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Maine People Living Safe, Healthy and Productive Lives
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To: Maine Immunization Providers
From: Maine Immunization Program
Subject: Meningococcal Vaccines
Date: February 2018

In an effort to ensure that all Maine children are receiving the recommended type of meningococcal vaccine for their age and circumstance, the Maine Immunization Program would like to provide some clarity on the types that we offer and when they should be used.

Meningococcal Conjugate Vaccine

The Maine Immunization Program offers two brands of meningococcal conjugate vaccine that protect against serogroups A, C, W and Y-135 (MenACWY).

- Menveo ®
- Menactra ®

Who should get these vaccines?

- All adolescents should be vaccinated with one dose of MenACWY at ages 11 or 12 years and with a booster dose at age 16 years
- All teens who were vaccinated with MenACWY at ages 13 through 15 years need a booster dose at age 16 through 18 years (at least 8 weeks after the first dose)

Serogroup B Meningococcal Vaccine (MenB)

We also offer two brands of serogroup B meningococcal vaccine that protect against the serogroup B.

- Trumenba ®
- Bexsero ®

The MenB vaccine recommendations are split into two categories – Category A and Category B, based on the U.S. Centers for Disease Control evidence-based method based on the **Grading of Recommendations, Assessment, Development and Evaluation (GRADE)** approach.

Who should get these vaccines?

A **Category A** recommendation is made for all persons in an age- or risk-factor-based group.

Category A recommendations:

- People age 10 years or older who have functional or anatomic asplenia
- People age 10 years and older who have persistent complement component deficiency, including people taking eculizumab (Soliris)
- People age 10 years and older who are at risk during an outbreak caused by a vaccine serogroup, such as on a college campus
- Microbiologists who work with meningococcus bacteria in a laboratory

A **Category B** recommendation does not apply to everyone. It gives clinicians an opportunity to discuss the value of MenB vaccination with their patients to make a decision together. Clinicians and patients can make an informed decision about choosing to vaccinate based on risks and benefits for an individual patient.

Category B recommendations:

- People 16 through 23 years of age (ONLY 16 through 18 years when using state-supplied vaccine)

Please see enclosed aids from the Immunization Action Coalition for additional guidance in determining which meningococcal vaccines your patient will need.

As always, if you have any questions, please do not hesitate to contact our Educator Line to speak with one of our staff at : 207-287-9972.

Thank you for all you do to keep Maine free of vaccine-preventable diseases.

Meningococcal: Questions and Answers

Q&A

INFORMATION ABOUT THE DISEASE AND VACCINES

What causes meningococcal disease?

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. This bacterium has at least 13 different subtypes (serogroups). Five of these serogroups, A, B, C, Y, and W, cause almost all invasive disease. The relative importance of these five serogroups depends on geographic location and other factors. In the United States almost all meningococcal disease is caused by serogroups B, C and Y. Each serogroup accounts for about one third of reported cases.

How does meningococcal disease spread?

The disease is spread person-to-person through the exchange of respiratory and throat secretions (e.g., by coughing, kissing, or sharing eating utensils). Meningococcal bacteria can't live for more than a few minutes outside the body, so the disease is not spread as easily as the common cold or influenza.

How long does it take to show signs of meningococcal disease after being exposed?

The incubation period of meningococcal disease is 3 to 4 days, with a range of 2 to 10 days. Meningococcal bacteria can make a person extremely ill by infecting the blood (septicemia) or by infecting the fluid of the spinal cord and around the brain (meningitis). Because this disease progresses quickly, it is important to be diagnosed and start treatment as soon as possible.

What are the symptoms of meningococcal disease?

The most common symptoms are high fever, chills, lethargy, and a rash. If meningitis is present, the symptoms will also include headache and neck stiffness (which may not be present in infants); seizures may also occur. In overwhelming meningococcal infections, shock, coma, and death can follow within several hours, even with appropriate medical treatment.

How serious is meningococcal disease?

Meningococcal disease caused by any serogroup is very serious. About 10 to 15% of people with meningococcal disease die even with appropriate antibiotic treatment. Of those who recover, up to 20% suffer from some serious after-effects, such as permanent hearing loss, limb loss, or brain damage.

How is meningococcal disease diagnosed?

The diagnosis is made by taking samples of blood and spinal fluid from a person who is sick. The spinal fluid is obtained by performing a spinal tap, where a needle is inserted into the lower back. Any bacteria found in the blood or spinal fluid is grown in a medical laboratory and identified.

Meningococcal disease is uncommon in the United States, and the symptoms can be mistaken for other illnesses, which unfortunately can lead to delayed diagnosis and treatment.

Can't meningitis be caused by a virus too?

Yes. The word "meningitis" refers to inflammation of the tissues covering the brain and spinal cord. This inflammation can be caused by viruses and fungi, as well as bacteria. Viral meningitis is the most common type; it has no specific treatment but is usually not as serious as meningitis caused by bacteria.

Is there a treatment for meningococcal disease?

Meningococcal disease can be treated with antibiotics. It is critical to start treatment early.

How common is meningococcal disease in the United States?

Fewer than 700 cases of meningococcal disease were reported each year since 2010 in the United States. An estimated average 80 deaths from meningococcal disease occurred each year in the United States since 2010.

The disease is most common in children younger than 5 years (particularly children younger than age 1 year), people age 16–21 years, and people age 65 years and older.

What people are at special risk for meningococcal disease?

For all meningococcal serogroups risk factors include age, having a damaged or missing spleen, persistent

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www.immunize.org/catg.d/p4210.pdf • Item #P4210 (8/15)

complement component deficiency (an immune system disorder), and occupation as a microbiologist in a laboratory that works with meningococcal isolates.

Certain groups are at increased risk for meningococcal serogroups A, C, Y, and W but not serogroup B. These risk factors include travel to places where meningococcal disease is common (such as certain countries in Africa and in Saudi Arabia), and college freshmen who live in a dormitory (see question below for more on college students). Other risk factors for serogroups A, C, Y and W include having a previous viral infection, living in a crowded household, having an underlying chronic illness, and being exposed to cigarette smoke (either directly or second-hand).

How common is meningococcal disease in the world?

Meningococcal disease occurs throughout the world, but is more common in the area of Africa known as the "meningitis belt." Serogroup A is responsible for most of the meningococcal disease in sub-Saharan Africa. This serogroup is uncommon in the United States.

Can you get meningitis more than once?

Yes. Meningitis can be caused by different serogroups of the meningococcal bacterium, by other bacteria such as *Streptococcus* and *Haemophilus*, as well as by viruses and fungi. Being vaccinated against *Neisseria meningitidis* or having had the disease will not protect you against meningitis from other bacteria or viruses.

If a child is diagnosed with meningococcal disease, can anything be done to protect the other children with whom he has contact?

Individuals who have been exposed to a person with bacterial meningitis can be protected by being started on a course of antibiotics immediately (ideally within 24 hours of the patient being diagnosed). This is usually recommended for household contacts and children attending the same day care or nursery school. Older children and adults (e.g., who are in the same school or church) aren't usually considered exposed unless they have had very close contact with the infected person (e.g., kissing or sharing a glass).

In addition to the antibiotic treatment, vaccination may be recommended for people 2 months of age and older if the person's infection is caused by meningococcus serogroup A, C, Y, or W-135, which are contained in 3 of the 4 meningococcal vaccines available in the United States.

What meningococcal vaccines are available in the United States?

There are 2 types of meningococcal vaccine available in the United States. Vaccines for meningococcal serogroups A, C, W and Y are composed of polysaccharide (sugar molecules) from the surface of the meningococcal bacteria. Meningococcal vaccines in which the polysaccharide is chemically bonded ("conjugated") to a protein produce better protection and are more effective in young children than the original polysaccharide vaccine. Vaccines for meningococcal serogroup B (MenB) are composed of proteins also found in the surface of the bacteria. Neither type of vaccine contains live meningococcal bacteria.

Meningococcal polysaccharide or conjugate vaccines provide no protection against serogroup B disease and MenB vaccines provide no protection against serogroup A, C, W or Y disease. For protection against all 5 serogroups of meningococcus it is necessary to receive both vaccines.

Meningococcal Vaccines Licensed in U.S.

TRADE NAME	TYPE OF VACCINE	SEROGROUPS INCLUDED	YEAR LICENSED	APPROVED AGES
Menomune	Polysaccharide	A, C, W, Y	1981	2 years and older
Menactra	Conjugate	A, C, W, Y	2005	9 months–55 years*
Menveo	Conjugate	A, C, W, Y	2010	2 months–55 years*
MenHibrix	Conjugate	C, Y and Hib	2012	6 weeks–18 months
Trumenba	Protein	B	2014	10–25 years†
Bexsero	Protein	B	2015	10–25 years†

*may be given to people age 56 years or older
†may be given to people age 26 years or older

How is this vaccine given?

Meningococcal polysaccharide vaccine (MPSV4) is given as an injection into the fatty tissue of the upper arm. Meningococcal conjugate vaccines (MCV4) are given in a leg muscle of a young child or the deltoid

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(arm) muscle of an older child or adult. MenB vaccines are given in the deltoid muscle.

Who should get the meningococcal vaccine?

Certain groups should receive both MCV4 and MenB vaccines. Others are recommended to receive MCV4 only. MPSV4 is recommended only for certain people older than 55 years.

MCV4 is recommended for these groups:

- All children and teens, ages 11 through 18 years
- People younger than 22 years of age if they are or will be a first-year college student living in a residential hall
- People age 2 months and older who have a damaged or missing spleen (MenHibrix may be used for children age 6 weeks through 18 months in this group)
- People age 2 months and older who have persistent complement component deficiency (an immune system disorder), or are at risk during an outbreak caused by a vaccine serogroup (MenHibrix may be used for children age 6 weeks through 18 months in these groups)
- People age 2 months and older who reside in or travel to certain countries in sub-Saharan Africa as well as to other countries for which meningococcal vaccine is recommended (e.g., travel to Mecca, Saudi Arabia, for the annual Hajj).
- People working with meningococcus bacteria in laboratories

MenB is recommended for these groups:

- People age 10 years and older who have a damaged or missing spleen
- People age 10 years and older who have persistent complement component deficiency (an immune system disorder), or are at risk during an outbreak caused by a vaccine serogroup
- People working with meningococcus bacteria in laboratories

MenB vaccines are not routinely recommended for all adolescents or college students. However, at their June 2015 meeting ACIP voted to recommend that a MenB vaccine series may be administered to persons 16 through 23 years of age with a preferred age of vaccination of 16 through 18 years. This permissive (Category B) recommendation allows the clinician to make a MenB vaccine recommendation based on the risk and benefit for the individual patient.

Should college students be vaccinated against meningococcal disease?

The MCV4 vaccine is recommended for previously unvaccinated first-year college students, age younger than 22 years, who are or will be living in a residence hall. Some colleges and universities require incoming freshmen and others to be vaccinated with MCV4; some may also require that a dose of MCV4 have been given since the age of 16 years. MCV4 may be available from the college health service.

Although several small MenB outbreaks have occurred on college campuses since 2013, college students in general are not at higher risk of MenB then persons of the same age who are not college students. Consequently, ACIP does not routinely recommend MenB vaccination for college students. However, college students may choose to receive MenB vaccine to reduce their risk should a MenB outbreak occur.

Why doesn't ACIP recommend MenB vaccination for all adolescents or all college students?

Although a person with MenB disease can die or be permanently scarred or disabled, and may incur staggering medical expenses, MenB disease is rare and MenB vaccine is very expensive. A recommendation to vaccinate all adolescents or all college students is not cost-effective.

How many doses of meningococcal vaccine are needed?

For MCV4 vaccines the number of doses recommended depends on the age when the vaccine is given and the presence of certain medical conditions or risk factors. All adolescents should be vaccinated with one dose of MCV4 at ages 11 or 12 years and with a booster dose at age 16 years. All teens who were vaccinated with MCV4 at ages 13 through 15 years need a booster dose at age 16 through 18 years (at least 8 weeks after the first dose). First-year college students younger than 22 years who are living in a residential hall should get an MCV4 booster dose if their previous dose was given before age 16 years. People ages 2 months and older who have certain risk factors such as no spleen or a damaged spleen, or persistent complement component deficiency (an immune system disorder), may need more than one dose. In addition, vaccinated people who remain at risk, such as people without a spleen, microbiologists who work with meningococcus, or

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those who travel repeatedly to parts of Africa, should receive a booster dose of MCV4 every 5 years.

A series of MenB vaccine is either 2 (for Bexsero) or 3 (for Trumenba) doses. Booster doses of MenB vaccine following the initial series are currently not recommended, including for people with no spleen or persistent complement component deficiency.

How soon after their first MCV4 dose should people who remain at risk for meningococcal disease be vaccinated again?

The time between the primary (initial) doses(s) of MCV4 and the first booster varies. Children who received their primary MCV4 dose(s) before their seventh birthday should get their first booster 3 years after their primary dose(s). Children who received their primary MCV4 dose(s) at or after age 7 years and all adults should get MCV4 boosters 5 years after their primary dose(s).

What are the side effects of this vaccine?

Up to about half of people who get meningococcal vaccines have mild side effects, such as redness or pain where the shot was given. These symptoms usually last for one or two days and are more common after MCV4 than after MPSV4. A small percentage of people who receive the vaccine develop a fever. Severe reactions, such as a serious allergic reaction, are very rare.

More than 60,000 persons have received MenB vaccines during clinical trials or for outbreak control on college campuses. The most common side effect was pain at the injection site, which was reported by about 80% of recipients. The Vaccine Adverse Event Reporting System (VAERS) and other vaccine safety systems will carefully monitor MenB vaccine safety as they do for other U.S.-licensed vaccines.

How effective is this vaccine?

The MPSV4 vaccine is 85 percent to 100 percent effective at preventing infection from the subtypes of meningococcus found in the vaccine. Based on results of laboratory studies, MCV4 is believed to be at least as effective as MPSV4.

Because of the low incidence of serogroup B meningococcal disease, MenB vaccine efficacy estimates were based on demonstration of an immune response after vaccination. From 63% to 88% of recipients of a full series of MenB vaccine develop a protective level of antibody against representative strains of serogroup B meningococcus.

Who should not receive meningococcal vaccine?

These groups should not receive either type of meningococcal vaccine:

- People who have had a serious allergic reaction to a previous dose of either meningococcal vaccine or to one of the vaccine components. The packaging of some meningococcal vaccines may contain latex. Information on the contents of each vaccine is included with each vaccine.
- People who are moderately or severely ill.

Can a pregnant woman get meningococcal vaccine?

Studies of vaccination with MPSV4 during pregnancy have not documented adverse effects among either pregnant women or newborns. Post-licensure safety data suggest no concerns with the safety of MCV4 during pregnancy. Pregnancy is not considered to be a contraindication to either MPSV4 or MCV4. Although experience with MenB vaccines is limited they have not been shown to be detrimental to a pregnant woman or fetus.

Can the vaccine cause meningococcal disease?

No. Only the *Neisseria meningitidis* bacterium can cause meningococcal disease. Meningococcal vaccines contain only the sugar capsule or capsule protein of the microbe.

Meningococcal B Vaccine: Q&A
CDC Answers Your Questions

Experts from the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention answer your questions about meningococcal serogroup B (MenB) vaccine.

Which meningococcal vaccines are available in the United States?

Since 2005, two types of meningococcal vaccines have been available in the United States that protect against meningococcal serogroups A, C, W, and Y: 1) meningococcal polysaccharide vaccine (MPSV4, Menomune,* Sanofi Pasteur) which is made up of polysaccharide (sugar molecules) from the surface of the meningococcal bacteria; and 2) meningococcal conjugate vaccines (MenACWY, Menactra, Sanofi Pasteur; Menveo, GSK) in which the polysaccharide is chemically bonded ("conjugated") to a protein to produce better protection.

More recently, two vaccines have become available that offer protection from meningococcal serogroup B disease (MenB, Bexsero, GSK; Trumenba, Pfizer). These vaccines are composed of proteins also found on the surface of the bacteria. Both MenB vaccines are approved by the Food and Drug Administration for use in persons 10 through 25 years of age.

MenACWY provides no protection against serogroup B disease and meningococcal serogroup B vaccines (MenB) provide no protection against serogroup A, C, W, or Y disease. For protection against all 5 serogroups of meningococcus, it is necessary to receive MenACWY *and* MenB.

Which individuals in risk groups are recommended to be vaccinated against meningococcal serogroup B disease?

CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine MenB vaccination of the following individuals in certain risk groups:

- People age 10 years and older who have functional or anatomic asplenia
- People age 10 years and older who have persistent complement component deficiency, including people taking eculizumab (Soliris)
- People age 10 years and older who are at risk during an outbreak caused by a vaccine serogroup, such as on a college campus
- Microbiologists who work with meningococcus bacteria in a laboratory

Administration of MenB vaccine in persons older than 25 years of age is an off-label use. Clinicians may choose to use vaccines off-label if they believe it would be of benefit to their patients.

Which individuals are recommended to be vaccinated against meningococcal serogroup B disease who are not in risk groups?

ACIP recommends that a MenB vaccine series may be administered to people 16 through 23 years of age with a preferred age of vaccination of 16 through 18 years. This Category B recommendation gives clinicians an opportunity to discuss the value of MenB vaccination with their patients to make a decision together about the individual's need or desire for the vaccine based on risks, benefits, and wish for protection from the disease. Because it is a Category B recommendation, MenB vaccination is covered by the Vaccines for Children Program for anyone who is eligible. Under the Affordable Care Act, private insurance must also cover the costs of both Category A and B recommended vaccines.

What is the difference between a Category A and Category B recommendation?

A Category A recommendation is made for all persons in an age- or risk-factor-based group. The meningococcal conjugate vaccine recommendation for all preteens at 11–12 years of age is an example of a Category A recommendation. A Category B recommendation does not apply to everyone, but in the context of a clinician-patient interaction, vaccination may be found to be appropriate for a person as noted above for MenB vaccination of healthy adolescents.

Does the Affordable Care Act (ACA) require health plans (non-grandfathered) to provide benefit coverage on Category B recommended vaccines?

Yes. ACA requires coverage of vaccines with both Category A and B recommendations. The Vaccines for Children Program also includes vaccines with a Category A and B recommendations.

Should college students be vaccinated against meningococcal B disease?

Although several small meningococcal serogroup B disease outbreaks have occurred on college campuses since 2013, college students in general are not at higher risk of meningococcal B disease than persons of the same age who are not college students. Consequently, ACIP does not routinely recommend MenB vaccination for college students. However, college students may choose to receive MenB vaccine to reduce their risk of serogroup B meningococcal disease.

Should international travelers receive both meningococcal conjugate vaccine and meningococcal serogroup B vaccine?

Travelers are not considered to be a group at increased risk for serogroup B meningococcal disease and are not recommended to receive serogroup B vaccine. Meningococcal conjugate vaccine (MenACWY) continues to be recommended for certain international travelers (residents of and travelers to sub-Saharan Africa and the Hajj in Saudi Arabia).

What is the schedule for administering MenB vaccine?

Bexsero is a 2-dose series with dose #2 given at least 1 month after dose #1. Trumenba

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**As of October 2017, MPSV4, Menomune, is no longer available in the U.S.*

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is either a 2-dose series with doses administered at least 6 months apart or a 3-dose series with dose #2 and dose #3 administered 2 and 6 months after dose #1. The ACIP recommends that persons at increased risk of meningococcal serogroup B disease (complement component deficiency, functional or anatomic asplenia, at risk during an outbreak of meningococcal B disease and microbiologists) receive either the 2-dose Bexsero series or the 3-dose Trumenba series. Persons not at increased risk (such as healthy adolescents and young adults) can receive either the 2-dose Bexsero series or the 2-dose Trumenba series.

What is the least amount of time allowable between doses (minimum intervals) when administering either of the MenB vaccines?

Neither ACIP nor the CDC meningococcal subject matter experts have addressed this issue. So we must assume that the routinely recommended intervals are also the minimum intervals (see previous question). It is important to use these intervals when scheduling doses. In general, if these intervals are violated, CDC recommends that the dose can be counted and does not need to be repeated. The 2-dose Trumenba series is the one exception to that rule; if the second dose is administered earlier than 6 months after the first dose, an additional (third) dose should be administered at least 4 months after the second dose.

Can the MenB series be completed with a different MenB brand from the one the series was begun with?

No. You may not switch MenB vaccines in order to complete a series. The series must be started and completed with the same MenB brand.

I have a patient who was given Trumenba in August. Two months later she was given a dose of Bexsero. How should I proceed with her MenB vaccination series? We stock both vaccines.

Since the ACIP meningococcal serogroup B vaccine recommendations state that the same vaccine must be used for all doses in the MenB series, the clinician needs to complete a series with one or the other vaccine. If a non-high risk person has already received 1 dose of Bexsero and 1 of Trumenba, then pick a brand and finish a recommended schedule with that brand. Ignore the extra dose of the other product that was already administered. If you choose to use Bexsero, it should be separated from the previous dose of Bexsero by one month. If you choose to use Trumenba, it should be separated from the previous dose of Trumenba by 6 months.

We have a 1-year-old with congenital asplenia. He already received a series of meningococcal conjugate vaccine. Should we also give him MenB vaccine?

Use of either meningococcal serogroup B vaccine in persons younger than age 10 years is off-label in the U.S. There is currently no ACIP recommendation for use of this vaccine for this age group. However, Bexsero brand meningococcal B vaccine has been studied in children and is approved for children as young as 2 months of age by the European Medicines Agency (the European version of the U.S. Food and Drug Administration). It is routinely recommended for infants in the United Kingdom (see www.nhs.uk/conditions/vaccinations/pages/meningitis-b-vaccine.aspx for details). A clinician may choose to use a vaccine off-label if, in their opinion, the benefit of the vaccine exceeds the risk from the vaccine. Product information for Bexsero can be found on the European Medicines Agency website at www.ema.europa.eu/ema. These doses may not be covered by insurance.

Can meningococcal conjugate (MenACWY) and MenB vaccines be given at the same visit?

Yes. Meningococcal conjugate and MenB vaccines can be given at the same visit or at any time before or after the other.

Which groups of patients should receive a booster dose of MenB vaccine after completion of the series?

ACIP does not currently recommend booster doses of MenB vaccine for any group.

By what route should meningococcal B vaccines be administered?

MenB vaccines are given by the intramuscular route.

What are the contraindications and precautions to MenB vaccine?

As with all vaccines, a severe allergic reaction to a vaccine component or a reaction following a prior dose is a contraindication to subsequent doses. The tip caps of the Bexsero pre-filled syringes contain natural rubber latex which may cause allergic reactions in latex-sensitive individuals. The only precaution for administering MenB vaccine is the presence of a moderate or severe acute illness. Vaccination should be deferred until the illness improves.

What adverse reactions have been reported after MenB vaccine?

For both MenB vaccines, the most common adverse reactions observed in clinical trials were local reactions, including pain at the injection site (83%–85%), erythema, and swelling.

How should MenB vaccines be stored?

MenB vaccines should be stored refrigerated at 2°C to 8°C (36°F to 46°F). Do not freeze the vaccines. Discard any vaccine that has been exposed to freezing temperature. Protect the vaccine from light.

REFERENCES

CDC. Use of Serogroup B Meningococcal Vaccines in Persons Aged ≥10 Years at Increased Risk for Serogroup B Meningococcal Disease: Recommendations of the Advisory Committee on Immunization Practices, 2015. *MMWR* 2016;64(No.22):608-12.

CDC. Use of Serogroup B Meningococcal Vaccines in Adolescents and Young Adults: Recommendations of the Advisory Committee on Immunization Practices, 2015. *MMWR* 2015;64(No.41):1171-6.

CDC. Updated Recommendations for Use of MenB-FHbp Serogroup B Meningococcal Vaccine — Advisory Committee on Immunization Practices, 2016. *MMWR* 2017;66(No.19):509-13.

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

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

MenACWY = Menactra (Sanofi Pasteur) and Menveo (GlaxoSmithKline)
MenACWY-D = Menactra **Hib-MenCY** = MenHibrix (GlaxoSmithKline)
MenACWY-CRM = Menveo **MPSV** = Menomune (Sanofi Pasteur)

Routine Recommendations for Quadrivalent Meningococcal Conjugate 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, age 19 through 21 years, 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,[2] people present during outbreaks caused by a vaccine serogroup,[3] 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 MenACWY-CRM or Hib-MenCY,[4] 8 weeks apart, and a 4th dose at 12–15 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.
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of MenACWY-CRM[5] or HibMenCY[4,6] or, if 9–23 months, MenACWY-D.[7] Separate the 2 doses by at least 12 weeks.[8]	
For age 2 through 55 years	Give 1 dose of MenACWY.	Boost every 5 years with MenACWY.[9,10]
For age 56 years and older	If no previous MenACWY dose and either short-term travel or outbreak-related, give 1 dose of MPSV; all others, give 1 dose of MenACWY.	Boost every 5 years with MenACWY.[10]
People with persistent complement component deficiencies[11]		
For age 2 through 6 months	Give 3 doses of MenACWY-CRM or Hib-MenCY, 8 weeks apart, and a 4th dose at 12–15 months. If possible, vaccination should begin at age 2 months.	Give MenACWY booster after 3 years followed by boosters every 5 years thereafter.
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of MenACWY-CRM[5] or Hib-MenCY[6] or, if age 9–23 months, MenACWY-D.[7] Separate the 2 doses by at least 12 weeks.	
For ages 2 through 55 years	Give 2 doses of MenACWY, 8 weeks apart.	Boost every 5 years with MenACWY.[9,12]
For age 56 years and older	Give 2 doses of MenACWY, 8 weeks apart.	Boost every 5 years with MenACWY.[12]
People with HIV infection or functional or anatomic asplenia (including sickle cell disease)		
For age 2 through 6 months	Give 3 doses of MenACWY-CRM or Hib-MenCY, 8 weeks apart, and a 4th dose at 12–15 months. If possible vaccination should begin at age 2 months.	Give MenACWY booster after 3 years followed by boosters every 5 years thereafter.[9]
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of MenACWY-CRM[5] or Hib-MenCY.[6] Separate the 2 doses by at least 12 weeks. Or, if using MenACWY-D, give dose #1 at least 4 weeks following completion of pneumococcal conjugate vaccine series, and dose #2 at least 12 weeks after dose #1.[7]	
For ages 2 through 55 years	Give 2 doses of MenACWY, 8 weeks apart.	Boost every 5 years with MenACWY.[9,12]
For age 56 years and older	Give 2 doses of MenACWY, 8 weeks apart.	Boost every 5 years with MenACWY.[12]

FOOTNOTES

1. The minimum interval between doses of MenACWY is 8 weeks.
2. Prior receipt of Hib-MenCY is not sufficient for children traveling to the Hajj or African meningitis belt as it doesn't provide protection against serogroups A or W.
3. Seek advice of local public health authorities to determine if vaccination is recommended.
4. Children ages 2 through 18 months who are present during outbreaks caused by serogroups C or Y may be given an age-appropriate series of Hib-MenCY.
5. If initiating vaccination with MenACWY-CRM in a child age 7 through 23 months, dose 2 should be given no younger than age 12 months.
6. Hib-MenCY is not licensed for use in children age 18 months or older.
7. If MenACWY-D is to be administered to a child with increased risk for meningococcal disease, it should be given either before or concomitantly with DTaP.
8. 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.
9. 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.
10. Booster doses are recommended if the person remains at increased risk.
11. Persistent complement component deficiencies include C3, C5–C9, properdin, factor D, factor H, or taking Soliris (eculizumab).
12. 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.

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www.immunize.org/catg.d/p2018.pdf ▪ Item #P2018 (12/16)

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.

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