Communicable Diseases CEN Review Aug. 27, 2018

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Overview

CEN exam will ask ~15 questions related to **Communicable, Environmental & Toxicologic Emergencies** (10% of the total exam's content)

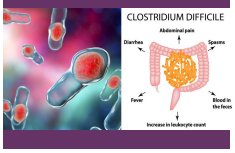
- Communicable Diseases, including:
  - *C. Difficile*
  - Tuberculosis
  - Childhood diseases (mumps, measles, pertussis, chickenpox, diphtheria, mononucleosis)
  - Herpes zoster
  - Meningitis
  - Reye's Syndrome

Isolation Precautions (Review)

Contact	Patients with known or suspected infections transmitted by direct or indirect contact with the patient or his/her environment (e.g., MRSA, *C. Diff*, ESBL, Scabies, Shingles, and other antibiotic-resistant organisms)	- Private room - PPE (gloves/gown/goggles, especially important) - Limit patient transport/movement - Dedicate equipment to single-use, where possible (e.g., BP cuffs, stethoscopes) - Prioritize cleaning and disinfecting rooms
Droplet	Patients known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by coughing, sneezing, or talking	- Private room - PPE (mask, especially important) - Don mask when working within 3 ft of patient - Mask patient during transport - Limit patient transport/movement
Airborne	Patients known or suspected to be infected with pathogens that can be suspended in air (e.g.,TB, measles (rubeola), chickenpox or disseminated herpes zoster (varicella))	- Private, negative pressure room - PPE (N-95 mask, especially) - Restrict susceptible healthcare personnel from entering room (e.g., pregnant or immunocompromised) - Immunize susceptible persons as soon as possible following unprotected contact with vaccine-preventable infections (e.g., measles, varicella or smallpox)

Clostridium Difficile

C. Difficile



- Hospital/healthcare-acquired infection (HAI); Common cause of antibiotic-associated diarrhea (AAD)
  - Accounts for 15-25% of all AAD
- Spore-forming, gram-positive anaerobic bacillus producing 2 exotoxins (A & B)
- Spores are shed in feces. Any surface, device, or material contaminated with feces may serve as a reservoir for *C. difficile*
- Symptoms
  - Watery diarrhea, fever, LOA, nausea, abdominal pain/tenderness
  - Complications incl pseudomembranous colitis (PMC), toxic megacolon, colon perforation, sepsis
- Treatment

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Tuberculosis

- *Mycobacterium tuberculosis*
- Attacks lungs, kidneys, spine, brain

Active	Latent
Cough>2 weeks	+skin test
Hemoptysis	Asymptomatic/non-contagious
Night sweats, chills	Treated w/drug therapy
Weight loss	High risk of active disease if no tx

- + TB skin/blood test only tells that a person has been infected with TB bacteria
  - CXR and sputum sample determines active disease
- Bacteria airborne when a person coughs, speaks, or sings

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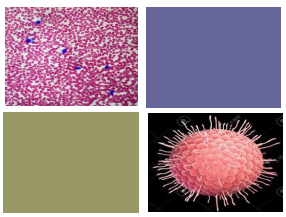
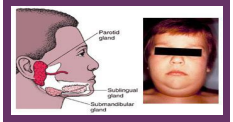
Childhood Illnesses



Mumps
Measles
Pertussis
Varicella

Diphtheria
Mononucleosis
Reye's Syndrome

Mumps



- Paramyxovirus
- Uni or Bilateral parotitis
- Involvement of salivary glands and one/both parotid glands
- Highly contagious via airborne droplets
- May affect other glands, leading to pancreatitis or orchitis
- Treatment

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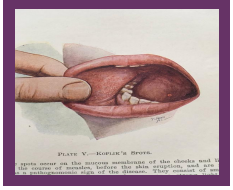
Measles (Rubeola)



- Rubeola virus
- Begins with spots in the mouth (Koplik's Spots), which spread to the face and torso (red maculopapular rash); high fever, malaise, dry cough, photophobia
- Highly contagious; spread via nasal secretions or **airborne** respiratory droplets
- Fetuses exposed to measles in first trimester at risk for heart defects, MR, deafness, growth problems
- Treatment

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Pertussis (Whooping Cough)

- Bordetella pertussis gram-negative bacterium, affecting throat and bronchi
- Highly contagious via airborne droplets
- Severe cough, large amounts of clear sputum
- Cough can be severe
  - Causing petechial rash above nipple line, pneumothorax, epistaxis, periorbital edema, subcutaneous emphysema, lingual frenulum laceration
- Treatment

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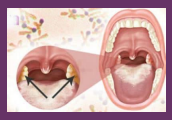
Diphtheria



- *Corynebacterium diphtheriae* bacteria
- Toxin destroys healthy tissues in resp system. Dead tissue (pseudomembrane) forms thick, gray coating in nose/throat
- Toxin in blood stream can damage heart, kidneys, and nerves
- Presentation
  - Sore throat, fever, HA, malaise, gray membrane
  - Complications: airway occlusion, myocarditis, nerve damage, ascending paralysis, respiratory failure or pneumonia, thrombocytopenia,
- Treatment

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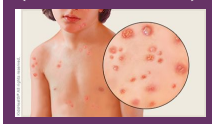
Varicella Zoster Virus (Chicken Pox)



- Transmitted by direct contact with infected individuals, airborne droplets, or contact with fluid from vesicles
- Presentation
  - Prodrome (48 hrs pre-rash): fever, cough, malaise
  - Rash: 250-500 lesions, starting on trunk as faint red macules, evolving into fluid-filled vesicles which dry and crust over
  - Spreads from face and trunk to extremities
- Mortality in adults (including complications like Varicella pneumonitis) is 15x higher in adults
- Treatment

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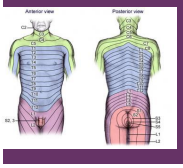
Varicella Zoster Virus (Shingles)



- VZV lies dormant in sensory nerve ganglia until host becomes immunocompromised
- Reactivation = Shingles outbreak
- Presentation
  - Prodrome (3-5 days pre rash): tingling, burning itching, hyperesthesia over affected area; malaise, photophobia
  - Disease: Fever, unilateral, usually thoracic or lumbar dermatome
  - Small fluid-filled vesicle on red base
- Treatment

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Mononucleosis

- Acute viral illness caused by Epstein-Barr Virus (EBV)
- Transmitted via oropharyngeal route (saliva)
- Presentation
  - Prodrome: fatigue, LOA, N/V, Chills, Myalgias, HA
  - Disease: Low-grade fever, red throat with enlarged tonsils, petechiae on palate, earache, diarrhea
  - Complications: hepatomegaly, splenomegaly, thrombocytopenia, pneumonia, meningitis, hepatitis, pneumonia
  - Mortality rare; splenic rupture or airway obstruction from tonsillar hypertrophy is possible
- Treatment

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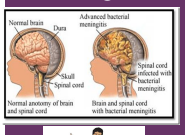
Meningitis



- Bacterial, viral or fungal infection causing inflammation of meningeal layers around the brain

Streptococcus pneumoniae	Group B strep
Haemophilus influenzae	E. Coli
Neiserria meningitides	Aspergillus
Listeria monocytogenes	Candida

- Viral: mild and short-lived
- Bacterial: severe and life-threatening
- Presentation
  - Meningeal irritation (Kernig/Brudzinski's signs)
  - CSF
    - Bacterial infxn: cloudy, elevated pressure, elevated WBC, incr protein, bacteria present on gram stain
    - Viral infxn: clear, protein/glucose/WBC WNL, no bacteria on gram stain
- Treatment

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Reye's Syndrome

- Origin unknown; often occurs in children several weeks post-viral illness who were given ASA
- Presenting symptoms are: frequent and violent vomiting, diarrhea, hyperventilation, AMS (later sign)
- Mitochondrial injury
- Symptom triad:
  - Hepatic
  - Metabolic
  - Neurologic
- Treatment

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Practice Questions

Which of the following clinical manifestations is the most common in patients with mononucleosis?

A. Sore throat

B. Splenomegaly

C. Fine red macular rash

D. Swelling of the parotid gland

Which of the following clinical manifestations is the most common in patients with mononucleosis?

A. Sore throat

B.

C.

D.

A patient is brought to the ED with diphtheria. Based on knowledge of this infection, which of the following pieces of equipment is most essential to have at the bedside?

A. Glucometer

B. Peak flow meter

C. Bedside US

D. Cricothyrotomy tray

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A patient is brought to the ED with diphtheria. Based on knowledge of this infection, which of the following pieces of equipment is most essential to have at the bedside?

A.

B.

C.

D. Cricothyrotomy tray

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Identification of a rash can often lead to clues about the causative agent. Measles presents with which type of rash?

A. Vesicular

B. Petechial

C. Pustular

D. Maculopapular

21

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A.

B.

C.

D. Maculopapular

22

Which of the following statements by a patient with herpes zoster indicates an understanding of discharge instructions?

A. A similar rash will break out on my right chest in two weeks

B. I should stay away from pregnant women

C. I can return to work in 3 days

D. I cannot use calamine lotion on this rash

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Which of the following statements by a patient with herpes zoster indicates an understanding of discharge instructions?

A.

B. I should stay away from pregnant women

C.

D.

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Which of the following vaccines provides protection against epiglottitis?

A. Tdap

B. MMR

C. Hib

D. HBV

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Which of the following vaccines provides protection against epiglottitis?

A.

B.

C. Hib

D.

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The incubation period for chickenpox is?

A. 1-3 days

B. 2-4 days

C. 7-10 days

D. 10-20 days

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The incubation period for chickenpox is?

A.

B.

C.

D. 10-20 days

28

A 6-year-old is brought to triage by his aunt. He's had a fever and cough for 3 days and now has a rash. Your first action as a triage nurse should be to?

A. Contact the child's parent for treatment consent

B. Institute isolation precautions with the child

C. Obtain VS and examine the rash

D. Ask the aunt to wait her turn, as several other patients are waiting to be seen

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A.

B. Institute isolation precautions with the child

C.

D.

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References

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Questions?