Teens & Shots

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Objectives

- Review Adolescent Vaccinations
- Describe the role of adolescent consent in giving vaccines
- Discuss approaches to vaccine hesitancy
- Discuss approaches to giving vaccines to teens with developmental disabilities

Financial disclosures

- Dr. Pam Murphy faculty for this CE activity, has no relevant financial relationship(s) with ineligible companies to disclose.
- None of the planners for this activity have relevant financial relationships to disclose with ineligible companies.
- The Arizona Alliance for Community Health Centers is accredited by the Arizona Medical Association to provide medical education for physicians.
- The Arizona Alliance for Community Health Centers designated the 2025 Arizona Immunization Conference educational activity for a maximum of 11 hours AMA PRA Category 1 Credits Physicians should only claim credit commensurate with the extent of their participation in the activity.
- The Arizona Pharmacy Association is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education.

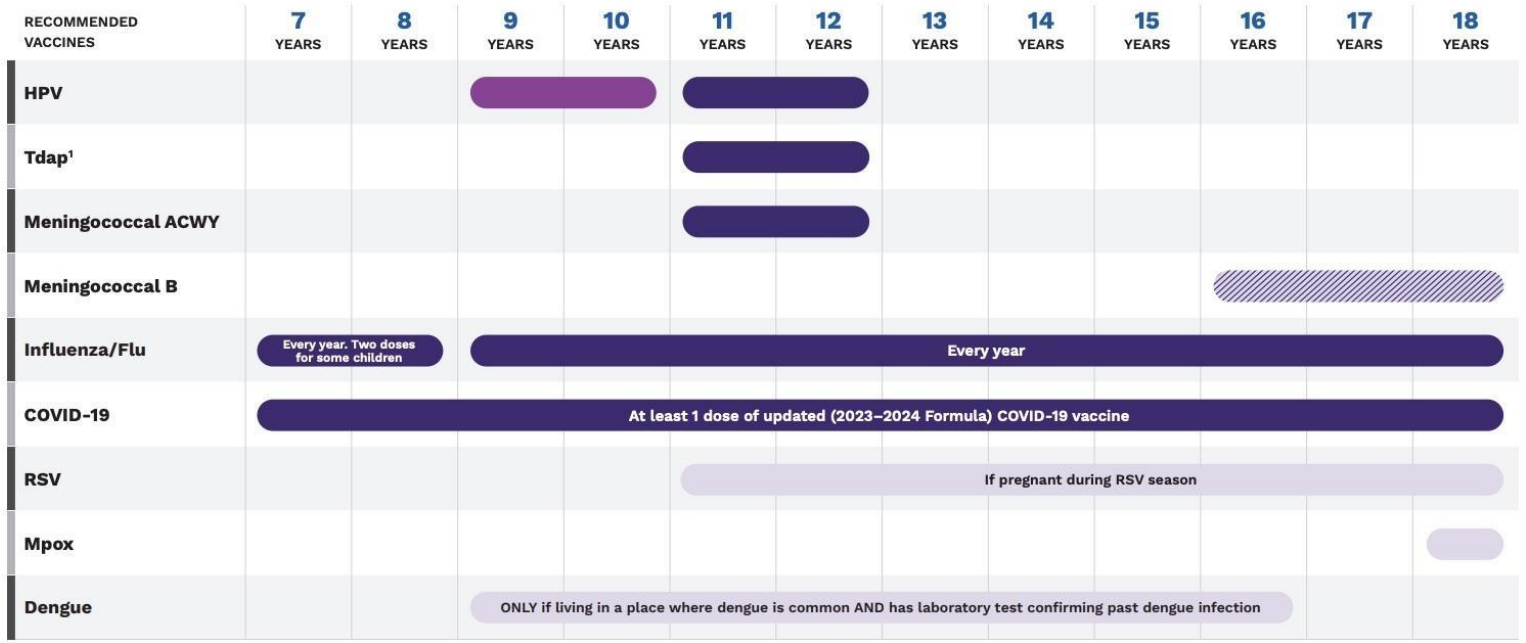
CDC Vaccine Schedules

Medical

Older children and teens need vaccines too!

2024 Recommended Immunizations for Children 7–18 Years Old

Want to learn more?
Scan this QR code to find out which vaccines your child might need. Or visit **www.cdc.gov/vaccines/tool/teen.html**



[1] One dose of Tdap is recommended during each pregnancy

KEY

- ALL children in age group should get the vaccine
- ALL children in age group can get the vaccine
- SOME children in age group should get the vaccine
- Parents/caregivers should talk to their health care provider to decide if this vaccine is right for their child

Talk to your child's health care provider for more guidance if:

1. Your child has any medical condition that puts them at higher risk for infection or is pregnant.
2. Your child is traveling outside the United States.
3. Your child misses any vaccine recommended for their age or for babies and young children.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

FOR MORE INFORMATION
Call toll-free: 1-800-CDC-INFO (1-800-232-4636)
Or visit: www.cdc.gov/vaccines/parents

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AMERICAN ACADEMY OF FAMILY PHYSICIANS

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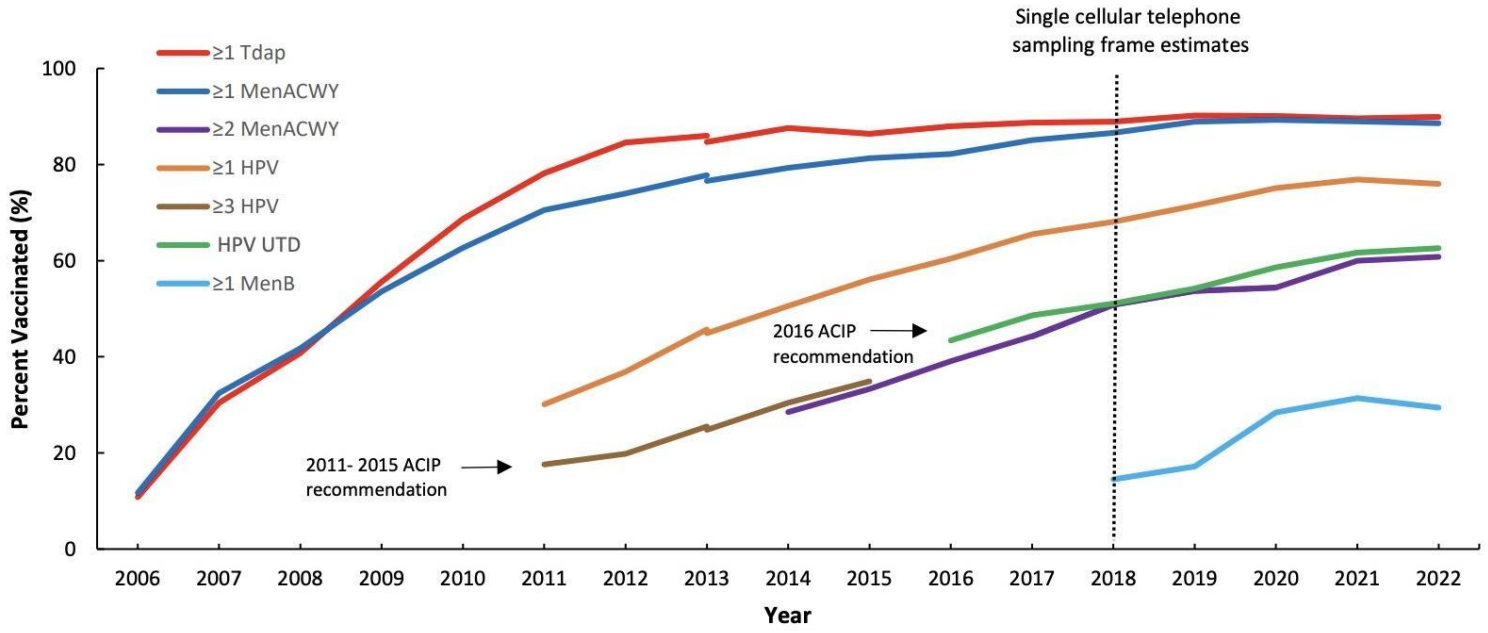
Supplemental Figure 1. Estimated vaccination coverage with selected vaccines and doses*,† among adolescents aged 13-17 years, by survey year — National Immunization Survey-Teen§¶, United States, 2006–2022



Abbreviations: ACIP = Advisory Committee on Immunization Practices; APD = adequate provider data definition; HPV = human papillomavirus; HPV UTD = up to date with HPV vaccination; MenACWY = quadrivalent meningococcal conjugate vaccine; MenB= serogroup B meningococcal vaccine; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine;

*≥1 dose Tdap at or after age 10 years; ≥1 dose MenACWY or meningococcal-unknown type vaccine; ≥2 doses MenACWY or meningococcal-unknown type vaccine, calculated only among adolescents aged 17 years at time of interview. Does not include adolescents who received their first and only dose of MenACWY at or after 16 years of age; HPV vaccine, nine-valent (9vHPV), quadrivalent (4vHPV) or bivalent (2vHPV). The routine ACIP recommendation for HPV vaccination was made for females in 2006 and for males in 2011. Because HPV vaccination was recommended for boys in 2011, coverage for all adolescents was not measured before that year; HPV UTD - Includes those with ≥3 doses, and those with 2 doses when the first HPV vaccine dose was initiated before age 15 years and at least five months minus four days elapsed between the first and second dose.

† ACIP revised the recommended HPV vaccination schedule in late 2016. The schedule changed from a 3-dose to 2-dose series with appropriate spacing between receipt of the 1st and 2nd dose for immunocompetent adolescents initiating the series before the 15th birthday. Three doses are still recommended for adolescents initiating the series between the ages of 15 and 26 years. Because of the change in definition, the graph includes estimates for ≥3 doses HPV from 2011 to 2015 and the HPV UTD estimate for 2016 - 2022. Because HPV vaccination was recommended for boys in 2011, coverage for all adolescents was not measured before that year.

§ NIS-Teen implemented a revised adequate provider data definition (APD) in 2014, and retrospectively applied the revised APD definition to 2013 data. Estimates using different APD definitions may not be directly comparable.

¶ NIS-Teen moved to a single-sample frame in 2018.

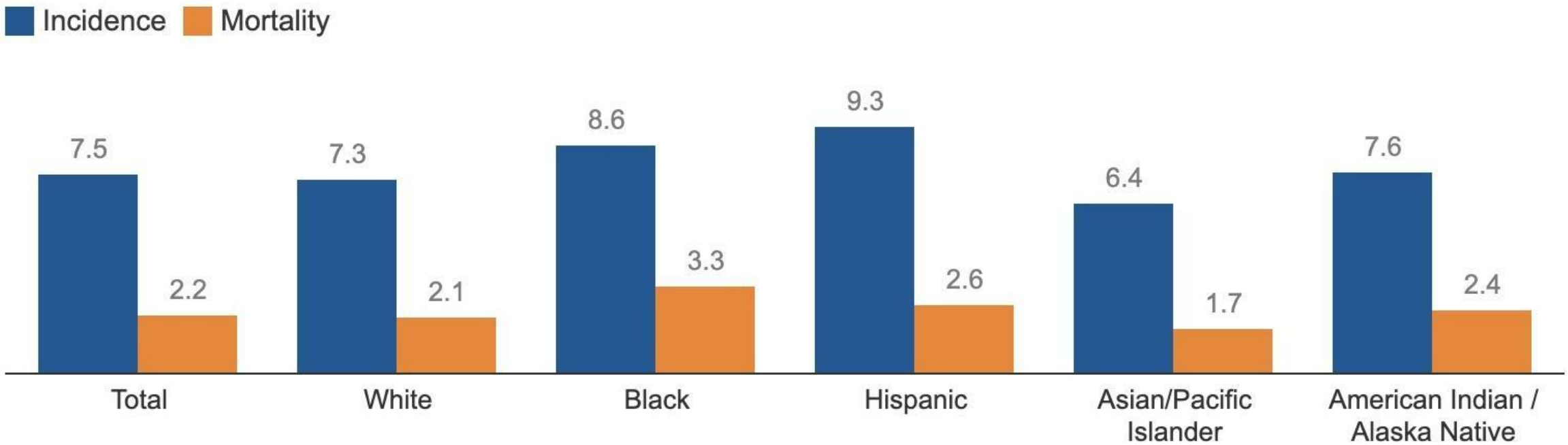
HPV Reminders

- Advancement of vaccines from 4 serotypes to 9 starting in 2006
- Gardisil 9 is the only vaccine used in US since 2016
- Majority of cervical, anal, throat cancers as well as most genital warts
- 27-45yo approved by FDA
- 27-45yo – ACIP recommends consideration
- Younger kids produce more antibodies than older teens

Figure 1

Racial and Ethnic Disparities in Cervical Cancer

Cervical Cancer Incidence and Mortality Rates by Race/Ethnicity, 2014-2018



NOTE: Data are age-adjusted rates per 100,000 women.

SOURCE: National Cancer Institute. SEER Stat Fact Sheets: Cervix Uteri Cancer. Accessed May 2021. • PNG

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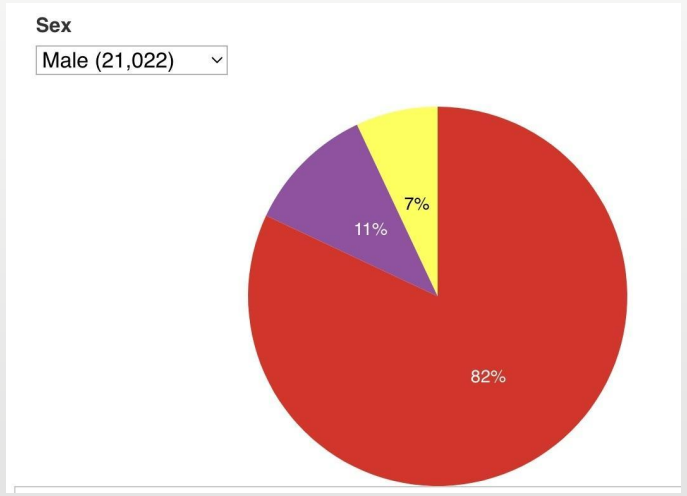
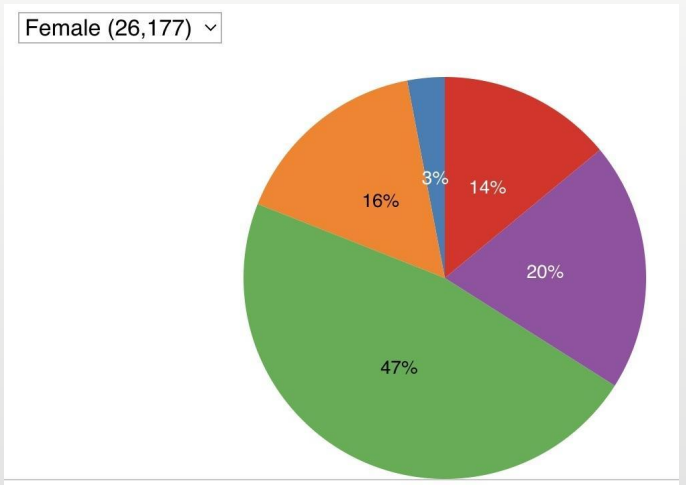
Cancer Types

- Vagina
- Vulva
- Cervix
- Anus*
- Oropharynx
- Penis





Number of new HPV-associated cancers each year

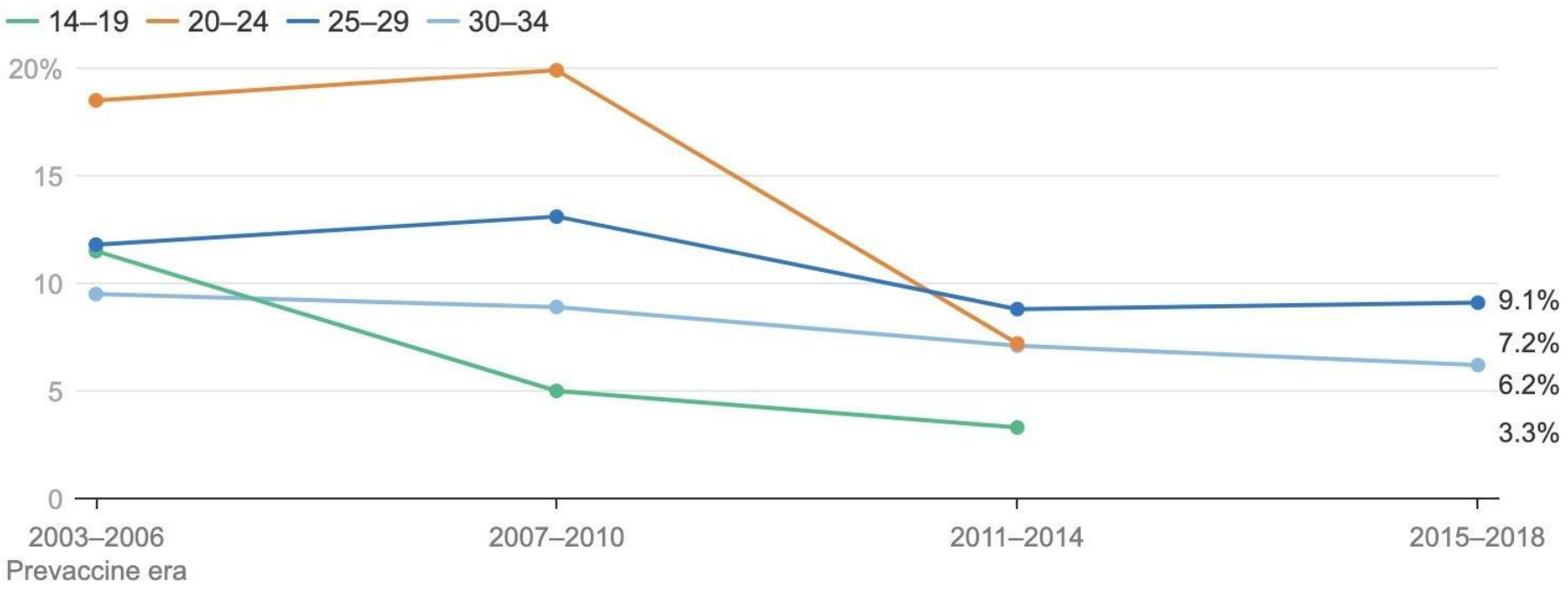
CDC Data 2015-2019

In 2020 the FDA broadened its (HPV) approval to prevent oropharyngeal cancer and other head and neck cancers.

Figure 3

Prevalence of HPV Infections Have Drastically Declined Among Teenage Girls and Young Women Since the Introduction of the Vaccine

Prevalence of 4vHPV-type infections among women 14-34



NOTE: 4vHPV = HPV 6, 11, 16, or 18. 2015-2018 data for ages 14-19 and 20-25 not included, relative standard error >30% and ≤50%, considered unstable.

SOURCE: Rosenblum HG, Lewis RM, Gargano JW, Querec TD, Unger ER, Markowitz LE. Declines in Prevalence of Human Papillomavirus Vaccine-Type Infection Among Females after Introduction of Vaccine — United States, 2003–2018. MMWR Morb Mortal Wkly Rep 2021;70:415–420 • PNG

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Figure 4

Estimated HPV Vaccination Coverage Among Adolescents in the U.S.

Share that are HPV Up-to-Date (UTD), 2019

NOTE: Among adolescents ages 13-17. HPV UTD includes those with ≥ 3 doses, and those with 2 doses when the first HPV vaccine dose was initiated before age 15 years and there was at least five months minus four days between the first and second dose.
Adolescents of Hispanic origin may be of any any race but are categorized as Hispanic; other groups are non-Hispanic.
*Indicates a statistically significant difference from White and Private Insurance; p<.05.
SOURCE: Elam-Evans LD, Yankey D, Singleton JA, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2019. MMWR Morb Mortal Wkly Rep 2020;69:1109–1116.
CDC. Supplementary tables for Estimated Vaccination Coverage with Selected Vaccines and Doses Among Adolescents Aged 13–17 Years — National Immunization Survey–Teen (NIS-Teen), United States, 2019. Accessed March 2021. • PNG

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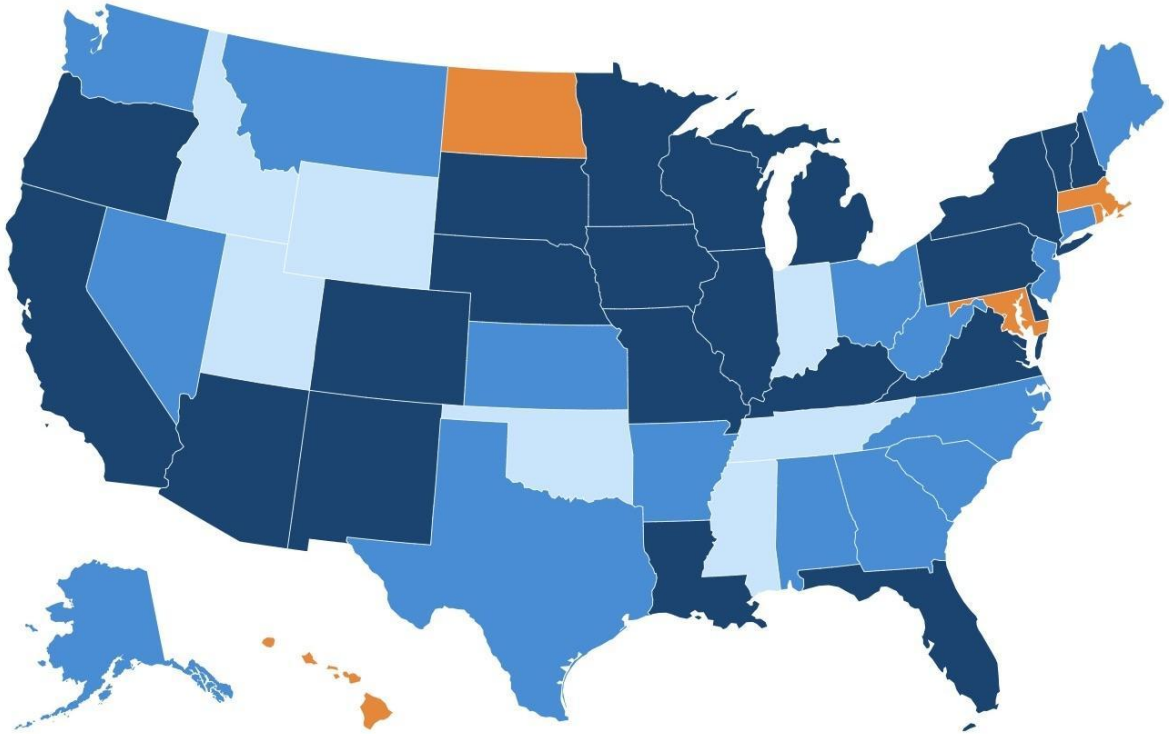
Figure 5

HPV Vaccination Rates of Adolescents, by State

Adolescents ages 13-17 with HPV Up-to-Date (UTD) Vaccination Series, 2019

Estimated vaccine coverage for adolescents ages 13-17

< 46.7% | 46.7%–54.3% | 54.3%–64.0% | ≥ 64.0%



NOTE: HPV UTD includes those with ≥ 3 doses, and those with 2 doses when the first HPV vaccine dose was initiated prior to age 15 years and there was at least 5 months minus 4 days between the first and second dose. In DC, 75.5% of adolescents are HPV UTD. DC requires female students to start HPV vaccine series prior to entering 6th grade.

SOURCE: CDC. SUPPLEMENTARY TABLE. Estimated vaccination coverage with selected vaccines and doses* among adolescents aged 13–17 years† (N = 18,788) by HHS region, state, selected local area, or territory — National Immunization Survey–Teen (NIS-Teen), United States, 2019. August 2020; National Conference of State Legislatures. HPV Vaccine: State Legislations and Regulation. Accessed April 2021.

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Contraindications

Allergy to any component including yeast

Pregnancy (not enough info)

- If inadvertently done, observe, no intervention needed
- Report to manufacturer
- Wait until after pregnancy to complete series

Reminders

- Tdap at 11yo then Td every 10 years
- Tdap during third trimester for every pregnancy
- Clean and minor wounds – Tdap or Td if not received in 10 years
- Other wounds – Tdap or Td if not received in 5 years
- Two Vaccines
  - Boostrix ≥10yo
  - Adacel 10-64yo

TdVax™ discontinued

- Tenivac still being produced
- Anticipate shortages
- Tdap is adequate substitute unless pertussis vaccine contraindicated
  - History of severe allergic reaction
  - History of allergic reaction to any component

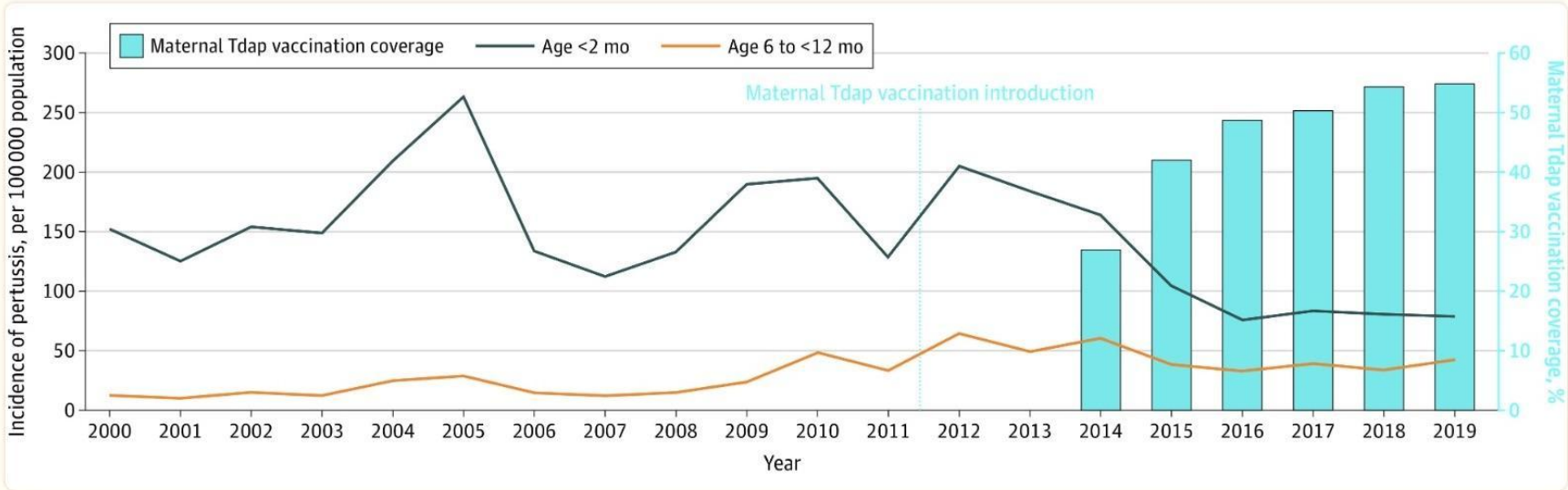


Figure 1.

Annual Incidence of Reported Pertussis Among Infants Younger Than 2 Months and Infants Aged 6 Months to Less Than 12 Months, 2000-2019

Maternal tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccination during pregnancy was introduced in the US in 2011. National coverage estimates of maternal Tdap vaccination for available years (beginning in 2014) were obtained through the Centers for Disease Control and Prevention's internet panel survey.[12,20,21,22] Changes in the internet panel survey methods may limit the ability to compare estimates for 2017 to 2018 with estimates from previous seasons.

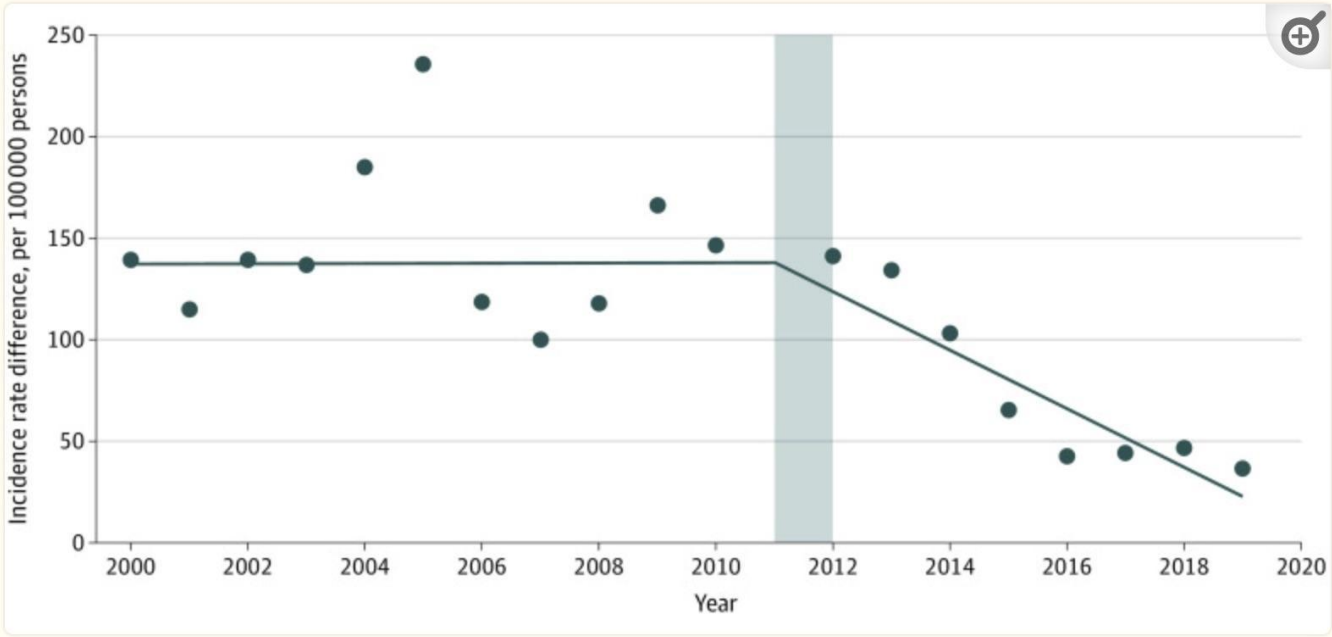


Figure 2.

Pertussis Incidence Difference Between Infants Younger Than 2 Months and Infants Aged 6 Months to Less Than 12 Months

The gray area indicates the year of maternal tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccination introduction, which was excluded from the segmented regression analysis to account for the gradual uptake of the recommendation; the dots indicate observed differences in pertussis incidence between infants younger than 2 months and infants aged 6 months to less than 12 months; and the solid line indicates estimated differences in pertussis incidence between infants younger than 2 months and infants aged 6 months to less than 12 months.

MenACWY-D

MenB-FHbp

MenACWY-CRM

CONFUSION!

MenACWY-TT

MenACWY-TT/MenB-FHbp

MenB-4C

Let’s Clarify!

- Menactra……..MenACWY-D (discontinued in 2022)
- Menveo……..MenACWY-CRM
- MenQuadfi……MenACWY-TT

- Penbraya……MenACWY-TT/MenB-FHbp

- Bexsero……..MenB-4C
- Trumenba……..MenB-FHbp

MenACWY

Routine

- 11-12yo two dose series, 5 years apart
- 16yo – one dose if started at 16yo or older
- Brands are interchangeable

Special Situations

- Anatomic or functional asplenia
- HIV infection
- Persistent complement component deficiency
- Complement inhibitor use
- Travel to endemic areas

Ages for special situations

- Menveo - starting at 2 months
- MenQuadfi - starting at 24 months

MenB

- Routine
  - Shared Decision Making at 16-23yo age group
  - **Bexsero** 2 doses at least one month apart
  - **Trumenba** 2 doses six months apart
  - These vaccines are not interchangeable
- Special Conditions
  - Anatomic or functional asplenia
  - Persistent complement component deficiency
  - Complement inhibitor use
  - Ages 10-25yo

Shared Clinical Decision-Making

Meningococcal B Vaccination

The determination on whether to vaccinate a patient 16-23 years of age who is not at increased risk for meningococcal disease with a MenB vaccine is based on a shared clinical decision-making process between a patient and their health care provider. However, all adolescents and young adults at increased risk because of a serogroup B meningococcal disease outbreak or certain medical conditions should receive a MenB vaccine. Shared clinical decision-making recommendations are intended to be flexible and informed by the characteristics, values, and preferences of the individual patient and the clinical discretion of the health care provider.

Consider discussing MenB vaccination with patients 16 through 23 years of age who are not at increased risk for meningococcal disease:

Remember: 	· MenB vaccine is not routinely recommended for all adolescents in this age group. · The vaccine series provides short-term protection against most strains of serogroup B meningococcal bacteria circulating in the United States.
Consider: 	· Serogroup B meningococcal disease is an uncommon but deadly disease. In recent years, between 20 and 50 cases occurred in 16 to 23 year olds in the United States each year. · A low risk of exposure or infection does not mean a person cannot get a MenB vaccine. It is just one potentially important consideration in shared clinical decision-making. · College students are at increased risk, especially those who are freshmen, attend a four-year university, live in on-campus housing, or participate in sororities and fraternities. · Serogroup B vaccines are safe and effective, but only offer short-term protection (1 to 2 years) to those who get vaccinated.
If you vaccinate: 	· Since these patients are not at increased risk of serogroup B disease, administer: - 2-dose series of MenB-4C at least 1 month apart, or - 2-dose series of MenB-FHbp at 0, 6 months · MenB-4C and MenB-FHbp are not interchangeable · MenB vaccines are safe and effective for this population unless a patient - Had a severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component - Is pregnant; vaccine should be delayed unless the patient is at increased risk and the benefits of vaccination outweigh the potential risks

Additional information:
CDC Child and Adolescent Immunization Schedule:
www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html
CDC Adult Immunization Schedule:
www.cdc.gov/vaccines/schedules/hcp/imz/adult.html
CDC Meningococcal B Disease and Vaccine Information:
www.cdc.gov/vaccines/vpd/mening/hcp/index.html
ACIP/CDC Meningococcal B Recommendations:
www.cdc.gov/mmwr/volumes/68/wr/mm6819a6.htm

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

07/12/22

Figure 1

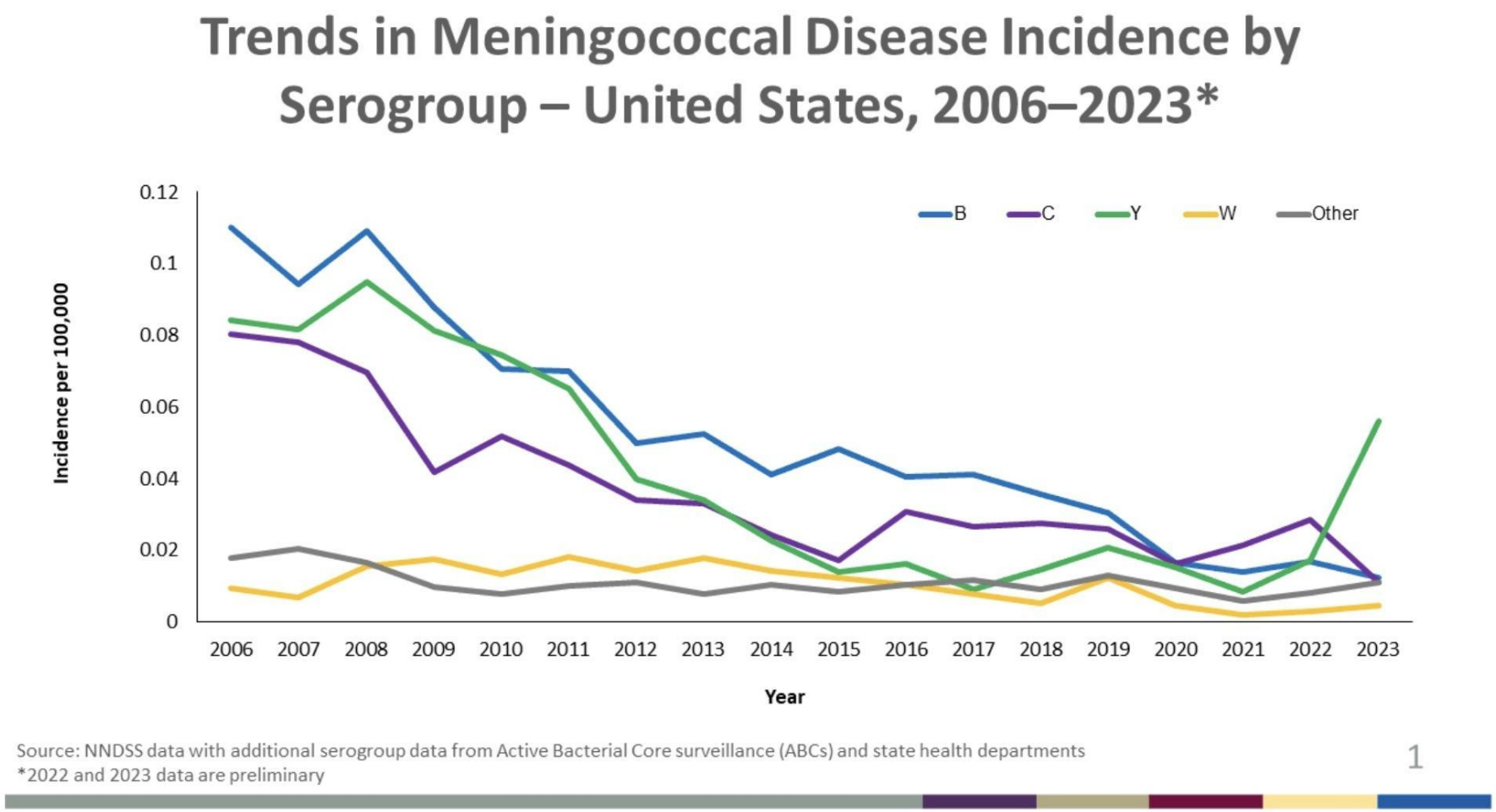
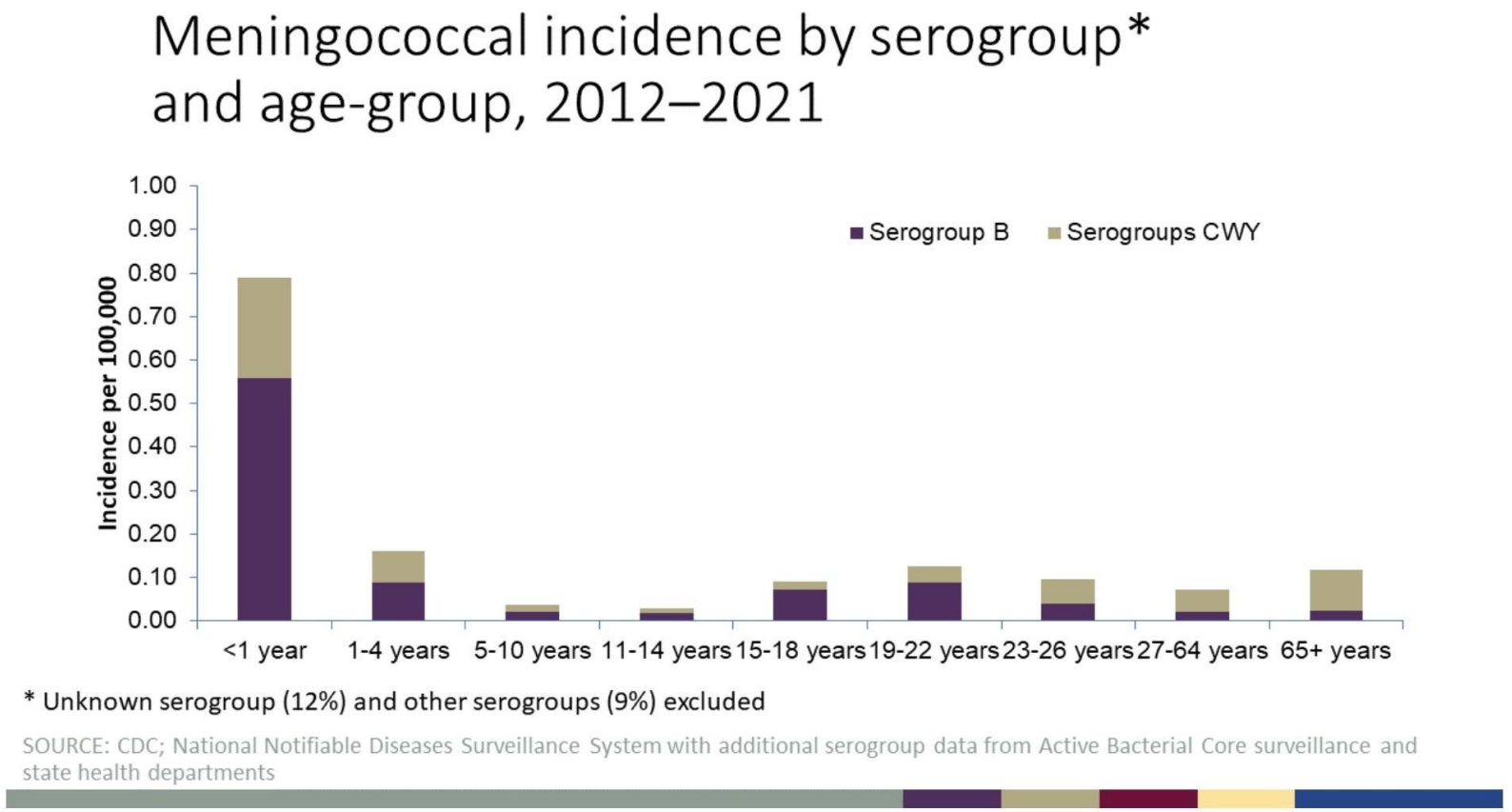


Figure 1 shows reported incidence of meningococcal disease declining or holding steady for all serogroups during 2006–2022 with an increase in serogroup Y incidence starting in 2022.

Figure 2



View Larger

Figure 2 shows incidence rates (per 100,000 persons) of meningococcal disease caused by serogroup B compared to serogroups C, W, and Y by age group from 2011 through 2021. Serogroup B caused approximately 60% of cases among children less than 5 years old. Serogroups C, Y, or W caused approximately three in five cases of meningococcal disease among persons 11 years old or older during this time period. View data for this chart.

Influenza

LAIV4 – Live Attenuated Influenza Vaccine

- Intranasal
- 2 years and older
- Avoid contact with immunosuppressed individuals for 7 days

IIV – Inactivated Influenza Vaccine

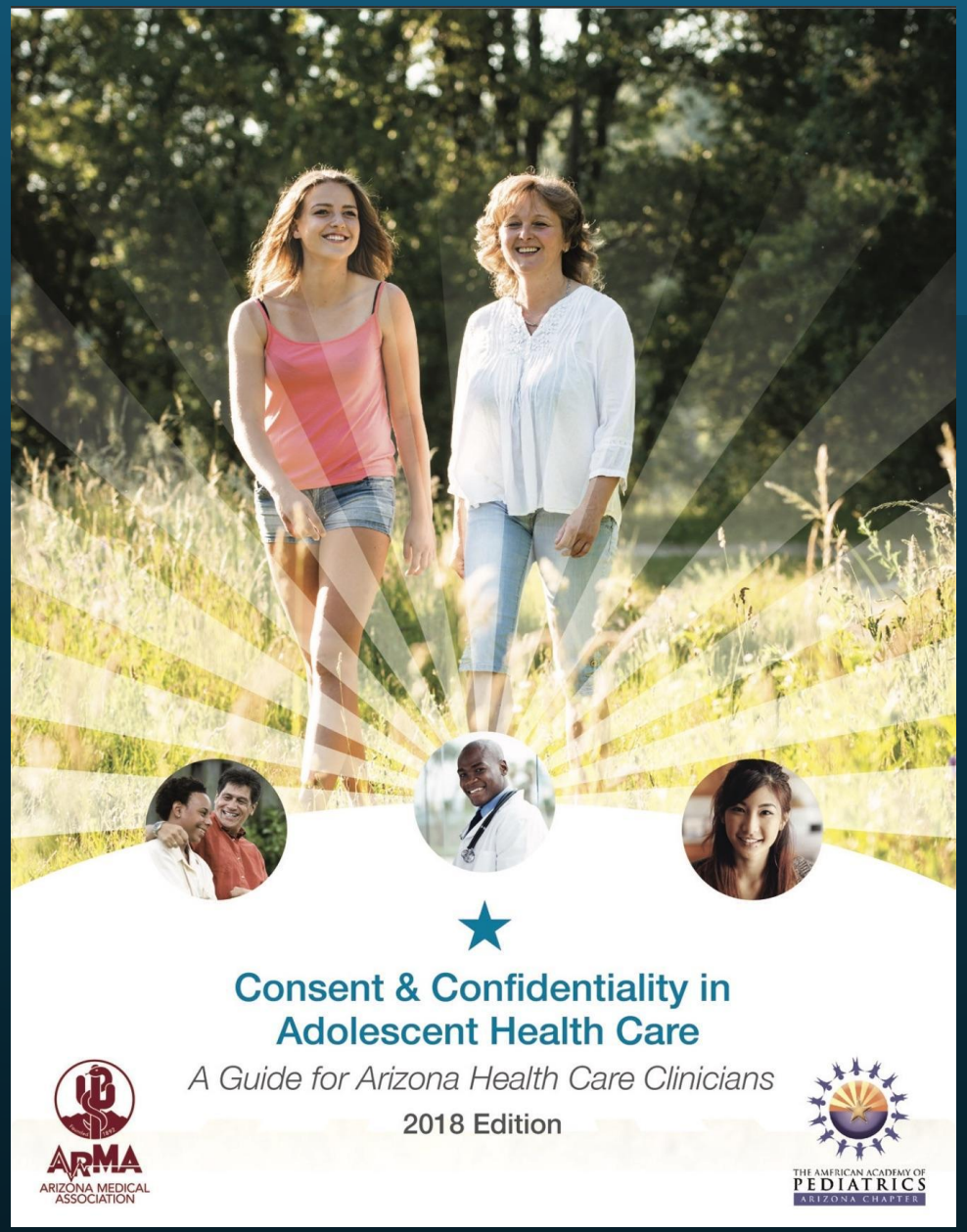
- 6 months and older

RIV4 – Recombinant Influenza Vaccine

- 18 years and older

LAIV4 Contraindications & Precautions

- Asthma
- Pregnancy
- Asplena or functional asplenia
- On ASA
- Cochlear implants
- Caring for individuals with immunosuppression
- Guillan-Barre within 6 weeks of a previous dose of flu vaccine
- Severe allergy to an ingredient of the vaccine


Consent & Confidentiality in
Adolescent Health Care
A Guide for Arizona Health Care Clinicians
2018 Edition
AzMA
ARIZONA MEDICAL ASSOCIATION
THE AMERICAN ACADEMY OF
PEDIATRICS
ARIZONA CHAPTER

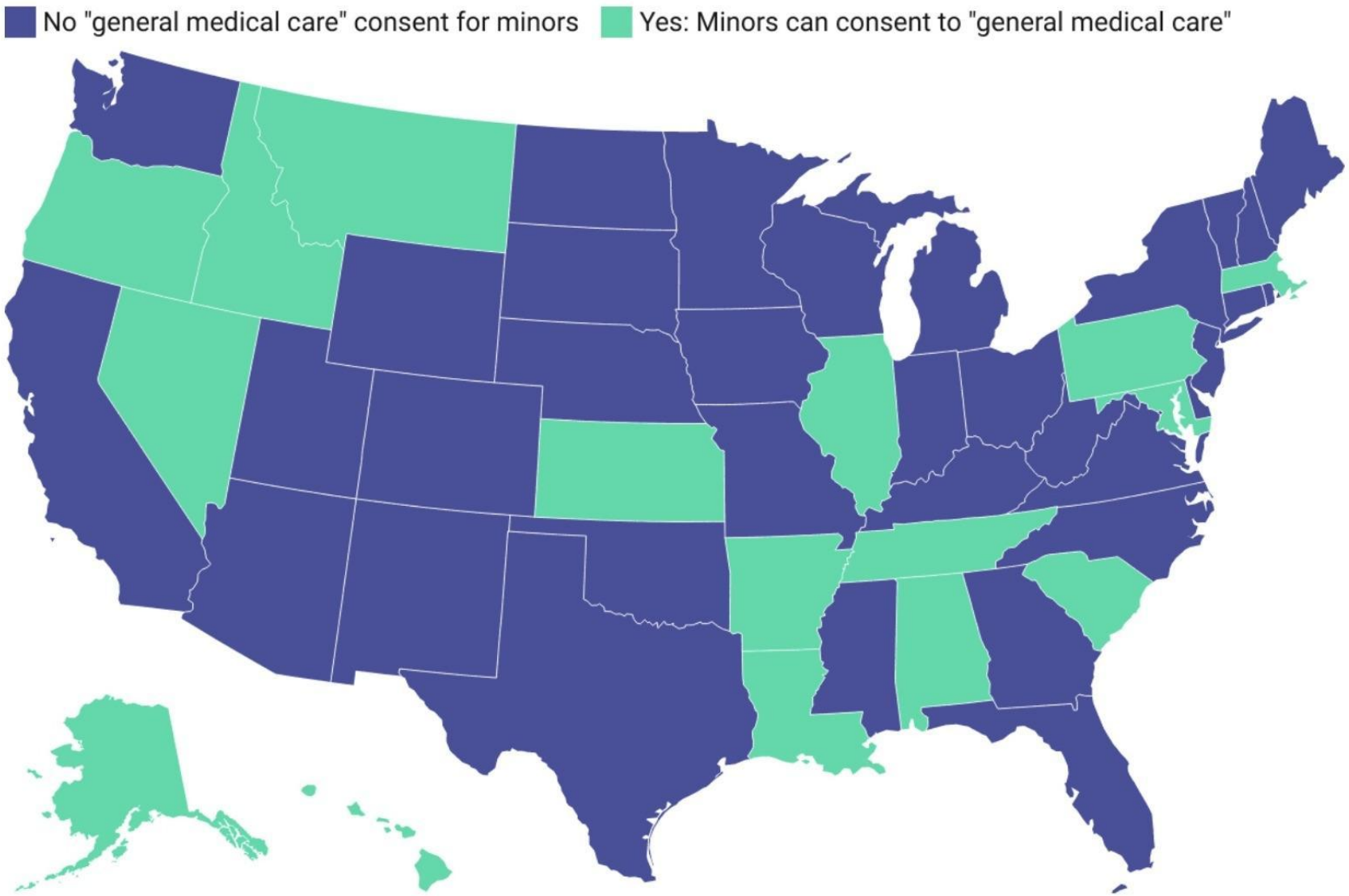
Consent

- Age and capacity
- Locality
- Legal status of adolescent
- Disease for which vaccination is given

State Consent Laws

States that specify HPV and/or HBV	CA, IL, IA, MN, NY
States that allow teens to consent above a certain age	AL, AR, DE, ID, LA, NC, OR, RI, SC, TN, WA Mature Minor Doctrine or above 12yo, 14yo, 16yo Many of these states make an exception for COVID
The rest…	

Sharko et al, State by State Variability in Adolescent Privacy Laws. PEDIATRICS Volume 149, number 6, June 2022:e2021053458



Map: The Conversation, CC BY-ND • Source: State Minor Consent Laws: A Summary, 3rd Ed.

Mature Minor Doctrine

- He or she is 15 years old or older and is able to understand the risks and benefits of the proposed care sufficiently well to give an informed consent; and
- The medical care is for the patient's benefit; and
- The care is necessary according to conservative medical opinion; and
- There is good reason (including the minor's objection) for not obtaining parental consent.

Optimizing Adolescent Vaccination Rate
What Can You Do in Your Clinic?

Vaccine Hesitancy

- Cancer prevention - helpful
- Urgency – counterproductive
- Use of personal pronouns undermine impact of explanations

•Shah et al, Questions and Concerns About HPV Vaccine, PEDIATRICS Volume 143, number 2, February 2019:e20181872

Vaccine Hesitancy

- Provider Persistence

•Shay et al, Parent-Provider Communication of HPV Vaccine Hesitancy. PEDIATRICS Volume 141, number 6, June 2018:e20172312

Concerns

- Diseases prevented by HPV vaccine
- The age to start HPV vaccine series
- Vaccination for boys and girls
- National recommendations for HPV vaccine
- Safety and side effects
- Vaccination for children not sexually active
- School requirements for vaccination

•Shah et al, Questions and Concerns About HPV Vaccine, PEDIATRICS Volume 143, number 2, February 2019:e20181872

Predictors of Immunizations in Children with Disabilities

- **Regular Health Checkups**
- **Health Care Provider recommendation**

- Research is needed
  - Understanding barriers (patient, family, HCP)
  - Understanding health professional opinion and advice

•O'Neill et al, Vaccination in People with a Disability. HUMAN VACCINES & IMMUNOTHERAPEUTICS 2020, VOL. 16, NO. 1, 7–15 https://doi.org/10.1080/21645515.2019.1640556

Parental/Caretaker Advice – Before Appt

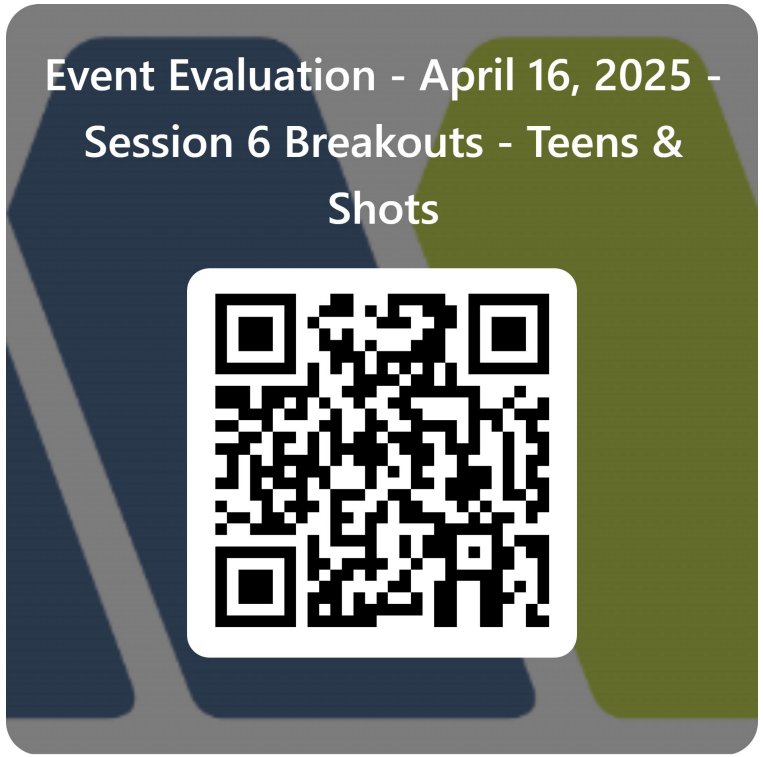
Ask	Ask for an appointment on a day and time that is not busy in your pediatrician's office.
See	See if your child's provider recommends pre-medicating with an over-the-counter pain reliever or using a topical numbing cream or spray.
Be	Be honest with your child and explain to them what will be happening. For some children, it might be appropriate to prepare a couple days in advance; for others it might be the day of the appointment.
Ask	If possible, ask if your child can receive their vaccination in the car instead of going into the clinic.

Parent/Caretaker Advice – Day of Appt

- Try to **remain calm** before and during the appointment. Bring your **child's favorite stuffed animal or doll** with them for comfort.
- If your child has a **favorite provider, nurse, or medical assistant** at your pediatrician's office, ask for that person to be present to support your child.
- Ask that your child be vaccinated in a **quiet exam room**, away from noise, the waiting area, and other people.
- If appropriate, encourage your child to take some **deep breaths**.
- If able, help your child relax by asking them to shake their arms and legs in a silly way.
- Walk around with your child after the vaccination to distract them instead of sitting.
- If multiple vaccinations are being administered, ask the provider to take a break in-between if it will help your child.
- Reassure your child that they will be fine, and you and the provider will be there to support them.
- **Reward your child**. If your child is having more than one vaccination in a single appointment, you may want to reward them after each vaccination with a sticker or other small item they like.

Troy Nelson, MD. DMG Children's Rehabilitative Services

Claim your Continuing Education Credit



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Pharmacy CEs pick up your QR code at the registration desk to Claim your CEs!