


55 – Kitchen Sink: Syndromes Not Covered Elsewhere

Speaker: Stacey Rose, MD



IDBR
INFECTIOUS DISEASE BOARD REVIEW
AUGUST 20-24
2022

Kitchen Sink: Syndromes Not Covered Elsewhere

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6/30/2022



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Disclosures of Financial Relationships with Relevant Commercial Interests

- None



HIGH YIELD

Session plan

- Case-based discussions of topics not extensively covered in other sessions
- Highlight points likely to be assessed on ID Boards (rather than comprehensive overview)

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Question 1

- A 51-year old male with past medical history significant for insulin dependent diabetes presents with a six-month history of progressive arthralgias, abdominal pain, diarrhea, weight loss, and low grade fevers.
- Work up thus far:
Negative blood cultures x 2
Negative Rheumatoid factor
Normal metabolic panels
Mild normocytic anemia

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Question 1

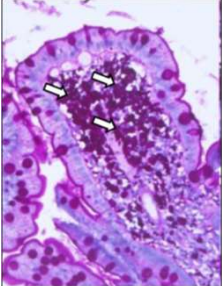
- Which of the following tests will most likely yield the diagnosis?

- a) Anti-streptolysin O Antibody
- b) Anti-nuclear Antibody
- c) Stool ova and parasite
- d) Duodenal biopsy

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Whipple's disease

- Caused by *Tropheryma whipplei* (gram variable bacterium, difficult to cultivate)
- More common in middle aged, Caucasian men
- Diagnosis often delayed due to indolent clinical presentation
- Most commonly diagnosed via duodenal biopsy, stained with PAS
- PCR increasingly used



Periodic acid-Schiff-diastase (PAS-D)-stained duodenal biopsy specimens with PAS-D-positive granules in the foamy macrophages (arrows).

Dolmans RAV, Boel CHE, Lacle MM, Kusters JS. 2017. Clinical manifestations, treatment, and diagnosis of *Tropheryma whipplei* infections. Clin Microbiol Rev 30:529–555. <https://doi.org/10.1128/CMR.00233-16>.

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Whipple's: clinical presentations

TABLE 1 Clinical manifestations of *Tropheryma whippelii* infection^a

Classic Whipple's disease (% incidence)	Chronic localized infections ^b	Acute infections ^b
Weight loss (79–99)	Endocarditis	Gastroenteritis
Gastroenteritis (63–85)	Encephalitis	Pneumonia
Abdominal pain (23–60)		Bacteremia
Arthritis (20–83)		
Neurological symptoms (6–63)		

^aSee text for references.
^bValues for relative incidence are unknown.

Dolmans RAV, Boel CHE, Lacle MM, Kusters JG. 2017. Clinical manifestations, treatment, and diagnosis of *Tropheryma whippelii* infections. Clin Microbiol Rev 30:529–555. <https://doi.org/10.1128/CMR.00033-16>

Whipple's endocarditis

• Increasingly recognized (PCR on heart valves)

• Analysis of > 1000 cardiac valves in Germany concluded that *T. whippelii* was the most common pathogen associated with culture negative endocarditis

Fennell F, Galard M, Lagier JC, Lepidi H, Fourmeau PE, Basclet D. Tropheryma whippelii endocarditis. Emerg Infect Dis. 2013;19(11):1721–1730. doi:10.1371/journal.p1002316
Gubler W, Amsler S, Moller A, et al. High frequency of Tropheryma whippelii in culture-negative endocarditis. Clin Microbiol. 2013;20(2):216–222. doi:10.1128/CM.00531-11

Whipple's: treatment


No gold standard

Options:

- Ceftriaxone or meropenem plus prolonged co-trimoxazole (~1 year)


OR

- Doxycycline plus hydroxychloroquine (12-18 mos)



Symptoms improve, but relapse is common without prolonged treatment / suppression

Dolmans RAV, Boel CHE, Lacle MM, Kusters JG. 2017. Clinical manifestations, treatment, and diagnosis of *Tropheryma whippelii* infections. Clin Microbiol Rev 30:529–555. <https://doi.org/10.1128/CMR.00033-16>



- Cause:** *Tropheryma Whippelii*
- Epidemiology:** middle aged, Caucasian males
- Clinical presentation:** classic – *arthralgia, diarrhea, weight loss*
- Localized infection** including *endocarditis* (increasingly recognized)
- Diagnosis** with *duodenal biopsy* (PAS stain; foamy macrophages) or *PCR* of infected tissue
- Prolonged treatment needed to prevent relapse

Whipple's disease

Take home points

Question 2

- A 20 year-old female school teacher presents to her primary care doctor with fever and pain / swelling in multiple joints (knees, elbows and wrists). The pain seems to move from joint to joint.
- She is generally healthy, but reports being ill ~3 weeks prior with sore throat and headache which resolved without specific treatment. She has no skin rash and no lymphadenopathy.
- She denies travel. She is sexually active with one male partner, using barrier protection (condoms).
- Labs are notable for **elevated ESR and CRP and + ASO titer**; pregnancy and HIV tests (4th generation Ag/Ab) are negative.





Question 2

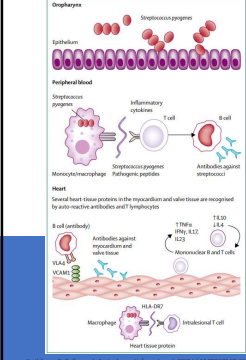
- Which of the following is the best explanation for her symptoms?
 - Acute HIV infection
 - Mononucleosis due to Epstein Barr Virus
 - Acute rheumatic fever
 - Lemierre's syndrome

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Explanation

-  Acute HIV – joint symptoms are not prominent with acute HIV infection; HIV 4th generation testing (Ag / Ab) should detect early HIV infection
-  Mononucleosis due to EBV – joint pains are not characteristic; no mention of lymphadenopathy
-  Acute Rheumatic Fever – multisystem disease following group A streptococcus pharyngitis; meets definition based on Jones criteria
-  Lemierre's – septic thrombophlebitis of internal jugular vein following pharyngitis, typically caused by *Fusobacterium necrophorum*. Joint pains are not characteristic; no neck swelling.



- **Pathogenesis:** immune responses following *Streptococcus pyogenes* pharyngitis; leads to systemic manifestations (**arthritis, carditis, chorea, skin – subcutaneous nodules; erythema marginatum**)

REVISED JONES CRITERIA

For patients with evidence of prior GAS infection*,
Acute Rheumatic fever =
2 MAJOR
OR
1 MAJOR plus 2 MINOR

Major	Minor
Arthritis (usually migratory polyarthritis)	Arthralgia
Carditis (clinical or subclinical)	Fever
Chorea	Elevated ESR or CRP
Erythema marginatum	Prolonged PR interval (unless carditis is a major criterion)
Subcutaneous nodules	

*e.g. rapid strep test; culture; anti-streptolysin-O titer (ASO)

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*e.g. rapid strep test; culture; anti-streptolysin-O titer (ASO)

Recognizing Acute Rheumatic Fever

- **Timing:** average 19 d after GAS infection
- **Arthritis:** migratory, polyarthritis involving large joints (knees, ankles, elbows, wrists)
- **Carditis:** wide range of effects – e.g. pericarditis, systolic dysfunction, valvular disease
- **Chorea:** late manifestation; involuntary movements
- **Skin:** Subcutaneous nodules; erythema marginatum (blanches; transient) – rare but specific



Treatment and prophylaxis of Acute Rheumatic Fever

Primary episode	Secondary prophylaxis
IM benzathine penicillin x 1 or Oral penicillin x 10 d	IM benzathine penicillin q 4 weeks

Goal: to prevent rheumatic heart disease

Duration of ppx varies by severity of primary illness


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CATEGORY	DURATION AFTER LAST ATTACK
Rheumatic fever with carditis and residual heart disease (persistent valvular disease ³⁾)	10 yr or until age 40 yr, whichever is longer; sometimes lifelong prophylaxis (see text)
Rheumatic fever with carditis but no residual heart disease (no valvular disease ³⁾)	10 yr or until age 21 yr, whichever is longer
Rheumatic fever without carditis	5 yr or until age 21 yr, whichever is longer

Duration of secondary prophylaxis following acute rheumatic fever:
longest if carditis and residual valvular disease

Principles and Practice of Infectious Diseases, 10th ed.



- Cause: immune dysregulation following *S. pyogenes pharyngitis*
- Epidemiology: children / young adults; rare in US
- Clinical presentation: ~3 weeks following GAS infection
 - **Major:** *migratory polyarthritis, carditis, chorea, subcutaneous nodules, erythema marginatum*
 - **Minor:** *fever, elevated ESR/CRP; PR prolongation*
- Diagnosis based on Jones criteria = 2 major OR 1 major + 2 minor (plus e/o prior GAS infection e.g. ASO titer)
- Treatment and secondary ppx with IM Penicillin; duration based on carditis (10 yr or to age 40 if carditis + residual valvular disease)

Acute Rheumatic Fever

Take home points

Question 3

- A 34 year old male with a history of injection drug use presents to the emergency room with a 2 day history of progressive muscle weakness and blurry vision. He also notices some difficulty swallowing.
- On examination, vital signs are normal, but the patient is noted to have ptosis and sluggish pupillary responses as well as slurred speech.

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Question 3

- Which of the following treatment(s) are recommended?

- Plasmapheresis
- Naloxone
- Tetanus antitoxin
- Botulinum antitoxin

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Explanation




Tetanus:
sardonic smile

Plasmapheresis – for Lambert-Eaton syndrome, immune attack of neuromuscular junction (chronic; associated with lung cancer)

Naloxone – for opioid intoxication (respiratory suppression, *constricted pupils*)

Tetanus antitoxin – for tetanus (rigid paralysis)

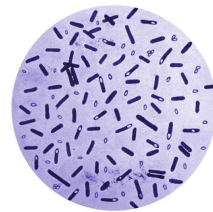
Botulinum antitoxin – for botulism



Botulism:
ptosis

[https://www.thelancet.com/journal/S0140-6736\(19\)31137-3/fulltext](https://www.thelancet.com/journal/S0140-6736(19)31137-3/fulltext)
https://www.medscape.com/viewarticle/950545_2_10

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Botulism

- Caused by **Clostridium botulinum* (gram positive, strict anaerobe with subterminal spore; found in soil)
- Symptoms due to **TOXINS** which prevent release of acetylcholine in neuromuscular junction
- Leads to **flaccid paralysis** of motor and autonomic nerves, beginning with the **cranial nerves** (*descending weakness*)
- **DX:** culture or detection of toxin

<https://phih.cdc.gov/details.aspx?id=2107>

*other neurotoxin producing species of Clostridium: *C. butyricum*, or *C. baratii*

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Botulism

 <p>Foodborne</p>	 <p>Infant</p>	 <p>Wound (black-tar heroin)</p>	 <p>Iatrogenic</p>
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Paik CM, Rosen H, Kamal A, et al. Wound Botulism Outbreak Among Persons Who Use Black Tar Heroin — San Diego County, California, 2017–2018. MMWR Morb Mortal Wkly Rep 2019; <https://www.cdc.gov/mmwr>. Principles and Practice of Infectious Diseases, 9th ed. 25

Botulism treatment

<p>Supportive care</p> <ul style="list-style-type: none"> Ventilatory support for respiratory compromise Wound debridement 	<p>Antitoxin</p> <ul style="list-style-type: none"> Botulinum anti-toxin (adults) Or Botulinum immune globulin (infants)
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<https://www.cdc.gov/mmwr>. Principles and Practice of Infectious Diseases, 9th ed. 25




- Cause:** *Clostridium botulinum* toxin impedes acetylcholine release from neuromuscular junction
- Epidemiology:** **food** (home canned veggies / fruits / fish); **infant** (honey); **wound** (black-tar heroin); **iatrogenic** (rare)
- Clinical presentation:** **descending flaccid paralysis**, starting with **cranial nerves** (ptosis, blurred vision, slurred speech)
- Diagnosis:** clinical; confirmed by culture or ID of toxin
- Treatment:** **antitoxin** plus **supportive care**; wound debridement

Botulism

Take home points

Question 4




Lancet Infect Dis. 2008 Jun;8(6):399.

- A 44 year-old male with a history of cirrhosis due to Hepatitis B and alcoholism presents with fever, lethargy and leg swelling. On exam, he is febrile, hypotensive and tachycardic. Skin exam is as pictured.

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Question 4




Lancet Infect Dis. 2008 Jun;8(6):399.

- The patient's clinical syndrome was most likely caused by which of the following exposures?


- Rat bite
- Tick bite
- Consumption of raw oysters
- Consumption of raw egg

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Explanation




Hemorrhagic bullae from *Vibrio vulnificus*



Petechial rash from *Streptobacillus moniliformis* (rat bite fever); fever, rash, migratory arthritis



Rose spots from *Salmonella typhi*

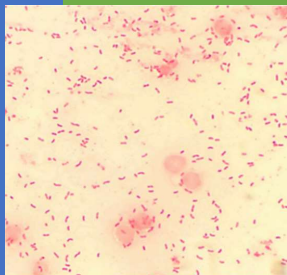


Erythema migrans due to *Borrelia burgdorferi* (tick borne)

<https://www.cdc.gov/mmwr>

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Vibrio vulnificus

- Gram-negative, curved bacillus
- Halophilic (salt loving) – **brackish water**
- Cause: **consumption of raw seafood (oysters) or contamination of open wound**
- At risk: **liver disease (cirrhosis); iron overload; renal disease; immunosuppression**
- High mortality


Beatty NL, Mangat J, Al-Mohag M. Skin Manifestations of Primary Vibrio vulnificus Infection. Am J Trop Med Hyg. 2017;97(1):2.

Clinical presentation and treatment



- Abrupt onset
- Fever, hypotension
- Rapidly progressive skin lesions: erythema → **hemorrhagic bullae** → necrosis
- Bacteremia common
- Treatment:
 - Fluoroquinolone plus 3rd generation cephalosporin
 - Debridement

Principles and Practice of Infectious Diseases, 9th ed.



- Epidemiology: consumption of **raw seafood**; **contamination of wound** (organism lives in warm, brackish water)
- At risk: **liver disease**, iron overload (also renal; immune suppression)
- Clinical presentation: rapidly progressive skin lesions with **hemorrhagic bullae**; **fever, hypotension, sepsis**
- Diagnosis: clinical; blood cultures usually positive
- Treatment: fluoroquinolone plus 3rd generation cephalosporin; debridement

Vibrio vulnificus

Take home points

Question 5

- A 23-year-old otherwise healthy college student presents to the university clinic with a non-productive, intermittent cough for 3 weeks. She describes spells during which she coughs repeatedly for several minutes. On two occasions she vomited after coughing.
- She reports episodes of sweating but has had no fever or other constitutional symptoms.
- She has tried several cough medicines, but nothing seems to help. She knows several other students who have been "coughing for weeks," and says the showers in her dorm are "covered with mold."

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Question 5

- She is afebrile and has a completely normal exam.
- Her CBC is normal; chest x-ray is normal.
- Specific nasopharyngeal culture for *Bordetella pertussis* is negative.

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Question 5

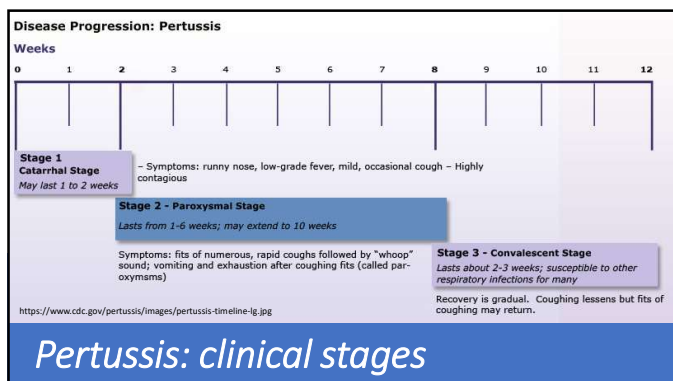
- Which one of the following is the most likely cause of her illness?

A. *Bordetella pertussis*
B. *Chlamydomphila pneumoniae*
C. Respiratory syncytial virus
D. *Mycoplasma pneumoniae*

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Pertussis diagnosis – no perfect test

Clinical case criteria (in absence of alternate dx):

- cough illness lasting ≥ 2 weeks, with at least one of the following:
 - Paroxysms of coughing; OR
 - Inspiratory whoop; OR
 - Post-tussive vomiting; OR
 - Apnea (with or without cyanosis)

Test	Sensitivity (%)	Specificity (%)	Advantages	Disadvantages
Culture	15	100	Specific; confirms diagnosis; most useful in first two weeks	Fastidious growth requirements; delayed results; inaccurate in late stages of disease
Polymerase chain reaction	45	85	Confirms diagnosis; rapid results; most accurate in early stages of disease	Sensitivity declines in late stages of disease
Serology	65	89	Accurate in late stages of disease	Cannot confirm acute infection (can be positive because of past infection or immunization); testing method not standardized

<https://www.cdc.gov/ncez/conditions/pertussis/case-definition/2005>
Am Fam Physician. 2013 Oct 15;88(8):507-514.

Treatment and post exposure prophylaxis

- TREAT with macrolide (e.g. azithromycin) if within 3 weeks of onset
- Treat within 6 weeks of onset for infants or pregnant women

- POST EXPOSURE PROPHYLAXIS (PEP) given to household members and contacts at risk of severe infection (within 3 weeks of exposure)

<https://www.cdc.gov/pertussis/>

People of all ages need WHOOPING COUGH VACCINES

DTaP for young children	Tdap for preteens	Tdap for pregnant women	Tdap for adults
<ul style="list-style-type: none"> ✓ 2, 4, and 6 months ✓ 15 through 18 months ✓ 4 through 6 years 	<ul style="list-style-type: none"> ✓ 11 through 12 years 	<ul style="list-style-type: none"> ✓ During the 27-36th week of each pregnancy 	<ul style="list-style-type: none"> ✓ Anytime for those who have never received it

-booster q 10 yrs

www.cdc.gov/whoopingcough

- Epidemiology: in past infants / kids; now young adults (waning immunity?)
- Severe disease: infants, pregnant women, lung disease
- Clinical presentation: cough lasting 2+ weeks plus paroxysmal cough, inspiratory whoop, post-tussive vomiting or apnea

Stages:

- catarrhal: URI
- paroxysmal: coughing fits / whoop
- convalescent: gradual lessening of cough

- Diagnosis: clinical; culture (insensitive), PCR, serology (late)
- Treat with macrolide within 3 wks of onset
- PEP for household contacts / at risk of severe dz within 3 wks of exposure

Bordetella pertussis

Take home points


Question 6

- A 25-month old child is brought to the emergency room for fever, rash and fussiness. The rash started on the face and spread to trunk and extremities within 1-2 days.
- 10 days ago, the family returned to the United States following a 1-month trip to Tanzania (where the parents conduct research as university professors).
- The child's 4-year old sibling is also ill, with cough and watery eyes, but does not have a rash.
- The parents do not believe in vaccination for their children due to fear of adverse effects (autism).

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Question 6



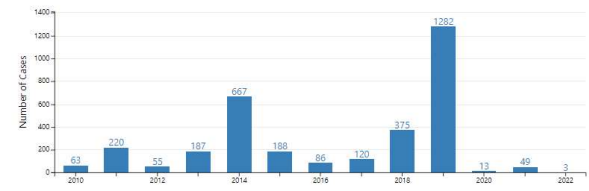
Which of the following could have prevented the development of the patient's illness?

- A. Varicella zoster virus vaccination
- B. Measles, mumps, rubella vaccination
- C. Mefloquine prophylaxis
- D. Influenza vaccination

Measles (Rubeola) in the US

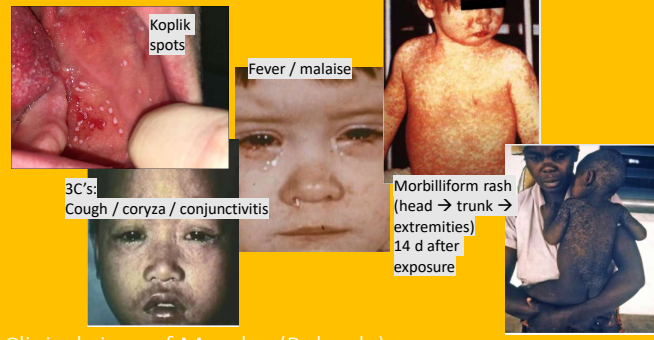
Mostly in unvaccinated individuals, related to international travel or an imported case

Number of measles cases reported by year
2010-2022* (as of June 3, 2022)



<https://www.cdc.gov/measles/cases-outbreaks.html>

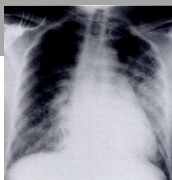
Clinical signs of Measles (Rubeola)



- Koplik spots
- Fever / malaise
- 3C's: Cough / coryza / conjunctivitis
- Morbilliform rash (head → trunk → extremities) 14 d after exposure

Principles and Practice of Infectious Diseases, 9th ed. <https://www.cdc.gov/measles/symptoms/clinical.html>

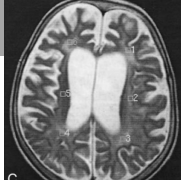
Complications of measles



Chest. 1993 May;10(5):1625-6

Acute

- 1 of 1000 children – death from respiratory / neurologic complications



http://www.ajnr.org/content/24/1/1501.full.pdf

Delayed

- rare but fatal - Subacute Sclerosing Pan-Encephalitis (SSPE)
- 7 yrs after infection; degenerative disease, seizures

Principles and Practice of Infectious Diseases, 9th ed. <http://www.cdc.gov/measles/>

Diagnosis

Don't wait for confirmation: isolate patients with suspected infection (airborne)

Clinical – high suspicion in unvaccinated individuals





Serum: measles-specific IgM antibody

*Respiratory specimen (nasopharyngeal swab): measles RNA by real-time polymerase chain reaction (RT-PCR)

*may also be detected in urine

<https://www.cdc.gov/measles/>

Prevention: Measles-mumps-rubella (MMR) Vaccination

 <p>CHILDREN 1st dose: 12-15 mos 2nd dose: 4-6 years</p>	 <p>ADULTS born after 1957 without evidence of immunity (at least one dose)</p>
 <p>COLLEGE STUDENTS without evidence of immunity (two doses, 28 d apart)</p>	 <p>INTERNATIONAL TRAVELERS (6 mos and older) without evidence of immunity</p>

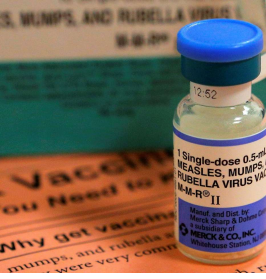
Principles and Practice of Infectious Diseases, 9th ed. <https://www.cdc.gov/measles/>

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Immunity and post exposure prophylaxis



Who is immune to measles?	What is the recommendation for PEP?
<ul style="list-style-type: none"> written documentation of adequate vaccination Lab evidence of immunity Lab confirmation of measles infection Born before 1957 	<ul style="list-style-type: none"> Non-immune persons with measles exposure should receive either MMR vaccine (within 72 hours of exposure) or Immune globulin (IG) within 6 days of exposure Do not co-administer MMR vaccine and IG (invalidates vaccine)



Principles and Practice of Infectious Diseases, 9th ed. <http://www.cdk.gov/mmr/vaccines/>
<https://www.washingtonpost.com/health/2018/04/09/how-does-measles-spread-often-frequently-asked-questions-about-measles/>

“German measles” (Rubella) vs. Measles (Rubeola)

German Measles (Rubella)	Measles (Rubeola)
<ul style="list-style-type: none"> Caused by RNA virus of <i>Togaviridae</i> family Often mild / asymptomatic Viral prodrome → maculopapular rash which spreads from head to extremities, +/- arthritis Transmitted in utero (congenital rubella): deafness, cataracts, glaucoma, heart disease, cognitive defects 	<ul style="list-style-type: none"> Caused by RNA virus of Paromyxovirus family Severe disease with complications including death Viral prodrome → cough / coryza / conjunctivitis, fever, Koplik spots → maculopapular rash which spreads from head to extremities

- Cause:** Rubeola (RNA virus of Paramyxovirus family)
- Epidemiology:** worldwide distribution; *in US, seen in unvaccinated persons due to travel or exposure to imported case*
- Clinical presentation:** three C's (cough, coryza, conjunctivitis), Koplik spots, morbilliform rash spreading from head → trunk → extremities (14 d after exposure)
- Diagnosis:** clinical; serum IgM; PCR on respiratory swab (or urine)
- Treatment:** supportive care, Vit A for severe cases in children
- Post-exposure ppx:** vaccination (within 72 h) or IG (within 6 days)


Measles (Rubeola)

Take home points

Question 7

- A 19 year old male, previously healthy, complained of abdominal pain and nausea after eating leftovers from a restaurant.
- Within several hours, his symptom progressed to include weakness, headache and neck stiffness.
- Five hours later, he had developed purplish skin discolorations and a friend brought him to the emergency room for evaluation.

Question 7



- Upon arrival to the hospital, he was noted to be febrile (40.4 degrees Celsius), tachycardic (HR 166), and tachypneic (RR 28), with BP 120/53, and with rapidly progressive reticular, purpuric rash.
- Within 24 hours, gram stain of blood cultures showed gram-negative diplococci.

N Engl J Med. 2021 Mar 11;384(10):953-963.

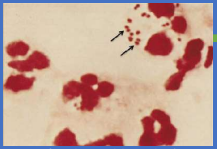
Question 7

- Which of the following is the most likely diagnosis?


- Meningococemia
- Disseminated *Streptococcus pneumoniae*
- Disseminated gonorrhea
- Secondary syphilis

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Gram stain of CSF with gram neg diplococci and PMNs
<https://www.cdc.gov/meningitis/lab-manual/09b06-culture-id.html>



Principles and Practice of Infectious Diseases, 9th ed

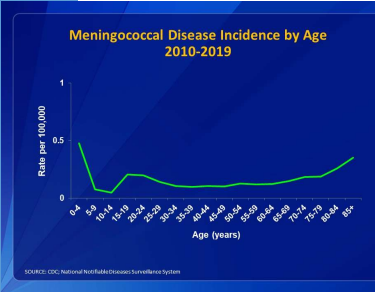
Invasive meningococcal disease (*N. meningitidis*)

- Main manifestations:
 - meningococemia
 - acute meningitis
- Petechial or purpuric rash in 40-80% of meningococemia cases
- Fulminant disease can progress to death within hours
- Treat with 3rd generation cephalosporin (ceftriaxone or cefotaxime) and supportive care

Principles and Practice of Infectious Diseases, 9th ed.
<https://www.cdc.gov/meningococcal/clinical-info.html>

Epidemiology

In the US, infants, young adults, and adults >80 years of age have the highest rates of meningococcal disease




Rate per 100,000

Age (years)

SOURCE: CDC National Notifiable Diseases Surveillance System

<https://www.cdc.gov/meningococcal/surveillance/index.html>

Transmission and risk factors



Transmission: person to person (respiratory droplets, oral secretions) from asymptomatic carriage or invasive disease



HOST / IMMUNE factors: asplenia; terminal complement deficiencies (native or acquired, such as use of complement inhibitors: eculizumab or ravulizumab); HIV

BEHAVIORAL / ENVIRONMENTAL factors: crowded conditions (college dorms, military barracks; Hajj and Umrah pilgrimages); daycare / preschool facilities; microbiologists; men who have sex with men (MSM)

<https://www.cdc.gov/meningococcal/about/risk-community.html>

Treatment

Detection of Ciprofloxacin-resistant, β -lactamase-producing *Neisseria meningitidis* Serogroup Y Isolates, United States, 2019–2020

First line: 3rd generation cephalosporin

Susceptibility testing recommended before changing to penicillin or ampicillin to complete course of therapy

<https://emergency.cdc.gov/han/2020/han00433.asp>

ANTIBIOTIC	CONSIDERATIONS
Rifampin	Drug interactions
Ceftriaxone	Recommended in pregnancy
Ciprofloxacin	Not generally recommended for persons < 18 yrs
Azithromycin	Limited data

Chemoprophylaxis for:

- Household members
- Childcare center contacts
- Anyone directly exposed to an infected person's oral secretions (kissing; mouth to mouth resuscitation; intubation) within 7 d before symptom onset
- HCW with exposure to respiratory secretions of infected patient

https://www.cdc.gov/vaccines/pubs/hurv-manual/chp08_mening.html

Meningococcal Immunization

- Recommendations revised in 2020

Summary:

- MenACWY for all adolescents (11-12 yrs) plus persons at increased risk** due to host or environmental factors
- MenB for those at increased risk** due to host or environmental factors; shared decision making for others

<https://www.cdc.gov/vaccines/vpd/mening/public/index.html>

55 – Kitchen Sink: Syndromes Not Covered Elsewhere

Speaker: Stacey Rose, MD

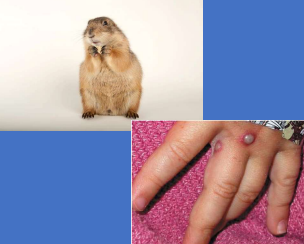


- Epidemiology:**
 - Host** (*asplenia; complement deficiencies; complement inhibitors – eculizumab or ravulizumab*)
 - Environmental** (crowded conditions – dorms, barracks, day care)
 - Person to person** transmission from oral / respiratory droplets
- Clinical presentation:** *acute meningitis or meningococemia; rapidly progressive, petechial / purpurral rash*
- Treatment:** ceftriaxone or cefotaxime; immunize for prevention and during outbreaks
- Chemoprophylaxis for close contacts within 7 d of exposure:** *rifampin, ceftriaxone (pregnancy), or ciprofloxacin (adults)*

Invasive meningococcal disease
(*Neisseria meningitidis*)

Take home points

Question 8



- A 4 year-old boy develops a new rash two weeks after adopting a new pet prairie dog.
- He also has fever and malaise.
- He is up to date on vaccinations and has no recent travel.
- His parents and older brother remain well.

<https://www.nationalgeographic.com/animals/mammals/facts/prairie-dogs>
PMID: 14720564

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Question 8

- To prevent spread of this illness to other household members, which of the following would be recommended?

A. Avoid contact with the pet
B. Avoid contact with the child's skin lesions or bedding
C. Smallpox vaccination
D. All of the above

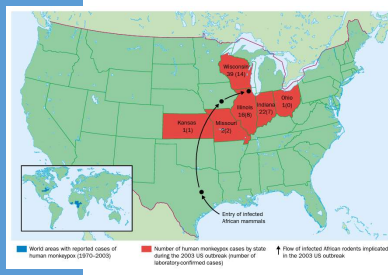
<https://www.nationalgeographic.com/animals/mammals/facts/prairie-dogs>

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Monkeypox (MPV) then and now

MPV – orthopoxvirus (same family as variola = smallpox)
Incubation: 5 d – 3 weeks
Papular / vesicular / pustular / crusting lesions
Usually self-limited 2-4 weeks

US outbreak: 2003 related to imported rodents



Di Giulio, D. B., & Esberg, P. B. (2004). Human monkeypox: an emerging zoonosis. *The Lancet Infectious Diseases*, 4(1), 15–25. [https://doi.org/10.1016/S1473-3099\(03\)00856-9](https://doi.org/10.1016/S1473-3099(03)00856-9)

Viewpoint ONLINE FIRST FREE

June 13, 2022

Monkeypox in 2022—What Clinicians Need to Know

Jeanette Guarnier, MD¹; Carlos del Rio, MD^{2,3}; Preeti N. Malani, MD, MSJ^{4,5}

> Author Affiliations | Article Information
JAMA. Published online June 13, 2022. doi:10.1001/jama.2022.10802

- 2022 outbreak: as of June 9, 2022, > 1350 lab-confirmed cases > 30 countries suspected sexual transmission (inoculation to skin / mucosal surfaces by direct contact)

- Diagnosis:** PCR of swab from a lesion
- Post-exposure ppx:** smallpox vaccination
- Antivirals:** tecovirimat; brincidofovir
- Intravenous vaccinia immune globulin (VIGIV)** if T cell immune deficiency




55 – Kitchen Sink: Syndromes Not Covered Elsewhere

Speaker: Stacey Rose, MD

Kitchen Sink summary - 1


<p>Whipple's:</p> <ul style="list-style-type: none"> • Classic: arthralgia, diarrhea, weight loss • Dx with duodenal bx (PAS+, foamy macrophages) • or PCR of tissue (heart valve for endocarditis) 	<p>Acute Rheumatic fever:</p> <ul style="list-style-type: none"> • Kids / young adults with migratory polyarthritis, carditis, chorea, subcutaneous nodules, erythema marginatum following GAS pharyngitis • Monthly IM penicillin prophylaxis for 10 years or to age 40 if carditis + residual valvular disease
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<https://www.cdc.gov/groupastrep/diseases-public/rheumatic-fever.html>

Kitchen Sink summary - 2

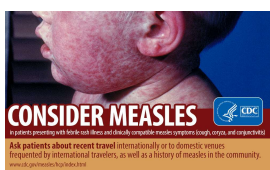
<p>Botulism:</p> <ul style="list-style-type: none"> • Due to <i>C. botulinum</i> toxin • Food; infant; wound (black-tar heroin); iatrogenic • Descending flaccid paralysis (starts with cranial nerves) • Antitoxin / supportive care 	<p>Vibrio vulnificans:</p> <ul style="list-style-type: none"> • Liver disease at risk • Exposure to raw seafood or contaminated wound (brackish water) • Rapidly progressive, hemorrhagic bullae / sepsis • Fluoroquinolone, ceftriaxone, debridement
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<https://www.cdc.gov/vibrio/wounds.html>

Kitchen Sink summary - 3

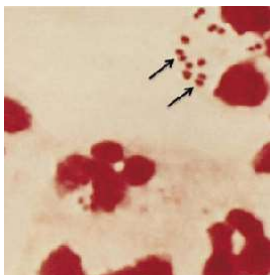
<p>Pertussis</p>	<p>Measles</p>
<ul style="list-style-type: none"> • Clinical diagnosis: >2 weeks of cough plus paroxysms, inspiratory whoop, post-tussive emesis, apnea • Macrolide if within 3 weeks of onset or as PEP for contacts at risk of severe disease 	<ul style="list-style-type: none"> • unvaccinated + travel history • 3 C's – coryza, cough, conjunctivitis • Koplik spots • Rash spreads from head to trunk to extremities • Contagious and severe • Later – SSPE (degenerative neurologic dz / seizures)



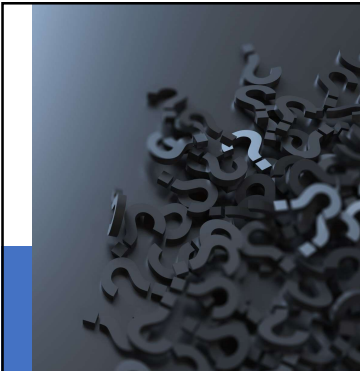
<https://www.cdc.gov/measles/consider-measles-infographic.html>

Kitchen Sink summary - 4

<p>Monkeypoxvirus</p>	<p>Invasive meningococcal disease</p>
<ul style="list-style-type: none"> • Orthopoxvirus; same family as variola virus (smallpox); vaccine cross-protective • Incubation 5d-3 weeks • Usually self-limited, lesions crust and scar • Spread by direct contact (sexual); past outbreak in US due to exposure to infected rodents 	<ul style="list-style-type: none"> • Host (asplenia/ complement deficiency or inhibitor); environmental (crowded conditions) risks • Rapidly progressive; meningitis; purpuric rash • Rx: 3rd gen cephalosporin • Ppx for close contacts within 7 d: rifampin, ceftriaxone (pregnancy), or ciprofloxacin (adults) • No rx for asx carriage



<https://www.cdc.gov/meningitis/hab-manual/chp06-culture-td.html>



Questions?

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