted an infectious disease, particularly histoplasmosis, from the bat droppings. The symptoms of headaches, sore muscles, and low fever are consistent with histoplasmosis. Therefore, your coworker needs to seek medical attention and inform the healthcare provider of his exposure to bat droppings. Early diagnosis and treatment can prevent the progression of the infection.

Resources:

Histoplasmosis

- Histoplasmosis. <https://www.cdc.gov/niosh/topics/histoplasmosis/>
- What Workers Should Know about Histoplasmosis? <https://www.cdc.gov/niosh/docs/2022-104/>
- What Employers Need to Know about Histoplasmosis. <https://www.cdc.gov/niosh/docs/2022-103/>

Legionella

- <https://www.cdc.gov/legionella/index.html>
- <https://www.osha.gov/legionnaires-disease>

Mold:

- <https://www.cdc.gov/mold/default.htm>
- <https://www.osha.gov/mold>

Asbestos:

- <https://www.osha.gov/asbestos>
- <https://www.cdc.gov/niosh/topics/asbestos/default.html>

Mosquitoes and Ticks

- <https://www.cdc.gov/niosh/docs/2010-119/default.html>

Others

- Anthrax. <https://www.cdc.gov/niosh/topics/anthrax/>
- Tuberculosis. <https://www.cdc.gov/niosh/topics/tb/>

PRECAUTION AND PREVENTION

Exercise #3 Develop Precaution and Prevention Strategies

Please list three ways to protect ourselves from infectious agents and diseases. Please demonstrate a proper handwashing technique. Please discuss and prepare your precaution and prevention strategies.

Several ways to protect ourselves from infectious agents and diseases include:

1. Stay at home when sick: Workers should stay at home when sick and ask health care professionals for help when needed.
2. Practice good hand hygiene: Frequent and proper handwashing is one of the most effective ways to prevent the spread of infectious agents and diseases. Use hand sanitizer that is at least 60% alcohol when hand washing with soap and water is unavailable.
3. Follow respiratory etiquette: Cover your mouth and nose with a tissue or elbow when coughing or sneezing, and dispose of used tissues properly.
4. Wearing a mask: Wear a well-fitted ASTM barrier face covering is more convenient and effective if tissues and hand hygiene are not easily accessible, especially in crowded areas.
5. Practice physical distancing: Maintain at least 6 feet of distance from others. When possible, avoid working in crowded areas and take steps to allow adequate space between workers

Proper handwashing technique (CDC 2022):

1. Wet your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
2. Lather your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your nails.
3. Scrub your hands for at least 20 seconds. Need a timer? Hum the “Happy Birthday” song from beginning to end twice.
4. Rinse your hands well under clean, running water.
5. Dry your hands using a clean towel or an air dryer.

Precaution and prevention strategies:

1. Implement infection control measures: Provide personal protective equipment (PPE) such as gloves, masks, and eye protection, and ensure proper disinfection and cleaning of workspaces and equipment.
2. Educate workers on prevention measures: Provide training and education on infection control and prevention measures, such as hand hygiene, respiratory etiquette, proper use of PPE and respiratory protection, cleaning and disinfection, and physical distancing.
3. Monitor and track illnesses: Regularly monitor and track illnesses in the workplace to quickly detect and respond to infectious disease outbreaks.
4. Vaccination: If available, encourage workers to get vaccinated against infectious diseases, such as COVID-19 and influenza vaccines.

By implementing these strategies, we can help prevent the spread of infectious agents and diseases and maintain a safe and healthy workplace.

Resources

- CDC Cleaning. <https://www.cdc.gov/hygiene/cleaning/facility.html>

Control and Protection

Exercise #4 Prepare Control and Protection Plan

You are working on a project with a coworker. Your coworker is using a nail gun and accidentally shoots a nail into his leg. He started bleeding badly.

Please discuss your responses to the incident with respect to infectious diseases.

In response to the incident, it is important to consider the risk of infectious diseases, as a nail gun injury can introduce foreign objects and bacteria into the body.

First, it is important to address the bleeding by applying pressure to the wound and elevating the affected limb to reduce blood flow. Determine if a higher level of medical care is needed, for example urgent care or emergency services. Once the bleeding is under control, the wound should be thoroughly cleaned with soap and water to remove any dirt or debris that may have entered the wound.

Next, assessing the risk of tetanus, a potentially life-threatening bacterial infection that can be transmitted through nail gun injuries, is important. If the coworker has not had a tetanus vaccine within the past ten years, they should receive one as soon as possible. Additionally, antibiotics may be prescribed to prevent infection if the wound is deep or contaminated.

Please discuss and prepare a control and protection plan.

To prevent future incidents and protect against infectious diseases, a control and protection plan should be developed, including:

1. Providing appropriate personal protective equipment (PPE) such as gloves, eye protection, and respiratory protection and training on their proper use.
2. Ensuring all workers are properly trained in the safe use of tools and equipment.
3. Providing a first aid kit and ensuring all workers are trained in basic first aid and emergency response.
4. Establishing protocols for reporting and addressing injuries and incidents.
5. Regularly inspecting and maintaining tools and equipment to ensure they are in safe working condition.

By implementing these measures, the risk of nail gun injuries and associated infectious diseases can be reduced, and the safety and health of workers can be protected.

ADDITIONAL RESOURCES

Infectious Diseases

- OSHA. Infectious Diseases. <https://www.osha.gov/healthcare/infectious-diseases>
- CDC Outbreak List. <https://www.cdc.gov/outbreaks/index.html>
- OSHA. Legionnaires Disease. <https://www.osha.gov/legionnaires-disease>
- CDC Mpox. <https://www.cdc.gov/poxvirus/mpox/response/2022/us-map.html>

COVID-19

- WA DOH: <https://doh.wa.gov/emergencies/covid-19>
- World Health Organization, COVID-19. https://www.who.int/health-topics/coronavirus#tab=tab_1
- Center for Disease Control and Prevention. COVID-19. <https://www.cdc.gov/coronavirus/2019-nCoV/index.html>
- CDC Data Tracker COVID-19. <https://covid.cdc.gov/covid-data-tracker/#wastewater-surveillance>
- CDC NIOSH COVID-19 Information for the workplace. https://www.cdc.gov/niosh/emres/2019_ncov_default.html
- The Center for Construction Research and Training (or CPWR). COVID-19 Resources. <https://www.cpwr.com/covid-19-resources/>
- OSHA. Construction Work COVID-19 Control and Prevention. <https://www.osha.gov/coronavirus/control-prevention/construction>
- Washington State Department of Labor and Industries. COVID-19. <https://lni.wa.gov/safety-health/safety-research/covid-19>
- L&I Requirements and Guidance for Preventing COVID-19. <https://lni.wa.gov/agency/outreach/coronavirus/requirements-and-guidance-for-preventing-covid-19>
- Novel Coronavirus Outbreak (COVID-19) Resources. <https://lni.wa.gov/agency/outreach/novel-coronavirus-outbreak-covid-19-resources>
- Granite COVID-19 Employee Awareness Video. <https://youtu.be/mqXHsQSG7VA>

Guidelines

- OSHA Guidance. <https://www.osha.gov/coronavirus/safework>
- New York City Department of Health and Mental Hygiene. Guidelines on Assessment and Remediation of Fungi in Indoor Environments. <https://www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>