



MENINGOCOCCAL INFECTIONS

1. **Agent:** *Neisseria meningitidis*, a Gram-negative diplococcus.
2. **Identification:**
 - a. **Symptoms:** Sudden onset of fever, headache, nausea, vomiting, lethargy, and irritability in cases of meningococcemia; headache, nausea, vomiting, and stiff neck in cases of meningitis. A petechial rash is seen frequently. Delirium and coma are not uncommon. Fulminant cases may present with ecchymosis and shock.
 - b. **Differential Diagnosis:** Other bacterial or viral agents of meningitis and sepsis, rickettsial diseases (e.g., Rocky Mountain spotted fever), and anaphylactoid purpura.
 - c. **Diagnosis:** Positive culture or detection of *N. meningitidis*-specific nucleic acid from a normally sterile site, e.g., blood or cerebrospinal fluid; positive bacterial antigen test in CSF or Gram-negative diplococci in a normally sterile site. A clinical diagnosis or clinically compatible presentation, specifically clinical purpura fulminans, in the absence of laboratory confirmation, must be investigated.
3. **Incubation:** 2-10 days; commonly 3-4 days.
4. **Reservoir:** Human.
5. **Source:** Nose and throat secretions of case and/or carriers.
6. **Transmission:** Direct contact with an infected person, often an asymptomatic carrier; also droplet spread.
7. **Communicability:** Until meningococci are no longer present in nose or throat, usually 24 hours after the initiation of effective therapy. Some antimicrobial treatment may not eradicate organism from nasopharynx; in such cases, communicability returns following completion of treatment unless an agent effective at eradicating carriage is given.
8. **Specific Treatment:**

Case: Parenteral penicillin, chloramphenicol, cefotaxime, ceftriaxone. If not already used for therapy, an antibiotic effective for prophylaxis (see below) should be given to all cases prior to discharge to eradicate nasal carrier state.

9. **Immunity:** Type-specific; unknown duration.

REPORTING PROCEDURES

1. **Reportable immediately.** *California Code of Regulations*, Section 2500.

2. **Report Form:** [MENINGOCOCCAL DISEASE CASE REPORT \(CDPH 8469\)](#)

[MENINGOCOCCAL DISEASE CONTACT ROSTER \(acd-meningocontact\)](#)

[MENINGOCOCCAL CASE SUPPLEMENTAL FORM \(acd-meningosupp\)](#)

3. **Epidemiologic Data:**
 - a. Household and intimate contacts.
 - b. Childcare center contacts.
 - c. Social or athletic contacts (e.g., nightclubs, parties or competitive sports).
 - d. Persons who recently shared drinks or smoking materials (e.g., tobacco, marijuana, pipe)
 - e. Recent illness among contacts.
 - f. Prophylaxis prescribed or received.
 - g. Residence in closed institution (e.g., dormitory, military barracks, jails) prior to onset.
 - h. Recent out-of-county travel.
 - i. Gender of sexual partners (i.e., is patient a man who has sex with men (MSM)).
 - j. Meningococcal vaccination history.
 - k. HIV status.



CONTROL OF CASE, CONTACTS & CARRIERS

Public Health Nursing Protocol:

Home visit is required – a face to face interview is required.

Refer to “Public Health Nursing Home Visit Required Algorithm” (B-73 Part IV Public Health Nursing Home Visit Protocol).

Investigate the day of report.

CASE: Droplet precautions in addition to standard precautions until 24 hours after start of antibiotic therapy.

1. Immediate hospitalization.
2. If hospitalization refused, droplet precautions until end of febrile period and until acute symptoms subside.
3. If treatment refused, patient to remain under droplet precautions until released by the PH Medical Director.

CONTACTS:

Prophylaxis: Indicated for household members, others who frequently eat or sleep in the same dwelling, childcare center contacts, and anyone having direct contact with case's oral secretions (e.g., sharing beverages or cigarettes, kissing, during resuscitation, or other activities that result in exposure to oral or nasal secretions) during the 7 days prior to onset of illness. During outbreaks, prophylaxis recommendations may be expanded. Please consult ACDC. Prophylaxis should be given immediately and no later than 14 days after last exposure.

Rifampin:

≤1 month of age: 5 mg/kg by mouth every 12 hours for 2 days.

>1 month of age: For children (1-12 years), 10 mg/kg (maximum 600 mg) every 12 hours for 2 days.

For adults: 20 mg/kg (maximum 600 mg) orally every 12 hours for 2 days.

Note: Rifampin stains contact lenses and turns urine orange-red. It is not recommended for use during pregnancy. It also may decrease the effectiveness of oral contraceptives as well as some seizure and anticoagulation medications.

Ceftriaxone:

≤15 years: 125 mg in a single IM injection.

>15 years: 250 mg in a single IM injection.

Note: Safe during pregnancy and more effective than rifampin for treatment of carriers of group A meningococcus.

Ciprofloxacin:

1 month – 11 years: 20 mg/kg oral suspension in a single dose (maximum dose, 500 mg). If oral suspension is unavailable, 500 mg tablets can be split.

≥12 years: 500 mg orally in a single dose. Not recommended for pregnant women.

Note: Ciprofloxacin is generally not given to children; however, a single dose is safe and effective for meningococcal prophylaxis. Contact ACDC for additional questions.

Surveillance:

Contacts, particularly household members should be monitored for 10 days following their last exposure to the index case, regardless of prophylaxis. The Area Medical Director may require prophylactic treatment of household contacts under medical supervision prior to release (*California Code of Regulations*, Section 2590b).

1. Educate all contacts, even if chemoprophylaxis is given, about the signs and symptoms of meningococcal infection and instruct them to self-monitor for illness.
2. Instruct contacts to immediately seek medical attention if fever or other signs and symptoms of meningococcal illness develops.
3. Household contacts should be followed up at the end of the 10 day incubation



period to ensure that they have remained healthy during that period.

4. Chemoprophylaxis for other than those individuals with whom the patient had intimate or household contact is generally not recommended.
5. Contact school or daycare center to provide education and notification of exposure, as well as to conduct surveillance. The facility should notify DPH if another person becomes ill with symptoms of meningococcal infection.
6. Discontinue surveillance of household or close contacts after 10 days.
7. Surveillance of carriers requires individual evaluation. Routine culturing of nasopharynx is not indicated.

OUTBREAKS

A meningococcal disease outbreak is defined by the occurrence of multiple confirmed or probable primary cases of meningococcal disease of the same serogroup in a community or institution over a short period of time. This may be as few as 2 cases depending on the size of the institution or circumstance.

The population at-risk is defined as a group of persons who, in addition to close contacts, are considered to be at increased risk for *N. meningitidis* when compared with the risk for this disease in the general U.S. population. This group is usually defined on the basis of organizational or community affiliation.

Meningococcal vaccines may be recommended for use in control of *N. meningitidis* outbreaks caused by vaccine preventable serogroups (see **PREVENTION-EDUCATION** section).

PREVENTION-EDUCATION

1. Mass prophylaxis generally is not indicated.
2. Special attention should be given to school, institutional, and military settings.
3. Concurrently disinfect fomites contaminated with nose and throat secretions. Encourage adequate ventilation of living and sleeping quarters.

4. Vaccination

- a. Six vaccines are available in the US that can prevent meningococcal disease: three protect against serogroups A, C, Y, and W-135, one protects against only serogroups C and Y, and two protect against serogroup B.

Meningococcal polysaccharide vaccine

- MPSV4 or Menomune® (licensed for persons aged 2 years and older; protects against serogroups A, C, Y, and W-135).

Meningococcal conjugate vaccines

- MenACWY-D or Menactra® (licensed for persons aged 9 months through 55 years).
- MenACWY-CRM or Menveo® (licensed for persons aged 2 years through 55 years).
- Hib-MenCY-TT or MenHibrix® (licensed for children aged 6 weeks through 18 months; protect against serogroups C and Y disease only).

Serogroup B meningococcal recombinant vaccine

- MenB-4C or Bexsero® (licensed for persons aged 10 years and older).
- MenB-FHbp or Trumemba® (licensed for persons aged 10 years and older).

- b. Meningococcal conjugate vaccine is the preferred vaccine for persons aged 2 years through 55 years of age who are at increased risk for meningococcal disease (see section d, below). MenACWY-D and MenACWY-CRM are interchangeable when booster doses are required. For persons aged less than 2 years, MenACWY-D and Hib-MenCY-TT are available for persons 9 months through 23 months and 6 weeks through 18 months, respectively.

Vaccination with meningococcal conjugate vaccine is routinely recommended for all persons 11 years through 18 years of age. A primary dose is given during the pre-adolescent immunization visit at 11-12 years of age and a booster dose at 16 years.



Persons 56 years of age and above who are in a high risk group should receive meningococcal polysaccharide vaccine (MPSV4).

Serogroup B meningococcal vaccine, in addition to the meningococcal conjugate vaccine, is recommended for persons aged 10 years or older who are at increased risk for meningococcal disease due to certain medical conditions (see section d, below). At least one dose is required.

d. Persons at high risk for meningococcal disease include:

- Travelers to countries in which *N. meningitidis* is hyper-endemic or epidemic, particularly if contact with the local population will be prolonged.
- Persons with anatomic or functional asplenia (require 2 dose primary series and booster doses every 5 years). Serogroup B vaccine also recommended.
- Persons with terminal complement deficiency including those taking Soliris® for treatment (require 2 dose primary series and booster doses every 5 years). Serogroup B vaccine also recommended.
- Persons infected with HIV (require 2 dose primary series).
- Military recruits.
- Research, industrial, and clinical laboratory workers who are routinely exposed to *N. meningitidis* in solutions that may be aerosolized. Serogroup B vaccine also recommended.

e. Meningococcal conjugate, polysaccharide, and serogroup B vaccines can be used for control of meningococcal disease outbreaks. A conjugate vaccine is the preferred vaccine for persons 2-55 years old.

DIAGNOSTIC PROCEDURES

Diagnosis of infection with *N. meningitidis* generally relies on evidence of the organism from blood or other normally sterile body sites. Consult with Public Health Laboratory.

Submit isolate to Public Health Laboratory for further testing and typing.