



Meningococcal Disease Quicksheet



Infectious Agent

Neisseria meningitidis, a gram-negative diplococcus bacterium carried by 5-10% of the population.

Clinical Description

Invasive disease manifests most commonly as meningitis and/or meningococemia and may progress to purpura fulminans, shock, and death within hours of onset. Other manifestations, such as septic arthritis or orbital cellulitis, may be observed. The case fatality rate is 10% and 11-19% of surviving patients have sequelae (e.g., neurologic disability, limb loss, and hearing loss).

Mode of Transmission

Transmission occurs through contact with aerosols from the nose, throat, and mouth of colonized or infected persons. *N. meningitidis* may be carried in the nasopharynx of otherwise healthy individuals. Invasive meningococcal disease occurs primarily in individuals who are newly colonized with the organism, usually within the first few days.

Incubation Period

From 1-10 days, usually less than 4 days.

Period of Communicability

Persons with meningococcal disease are considered infectious 7 days before onset of disease until 24 hours after initiation of appropriate antibiotic therapy with the most infectious period shortly before onset until initiation of antibiotic therapy.

2010 CDC/CSTE Case Definition

Confirmed:

- Detection of *Neisseria 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 [available at MDL]; or
- Isolation of *Neisseria meningitidis* from
 - a normally sterile body site (e.g., blood or cerebrospinal fluid, or, less commonly, synovial, pleural, or pericardial fluid), or
 - purpuric lesions.

Probable:

- Detection of *N. meningitidis* antigen in
 - formalin-fixed tissue by immunohistochemistry (IHC); or
 - CSF by latex agglutination.

Suspect:

- 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).

Culture-negative suspect cases

If antibiotics have been given prior to specimen collection, cultures may be negative. Culture-negative sterile site specimens should be submitted to the CDPH Microbial Diseases Laboratory (MDL) for PCR testing, which can confirm the diagnosis. See “**Laboratory Testing for Meningococcal Disease**” at:

<http://www.cdph.ca.gov/programs/immunize/Documents/CDPHMeningococcalLabTesting.pdf>

A **primary case** of meningococcal disease is one that occurs in the absence of previous known close contact with another case. A **secondary case** is one that occurs in a close contact of a primary case ≥ 24 hours after the onset of illness in the primary case. **Co-primary cases** are two or more cases that occur among a group of close contacts with onset of illness separated by < 24 hours.

Case Investigation

- 1) Confirm that the suspected case meets the case definition and/or is highly suspected.
- 2) Identify and locate patient specimens. **Submit bacterial isolates or culture-negative sterile site specimens to CDPH MDL as soon as possible for serogrouping and additional testing.** See laboratory testing link above for more information.
- 3) Confirm that appropriate antibiotics have been provided to the case. Cases treated only with penicillin need an additional antibiotic to eradicate pharyngeal carriage (see page 3).
- 4) Identify all persons who had close contact with case within 7 days of onset of disease in case until case has had 24 hours of effective antibiotic therapy (see definition of close contact below). Interview the case, their household members and close friends (for adolescents and young adults, close friends may be the only source of information about contacts during school or in other non-household settings).
- 5) Recommend antibiotic postexposure prophylaxis 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) Postexposure chemoprophylaxis should be offered regardless of the meningococcal vaccination status of the contact.
- 7) For long-term protection, encourage meningococcal conjugate vaccines (ACWY and B) for unvaccinated close contacts and recovered cases recommended to receive meningococcal vaccines by ACIP.
- 8) Meningococcal vaccines may also be considered for unvaccinated:
 - o persons who are not close contacts who qualify for vaccine under ACIP recommendations to help reduce anxiety about exposure; and
 - o close contacts ≥ 2 months of age who do not qualify for vaccine under ACIP recommendations because risk of exposure may be longer than the few weeks of protection from chemoprophylaxis (children vaccinated before the age recommended by ACIP should receive additional doses of vaccine at the recommended ages).
- 9) 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.
- 10) Alert clinicians and educate the public, as indicated.
- 11) Recommend evaluation of previously immunized or recurrent cases for immune deficiency.
- 12) Report vaccine failures to the CDPH Immunization Branch.

Close Contact Definition

Close contacts are people who may have been exposed to the respiratory aerosols of a case in the 7 days before the onset of symptoms in the case and until the case has had 24 hours of effective antimicrobial therapy.

CDC guidance states that close contacts include anyone directly exposed to the patient's oral secretions (e.g., through kissing, endotracheal intubation, endotracheal tube management, or mouth-to-mouth resuscitation). However, *N. meningitidis* is not commonly detected in saliva and CDPH believes that such exposures are more likely to be markers of close contact in which inhalation of respiratory aerosols from the case can occur. Direct exposure to the case's oral secretions is not necessary for transmission of *N. meningitidis* to occur.

The following persons are considered close contacts:

- Household members.
- Childcare or preschool contacts.
- Persons with unprotected exposure to the case's respiratory aerosols, e.g., via intubation, endotracheal tube management, suctioning, and mouth-to-mouth resuscitation.
- Persons who shared sleeping spaces with the case (e.g., dormitory, barracks).

- Persons with exposure to the index patient's respiratory secretions through kissing or other markers of close or intimate contact.
- Other persons who may be considered close contacts include people who are likely to have been exposed to aerosols or secretions from the case's nose, throat, or mouth (e.g., close face-to-face contact, especially if prolonged, party and sport team contacts, etc.).
- Per CDC, persons sitting directly next to the index case during airline flights lasting more than 8 hours.

When there is a need to prioritize prophylaxis (e.g., large numbers of contacts, difficulty reaching contacts), priority should be given to persons with prolonged or intimate contact with the case, or contact with the case shortly before onset of disease when cases are thought to be most infectious.

Expanded Chemoprophylaxis

Offering targeted chemoprophylaxis to an expanded group of contacts (i.e. persons in the same social network as case) may be considered for cases that occur in settings with a higher risk for outbreaks, e.g., colleges/universities or secondary schools. If expanded chemoprophylaxis is undertaken, the goal should be to administer it to all targeted persons on the same day.

Closing schools or cancelling sporting events are not recommended. However, there may be times during outbreaks when cancelling some social events may be considered based on the epidemiology of the outbreak. Please contact CDPH for consultation immediately for cases that occur in college or high school students.

Serogroup B vaccine

Two serogroup B vaccines are now licensed for use in the United States in persons 10-25 years of age in a 2 or 3-dose series. While there is no routine recommendation for MenB vaccine at this time, physicians can use either vaccine for persons who want to reduce their risk of meningococcal disease.

Mass Vaccination

Mass vaccination may be used during suspected or confirmed outbreaks of meningococcal disease. Contact CDPH for consultation if mass vaccination is being considered.

Community and organization outbreaks

CDC defines a community-based (e.g., neighborhood, town, county) outbreak as the occurrence of ≥ 3 confirmed or probable primary cases of meningococcal disease in a period of ≤ 3 months among persons residing in the same area who are not close contacts and who do not share a common affiliation, with a primary attack rate of ≥ 10 cases per 100,000 population.

CDC defines an organization-based (e.g., school, church, university, etc.) outbreak as three or more confirmed or probable cases of meningococcal disease of the same serogroup in period of ≤ 3 months among persons who have a common affiliation but no close contact with each other, resulting in a primary disease attack rate of ≥ 10 cases per 100,000 persons. In some instances the attack rate will be >10 cases per 100,000 population with only 2-3 cases. In these situations, vaccination may be considered after only 2 primary cases are identified.

Additional guidance for organizational-based outbreaks of serogroup B meningococcal disease is available at <http://www.cdc.gov/meningococcal/downloads/interim-guidance.pdf>

***N. meningitidis* infection in a non-sterile site**

Although not recommended by CDC, CDPH considers it reasonable to manage close contacts of meningococcal conjunctivitis or pneumonia cases in the same manner as close contacts of invasive disease cases. Invasive disease has developed among close contacts of meningococcal conjunctivitis or pneumonia cases.

Risk Communication

Immediately contact administrators of schools or other institutions where a case of meningococcal disease has occurred. Recommend that affected schools and institutions rapidly communicate (phone trees, e-mail) with their populations and help guide messaging.

Information communicated should include:

- Notification about the case (obtain consent if the name of the case is to be released).
- Reassurance that chance of another case is remote.
- Signs and symptoms of meningococcal disease and instructions to seek care promptly if they occur.
- Chemoprophylaxis is inappropriate unless individuals have been contacted by public health authorities.
- Vaccination with meningococcal conjugate vaccine offers longer-term protection against serogroups A, C, W-135 and Y and is routinely recommended for adolescents and others at increased risk.

Molecular subtyping of isolates

Molecular subtyping can be performed on isolates of the same serogroup to determine if they have similar genetic fingerprints. This information can be extremely helpful in determining if a cluster or outbreak is occurring.

Reporting

Report all suspected, probable and confirmed cases of meningococcal disease on CDPH form 8469 at: <http://www.cdph.ca.gov/pubsforms/forms/Pages/CD-Report-Forms.aspx>

Contact the CDPH Immunization Branch at (510) 620-3737 if there are suspected cases in a high school or college setting or ≥ 2 suspected cases within a common social network or for guidance about other unusual situations.

Recommended chemoprophylaxis regimens*

Age	Dose	Duration	Efficacy	Cautions
Rifampin^a				
<1 month	5 mg/kg, orally, every 12 h	2 days		
≥ 1 month	10 mg/kg (maximum 600 mg), orally, every 12 h	2 days	90–95%	Can interfere with efficacy of oral contraceptives and some seizure and anticoagulant medications; can stain soft contact lenses.
Ceftriaxone				
<15 year	125 mg, intramuscularly	Single dose	90–95%	To decrease pain at injection site, dilute with 1% lidocaine.
≥ 15 year	250 mg, intramuscularly	Single dose	90–95%	To decrease pain at injection site, dilute with 1% lidocaine.
Ciprofloxacin^{a,b}				
≥ 1 month	20 mg/kg (maximum 500 mg), orally	Single dose	90–95%	Used routinely for those ≥ 18 years of age. Per 2011 AAP recommendations, ciprofloxacin can be considered for those <18 years of age based on risk/benefit assessment. See: http://pediatrics.aappublications.org/content/128/4/e1034.full.pdf CDPH and CDC consider it reasonable to use single-dose ciprofloxacin for <i>N. meningitidis</i> chemoprophylaxis in children ≥ 5 years of age given that reports of adverse events in children have been rare after widespread use in children.
Azithromycin	10 mg/kg (maximum 500 mg)	Single dose	90%	Not recommended routinely; equivalent to rifampin for eradication of <i>Neisseria meningitidis</i> from nasopharynx in one study.

***Penicillin** is often appropriate as treatment, but is not appropriate for prophylaxis.

^a Not recommended for use in pregnant women.

^b Use only if fluoroquinolone-resistant strains of *N meningitidis* have not been identified in the community. See: CDC. Emergence of fluoroquinolone-resistant *Neisseria meningitidis*—Minnesota and North Dakota, 2007–2008. *MMWR*. 2008;57(7):173–175 at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5707a2.htm>. In limited testing to date, ciprofloxacin-resistant *N. meningitidis* isolates have been detected in one case in California and three cases in the Midwest. Please contact CDPH for updates on the prevalence of resistant strains.