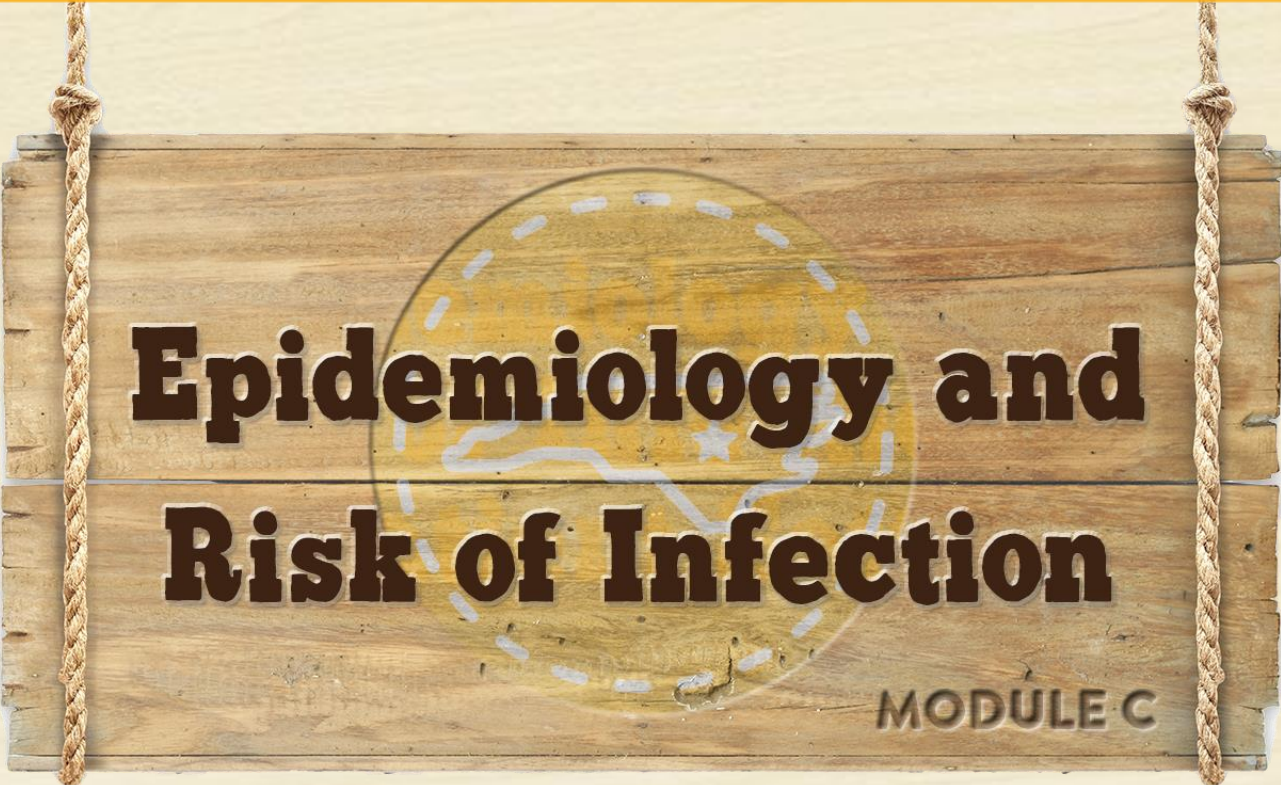


# Module C



## **Epidemiology and Risk of Infection**

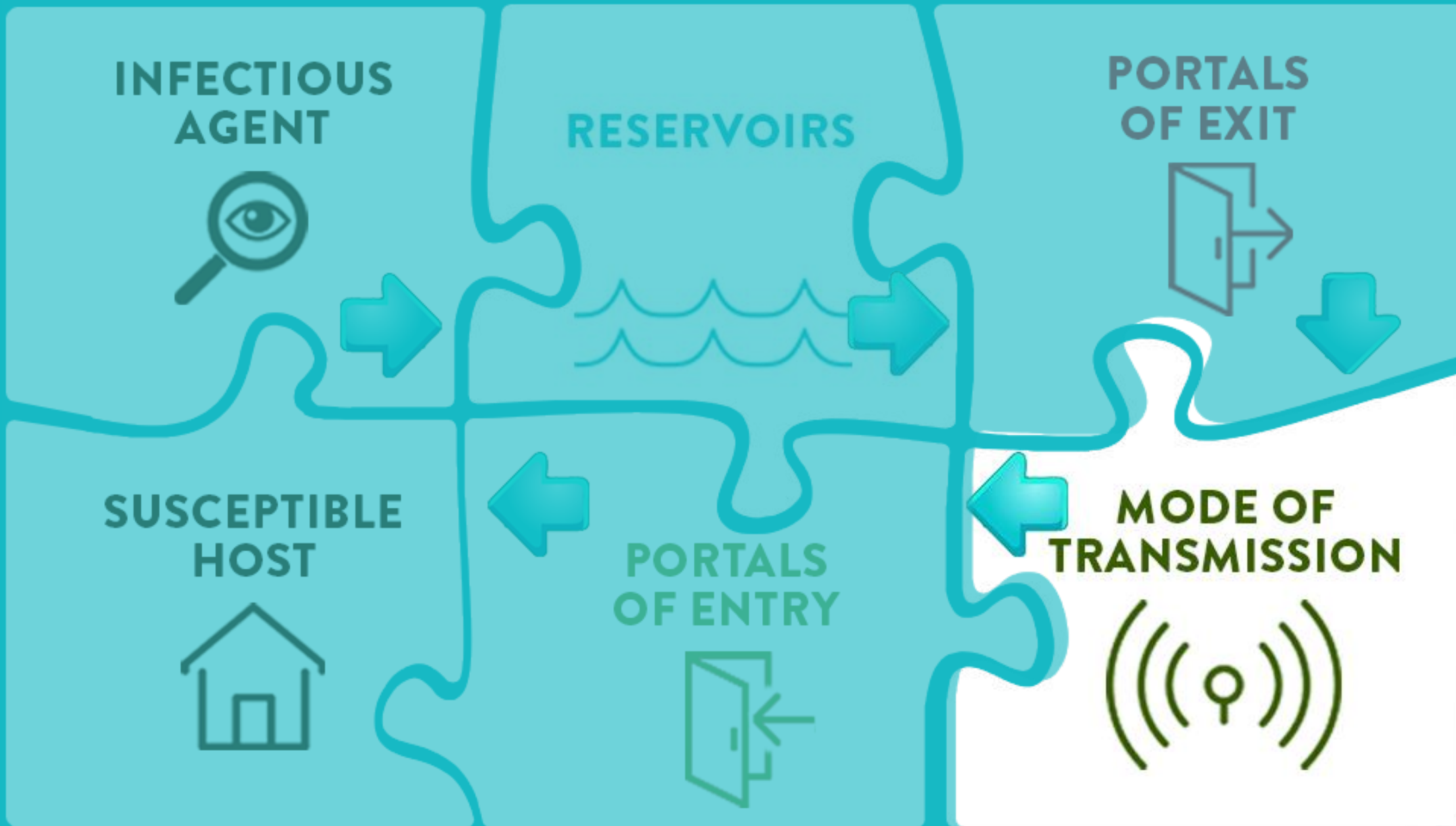
MODULE C

# Objectives:



- Discuss the infectious process
- Review methods for controlling transmission of infection in **dental** settings
  - Standard Precautions
  - Transmission-based Precautions
- Describe steps for detecting and controlling outbreaks

## CHAIN OF INFECTION



# Infectious Agent or “The Harmful Germ”

- *Bacteria (MRSA, VRE)*
- *Viruses (Influenza, Norovirus)*
- *Fungi (Candida, Aspergillus)*
- *Parasites (Giardia, pinworms)*
- *Arthropods (mites)\**

\* *Infestations, not infections*



# Reservoir or “Hiding Places”

**Where germs live, grow, and increase in numbers**

- A person
- Environment/Fomite
- An animal



**RESERVOIRS**



# People as Reservoirs

- Blood
- Skin
- Digestive tract
  - Mouth, stomach, intestines
- Respiratory tract
  - Nose, throat, lungs
- Urinary tract



# Portals of Exit and Entry

## Exit or “The Way Out”

- Nose and mouth
  - Allows germs to leave in mucous droplets, and saliva or spit
- Gastrointestinal tract
  - Allows for germs to leave in stool and/or vomit
- Skin
  - Allows for germs to leave through direct contact, in blood, pus, or other secretions that come from the body.

## Entry or “The Way In”

- Nose and mouth
  - Allows germs to enter in mucous droplets, and saliva or spit
- Gastrointestinal tract
  - Allows for germs to enter via ingestion
- Skin
  - Allows for germs to enter through direct contact, with blood, pus, or other secretions that come from the body.

PORTALS  
OF ENTRY



PORTALS  
OF EXIT



# Susceptible Host

- Age
- Stress
- Fatigue
- Poor Nutrition
- Chronic Illnesses
- Not properly vaccinated
- Open cuts, skin breakdown
- Medications

**SUSCEPTIBLE  
HOST**



# Mode of Transmission



- Person to Person
- Environmental Source

**MODE OF  
TRANSMISSION**



# Modes of transmission



Contact



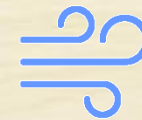
= Most Common



Droplet



Airborne



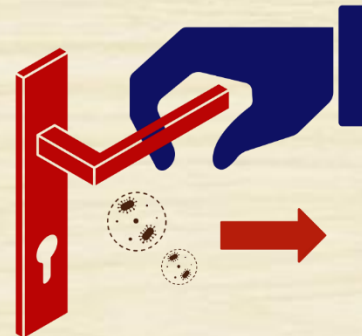
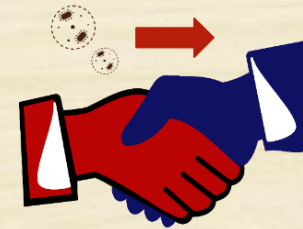
# Modes of transmission



## Contact

### Direct Contact

Person to person contact and physical transfer of organisms



### Indirect Contact

Contact with a contaminated surface or device



Contact

# Modes of transmission



Droplet – an infectious agent travels as a very large particle over a short distance by air current (usually 3-6 feet)

*Droplets may arise from speaking, coughing or sneezing  
Need to be relatively close*

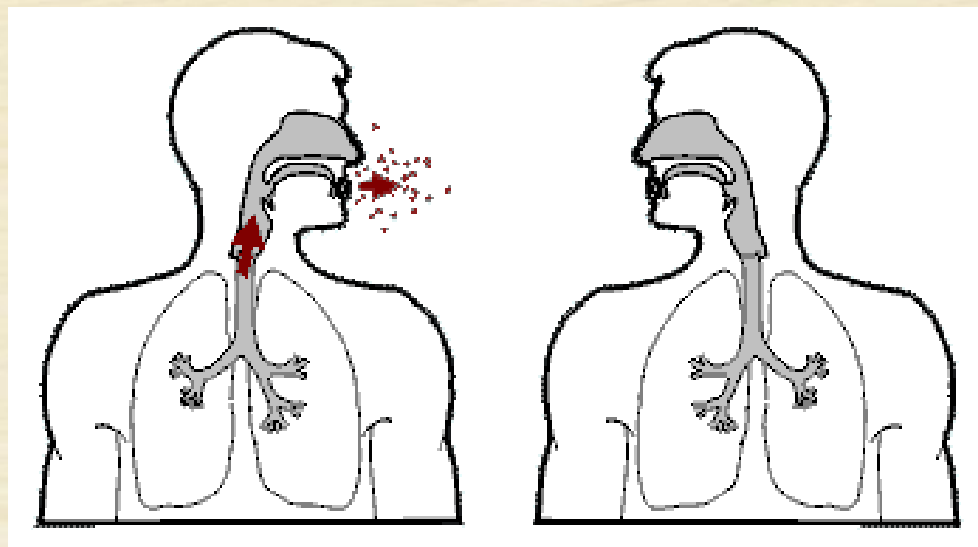


**Droplet**

## Modes of transmission



Airborne – infectious agent travels as very small particles over long distances by air current



*Small respiratory droplets, that can remain infective for long periods of time are dispersed when an infected person coughs, sneezes, laughs or speaks. May spread thru ventilation systems*




Airborne

## Knowledge Check

**The Chain of Infection Includes which of the following:**

- A. Infectious agent, reservoir, mode of transmission and isolation precautions
- B. Susceptible host, portal of entry, OSHA rules, medical waste
- ✓ C. Mode of transmission, infectious agent, susceptible host, reservoir, portal of entry and portal of exit
- D. None of the above

# Controlling transmission of infection



As long as there is a means of transmission, infection will spread to others.

- Standard Precautions
- Transmission-Based Precautions

# CONTROLLING TRANSMISSION

## Standard Precautions



The minimum infection prevention practice that applies to all patient care, regardless of suspected or confirmed infection status of the patient

# CONTROLLING TRANSMISSION

## Standard Precautions



- Hand hygiene
- Use of personal protective equipment
- Respiratory hygiene/cough etiquette
- Safe injection practices
- Use of a mask when injecting the epidural space
- Safe handling of potentially contaminated equipment

# The Best Way to Stop the Spread of Infection: *Hand Hygiene*



- Good hand hygiene, including use of an alcohol-based hand rub and washing with soap and water is critical in reducing the risk of transmission of infections in any healthcare setting



Hand Hygiene

*Hand hygiene is discussed in detail in Module E, “principals of asepsis”*

# The Best Way to Stop the Spread of Infection: *Hand Hygiene*



- Use of an alcohol-based hand rub is recommended as primary mode of hand hygiene except when hands are visible soiled
  - Dirt
  - Blood
  - Body fluids
  - Caring for patient with infectious diarrhea



Hand Hygiene

*Hand hygiene is discussed in detail in Module E, “principals of asepsis”*

# The Best Way to Stop the Spread of Infection: *Hand Hygiene*



Hand Hygiene

# Personal Protective Equipment

- Second component of Standard Precautions is Personal Protective Equipment (PPE)
- Wearable equipment that is intended to protect healthcare personnel from exposure or contact with infectious agent
- Examples:
  - Use of gowns to protect skin and clothing
  - Use of gloves in situations involving possible contact with blood, body fluids, non-intact skin and/or mucous membranes
  - Use of mouth, nose and eye protection during procedures likely to generate splashes or splatters of blood or other body fluids



Personal Protective Equipment (PPE)

# Personal Protective Equipment



Personal Protective Equipment (PPE)



Personal Protective Equipment (PPE)

## Sequence



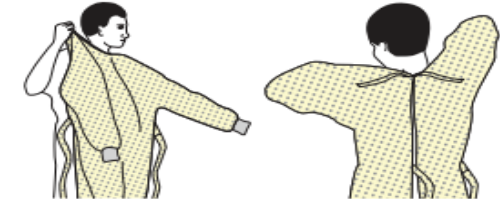
## Personal Protective Equipment (PPE)

## SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

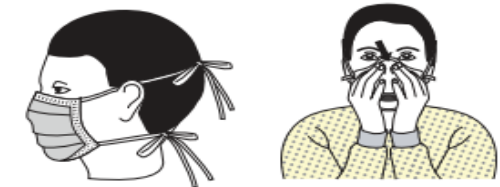
### 1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



### 2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



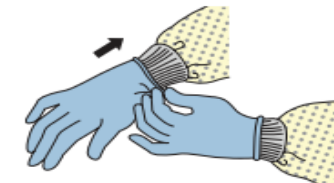
### 3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



### 4. GLOVES

- Extend to cover wrist of isolation gown



## Removal example 1



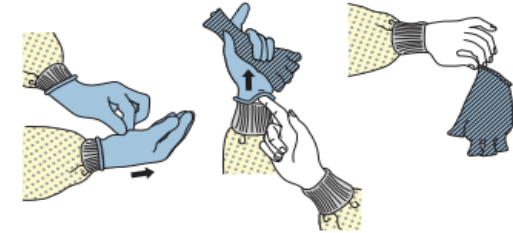
Personal Protective Equipment (PPE)

## HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

### 1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



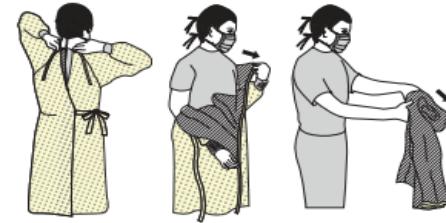
### 2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



### 3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container



### 4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — **DO NOT TOUCH!**
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



### 5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING



## Removal example 2



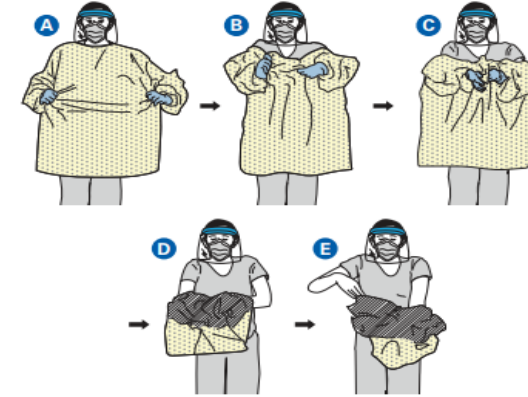
Personal Protective Equipment (PPE)

## HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

### 1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



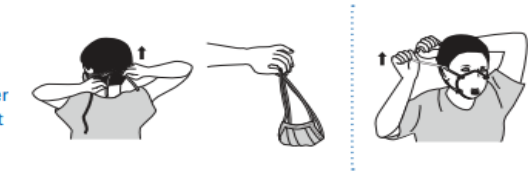
### 2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

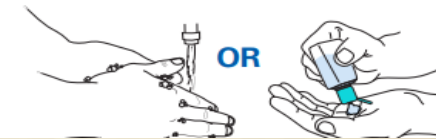


### 3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — **DO NOT TOUCH!**
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



### 4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



# Use of Personal protective equipment (PPE)



Three overriding principals related to personal protective equipment (PPE)

- Wear PPE when the nature of the anticipated patient interaction indicates that contact with blood or body fluids may occur
- Prevent contamination of clothing and skin during the process of removing PPE
- Before leaving the patient's room or cubicle, remove and discard PPE



Personal Protective Equipment (PPE)



## DO

- Wear gloves to reduce risk of contamination or exposure to blood/other body fluids
- Clean hands before donning sterile gloves
- Cleans hands after removing gloves
- Cleans hands and change gloves between task (moving from one body site to another)
- Make sure gloves correct type and fit
- Follow facility policy

## DON'T



- Re-use or wash gloves (except for utility gloves)
- Substitute glove use for hand hygiene
- Use non-approved hand lotions
- Use gloves if damaged or visible soiled
- Touch your face when wearing gloves
- Wear the same pair from one patient to another
- Wear gloves in the hall
- Forget to remove and dispose of appropriately

# Controlling Transmission respiratory hygiene/cough etiquette



- Third element of standard precautions is Respiratory Hygiene/ Cough Etiquette
- Strategy designed to contain respiratory secretions:
  - Patients
  - Accompanying individuals who have signs and symptoms of a respiratory infection
- Initial point of encounter:
  - Triage
  - Reception area
  - Waiting rooms in emergency departments, outpatient clinics and dental practices



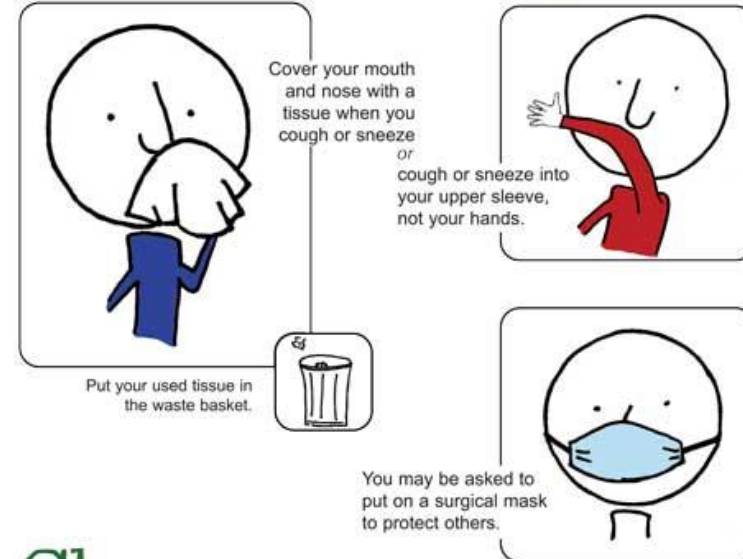
**Respiratory Hygiene/Cough Etiquette**



- Post signs at entrances
- Provide tissues and no-touch trash cans for disposal in waiting areas
- Provide hand hygiene product in waiting areas
- Offer mask to symptomatic patients
- Encourage ill patients to sit away from others

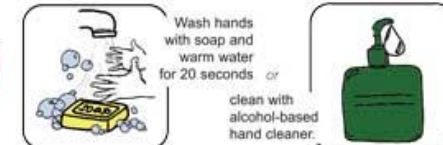
Stop the spread of germs that make you and others sick!

# Cover your Cough



## Clean your Hands

after coughing or sneezing.



Minnesota Department of Health  
717 320 Oakdale Street  
Minneapolis, MN 55415  
612-676-6414 or 1-877-476-6414  
www.health.state.mn.us



North Carolina  
Department of Health  
& Human Services  
100 North Salisbury Street  
Raleigh, NC 27601

APIC  
Association for  
Professional  
Infection Control  
www.apic.org

**Process must be in place year round and not just during influenza season**

# Respiratory Hygiene/Cough Etiquette



Respiratory Hygiene/Cough Etiquette

# Controlling transmission



# Controlling transmission



Contact



Droplet



Airborne



## Transmission Based Precautions



# Controlling transmission



Used for patients known or suspected to be infected with highly transmissible or epidemiologically important pathogens



**Transmission  
Based  
Precautions**

MODE OF  
TRANSMISSION




Private room


# Contact Precautions

- Private room or Cohort
- Gown and gloves before or “upon entry”
- Hand hygiene
- Dedicate equipment
- Disinfect shared equipment

Limit patient movement



**CONTACT PRECAUTIONS**  
PRECAUCIONES DE  
TRANSMISION POR CONTACTO






Family/Visitors should not visit if having signs or symptoms of an infection or a communicable disease. Visitation also based on facility's policy.  
*Los familiares y visitantes no deben visitar si tienen señales o síntomas de infección o de una enfermedad contagiosa. Las visitas también dependen de la política de la instalación.*

Follow instructions below before entering room.  
*Antes de entrar a la habitación, siga las instrucciones a continuación.*

**Everyone must:**

Clean hands before entering and when leaving room.  
*Todos deben:  
Lavarse las manos antes de entrar y antes de salir de la habitación.*

**All Healthcare Personnel must:**  
*Todo el personal de atención médica debe:*

- 
 Wear gloves when entering room and remove before leaving room.  
*Usar guantes al entrar a la habitación y quitárselos antes de salir de la habitación.*
- 
 Wear a gown when entering room and remove before leaving.  
*Usar una bata al entrar a la habitación y quitársela antes de salir.*
- 
 Use patient-dedicated or single-use disposable equipment. If shared equipment is used clean and disinfect between patients.  
*Usar equipo desechable de un solo uso o designado al paciente. Si se utiliza equipo compartido, limpiar y desinfectar entre pacientes.*

Additional PPE may be required per Standard Precautions.  
*Es posible que se exija utilizar equipo de protección personal adicional según las precauciones estándar.*

Translated by UNC Health Interpreter Services

REVISED DATE: 1/20/22

**Contact Precautions**

Remove sign after room is terminally cleaned upon discharge or discontinuation of precautions.

**Common conditions (per CDC guidelines)**  
Methicillin-resistant *Staphylococcus aureus* (MRSA)  
Vancomycin-resistant *Enterococcus* (VRE)  
Carbapenem-resistant *Enterobacteriales* (CRE)  
Extended spectrum beta lactamase producers Gram Negative Rods (ESBL-GNR)  
*Candida auris* (C. auris)  
Other multidrug resistant organisms  
Scabies  
Uncontained draining wounds or abscesses  
RSV

**Room Placement:**  
Use private room when available. When private rooms are unavailable, place together in the same room persons who are colonized or infected with the same pathogen.

**Personal Protective Equipment**  
*Put on in this order:*

- Alcohol based handrub or wash with soap and water if visibly soiled
- Gown— secure ties and tie in back (bow should not be tied in front of the gown)
- Gloves— pull over the cuffs of gown

*Take off and dispose in this order:*  
(Do NOT wear same gown and gloves for multiple patients/residents)

- Gloves— Carefully remove to prevent contamination of hands upon removal
- Gown— Carefully remove to prevent contamination on clothing or skin
- Alcohol based hand rub or wash hands with soap and water if visibly soiled

**Diaper/Urinals:**  
No special precautions. Should be managed in accordance with routine procedures.

**Room Cleaning:**  
Follow facility policy for Contact Precautions


**Trash and Linen Management:**  
Bag linen and trash in patient/resident room (double bagging of trash or linen is not necessary unless outside of bag visibly contaminated).

**Transport:**  
Essential transport only. Place patient/resident in a clean gown. Clean and disinfect transport equipment. Alert receiving department regarding patient/resident isolation precaution status.


**Duration of Precautions:**  
For all multidrug resistant organisms, follow guidance and recommendations from CDC (Management of Multidrug-Resistant Organisms in Healthcare Settings) and SHEA (Duration of Contact Precautions for Acute-Care Settings).  
For other guidance for duration of precautions, follow Appendix A: Type and Duration of Precautions Recommended for Selected Infections and Conditions within the CDC's 2007 Guideline for Isolation Precautions:  
Preventing Transmission of Infectious Agents in Healthcare Settings

# Contact (Enteric) Precautions

- Special enteric precautions for *C. difficile* and Norovirus
- Routine handwashing with soap and water or ABHR
- Use of an EPA registered disinfectant with activity against *C. difficile*



**ENTERIC PRECAUTIONS**  
PRECAUCIONES DE TRANSMISIÓN POR  
ENTÉRICA




Family/Visitors should not visit if having signs or symptoms of an infection or a communicable disease. Visitation also based on facility's policy.  
*Los familiares y visitantes no deben visitar si tienen señales o síntomas de infección o de una enfermedad contagiosa. Las visitas también dependen de la política de la instalación.*


Follow instructions below before entering room.  
*Antes de entrar a la habitación, siga las instrucciones a continuación.*


**Everyone must:**

**Clean hands before entering and when leaving room.**  
*Todos deben: Lavarse las manos antes de entrar y antes de salir de la habitación.*

**All Healthcare Personnel must:**  
*Todo el personal de atención médica debe:*

- 

**Wear gloves when entering room and remove before leaving room.**  
*Usar guantes al entrar a la habitación y quitárselos antes de salir de la habitación.*
- 

**Wear a gown when entering room and remove before leaving.**  
*Usar una bata al entrar a la habitación y quitársela antes de salir.*
- 

**Use patient-dedicated or single-use disposable equipment. If shared equipment is used, clean with an EPA K list disinfectant.**  
*Usar equipo desechable de un solo uso o designado al paciente. Si se usa equipo compartido, limpiarlo con un desinfectante de la lista K de la EPA.*

Additional PPE may be required per Standard Precautions.  
*Es posible que se exija utilizar equipo de protección personal adicional según las precauciones estándar.*

Translated by UNC Health Interpreter Services REVISED DATE: 1/20/2022

**Enteric Precautions**

Remove sign after room is terminally cleaned upon discharge or discontinuation of precautions.

**Common conditions:**  
*Clostridioides difficile*  
Norovirus

**Room Placement:**  
Use private room when available. When private rooms are unavailable, place together in the same room persons who are colonized or infected with the same pathogen.

**Personal Protective Equipment**

**Put on in this order**

- Alcohol based handrub or wash with soap and water if visibly soiled
- Gown—secure ties and tie in back (bow should not be tied in front of the gown)
- Gloves—pull over the cuffs of gown

**Take off and dispose in this order**

- (Do NOT wear same gown and gloves for multiple patients/residents)
- Gloves—Carefully remove to prevent contamination of clothing or skin
- Gown—Carefully remove to prevent contamination on clothing or skin
- Alcohol based handrub or wash hands with soap and water if visibly soiled. If your institution experiences an outbreak, consider using soap and water instead of alcohol-based hand sanitizers for hand hygiene after removing gloves while caring for patients with CDI.

**Dishes/Utensils:**  
No special precautions. Should be managed in accordance with routine procedures.

**Room Cleaning:**  
Follow facility policy. Use a disinfectant included on the EPA LIST K. Examples of these include: Bleach wipes, bleach and other sporicidal disinfectants.


**Trash and Linen Management:**  
Bag linen and trash in patient/resident room (double bagging of trash or linen is not necessary unless outside of bag visibly contaminated).

**Transport:**  
Essential transport only. Place patient/resident in a clean gown. Clean and disinfect transport equipment. Alert receiving department regarding patient/resident isolation precaution status.


<https://www.epa.gov/pesticide-registration/list-k-antimicrobial-products-registered-epa-claims-against-clostridium>

# Droplet Precautions

- Surgical mask prior to entry
- No special ventilation
- Private room or Cohort
- Hand hygiene
- Patients/Residents use mask outside of room




**DROPLET PRECAUTIONS**  
PRECAUCIONES DE TRANSMISIÓN  
POR GOTAS




**Family/Visitors should not visit if having signs or symptoms of an infection or a communicable disease. Visitation also based on facility's policy.**  
*Los familiares y visitantes no deben visitar si tienen señales o síntomas de infección o de una enfermedad contagiosa. Las visitas también dependen de la política de la instalación.*

Follow instructions below before entering room.  
*Antes de entrar a la habitación, siga las instrucciones a continuación.*



**Everyone must:**  
Clean hands before entering and when leaving room.

**Todos deben:**  
*Lavarse las manos antes de entrar y al salir de la habitación.*



**Wear surgical/procedure mask when entering the room and remove after exiting the room.**

*Usar una mascarilla quirúrgica o para procedimientos al entrar a la habitación y quitársela después de salir de la habitación.*

**Additional PPE may be required per Standard Precautions.**  
*Es posible que se exija equipo de protección personal adicional según las precauciones estándar.*

Translated by UNC Health Interpreter Services

REVISED DATE: 1/20/2022

**Droplet Precautions**

Remove sign after room is terminally cleaned upon discharge or discontinuation of precautions.

**Common conditions (per CDC guidelines)**

*B. pertussis* (Whooping cough)  
Influenza virus  
Rhinovirus  
Known or suspected *Neisseria meningitidis* (meningococcal) and *H. influenzae meningitis*  
Mumps  
Rubella  
Parvovirus B19

**Room Placement:**

Use private room when available. When private rooms are unavailable, place together in the same room persons who are colonized or infected with the same pathogen.  
Spatial separation of ≥3 feet and drawing the curtain between patient beds is especially important for patients in multi-bed rooms with infections transmitted by the droplet route.

**Personal Protective Equipment**  
*Put on in this order*

- Alcohol based handrub or wash with soap and water if visibly soiled
- Mask- Cover nose, mouth, and chin. If wearing a mask with ties, all ties must be secured.

*Take off and dispose in this order*

- Mask- Do NOT grasp front of the mask when removing. Grasp bottom ties then the ties at top and pull away from face. For ear loop masks stretch the ear loops, remove, and handle only ear loops.
- Alcohol based handrub or wash hands with soap and water if visibly soiled.

**Diaper/Urinals:**

No special precautions. Should be managed in accordance with routine procedures.

**Room Cleaning:**

Follow facility policy for Droplet Precautions

**Trash and Linen Management:**

Bag linen and trash in patient/resident room (double bagging of trash or linen is not necessary unless outside of bag visibly contaminated).

**Transport:**


Essential transport only. Place patient/resident in a medical grade mask. Clean and disinfect transport equipment. Alert receiving department regarding patient/resident isolation precaution status.

**Duration of Precautions:**


For guidance for duration of precautions, follow Appendix A- Type and Duration of Precautions Recommended for Selected Infections and Conditions within the CDC's 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

# Airborne Precautions

- Private room only
- Room requires negative airflow pressure
- Doors must remain closed
- Visual air monitors
- Everyone must wear an N-95 respirator or higher
- Limit the movement and transport of the patient



**AIRBORNE PRECAUTIONS**  
PRECAUCIONES DE  
TRANSMISION AÉREA



Family/Visitors should not visit if having signs or symptoms of an infection or a communicable disease. Visitation also based on facility's policy.  
*Los familiares y visitantes no deben visitar si tienen señales o síntomas de infección o de una enfermedad contagiosa. Las visitas también dependen de la política de la instalación.*

Follow instructions below before entering room.  
*Antes de entrar a la habitación, siga las instrucciones a continuación.*

**Everyone must:**

**Clean hands before entering and when leaving room.**  
*Todos deben:*  
*Lavarse las manos antes de entrar y antes de salir de la habitación.*

**Wear a respirator (N95) or higher level respirator prior to entering the room. Remove after exiting the room.**  
*Visitors-See nurse for instruction on mask or respirator selection and use.*  
*Usar un respirador (N95) o un respirador de nivel superior antes de entrar a la habitación. Quitárselo después de salir de la habitación.*

**Keep door closed. (Maintain negative pressure)**  
*Mantenga la puerta cerrada. (Mantener presión negativa)*

Additional PPE may be required per Standard Precautions.  
*Es posible que se exija utilizar equipo de protección personal adicional según las precauciones estándar.*

Translated by UNC Health Interpreter Services REVISED DATE: 1/20/2022

**Airborne Precautions**

Remove sign after room is terminally cleaned upon discharge or discontinuation of precautions.

**Common conditions (per CDC guidelines)**  
*Mycobacteria tuberculosis (TB)*  
*Measles*

**Room Placement:**

Preferred placement for patients who require Airborne Precautions is in an airborne infection isolation room (AIIR). An AIIR is a single-patient room that is equipped with special air handling and ventilation capacity that meet the Facility Guidelines Institute (FGI) standards for AIIR. In settings where Airborne Precautions cannot be implemented due to limited engineering resources (e.g., physician offices), masking the patient, placing the patient in a private room (e.g., office examination room) with the door closed, and providing N95 or higher level respirators or masks if respirators are not available for healthcare personnel will reduce the likelihood of airborne transmission until the patient is either transferred to a facility with an AIIR or returned to the home environment, as deemed medically appropriate.

**Personal Protective Equipment**  
*Put on in this order*

- Alcohol based handrub or wash with soap and water if visibly soiled
- Fit tested NIOSH approved respirator (N95) or higher level respirator

Healthcare worker must be fit tested for respirator and visitors should see nurse for proper use.

**Take off and dispose in this order**

- N95 respirator- Do NOT grasp front of the respirator. Grasp bottom elastics then the ones at the top.
- Alcohol based handrub or wash hands with soap and water if visibly soiled.

**Dishes/Utensils:**

No special precautions. Should be managed in accordance with routine procedures.

**Room Cleaning:**

Follow facility policy for Airborne Precautions. When in doubt keep sign on door and room closed for one hour to allow room air to circulate and filter.

**Trash and Linen Management:**

Bag linen and trash in patient room (double bagging of trash or linen is not necessary unless outside of bag visibly contaminated).

**Transport:**

Essential transport only. Place patient in a medical grade mask. Clean and disinfect transport equipment. Alert receiving department regarding patient/resident isolation precaution status.

**Duration of Precautions:**

For guidance for duration of precautions, follow Appendix A- Type and Duration of Precautions Recommended for Selected Infections and Conditions within the CDC's 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

## Knowledge Check

**What is the single most effective way to prevent the spread of infections?**

- A. Using PPE
- B. Cleaning patient care equipment
- ✓ C. Hand Hygiene
- D. Coughing into the crook of elbow or tissue

## Knowledge Check

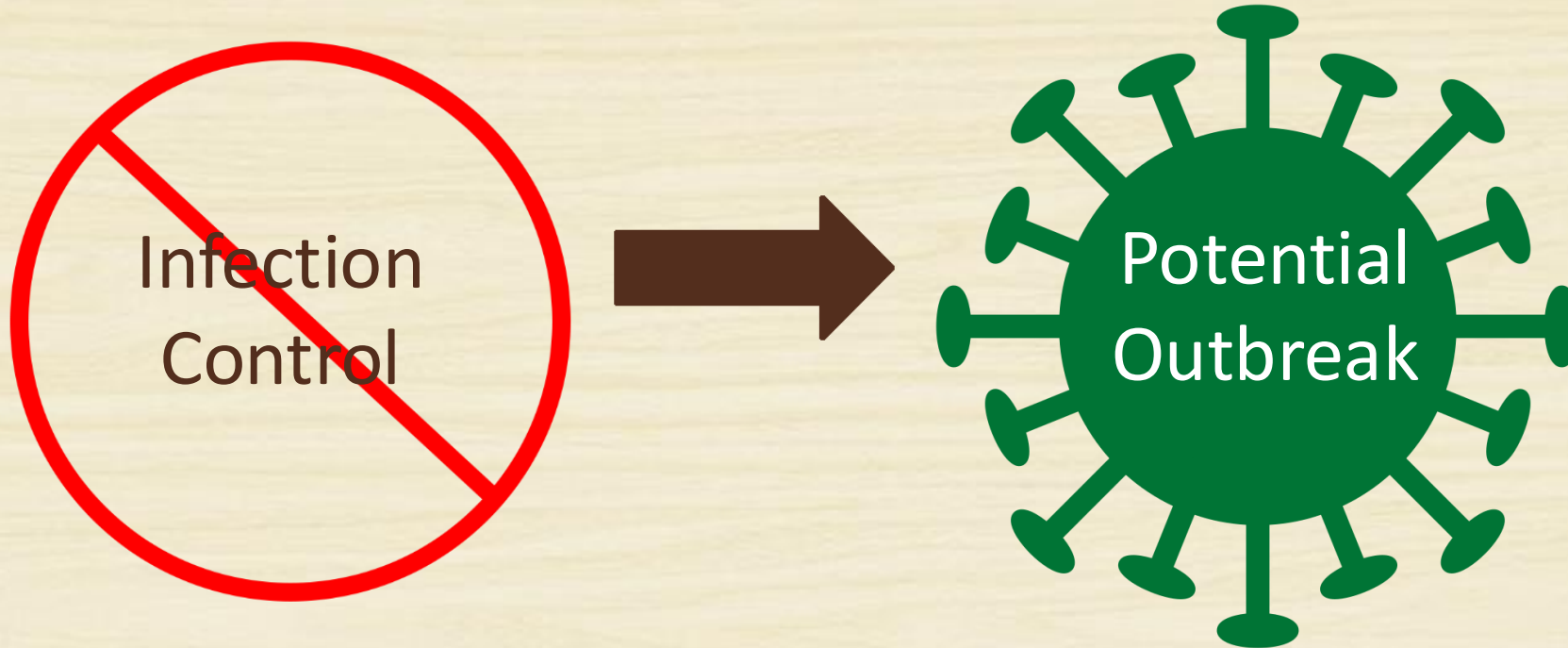
### True or False?

Patients who require the use of droplet precautions should be allowed to wait in the waiting room with other patients.

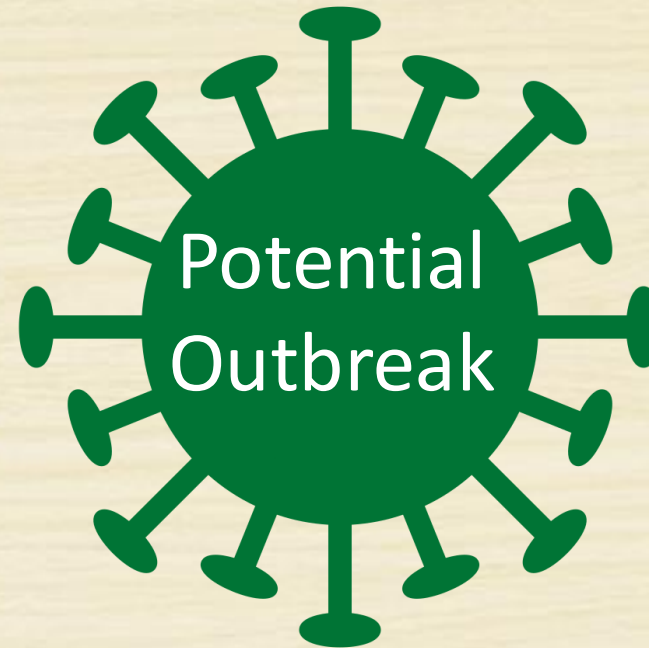
True

False

# Outbreak Investigation



# Outbreak Investigation

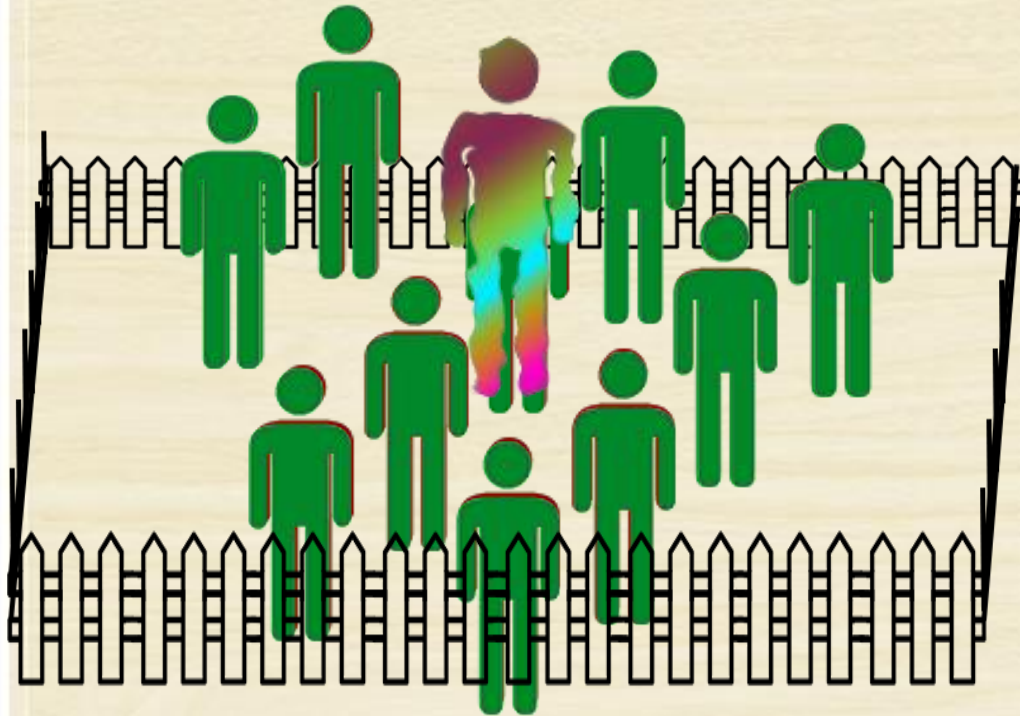


More common with shift to outpatient services

# Outbreak Investigation



# Outbreak Investigation



**The goal of the investigation is to control and prevent the spread of further disease**

- Determine contributing factors
- Implement measures to
  - stop the outbreak
  - prevent future outbreaks



# Outbreaks Steps



- Verify diagnosis

- Establish case definition

- Review for cases – case search

- Create a line listing

- Make an epi-curve



- Develop hypothesis

- Test hypothesis

- Control measures

- Evaluate control measures

- Disseminate information



# Outbreak Investigation



## Know Who to Call for Assistance



- Your Supervisor/Manager



- Local Health Department



- North Carolina Division of Public Health



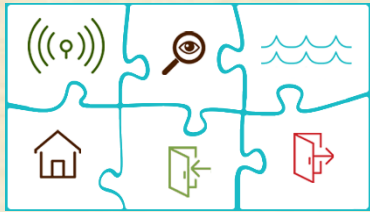
- Statewide Program for Infection Control and Epidemiology (SPICE) [spice@unc.edu](mailto:spice@unc.edu) 919-966-3242

## Knowledge Check

**Who should be notified of a suspected or known communicable disease outbreak?**

- A. Risk Management
- B. Administration/Director
- C. Local Health Department
- ✓ D. All the above

# Summary



Discuss the “chain of infection”

Discuss the “chain of infection”

Review **standard** and **transmission-based** precautions for controlling transmission of infections in outpatient settings

infections in outpatient settings  
precautions for controlling transmission of

Describe the steps for **detecting** and controlling outbreaks

and controlling outbreaks  
Describe the steps for detecting



# References

- List K: Antimicrobial Products registered with EPA for Claims Against Clostridies difficile Spores

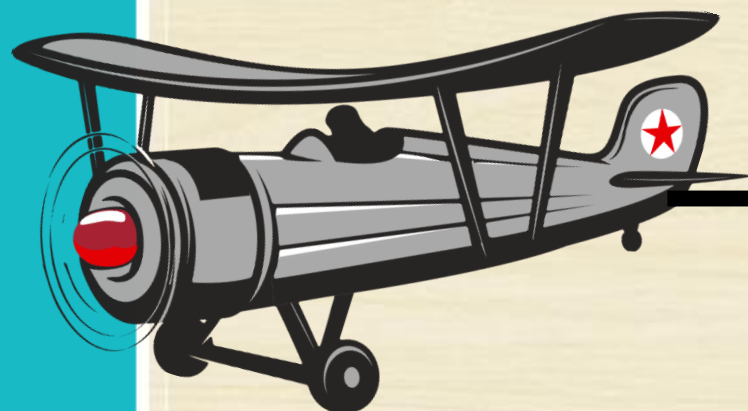
<https://www.epa.gov/pesticide-registration/list-k-antimicrobial-products-registered-epa-claims-against-clostridium>

- NC Statewide Program for Infection Control and Epidemiology

<https://spice.unc.edu/>

<https://spice.unc.edu/resources/signage/>

Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007) (cdc.gov)



**Questions?**

