FIU | FLORIDA INTERNATIONAL UNIVERSITY

Environmental Health & Safety

Infection Control Guidelines

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This document outlines the methods by which EH&S will implement the FIU Workplace Infection Control Program based on recommendations by the Centers for Disease Control (CDC) and Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

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The Biosafety Officer is responsible for assuring this program meets the standards of these guidelines. The following individual is designated to fulfill this responsibility:

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Employees name or title	Telephone #

PURPOSE

The purpose of this document is to provide guidelines based on recommendations from the Center of Disease Control for controlling the spread of communicable infections in the workplace setting.

SCOPE

University-wide

DEFINITIONS

Infection control: policies and procedures established for the surveillance, prevention, and control of infection.

Presenteeism: the practice of being on the job while experiencing or displaying/experiencing symptoms of illness that undermine productivity. Health conditions most typically associated with presenteeism include: flu/colds, gastrointestinal disorders, depression, back and joint pain.

Pathogens: microorganisms (e.g. bacteria, viruses, or parasites) that can cause disease in humans, animals, and plants.

INTRODUCTION

Infections are caused by human pathogens, such as bacteria, viruses, and microorganisms, which can invade the body and compromise its well-being. Any situation that brings people together provides an opportunity for the transmission of infectious agents. Infection control in the workplace focuses on pathogens that are transmitted by person-to-person contact or eating and drinking.

MODE OF TRANSMISSION

There are a variety of ways in which infections can spread from person to person. These are referred to as the Modes of Transmission. Knowing mode of transmission is important in controlling the spread of infection. See below

1. Contact: this is the most frequent mode of transmission and involves direct contact between persons in which one person is infected and the infectious organism spreads to other persons by direct contact such as touching. It can also involve indirect contact where-in a non-infected person touches the surface of an object that was touched by an infected person.
    a. Touching or being exposed to body fluids such as blood, or saliva, which contain infectious organisms, can also cause infection
    b. There are some infections caused by contact which are not expected to occur in the workplace. Additional information on infections caused by intimate contact can be obtained from the Centers for Disease Control website: **www.cdc.gov**
2. airborne: droplets from sneezing or coughing can spread or carry infectious agents through the air from one person to another.
3. common vehicle: spread of diseases through contaminated food, water, etc.
4. vector: diseases that are carried by an animal such as mosquitoes, ticks, fleas and transmitted to humans by biting.

COMMON WORKPLACE PATHOGENS

Community-Associated Methicillin-Resistant *Staphylococcus aureus* (CA-MRSA)

Definition
MRSA is a type of staphylococcus bacteria that is resistant to antibiotics called beta-lactams. Beta-lactam antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin.

Symptoms
MRSA, can cause skin infections that may look like a pimple or boil and can be red, swollen, painful, or have pus or other drainage. More serious infections may cause pneumonia, bloodstream infections, or surgical wound infections.

Mode of Transmission
Factors that have been associated with the spread of MRSA skin infections include: close skin-to-skin contact, openings in the skin such as cuts or abrasions, contaminated items and surfaces, crowded living conditions, and poor hygiene.

Prevention and Control
Practice good hygiene:

1. Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
2. Keep cuts and scrapes clean and covered with a bandage until healed.
3. Avoid contact with other people's wounds or bandages.
4. Avoid sharing personal items such as towels or razors.

Vantomycin-Resistant Enterococci (VRE)

Definition
Enteroccocci are bacteria that are present in the intestines and are often found in the environment. Sometimes these bacteria can cause infections. Vancomycin is an antibiotic that is often used to treat the infection. In some instances, enterococci have become resistant to this drug and thus are called vancomycin-resistant enterococci (VRE).

Symptoms
VRE can live in the intestines without causing disease. However, when VRE infects the urinary tract, blood stream, or wounds, it may become more difficult to treat

Mode of Transmission
VRE is usually passed to others by direct contact with stool, urine or blood containing VRE. It can also be spread indirectly via contaminated environmental surfaces. VRE usually is not spread through casual contact such as touching or hugging. VRE is not spread through the air by coughing or sneezing.

Prevention and Control
The following are some measures to prevent spread of VRE:

- Always wash your hands thoroughly after using the bathroom and before preparing food. Clean your hands after close contact with persons who have VRE. Wash with soap and water (particularly when visibly soiled) or clean with alcohol-based hand cleaner.
- Frequently clean areas of your home such as your bathroom that may become contaminated with VRE. Use a household disinfectant or a mixture of one-fourth cup bleach and one quart of water to clean those areas and surfaces that are touched frequently.
- Wear gloves if you may come in contact with body fluids that may contain VRE, such as feces. Always wash your hands after removing gloves.
- Be sure to tell any healthcare providers that you have VRE so that they are aware of your infection.

Multi and Extremely Drug-Resistant Tuberculosis (MDR and XDR TB)

Definition
Tuberculosis (TB) is a disease caused by bacteria called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs. But, TB bacteria can attack any part of the body such as the kidney, spine, and brain.

Multidrug-resistant TB (MDR TB) is TB that is resistant to at least two of the best anti-TB drugs, isoniazid and rifampicin. These two drugs are considered "first-line" drugs used to treat all persons with TB disease.

Extremely drug resistant TB (XDR TB) is a relatively rare type of MDR TB. XDR TB is defined as TB which is resistant to isoniazid and rifampin; is resistant to any fluoroquinolone (bacterial drug) and at least one of three injectable second-line drugs (i.e., amikacin, kanamycin, or capreomycin).

Symptoms
TB in the lungs may cause symptoms such as: a cough that lasts 3 weeks or longer, pain in the chest, and coughing up blood or sputum. Other symptoms of active TB disease are: weakness or fatigue, weight loss, loss of appetite, chills, and fever.

Mode of Transmission
TB is spread through the air from one person to another as the bacteria are carried in droplets put into the air when a person with active TB disease of the lungs or throat coughs or sneezes. Persons nearby may breathe in these bacteria and become infected.

Prevention and Control
Avoid close contact or prolonged time with known TB patients in crowded, enclosed environments like clinics, hospitals, or shared workplace areas.

Influenza (Flu virus)

Definition
The flu is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death. The best way to prevent the flu is by getting a flu vaccination each year. University Health Services provides flu vaccinations to faculty and staff every flu season. For more information or to schedule an appointment, call 348-

Symptoms
Symptoms of flu include fever (usually high), headache, tiredness, cough, sore throat, runny or stuffy nose, and muscle aches.

Mode of Transmission
Flu viruses spread mainly from person to person through coughing or sneezing of people with influenza. Sometimes people may become infected by touching something with flu viruses on it and then touching their mouth or nose. Most healthy adults may be able to infect others beginning 1 day before symptoms develop and up to 5 days after becoming sick

Prevention and Control
The single best way to prevent seasonal flu is to get vaccinated every year, but the following good health practices can often help prevent respiratory illnesses like the flu.

- Avoid close contact with people who are sick. When you are sick, keep your distance from others to keep them from getting sick too.
- If possible, stay home from work or school when you are sick. You will help prevent others from catching your illness.
- Cover your mouth and nose with a tissue when sneezing or coughing.
- Wash your hands often to prevent the spread of germs.

Campylobacteriosis

Campylobacteriosis is an infectious disease caused by bacteria of the genus *Campylobacter Campylobacter* is one of the most common bacterial causes of diarrheal illness in the United States. Virtually all cases occur as isolated, sporadic events, not as a part of large outbreaks. Many more cases go undiagnosed or unreported, and it is estimated to affect over 1 million persons every year.

Symptoms
Most people who become ill with campylobacteriosis experience diarrhea, cramping, abdominal pain, and fever within 2 to 5 days after exposure to the organism.

Mode of Transmission
Campylobacteriosis is associated with handling raw poultry or eating raw or undercooked poultry meat. Only a small number of Campylobacter organisms (fewer than 500) are needed to cause illness in humans. One way to become infected is to cut poultry meat on a cutting board, and then use the unwashed cutting board or utensil to prepare vegetables or other raw or lightly cooked foods. The *Campylobacter* organisms from the raw meat can then spread to the other foods.

Prevention and Control

- Cook all poultry products thoroughly. Make sure that the meat is cooked throughout (no longer pink).
- If you are served undercooked poultry in a restaurant, send it back for further cooking.
- Wash hands with soap before and after handling raw foods of animal origin.
- Prevent cross-contamination in the kitchen:
    - Use separate cutting boards for foods of animal origin and other foods. Carefully clean all cutting boards, countertops and utensils with soap and hot water after preparing raw food of animal origin.
    - Avoid consuming unpasteurized milk and untreated surface water.
- Make sure that persons, especially children, wash their hands carefully and frequently with soap to reduce the risk of spreading infection.
- Wash hands with soap after having contact with pets.

Cryptosporidiosis

Cryptosporidiosis is a diarrheal disease caused by microscopic parasites of the genus *Cryptosporidium*. Once an animal or person is infected, the parasite lives in the intestine and is passed in the fecal matter. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine- based disinfectants. Both the disease and the parasite are commonly known as "crypto."

Symptoms

Symptoms of cryptosporidiosis generally begin 2 to 10 days (average 7 days) after becoming infected with the parasite. The most common symptom of cryptosporidiosis is watery diarrhea. Other symptoms include dehydration, weight loss, stomach cramps or pain, fever, nausea, vomiting.

Mode of Transmission

Cryptosporidium lives in the intestine of infected humans or animals. Millions of crypto germs can be released in the feces of an infected human or animal. Consequently, *Cryptosporidium* is found in soil, food, water, or surfaces that have been contaminated with infected human or animal feces. The parasite is transmitted through the fecal-oral route by:

- Accidentally putting something into your mouth or swallowing something that has come into contact with feces of a person or animal infected with *Cryptosporidium*.
- Swallowing recreational water contaminated with *Cryptosporidium* (Recreational water includes water in swimming pools, hot tubs, jacuzzis, fountains, lakes, rivers, springs, ponds, or streams that can be contaminated with sewage or feces from humans or animals.) **Note:** *Cryptosporidium* can survive for days in swimming pools as it is resistant to chlorine
- Eating uncooked food contaminated with *Cryptosporidium.*
- Accidentally swallowing *Cryptosporidium* picked up from surfaces (such as bathroom fixtures, changing tables, diaper pails, or toys) contaminated with feces from an infected person.

Prevention and Control

- Practice good hygiene.
  - Wash hands thoroughly with soap and water.
  - Wash hands after using the restroom and before handling or eating food
  - Wash hands after every diaper change, especially if you work with diaper-aged children, even if you are wearing gloves.
  - Protect others by not swimming if you are experiencing diarrhea (essential for children in diapers).
- Avoid water that might be contaminated.
  - Do not swallow recreational water
  - Do not drink untreated water from shallow wells, lakes, rivers, springs, ponds, and streams.
  - Do not drink untreated water during community-wide outbreaks of disease caused by contaminated drinking water.
  - Do not use untreated ice or drinking water when traveling in countries where the water supply might be unsafe.
- If you are unable to avoid using or drinking water that might be contaminated, then you can make the water safe to drink by doing one of the following:
  - Heat the water to a rolling boil for at least 1 minute.
    OR
  - Use a filter that has an absolute pore size of 1 micron or smaller, or one that has been NSF rated for "cyst removal."
- Do not rely on chemicals to disinfect water and kill *Cryptosporidium*. Because it has a thick outer shell, this particular parasite is highly resistant to disinfectants such as chlorine and iodine.
- Avoid food that might be contaminated.
  - Wash and/or peel all raw vegetables and fruits before eating.
  - Use safe, uncontaminated water to wash all food that is to be eaten raw.
  - Avoid eating uncooked foods when traveling in countries with minimal water treatment and sanitation systems.

Hepatitis A

Hepatitis A is a liver disease caused by the hepatitis A virus. Hepatitis A can affect anyone. In the United States, Hepatitis A can occur in situations ranging from isolated cases to widespread epidemics.

Symptoms

When symptoms are present, they usually occur abruptly and can include the following: fever, tiredness, loss of appetite, nausea, abdominal discomfort, dark urine, and jaundice

Mode of Transmission

Person-to-person transmission through the fecal-oral route (i.e., ingestion of something that has been contaminated with the feces of an infected person) is the primary means of hepatitis A virus transmission in the United *States*. Common-source outbreaks can occur from exposure to fecally contaminated food or water. Uncooked HAV-contaminated foods have been recognized as a

source of outbreaks. Cooked foods also can transmit HAV if the temperature during food preparation is inadequate to kill the virus or if food is contaminated after cooking, as occurs in outbreaks linked to infected food handlers.

Prevention and Control

- The best protection is the Hepatitis A vaccine.
- Short-term protection against hepatitis A is available from immune globulin. It can be given before and within 2 weeks of coming in contact with HAV.
- Always wash your hands with soap and water after using the bathroom, changing a diaper, and before preparing and eating food.

Salmonellosis

Salmonella is a group of bacteria that can cause diarrheal illness in humans. They are microscopic organisms that pass person-to-person through the fecal-oral route. There are many different kinds of Salmonella bacteria. Salmonella serotype Typhimurium and Salmonella serotype Enteritidis are the most common in the United States.

Symptoms

Most persons infected with Salmonella develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts 4 to 7 days, and most persons recover without treatment.

Mode of Transmission

Salmonella are usually transmitted to humans by eating foods contaminated with animal feces. Contaminated foods are often of animal origin, such as beef, poultry, milk, or eggs, but all foods, including vegetables may become contaminated. Many raw foods of animal origin are frequently contaminated, but fortunately, thorough cooking kills Salmonella. Food may also become contaminated by the unwashed hands of an infected food handler.

Prevention and Control

The following steps should be taken to prevent the spread of samonella:

- Cook poultry, ground beef, and eggs thoroughly before eating. Do not eat or drink foods containing raw eggs, or raw unpasteurized milk.
- If you are served undercooked meat, poultry or eggs in a restaurant, don't hesitate to send it back to the kitchen for further cooking.
- Wash hands, kitchen work surfaces, and utensils with soap and water immediately after they have been in contact with raw meat or poultry.
- Be particularly careful with foods prepared for infants, the elderly, and the immunocompromised.
- Wash hands with soap after handling reptiles or birds, or after contact with pet feces.
- Avoid direct or even indirect contact between reptiles (turtles, iguanas, other lizards, snakes) and infants or immunocompromised persons.

GUIDELINES FOR PREVENTION

Workplace Environment

- Ensure that the work area is clutter-free and well-lit to discourage the presence of insects and vermin.
- Trim back plants and hedges close to entry doors.
- Report to Work Management ponding of water in the vicinity of your building.
- Assure doors and windows do not leak and there are no openings.
- Do not discard food in uncovered garbage containers.
- Do not leave items that decompose in the trash overnight, especially not on weekends.
- Do not leave food opened and unattended.
- Routinely clean commonly shared items, such as telephones, with surface disinfectant such as Lysol sanitizing wipes. Shared equipment, such as keyboards and equipment requiring data entry, should not be ignored.
- Use tissues only once and dispose properly
- Discourage "presenteeism".
- Do not touch, feed, or play with animals.
- Keep broken skin covered with a band-aid, or appropriate wound protection.
- Do not share personal items such as hairbrushes, drinking cups, make-up, etc.

Germ "Hot" Zones

- Identify "hot zones" for germ transmission
    - door knobs, stair railings, elevator buttons, employee break rooms
- Consider Installing "no touch" technology
    - automatic touchless hand sanitizers, sinks, toilets, and hand dryers
- Provide surface and hand sanitizers in the break room
    - disposable surface sanitizing wipes (i.e. chlorox wipes) can be used to wipe down food contact surfaces
- Stress the importance of daily surface sanitation

Personal Hygiene

Hand Hygiene

Hand hygiene is an important aid in the prevention of contamination and cross transmission of microorganisms among employees. Frequent hand-washing can reduce the spread of infections in the work-place by removing microorganisms that are acquired during daily activities.

The Center for Disease Control advises that hand washing should take place as follows:

- Before preparing or eating food.
- After going to the bathroom.
- After changing diapers or cleaning up a child who has gone to the bathroom.
- Before and after tending to someone who is sick.
- Before and after contact with patients (medical setting)
- After gloves are removed (medical and lab setting)
- After handling uncooked foods, particularly raw meat, poultry, or fish.
- After blowing your nose, coughing, or sneezing.
- After handling an animal or animal waste.
- After handling garbage.
- Before and after treating a cut or wound.

Essential Components of Handwashing

Friction: removes visible soiling, dead skin cells, and other material which may harbor pathogenic microorganisms
Soap: to loosen skin oils as well as remove dirt and body fluids
Warm Water: to rinse off loosened dirt, debris, and pathogenic particles

Types of Hand Hygeine Agents

Alcohol-based hand products

- Less damaging to skin than soap and water
- reduces time needed for hand disinfection
- more effective than soap and water
- more accessible than sinks
- reduces bacterial counts
- improves skin condition

Anti-microbial hand products

- effectively removes transient flora, dirt, blood, and bodily fluids
- destroys contaminating and colonizing flora

Plain soap

- removes some transient flora, dirt, blood, and bodily fluids
- not as effective as anti-microbial or alcohol based products

Administrative Measures

- Educate the importance of hand-washing
    - reminders should be posted in restrooms and kitchen areas
    - ensure that there are adequate amounts of hand-washing supplies (soap, absorbent towels, etc)
- Encourage good hand-hygiene habits and provide appropriate administrative support and financial resources to stock necessary supplies to maintain high standards of hygiene in your unit.
- As part of the departmental program to improve hand-hygiene adherence, provide employees with a readily accessible alcohol-based hand-rub product

Food Precautions

When eating or preparing foods in the workplace, it's important to follow food safety guidelines to prevent harmful bacteria from causing food-borne illness. These recommendations will help to minimize food-borne illness:

- Wash hands before and after handling any types of food or drink.
- Wash fruits and vegetables before eating.
- Food items are **absolutely prohibited** in laboratories.
- Do not share eating utensils or drinking devices, etc. with others in the workplace.
- When you have finished eating, seal food remains in a plastic bag and discard in a waste receptacle to prevent attracting insects, etc.

For additional information on food safety, please refer to the Food Safety guidelines USCG 109 on the EH&S website.

REPORTING

Effective infection control practices require:

1) knowing the facts
2) applying the principles

A departmental workgroup responsible to monitor departmental hygiene practices such as sanitation, food preparation/storage and disposal, and monitoring for "presenteeism" may be an effective way to apply infection prevention principles in each work area.

Incidence/Outbreak Reporting

If an area reports the possibility of exposure to an infectious disease in the workplace, areas have responded as follows:

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- Investigate the situation to identify the source of infection and other potentially exposed persons.
- Interview the supervisor who reported the incident and the affected individual(s).
- Consult with Director of Student Health Services, Director of Faculty Group Practice, and Miami-Dade Department of Health for options if the possibility of epidemic/outbreak exists
- Coordinate with Academic Space to relocate class sessions in affected areas if necessary
- Distribute educational flyers pertaining to infection control and good hygiene in the workplace

Student Health Services/Faculty Group Practice

- Respond to correspondence regarding symptoms and advise
- Assess possible epidemic/outbreaks and, if appropriate, contact proper health authorities and follow-up as required.
- Distribute educational information concerning symptoms, treatment, and prevention

Utility Operations

- Decontaminate affected facilities as recommended by CDC
- Ensure custodial personnel have been trained on disinfection and cleaning as it pertains to infection control

Employees and Students

- Continue to encourage and practice good hygiene habits (cough etiquette, hand-washing, etc)

The best defense against becoming infected is to learn and understand the facts related to infection control and prevention and to apply these in a prudent and responsible manner.

Please contact the Department of Environmental Health and Safety with any questions you may have about these safety guidelines: (305) 348-2621.