Meningococcal Disease and Meningococcal Vaccines

Pink Book Web-on-Demand Series
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Learning Objectives

- Describe the Advisory Committee on Immunization Practices General Best Practice Guidelines on Immunization.
- 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.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

Continuing Education Information

- **CE credit, go to**: https://tceols.cdc.gov/
- **Search course number: WD4564-082322**
- **CE credit expires: July 1, 2024**
- **CE instructions are available on the Pink Book Web-on-Demand Series web page**
- **Questions and additional help with the online CE system, e-mail** CE@cdc.gov

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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.

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Meningococcal Disease

Meningococcal Disease

- Caused by *Neisseria meningitidis* (*N. meningitidis*)

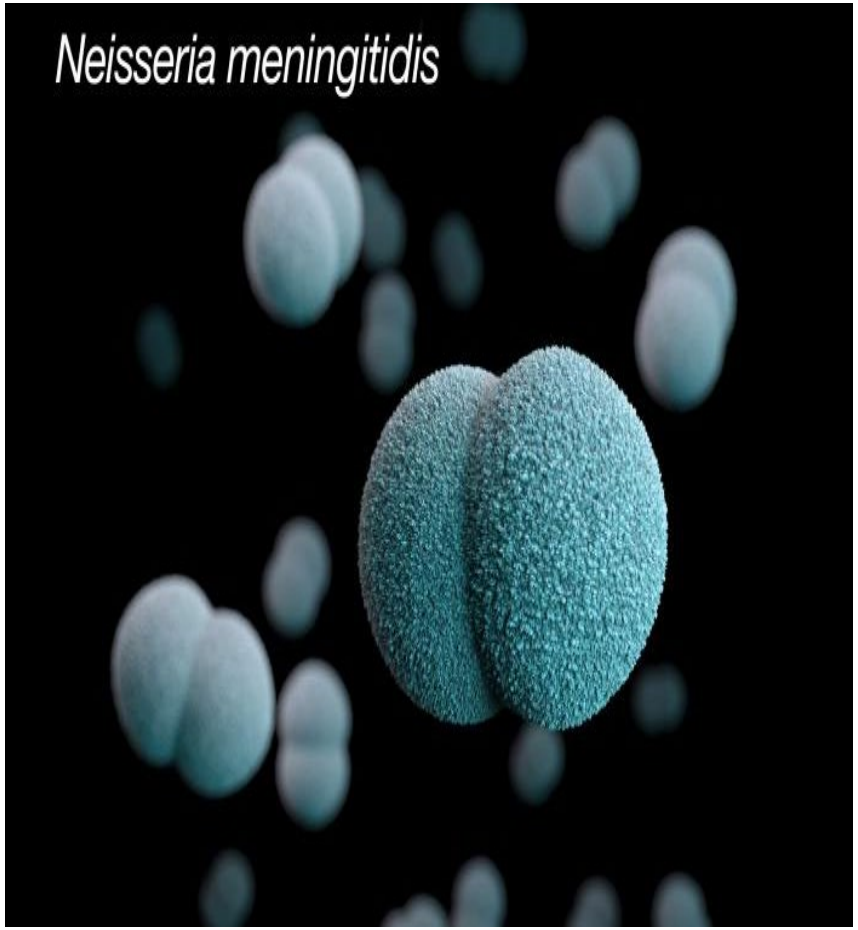
- Occurs worldwide
  - Hyperendemic with periodic epidemics in meningitis belt of sub-Saharan Africa

- Clinical presentation primarily meningitis, bacteremia, or both

- Complications
  - 20% with long-term disabilities (e.g., neurologic disabilities, limb or digit loss, hearing loss)
  - 10%–15% fatality rate; up to 40% in meningococcal bacteremia

Neisseria Meningitidis

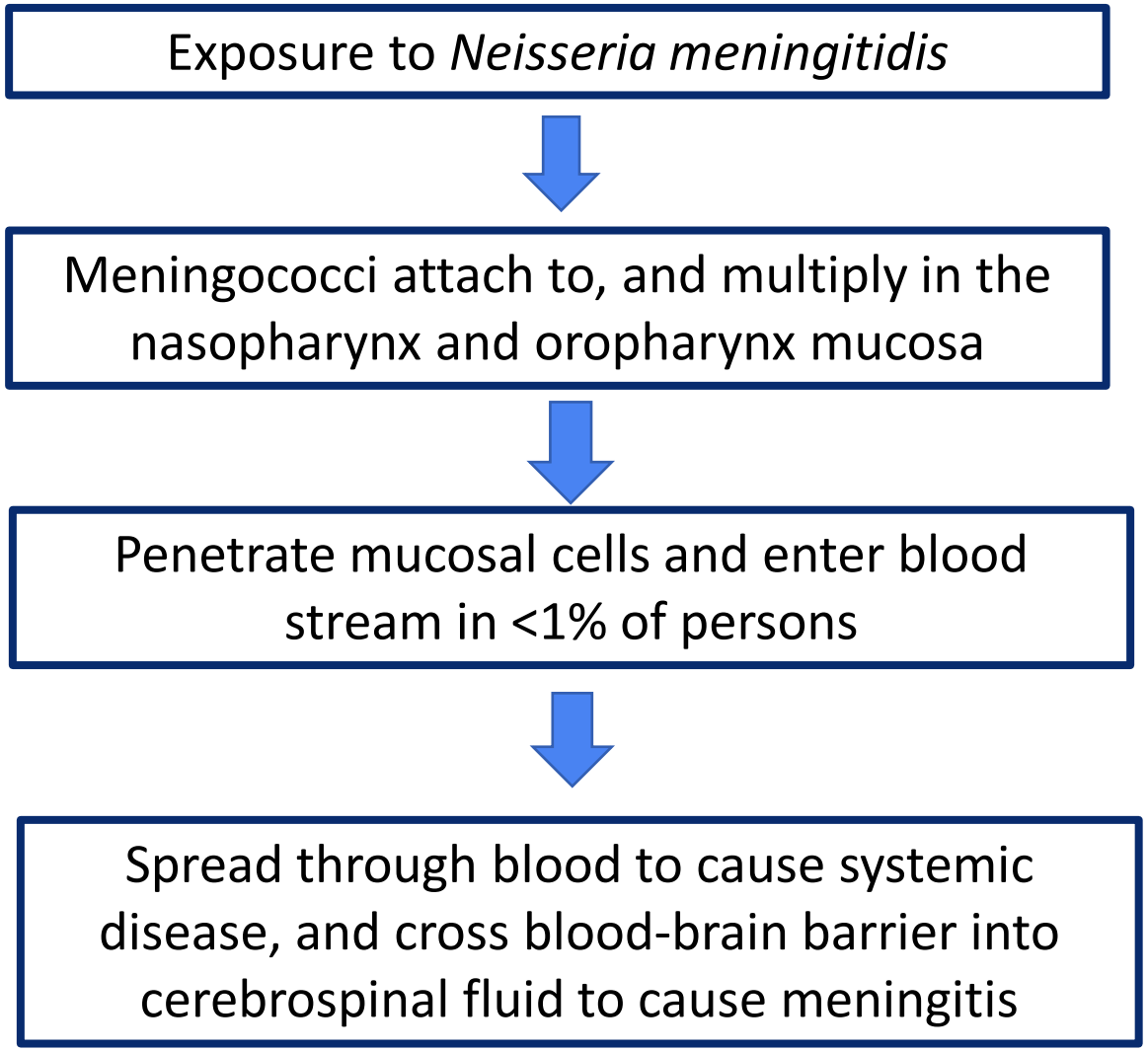
- Aerobic gram-negative bacteria
- At least 12 serogroups-based polysaccharide capsule
- Most invasive disease caused by serogroups A, B, C, W, X, and Y
- Relative importance of serogroups depends on geographic location and other factors (e.g., age)
  - Serogroups B, C, and Y cause most of the illness in the United States



Neisseria Meningitidis

- Human reservoir
- Transmission: respiratory droplets or direct contact with respiratory secretions
- Limited communicability
  - 2-4 cases per 1000 household members at risk
- Highest incidence in late winter or early spring
- 95% of cases in United States are sporadic

Meningococcal Disease Pathogenesis



Clinical Manifestation

- Incubation period 3–4 days (range 1–10 days)

- Common clinical manifestations:
  - Meningitis
  - Bacteremia/septicemia

- Other presentations
  - Pneumonia
  - Septic arthritis
  - Pericarditis
  - Conjunctivitis
  - Urethritis

Meningococcal Meningitis

- **Infection of the meninges**
- **Most common presentation of invasive disease**
- **May occur with or without bacteriemia**
- **Clinical features**
  - Fever
  - Headache
  - Stiff neck
  - Photophobia
  - Nausea and vomiting
  - Altered mental status

Meningococcal Bacteremia/Septicemia

- **Bloodstream infection**
- **May occur with or without meningitis**
- **Clinical features**
  - Fever
  - Petechial or purpuric rash
  - Hypotension
  - Shock
  - Acute adrenal hemorrhage
  - Multi-organ failure

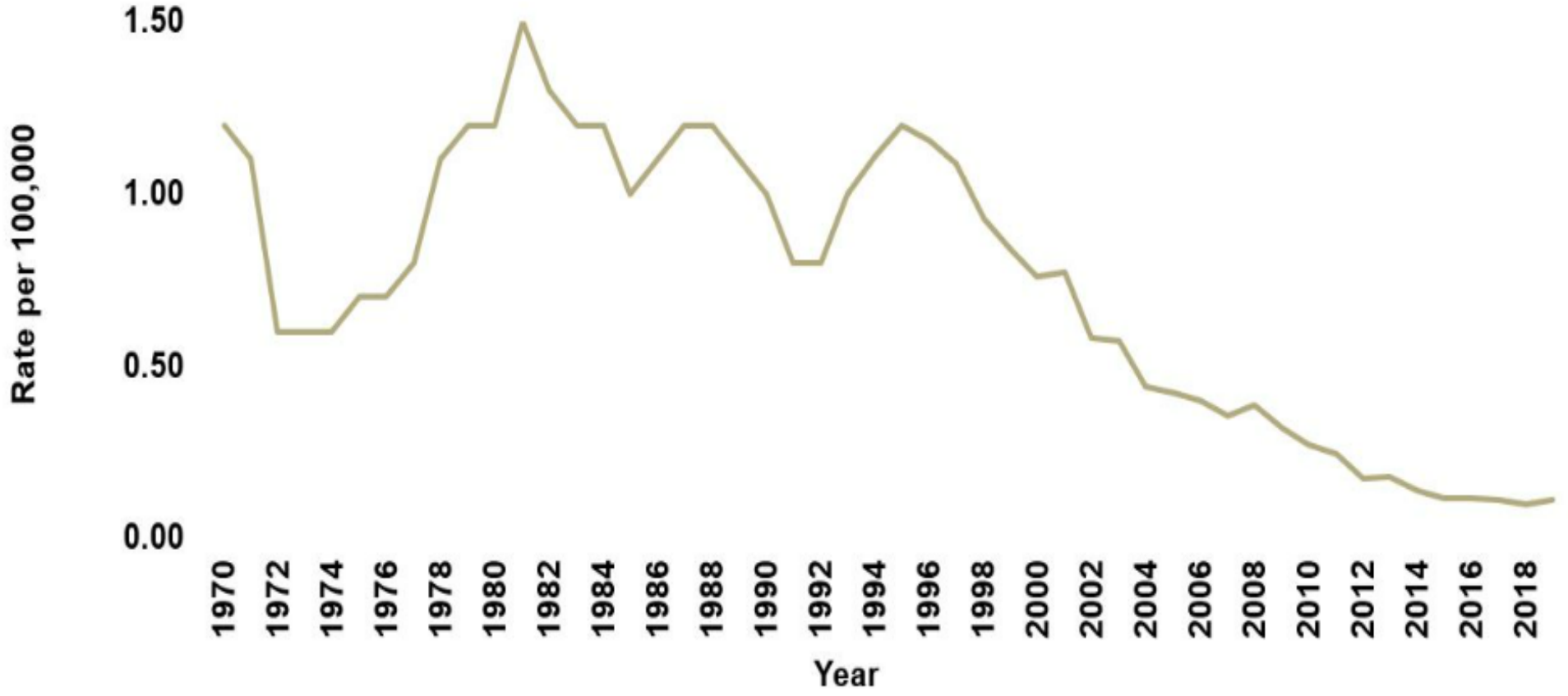
Meningococcal Disease

Meningococcal Disease

Risk Factors for Meningococcal Disease

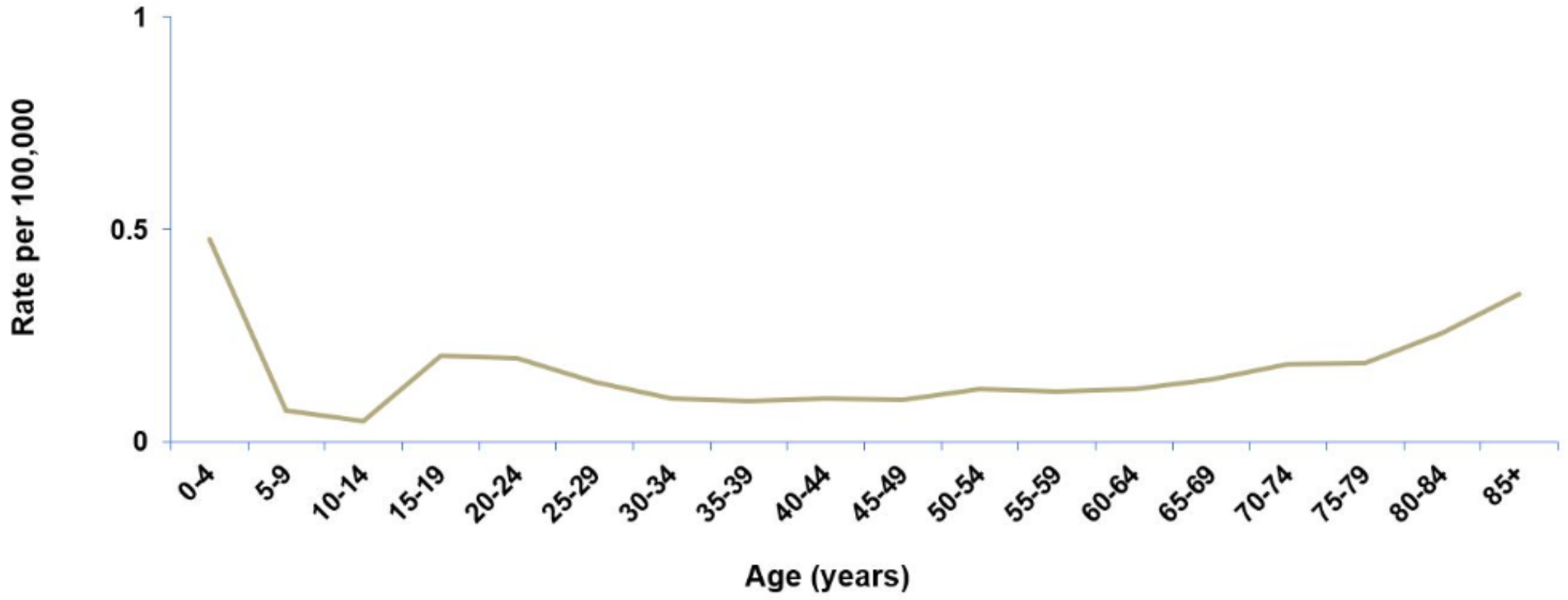
- **Host Factors**
  - Persistent complement component deficiency
  - Functional or anatomic asplenia
  - Human immunodeficiency virus (HIV)
  - Receipt of complement inhibitors (e.g., eculizumab, ravulizumab)
- **Environmental factors**
  - Active and passive smoking
  - Antecedent viral infection
  - Housing (e.g., military recruits, college students living in residential halls)
  - Travel to areas where meningococcal is hyperendemic or epidemic
- **Occupational Factors**
  - Microbiologists
- **Affected communities**
  - Men who have sex with men
  - People experiencing homelessness

Meningococcal Disease Incidence — United States, 1970–2019



National Notifiable Diseases Surveillance System [Meningococcal Disease Surveillance | CDC]

Meningococcal Disease Incidence by Age — United States, 2010–2019



National Notifiable Diseases Surveillance System [Meningococcal Disease Surveillance | CDC]

Meningococcal incidence by serogroup* and age-group, 2010–2019

* Unknown serogroup (14%) and other serogroups (7%) 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

Knowledge Check

- **Meningitis with or without bacteremia, is the primary clinical presentation of invasive meningococcal disease.**

- A. True

2

Meningococcal Vaccines

Meningococcal Vaccine Products

Vaccine Product	Trade name	Licensed age group*	Year Licensed
Quadrivalent meningococcal conjugate vaccines (MenACWY)			
MenACWY-D	Menactra®	9 months–55 years	2005
MenACWY-CRM	Menveo®	2 months–55 years	2010
MenACWY-TT	MenQuadfi®	≥2 years	2020
Serogroup B meningococcal vaccines (MenB)			
MenB-FHbp	Trumenba®	10–25 years	2014
MenB-4C	Bexsero®	10–25 years	2015

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

Information from: https://www.cdc.gov/vaccines/pubs/pinkbook/mening.html and https://www.cdc.gov/vaccines/vpd/mening/hcp/about-vaccine.html

Quadrivalent Meningococcal Conjugate Vaccines (MenACWY)

- Non-live vaccines
- Polysaccharide capsule antigen conjugated to a protein carrier
- Do not contain an adjuvant, antibiotic, or preservative
- Administered by intramuscular injection
- No product preference
- Vaccine effectiveness wanes over time
  - 79% within 1 year of vaccination
  - 61% within 3–8 years vaccination

Serogroup B Meningococcal Conjugate (MenB) Vaccines

- Non-live recombinant vaccines
- Contain aluminum as an adjuvant
- MenB-4C (Bexsero) contains kanamycin as an antibiotic and its prefilled syringes contain latex
- Administered by intramuscular injection
- No product preference
- Vaccine effectiveness
  - 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
  - Vaccine effectiveness wanes 1-2 years after completion of primary series

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Clinical Considerations

Meningococcal Vaccine Recommendations: children/adolescents

Recommendations for routine vaccination in children and adolescents are found in the Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger.

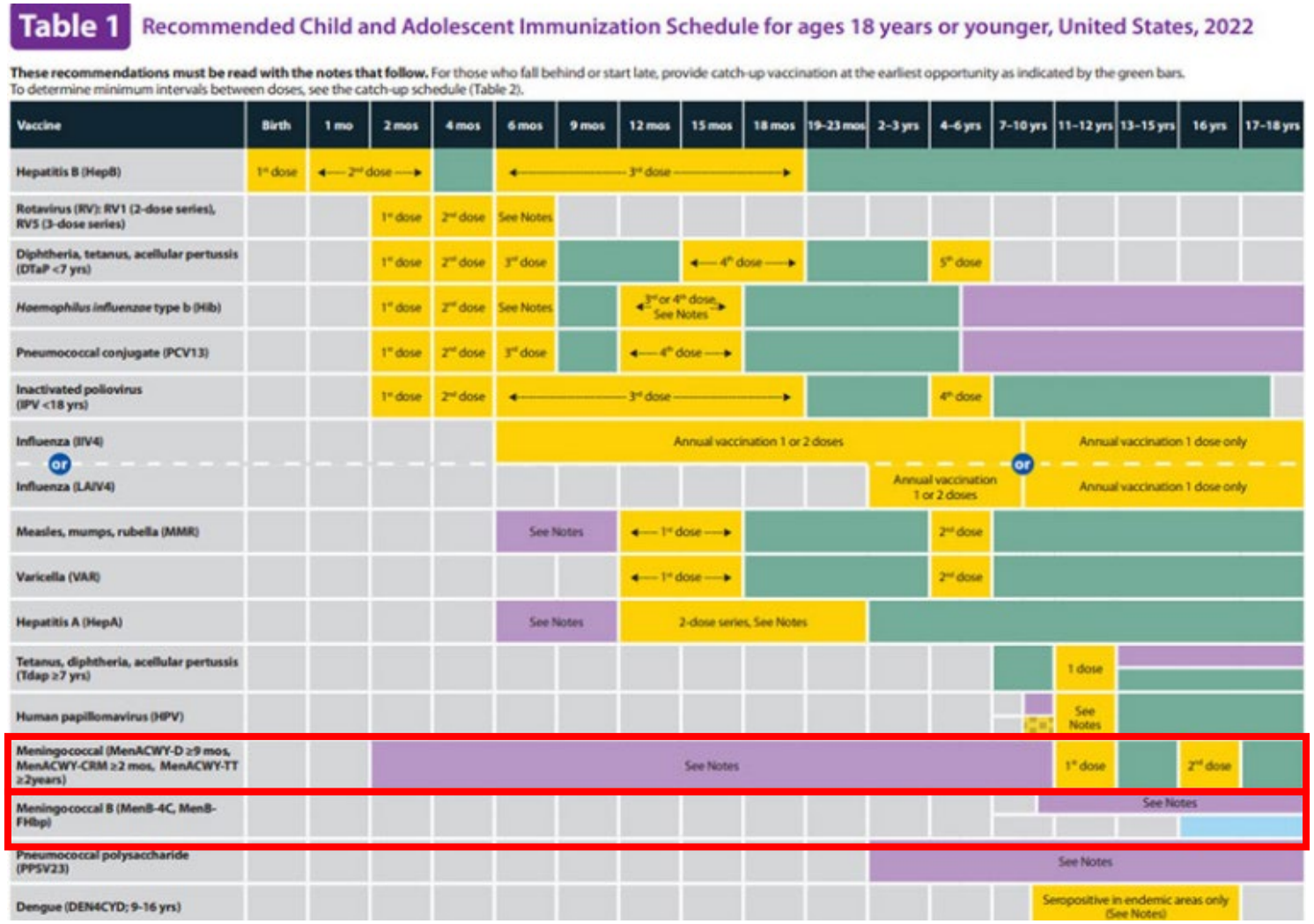


Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

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	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
Hepatitis B (HepB)	1st dose	◄— 2nd dose —►			◄— 3rd dose —►												
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1st dose	2nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1st dose	2nd dose	3rd dose			◄— 4th dose —►				5th dose					
Haemophilus influenzae type b (Hib)			1st dose	2nd dose	See Notes		◄— 3rd or 4th dose, See Notes —►										
Pneumococcal conjugate (PCV13)			1st dose	2nd dose	3rd dose		◄— 4th dose —►										
Inactivated poliovirus (IPV <18 yrs)			1st dose	2nd dose	◄— 3rd dose —►							4th dose					
Influenza (IIV4)					Annual vaccination 1 or 2 doses								Annual vaccination 1 dose only				
or																	
Influenza (LAIV4)											Annual vaccination 1 or 2 doses		Annual vaccination 1 dose only				
Measles, mumps, rubella (MMR)					See Notes		◄— 1st dose —►					2nd dose					
Varicella (VAR)							◄— 1st dose —►					2nd dose					
Hepatitis A (HepA)					See Notes		2-dose series, See Notes										
Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)														1 dose			
Human papillomavirus (HPV)														See Notes			
Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)			See Notes											1st dose		2nd dose	
Meningococcal B (MenB-4C, MenB-FHbp)														See Notes			
Pneumococcal polysaccharide (PPSV23)											See Notes						
Dengue (DEN4CYD; 9-16 yrs)													Seropositive in endemic areas only (See Notes)				

Information from www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html

Meningococcal Vaccine Recommendations: adults

Recommendations for routine vaccinations in adult is found in the [Recommended Adult Immunization Schedule for ages 19 years or older](#).

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2022

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
or		or		
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			1 dose PCV15 followed by PPSV23 OR 1 dose PCV20
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
	19 through 23 years			
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			

Information from www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html

MenACWY Recommendations for Healthy Children/Adolescents

Vaccine	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-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)			See Notes											1st dose		2nd dose	

- **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 unvaccinated after 16th birthday**
  - **22 years and older: no booster needed even if primary dose at age 11–15 years**

Information from Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices, United States, 2020 | MMWR (cdc.gov)

MenACWY use in Healthy Children Before Age 11 years

- **MenAWCY at age 10 years**
  - **Do NOT need routine MenACWY at age 11 – 12 years**
  - **Give booster at age 16 years**

- **MenACWY before age 10 years**
  - **Give routine MenACWY at 11 – 12 years with booster at 16 years**

Information from Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices, United States, 2020 | MMWR (cdc.gov)

MenB Recommendations for Healthy Children/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)**
  - **MenB-FHbp (Trumenba®): 2 doses at 0 and 6 months**
  - **MenB-4C (Bexero®): 2 doses separated by at least 1 months**
- **Booster vaccination: not recommended**

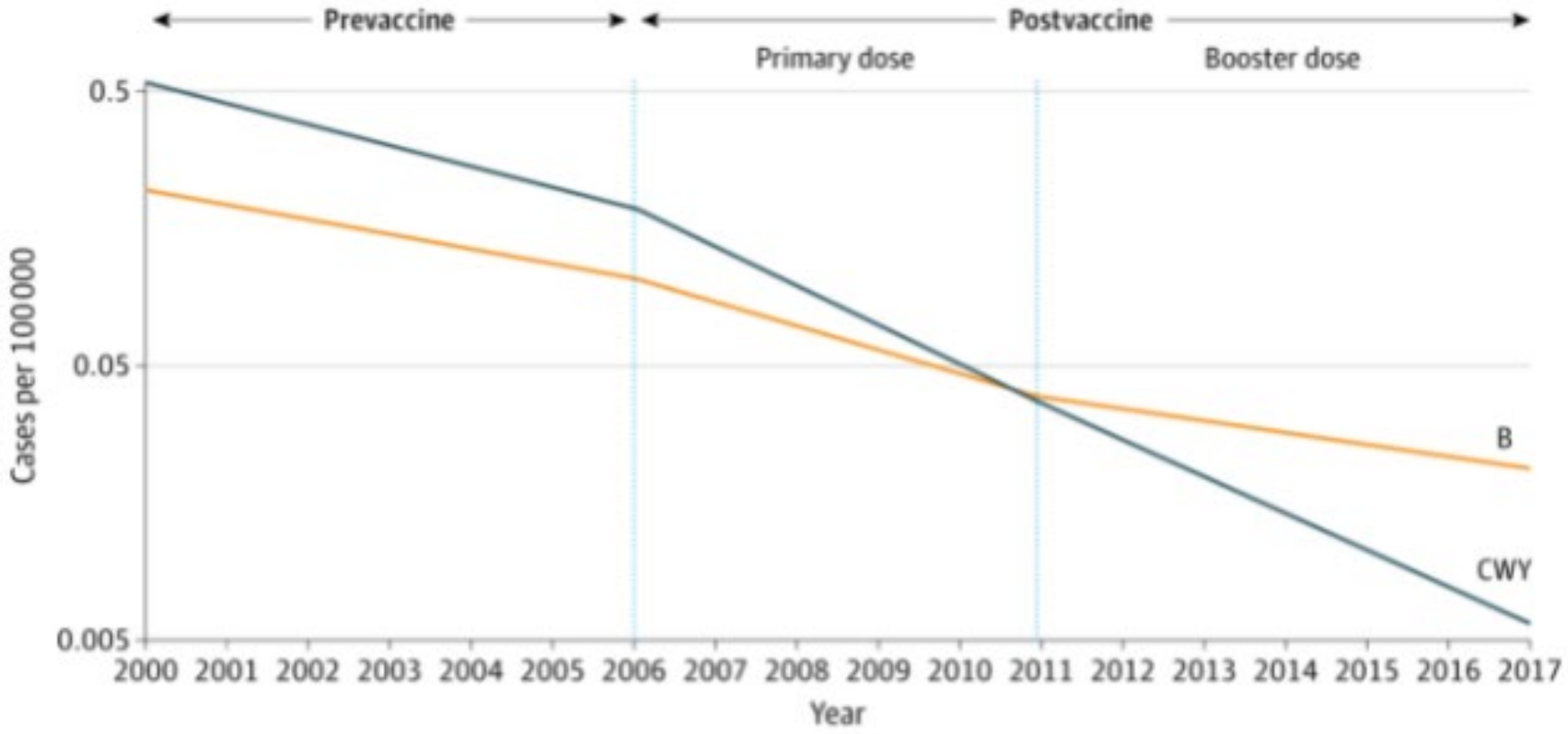
Information from Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices, United States, 2020 | MMWR (cdc.gov

MenB Recommendations for Healthy Children/Adolescents

- **Considerations for shared clinical decision-making for vaccination includes:**
  - **Serious nature of meningococcal infections**
  - **Low number of serogroup B meningococcal disease cases among persons aged 16–23 years**
  - **Increased risk among college students, especially those who are freshmen, attend a 4-year university, live in on-campus housing, or participate in sororities and fraternities;**
  - **Protection provided by MenB vaccines against most strains of serogroup B *N. meningitidis;***
  - **Estimated relatively short duration of MenB protection (antibody waning within 1–2 years postcompletion of the primary series); and**
  - **Evidence to date suggesting that MenB vaccination has no effect on meningococcal carriage (i.e., MenB vaccines might provide individual protection against serogroup B disease but herd protection is unlikely).**

Impact of Meningococcal Vaccination in the United States

Estimated Log Annual Incidence and Annual Percentage Change in Meningococcal Disease Incidence Among Adolescents Aged 11 to 15 Years—United States, 2000-2017 by Serogroup



Information from: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2768552

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 would 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.

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

Her school is requesting an additional dose of MenACWY. Can he get a 3rd dose today?

- A. YES

Meningococcal Vaccination for Persons at Increased Risk

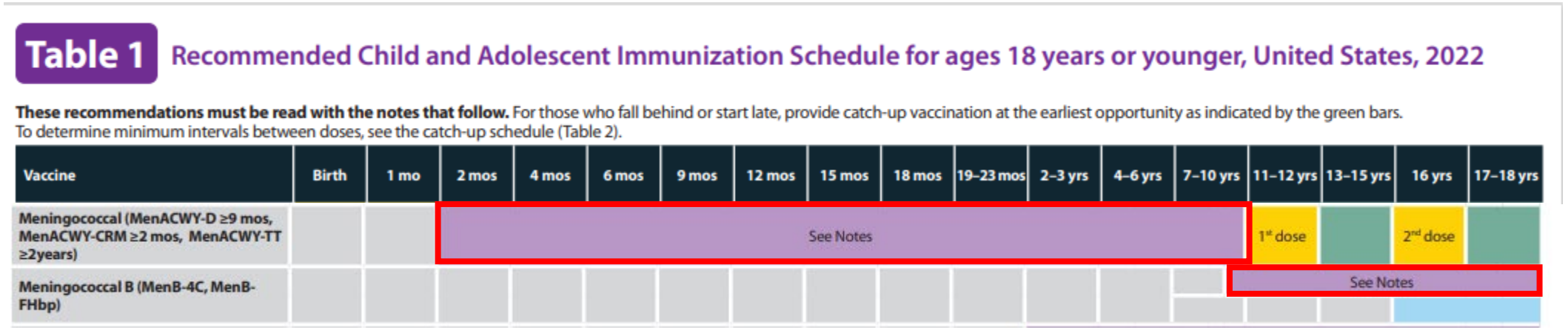


Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2022

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	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-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)			See Notes											1st dose		2nd dose	
Meningococcal B (MenB-4C, MenB-FHbp)													See Notes				

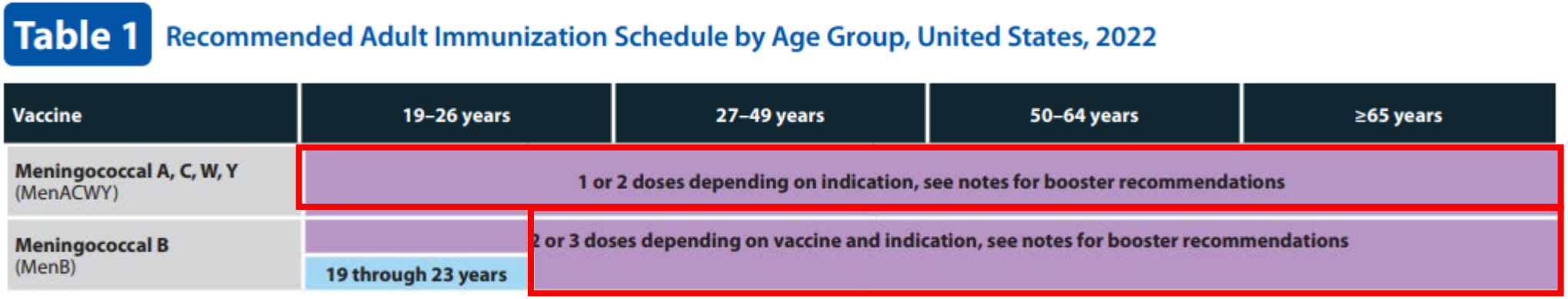


Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2022

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

Risk group	MenACWY vaccine	MenB vaccine
Persons with complement component deficiency (including patients using a complement inhibitor)	Aged ≥2 months	Aged ≥10 years
Persons with functional or anatomic asplenia (including sickle cell disease)	Aged ≥2 months	Aged ≥10 years
Persons with HIV infection	Aged ≥2 months	No recommendation
Microbiologists routinely exposed to *Neisseria meningitidis*	Age appropriate*	Age appropriate†
Persons exposed during an outbreak of meningococcal disease due to a vaccine-preventable serogroup	Aged ≥2 months	Aged ≥10 years
Persons who travel to or live in countries where meningococcal disease is hyperendemic or epidemic	Aged ≥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.

MenACWY Vaccination Schedule for Persons at Increased Risk

Vaccine Product	Trade Name	Primary Series		Booster Dose
		2 months to 23 months	2 years and older	For persons who remain at increased risk and completed the primary vaccination at age: **< 7years:** single dose 3 years after primary series; boosters every 5 years **≥ 7 years:** single dose 5 years after primary series; boosters every 5 years
MenACWY-CRM	**Menveo**	Minimum age: 2 months Total doses depends on age at first dose	• 2 doses ≥8 weeks apart for persons with persistent complement deficiencies, complement inhibitor use, functional or anatomic asplenia, or HIV. • 1 dose for college students in dorms, military recruits, microbiologist, travel, or outbreak	
MenACWY-D	**Menactra**	Minimum age: 9 months 2 doses, 12 weeks apart		
MenACWY-TT	**MenQuadfi**	Not indicated		

Information from: https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm

MenB Vaccination Schedule for Persons at Increased Risk*

Vaccine Product	Trade Name	Age Group	Primary series	Booster Dose
MenB- FHbp	**Trumenba®**	**≥10 years**	Three doses (0-, 1-2-, and 6-month schedule)	**Persons with complement deficiency, complement inhibitor use, microbiologist, or functional or anatomic asplenia:** booster dose at least one 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 one 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.
MenB-4C	**Bexsero®**	**≥10 years**	Two doses, at least one month apart (0 and ≥1 month schedule)	

***No recommendation for persons travelling to hyperendemic/epidemic areas or who are HIV-infected**

Information from: https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm

Knowledge Check

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

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

Interchangeability of Meningococcal Vaccine products

- **Meningococcal serogroup A, C, W, Y vaccines are interchangeable**
  - **Same vaccine product is recommended, but not required, for all doses**

- **Meningococcal serogroup B vaccines are NOT interchangeable**
  - **Same vaccine product must be used for all doses, including booster doses**
  - **If 2 different vaccine products administered**
    - **Pick one product and invalidate the dose of the other**
    - **Minimum interval of 4 weeks between invalid dose and repeat dose**

Co-administration of Meningococcal Vaccine products

- **MenB can be co-administered with MenACWY but at different anatomic site**

- **MenB can be administered on the same day or at any interval with other live and non-live vaccines but at different anatomic site**

- **MenACWY vaccines can be administered co-administered with other vaccines but at different anatomic site except for:**
  - **MenACWY-D (Menactra) and pneumococcal conjugate vaccines in persons with HIV infection or functional or anatomic asplenia. Separate vaccines by at least 4 weeks**

  - **MenACWY-D (Menactra) and DTaP: give Menactra before or on the same day as DTaP, or give Menactra at least 6 months after DTaP unless at risk for invasive meningococcal disease (e.g., travel to hyperendemic area or outbreak)**

Off-label Meningococcal Vaccination Recommendations for Persons at Risk

Age group	Indication
≥2 yrs	Administration of a 2-dose MenACWY primary series in persons at increased risk for serogroups A, C, W, or Y meningococcal disease Repeated booster doses of MenACWY for certain persons who remain at increased risk for serogroups A, C, W, or Y meningococcal disease (MenACWY-D and MenACWY-CRM are 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)
≥10 yrs	MenB booster doses in certain persons who remain at increased risk for serogroup B meningococcal disease
≥26 yrs	MenB primary series administration in persons at increased risk for serogroup B meningococcal disease
≥56 yrs	Administration of MenACWY-D or 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_{197} 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.

Mbaeyi SA, Bozio CH, Duffy J, et al. Meningococcal Vaccination: Recommendations of the Advisory Committee on Immunization Practices, United States, 2020. MMWR Recomm Rep 2020;69(No. RR-9):1–41. DOI: http://dx.doi.org/10.15585/mmwr.rr6909a1external icon.

4

Safety

Common Adverse Reactions: MenACWY vaccines

- **MenACWY-D (Menactra®)**
  - **Injection site reactions: pain and erythema**
  - **Systemic reactions: irritability, drowsiness, myalgia, headache, fever and fatigue**
- **MenACWY-CRM (Menveo®)**
  - **Injection site reactions: pain and erythema**
  - **Systemic reactions: Irritability, sleepiness, myalgia, headache, and fatigue**
- **MenACWY-TT (MenQuadfi®)**
  - **Injection site reactions: pain**
  - **Systemic reactions: myalgia, headache, and malaise**

Information from: https://www.cdc.gov/vaccines/pubs/pinkbook/mening.html

Common Adverse Reactions: MenB vaccines

- **MenB-FHbp (Trumenba®)**
  - **Injection site reactions: pain, induration, and erythema**
  - **Systemic reactions: headache, fatigue, myalgia, and arthralgia, and fever**

- **MenB-4C (Bexero®)**
  - **Injection site reactions: pain, erythema, swelling, and induration**
  - **Systemic reactions: headache, fatigue, myalgia, and arthralgia, fever, transient decreased mobility of arm**

Information from: https://www.cdc.gov/vaccines/pubs/pinkbook/mening.html

Contraindications and Precautions: MenACWY

Contraindications	Precautions

• Severe allergic reaction (e.g., anaphylaxis) after a previous dose
• Severe allergic reaction (e.g., anaphylaxis) to a vaccine component including:
  • For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria toxoid– or CRM_{197} containing vaccine
  • For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine
	• For MenACWY-CRM only: Preterm birth if less than age 9 months
	• Moderate or severe acute illness with or without fever

Contraindications and Precautions: MenB

Contraindications	Precautions
• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component	• Pregnancy • For MenB-4C only: Latex sensitivity • Moderate or severe acute illness with or without fever

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Storage & Handling

Storage and Handling for Meningococcal Vaccines

- 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 the original packaging

MenACWY-D (Menactra)

Ages: 9 months and older
Use for: Any dose in the series (and certain high-risk groups)
Route: Intramuscular (IM) injection

MenACWY-TT (MenQuadfi)

Ages: 2 years and older
Use for: Any dose in the series (and certain high-risk groups)
Route: Intramuscular (IM) injection

MenACWY-CRM (Menveo)

Ages: 2 months and older
Use for: Any dose in the series (and certain high-risk groups)
Route: Intramuscular (IM) injection
Reconstitute the MenA lyophilized conjugate component ONLY with manufacturer-supplied MenCWY liquid conjugate component
Do NOT administer MenCWY w/o MenA
Beyond Use Time: Should be used immediately after reconstitution, but may be stored between 2° and 25°C (36° and 77°F) for up to 8 hours. Do not freeze.

MenB-4C (Bexsero)

Ages: 10 years and older
Use for: Any dose in the series
Route: Intramuscular (IM) injection
Bexsero and Trumenba are NOT interchangeable
Complete series with same vaccine product

MenB-FHbp (Trumenba)

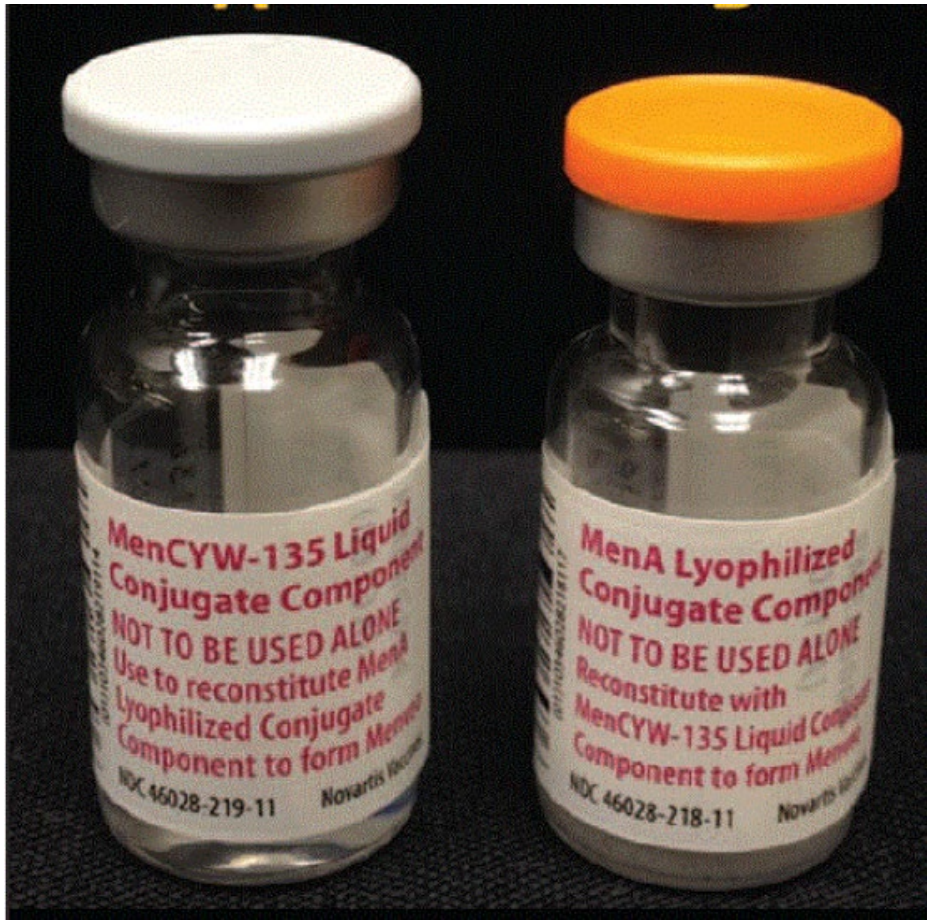
Ages: 10 years and older
Use for: Any dose in the series
Route: Intramuscular (IM) injection
Bexsero and Trumenba are NOT interchangeable
Complete series with same vaccine product

Vaccine Label Examples (cdc.gov)

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

- MenACWY-CRM requires reconstitution.
- The MenA (lyophilized) component of Menveo should **only** be reconstituted using the liquid C-W-Y component of Menveo. The 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.



Information from https://www.fda.gov/media/90064/download and https://www.cdc.gov/vaccines/vpd/mening/hcp/storage-handling.html

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 and/or your state or local immunization program for guidance**

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Resources

Meningococcal Resources

- Meningococcal disease
  - https://www.cdc.gov/meningococcal/index.html
- ACIP's Meningococcal Recommendations
  - https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html CDC's
- Meningococcal Vaccination for healthcare providers
  - https://www.cdc.gov/vaccines/vpd/mening/hcp/index.html
- Immunization Action Coalition Meningococcal Vaccines
  - 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

- **CE credit, go to**: https://tceols.cdc.gov/
- **Search course number: WD4564-082322**
- **CE credit expires: July 1, 2024**
- **CE instructions are available on the Pink Book Web-on-Demand Series web page**
- **Questions and additional help with the online CE system, e-mail CE@cdc.gov**

E-mail Your Immunization Questions to Us

- NIPINFO@cdc.gov

Thank You From Atlanta!