

GAME OF GERMS



WINTER IS COMING

C. DIFFICILE



What it is: *Clostridium difficile*, also known as *C. difficile* or *C. diff*, is a bacterium that lives in the intestines of some people (even healthy people). When antibiotics are taken for other medical conditions, the normal balance of their bowel bacteria is upset, allowing *C. difficile* to hyper-multiply. *C. difficile* bacteria can produce a toxin that damages the cells in the intestines. The most common symptom is diarrhea.

C. difficile is the most frequent cause of infectious diarrhea in hospitals and health care facilities.

How it presents: Patients develop frequent watery diarrhea, fever, nausea, crampy abdominal pain and, nausea.

How it's transmitted: *C. difficile* bacteria are extremely hardy in the environment. They are spread from room to room (and patient to patient) on people's hands and shared equipment.

How to prevent transmission:

- ❖ Frequent cleaning of all surfaces, especially high-touch surfaces and toilet areas is critical.
- ❖ Eliminate clutter to enable better cleaning.
- ❖ Clean hands (washing preferred) and equipment between patients.

MRSA

(METHICILLIN-RESISTANT STAPH AUREUS)



What it is: Common bacteria called *staphylococcus aureus* that have developed resistance to many antibiotics. When these bacteria are in your nose or on the surface of your skin, they will not normally harm you.

How it presents: MRSA can cause a variety of infections, such as skin and wound infections that often look like infected spider bites. Sometimes MRSA can cause serious infections in the blood, lungs, or other tissues. These can be difficult to treat because the choice of antibiotics is limited.

How it's transmitted: direct or indirect contact, usually on people's hands either from touching another person who is colonised with MRSA, or a surface that has become contaminated with MRSA.

How to prevent transmission.

- ❖ Frequent hand hygiene
- ❖ Clean shared equipment in between patients
- ❖ Do not share personal items
- ❖ Keep surfaces clutter-free, and clean frequently with an approved disinfectant.

CPO

(CARBAPENEMASE-PRODUCING ORGANISMS)

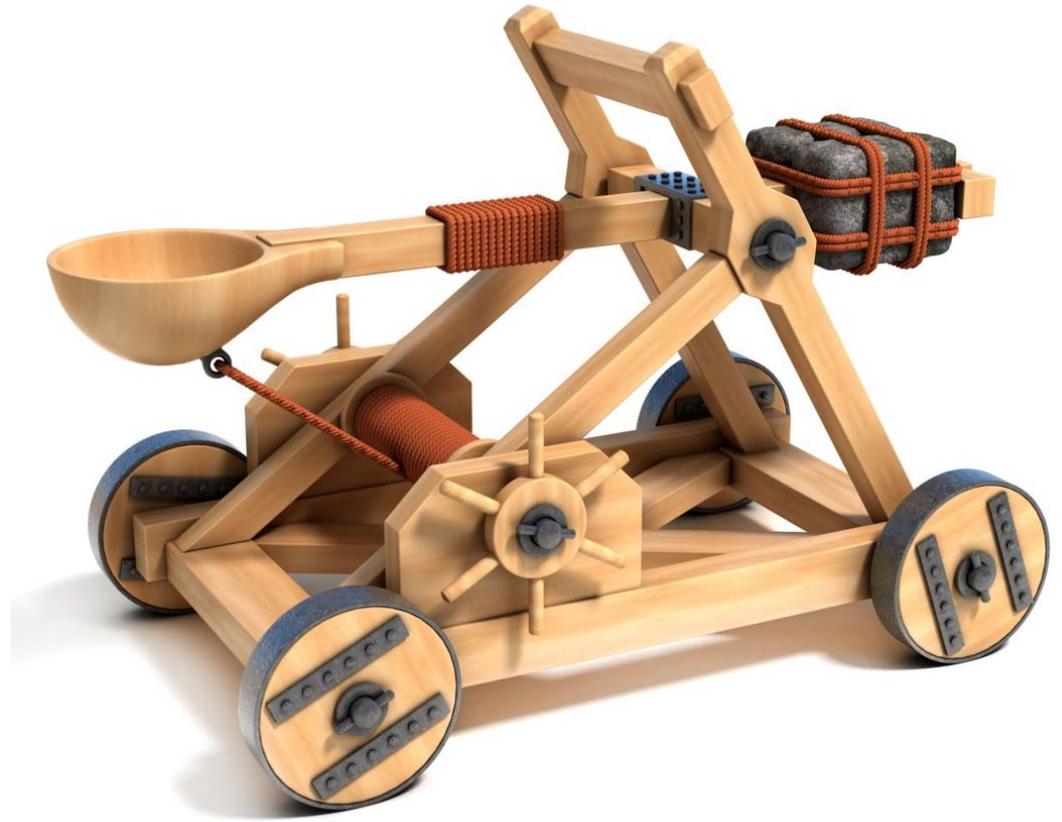
What it is: The carbapenem group of antibiotics are used to treat some severe infections that are resistant to other classes of antibiotics. Some bacteria have also developed resistance to carbapenems by producing an enzyme called “carbapenemase”, which is able to render the antibiotic ineffective. These are emerging organisms, and there is still much to learn about them.

How it presents: The bacteria that are currently able to produce CPOs can cause a variety of infections such as wound/surgical site, bacteremias, pneumonias, and urinary tract infections. If this happens, there are few, if any, treatment options.

How it's transmitted: believed to be spread from patient to patient and room to room on uncleaned equipment and on people's hands (direct and indirect contact)

How to prevent transmission:

- ❖ Use routine plus contact precautions when caring for a patient with suspected or confirmed CPO.
- ❖ Dedicate any equipment needed to be used only by that patient and disinfect after discharge prior to using on any other patient.



INFLUENZA



What it is: an infection of the upper airway caused by an influenza virus.

How it presents: fever, headache, muscle pain, runny nose, sore throat, extreme tiredness, and cough. Children may also experience nausea, vomiting, or diarrhea. Although infections from other viruses may have similar symptoms, those due to the influenza virus tend to be worse.

How it's transmitted: exposure of your mucous membranes (mouth eyes, nose) to droplets from infected people, or picking the virus up on your hands from surfaces and then touching your mouth, rubbing your eyes or nose, etc.

How to prevent transmission:

- ❖ Get a vaccination each year
- ❖ Stay home when you are ill, and advise others to do so
- ❖ Clean your hands regularly
- ❖ Teach patients to and use good respiratory hygiene (contain their cough into a thick tissue or upper arm)
- ❖ Wear a surgical mask with eye protection when within 2 meters of ill patients, or have patient wear mask if they are able.

NOROVIRUS

What it is: Norovirus is a group of viruses that cause terrible nausea, vomiting and/or diarrhea.

How it presents: an upset stomach, vomiting, and/or diarrhea. Other symptoms include nausea, cramping, chills, and fever. Symptoms last 1-3 days.

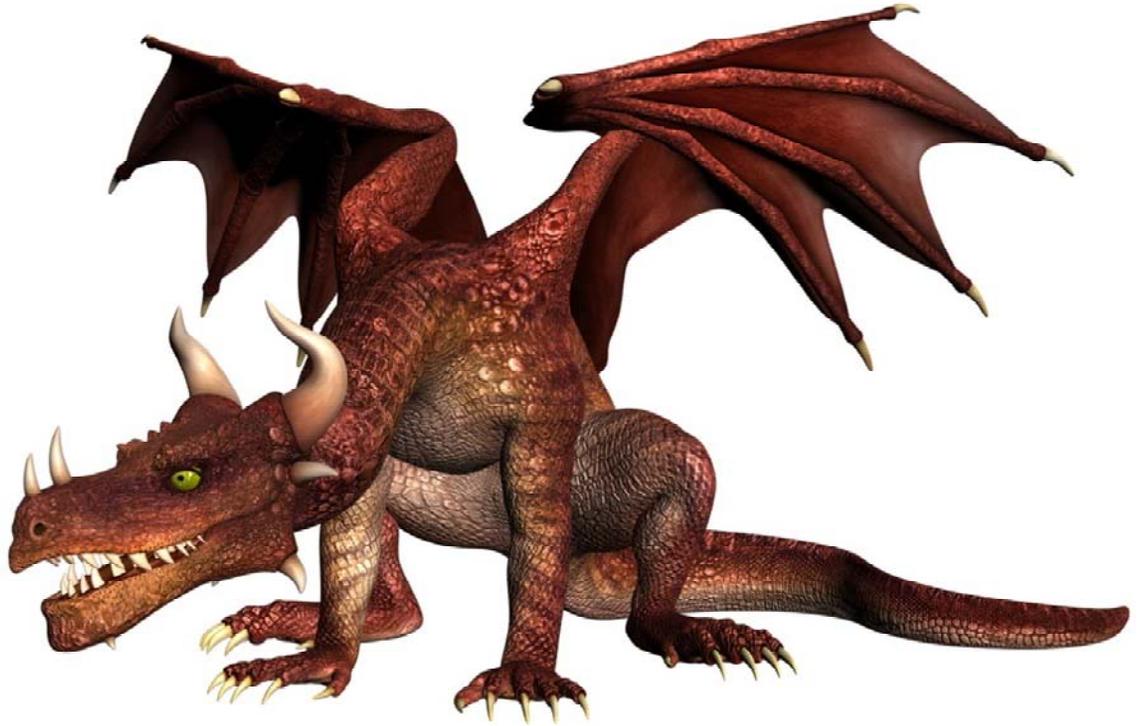
How it's transmitted: Norovirus can be found in the vomit and diarrhea of people who are sick. When someone vomits, people nearby may become infected by swallowing tiny droplets from the air.

The virus can also be spread on surfaces like countertops or sink taps. The virus can survive for a long time on these surfaces if they are not properly cleaned. You can become ill when you touch these surfaces and then touch your mouth.

Some foods can be contaminated with the virus at their source. For example, shellfish may be contaminated by sewage water before they are harvested.

How to prevent transmission:

- ❖ Stay home if ill
- ❖ Clean hands frequently
- ❖ Clean horizontal surfaces frequently
- ❖ Use contact precautions when cleaning emesis or diarrhea
- ❖ Wear a surgical mask with eye protection if assisting someone who is actively vomiting



RSV (RESPIRATORY SYNCYTIAL VIRUS)

What it is: a virus that causes acute respiratory illness (bronchiolitis, pneumonia) in all ages, but especially in the very young and the elderly. Seasonal occurrence; usually winter and early spring. Has been responsible for many outbreaks of respiratory illness in residential care facilities.

How it presents: fever, cough (may have wheezing). In very young or preterm babies, infection may present as lethargy, poor feeding, irritability, and sometimes apneic spells.

How it's transmitted: exposure of your mucous membranes (mouth eyes, nose) to droplets from infected people, or picking the virus up on your hands from surfaces and then touching your mouth, rubbing your eyes or nose, etc.

How to prevent transmission:

- ❖ In high risk areas (i.e. NICU), use routine practices plus droplet precautions
- ❖ In general areas, use routine practices, especially hand hygiene and good respiratory hygiene (cough etiquette)



PERTUSSIS (WHOOPING COUGH)

What it is: ‘whooping cough’ is a highly contagious infection of the respiratory tract by the *Bordetella pertussis* bacterium. Anyone can get pertussis, but young children get sicker than adults do, with serious complications such as pneumonia, seizures, brain damage and death.

How it presents: pertussis starts as with common cold-like symptoms. Within 1-2 weeks, violent coughing fits develop, sometimes (especially in children) accompanied by a whooping sound. The coughing can make the patient gag, bring up clear mucous, vomit, and have difficulty breathing.

How it’s transmitted: easily spreads through the air, via droplets of saliva or mucous from an infected person (e.g. coughing, sneezing, sharing food). People are most likely to transmit the bacteria during the early, common-cold-like stage.

How to prevent transmission:

- ❖ Encourage routine vaccination for babies
- ❖ Vaccines and boosters are also available for adults
- ❖ Use routine practices and droplet precautions (mask with eye protection) when providing care for people with pertussis
- ❖ Keep infants and pregnant women in their 3rd trimester away from people with pertussis
- ❖ Treatment with antibiotics shortens the time that an infected person is contagious
- ❖ Preventative antibiotics may be prescribed for those who have been exposed and are at high risk of severe illness



MENINGITIS



What it is: meningitis is an inflammation of the membranes (meninges) surrounding the brain and spinal cord. Most cases are caused by viruses; however, some may be caused by bacteria.

Depending on the cause of the infection, meningitis can get better on its own in a couple of weeks, or it can be a life-threatening emergency requiring urgent antibiotic treatment.

How it presents: fever, headache, stiff neck (and symptoms are NOT relieved with acetaminophen or ibuprofen). The majority of times, the symptoms for bacterial and viral meningitis are similar, with the exception of bacteria called *Neisseria meningitidis*, in which people often develop a puerperal rash.

How it's transmitted: contact with respiratory secretions via droplets or surfaces/objects. Meningitis can also spread through coughing, sneezing, kissing, or sharing eating utensils, a water bottle, lip balm, or a cigarette.

How to prevent transmission:

- ❖ Routine practices and droplet/contact precautions until bacterial cause has been ruled out or the patient has been on effective antibiotics for 24 hours.
- ❖ Educate patients not to share drinks, foods, straws, eating utensils, lip balms, or toothbrushes with anyone else.
- ❖ Educate patients to practice good cough etiquette and clean their hands often.

ZOSTER (SHINGLES)

What it is: The same virus that causes chickenpox causes shingles. For some people who have had chickenpox, the virus can become active again later in life and cause a painful rash with blisters called shingles.

How it presents: Symptoms of shingles include headache, fever, nausea, and chills. People may feel itching, tingling, or extreme pain in the area where a rash develops several days later. The pain associated with shingles involves the virus infecting sensory nerves. The rash is often clustered around the affected nerve. It takes 2 to 4 weeks for the blisters to heal, although some scars may remain.

How it's transmitted: **Shingles cannot be passed from person to person.** However, a person who has not had chickenpox or the chickenpox vaccine can get chickenpox from someone with shingles. This is uncommon, and requires direct contact with the fluid from the shingles blisters.

How to prevent transmission:

- ❖ Healthcare workers should have their immune status to chickenpox verified by a blood test (titer).
- ❖ Individuals with low or no immunity should consult public health about receiving a varicella vaccine; and those with immunity to varicella should consult Public Health about the Zostavax vaccine.
- ❖ A person with shingles who feels well can be out and about as long as the rash can be completely covered and the person uses good hand hygiene.
- ❖ Healthcare providers who care for patients in high-risk units (i.e. transplant, NICU, oncology) should check with their occupational health representatives if they suspect they are developing Zoster/Shingles.



GROUP A STREPTOCOCCUS



What it is: bacteria also known as GAS or Strep, often present in the nose, throat and skin of healthy people. Infections are usually mild. Rarely, the bacteria may enter the bloodstream, lungs, joints, and membranes around the heart, causing severe illness and tissue damage.

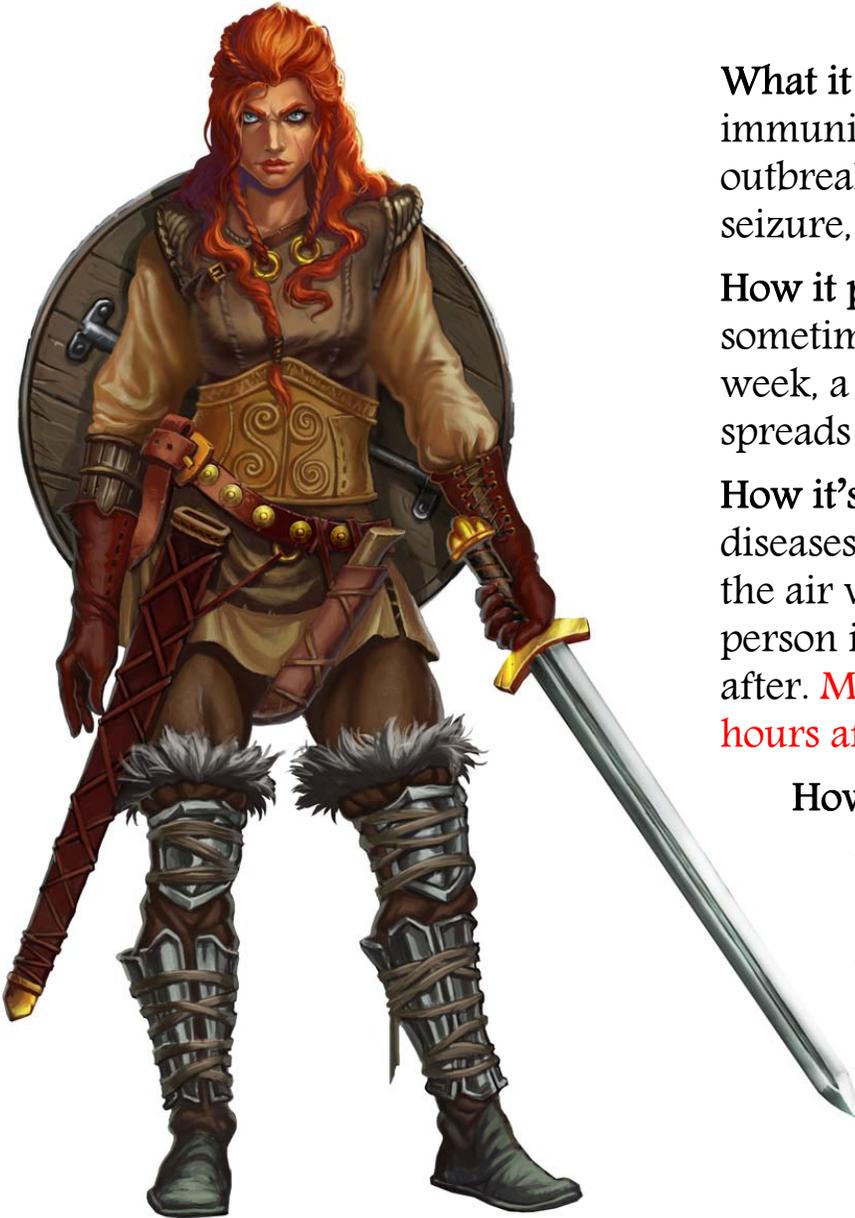
How it presents: Strep throat starts suddenly with high fever, sore throat, swollen lymph nodes in the neck, white/yellow patches at the back of the throat, and in children, abdominal pain. GAS can also cause wound infections; toxic shock syndrome (invasive infection with fever, low blood pressure, diarrhea, vomiting and severe muscle pain); necrotizing fasciitis (a very severe infection that may start in a minor wound); scarlet fever; and rheumatic fever.

How it's transmitted: GAS spreads through saliva and mucous, either from person to person (e.g. sneezing, kissing), or through objects (e.g. shared utensils). Most infections occur from contact with those who have no symptoms.

How to prevent transmission:

- ❖ Clean your hands often
- ❖ Cough and sneeze into your elbow or sleeve
- ❖ Avoid sharing cups, utensils, or anything with saliva on it
- ❖ Keep wounds clean. Watch for redness, swelling, fever, increased pain or drainage

MEASLES



What it is: a severe viral infection that is rare among people immunized against it (however, there are current global outbreaks due to non-vaccination). Complications can lead to seizure, deafness and brain damage.

How it presents: fever, cough, cold, red and inflamed eyes, and sometimes, Koplik spots (white spots inside the mouth). Within a week, a red blotchy rash appears first on the face and neck and spreads to the chest, arms and legs, lasting 4 to 7 days.

How it's transmitted: one of the most contagious infectious diseases, the virus is transmitted in droplets of saliva, and through the air when an infected person breathes, coughs, or sneezes. A person is infectious from 4 days before the rash appears, to 4 days after. **Measles virus can remain infectious in the air for up to two hours after an infected person leaves an area.**

How to prevent transmission:

- ❖ MMR vaccination offers the best protection from measles
- ❖ Stay home if you are sick, and notify Occupational Health/Infection Control if you are sick with measles
- ❖ Use airborne precautions (per your health authority's infection control guidelines) for those suspected or confirmed to have measles
- ❖ Frequent hand cleaning

VRE

(VANCOMYCIN RESISTANT ENTEROCOCCI)

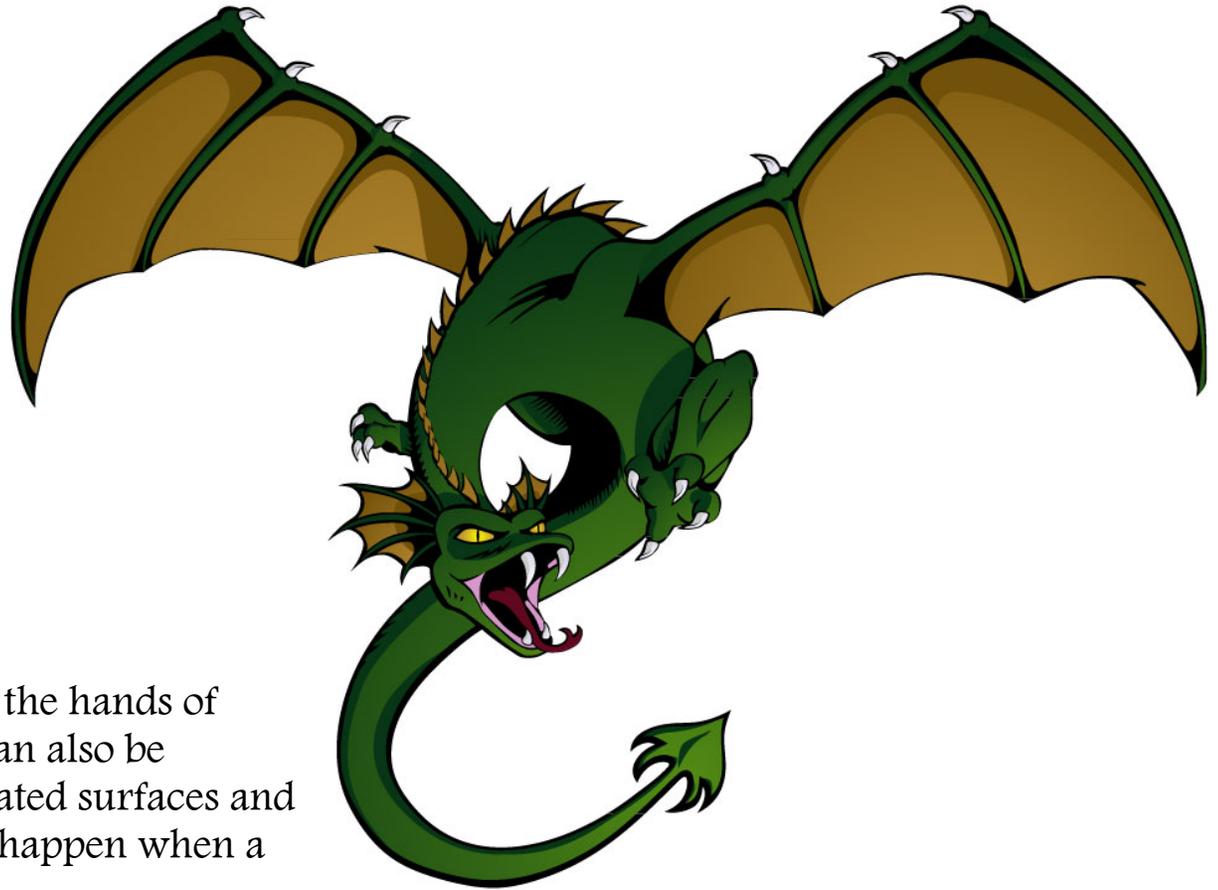
What it is: *Enterococcus* bacteria, commonly found on healthy people and in the environment, which have become resistant to the antibiotic vancomycin. This makes VRE harder to treat with antibiotics.

How it presents: The majority of patients with VRE are colonized, carrying the bacteria with no symptoms of illness. If VRE gets into an open wound, it can cause infection. Less often, it can cause infections in the urinary tract, catheter insertion sites, or blood.

How it's transmitted: Usually carried on the hands of healthcare workers or caregivers. VRE can also be transmitted through touching contaminated surfaces and objects. Contamination is more likely to happen when a VRE patient has diarrhea.

How to prevent transmission:

- ❖ Good hand hygiene for healthcare workers and patients
- ❖ Clean shared equipment in between patients
- ❖ Keep surfaces clutter-free, and clean frequently with an approved disinfectant



TUBERCULOSIS



What it is: is a serious disease caused by breathing in bacteria called *Mycobacterium tuberculosis*. Tuberculosis (TB) usually infects the lungs, but it can also infect other parts of the body, including the kidneys, spine, and brain. People can have TB and not be sick; this is called latent TB. Latent TB is when a person has the TB bacteria in their body but the bacteria are not growing. The latent TB can become active TB at any time, and make you very sick. People with a latent TB infection may need to get treatment.

How it presents: Gradual appearance of chronic cough (often with blood tinged sputum), low grade fever, night sweats, and weight loss.

How it's transmitted: Pulmonary TB is transmitted via tiny respiratory particles that can float on air currents. In order to become infected, a person must breathe these particles into the tiniest portions of their lungs (alveoli).

How to prevent transmission:

- ❖ Use routine practices plus airborne precautions (N95 respirator) when caring for anyone suspected or confirmed to have active TB.
- ❖ These people must always be in a private room with the door closed, preferably with negative pressure ventilation if available at the facility.
- ❖ If this person needs to leave their room they must wear a face mask when out.

Important: People with TB are often not ill enough to need hospitalization, and can easily and safely be treated in their home if they live in an environment that will prevent exposure to others.

MERS-COV (MIDDLE EASTERN RESPIRATORY SYNDROME CORONAVIRUS)

What it is: MERS-CoV is from a family of viruses called coronaviruses, which are a common cause of respiratory infections in adults and children. The SARS virus was also a coronavirus. While many strains of coronavirus only cause mild or moderate illness, both of these coronaviruses can cause severe illness. However, MERS-CoV does not seem to spread as easily as the SARS virus did.

How it presents: shortness of breath and breathing difficulties, fever, cough, muscle aches, chest pain, vomiting, diarrhea.

How it's transmitted: Scientists believe that the virus can spread from person to person when there is close contact. This is because clusters of cases have occurred in healthcare facilities, among family members, and between co-workers. The most likely transmission is via large respiratory droplets, and contact on hands. There is also growing evidence that direct or indirect contact with camels may have a role in spreading the virus.

How to prevent transmission:

- ❖ Always ask for a history of travel, or contact with others who have travelled in the past 30 days, for any person presenting with illness. If the individual has lived in or travelled in a country in which MERS has been reported or has been in contact with someone with such history, notify your Medical Health Officer and consult a virologist or microbiologist at the BCCDC.
- ❖ Separate (at least 2 meters) the individual from other patients and implement contact and droplet precautions immediately.
- ❖ Airborne precautions (including negative pressure rooms) are warranted in the event of aerosol-generating procedures.

