MARCH 2024

INVASIVE MENINGOCOCCAL QUICKSHEET

Kentucky Public Health
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CLINICAL FEATURES

MENINGITIS

- sudden onset of fever
- headache and stiff neck
- often accompanied by nausea, vomiting, photophobia (sensitivity to light) or altered mental status

MENINGOCOCCAL SEPSIS (MENINGOCOCCEMIA OR BACTEREMIA)

- abrupt onset of fever
- petechial or purpuric (red or purplish spots caused by bleeding under the skin) rash
- often associated with:
  - hypotension
  - shock
  - acute adrenal hemorrhage
  - multiple organ failure

LESS COMMON PRESENTATIONS

- pneumonia
- arthritis
- otitis media
- epiglottitis

ETIOLOGIC AGENT

Neisseria meningitidis (bacteria)

TRANSMISSION

Respiratory droplets or direct contact with respiratory secretions

INCUBATION

3 to 4 days (range, 1 to 10 days)

COMMUNICABILITY

Considered infectious 7 days before onset of disease until 24 hours after initiation of appropriate antibiotic therapy.

MENINGOCOCCAL VACCINE

- Quadrivalent Meningococcal Conjugate Vaccines
  - MenACWY-D (Menactra)
  - MenACWY-CRM (Menevo)
  - MenACWY-TT (MenQuadfi)
- Serogroup B Meningococcal Vaccines
  - MenB-FHbp (Trumenba)
  - MenB-4C (Bexsero)

KENTUCKY INVASIVE MENINGOCOCCAL OCCURRENCE

MMWR Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Confirmed Case Count	6	2	1	3	3	2	2	6	8	2	2	2

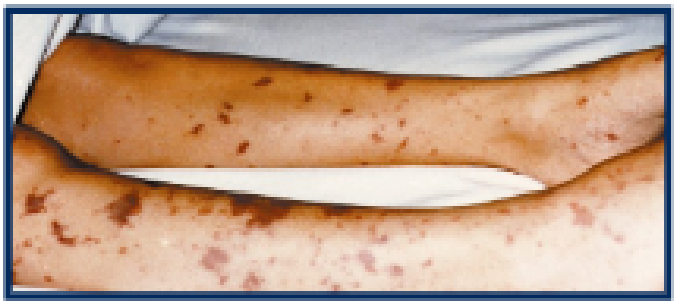
KENTUCKY DEPARTMENT OF PUBLIC HEALTH
ON CALL PHONE: (888) 9REPORT
IMMUNIZATION BRANCH: (502) 564-4478

INVASIVE MENINGOCOCCAL QUICKSHEET

CASE CLASSIFICATION

CLINICAL CRITERIA

Clinical purpura fulminans in the absence of a positive blood culture.



LABORATORY CRITERIA

- Isolation of *N. meningitidis*
  - From a normally sterile body site (e.g., blood or CSF, or less commonly, synovial, pleural, or pericardial fluid); **or**
  - From purpuric lesions
- Detection of *N. meningitidis* specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using a validated polymerase chain reaction (PCR) assay; **or**
- Gram-negative diplococci, not yet identified, isolated from a normally sterile body site (e.g., blood or CSF)
- Detection of *N. meningitidis* antigen
- In formulin-fixed tissue by immunohistochemistry (IHC); **or**
- In CSF by latex agglutination

*Throat cultures are not reportable, however lower respiratory tract cultures should be investigated.
All confirmed cases should be sent to KDPH DLS for serology typing

SUSPECTED CASE

- Clinical purpura fulminans in the absence of a positive blood culture; **OR**
- Gram-negative diplococci, not yet identified, isolated from a normally sterile body site (e.g., blood or CSF)

PROBABLE CASE

- Detection of *N. meningitidis* antigen
  - In formulin-fixed tissue by immunohistochemistry (IHC); **OR**
  - In CSF by latex agglutination

CONFIRMED CASE

- Detection of *N. meningitidis* specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using a validated polymerase chain reaction (PCR) assay; **OR**
- Isolation of *N. meningitidis*
  - From a normally sterile body site (e.g., blood or CSF, or less commonly, synovial, pleural, or pericardial fluid); **OR**
  - From purpuric lesions

OUTBREAK

- Generally defined as:
  - 2 to 3 associated cases within an organization during a 3 month period **OR**
  - multiple outbreak associated cases resulting in increased meningococcal disease incidence in a community during a 3 month period

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CASE INVESTIGATION

1. Confirm that the suspected case meets the case definition and/or is highly suspected. Identify and locate patient specimens. Submit bacterial isolates to KDPH DLS
2. Empiric therapy for suspected meningococcal disease should include cefotaxime or ceftriaxone. Cases not treated with cefotaxime or ceftriaxone, which clear carriage, should receive chemoprophylaxis before hospital discharge
3. The medical provider should determine effective antibiotic therapy for meningococcal disease. Options include cefotaxime, ceftriaxone, penicillin G, or ampicillin
4. Identify all persons who had close contact with case within 7 days of case's onset of symptoms until case has had 24 hours of effective antibiotic therapy.
5. Regardless of the meningococcal vaccination status of the contact, recommend chemoprophylaxis for close contacts as soon as possible, ideally within 24 hours of identification of the index case and up to 14 days from the last exposure
6. For long-term protection, recommend meningococcal vaccines to unvaccinated close contacts and recovered cases with an ACIP recommendation for vaccination.
7. Provide close contacts with information about the signs and symptoms of meningococcal disease and ask them to self-monitor for the onset of febrile illness
8. Alert clinicians and educate the public, as indicated
9. Recommend evaluation of previously immunized or recurrent cases for terminal complement or other immune deficiency; some experts recommend evaluation of all recovered cases

SPECIMEN COLLECTION FOR LABORATORY TESTING

Test Name	Specimens to take	Timing for specimen collection	Transport requirements
Culture*^ **Preferred Specimen* *^Request that lab conduct serogrouping on any N. meningitidis isolate*	Blood/ CSF	ASAP	Blood culture bottles w/broth or lysis-centrifugation tube CSF: Sterile, screw-capped tube
PCR for detection and serogrouping	Any normally sterile site	ASAP	Sent frozen on blue ice packs
Antigen detection	Any normally sterile site	ASAP	Sent frozen on blue ice packs

CDC| Best practices for use of polymerase chain reaction (PCR) for diagnosing *Haemophilus influenzae* and *Neisseria meningitidis* disease and public health importance of identifying serotype/serogroup. CDC's Bacterial Meningitis Laboratory Information.

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SCHOOL MANAGEMENT

1. When a case of invasive meningococcal disease is identified in a school or other institution, public health should immediately contact facility administrators to recommend that the institution rapidly communicate with its population, and to help guide messaging
    a. Information communicated should include:
        i. Notification about the case (obtain consent if the name of the case is to be released)
        ii. Reassurance that the chance of another case is remote
        iii. Signs and symptoms of invasive meningococcal disease and instructions to seek care promptly if they occur
        iv. Chemoprophylaxis is not needed unless individuals have been contacted by public health authorities.
    b. Vaccination with available meningococcal vaccines offers longer-term protection and is routinely recommended for adolescents and others at increased risk
        i. Meningococcal conjugate vaccines (Menactra® and Menveo®) available in the US provide protection against 4 of the 5 most common serogroups of *N. meningitidis* (serogroups A, C, W, and Y)
        ii. Serogroup B vaccines (Trumenba® and Bexsero®) provides protection for the other most common serogroup, serogroup B
        iii. Approximately 2 weeks are required following vaccination for the development of protective antibody levels
2. Children in school and childcare settings shall be excluded until 24 hours after start of effective treatment and written approval by health care provider is provided
3. Children with a fever from any infectious cause should be excluded from school and daycare for at least 24 hours after fever has subsided without the use of fever suppressing medications

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CHEMOPROPHYLAXIS

LOW RISK: CHEMOPROPHYLAXIS NOT RECOMMENDED

- Casual contact: no history of direct exposure to index patient's oral secretions (e.g., school or work)
- Indirect contact: only contact is with a high-risk contact, no direct contact with the index patient
- Health care personnel without direct exposure to patient's oral secretions
    - Note: Hospital personnel should receive prophylaxis only if they were directly exposed to the patient's nasal or throat secretions and failed to correctly use appropriate personal protective equipment (PPE).

HIGH RISK: CHEMOPROPHYLAXIS RECOMMENDED FOR CLOSE CONTACTS

- Household contacts, especially children younger than 2 years of age
- Child care or preschool contact at any time during 7 days before onset of illness
- Direct exposure to the index patient's secretions through kissing or through sharing toothbrushes or eating utensils—markers of close social contact—at any time during 7 days before onset of illness
- Mouth-to-mouth resuscitation, unprotected contact during endotracheal intubation at any time 7 days before onset of illness
- Frequently slept in same dwelling as index patient during 7 days before onset of illness
- Passengers seated directly next to the index case during airline flights lasting more than 8 hours (gate to gate)

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RECOMMENDED CHEMOPROPHYLAXIS REGIMENS

AGE	DOSE	DURATION	EFFICACY	CAUTIONS
Rifampin*	*Not recommended for use in pregnant women.			
<1 month	5 mg/kg, every 12 h, po	2 days		Discussion with an expert for infants <1 month of age
≥1 month	10 mg/kg (maximum 600 mg), every 12 h, po		90–95%	Can interfere with efficacy of oral contraceptives and some seizure and anticoagulant medications; can stain soft contact lenses.
Adult	600mg every 12 h, po			
Ceftriaxone				
<15 years	125 mg, intramuscularly	Single dose	90–95%	To decrease pain at injection site, dilute with 1% lidocaine.
≥15 years – Adult	250 mg, intramuscularly			
Ciprofloxacin**	**** Not recommended in pregnancy. Public health recommendations to use non-fluoroquinolone antibiotics for N. meningitidis chemoprophylaxis may be made if fluoroquinolone-resistant strains of N. meningitidis have been identified in the community. If the case's isolate is known to be resistant to fluoroquinolones, or if there are resistant strains circulating in the community and public health has recommended a change to the chemoprophylaxis regimen, rifampin or azithromycin may be appropriate choices.**			
≥1 month	20 mg/kg (maximum 500 mg), po	Single dose	90–95%	
Adult	500mg, po			
Azithromycin	10 mg/kg (maximum 500 mg), po	Single dose	90%	Not recommended routinely; equivalent to rifampin for eradication of N. meningitidis from nasopharynx in one study of young adults.

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N. MENINGITIDIS INFECTION IN A NON-STERILE SITE

Nonsterile Site (condition)	Treatment	Close contact management/PEP
Eye (conjunctivitis)	No public health treatment recommendation; manage clinically.	No public health recommendation for contact management/PEP.
Nasopharyngeal/throat/oropharynx (pharyngitis, sinusitis)	No public health recommendation for treatment; manage clinically	No public health recommendation for contact management/PEP
Urine (urethritis)	N. meningitidis can cause urethritis. CDC recommends the same treatment for N. meningitidis and N. gonorrhoeae urethritis	CDC recommends that sex partners of patients with N. meningitidis urethritis be treated as they would be treated for N. gonorrhoeae exposure
Sputum/respiratory/endotracheal (pneumonia)	No public health recommendation for treatment; manage clinically.	No public health recommendation for contact management/PEP

NORMALLY STERILE SITES

- blood, bone and bone marrow
- cerebrospinal fluid (CSF)
- internal body sites
  - specimen obtained from surgery or aspirate from one of the following: brain, heart, kidney, liver, lymph node, ovary, pancreas, spleen, vascular tissue, vitreous fluid
- joint fluid
  - includes synovial fluid and needle aspirate or culture of any specific joint: ankle, elbow, hip, knee, wrist
- muscle
- pericardial fluid
- peritoneal fluid
  - includes abdominal fluid, ascites
- pleural fluid
  - includes chest fluid, thoracentesis fluid