Indiana State Department of Health
Epidemiology Resource Center

Meningococcal Disease

Investigation Guidelines
June 2019

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To determine if meningitis cases are caused by a non-reportable organism (e.g. fungal, viral, or other type of bacterial meningitis) or possibly meningococcal disease (see Table 1).
2. To identify persons who have been significantly exposed to an individual with meningococcal infection, in order to recommend antibiotic prophylaxis and to inform them about signs and symptoms of illness.
3. Under rare circumstances, to recommend meningococcal vaccine in a defined population or community.

1.2 Laboratory and Physician Reporting Requirements

Health care providers **must** report confirmed **or** suspected cases of meningococcal disease to the local health department (LHD) by telephone ***immediately upon first suspicion***. Do **not** wait for laboratory confirmation. If an LHD staff member is unreachable, health care providers **must** contact the Indiana State Department of Health (ISDH) Epidemiology Resource Center (ERC). The ISDH ERC can be reached during normal business hours Monday-Friday 8:15 a.m. to 4:45 p.m., at 317-233-7125. For calls after hours/holidays/weekends, please contact the ISDH Epidemiologist-on-Call at 317-233-1325.

According to the ISDH Communicable Disease Rule 410-IAC 1-2.5-119, laboratories are required to submit all *Neisseria meningitidis* isolates from normally sterile sites to the Indiana State Department of Health Laboratories within three business days of isolation. Information about isolate submission is available at the ISDH Laboratories website at https://www.in.gov/isdh/24634.htm.

1.3 Local Health Department Reporting and Follow-Up Responsibilities

1. Report all confirmed, probable, and suspect cases (see definitions below) to the ISDH as soon as possible after initial report from the health care provider or laboratory.
2. Immediately begin follow-up investigation (see section 5).
3. Identify close contacts (see section 3.3) and recommend prophylaxis (see section 6.4) within 24 hours of report.
4. If the case is laboratory-confirmed, make sure that the isolate is forwarded to the ISDH Laboratories.

2. MENINGOCOCCAL DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

Neisseria meningitidis – These gram-negative diplococcal bacteria are a leading cause of bacterial meningitis in the United States. Almost all invasive disease is caused by one of five serogroups (A, B, C, Y, and W); however, serogroups B, C and Y are the major causes of meningococcal disease in the United States.[2] Among persons age 11 years or older, approximately 73% of cases are caused by serogroups C, Y, or W, while in children ages 0 through 59 months, approximately 60% of cases are caused by serogroup B.[3] Humans are the only reservoir for *N. meningitidis*.

2.2 Description of Illness

Invasive meningococcal disease most commonly presents as meningitis, meningococcemia, or both. Symptoms of meningococcal meningitis include acute onset of fever, headache, and stiff neck, often accompanied by nausea, vomiting, photophobia, and altered mental status. Symptoms of meningococcemia (i.e., blood infection) include acute onset of fever often accompanied by hypotension and shock, and may include a petechial or purpuric rash, purpura fulminans, and multi-organ failure.[1]

Neisseria meningitidis, also called meningococcus, is fatal in 10-15% of infections, even when appropriate antibiotic treatment is provided. The case-fatality ratio for meningococcemia is as high as 40%. Sequelae associated with meningococcal disease occur in 10-20% of survivors and include hearing loss, neurologic disability, digit or limb amputations, and skin scarring.[1] The burden of invasive meningococcal disease is typically highest in the very young (those 0–4 years of age), with a second, lower peak in incidence in young adults. Incidence is also elevated among adults 65 years of age or older.

Asymptomatic colonization of the upper respiratory tract provides the source from which the organism is spread. *N. meningitidis* organisms are carried in the nasopharynx of about 5–10% of the healthy population. Carrier rates of up to 25% have been documented in some groups (i.e. college students and military). However, less than 1% of those colonized develop invasive disease.[6] Therefore, colonization is common, but invasive disease is very rare.

The method of penetration of meningococci from the nasopharyngeal membranes into the blood is unknown, but having had a recent upper respiratory tract infection or exposure to smoke in one's environment may facilitate invasion. Risk groups for invasive meningococcal disease include:

- Household and other close contacts of infected persons
- Persons who may have been exposed during an outbreak
- Residents in crowded housing settings (e.g., military recruits, college students living in dormitories)
- Persons traveling to or residing in countries where meningococcal disease is epidemic or hyperendemic (e.g., Sub-Saharan Africa "meningitis belt")
- Microbiologists working with isolates of *N. meningitidis*
- Persons with underlying medical conditions, such as splenectomy or damaged spleen, terminal complement deficiency, and HIV infection[7]

2.3 Modes of Transmission

Transmission occurs through respiratory droplets and saliva or by direct contact with nasopharyngeal secretions or saliva from a colonized person – symptomatic or otherwise. Disease incidence is highest in late winter to early spring.[3]

2.4 Incubation Period

Commonly 3-4 days, but may range from 1 to 10 days.[1,6]

2.5 Period of Communicability

Persons can transmit the organism to others as long as meningococci are present in nasal or pharyngeal secretions. Cases should be considered infectious from the time they are exposed until 24 hours after initiation of treatment or prophylaxis with appropriate antibiotics. Contacts exposed to the patient more than 7 days before his/her onset of illness are not at significantly increased risk. Depending on the antimicrobials used, therapy for invasive disease may not eradicate the organism from the nasopharynx, and prophylaxis may also be required (see Table 3).

2.6 Treatment

The clinical presentation of meningococcal meningitis is similar to other forms of bacterial meningitis. Consequently, empiric therapy with broad-spectrum antibiotics (e.g., third-generation cephalosporins including ceftriaxone, cefotaxime, and vancomycin) should be started promptly after appropriate cultures have been obtained.[3]

*For prophylaxis treatment for close contacts, review Section 6.4 and Table 3.

3. CASE AND CONTACT DEFINITIONS

3.1 Clinical Description

Meningococcal disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminans, shock, and death. However, other manifestations might be observed, as described in Section 2.2.

3.2 Case Classifications (2015 Case Definition)

Suspected:

- 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 cerebrospinal fluid (CSF).

Probable:

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

Confirmed:

- 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 *Neisseria meningitidis*
    - from a normally sterile body site (e.g., blood or cerebrospinal fluid, or, less commonly, synovial, pleural, or pericardial fluid), or
    - from purpuric lesions

Source: http://wwwn.cdc.gov/nndss/.

3.3 Close Contacts (of a person with meningococcal disease)

Close contacts of a case are at increased risk of becoming colonized or infected from direct contact with infectious respiratory secretions or droplets. Such droplets generally travel three feet or less when an infected person talks, coughs, or sneezes. The risk of transmission of *N. meningitidis* is a

function of multiple factors, including clinical features of the source case related to communicability (e.g., presence of cough), proximity and duration of contact, ventilation, and use of appropriate infection control measures (mask). Risk of disease in close contacts is highest during the 7-day period following exposure. Consult with the ISDH Vaccine-Preventable Disease Epidemiologist as needed on a case-by-case basis regarding determinations of exposure risk to close contacts.

Examples of close contact with meningococcal disease patients include:

1. Direct face-to-face contact with a symptomatic case-patient during the contagious period. This includes household and immediate family members, boyfriends/girlfriends, and child care contacts (those who spend many hours together or sleep under the same roof) or who are at increased risk for contact with respiratory secretions of the case. The attack rate for household contacts of cases is 500–800 times higher than the rate for the general population.[1]
2. An obvious exposure that involves direct contact with respiratory, oral, or nasal secretions from a case-patient during the contagious period (e.g., a cough or sneeze in the face; sharing eating utensils, water bottles, or anything put in the mouth; kissing; mouth-to-mouth resuscitation; or performing intubation or nasotracheal suctioning without a mask). Healthcare workers who have not had direct contact with the case's nasopharyngeal secretions are *not* at increased risk, and prophylaxis is *not* indicated.
3. Close proximity for a prolonged period of time with a case-patient during the contagious period. Risk of droplet exposure increases with longer duration and closer proximity of contact. Examples of persons who may be at increased risk include:

    a) non-household close friends or other social contacts
    b) some passengers during shared transportation lasting more than 8 hours
    c) some contacts at community activities or at the place of employment
    d) some healthcare workers caring for a case without wearing a mask
    e) children attending an after-school care group or play group on the same days[1]

Note: Close contact does not include activities such as walking by a person or briefly sitting across a waiting room or office.

4. DIAGNOSIS AND LABORATORY SERVICES

4.1 Diagnosis

Meningococcal disease is most commonly diagnosed by isolation of *N. meningitidis* or detecting *N. meningitidis*-specific nucleic acid in a specimen obtained from blood or CSF. After administration of any antibiotics, sensitivity of bacterial culture can be low. In this situation, a Gram stain of CSF, assays to detect bacterial antigen in CSF, and polymerase chain reaction (PCR) tests for *N. meningitidis* DNA can be helpful.

4.2 Services Available at the Indiana State Department of Health Laboratories

All isolates of *N. meningitidis* obtained from patients with invasive meningococcal disease must be submitted to the ISDH Laboratories. Once received, the ISDH Laboratory confirms the identification and determines the serogroup of *N. meningitidis* isolates. The ISDH Laboratory does not perform PCR for *N. meningitidis* on blood or CSF specimens, or latex agglutination on CSF specimens. All isolates will be sent to CDC, twice annually, for molecular testing.

The ISDH Laboratories requires that all clinical isolates must be properly labeled with the patient's name and date of isolation. Submission forms must be filled out completely and sent with the specimen to the ISDH Laboratory. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly labeled and documented. Visit https://www.in.gov/isdh/files/CLI_VPD_Isolate.pdf for more detailed information.

5. ROUTINE CASE INVESTIGATION

5.1 Evaluate the Diagnosis

Conduct a public health investigation for all confirmed, probable, and suspect cases promptly after notification. Review the clinical history, including onset date and vaccination history, physical exam findings, and laboratory results. Enter this information into the NEDSS Base System (NBS) under the condition, "Neisseria meningitidis, invasive (Mening. disease)". Tables 1 & 2 are valuable reference tools to use during investigations. ISDH staff is available for consult and can arrange conference calls to assist with complex situations, as needed and when requested.

5.2 Identify Potential Sources of Infection and Potentially Exposed Persons

Interview the case or, as necessary, parent/guardian, close family members, or others who may be able to provide pertinent information. Ask detailed questions about occupation and the types of job activities performed (e.g. hands-on involvement with people or students, staff members, etc.).

Identify all persons who had close contact (Section 3.3) with the case that could have resulted in exposure, and events (e.g., parties, sporting event, resuscitation) where close contact could have occurred during the period 7 days prior to case onset through 24 hours after initiation of appropriate antibiotics.

Obtain the name, address, and telephone number of exposed persons, and enter this information into the NBS case investigation. Date of birth, weight, and any history of drug allergies will also be needed if prophylaxis will be provided.

It is useful to ask whether any household, child care, or other close contact has recently had an illness suggestive of meningococcal disease; however, clusters of meningococcal disease are rare, even among household members of cases.

5.3 Environmental Evaluation

Generally, environmental evaluation is not necessary, given the close person-to-person contact required for transmission, although in outbreak settings an investigation may be warranted to identify environmental factors (disinfection practices, ventilation patterns, etc.) that may favor droplet transmission. Concurrent disinfection and terminal cleaning is required for areas that may have been contaminated by discharges from the nose and throat (e.g. surfaces in patient's hospital room). However, meningococci cannot survive long outside the body, so additional environmental cleaning at home, in classrooms or workplaces is not required.

Table 1. CSF Analysis

CSF Examination	Normal Findings	Bacterial	Aseptic/ Viral Meningitis
Gram Stain (results available within a few hours)	No organisms detected	Organism detected in approximately 80% of untreated cases **Meningococcal:** gram negative cocci in pairs (diplococci) ***Haemophilus influenza*e:** gram negative bacilli **Streptococcal:** gram positive cocci in chains or pairs **Staphylococcal:** gram positive cocci in clusters	No organism detected
CSF Appearance	Clear	Very cloudy or purulent	Clear to slightly cloudy
Glucose	40 – 70 mg/100 mL or approx. 60% of serum glucose levels	Low or less than 40% of serum glucose levels	Normal
Protein	20 – 40 mg/dL	High	Normal or slightly elevated
Cell Count	< 4 WBC's per cc	1000 – 100,000 WBC's*	> 5 to 500 WBC's
Cell Differential	Lymphocytes predominate (> 50%)	Neutrophils or monocytes (if early or treated case) predominate	Lymphocytes predominate (>50%)
Other Symptoms	No Rash	Petechial or purpuric lesions (meningococcal disease)	Maculopapular(enterovirus) Vesicular rash (herpes)

* ratio of 500:1 red blood cells (RBC) to white blood cells (WBC) indicates a traumatic tap and cell counts should not be used in the diagnosis

Table 2. Meningococcal Disease Investigation Worksheet

1. Date: Time:	2. Reporter:		
3. Medical Contact: (If different from reporter) Phone: ( ) Pager: ( )	Hospital Location: Phone: ( ) Pager: ( ) Other: ( )		
4. Patient Information Last Name:	First Name:	Date of Birth:	
Street Address:	City & Zip:	State:	County of Residence:

Date of onset: ___/___/___ First symptom experienced: _____

Status: ☐ Hospitalized; location: _____ Admit: ___/___/___ Discharge: ___/___/___

☐ Died: date of death: ___/___/___ ☐ Other (describe): _____

Symptoms	No	Unk	Yes	Comments / Specifics:
Fever (Highest temp:_____)				
Headache				
Stiff neck				
Photophobia				
Altered mental status, confusion				
Coma / Unresponsive				
Lethargic				
Nausea				
Vomiting				
Rash (describe)				
Other symptoms (list):				

Initial Treatment/ Testing

	No	Unk	Yes	Date	Time	Notes
Any antibiotic treatment started						
Lumbar puncture performed						
Blood culture specimen collected						

	CSF Result	Serum/Blood Result	Notes
Gram Stain:			
Color/Clarity:		[redacted]	
Protein:			
Glucose:			
RBC Count:			
WBC Count:			
Predominate cell type:			
Latex agglutination:		[redacted]	
Cryptococcal antigen:			
Other (specify):			

Additional Laboratory Testing

	Laboratory Performing Test	CSF Result	Serum/Blood Result
Bacterial Culture			
PCR Testing			

6. CONTROLLING FURTHER SPREAD

6.1 Education

Potentially exposed persons should be instructed to watch for fever, rash, fatigue, sensitivity to light, headache/stiff neck, loss of appetite, or vomiting. Should signs or symptoms develop within 1-10 days of exposure, average 3-4 days, they should seek medical care immediately.

6.2 Isolation

In addition to standard precautions, hospitalized cases should be placed under droplet precautions until at least 24 hours after initiation of effective antibiotic treatment.

6.3 Case Follow-up

Some of the antibiotics used for treatment do not reliably eradicate nasopharyngeal colonization. Unless rifampin, ceftriaxone, or ciprofloxacin are used, the patient should also be given prophylaxis with an effective antibiotic before hospital discharge.

6.4 Antibiotic Prophylaxis

Antibiotic prophylaxis should be recommended for all household members of confirmed or presumptive cases and other close contacts, as defined in section 3.1-3.3. Prophylaxis should be initiated as soon as possible, ideally <24 hours after index patient identification.[5] Prophylaxis should also be recommended to daycare contacts under certain circumstances (see section 7.1). It should not be recommended to persons who have had only brief or casual contact with the case, including in traditional classroom settings. Persons concerned about exposure should be advised that the risk of disease is extremely low. They should be further advised to be alert to signs and symptoms of illness, especially fever, and to seek medical care immediately should illness develop. For unusual situations in which expanded prophylaxis may be warranted, such as interactive contact or active coughing, contact ISDH immediately. Other unique prophylaxis situations are listed in section 7.

Persons who had close contact with the case during the 7 days prior to onset through 24 hours after initiation of appropriate antibiotics for the case should be offered prophylaxis. In general, prophylaxis should be recommended to contacts whose last exposure occurred within the 14 days prior to *the current date*. According to the Centers for Disease Control and Prevention (CDC), prophylaxis administered more than 14 days after the case onset is probably of limited or no value.[2] Acceptable prophylaxis is detailed on Table 3.

Table 3. Recommended prophylaxis for protection against meningococcal disease.[1]

Drug	Age	Dose	Duration	Cautions
Rifampin	<1 mo ≥1 mo	5 mg/kg, orally, every 12 h 15-20 mg/kg (maximum 600 mg), orally, every 12 h	2 days	Discussion with an expert for infants <1 month. Can interfere with the efficacy of oral contraceptives and some seizure and anticoagulation medications; may stain soft contact lenses. Not recommended in pregnant women.
Ceftriaxone	<15 y ≥15 y	125 mg, intramuscularly 250 mg, intramuscularly	Single dose	To decrease pain at injection site, dilute with 1% lidocaine.
Ciprofloxacin	≥1 mo	20mg/kg (maximum 500 mg), orally	Single dose	Not recommended for pregnant women. Use only if fluoroquinolone-resistant strains of *N. meningitidis* have not been identified in the community.
Azithromycin		10 mg/kg (maximum 500 mg)	Single dose	Not routinely recommended.

7. MANAGING SPECIAL SITUATIONS

7.1 Case Attends a Daycare Facility

If the case has attended any such facility during the seven (7) days before onset, then within 24 hours of the initial report:

1. The LHD should interview the facility operator to determine whether other cases of meningococcal disease occurred among children or staff during the past 90 days. The 90-day time frame is used to determine if the case may be part of an outbreak.
2. The parents of children who are in the same classroom as the case should be notified in writing of the occurrence of meningococcal disease in the facility (templates are available from ISDH). The notice should advise parents to:
   - Seek prophylaxis for their attending children without delay.
   - Monitor their children carefully for a two-week period following the notice for signs of illness, especially fever, and seek medical care immediately if illness should occur. Advise parents that an elevated risk may persist for up to two weeks following the occurrence of a case.
3. Instruct the day care operator to notify the LHD immediately if another person shows signs and symptoms of meningococcal disease in the next 90 days.
4. Advise staff members in the same classroom to obtain prophylaxis without delay.
5. Children and staff in other rooms are usually not at elevated risk, and do not need prophylaxis.

7.2 Unusual Cases in School Setting

For unusual situations in which expanded prophylaxis may be warranted, such as interactive contact or case patient with active coughing, contact the ISDH immediately.

7.3 Multiple Cases in a Defined Population within a 3-month Period

Outbreaks of meningococcal disease are rare; only about two percent of meningococcal disease cases are related to outbreaks.[3] Declaration of a meningococcal disease outbreak should be made on a case-by-case basis and depends on factors such as the setting of the outbreak (organization-based or community-based), the population at risk, and the expected incidence of meningococcal disease.[9] If multiple (two or three) confirmed, probable, or suspect cases of meningococcal disease of the same serogroup occur within a 3-month period among persons who have a common affiliation but not close contact, contact the ISDH Vaccine-Preventable Disease Epidemiologist immediately for consultation.

7.4 Troubleshooting Prophylaxis Availability

What if the contact's insurance refuses to cover the cost of prophylaxis?

Prophylaxis should be covered by all insurance policies in Indiana, though a copayment may be required. If the pharmacist cannot obtain authorization, the insurance company should be contacted directly for pre-approval.

Most prophylaxis options require only one to four doses of medication, and inexpensive (often free) generics for the recommended antibiotics are available. Inquire with the pharmacist about out-of-pocket cost; the total cost of the medication might be less than a copayment.

Either way, close contacts need to receive some form of prophylaxis within the recommended time window. Contact the Vaccine-Preventable Disease Epidemiologist to discuss other solutions, if needed.

8. Routine Vaccination Recommendations

8.1 Serogroup B Vaccination

The Food and Drug Administration (FDA) recently licensed two serogroup B meningococcal vaccines: MenB-FHbp (Trumenba®), a 3-dose series, and MenB-4C (Bexsero®), a 2-dose series. Both vaccines are approved for use in people 10–25 years of age. MenB vaccination recommendations are summarized in Table 4 of this document.

For additional information visit:
http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html.

8.2 Active Immunization for Serogroup A, C, W, Y Protection

The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination with quadrivalent (contains antigens from serogroups A, C, Y, and W-135) meningococcal conjugate vaccine such as MenACWY-D (Menactra®) or MenACWY-CRM (Menveo®) for all adolescents and young adults, with the first dose administered at ages 11-12 years and the second dose administered at age 16 years. Persons at increased risk for meningococcal disease (see Table 5) may need to receive a booster dose every 5 years if they remain at increased risk.

The conjugate vaccines are preferred to the quadrivalent meningococcal polysaccharide vaccine (MPSV4) in all individuals ≤55 years of age. Neither of the two meningococcal conjugate vaccines are licensed for use in persons >55 years of age; high-risk persons >55 years old may receive MPSV4 (Menomune®).[7] The ACIP, however, has indicated that some at-risk individuals older than 55 years, including those who have previously received meningococcal conjugate vaccine or for whom multiple doses of meningococcal vaccine are anticipated, may receive meningococcal conjugate vaccine, as it may produce a higher antibody response in these individuals.[10] Persons over age 55 who need to receive meningococcal vaccine should consult with a healthcare provider regarding which vaccine is appropriate for them.

Quadrivalent vaccines do not protect against serogroup B disease; see above for more information on serogroup B vaccination. Vaccination campaigns may be useful during an outbreak of serogroup A, C, Y, or W135 in a community. Review Table 5 for further guidance on meningococcal conjugate vaccine.

Table 4. Immunization Action Coalition Serogroup B Vaccine Recommendations

Meningococcal B Vaccine Recommendations by Age and Risk Factor

This document covers MenB vaccine. For information on vaccine that provides protection against meningococcal serogroup A, C, W, and Y disease, see www.immunize.org/catg.d/p2018.pdf.

Meningococcal Serogroup B Vaccines	
• Bexsero (MenB-4C, GlaxoSmithKline) • Trumenba (MenB-FHbp, Pfizer)	The two brands of MenB vaccines are not interchangeable. The series must be started and completed with the same brand of vaccine.

Recommendations for Meningococcal Serogroup B Vaccination (Category B) for People Who Are Not in a Risk Group	
WHOM TO VACCINATE	**VACCINATION SCHEDULE**
Teens and young adults ages 16 through 23 years who wish to be vaccinated. The preferred age for vaccination is 16 through 18 years.	Administer either • Bexsero: Give 2 doses, 4 weeks apart, or • Trumenba: Give 2 doses 6 months apart. If dose #2 is administered earlier than 6 months after dose #1, give a third dose at least 4 months after dose #2.

Risk-based Recommendations for Persons with Underlying Medical Conditions or Other Risk Factors	
WHOM TO VACCINATE	**VACCINATION SCHEDULE**
For people ages 10 years or older with • persistent complement component deficiencies[1] • anatomic or functional asplenia, including sickle cell disease, For people ages 10 years or older who • are present during outbreaks caused by serogroup B[2] • have prolonged increased risk for exposure (e.g., microbiologists routinely working with *Neisseria meningitidis*)	Administer either • Bexsero: Give 2 doses, 4 weeks apart, or • Trumenba: Give 3 doses on a 0-, 1–2-, and 6-month schedule.

1. Persistent complement component deficiencies include inherited or chronic deficiencies in C3, C5–C9, properdin, factor D, and factor H, or taking eculizumab (Soliris).
2. Seek advice of local public health authorities to determine if vaccination is recommended.

Source: Immunization Action Coalition. Retrieved from http://www.immunize.org/catg.d/p2035.pdf.

Table 5. Meningococcal Vaccine Recommendations by Age and Risk Factor for Serogroups A, C, W, or Y Protection.

Meningococcal ACWY Vaccine Recommendations by Age and Risk Factor

A separate vaccine is needed for protection against meningococcal serogroup B disease.

MenACWY = Menactra (Sanofi Pasteur) and Menveo (GlaxoSmithKline)
MenACWY-D = Menactra MenACWY-CRM = Menveo

Routine Recommendations for Use of Meningococcal A,C,W,Y Vaccine (MenACWY)

For preteens age 11 through 12 years	Give dose #1 of 2-dose MenACWY series. (Dose #2 is recommended at age 16 years.)
For teens age 13 through 15 years	Give catch-up dose #1 of 2-dose MenACWY series. (Dose #2 will be due at age 16 years.[1])
For teens at age 16 years	Give dose #2 of MenACWY.[1] (Separate from dose #1 by at least 8 weeks.)
Catch-up for teens age 17 through 18 years	If dose #2 not given at age 16 years, give dose #2 of MenACWY as catch-up.
Catch-up for teens age 16 through 18 years	If no history of prior vaccination with MenACWY, give 1 dose of MenACWY.
For first year college students living in residence halls	If no history of prior vaccination with MenACWY, give 1 dose of MenACWY. If history of 1 dose of MenACWY given when younger than age 16 years, give dose #2 of MenACWY.

Risk-based Recommendations for Persons with Underlying Medical Conditions or Other Risk Factors

TARGETED GROUP BY AGE/OR RISK FACTOR	PRIMARY DOSE(S)	BOOSTER DOSE(S)
Travelers to or residents of countries where meningococcal disease is hyperendemic or epidemic, people present during outbreaks caused by a vaccine serogroup,[2] and other people with prolonged increased risk for exposure (e.g., microbiologists routinely working with *Neisseria meningitidis*)		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose[3] at age 12–18 months. If possible, vaccination should begin at age 2 months.	If risk continues, give initial booster after 3 years followed by boosters every 5 years.[5]
For age 7 through 23 months who have not initiated a series of MenACWY	If age 7–8 months, initiate 2-dose series of Menveo[4] or, if age 9–23 months, give either Menveo or Menactra.[5] Separate the 2 doses by at least 12 weeks.[6]	
For age 2 years and older	Give 1 dose of either MenACWY vaccine.[5]	Boost every 5 years with MenACWY.[5,7,8]
People with persistent complement component deficiencies[9]		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose[3] at age 12–18 months. If possible, vaccination should begin at age 2 months.	Give MenACWY booster after 3 years followed by boosters every 5 years thereafter.[5]
For age 7 through 23 months who have not initiated a series of MenACWY	If age 7–8 months, initiate 2-dose series of Menveo[4] or, if age 9–23 months, give either Menveo or Menactra.[5] Separate the 2 doses by at least 12 weeks.	
For ages 2 years and older	Give 2 doses of MenACWY (either vaccine), 8 weeks apart.[5]	Boost every 5 years with MenACWY.[5,7,10]
People with HIV infection or functional or anatomic asplenia (including sickle cell disease)		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose[3] at age 12–18 months. If possible vaccination should begin at age 2 months.	Give MenACWY booster after 3 years followed by boosters every 5 years thereafter.[5,7]
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of Menveo.[4] Separate the 2 doses by at least 12 weeks.	
For ages 2 years and older	Give 2 doses of MenACWY (either vaccine), 8 weeks apart. If using Menactra, give dose #1 at least 4 weeks after final dose of PCV13.[5]	Boost every 5 years with MenACWY.[5,7,10]

FOOTNOTES

1. The minimum interval between doses of MenACWY is 8 weeks.
2. Seek advice of local public health authorities to determine if vaccination is recommended.
3. If available, use the same vaccine product for all doses in the series given to infants, including the booster doses.
4. If initiating vaccination with Menveo in a child age 7 through 23 months, dose 2 should be given no younger than age 12 months.
5. If Menactra is to be administered to a child with increased risk for meningococcal disease, it should be given either before, at the same visit, or at least 6 months after DTaP. Menveo can be given at any time before or after DTaP.
6. If child age 7 through 23 months will enter an endemic area in less than 3 months, give doses as close as 2 months apart.
7. If most recent dose given when younger than age 7 years, give booster after 3 years; if given at or after age 7 years, give booster after 5 years; then boost every 5 years thereafter.
8. Booster doses are recommended if the person remains at increased risk.
9. Persistent complement component deficiencies include C3, C5–C9, properdin, factor D, factor H, or taking Soliris (eculizumab).
10. If the person has a history of only 1 dose, give dose 2 at least 8 weeks after dose 1, then boost every 5 years.

Source: Immunization Action Coalition. Retrieved from http://www.immunize.org/catg.d/p2035.pdf.

9. REFERENCES & ADDITIONAL RESOURCES

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Other Resources

- http://www.cdc.gov/meningococcal/

10. UPDATE LOG

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