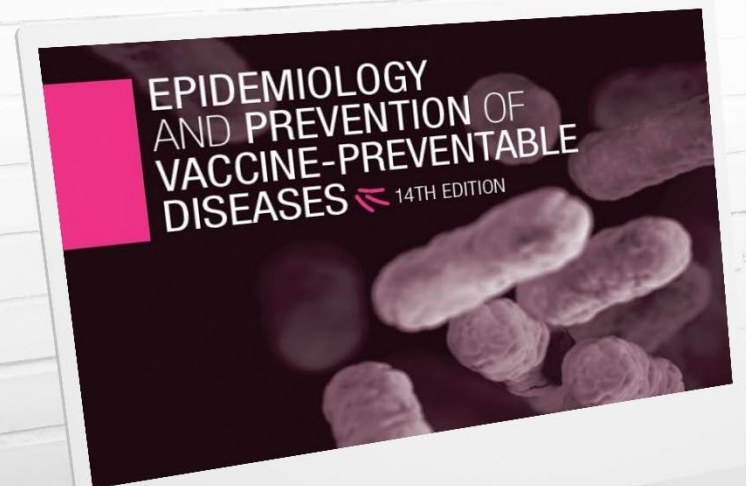


# Meningococcal Disease and Meningococcal Vaccines

Pink Book Web-on-Demand Series

Janelle King, MPH, BSN, RN  
Nurse Educator  
Immunization Services Division





## Learning Objectives

- Describe the fundamental principles of the immune response.
- Describe immunization best practices.
- Describe an emerging immunization issue.
- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Locate current immunization resources to increase knowledge of team's role in program implementation for improved team performance.

# Continuing Education Information

- To claim continuing education (CE) for this course, please follow the steps below by July 1, 2026.
- Search and register for course **WD4810-080124** in **CDC TRAIN**.
- Pass the post-assessment at 80%.
- Complete the evaluation.
- Visit “Your Learning” to access your certificates and transcript.
- If you have any questions, contact **CDC TRAIN** at [train@cdc.gov](mailto:train@cdc.gov) or CE Coordinator, Melissa Barnett, at [MBarnett2@cdc.gov](mailto:MBarnett2@cdc.gov)

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# Disclosure Statements

- In compliance with continuing education requirements, all planners and presenters must disclose all financial relationships, in any amount, with ineligible companies during the previous 24 months as well as any use of unlabeled product(s) or products under investigational use.
- CDC, our planners, and content experts, wish to disclose they have no financial relationship(s) with ineligible companies whose primary business is producing, marketing, selling, reselling, or distributing healthcare products used by or on patients.
- Content will not include any discussion of the unlabeled use of a product or a product under investigational use except for Janelle King's discussion of the use of meningococcal vaccine in a manner recommended by the Advisory Committee on Immunization Practices, but not approved by the Food and Drug Administration.
- CDC did not accept financial or in-kind support from any ineligible company for this continuing education activity.

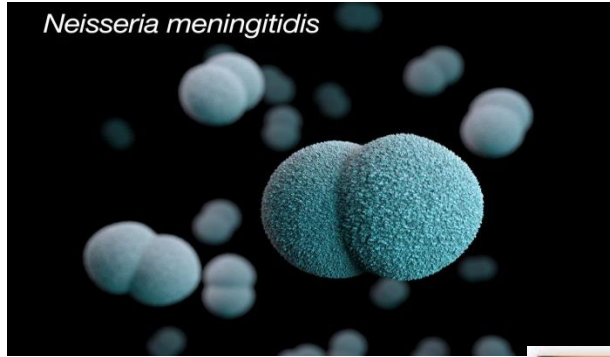
# Disclosure Statements

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

**1**

# **Meningococcal Disease**

# Meningococcal Disease (1)



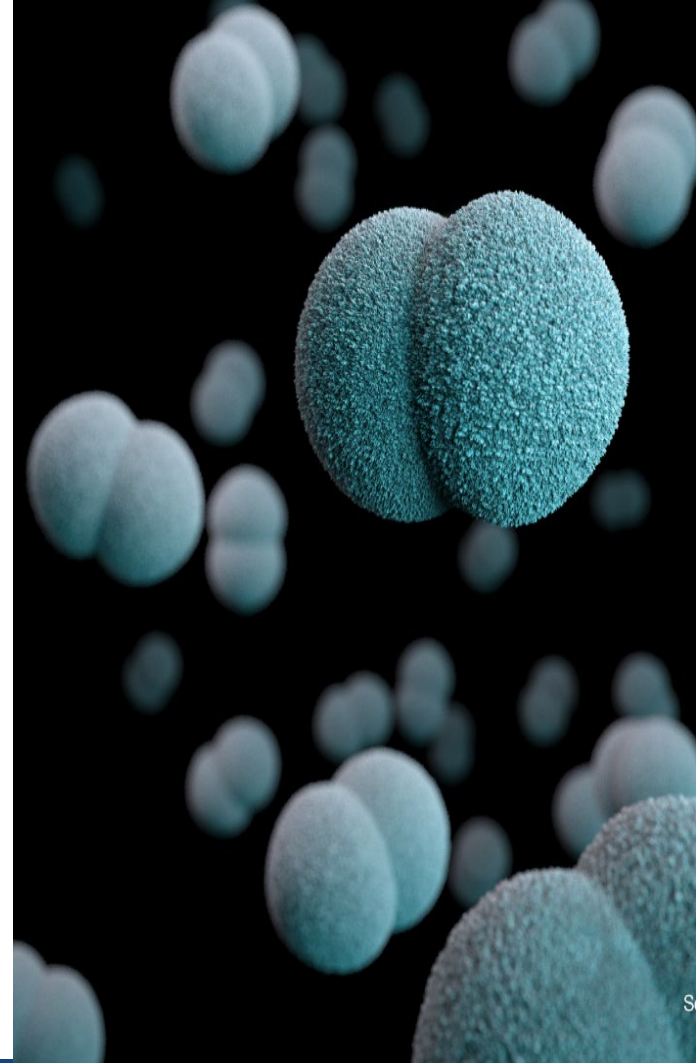
**Meningococcal disease is found globally**





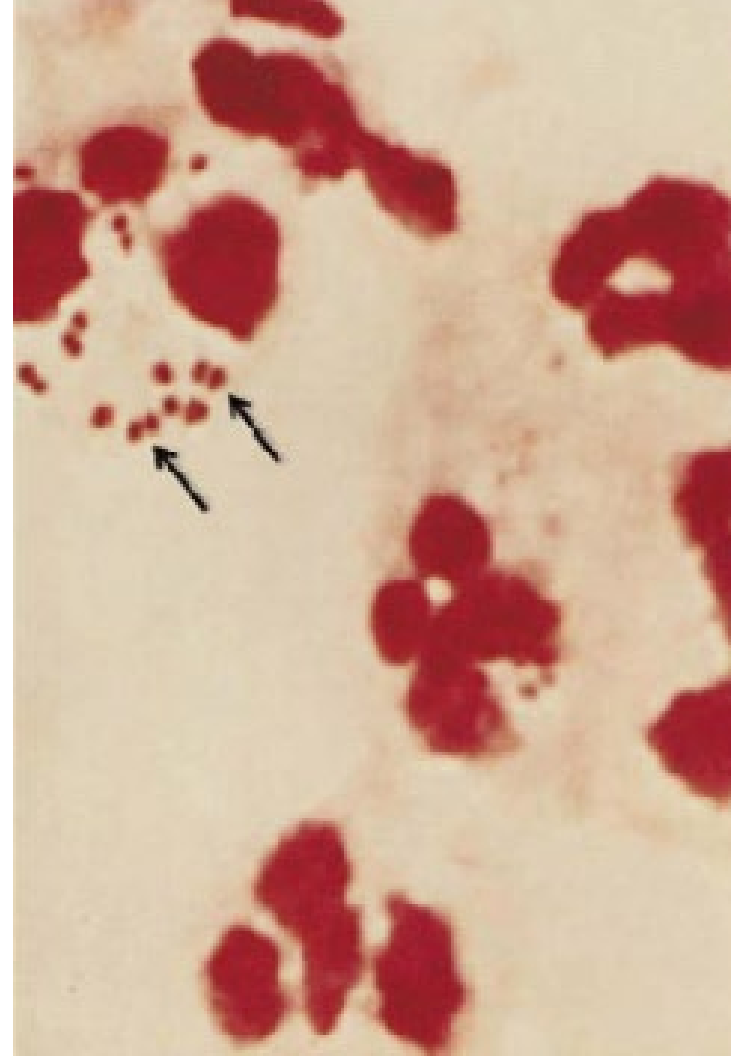
# Meningococcal Disease (2)

- **Clinical presentations primarily meningitis, bacteremia, or both**
- **Complications**
  - 20% with long-term disabilities
  - 10%–15% fatality rate
  - Up to 40% in meningococcal bacteremia
- **Less common presentations**
  - Septic arthritis
  - Conjunctivitis
  - Urethritis



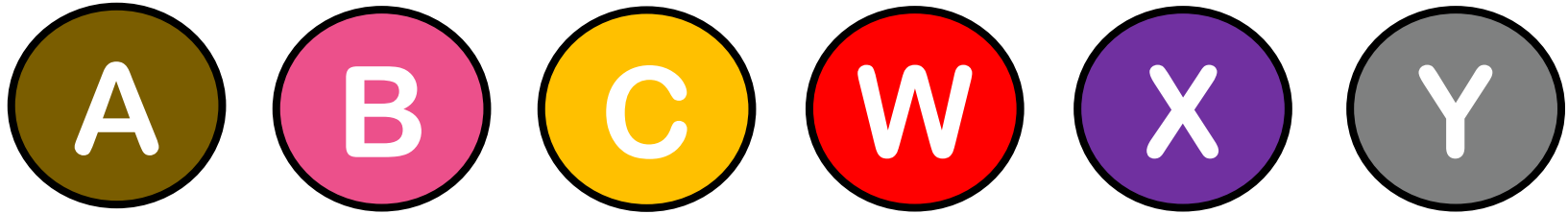
# *Neisseria meningitidis* (1)

- **Aerobic gram-negative bacteria**
- **Key antigens**
  - Outer membrane protein
  - Polysaccharide capsule
- **Spread by respiratory droplets or direct contact with respiratory secretions**

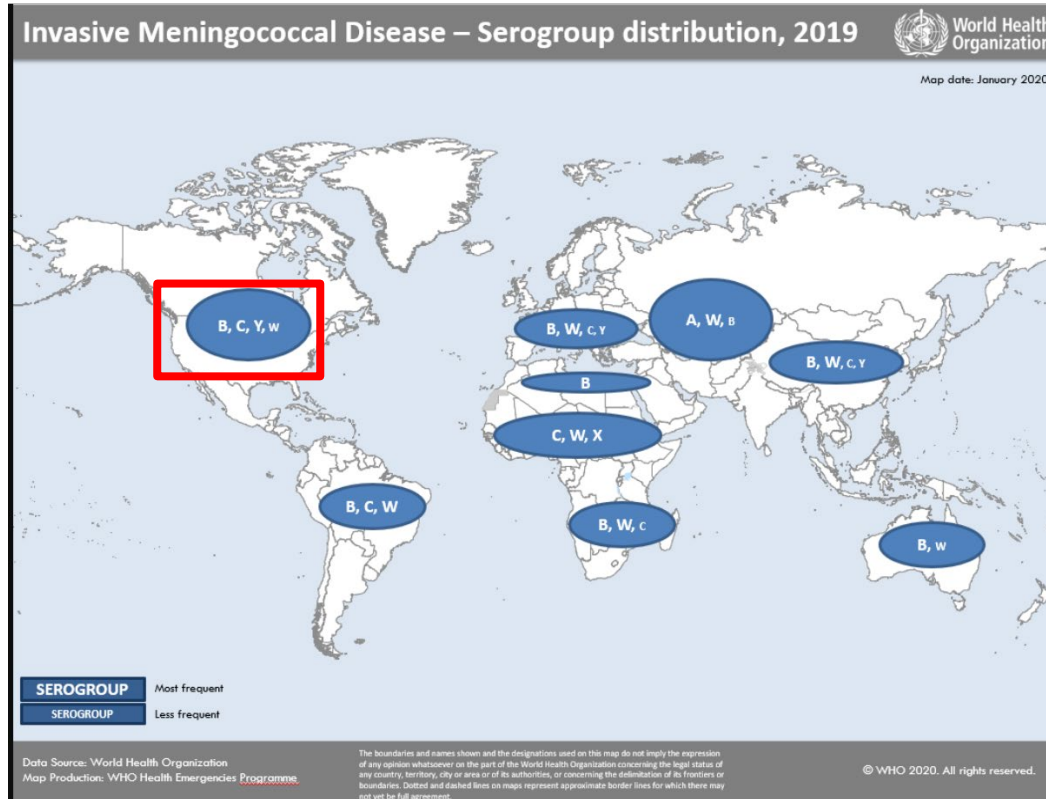


## *Neisseria meningitidis* (2)

- Six serogroups cause most meningococcal disease



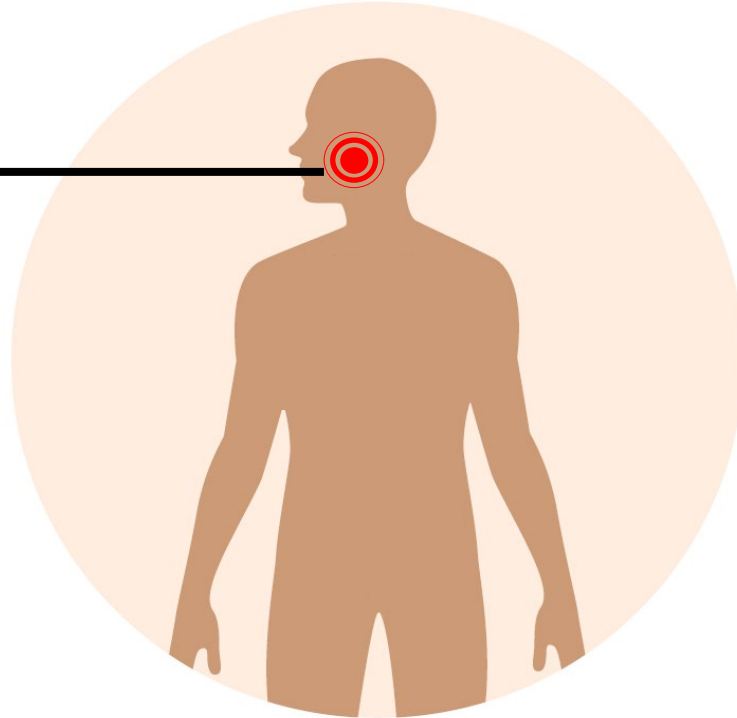
# Neisseria meningitidis Serogroup Distribution



Information from: [9789240017481-eng.pdf\(who.int\)](https://www.who.int/publications/m/item/9789240017481-eng.pdf)

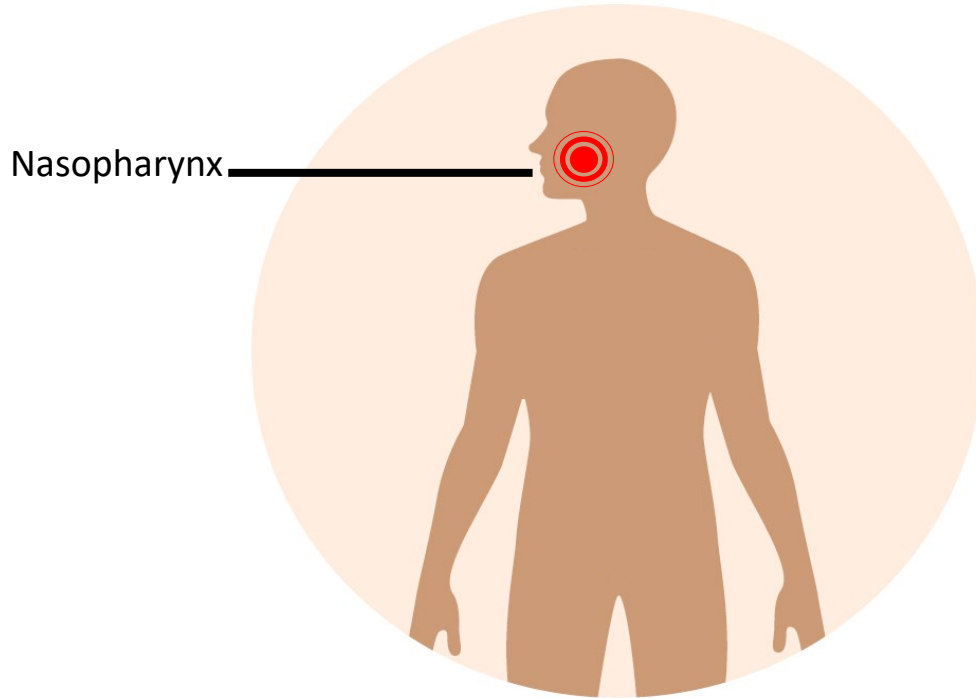
# Transmission of *Neisseria meningitidis* (1)

Nasopharyngeal  
carriage



**About 10% of adolescents and adults are asymptomatic nasopharyngeal carriers.**

## Transmission of *Neisseria meningitidis* (2)



- **Transmission:**  
Respiratory droplets  
or direct contact with  
respiratory secretions
- **Limited communicability:**  
2–4 cases per 1000  
household members at risk

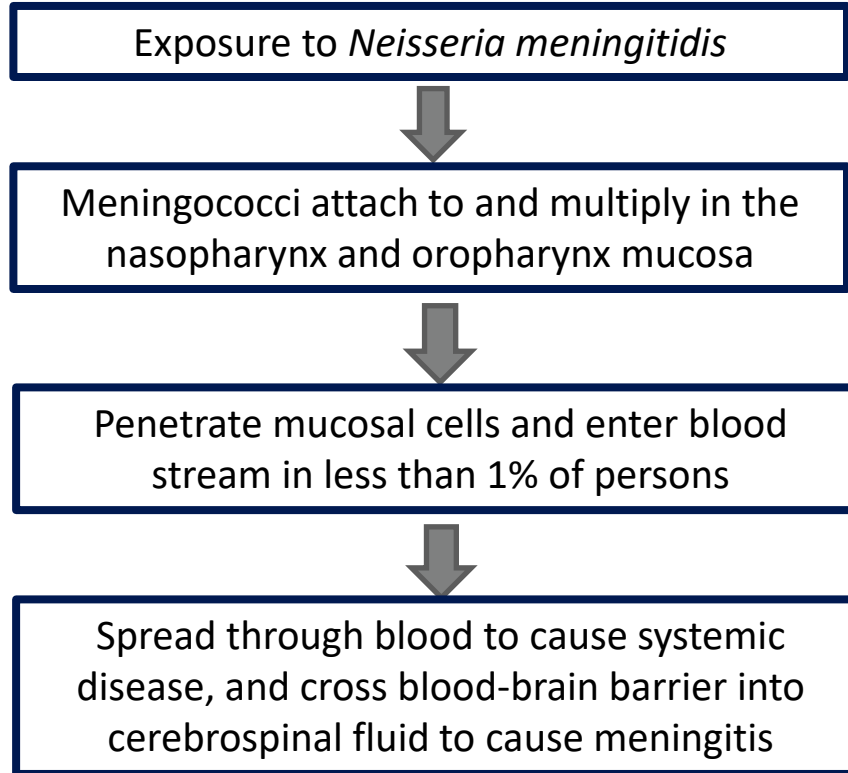
## Transmission of *Neisseria meningitidis* (3)



Can occur throughout the year,  
but incidence is highest in  
late winter and early spring



# Meningococcal Disease Pathogenesis





# Clinical Manifestations

- **Incubation period 3–4 days** (range 1–10 days)
- **Common clinical manifestations:**
  - Meningitis
  - Bacteremia/septicemia
- **Other presentations:**
  - Septic arthritis
  - Conjunctivitis
  - Urethritis

# Meningococcal Meningitis



Fever



Stiff neck



Headache



Confusion



Increased sensitivity to light



Nausea and vomiting

# Meningococcal Bacteremia/Septicemia (1)



## Meningococcal Bacteremia/Septicemia (2)



# Risk Factors for Meningococcal Disease (1)



## Host Factors

- Receipt of complement inhibitors (eculizumab, ravulizumab, etc.)
- Persistent complement component deficiency
- Functional or anatomic asplenia
- Human immunodeficiency virus (HIV)



## Environmental Factors

- Active or passive smoking
- Antecedent viral infection
- Housing:
  - Military recruits
  - Unvaccinated or undervaccinated first-year college students living in residence halls



## Travel

- Traveling where meningococcal disease is hyperendemic or epidemic



## Occupational Factors

- Microbiologists



## Affected Communities

- Men who have sex with men
- People experiencing homelessness
- College campuses with outbreaks

# Risk Factors for Meningococcal Disease (2)



## Host Factors

- Receipt of complement inhibitors (eculizumab, ravulizumab, etc.)
- Persistent complement component deficiency
- Functional or anatomic asplenia
- Human immunodeficiency virus (HIV)



## Environmental Factors

- Active or passive smoking
- Antecedent viral infection
- Housing:
  - Military recruits
  - Unvaccinated or undervaccinated first-year college students living in residence halls



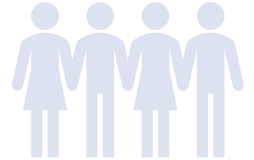
## Travel

- Traveling where meningococcal disease is hyperendemic or epidemic



## Occupational Factors

- Microbiologists



## Affected Communities

- Men who have sex with men
- People experiencing homelessness
- College campuses with outbreaks

# Risk Factors for Meningococcal Disease (3)



## Host Factors

- Receipt of complement inhibitors (eculizumab, ravulizumab, etc.)
- Persistent complement component deficiency
- Functional or anatomic splenia
- Human immunodeficiency virus (HIV)



## Environmental Factors

- Active or passive smoking
- Antecedent viral infection
- Housing:
  - Military recruits
  - Unvaccinated or undervaccinated first-year college students living in residence halls



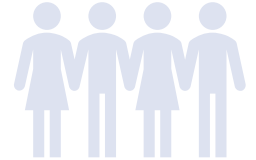
## Travel

- Traveling where meningococcal disease is hyperendemic or epidemic



## Occupational Factors

- Microbiologists



## Affected Communities

- Men who have sex with men
- People experiencing homelessness
- College campuses with outbreaks

# Risk Factors for Meningococcal Disease (3)



## Host Factors

- Receipt of complement inhibitors (eculizumab, ravulizumab, etc.)
- Persistent complement component deficiency
- Functional or anatomic asplenia
- Human immunodeficiency virus (HIV)



## Environmental Factors

- Active or passive smoking
- Antecedent viral infection
- Housing:
  - Military recruits
  - Unvaccinated or undervaccinated first-year college students living in residence halls



## Travel

- Traveling where meningococcal disease is hyperendemic or epidemic



## Occupational Factors

- Microbiologists

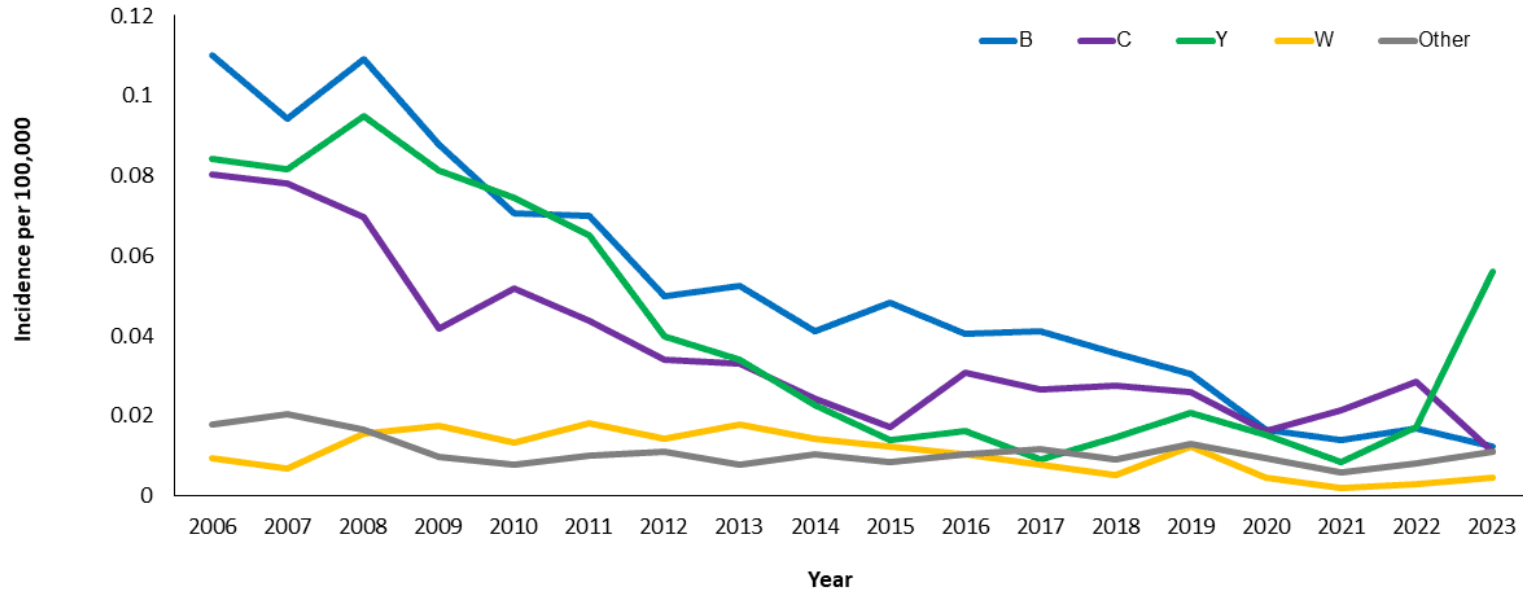


## Affected Communities

- Men who have sex with men
- People experiencing homelessness
- College campuses with outbreaks



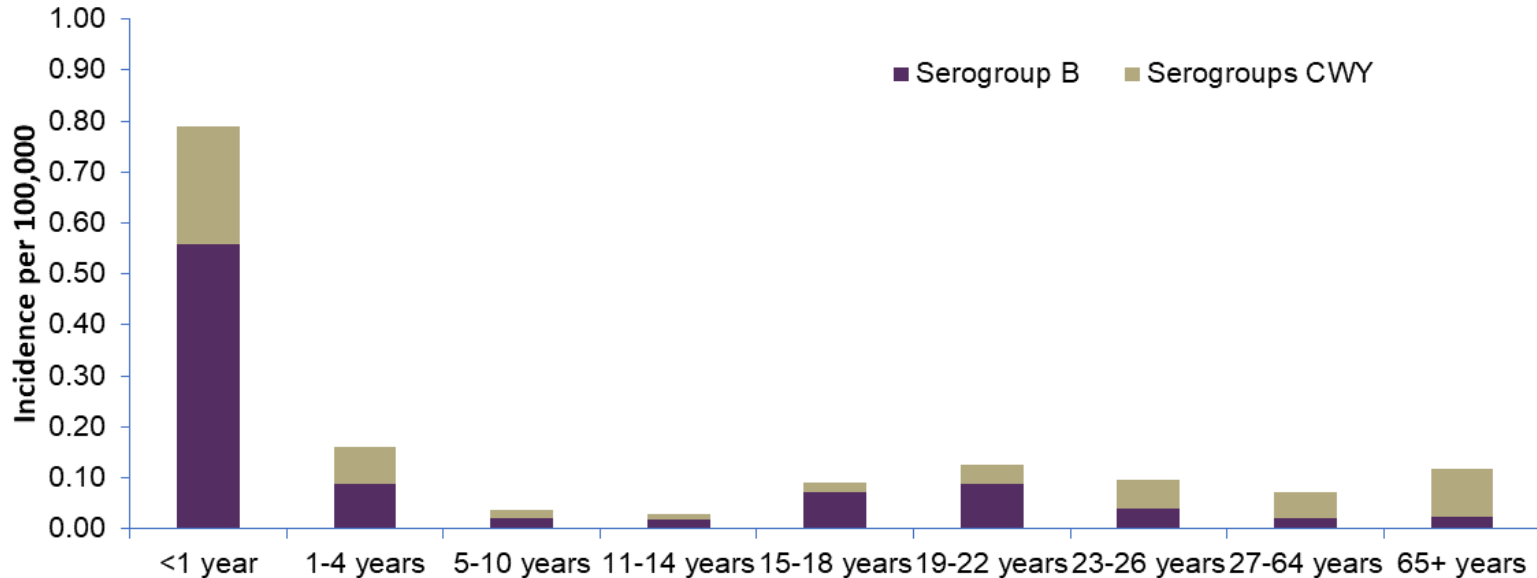
# Trends in Meningococcal Disease Incidence by Serogroup – United States, 2006–2023\*



Source: NNDSS data with additional serogroup data from Active Bacterial Core surveillance (ABCs) and state health departments

\*2022 and 2023 data are preliminary

# Meningococcal incidence by serogroup\* and age-group, 2012–2021



\* Unknown serogroup (12%) and other serogroups (9%) excluded

SOURCE: CDC; National Notifiable Diseases Surveillance System with additional serogroup data from Active Bacterial Core surveillance and state health departments



## Knowledge Check

Meningitis with or without bacteremia is the primary clinical presentation of meningococcal disease.

- A. True
- B. False



## Answer

Meningitis with or without bacteremia is the primary clinical presentation of meningococcal disease.

**A. True** ←

B. False

# 2

## Meningococcal Vaccines

# Meningococcal ACWY and Meningococcal B Vaccines, United States, 2024 (1)

Vaccine Product	Trade Name	Licensed Age Group*
<b>Quadrivalent meningococcal conjugate vaccines (MenACWY)</b>		
MenACWY-CRM	Menveo	2 months–55 years
MenACWY-TT	MenQuadfi	≥2 years
<b>Serogroup B meningococcal vaccines (MenB)</b>		
MenB-FHbp	Trumenba	10–25 years
MenB-4C	Bexsero	10–25 years

\*ACIP recommends off-label use of vaccine products outside of the licensed maximum age

# Meningococcal ACWY and Meningococcal B Vaccines, United States, 2024 (2)

Vaccine Product	Trade Name	Licensed Age Group*
<b>Quadrivalent meningococcal conjugate vaccines (MenACWY)</b>		
MenACWY-CRM	Menveo	2 months–55 years
MenACWY-TT	MenQuadfi	≥2 years
<b>Serogroup B meningococcal vaccines (MenB)</b>		
MenB-FHbp	Trumenba	10–25 years
MenB-4C	Bexsero	10–25 years

\*ACIP recommends off-label use of vaccine products outside of the licensed maximum age

Information from: [Chapter 14: Meningococcal Disease | Pink Book | CDC](#) and <https://www.cdc.gov/vaccines/vpd/mening/hcp/about-vaccine.html>

# Meningococcal ACWY and Meningococcal B Vaccines, United States, 2024 (3)




Vaccine Product	Trade Name	Licensed Age Group*
Quadrivalent meningococcal conjugate vaccines (MenACWY)		
MenACWY-CRM	Menveo	2 months–55 years
MenACWY-TT	MenQuadfi	≥2 years
<b>Serogroup B meningococcal vaccines (MenB)</b>		
MenB-FHbp	Trumenba	10–25 years
MenB-4C	Bexsero	10–25 years

\*ACIP recommends off-label use of vaccine products outside of the licensed maximum age






# Meningococcal Single-Component Vaccine Products (4)

## MenACWY Vaccines

-  • No adjuvants
-  • No antibiotics
-  • No preservatives

## MenB Vaccines

-  • Aluminum as an adjuvant
-  • Kanamycin as an antibiotic (MenB-4C/Bexsero only)
-  • No preservatives

# Vaccine Effectiveness

- **MenACWY – Wanes over time**
  - 79% effective within 1 year of vaccination
  - 61% effective within 3–8 years after vaccination
- **MenB**
  - No data available on vaccine effectiveness against clinical disease among populations recommended for vaccination in the United States
  - 84–88% immunogenicity in adolescents and college students
  - Wanes 1–2 years after completion of primary series

# Meningococcal Combination Vaccine Product

Vaccine Product	Trade Name	Licensed Age Group*
<b>Pentavalent meningococcal vaccine</b>		
MenACWY-TT/MenB-FHbp	Penbraya	10 years–25 years

\*ACIP recommends off-label use after age 25 years; the maximum licensed age

# Vaccine Preparation: Menveo Two-Vial

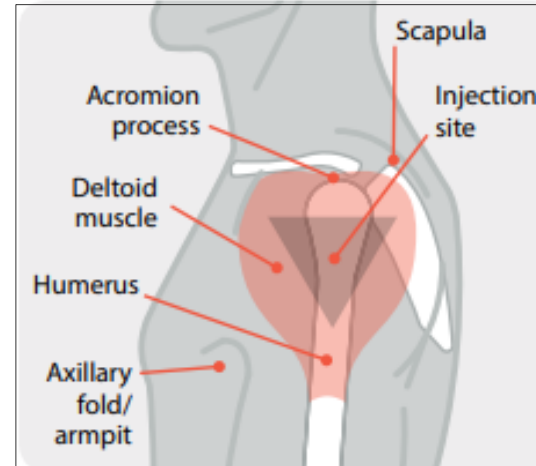
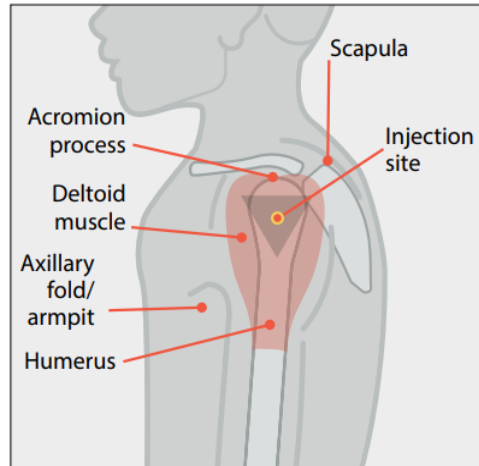
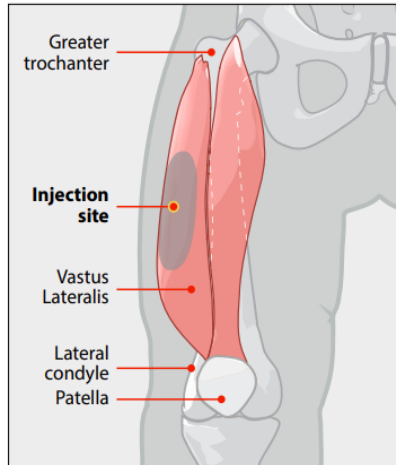
- **Lyophilized formulation must be reconstituted (mixed) prior to administration**
  - Vial containing liquid MenCYW (gray cap)
  - Vial containing lyophilized MenA (orange cap)
- **Use *only* manufacturer-supplied vaccine diluent.**

# Vaccine Preparation: Penbraya

- **Lyophilized formulation must be reconstituted (mixed) prior to administration**
  - Vial containing lyophilized MenACYW (powder)
  - Prefilled syringe containing MenB (liquid)
  - Vial adapter
- **Contains aluminum as an adjuvant but has neither antibiotic nor preservative**

# Vaccine Administration

- All meningococcal vaccines are administered by intramuscular injection.



**3**

## **Clinical Considerations**

# Meningococcal Vaccine Recommendations: Children and Adolescents


**Table 1**


Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, United States, 2025


These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).


Vaccine and other immunizing agents	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16 yrs	17–18 yrs
Meningococcal (MenACWY-CRM ≥2 mos, MenACWY-TT ≥2 years)			See Notes										1st dose		2nd dose		
Meningococcal B (MenB-4C, MenB-FHbp)														See Notes			

 Range of recommended ages for all children

 Range of recommended ages for catch-up vaccination

 Range of recommended ages for certain high-risk groups or populations

 Recommended vaccination can begin in this age group

 Recommended vaccination based on shared clinical decision-making

 No Guidance/Not Applicable



# Meningococcal Vaccine Recommendations: Adults

**Table 1**

Recommended Adult Immunization Schedule by Age Group, United States, 2025

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication (See Notes for booster recommendations)			
Meningococcal B (MenB)	19 through 23 years	2 or 3 doses depending on vaccine and indication (See Notes for booster recommendations)		



Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of immunity



Recommended vaccination for adults with an additional risk factor or another indication



Recommended vaccination based on shared clinical decision-making



No Guidance/ Not Applicable

# Routine MenACWY Recommendations for Children/Adolescents

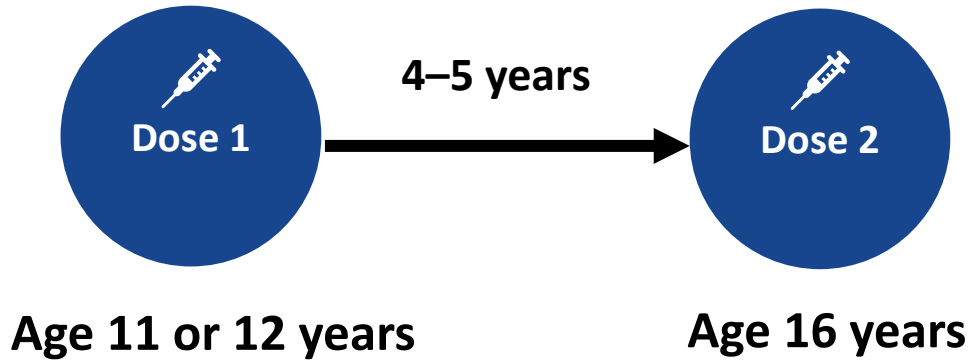
**Table 1** Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, United States, 2025

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).

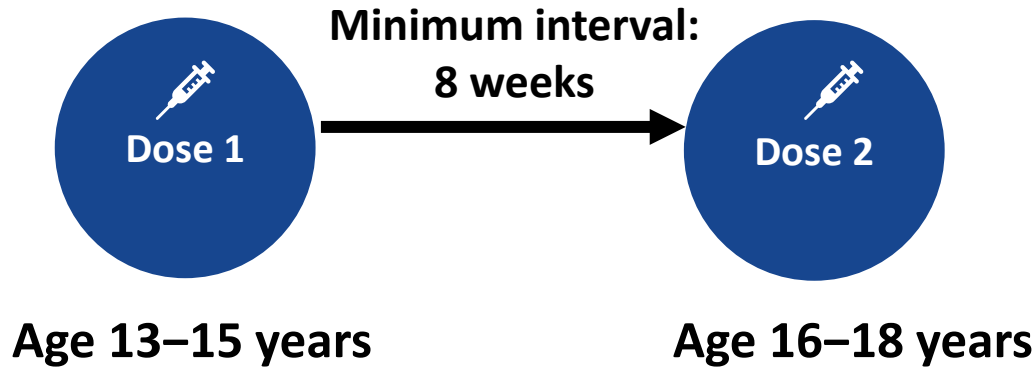
Vaccine and other Immunizing agents	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16 yrs	17–18 yrs
Meningococcal (MenACWY-CRM $\geq$ 2 mos, MenACWY-TT $\geq$ 2 years)			See Notes											1st dose		2nd dose	
Meningococcal B (MenB-4C, MenB-FHbp)															See Notes		

- **Primary vaccination:** 1 dose at age 11 or 12 years
- **Booster vaccination:** 1 dose at age 16 years
- **Catch up vaccination**
  - 1 dose at age 13–15 years
  - Single booster at age 16–18 years (minimum interval 8 weeks)
  - No booster if primary dose administered on or after 16th birthday
- **Ages 19–21 years**
  - Can receive 1 dose if have no dose administered after 16th birthday
  - After age 21 years, no booster dose is recommended for healthy persons

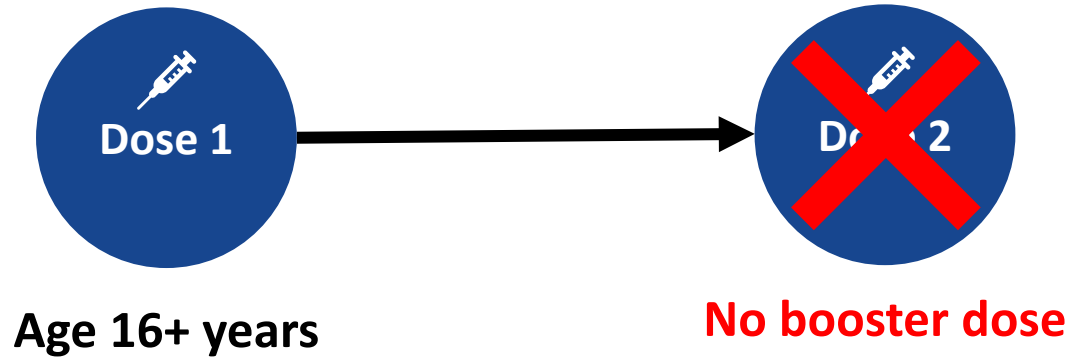
# MenACWY Recommendations for Children and Adolescents: Routine Vaccination



# Catch-up MenACWY Recommendations for Children and Adolescents (1)



# Catch-up MenACWY Recommendations for Children and Adolescents (2)



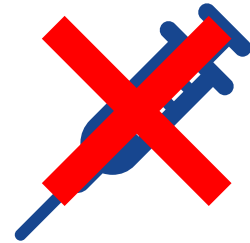
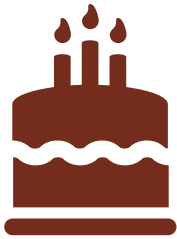
# Catch-up MenACWY Recommendations for Children and Adolescents (3)



If **no** dose was given  
after the 16th birthday

MenACWY may be given  
to persons ages 19–21 years

# Catch-up MenACWY Recommendations for Children and Adolescents (4)



If **no** dose was given  
after the 16th birthday

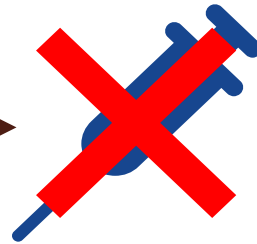
MenACWY may be given  
to persons ages 19–21 years

Not routinely  
recommended after  
age 21 years

# Routine MenACWY Use in Children Before Age 11 Years (1)



Vaccinated at  
age 10 years



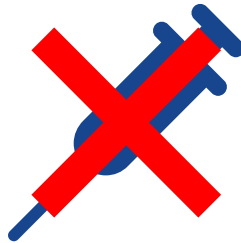
***Do not*** give a dose at  
age 11 or 12 years



# Routine MenACWY Use in Children Before Age 11 Years (2)



Vaccinated at  
age 10 years



***Do not*** give a dose at  
age 11 or 12 years



***Do*** give a dose at  
age 16 years

# Routine MenACWY Use in Children Before Age 11 Years (3)



Vaccinated before  
age 10 years

***Do*** give a dose at  
age 11 or 12 years

***Do*** give a dose at  
age 16 years

# Routine MenB Recommendations for Adolescents

- **Not** routinely recommended for all adolescents
- **Primary vaccination**
  - 2 doses at ages 16–23 years based on *shared clinical decision-making*
  - Preferred age 16–18 years
- **Booster vaccination *not* recommended\***

\*Booster not recommended for healthy persons unless ongoing risk of exposure such as microbiologist exposed to *N. meningitidis* and persons exposed during an outbreak

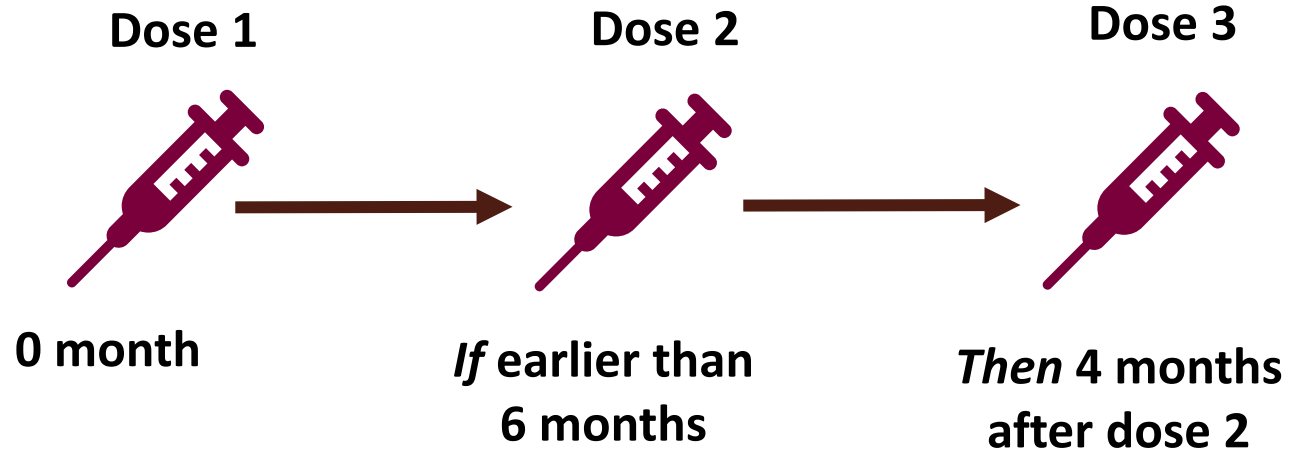
# Routine MenB Recommendations for Adolescents: Dose Intervals (1)

**MenB-FHbp  
(Trumenba)  
or  
MenB-4C  
(Bexsero)**



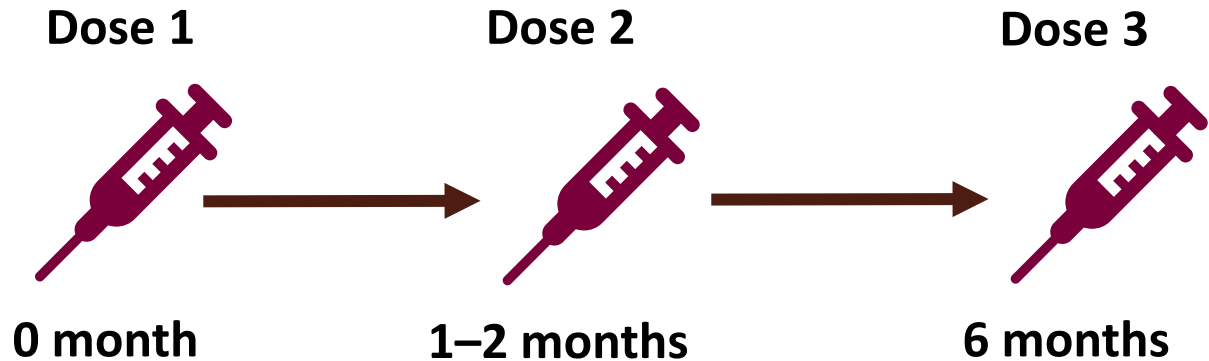
# Routine MenB Recommendations for Adolescents: Dose Intervals (2)

**MenB-FHbp  
(Trumenba)  
or  
MenB-4C  
(Bexsero)**



# Routine MenB Recommendations for Adolescents: Dose Intervals if Rapid Protection Is Desired\*

**MenB-FHbp  
(Trumenba)  
or  
MenB-4C  
(Bexsero)**



\* For example, for students starting college in less than 6 months.

# MenB Recommendations: Considerations for Shared Clinical Decision-Making



**Clinical factors**



**Risk factors**



**Vaccine effectiveness**

# Considerations for Shared Clinical Decision-Making (1)

- **Clinical factors**
  - Serious nature of meningococcal infections
  - High death rate
  - Severe complications
    - e.g., loss of limb(s), neurologic disability, hearing loss





# Considerations for Shared Clinical Decision-Making (2)

- **Considerations:**
  - Increased risk among college students
  - Rapid course of severe illness and risk of death even with prompt recognition and antibiotic treatment



# Considerations for Shared Clinical Decision-Making (3)

- **Vaccine effectiveness**
  - Protection against most strains of serogroup B *N. meningitidis*
  - Estimated relatively short duration of MenB protection
  - Evidence to date suggests MenB vaccination has no effect on meningococcal carriage





## Knowledge Check

A healthy 20-year-old college freshman has previously received two doses of MenACWY vaccine.

- Dose 1 at age 13 years
- Dose 2 at age 15 years

Her school is requesting an additional dose of MenACWY because she will be living in college residential housing. Can she get a 3rd dose today?

- A. Yes
- B. No



## Answer

A healthy 20-year-old college freshman has previously received two doses of MenACWY vaccine.

- Dose 1 at age 13 years
- Dose 2 at age 15 years

Her school is requesting an additional dose of MenACWY because she will be living in college residential housing. Can she get a 3rd dose today?

A. Yes ←

B. No

# Meningococcal Vaccination for Persons at *Increased Risk* (1)

**Table 1** Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, United States, 2025

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2).

Vaccine and other Immunizing agents	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16 yrs	17–18 yrs	
Meningococcal (MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)			See Notes											1st dose		2nd dose		
Meningococcal B (MenB-4C, MenB-FHbp)															See Notes			

**Table 1** Recommended Adult Immunization Schedule by Age Group, United States, 2025

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication (See Notes for booster recommendations)			
Meningococcal B (MenB)	19 through 23 years	2 or 3 doses depending on vaccine and indication (See Notes for booster recommendations)		

# Meningococcal Vaccination for Persons at Increased Risk (2)

Risk Group	MenACWY	MenB
Persons with complement component deficiency (including patients using a complement inhibitor)	Age $\geq 2$ months	Age $\geq 10$ years
Persons with functional or anatomic asplenia (including sickle cell disease)	Age $\geq 2$ months	Age $\geq 10$ years
Persons with HIV infection	Age $\geq 2$ months	No recommendation
Microbiologists routinely exposed to <i>Neisseria meningitidis</i>	Age appropriate*	Age appropriate <sup>†</sup>
Persons exposed during an outbreak of meningococcal disease due to a vaccine-preventable serogroup	Age $\geq 2$ months	Age $\geq 10$ years
Persons who travel to or live in countries where meningococcal disease is hyperendemic or epidemic	Age $\geq 2$ months	No recommendation
College freshmen living in residence halls	Age appropriate*	No recommendation
Military recruits	Age appropriate*	No recommendation

- Persons aged  $\geq 2$  months in these risk groups are recommended to receive MenACWY vaccination.

<sup>†</sup> Persons aged  $\geq 10$  years in this risk group are recommended to receive MenB vaccination

\*Shared clinical decision-making recommendation for all persons ages 16-23 years

# Meningococcal Vaccination for Persons at Increased Risk (3)

Risk Group	MenACWY	MenB
Persons with complement component deficiency (including patients using a complement inhibitor)	Age ≥2 months	Age ≥10 years
Persons with functional or anatomic asplenia (including sickle cell disease)	Age ≥2 months	Age ≥10 years
Persons with HIV infection	Age ≥2 months	No recommendation
Microbiologists routinely exposed to <i>Neisseria meningitidis</i>	Age appropriate*	Age appropriate <sup>†</sup>
Persons exposed during an outbreak of meningococcal disease due to a vaccine-preventable serogroup	Age ≥2 months	Age ≥10 years
Persons who travel to or live in countries where meningococcal disease is hyperendemic or epidemic	Age ≥2 months	No recommendation
College freshmen living in residence halls	Age appropriate*	No recommendation
Military recruits	Age appropriate*	No recommendation

• Persons aged ≥2 months in these risk groups are recommended to receive MenACWY vaccination.

† Persons aged ≥10 years in this risk group are recommended to receive MenB vaccination.

\*Shared clinical decision-making recommendation for all persons ages 16-23 years

# Meningococcal Vaccination for Persons at Increased Risk (4)

Risk Group	MenACWY	MenB
Persons with complement component deficiency (including patients using a complement inhibitor)	Age $\geq 2$ months	Age $\geq 10$ years
Persons with functional or anatomic asplenia (including sickle cell disease)	Age $\geq 2$ months	Age $\geq 10$ years
Persons with HIV infection	Age $\geq 2$ months	No recommendation
Microbiologists routinely exposed to <i>Neisseria meningitidis</i>	Age appropriate*	Age appropriate <sup>†</sup>
Persons exposed during an outbreak of meningococcal disease due to a vaccine-preventable serogroup	Age $\geq 2$ months	Age $\geq 10$ years
Persons who travel to or live in countries where meningococcal disease is hyperendemic or epidemic	Age $\geq 2$ months	No recommendation
College freshmen living in residence halls	Age appropriate*	No recommendation
Military recruits	Age appropriate*	No recommendation

- Persons aged  $\geq 2$  months in these risk groups are recommended to receive MenACWY vaccination.

<sup>†</sup> Persons aged  $\geq 10$  years in this risk group are recommended to receive MenB vaccination.

\*Shared clinical decision-making recommendation for all persons ages 16-23 years



# MenACWY-CRM (Menveo): Anatomic or Functional Asplenia, HIV Infection, Persistent Complement Component Deficiency, Complement Inhibitor Use (1)

- **Dose 1 at age 2 months: 4-dose series**
  - Additional 3 doses at age 4, 6, and 12 months
- **Dose 1 at age 3–6 months: 3- or 4-dose series**
  - Dose 2 (and dose 3 if applicable) at least 8 weeks after previous dose until a dose is received at age 7 months or older
  - Then an additional dose at least 12 weeks later and after age 12 months
- **Dose 1 at age 7–23 months: 2-dose series**
  - Dose 2 at least 12 weeks after dose 1 and after age 12 months
- **Dose 1 at age 24 months or older: 2-dose series at least 8 weeks apart**

# MenACWY-TT (MenQuadfi): Anatomic or Functional Asplenia, HIV Infection, Persistent Complement Component Deficiency, Complement Inhibitor Use (2)

- **Dose 1 at age 24 months or older**
  - 2-dose series at least 8 weeks apart

# MenACWY: Travel to Countries With Hyperendemic or Epidemic Meningococcal Disease

- **Ages 2–23 months: MenACWY-CRM (Menveo)**
  - Dose 1 at age 2 months: 4-dose series
    - Additional 3 doses at age 4, 6, and 12 months
  - Dose 1 at age 3–6 months: 3- or 4- dose series
    - Dose 2 (and dose 3 if applicable) at least 8 weeks after previous dose, until a dose is received at age 7 months or older
    - Then an additional dose at least 12 weeks later and after age 12 months
  - Dose 1 at age 7–23 months: 2-dose series
    - Dose 2 at least 12 weeks after dose 1 and after age 12 months
- **Ages 2 years or older: 1 dose Menveo or MenQuadfi**

## **MenACWY: First-Year College Students Who Live in Residential Housing, or Military Recruits**

- **1 dose MenACWY-CRM (Menveo) or MenACWY-TT (MenQuadfi) if not previously vaccinated at age 16 years or older**

# MenACWY Booster Recommendations for Persons at *Increased Risk*

- **For persons who remain at increased risk and completed the primary vaccination at age:**
  - Younger than 7 years
    - 1 dose 3 years after primary series
    - Boosters every 5 years
  - 7 years and older
    - 1 dose 5 years after primary series
    - Boosters every 5 years

# MenB Vaccination Schedule for Persons at *Increased Risk*

- **MenB-4C (Bexsero) or MenB-FHbp (Trumenba): 3-dose series at 0, 1–2, 6 months**
  - If dose 2 administered at least 6 months after dose 1, dose 3 not needed
  - If dose 3 administered earlier than 4 months after dose 2, a 4th dose should be given at least 4 months after dose 3

# MenB Booster Recommendations for Persons at *Increased Risk*

- **Persons with complement deficiency, complement inhibitor use, or functional or anatomic asplenia, or who are routinely exposed to *Neisseria meningitidis* at work**
  - Booster dose at least 1 year since primary series
  - Repeat every 2–3 years as long as risk remains
- **At risk due to Serogroup B outbreak**
  - Booster dose at least 1 year since primary series
  - If recommended by public health officials, booster dose may be given if it has been at least 6 months since primary series

# Use of Penbraya

- **Combination MenACWY-TT/MenB-FHbp (Penbraya) is an option when both MenACWY *and* MenB are recommended (inclusive of SCDM) for same visit.**
- **Minimum 6-month interval between:**
  - Any 2 doses of Penbraya
  - Penbraya and Trumenba

SCDM = Shared Clinical Decision Making





## Knowledge Check

A 16-year-old recently began treatment with eculizumab—a complement inhibitor—and is recommended to begin MenB vaccination series. Your clinic has Trumenba in stock. How many doses of Trumenba should she receive?

- A. Trumenba 2 doses at 0 and 6 months
- B. Trumenba 3 doses (0, 1–2, and 6 months)



## Answer

A 16-year-old recently began treatment with eculizumab—a complement inhibitor—and is recommended to begin MenB vaccination series. Your clinic has Trumenba in stock. How many doses of Trumenba should she receive?

A. Trumenba 2 doses at 0 and 6 months

**B. Trumenba 3 doses (0, 1–2, and 6 months)**



# Interchangeability of Meningococcal Vaccine Products (1)



MenACWY vaccines  
*are* interchangeable



MenB vaccines  
*are not*  
interchangeable

# Interchangeability of Meningococcal Vaccine Products (2)



MenACWY vaccines  
**are** interchangeable  
Same vaccine product is  
recommended  
but not required  
for all doses.



MenB vaccines  
**are not**  
interchangeable

# Interchangeability of Meningococcal Vaccine Products (3)



MenACWY vaccines  
**Are** interchangeable



MenB vaccines ***are not*** interchangeable

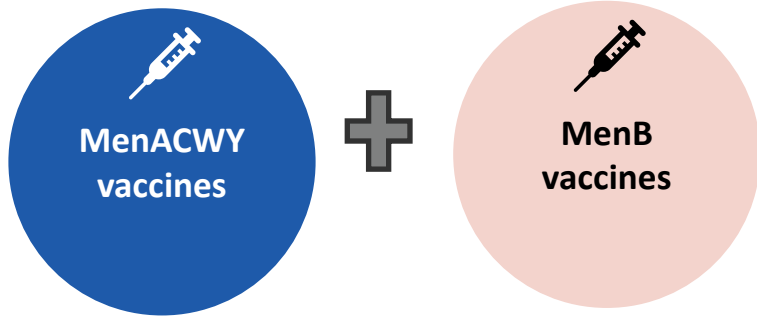
**Use same product for all doses.**

If 2 different products are administered,  
pick one and invalidate the dose of the other.

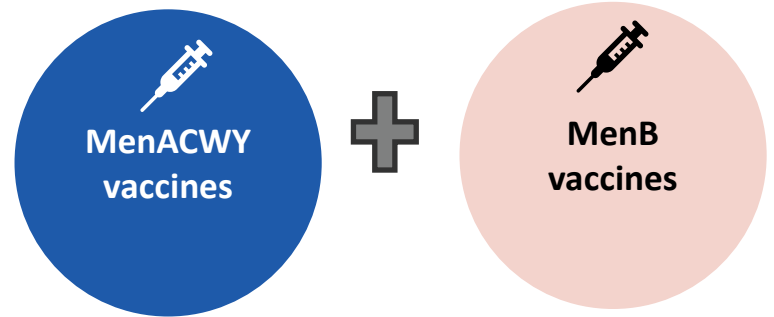
Space repeat dose at a minimum interval of 4 weeks.

# Co-Administration of Meningococcal Vaccine Products

Same day administration

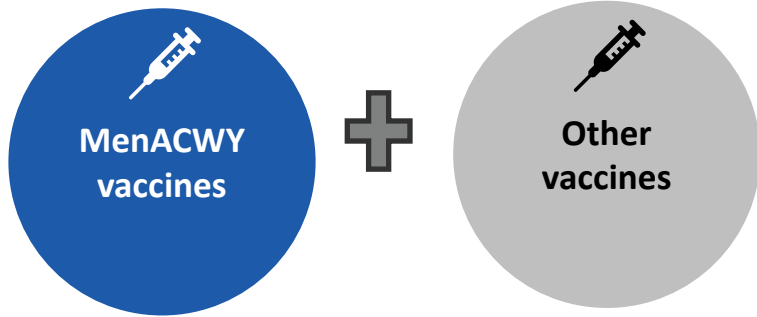


Any interval

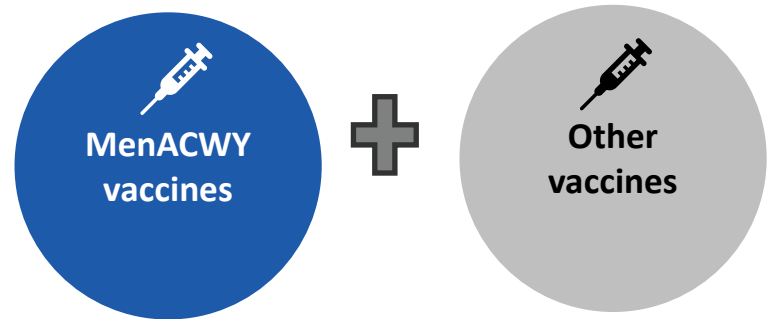


# Co-Administration of MenACWY and Other Vaccines

Same day administration

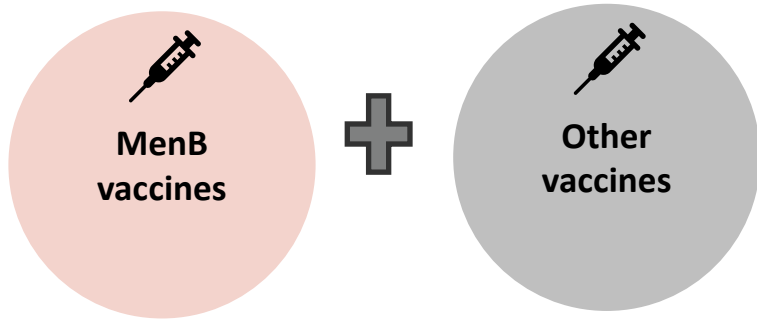


Any interval

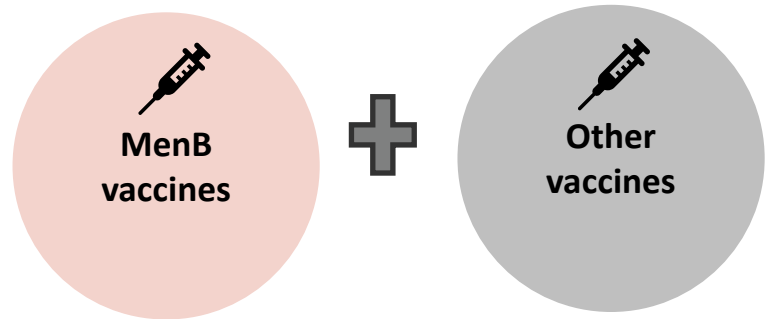


# Co-Administration of MenB and Other Vaccines

Same day administration



Any interval





# Off-Label Meningococcal Vaccination Recommendations for Persons at Risk

Age Group	Indication
2 years and older	<p>Administration of a 2-dose MenACWY primary series in persons at increased risk for serogroups A, C, W, or Y meningococcal disease</p> <p>Repeated booster doses of MenACWY for certain persons who remain at increased risk for serogroups A, C, W, or Y meningococcal disease</p> <p>(MenACWY-CRM is licensed for a single booster dose for persons aged 15–55 yrs if at least 4 yrs have elapsed since the last dose. MenACWY-TT is licensed for a single booster dose for persons aged ≥15 yrs if at least 4 yrs have elapsed since the last dose of MenACWY)</p>
10 years and older	MenB booster doses in certain persons who remain at increased risk for serogroup B meningococcal disease
26 years and older	MenB primary series administration in persons at increased risk for serogroup B meningococcal disease
56 years and older	Administration of MenACWY-CRM in persons at increased risk for serogroups A, C, W, or Y meningococcal disease

## Abbreviations

**MenACWY** = quadrivalent meningococcal conjugate vaccine; **MenACWY-CRM** = meningococcal groups A, C, W, and Y oligosaccharide diphtheria CRM<sub>197</sub> conjugate vaccine; **MenACWY-D** = meningococcal groups A, C, W, and Y polysaccharide diphtheria toxoid conjugate vaccine; **MenACWY-TT** = meningococcal groups A, C, W, and Y polysaccharide tetanus toxoid conjugate vaccine; **MenB** = serogroup B meningococcal vaccine

**4**

**Safety**

# Common Adverse Reactions: MenACWY Vaccines



**Fever**



**Irritability**



**Fatigue, drowsiness**



**Injection site reactions:  
pain and erythema**



**Headache**



**Myalgia**



**Malaise**

# Common Adverse Reactions: MenB Vaccines



**Headache**



**Fever**



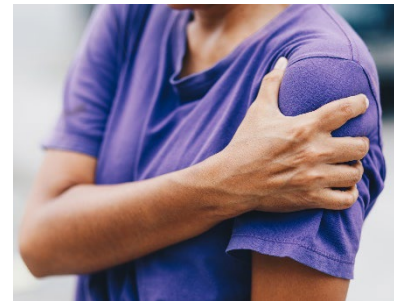
**Fatigue**



**Myalgia**



**Arthralgia**



**Injection site reactions:  
pain, induration, erythema**

# Contraindications: MenACWY and MenB

- **Severe allergic reaction (e.g., anaphylaxis) after a previous dose**
- **Severe allergic reaction (e.g., anaphylaxis) to a vaccine component:**
  - For MenACWY-CRM (Menveo) only: severe allergic reaction to any diphtheria toxoid- or CRM197-containing vaccine
  - For MenACWY-TT (MenQuadfi) only: severe allergic reaction to a tetanus toxoid-containing vaccine

# Precautions to MenACWY and MenB

- Moderate or severe acute illness, with or without fever
- For MenACWY-CRM (Menveo) only: infants born preterm if younger than age 9 months
- For MenB only: pregnancy
- For MenB-4C (Bexsero) only: anaphylactic allergy to latex



**5**

**Storage & Handling**


# Meningococcal Vaccine Storage and Handling

- Store meningococcal vaccines refrigerated between 2°C and 8°C (36°F and 46°F).
- Do not freeze vaccine or diluents, or expose to freezing temperatures.
- Store meningococcal vaccines in original packaging.

**Menveo (MenACWY)**  
Two-Vial (Reconstitute Before Using)

Store between 2°C and 8°C (36°F and 46°F)


**Ages:** 2 months and older  
**Presentation:** Single-dose vial liquid component (gray cap) and single-dose vial lyophilized component (orange cap)  
**Protect From Light**  
**Do Not Freeze**  
**Beyond Use Time:** Use immediately after reconstitution; however, may be stored between 2°C and 25°C (36°F and 77°F) for up to 8 hours

Updated 3/6/2024 

**Menveo (MenACWY)**  
Single-Vial (Ready-to-Use)

Store between 2°C and 8°C (36°F and 46°F)


**Ages:** 10 years and older  
**Presentation:** Single-dose vial (pink cap)  
**Protect From Light**  
**Do Not Freeze**

Updated 3/6/2024 

**Penbraya (MenABCWY)**

Store between 2°C and 8°C (36°F and 46°F)


**Ages:** 10 through 25 years  
**Presentation:** Single-dose vial lyophilized MenACWY component and manufacturer-filled syringe MenB component  
**Do Not Freeze**  
**Beyond Use Time:** After reconstitution, administer immediately or store between 2°C and 30°C (36°F and 86°F) and use within 4 hours

Updated 3/6/2024 

**MenQuadfi (MenACWY)**

Store between 2°C and 8°C (35°F and 46°F)


**Ages:** 2 years and older  
**Presentation:** Single-dose vial  
**Do Not Freeze**

Updated 3/6/2024 

**Bexsero (MenB)**

Store between 2°C and 8°C (36°F and 46°F)


**Ages:** 10 years and older  
**Presentation:** Manufacturer-filled syringe  
**Protect From Light**  
**Do Not Freeze**

Updated 3/6/2024 

**Trumenba (MenB)**

Store between 2°C and 8°C (36°F and 46°F)

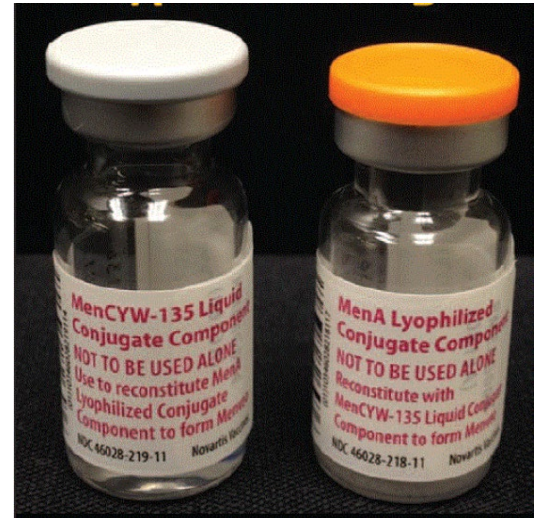
**Ages:** 10 years and older  
**Presentation:** Manufacturer-filled syringe  
**Do Not Freeze**

Updated 3/6/2024 



# Vaccine Storage and Handling: MenACWY-CRM (Menveo)

- MenACWY-CRM (Menveo) two-vial presentation requires reconstitution.
- The MenA (lyophilized) component should be reconstituted only with the liquid C-W-Y component of Menveo.
- Reconstituted vaccine should be used immediately but may be stored between 36°F and 77°F (2°C and 25°C) for up to 8 hours.
- Do not use if the reconstituted vaccine cannot be resuspended with thorough agitation.



# Improper Storage and Handling of Meningococcal Vaccines

- **If the vaccine product is exposed to inappropriate temperatures or conditions:**
  - Store the vaccine at the appropriate temperature.
  - Isolate from other vaccines.
  - Mark “Do NOT Use.”
  - Consult the vaccine manufacturer or your state or local immunization program for guidance.

6

Resources

# Meningococcal Resources

Meningococcal disease

- [Meningococcal Disease | Meningococcal | CDC](#)

ACIP's Meningococcal Recommendations

- [ACIP Recommendations: Meningococcal Vaccine | ACIP Recommendations | CDC](#)

Meningococcal Vaccination for healthcare providers

- [Meningococcal Vaccination | For Providers | CDC](#)

Immunize.org

- <https://www.immunize.org/meningococcal-acwy/>

Children's Hospital of Philadelphia Vaccine Education Center Meningococcal web page

- <https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-details/meningococcal-vaccine>

# Continuing Education Information

- To claim continuing education (CE) for this course, please follow the steps below by July 1, 2026.
- Search and register for course **WD4810-080124** in **CDC TRAIN**.
- Pass the post-assessment at 80%.
- Complete the evaluation.
- Visit “Your Learning” to access your certificates and transcript.
- If you have any questions, contact **CDC TRAIN** at [train@cdc.gov](mailto:train@cdc.gov) or CE Coordinator, Melissa Barnett, at [MBarnett2@cdc.gov](mailto:MBarnett2@cdc.gov)

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# Email Us Your Immunization Questions



**[nipinfo@cdc.gov](mailto:nipinfo@cdc.gov)**

# Thank You From Atlanta!

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

