Common Infections in LTCFs

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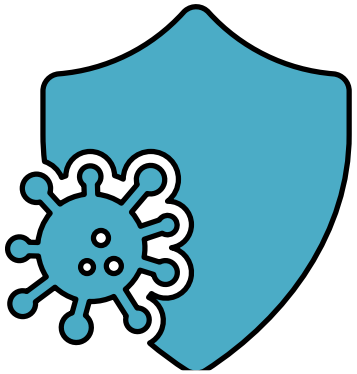
Audience



Infection Preventionist

Clinical Staff

DON/ADON

EVS/Contract Staff

Coronavirus

SARS-CoV-2 (COVID-19)

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COVID-19- Introduction

- Caused by the SARS-CoV-2 virus
- Very contagious and spreads quickly
- Causes respiratory symptoms that feel like a cold, flu, or pneumonia
- Over a million people have died from COVID-19 in the United States
- LTCF population make up 65% of affected COVID population

https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19.html

COVID-19 Introduction cont.

- Population at risk
  - Older individuals
  - Immunocompromised
  - Disabilities
  - Underlying health conditions

COVID-19 - continued

- **Mode of transmission**
  - Droplets from an infected person
- **Symptoms**
  - Fever
  - Cough
  - Shortness of breath or difficulty breathing
  - Fatigue
  - Muscle or body aches
  - Headache
  - New loss of taste or smell
  - Sore throat
  - Congestion or runny nose
  - Nausea or vomiting
  - Diarrhea

https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html

Gmehlin CG, Munoz-Price LS. Coronavirus disease 2019 (COVID-19) in long-term care facilities: A review of epidemiology, clinical presentations, and containment interventions. Infect Control Hosp Epidemiol. 2022 Apr;43(4):504-509. doi: 10.1017/ice.2020.1292. Epub 2020 Oct 26. PMID: 33100245; PMCID: PMC7684019.

COVID-19 continued

- Precautions and Prevention
  - Droplet person to person, direct and indirect contact (coughing-transmissible)
- Exposure
  - Isolate or cohort immediately
  - One can still develop COVID even 10 days after being exposed

What to Do If You Were Exposed to COVID-19 | CDC

COVID-19 – precaution and prevention in LTC

- Initiate isolation precautions
- PPE needs (mask, goggles, gown, gloves, face shield) change in between residents, properly dispose of infected garments, hand hygiene.
  - Encourage infected resident to wear a mask
  - cart outside of door for isolation precautions, try to put in private room or with someone who has same disease
- Frequent testing according to CDC guidelines, monitoring – report to VDH, state or federal system

COVID-19 patient management

Hand hygiene, social distance 6ft, respiratory hygiene, vaccination, testing

COVID is always changing refer to CDC website for up-to-date guidelines

§483.80 Infection Control The facility must establish and maintain an infection prevention and control program designed to provide a safe, sanitary, and comfortable environment and to help prevent the development and transmission of communicable diseases and infections

Influenza

Influenza A & B

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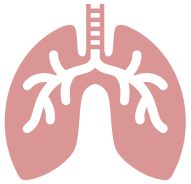
Influenza A and B



Respiratory illness caused by Influenza A and B

Flu Season

September to May

Peaks in December

70 – 85% of seasonal flu deaths occur in ages 65 and older

CDC (2021, August 18) Epidemiology and Prevention of Vaccine-Preventable Diseases: Influenza. Retrieved from: https://www.cdc.gov/vaccines/pubs/pinkbook/flu.html

CDC (2022, September 20) Influenza (Flu): Flu Season. Retrieved from: https://www.cdc.gov/flu/about/season/index.html

CDC (2023, February 13) People 65 Years and Older Need a Flu Shot. Retrieved from: https://www.cdc.gov/flu/pdf/freeresources/seniors/seniors-vaccination-factsheet-final.pdf

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Influenza

Transmission

- Droplet/Secretions
  - Talking, Sneezing, Coughing
- Direct Contact
  - Kissing
- Indirect Contact
  - Touching contaminated surface

Attachment

- Infects columnar epithelial cells of upper respiratory tract

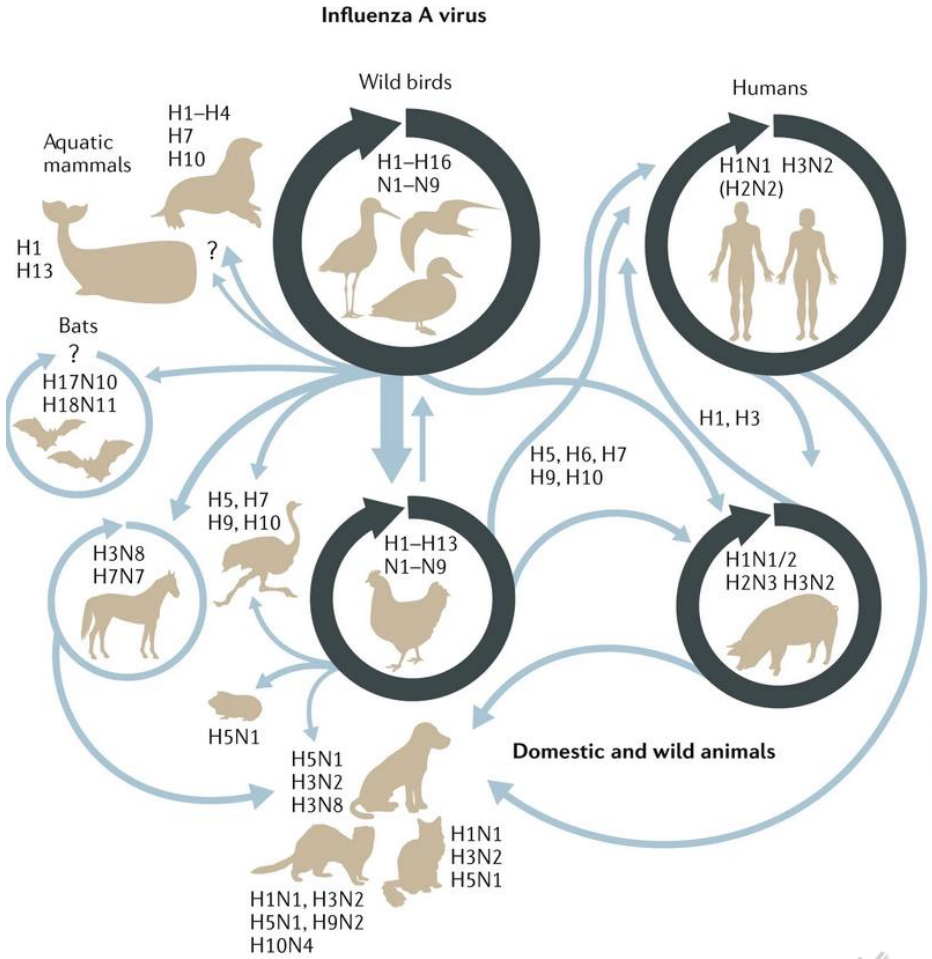

Image Source: Long, J. S., Mistry, B., Haslam, S. M., Barclay, W. S. (2018, November 28) Host and viral determinants of influenza A virus species specificity. Retrieved from: https://www.nature.com/articles/s41579-018-0115-z

CDC (2021, August 18) Epidemiology and Prevention of Vaccine-Preventable Diseases: Influenza. Retrieved from: https://www.cdc.gov/vaccines/pubs/pinkbook/flu.html

Influenza

Incubation:

- Takes 1-4 days for signs/symptoms to develop
- Infectious beginning one day before symptoms develop and up to 5 to 7 days after becoming sick.
- At risk of developing bacterial pneumonia up to 2 weeks after

Signs/Symptoms:

- Fever
- Chills
- Cough
- Sore Throat
- Nasal Discharge or Congestion
- Muscle/Body Aches
- Headache
- Fatigue/Lethargy
- Nausea / Vomiting
- Diarrhea

CDC (2022, October 3) Flu Symptoms & Complications https://www.cdc.gov/flu/symptoms/symptoms.htm

CDC (2022, October 24) Key Facts About Influenza (Flu). Retrieved from: https://www.cdc.gov/flu/about/keyfacts.htm

Influenza Management – Best Practices

Follow Facility Policy for Isolation Protocol

- Place Proper Isolation Signage on Door

Precaution cart

- PPE: gloves, gown, mask, face shield

Private room or cohort with someone who has the same infection

Hand Hygiene, respiratory hygiene, test to rule out

Influenza

Reporting Process

Code of Virginia Section 32.1-37

- Specific facilities must report suspected outbreak
- Includes Nursing Homes/Medical Facilities

Reportable Infections

- Any infection transmitted, or potentially transmitted person to person

  - Respiratory (Influenza)
  - Gastrointestinal (Norovirus)
  - Epidermis (Scabies)
  - Environmental (Carbon monoxide)

Outbreak Reporting

- Contact local health department immediately
  - https://www.vdh.virginia.gov/local-health-districts/

VDH (2018, September) Outbreak Reporting. https://www.vdh.virginia.gov/epidemiology/epidemiology-fact-sheets/outbreak-reporting/

Legionnaires' Disease

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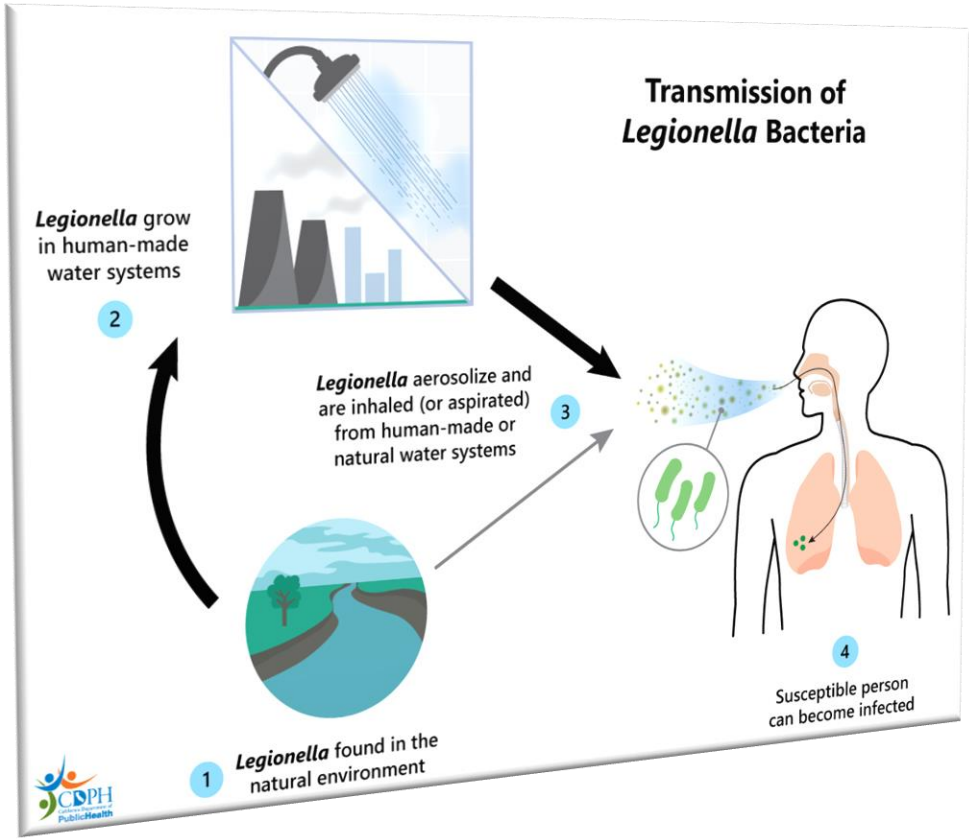
Legionnaires' Disease

- Caused by *Legionella* bacteria found in
  - Shower heads, sinks, faucets, hot tubs, air conditioning units, hot water tanks and heater, and complex water systems
- 9% of cases are often fatal. However, healthcare associated deaths are as high as 46%
- Two or more is considered an outbreak

Soda EA, Barskey AE, Shah PP, et al. Vital Signs: Health Care–Associated Legionnaires' Disease Surveillance Data from 20 States and a Large Metropolitan Area — United States, 2015. MMWR Morb Mortal Wkly Rep 2017;66:584–589.

Legionnaires Disease



- **Transmission**
  - Inhalation of droplets of contaminated water via:
  - shower heads, central air, complex water systems
  - No evidence of person-to-person transmission
- **Incubation**
  - 2-10 days after exposure

Legionnaires Disease Cause and Spread | CDC

Legionnaires' Disease

- Symptoms:
  - Cough, sob, fever, muscle aches, headaches, nausea, diarrhea, change in mental status
- Population at risk for severe illness:
  - Current or former smoker, immunocompromised, chemotherapy patients, chronic kidney disease, Emphysema, Chronic Obstructive Pulmonary Disease, Asthma, 50 years or older

Legionnaires' Prevention and Treatment

- Prevention
  - Waterborne pathogen
  - Water management programs - this is a multi-step process and must be continuously reviewed.
  - Not spread by person to person -Do not need to be put on isolation precautions

- Testing and Treatment
  - Sputum culture
  - X-rays to diagnose
  - Treatable with antibiotics

Gastroenteritis

Norovirus

Clostridioides Difficile

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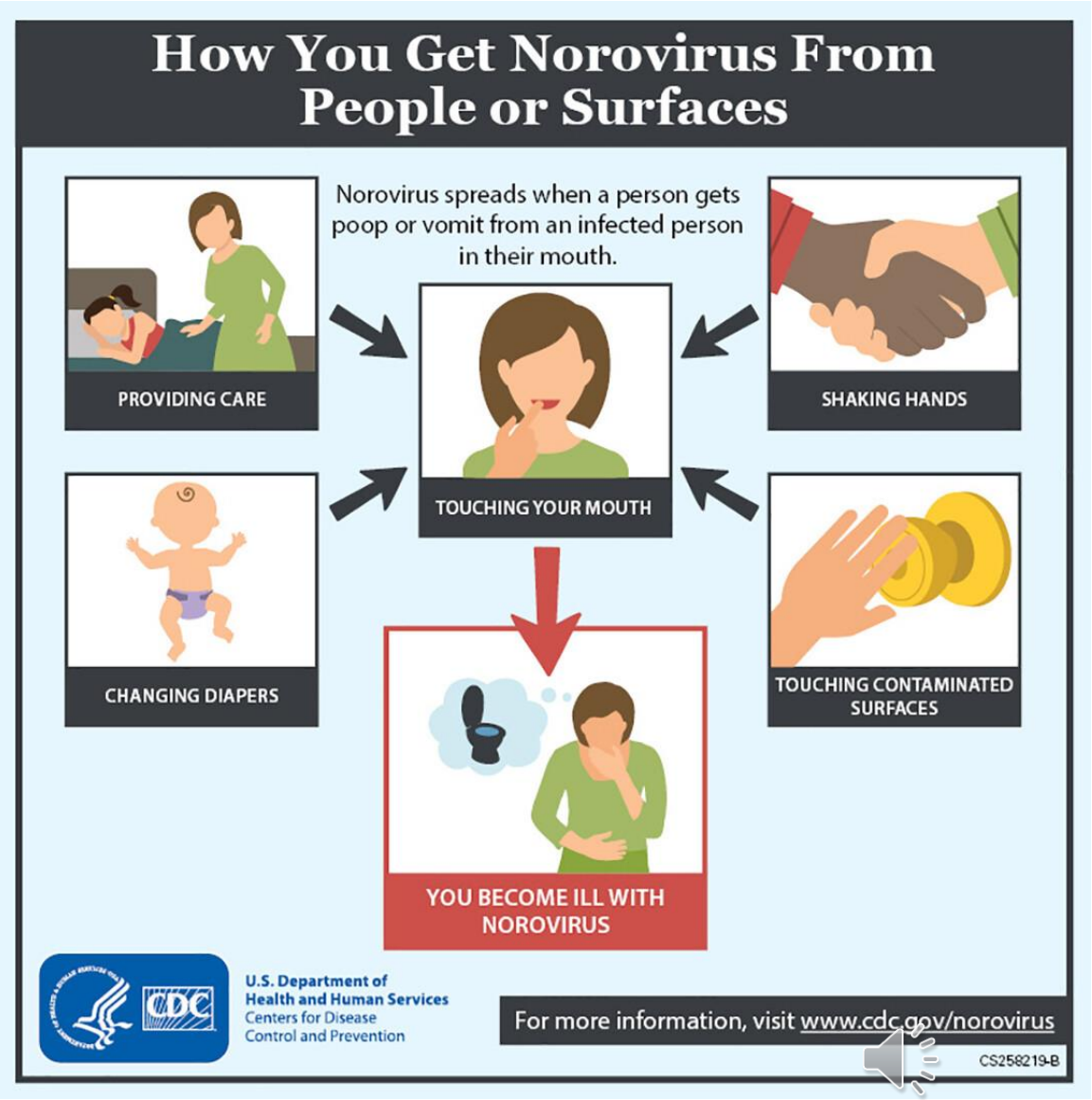
Gastroenteritis - Norovirus

- One of the most common GI outbreaks in LTC
- ~900 deaths each year among adults 65 and older according to CDC
- Causative agent
  - Single stranded RNA virus of the genus *Norovirus*
- December to April months – seasonal
- No treatment for Norovirus it has to run its course. Supportive treatment of symptoms

Norovirus - Transmission

- Fecal-oral route
- Direct person-to-person contact
- Ingestions of fecal contaminated food or water
- Droplet route from vomit



Norovirus

- Incubation:
  - 12-48 hours after being exposed to virus and can last 1-3 days
- Symptoms:
  - Vomiting and diarrhea, nausea, fever, stomach aches, general body aches and fatigue
- Complications
  - Dehydration is common complication transmitted through direct and indirect contact

Norovirus patient management

- Private room or share a room with a similar infection
- Contact Precautions signage on door
- PPE cart
  - Gown, gloves, (face shield and mask when applicable)
- Hand hygiene with **soap and water**
- Cannot share thermometers or stethoscope individualized equipment
- Frequent environmental cleaning with bleach is key
- Encourage hydration of patient to prevent complications
- Monitor resident closely
- Staff education

Gastroenteritis – C. Difficile

- Estimated almost half a million infections in the U.S per year
- 1 in 11 people over age 65 will die within one month of infection

Risk Factors for *C. diff*

C. diff can affect anyone. Most cases of *C. diff* occur when you've been taking antibiotics or not long after you've finished taking antibiotics.

There are other risk factors:

- Being 65 or older
- Recent stay at a hospital or nursing home
- A weakened immune system, such as people with HIV/AIDS, cancer, or organ transplant patients taking immunosuppressive drugs
- Previous infection with *C. diff* or known exposure to the germs

What is C. diff? | CDC

Gastroenteritis – C. Difficile

- Causative agent:
  - Bacteria *Clostridioides difficile*
  - Long antibiotic use can increase risk
  - Causes inflammation of the colon
- Mode of Transmission
  - Fecal-oral route
- Incubation:
  - 48 hours after exposure and up to 3 months post exposure
- Symptoms:
  - Diarrhea, nausea, fever, stomach aches, general body aches and fatigue

https://urldefense.com/v3/__https:/healthunit.org/for-professionals/health-care-dental/communicable-disease-resources/reportable-disease-toolkit/clostridium-difficile/__;!!IPSbOkggTOHFLw!3cWDvhdDJ4xAC-WodFzG8JD0KJYIwTznNyV3ExEmuxXKDzZIyhLBEzmMotaIZmo5eFI21sTSSLIDOWAwvc3vWwLc-iQKsdc$

C. diff Patient management

- Private room or share a room with a similar infection
- Contact Precautions signage on door
- PPE cart
  - Gown, gloves, (face shield and mask when applicable)
- Hand hygiene with **soap and water**
- Cannot share thermometers or stethoscope individualized equipment
- Frequent environmental cleaning with bleach is key
- Encourage hydration of patient to prevent complications
- Monitor resident closely
- Treatable with antibiotics
- Staff education

Pneumonia

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Pneumonia - Introduction

- Respiratory illness caused by viruses, bacteria, and fungi
- Bacterial pneumonia is most common and most serious of the pneumonia's
- Profuse sweating, increased breathing, change in mental status, blue nail beds, dry cough, muscle pain and weakness, SOB
- 47,000 died from pneumonia in 2020

https://urldefense.com/v3/__https:/www.lung.org/lung-health-diseases/lung-disease-lookup/pneumonia/symptoms-and-diagnosis__;!!IPSbOkggTOHFLw!3cWDvhdDJ4xAC-WodFzG8JD0KJYlwTznNyV3ExEmuxXKDzZIyhLBEzmMotaIZmo5eFI21sTSSLlDOWAwvc3vWwLccHu4zrI$

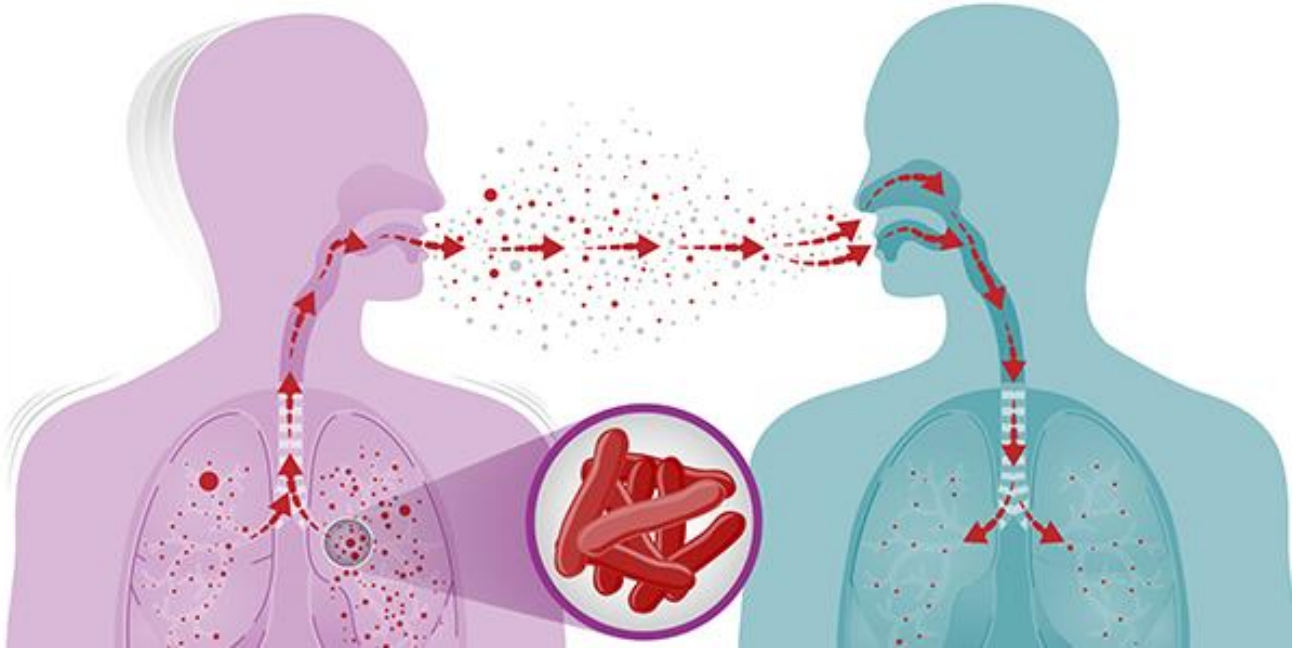
Pneumonia types

- Community-acquired
- Healthcare-associated
- Ventilator-associated

Causes of Pneumonia | CDC

Pneumonia

- Population at risk:
  - Adults 65 and older
  - people with ongoing medical conditions
  - Smokers
- Mode of transmission
  - Respiratory droplets into the air



https://urldefense.com/v3/__https:/www.lung.org/lung-health-diseases/lung-disease-lookup/pneumonia/what-causes-pneumonia__;!!IPSbOkggTOHFLw!3cWDvhdDJ4xAC-WodFzG8JD0KJYlwTznNyV3ExEmuxXKDzZIyhLBEzmMotaIZmo5eFI21sTSSLlDOWAwvc3vWwLc46Xs72Y$

Pneumonia

- Incubation
  - 1 to 3 days
- Symptoms
  - Coughing
  - Fever
  - Shortness of breath
  - Rapid, shallow breathing
  - Sharp or stabbing chest pain that gets worse when one breathes deeply or coughs
  - Loss of appetite, low energy, and fatigue

https://urldefense.com/v3/__https:/www.lung.org/lung-health-diseases/lung-disease-lookup/pneumonia/symptoms-and-diagnosis__;!!IPSbOkggTOHFLw!3cWDvhdDJ4xAC-WodFzG8JD0KJYlwTznNyV3ExEmuxXKDzZIyhLBEzmMotaIZmo5eFI21sTSSLlDOWAwvc3vWwLccHu4zrI$

https://urldefense.com/v3/__https:/www.cdc.gov/pneumococcal/clinicians/clinical-features.html__;!!IPSbOkggTOHFLw!3cWDvhdDJ4xAC-WodFzG8JD0KJYlwTznNyV3ExEmuxXKDzZIyhLBEzmMotaIZmo5eFI21sTSSLlDOWAwvc3vWwLcslc_hxY$

Pneumonia Patient management

- Treatment:
  - Antibiotics and antivirals
- In patients that have a high rate of aspiration – closely monitor feedings, maintain oral care, alternative routes for nutrition can improve outcomes
- Droplet precautions needed
  - PPE gloves, mask or face shield
- Consequence of other lung diseases
- Respiratory hygiene, vaccinate, hand hygiene

Tuberculosis

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Tuberculosis - Introduction

Causative agent:

- *Mycobacterium tuberculosis*

Usually attacks the lungs but can attack kidney, spine, and brain

Prevalent among immigrant populations at a rate significantly higher than U.S born citizens

https://www.cdc.gov/tb/topic/basics/default.htm

Tuberculosis

Organism

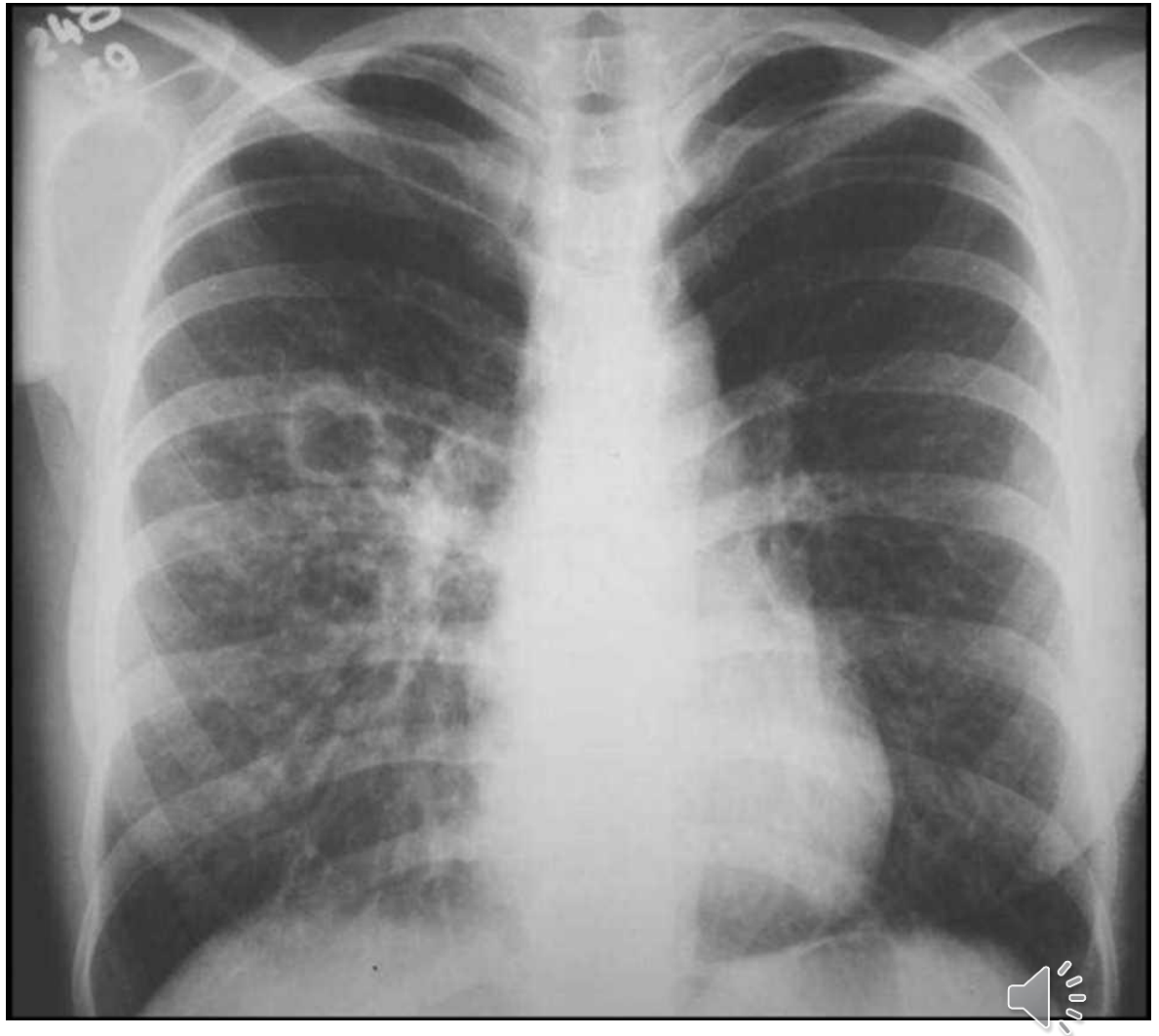
- Mycobacterium Tuberculosis

Transmission

- Airborne Particles

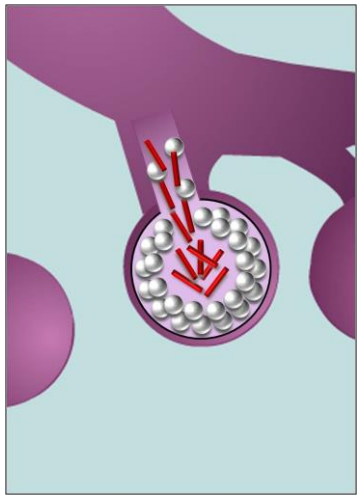
Incubation

- Variable
  - May take weeks - TB Disease
  - May never develop – Latent TB



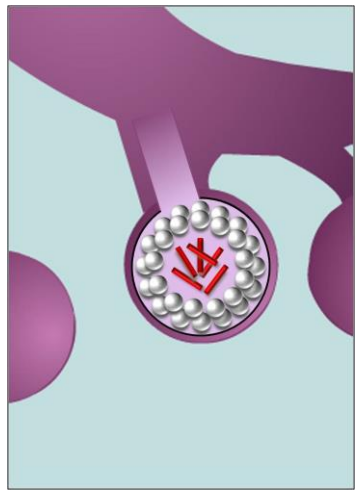
CDC (2021) Core Curriculum on Tuberculosis: What The Clinician Should Know. Retrieved from: https://www.cdc.gov/tb/education/corecurr/pdf/CoreCurriculumTB-508.pdf

Tuberculosis



Active TB

- Has large amount of active TB bacteria in body
- May feel sick and show symptoms
- Can infect others
- Has TB disease

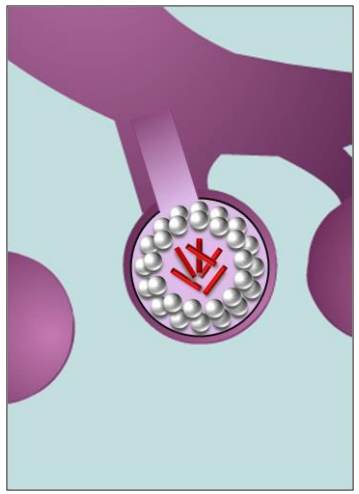


Latent TB

- Immune system suppresses bacteria
- Creates “shell” or granuloma
- Cannot spread bacteria to others
- Does not have TB disease

CDC (2021) Core Curriculum on Tuberculosis: What The Clinician Should Know. Retrieved from: https://www.cdc.gov/tb/education/corecurr/pdf/CoreCurriculumTB-508.pdf

Tuberculosis – Latent TB



Latent TB is a condition when a person is infected with M. tuberculosis but does not have TB disease.

- Persons with latent TB carry the M. tuberculosis organism that causes TB, but they do not have TB disease symptoms, do not feel sick, and cannot spread TB germs to others.
- Most persons with LTBI have a positive result to the tuberculin skin test.

CDC (2019) Module 1: Transmission and Pathogenesis of Tuberculosis. Retrieved from: https://www.cdc.gov/tb/education/ssmodules/pdfs/Module1.pdf

Tuberculosis

Testing

IGRA

- QuantiFERON-TB Gold Plus (QFT-PLUS)
- T-SPOT.TB test (T-Spot)

How it works

- Blood sample mixed with a substance to cause an immune response
- Takes 8-32 hours depending on manufacturer
- Trained healthcare professionals assesses blood sample for immune response or production

CDC (2016, May 4) IGRAs – Blood Test for TB Infection Fact Sheet. Retrieved from: https://www.cdc.gov/tb/publications/factsheets/testing/igra.htm

Tuberculosis

Testing for Active TB

Mantoux Tuberculin Skin Test (TST)

How it Works

- Tuberculin (protein from killed tubercle bacilli) injected under the skin
- Induration (swelling) is measured after 48-72 hours

False Positive Reactions May Occur

- If you have received a vaccine for bacille Calmette-Guerin (BCG)
- If you have an infection with non-tuberculosis mycobacteria
- If incorrect measurement or antigen was used

*IGRA or blood test may be preferred to prevent false-positive reactions

CDC (2020, November 2) Tuberculin Skin Testing Fact Sheet. Retrieved from: https://www.cdc.gov/tb/publications/factsheets/testing/skintesting.htm

Tuberculosis

Testing

Acid Fast Bacilli (AFB) Tests

AFB Smear

- Stained with auramine/rhodamine
- Read by fluorescence microscopy
- Approximately 24 hours
- Does not differentiate between non-tuberculosis mycobacteria and tuberculosis mycobacteria

Department of Heath and Human Services (2014, November) NWT Tuberculosis Manual, Section 6: Diagnosis of TB (Latent vs. Active Disease). Retrieved from: https://www.hss.gov.nt.ca/professionals/sites/professionals/files/resources/tb-section-6-microbateria-testing-afb-smear.pdf

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Tuberculosis

Testing

Acid Fast Bacilli (AFB) Tests

AFB Culture

- Broth-based and/or agar-based culture
- Mycobacteria are slow growers
- Results may take 6 to 8 weeks
- Identified by use of DNA probes and/or nucleic acid sequencing
- Resistance testing performed

Department of Heath and Human Services (2014, November) NWT Tuberculosis Manual, Section 6: Diagnosis of TB (Latent vs. Active Disease). Retrieved from: https://www.hss.gov.nt.ca/professionals/sites/professionals/files/resources/tb-section-6-microbateria-testing-afb-smear.pdf

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Tuberculosis

Signs & Symptoms

- Prolonged cough lasting more than 3 weeks
- Bloody sputum
- Weight loss
- Fatigue
- Night sweats
- Fever
- Chills

Signs & Symptoms | TB | CDC

Tuberculosis Prevention and Management

Perform TB risk assessment to screen residents and employees

- Risk assessment will identify need for TB testing
- Test residents and employees per facility policy

Airborne Precautions & Airborne Infection Isolation Room

- Most nursing facilities are not equipped with a negative pressure room
- Set up transfer to appropriate facility

When someone tests positive in long-term care

- Place in private room with airborne precautions signage on door
- Wear appropriate PPE
- Close door and limit transport and movement of the resident
- Set up transfer to appropriate facility
- Resident must wear a mask during transport out of facility

If you test positive

- No symptoms means you are not contagious
- Follow guidance provided by your facility and the local health department

VDH (n.d.) Transmission Based Precautions. Retrieved from: https://www.vdh.virginia.gov/haiar/ip/transmission-based-precautions/

VDH (n.d.) Virginia Tuberculosis (TB) Risk Assessment. Retrieved from: https://www.vdh.virginia.gov/content/uploads/sites/112/2019/02/VA-TB-Risk-Assessment-and-User-Guide-2019-1.pdf

CarilionClinic

Urinary Tract Infections

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Urinary Tract Infections

- Urinary Tract Infections or UTIs – two types
  - General
  - Catheter Associated

    managing and prevention, aseptic technique, emptying without contamination, bag off of floor, flows downward and not back up into the bladder
- Females are higher risk – shorter urethra
- People who are at risk – previous infections, pregnancy, enlarged prostrates, poor hygiene, spinal cord injuries, indwelling catheters

Urinary Tract Infections – Signs and Symptoms

- Pain or burning during urination
- Bloody urine
- Frequency
- Pressure in groin or abdomen
- Increased urge to urinate
- Fever, chills, back pain

Urinary Tract Prevention and Treatment

- Urine culture to diagnose
- Antibiotics to treat
- Prevention – good peri care hygiene, hand hygiene, catheter management, encouraging fluid intake

Urinary Tract Infection | Antibiotic Use | CDC

Nurses Role in Common Disease Management

- Receiving consent for testing
- Do the actual testing
- Educate residents and families and staff
- Ensure appropriate precaution protocols
- Reporting to appropriate channels
- Provide care and give medications

Common Infections Key Points

- Remember to follow your facilities policies for isolation precaution procedures
- Always use **soap and water** to perform hand hygiene when you have a resident with Norovirus or C. Diff
- Report any outbreaks to VDH

References

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- What to Do If You Were Exposed to COVID-19 | CDC
- Urinary Tract Infection | Antibiotic Use | CDC