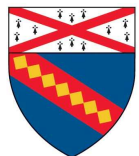


Infection Control Principles for Mass Dispensing



YALE CENTER FOR
PUBLIC HEALTH PREPAREDNESS

Course outline

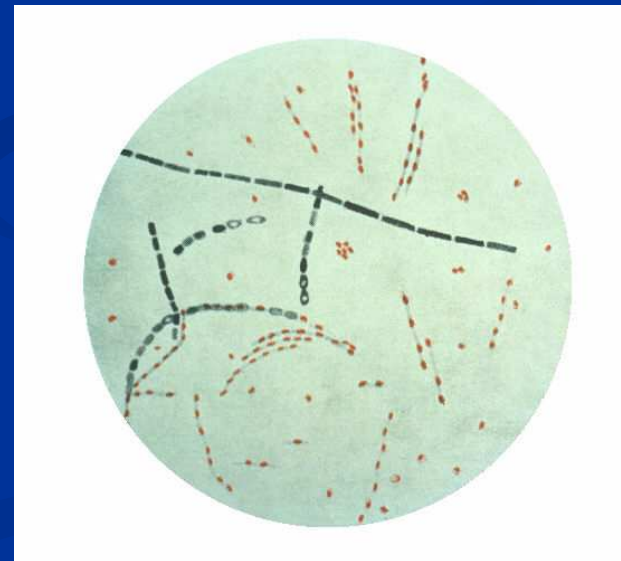
- Infection transmission basics
- Modes of transmission
- POD infection control measures
- Use of personal protective equipment

Learning objectives

- By the end of the training, the learner should be able to:
 - Describe the 3 conditions necessary for infection to spread from one person to another
 - Describe the difference between droplet and airborne transmission
 - List at least 3 POD infection control measures

What causes an infectious disease?

- Infectious disease is caused by a microorganism that can spread from one person to another
 - Bacteria
 - Virus
 - Fungus



Bacillus anthracis bacteria— Public Health Image Library

How is Infectious Disease Spread From Person to Person?

3 conditions needed for spread:

- An infected person
- A susceptible person
- A way for the microorganism to leave the body of the infected person and enter the body of the susceptible person

How is Infectious Disease Spread from Person to Person? (continued)

If any of those conditions are not met, the chain is broken and the infectious disease does not spread.

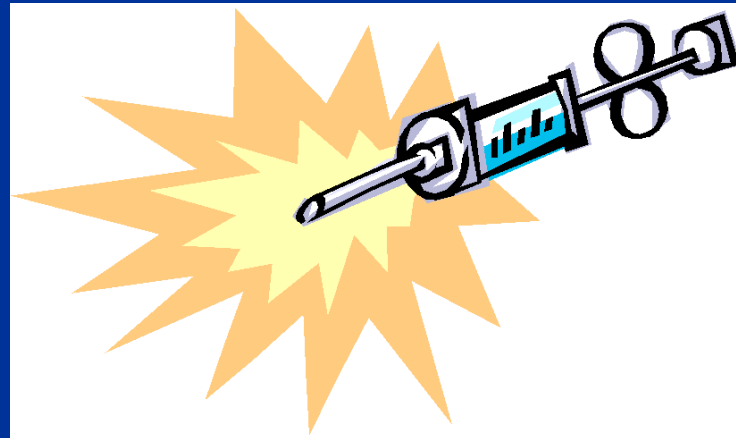


What does it mean to be susceptible?

- Susceptible = able to be infected when exposed
- A person is usually susceptible to an organism if he/she has never been in contact with it before

How can susceptibility be reduced?

- Antibiotic prophylaxis
- Vaccination



What is a mode of transmission?

- The way that a microorganism is spread from an infected person to a susceptible person
- The modes of transmission are:

| Direct transmission | Indirect transmission |
|---------------------|-----------------------|
| Direct contact | Airborne |
| Droplet spread | Vector borne |
| | Vehicle borne |

What is direct contact?

- Microorganism is passed to a susceptible person when he or she has contact with an infected person's skin, mucus membranes or body fluid (blood, urine, feces)

What is droplet spread?

- Spread via respiratory secretions that form when an infected person breaths, coughs or sneezes
- A susceptible person can become infected if the droplets enters his eyes, nose or mouth directly

Why is droplet considered direct transmission?

- Droplets are heavy and do not tend to travel more than 6 feet
 - *A susceptible person who is not near an infected person will not become infected*
 - *The spread of disease by respiratory droplets usually requires extended contact*



What is airborne transmission?

- Airborne transmission - the intermediary is the air
 - the microorganism becomes suspended in the air and spreads over long distances (>6 feet).
 - A susceptible person becomes infected by breathing in the contaminated air

Other indirect transmission

- Vectorborne transmission - the intermediary is an animal
- Vehicleborne transmission - the intermediary is an inanimate object

What are the modes of transmission of diseases that may result in the establishment of a POD ?

| | Anthrax | Plague | Smallpox | Influenza |
|--|--------------------|-------------------------------|---------------------------|-------------------------------|
| Direct transmission | | | | |
| Direct contact | ✓ (skin lesion) | ✓ (respiratory secretions) | ✓ (body fluids, scabs) | ✓ (respiratory secretions) |
| Droplet spread (< 6 feet) | | ✓ | ✓ | ✓ |
| Indirect transmission | | | | |
| Airborne (\geq 6 feet) | | | ✓ (rarely) | |
| Vehicle borne (Objects or Surfaces) | ✓ | ✓ | ✓ (rarely) | ✓ |

What is infection control?

- Measures taken to reduce the chance that an infection will get from an infected person to a susceptible person



Infection Control Methods

- Blocking infection from leaving the body
- Reducing susceptibility
- Modifying interaction between the infected person and the susceptible person

How does infection control work within a POD?

- Use of vaccines or antibiotics or other medications
- POD organization
- Environmental decontamination
- Good POD work practices
- Use of personal protective equipment

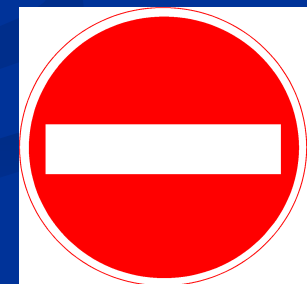
How will medications be used to protect POD workers?

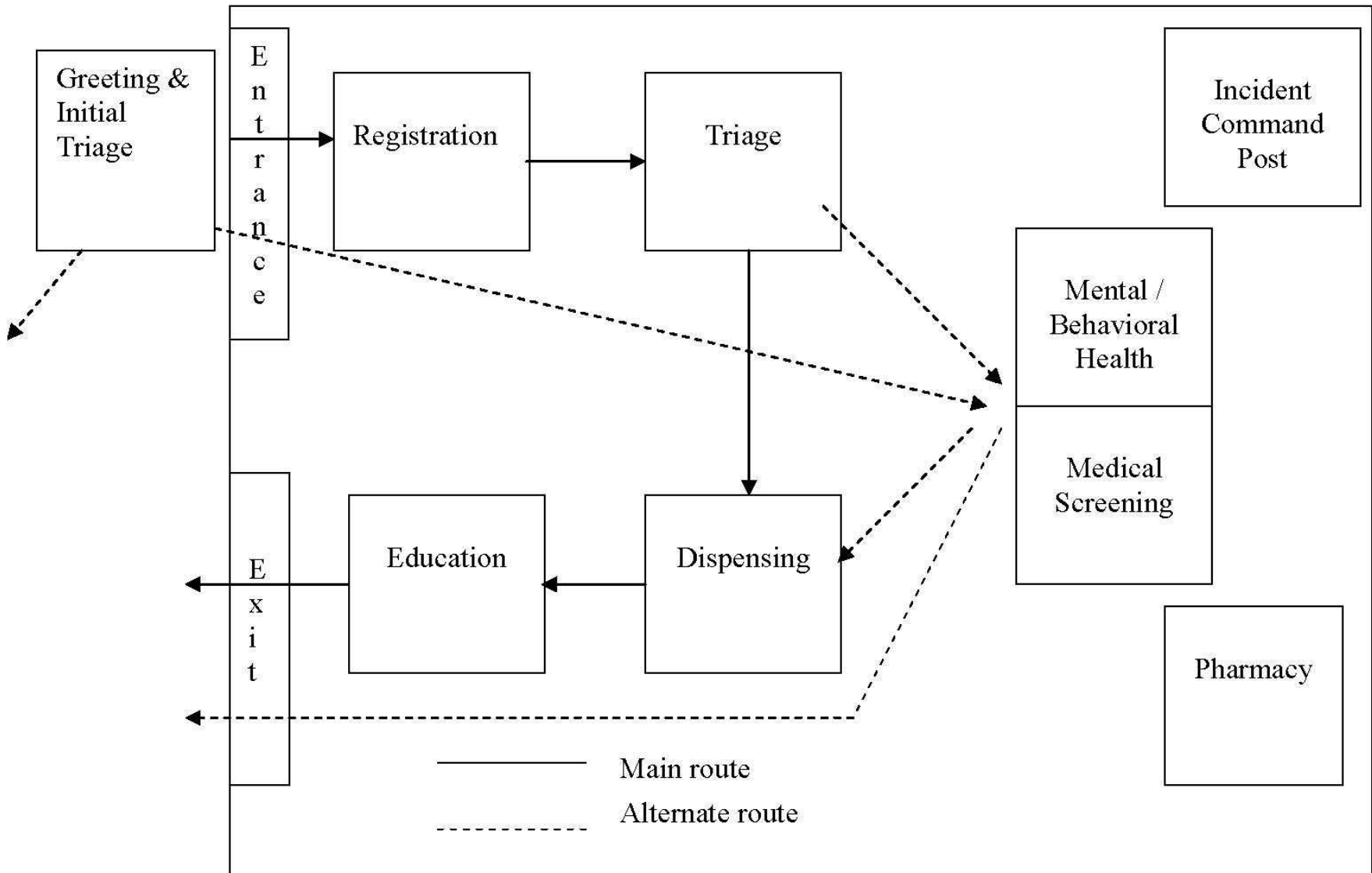
- POD workers will be given the vaccine or antibiotic that is being dispensed at the POD before it is open
- Helps to break the chain by reducing susceptibility



How does POD organization protect POD workers from infection?

- Exclusion of symptomatic people
 - Symptomatic people will be told not to report to the POD
 - Initial triage will bar symptomatic people
- Helps to break the chain by reducing interaction between infected and susceptible





How does POD organization protect POD workers from infection? (continued)

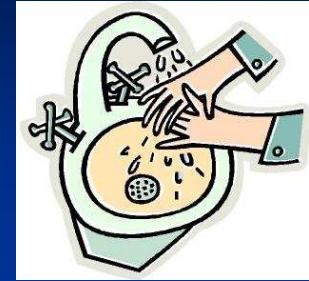
- Organizational structure
 - Safety Officer
 - Manager

How does environmental decontamination protect POD workers?

- Wiping down work surface:
 - At regular intervals
 - When a possible contamination of the surface has occurred
- Helps to break the chain of transmission by reducing vehicleborne transmission



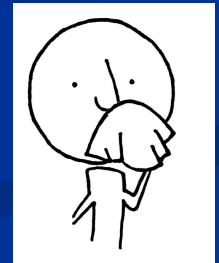
How good work practices protect POD workers from infection?



- Good work practices:
 - Wash hands often
 - Refrain from touching eyes, nose, mouth
 - Avoid touching environmental surfaces
 - Practice good respiratory etiquette and encourage others to do so
- Helps to break the chain of transmission

What is respiratory etiquette?

- Cover the nose/mouth when coughing or sneezing;
 - Use tissues to contain respiratory secretions and dispose of them in the nearest waste receptacle after use
- Hand hygiene after having contact with respiratory secretions and contaminated objects/materials.



What is PPE?

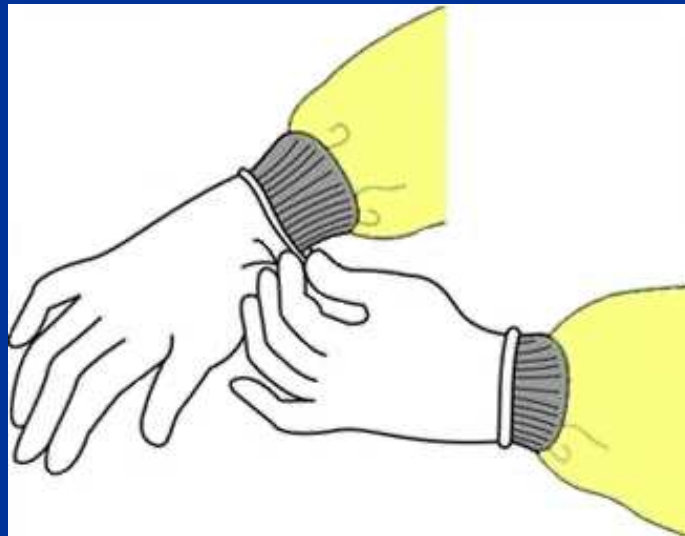
- Personal protective equipment = specialized clothing or equipment worn for protection against infectious materials

What PPE may be used at a POD?

- Gloves
- Gowns/aprons
- Masks
- Respirators

Gloves

- Limit exposure of hands to contaminated materials.



If you are told to wear gloves

- Change your gloves
 - if they become torn or heavily soiled
 - between patients
- Avoid touching yourself
- Discard them in an appropriate medical waste receptacle
- Wash your hands before donning and after removing gloves

Gown

- Limits exposure of skin and clothes to contamination
- To put on a gown:
 - Choose the appropriate size
 - Make sure opening is at the back
 - Secure at the neck and waist
 - If the gown is too small to cover your torso, use two. Tie the first gown in front and the second in the back



Surgical mask



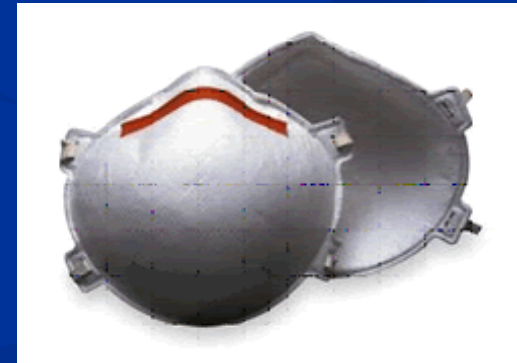
- Provides some protection against inhalation of respiratory droplets
- Effective at stopping expulsion of respiratory droplets
 - Symptomatic people may be masked

Surgical mask

- To put on a surgical mask:
 - Place over the nose, mouth and chin
 - Fit flexible nose piece over nose bridge
 - Secure on head with ties or elastic
 - Adjust the fit to make sure it is secure on the head and fits snugly around the face so there are no gaps
- When you remove the mask, dispose of it in the appropriate receptacle

Respirator use

- Like a mask but protects against breathing in microorganisms that can become airborne. An N95 is a type of respirator



Respirators

- Use based on level of exposure
- To use you must
 - be fit tested annually
 - Have medical clearance
 - Have special training

How to remove and dispose of PPE

- Touch areas are least likely to have had contact with an infectious microorganism
 - Inside of gloves
 - Inside and back of gown (including ties)
 - Ties, elastic of mask or respirator



How to remove and dispose of PPE (continued)

- Remove before leaving the POD work area. Do not wear it in eating or rest areas
- Deposit it in a medical waste receptacle
- Wash your hands

How will a POD worker know what PPE to use?

- CDC will make recommendations
- You will be told what to use and will be trained to use it
- Use of PPE may be role specific depending on exposure

More information on PPE

- PPE use

- <http://www.cdc.gov/ncidod/dhqp/pdf/ppe/ppeslides6-29-04.ppt>

- Masks & Respirators

- <http://www.cdc.gov/features/masksrespirators>
- <http://www.pandemicflu.gov/plan/healthcare/maskguidancehc.html>

Summary

- 3 conditions for an infectious disease to spread:
 - An infected person
 - A susceptible person
 - A way for the microorganism to leave the body of the infected person and enter the body of the susceptible person
- These three elements make up the links in a chain of transmission
- Infection control seeks to break that chain

Summary

- Infection control measures protect POD workers
 - POD organization
 - Prophylaxis
 - PPE
 - Environmental decontamination
- POD workers also play a role in protecting yourselves and others
 - Using PPE as directed
 - Maintaining good work practices

References

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- Centers for Disease Control and Prevention. Cover Your Cough. Available at <http://www.cdc.gov/flu/protect/covercough.htm>
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