



# MENINGOCOCCAL INFECTIONS

1. **Agent:** *Neisseria meningitidis*, a Gram-negative diplococcus.
2. **Identification:**
  - a. **Symptoms:** In cases of meningococcemia, sudden onset of fever, headache, nausea, vomiting, lethargy, and irritability; 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, rickettsial diseases (e.g., Rocky Mountain spotted fever), and anaphylactoid purpura.
  - c. **Diagnosis:** Positive culture from a normally sterile site, e.g., blood or cerebrospinal fluid; also Gram-negative diplococci or positive bacterial antigen test on CSF. A clinical diagnosis or clinically compatible presentation, 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. Treatment may not eradicate organism from nasopharynx; in such cases, communicability returns following completion of treatment.
8. **Specific Treatment:**

**Case:** Parenteral penicillin, chloramphenicol, cefotaxime, ceftriaxone. If not already used for therapy, an antibiotic effective for prophylaxis 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 (DHS 8469, 10/04 fillable)**

## MENINGOCOCCAL DISEASE CONTACT ROSTER (ACDC, 11/05)

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. Recent illness among contacts.
  - e. Prophylaxis prescribed or received.
  - f. Residence in closed institution prior to onset.

## CONTROL OF CASE, CONTACTS & CARRIERS

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.
4. Not all antibiotics eradicate carriage; an effective prophylactic drug is strongly



recommended prior to discharge. (See prophylaxis for contacts.)

### 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., via social or sports settings in which beverages or cigarettes are shared, or intimate behavior results in exposure to oral or nasal secretions) during the 7 days prior to onset of illness. In these instances, prophylaxis should be given immediately and no later than 10 days after last exposure.

### Recommended:

#### 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.

### Alternative 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:

**≥18 years:** 500 mg orally in a single dose. Not recommended for pregnant women. Not routinely recommended for children but might be considered in the setting of mass chemoprophylaxis. Consult with ACDC.

**Surveillance:** Contacts should be carefully observed for 10 days following their last exposure

to the index case. The Area Medical Director may require prophylactic treatment of household contacts under medical supervision prior to release (*California Code of Regulations*, Section 2590b).

1. The most important recommendation for the management of contacts is close surveillance even if chemoprophylaxis is given. Chemoprophylaxis does not ensure that disease will not occur.
2. If fever or other symptoms and signs of meningococcal illness develop, refer immediately for medical evaluation.
3. Chemoprophylaxis for other than those individuals with whom the patient had intimate or household contact is generally not recommended.
4. Contact school or daycare center to provide education and notification of exposure, as well as to conduct surveillance.
5. Discontinue surveillance after 10 days.
6. Surveillance of carriers requires individual evaluation. Routine culturing of nasopharynx is not indicated.

### OUTBREAKS

A meningococcal disease outbreak is defined by the occurrence of at least three confirmed or probable primary cases of meningococcal disease in ≤ 3 months, with a resulting primary attack rate of ≥ 10 cases/100,000 for the population at risk. (This definition is based on the national experience with serogroup C outbreaks but it is felt to be applicable to outbreaks caused by other serogroups as well).

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 affiliation or community affiliation.

Meningococcal vaccines are recommended for use in control of *N. meningitidis* outbreaks caused by vaccine preventable serogroups (see 4c under **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. Two meningococcal vaccines are available in the US:

Meningococcal polysaccharide vaccine (MPSV4) and Meningococcal conjugate vaccine (MCV4). Both vaccines can prevent meningococcal disease caused by *N. meningitidis* serogroups A, C, Y, and W-135.

MCV4 is the preferred vaccine for persons aged 2 years through 55 years of age who are at increased risk for meningococcal disease (see section b, below). One dose of MCV4 is routinely recommended for persons 11 years through 18 years of age, ideally given during the preadolescent immunization visit at 11 years through 12 years of age.

Persons 56 years of age and above, as well as persons for whom MCV4 is recommended but not available or contraindicated, should receive MPSV4 when vaccination against *N. meningitidis* is indicated.

- b. 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
  - Persons with terminal complement deficiency
  - Persons infected with HIV.
  - Military recruits
  - Research, industrial, and clinical laboratory workers who are routinely

- exposed to *N. meningitidis* in solutions that may be aerosolized
- College freshmen living in dormitory-like settings
- c. Both MCV4 and MPSV4 are recommended for use in control of meningococcal disease outbreaks that are caused by vaccine preventable serogroups of *N. meningitidis*, although MCV4 is preferred for persons 2 years through 55 years of age.

5. Quadrivalent (A, C, Y, W-135) meningococcal polysaccharide vaccine has been licensed for all ages in the United States since 1981. A meningococcal conjugate vaccine (MCV4) (Menactra®) was approved in 2005 by the Advisory Committee on Immunization Practices (ACIP) for persons 11 to 55 years. Menactra vaccine is indicated for active immunization against invasive meningococcal disease caused by the same serogroups: A, C, Y, and W-135. MCV4 is expected to give better, longer-lasting protection than the polysaccharide vaccine.

## DIAGNOSTIC PROCEDURES

Consult with Public Health Laboratory.

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