

## Ensure adolescents who missed vaccines during pandemic catch up

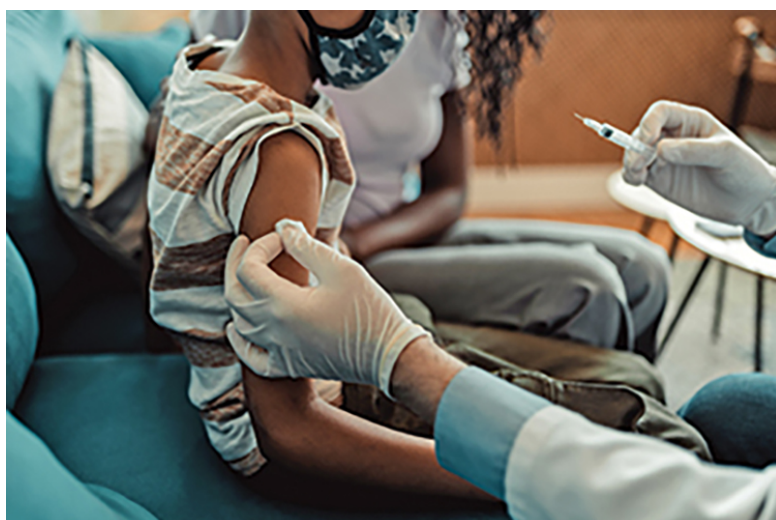
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Though routinely recommended vaccines have improved the health and well-being of adolescents, the COVID-19 pandemic has led to new challenges and decreased immunization rates.

A recent report from the Centers for Disease Control and Prevention (CDC) found a substantial decrease of up to 71% in routine vaccine doses administered to adolescents during the COVID-19 pandemic compared to in 2018 and 2019 (Murthy BP, et al. *MMWR Morb Mortal Wkly Rep.* 2021;70:840-84).

The easing of nationwide restrictions and opening of schools introduce a new risk for disease outbreaks among adolescents who may have missed routine immunizations due to the pandemic. Therefore, it is essential for pediatricians to ensure adolescents are up to date on their vaccines.

The 2021 Recommended Child and Adolescent Immunization Schedule (<http://bit.ly/33ekBFE>) includes recommendations for adolescent vaccines such as HPV, quadrivalent and type B meningococcal (MenACWY and MenB), tetanus, diphtheria and acellular pertussis (Tdap) and influenza. It also covers special situations, including catch-up schedules, and serves as a tool to assist providers with resuming routine vaccinations in the pandemic-recovery era.

Interim clinical guidance from the CDC allows COVID-19 vaccines to be administered at the same time as other routine vaccines. The AAP also supports coadministration of routine childhood and adolescent immunizations with COVID-19 vaccines.

### **Meningococcal vaccines**

The most recent vaccine data on the meningococcal ACWY series reflected that 88.9% of adolescents ages 13-17 received one dose, and 53.7% of 17-year-olds received two or more doses (Elam-Evans LD, et al. *MMWR Morb Mortal Wkly Rep.* 2020;69:1109-1116). Vaccine initiation should begin with one dose at 11-12 years of age, with a booster at 16 years of age. This recommendation applies to *all* adolescents, regardless of college-bound status.

Conversely, the MenB vaccine is not universally recommended but confers protection to special populations, such as those with complement deficiencies or those with functional or anatomic asplenia (including sickle cell disease). Adolescents ages 16-23 with these medical conditions may receive the MenB vaccine if it is determined to be appropriate through shared clinical decision-making with the patient, family and health care provider. Two doses are required one month apart, with a booster dose after one year.

MenACWY and MenB vaccines can be given together safely, if required for these special populations.

#### *Special situation*

Immunocompetent adolescents do not need a MenACWY booster, if the initial dose is given at or after age 16.

#### **HPV vaccine**

The HPV vaccine was created to prevent cervical, penile, anal and oropharyngeal cancers caused by the human papillomavirus. It has become more accepted due to efforts to dispel myths; however, some biases persist.

A common parental fear is that early initiation of the HPV vaccine will lead to early sexual encounters. However, studies continue to show that HPV vaccination status has not resulted in an increased likelihood of early sexual experiences or an increased number of sexual partners in males or females (Brouwer AF, et al. *BMC Public Health.* 2019;19:821).

It is important for parents and adolescents to recognize that HPV remains the most common sexually transmitted disease, with an annual incidence of approximately 13 million people (Lewis RM, et al. *Sex Transm Dis.* 2021;48:273-277).

The most recent data from 2019 illustrated that over half of U.S. adolescents were up to date on the HPV vaccine, and 71.5% of 13- to 17-year-olds had received the first dose (Elam-Evans LD, et al. *MMWR Morb Mortal Wkly Rep.* 2020;69:1109-1116).

Since routine HPV vaccination was recommended in 2006, disease prevalence has declined in females ages 14-24 years. Infection with HPV types included in the quadrivalent vaccine decreased by more than 80% from pre-vaccine baseline (from 11.5% prevalence in 2003-'06 to 1.5% prevalence in 2015-'18) (Rosenblum HG, et al. *MMWR Morb Mortal Wkly Rep.* 2021;70:415-420), which demonstrates "evidence of indirect protection of unvaccinated females through herd immunity."

Though the CDC recommends the HPV vaccine for children starting at ages 11-12 years, the AAP has encouraged vaccination starting as early as 9 years.

Two-dose and three-dose series have been approved for use in pediatrics. Doses are administered six to 12 months apart, with age determining which series the patient receives. Three doses are recommended for patients who initiate vaccines after 15 years of age. Catch-up vaccines may be administered safely without a need to restart the series.

### *Special situations*

- Immunocompromised patients are recommended to receive the three-dose series at 0, 1-2 and 6 months.
- Children who are victims of sexual abuse should initiate the vaccination series at 9 years of age.
- Pregnant patients are recommended to wait to start the vaccine series until after delivery. However, if a patient is vaccinated during pregnancy because pregnancy status was unknown, no intervention is required

### **Tdap vaccine**

Children complete their routine DTaP series at 4-6 years of age. Due to waning protection, a Tdap booster is recommended at 11-12 years of age, and a booster with either Tdap or Td is recommended every 10 years thereafter.

### *Special situation*

Pregnant adolescents should receive one dose during pregnancy at 27-36 weeks of gestation.

### **Influenza vaccine**

The one-dose annual influenza vaccine is recommended for adolescents prior to and throughout the flu season. Influenza activity was substantially lower during the COVID-19 pandemic, likely due to COVID-19 mitigation measures. As restrictions are relaxed, timely influenza vaccination will be crucial for adolescents in the coming season.

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