# ACHA Guidelines Immunization Recommendations for College Students

Immunizations offer safe and effective protection from vaccine-preventable diseases and outbreaks. The United States is experiencing re-emergence of these diseases, in part due to factors such as un-immunized and under-immunized persons, global travel, and the politicization of vaccine science. The American College Health Association (ACHA) strongly supports the use of vaccines to protect the health of our individual students and our campus communities.<sup>1</sup> In recognition of the vital role that vaccine coverage plays in community immunity (also known as herd immunity), ACHA discourages use of nonmedical exemptions for required vaccines.

This guidance is provided to facilitate implementation of a comprehensive institutional immunization policy. Best practices for institutions of higher education include implementing the following immunization recommendations for college students, encouraging students who request nonmedical exemptions to required vaccines to be counseled by a health service clinician, and considering exclusion of un-immunized students from school during outbreaks of vaccine-preventable diseases. Institutions may also be subject to additional requirements for pre-matriculation vaccinations and the granting of exemptions by state law. Health science students have additional responsibility to their patients and should meet the same standards as health care personnel.

The ACHA Vaccine-Preventable Diseases Advisory Committee updates this document yearly in accordance with changing public health recommendations. These guidelines follow Advisory Committee on Immunization Practices (ACIP) recommendations published by the U.S. Centers for Disease Control and Prevention (CDC). Links to full information regarding ACIP provisional and final recommendations, including schedules, indications, precautions, and contraindications, are available on the CDC website.<sup>2</sup>

In addition to implementing a comprehensive institutional immunization policy, institutions are also encouraged to screen for tuberculosis (TB) infection, especially those students who are at increased risk, as this is a key strategy for controlling and preventing infection on college and university campuses. ACHA Guidelines for Tuberculosis Screening and Targeted Testing of College and University Students are available on ACHA's <u>website</u>.<sup>3</sup> Additionally, Appendix A of this document offers an overview and guidance for health science students.

# VACCINES TO REDUCE OUTBREAKS

Outbreaks of communicable diseases cause great disruption and emotional and financial burdens for campuses, students, and their families. Assuring compliance with the vaccines recommended by the CDC is particularly important in preventing disease clusters and outbreaks on campus and is essential for maintaining the academic missions of colleges and universities.

# **COVID-19 VACCINE**

As **COVID-19 vaccines** continue to move through the FDA authorization process from Emergency Use to Biologic Licensure, it is important to note that these vaccines are safe and effective at preventing severe illness and death. All members of a college community should be encouraged to follow CDC guidelines and stay up to date on COVID-19 vaccination.

As the COVID-19 public health emergency has ended, the definition of up to date for COVID-19 immunization continues to evolve. The scientific and research communities continue to monitor COVID-19 for seasonality and circulating strains, and CDC and ACIP continue to adapt their vaccine recommendations. This often means their updated recommendations

<sup>&</sup>lt;sup>1</sup> <u>https://www.acha.org/resource/vaccine-use-to-promote-health-and-prevent-disease/</u>

<sup>&</sup>lt;sup>2</sup> <u>https://www.cdc.gov/vaccines/index.html</u>

<sup>&</sup>lt;sup>3</sup> <u>https://www.acha.org/resource/tuberculosis-screening-and-targeted-testing-of-college-and-university-students/</u>

are released after the publication of this document. At the time of review, up to date is defined as receiving one dose of an updated COVID vaccine. At present, there are two types of COVID-19 vaccines available in the United States:

#### mRNA vaccines

- Moderna COVID-19 Vaccine is authorized for children ages 6 months and older.
- Pfizer-BioNTech COVID-19 Vaccine is authorized for children ages 6 months and older.

#### Protein subunit vaccine

• Novavax COVID-19 Vaccine, Adjuvanted is authorized for people ages 12 years and older.

**VACCINATION SCHEDULE:** ACIP regularly updates updated formularies and dosing recommendations for the COVID-19 vaccine. As an example, On December 12, 2024, ACIP approved an additional dose of COVID-19 for persons aged  $\geq 6$  months who are moderately or severely immunocompromised. College health professionals should follow formulary and vaccine schedule recommendations at <u>ACIP Recommendations: COVID-19 Vaccine.</u><sup>4</sup>

**MAJOR INDICATIONS:** All members of a campus community age 6 months or older should receive an updated COVID-19 vaccine, according to <u>CDC's Interim Clinical Considerations for Use of COVID-19 Vaccines</u>.<sup>5</sup>

**CONTRAINDICATIONS AND PRECAUTIONS:** Contraindications and precautions vary based on the type of COVID-19 vaccine being considered. People receiving any COVID-19 vaccine, especially males ages 12–39 years, should be made aware of the rare risk of myocarditis and pericarditis following COVID-19 vaccination. Counseling should include the need to seek care if symptoms of myocarditis or pericarditis develop after vaccination, particularly in the week after vaccination. The only contraindication to COVID-19 vaccination is a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a component of the COVID-19 vaccine. Caution should be used in individuals with a history of a diagnosed non-severe allergy to a component of the COVID-19 vaccine; a history of a non-severe, immediate (onset less than 4 hours) allergic reaction after administration of a previous dose of one COVID-19 vaccine types; moderate or severe acute illness (with or without fever); a history of MIS-C or MIS-A; and/or a history of myocarditis or pericarditis within 3 weeks after a dose of any COVID-19 vaccine.

# INFLUENZA VACCINE

The scientific and research communities continue to monitor influenza vaccine for seasonality and circulating strains, and CDC and ACIP continue to adapt their vaccine recommendations. The ACHA Vaccine-Preventable Diseases Committee strongly encourages looking for the most up-to-date schedule and recommendations from <u>ACIP</u>.<sup>6</sup> At present, several preparations of influenza vaccine are available. Please review <u>CDC's influenza website for professionals</u> for options.<sup>7</sup>

VACCINATION SCHEDULE: Annually, in September or October for most.8

**MAJOR INDICATIONS:** All members of a campus community age 6 months or older, even those with egg allergies, should receive annual influenza vaccination.

**CONTRAINDICATIONS AND PRECAUTIONS:** Contraindications and precautions vary based on the type of influenza vaccine being considered. In general, a history of severe allergic reaction (e.g. anaphylaxis) to any component of the vaccine or to a previous dose of any vaccine is a contraindication. Precautions should be taken in individuals with a moderate or severe acute illness, with or without fever, or a history of Guillain-Barre syndrome within 6 weeks of receiving an influenza vaccine. CDC no longer requires additional safety measures for flu vaccination of people with egg allergies. Providers can consult <u>CDC flu vaccine safety guidance</u> or an allergist to help determine which vaccine component is responsible for the allergic reaction.<sup>9</sup>

<sup>9</sup> https://www.cdc.gov/flu/hcp/vax-summary/vaccine-

<sup>&</sup>lt;sup>4</sup> <u>https://www.cdc.gov/acip-recs/hcp/vaccine-specific/covid-19.html?CDC\_AAref\_Val=https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/covid-19.html</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html</u>

<sup>&</sup>lt;sup>6</sup> <u>https://www.cdc.gov/acip-recs/hcp/vaccine-specific/flu.html</u>

<sup>&</sup>lt;sup>7</sup> <u>https://www.cdc.gov/flu/professionals/index.htm</u>

<sup>&</sup>lt;sup>8</sup> https://www.cdc.gov/flu/vaccines/keyfacts.html#cdc\_generic\_section\_2-flu-vaccine-options

safety.html?CDC AAref Val=https://www.cdc.gov/flu/professionals/vaccination/vaccine safety.htm

# MEASLES, MUMPS, RUBELLA (MMR) VACCINE

VACCINATION SCHEDULE: Two doses of MMR, at least 28 days apart, after 12 months of age.<sup>10</sup>

#### **MAJOR INDICATIONS:**

- All college students born before 1957 without evidence of immunity should receive 2 doses. Acceptable evidence of immunity:
  - o Born before 1957 (presumptive evidence see outbreak guidance below), OR
  - Documentation of receipt of MMR vaccine, OR
  - Laboratory evidence of immunity or disease
- All health care professional students without evidence of immunity should receive two doses of MMR (if they do not have documentation of having had 2 MMR doses)
- In a measles outbreak, those born before 1957 without other evidence of immunity should be brought up to date on their MMR vaccination.
- A 3rd dose of MMR should be given in a <u>mumps outbreak</u> when public health authorities consider the individual part of a group or population at increased risk.<sup>11</sup>

**CONTRAINDICATIONS:** Pregnancy; severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component; severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised). A family history of immunosuppression in first-degree relatives (i.e., parents or siblings) is a contraindication to MMR and varicella-containing vaccines unless the potential vaccine recipient's immunocompetence has been verified either clinically or by a laboratory.

**PRECAUTIONS:** Recent ( $\leq 11$  months) receipt of antibody-containing blood product (specific interval depends on product); history of thrombocytopenia or thrombocytopenic purpura; need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing; moderate or severe acute illness, with or without fever. A family history of seizures is a precaution for MMRV vaccination.

# MENINGOCOCCAL VACCINE

### Meningococcal ACYW Vaccine

At present, for serogroups A, C, W, and Y vaccines, there are three quadrivalent meningococcal vaccines available in the United States:

- Menactra: MenACWY-D (meningococcal groups A, C, W, and Y polysaccharide diphtheria toxoid conjugate vaccine)
- Menveo: MenACWY-CRM (meningococcal groups A, C, W, and Y oligosaccharide diphtheria CRM197 conjugate vaccine)
- MenQuadfi: MenACWY-TT (meningococcal groups A, C, W, and Y polysaccharide tetanus toxoid conjugate vaccine)

#### VACCINATION SCHEDULE:

- Initial dose: 11–12 yrs. of age
- Booster dose: 16 yrs. of age
- If initial dose given age 13–15 years: booster dose at 16–18 years of age
- If the initial dose given age  $\geq 16$  years, CDC does not recommend a booster unless in the event of an outbreak.
- If someone is receiving MenACWY and MenB vaccines at the same visit, vaccine providers can administer the individual vaccines at different injection sites OR administer MenABCWY vaccine instead.

**NOTES:** MenACWY vaccines are interchangeable; the same vaccine product is recommended, but not required, for all doses. Refer to <u>CDC guidelines</u> for persons with altered immune competence.<sup>12</sup> Colleges and universities should check to see if their <u>state mandates MenACWY vaccination</u>.<sup>13</sup>

<sup>10</sup> https://www.cdc.gov/vaccines/vpd/mmr/hcp/recommendations.html

<sup>&</sup>lt;sup>11</sup> https://www.cdc.gov/mmwr/volumes/67/wr/mm6701a7.htm

<sup>&</sup>lt;sup>12</sup> <u>https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm</u>

<sup>&</sup>lt;sup>13</sup> https://www.immunize.org/official-guidance/state-policies/vaccine-requirements/menacwy-college/

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Those schools that have a state mandate or meningococcal vaccine requirement should have documentation of a dose of conjugate vaccine at  $\geq 16$  years of age. The booster dose can be administered any time after the 16th birthday. The minimum interval between doses of meningococcal conjugate vaccine is a minimum of 8 weeks. Routine vaccination of healthy persons who are not at increased risk for exposure is not recommended after age 21 years.

CDC recommends a booster dose during an outbreak if 5 years or more have passed since vaccination.<sup>14</sup>

#### **MAJOR INDICATIONS:**

- ACIP recommends routine vaccination for adolescents aged 11 or 12 years, with a booster dose at age 16 years.<sup>15</sup>
- Booster doses are also recommended for previously vaccinated persons who become or remain at increased risk, including unvaccinated or under-vaccinated first-year college students living in residence halls; persons with certain medical conditions including anatomic or functional asplenia, complement component deficiencies, complement inhibitor or ravulizumab [Ultomiris]) use, or human immunodeficiency virus infection; microbiologists with routine exposure to *Neisseria meningitidis* isolates; persons at increased risk during an outbreak (e.g., in community or organizational settings, and among men who have sex with men [MSM]); persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic.
- Non-first year college students may choose to be vaccinated to reduce their risk of meningococcal disease.
- Menactra (MenACWY-D) and Menveo (MenACWY-CRM) can be used for certain persons aged 11–55 years at increased risk for meningococcal disease because of asplenia, persistent complement component deficiency, or human immunodeficiency virus (HIV) infection (with another indication for vaccination).

**CONTRAINDICATIONS:** Severe allergic reaction (e.g., anaphylaxis) to a vaccine component or following prior dose. For Menactra (MenACWY-D) and Menveo (ACWY-CRM) only: severe allergic reaction to any diphtheria toxoid- or CRM197-containing vaccine. For MenQuadfi (MenACWY-TT) only: severe allergic reaction to a tetanus toxoid-containing vaccine.

**PRECAUTIONS:** Moderate or severe acute illness with or without fever.

#### **Meningococcal B Vaccine**

At present, there are two recombinant serogroup B meningococcal (MenB) vaccines are available in the United States:

- Bexsero: (MenB-4C); 2 or 3 dose series
- Trumenba: (MenB-FHbp); 2 or 3 dose series

Both MenB vaccine products (Bexsero and Trumenba) require more than 1 dose for maximum protection. **Trumenba and Bexsero are not interchangeable.** Patients must receive a vaccine product from the same manufacturer for all doses. The same vaccine should be used inclusive of booster doses.

**VACCINATION SCHEDULE:** On October 24, 2024, the ACIP updated its recommendations for MenB-4C to align the dosing interval and schedule with the new FDA label and harmonize with recommendations for MenB-FHbp (Trumenba) vaccine. ACIP now recommends MenB-4C as a 2-dose series with doses administered at intervals of 0 and 6 months for healthy adolescents and young adults aged 16–23 years based on shared clinical decision-making and as a 3-dose series with doses administered at 0, 1–2, and 6 months for persons aged  $\geq 10$  years at increased risk. For young adults (age 16–23), administer 2 doses to healthy adolescents who are not at increased risk for serogroup B meningococcal disease. Administer the second dose 6 months after the first dose.

- If someone is receiving MenACWY and MenB vaccines at the same visit, vaccine providers can administer the individual vaccines at different injection sites OR administer MenABCWY vaccine instead
- For people 10 years of age or older who are at increased risk for meningococcal disease, administer 3 doses. Administer the second dose 1 to 2 months after the first dose. Administer the third dose 6 months after the first dose.
- For patients at prolonged increased risk for meningococcal disease, CDC recommends MenB booster doses after completion of the primary series. Administer a booster dose of MenB vaccine 1 year after series completion and then every 2 to 3 years thereafter.

<sup>&</sup>lt;sup>14</sup> <u>https://www.cdc.gov/meningococcal/hcp/vaccine-recommendations/index.html</u>

<sup>&</sup>lt;sup>15</sup> https://www.cdc.gov/acip-recs/hcp/vaccine-specific/meningococcal.html

#### NOTES:

- If the second dose of Bexsero or Trumenba is administered earlier than 6 months after the first dose, a third dose should be administered at least 4 months after the last dose.
- Serogroup B vaccines may be administered with MenACWY but at different anatomic site, if possible.
- <u>CDC recommends a booster</u> dose during an outbreak if a year or more has passed since vaccination.<sup>16</sup>

#### MAJOR INDICATIONS:

Based on shared clinical decision-making, may be given to those not at increased risk:

- Adolescents and young adults age 16–23 to provide short term protection (preferred age 16–18 years)
- MenB vaccines are licensed in the United States only for persons aged 10–25 years

**CONTRAINDICATIONS:** Bexsero and Trumenba: severe allergic reaction (e.g., anaphylaxis) after a previous dose or to any vaccine component.

**PRECAUTIONS:** Moderate or severe acute illness. Latex sensitivity (Bexsero only).

#### Pentavalent Vaccine (MenABCYW)

At present, there is one pentavalent vaccine available in the United States: Penbraya (MenACYW-TT/MenB-FHbp)

**VACCINATION SCHEDULE:** Penbraya (MenACYW-TT/MenB-FHbp) is approved for individuals 10–25 years of age, with 6 months as the minimum interval between doses. Penbraya (MenACYW-TT/MenB-FHbp) vaccine may be used when both meningococcal conjugate vaccines (MenACWY) and meningococcal B vaccine (MenB) are indicated at the same visit.<sup>17</sup>

- If a patient receives a Penbraya (MenACYW-MenB-FHbp) vaccine and at least 6 months have passed, then administer either:
  - a second dose of Penbraya (MenACYW-MenB-FHbp) **OR**
  - Trumenba (MenB-FHbp) AND any MenACWY vaccine
  - If less than 6 months have passed since the initial Penbraya (MenACYW-MenB-FHbp) vaccine, administer: • Trumenba (MenB-FHbp) AND any MenACWY vaccine

Different manufacturers of MenB are not interchangeable. When MenACWY-TT/MenB-FHbp is administered, subsequent doses of MenB should be from the same manufacturer.

**NOTES:** Patients at prolonged increased risk for serogroup A, C, W, or Y and B meningococcal disease need regular boosters. However, the <u>recommended interval between doses varies by age and vaccine type</u>.<sup>18</sup>

# **MPOX VACCINE**

VACCINATION SCHEDULE: 2-dose series of Jynneos, 28 days apart<sup>19</sup>

**MAJOR INDICATIONS:** Any person at risk for mpox infection, including persons who are gay or bisexual and other MSM, transgender, or nonbinary people who in the last 6 months have had:

- A new diagnosis of at least 1 sexually transmitted disease
- More than 1 sex partner
- Sex at a commercial sex venue
- Sex in association with a large public event in a geographic area where mpox transmission is occurring
- Persons who are sexual partners of the persons described above
- Persons who anticipate experiencing any of the situations described above

CONTRAINDICATIONS: History of severe allergic reaction after previous dose or to a vaccine component.<sup>20</sup>

PRECAUTIONS: Moderate or severe acute illness with or without fever.

<sup>&</sup>lt;sup>16</sup> https://www.cdc.gov/meningococcal/hcp/vaccine-recommendations/index.html

<sup>&</sup>lt;sup>17</sup> https://www.cdc.gov/mmwr/volumes/73/wr/mm7315a4.htm

<sup>&</sup>lt;sup>18</sup> https://www.fda.gov/vaccines-blood-biologics/vaccines/penbraya

<sup>&</sup>lt;sup>19</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-notes.html#note

<sup>&</sup>lt;sup>20</sup> <u>https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-appendix.html#appendix-mpox</u>

# TETANUS, DIPHTHERIA, PERTUSSIS VACCINE

At present, the full primary series schedule includes:

- DT: pediatric (<age 7 years), preparation of diphtheria and tetanus toxoids
- DTaP: pediatric (<age 7 years), preparation of diphtheria, tetanus toxoids, and acellular pertussis
- Td: 7 years and older, preparation of tetanus and diphtheria toxoids
- Tdap: 7 years and older, preparation of tetanus, diphtheria toxoids, and acellular pertussis

#### VACCINATION SCHEDULE:

- Primary series in childhood (5-dose DTaP series)<sup>21,22,23</sup>
- **Booster doses:** For adolescents 11–18 and adults 19–64: single dose of Tdap. Tdap can be administered regardless of interval since the last tetanus or diphtheria toxoid-containing vaccine.
- **Routine booster dose intervals:** Adults should receive tetanus boosters at 10-year intervals, beginning 10 years after receiving Tdap. Subsequently, either Tdap or Td may be used for booster doses.<sup>24</sup>
- Tetanus prophylaxis in wound management: Persons with three or more doses of tetanus toxoid-containing vaccine: for clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons who have not previously received Tdap or whose Tdap history is unknown.

**MAJOR INDICATIONS:** In an unvaccinated or incomplete primary vaccination series for tetanus, diphtheria, or pertussis, the remaining doses (1, 2, or 3 doses) should be administered to complete the 3-dose primary series. 1 dose of Tdap followed by 1 dose of Td or Tdap at least 4 weeks later, and a third dose of Td or Tdap 6-12 months later. Tdap is the preferred first dose and can be substituted for any Td dose. Then Td or Tdap every 10 years thereafter.<sup>25</sup>

**CONTRAINDICATIONS:** Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. For Tdap only: encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP, DTaP, or Tdap.<sup>26</sup>

**PRECAUTIONS:** Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of tetanus toxoid-containing vaccine; history of Arthus-type hypersensitivity reactions after a previous dose of diphtheria toxoid-containing or tetanus toxoid-containing vaccine (defer vaccination until at least 10 years have elapsed since the last tetanus toxoid-containing vaccine); moderate or severe acute illness with or without fever. For Tdap only: progressive or unstable neurological disorder, uncontrolled seizures, or progressive encephalopathy until a treatment regimen has been established and the condition has stabilized.

# VARICELLA VACCINE

**VACCINATION SCHEDULE:** Two doses of varicella-containing vaccine, at least 12 weeks apart, if vaccinated between 1 and 12 years of age, and at least 4 weeks apart if vaccinated at age 13 years or older.<sup>27</sup>

MAJOR INDICATIONS: All college students without evidence of immunity. Immunity can be demonstrated by:

- being born in the U.S. before 1980,
- a history of disease,
- two prior doses of varicella vaccine, or
- an antibody level consistent with immunity

**CONTRAINDICATIONS:** Pregnancy, severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component, severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital

<sup>&</sup>lt;sup>21</sup> <u>https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-16-pertussis.html</u>

<sup>&</sup>lt;sup>22</sup> https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-21-tetanus.html

<sup>&</sup>lt;sup>23</sup> https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-7-diphtheria.html

<sup>&</sup>lt;sup>24</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-appendix.html#appendix-tetanus

<sup>&</sup>lt;sup>25</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-notes.html#note

<sup>&</sup>lt;sup>26</sup> https://www.cdc.gov/vaccines/hcp/imz-best-practices/contraindications-

precautions.html?CDC\_AAref\_Val=https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

<sup>&</sup>lt;sup>27</sup> <u>https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-22-varicella.html#cdc\_report\_pub\_study\_section\_9-contraindications-and-precautions-to-vaccination</u>

immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised). A family history of immunosuppression in first-degree relatives (i.e., parents or siblings) is a contraindication to MMR and varicella-containing vaccines unless the potential vaccine recipient's immunocompetence has been verified either clinically or by a laboratory. A family history of seizures is a precaution for MMR and varicella vaccination.

**PRECAUTIONS:** Recent ( $\leq 11$  months) receipt of antibody-containing blood product (specific interval depends on product), receipt of specific antiviral drugs (acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination (avoid use of these antiviral drugs for 14 days after vaccination), use of aspirin or aspirin-containing products, need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing, moderate or severe acute illness with or without fever.

# **OTHER VACCINES RECOMMENDED FOR ADULTS**

The following vaccines are recommended for adults. College matriculation provides the opportunity to assure that students receive the appropriate vaccines.

# **HEPATITIS A VACCINE**

**VACCINATION SCHEDULE:** Two-dose series: HepA (Havrix, 6–12 months apart) or Vaqta 6–18 months apart (minimum interval: 6 months)<sup>28,29</sup>\*

**MAJOR INDICATIONS:** Recommended for routine use for any person who is not fully vaccinated and requests vaccination and in particular for adolescent and adult high-risk groups (i.e., chronic liver disease, HIV infection, men who have sex with men, injection or non-injection drug use, persons experiencing homelessness, work with hepatitis A virus in research laboratory or with nonhuman primates with hepatitis A virus infection, travel in countries with high or intermediate endemic hepatitis A, close personal contact with international adoptee [e.g., household or regular babysitting] in first 60 days after arrival from country with high or intermediate endemic hepatitis A, pregnancy if at risk for infection or severe outcome from infection during pregnancy, and settings for exposure, including health care settings targeting services to injection or non-injection drug users or group homes and non-residential day care facilities for developmentally disabled persons).<sup>30</sup>

**CONTRAINDICATIONS:** Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component including neomycin.<sup>31</sup>

**PRECAUTIONS:** Moderate or severe acute illness with or without fever.

\*Combined hepatitis A and B vaccines may be given as a series of 3 or 4 doses for 18 years of age and older:

- 3-dose series HepA-HepB (Twinrix) at 0, 1, 6 months. Minimum interval for dose 1 to dose 2: 4 weeks; minimum interval for dose 2 to dose 3: 5 months
- 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months

# **HEPATITIS B VACCINE**

At present, there are several preparations of Hep B vaccine: 32, 33, 34

- Hepatitis B recombinant (Engerix-B, Recombivax HB, PreHevbrio)
- Hepatitis B recombinant, adjuvanted HepB-CpG (Heplisav-B)
- HepA-HepB (Twinrix)

<sup>&</sup>lt;sup>28</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-appendix.html#appendix-hepa

<sup>&</sup>lt;sup>29</sup> https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-9-hepatitis-a.html

<sup>&</sup>lt;sup>30</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-notes.html#note

<sup>&</sup>lt;sup>31</sup> https://www.cdc.gov/vaccines/hcp/imz-best-practices/contraindications-

precautions.html?CDC AAref Val=https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

<sup>&</sup>lt;sup>32</sup> <u>https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-notes.html#note</u>

<sup>&</sup>lt;sup>33</sup> https://www.cdc.gov/vaccines/hcp/imz-schedules/adult-appendix.html#appendix-hepb

<sup>&</sup>lt;sup>34</sup> https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-10-hepatitis-b.html

#### VACCINATION SCHEDULE: 2- or 3- or 4-dose series:

- 2-dose series only applies when 2 doses of Heplisav-B\* are used at least 4 weeks apart
- 3-dose series Engerix-B, PreHevbrio, or Recombivax HB at 0, 1, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks; dose 2 to dose 3: 8 weeks; dose 1 to dose 3: 16 weeks)
- 3-dose series HepA-HepB (Twinrix) at 0, 1, 6 months (minimum intervals: dose 1 to dose 2 = 4 weeks; dose 2 to dose 3 = 5 months)
- 4-dose series: HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21-30 days, followed by a booster dose at 12 months

\*Heplisav-B cannot be combined with a different HepB vaccine to complete a series, but any 2 Heplisav-B doses separated by 4 weeks constitutes a complete HepB vaccine series, even if other doses of Engerix-B, Recombivax HB, or

Twinrix, are administered before, after, or between the 2 doses of Heplisav-B, regardless of the interval between these other vaccines and Heplisav-B.

**MAJOR INDICATIONS:** All unvaccinated adults aged 19–59 years. Students enrolled in health care professional programs should receive hepatitis B vaccination. See Appendix A for additional guidance and considerations.

**CONTRAINDICATIONS:** Individuals with a history of severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component including yeast. PreHevbrio is not recommended in pregnancy due to lack of safety data in pregnant persons. For Twinrix: severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component including neomycin and yeast.<sup>35</sup>

**PRECAUTIONS:** Moderate or severe acute illness with or without fever.

# HUMAN PAPILLOMAVIRUS (HPV) VACCINE

At present there is only one HPV vaccine available in the United States (9-valent (HPV9 [Gardasil 9])

**VACCINATION SCHEDULE:** Administer human papillomavirus (HPV) vaccine to all persons through age 26 years; use shared clinical decision making for those age 27-45 (CDC).<sup>36</sup> The number of doses of HPV vaccine to be administered depends on age at initial HPV vaccination:

- Age 15 years or older at initial vaccination: 3-dose series at 0, 1–2 months, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks; dose 2 to dose 3: 12 weeks; dose 1 to dose 3: 5 months. Repeat dose if administered too soon.)
- Before age 15, 2 doses at 0, and 6-12 months. If given less than 5 months apart, administer 1 additional dose.
- Administer human papillomavirus (HPV) vaccine using shared clinical decision-making to persons aged 27 to 45. Administer 2 or 3 doses based on age at the initial dose, as above.

NOTE: Bivalent (Cervarix, 2vHPV) and Quadrivalent (Gardasil, 4vHPV) are no longer available in the U.S.

MAJOR INDICATIONS: If not vaccinated previously: all adults through age 26 years

**CONTRAINDICATIONS:** Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. Pregnancy testing is not needed before vaccination; HPV vaccination is not recommended until after pregnancy; no intervention needed if inadvertently vaccinated while pregnant.

**PRECAUTIONS:** Moderate or severe acute illness with or without fever.

# PNEUMOCOCCAL VACCINE

At present, there are several preparations of pneumococcal vaccine:<sup>37</sup>

- Pneumococcal conjugate vaccine PCV15 [Vaxneuvance]; PCV20 [Prevnar20]); and PCV21 [CAPVAXIVE]
- Pneumococcal polysaccharide vaccine (PPSV23 [Pneumovax23])

<sup>36</sup> https://www.cdc.gov/vaccines/vpd/hpv/hcp/recommendations.html

<sup>35</sup> https://www.cdc.gov/vaccines/hcp/imz-best-practices/contraindications-

precautions.html?CDC\_AAref\_Val=https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

<sup>&</sup>lt;sup>37</sup> https://www.cdc.gov/vaccines/vpd/pneumo/hcp/about-vaccine.html

#### VACCINATION SCHEDULE:

• Vaccine schedule depends on childhood series, vaccination in adulthood, and vaccine formulary. The PneumoRecs VaxAdvisor App is recommended by CDC to navigate decision making.<sup>38</sup>

#### **MAJOR INDICATIONS:**

- Adults 50 years or older<sup>39</sup>
- Adults aged 19–64 years old with certain underlying medical conditions or other risk factors who have not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown:
  - $\circ~$  PCV15, PCV20 or PCV21 should be used if the adult has never been vaccinated.
  - If PCV15 is used, it should be followed by a dose of PPSV23 given at least 1 year after the PCV15 dose. A minimum interval of 8 weeks between PCV15 and PPSV23 can be considered for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak to minimize the risk of invasive pneumococcal disease caused by serotypes unique to PPSV23 in these vulnerable groups.

**CONTRAINDICATIONS:** Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. For PCV15, PCV20, and PCV21 severe allergic reaction (e.g., anaphylaxis) to any diphtheria toxoid-containing vaccine or to its vaccine component.

**PRECAUTIONS:** Moderate or severe acute illness with or without fever.

### **POLIO VACCINE**

Inactivated polio vaccine (IPV) is the only polio vaccine available in the United States. Oral poliovirus vaccine (OPV) has not been available in the U.S. since 2000.<sup>40</sup>

#### VACCINATION SCHEDULE:

- 4-dose series at ages 2, 4, 6-18 months; 4-6 years with IPV, mixed OPV-IPV, or OPV-only series
- IPV booster only for those at increased risk of exposure.
- For adults not fully immunized, follow these recommendations.<sup>41</sup>

**MAJOR INDICATIONS:** Adults at increased risk of exposure may receive one lifetime booster dose of IPV: travelers who are going to countries where polio is epidemic or endemic, laboratory and healthcare workers who handle specimens that might contain polioviruses, healthcare workers or other caregivers who have close contact with a person who could be infected with poliovirus, adults who are identified by public health authorities as being part of a group or population at increased risk of exposure because of an outbreak.

CONTRAINDICATIONS: Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component.

**PRECAUTIONS:** Pregnancy. Moderate or severe acute illness with or without fever.

These guidelines were developed by ACHA's Vaccine-Preventable Diseases Advisory Committee and are updated annually.



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<sup>&</sup>lt;sup>38</sup> <u>https://www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/app.html</u>

<sup>&</sup>lt;sup>39</sup> https://www.cdc.gov/pneumococcal/hcp/vaccine-recommendations/index.html

<sup>&</sup>lt;sup>40</sup> https://www.cdc.gov/vaccines/vpd/polio/hcp/index.html

<sup>&</sup>lt;sup>41</sup> https://www.cdc.gov/polio/hcp/vaccine-considerations/

# APPENDIX A: Recommendations for Immunizations and TB Testing for Health Science Students

### **OVERVIEW AND DETAILED GUIDANCE**

Health science students are often recommended to receive several vaccines to protect themselves, their patients, and the community from preventable infectious diseases. The specific recommendations may vary depending on factors such as age, vaccination history, and occupational risks. However, common vaccines recommended for health science students typically include the following.

### COVID-19

Vaccination against COVID-19 is crucial for health science students working in hospitals to protect themselves and mitigate the risk of contracting and spreading the virus to vulnerable patients, colleagues, and their own families. Their vaccination serves as a vital step in controlling the transmission of COVID-19 within healthcare settings, ultimately reducing the burden on healthcare systems and saving lives. If not up to date, give COVID-19 vaccine according to current CDC recommendations (see <u>Clinical Guidance for COVID-19 Vaccination</u>).<sup>42</sup> Health science students should check for the specific requirements of their affiliated medical facility, hospitals, or their local and state health departments.

### Hepatitis **B**

Hepatitis B is a viral infection that can cause liver damage and liver cancer. Health science students are at an increased risk of exposure to blood and bodily fluids, placing them at higher risk for hepatitis B infection. The vaccine provides long-term protection against the virus.

Health science students should have a primary hepatitis B series **AND** a positive ( $\geq 10 \text{ mIU/mL}$ ) serological <u>quantitative</u> hepatitis B surface antibody serologic test (anti-HBs or HBsAb). The test is recommended to be done 1–2 months after completion of a primary series/booster dose.

A positive serologic test without documentation of the primary series is not sufficient. A positive serological test *only* cannot definitively confirm immunity to the virus; a positive result could be due to a past natural infection, passive immunity from hepatitis B immune globulin (HBIG) administration, or a false positive, and not necessarily from a completed vaccination series, which is the standard way to ensure reliable protection against hepatitis B.<sup>43</sup>

If the test result is still not consistent with immunity (<10 mIU/mL), after the booster dose completion of the second series should be done and a test repeated 1-2 months after the final dose.

If the student has received 2 complete series of hepatitis B vaccine and does not have a positive anti-HBs test result, they are considered a "non-responder" and must be evaluated for further clinical review and recommendations.

- Non-responders should be considered susceptible to hepatitis B infection and should be counseled about precautions to prevent HBV infection and the need to receive hepatitis B immunoglobulin upon exposure to hepatitis B surface antigen positive (HBsAg) blood or fluids or blood or fluids with unknown HBsAg status.
- Non-responders should also be tested for HBsAg to evaluate for chronic hepatitis B infection. Health science students who are chronic hepatitis B carriers should be counseled as to local and state guidelines for the safe provision of health care.

More information on hepatitis B vaccine and serology in healthcare personnel can be found here.44

<sup>&</sup>lt;sup>42</sup> <u>https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html</u>

<sup>&</sup>lt;sup>43</sup> https://www.immunize.org/ask-experts/topic/hepb/healthcare-personnel/

<sup>&</sup>lt;sup>44</sup> <u>https://www.immunize.org/wp-content/uploads/catg.d/p2109.pdf</u>

### Influenza

The influenza virus causes seasonal flu outbreaks, which can be severe and lead to complications, especially in vulnerable populations. Health science students are often in close contact with patients, increasing their risk of exposure to the influenza virus. Health science students should receive 1 dose of inactivated influenza vaccine yearly.

### Measles/Mumps/Rubella (MMR)

Measles, mumps, and rubella are highly contagious viral infections. Health science students may encounter infected patients or fellow students, making vaccination important for preventing outbreaks and protecting vulnerable populations.

Students must meet any of the following 3 options to document proof of immunity to measles, mumps, and rubella (MMR):

- 2 doses of MMR vaccine at least 28 days apart after 12 months of age **OR**
- 2 doses of measles vaccine **and** 2 doses of mumps vaccine at least 28 days apart after 12 months of age **and** 1 dose of rubella vaccine after 12 months of age **OR**
- Serologic testing to indicate proof of immunity to measles, mumps and rubella.
  - If the serologic test result is negative or equivocal, the student should repeat the MMR series with at least 28 days between each dose.
  - No test is required after the MMR vaccine series.

### Meningococcal ACWY, B, and/or Pentavalent Vaccine

Meningococcal disease is a serious bacterial infection that can lead to meningitis and septicemia. Health science students may be at increased risk of exposure to meningococcal bacteria, particularly in healthcare settings with close contact with patients. Vaccination provides protection against several strains of meningococcal bacteria. Health science students should follow the specific requirements of their affiliated medical facility, hospitals, or their local and state health departments.

#### Tetanus/Diphtheria/Pertussis

The Tdap vaccine protects against tetanus, diphtheria, and pertussis (whooping cough). Pertussis can be particularly dangerous for infants and young children.

- Health science students should have had 1 dose of the Tdap vaccine in the past 10 years.
- If the student does not have documentation of receiving a Tdap vaccine, a Tdap vaccine should be administered as soon as feasible without regard to the interval since the previous dose of Td.
- All health science students should then receive Td or Tdap boosters every 10 years thereafter.

### Varicella

Varicella (chickenpox) is a highly contagious viral infection that can cause severe complications, especially in adults. Students must have either 1 of the following 2 options to demonstrate immunity to varicella:

- Documentation of 2 varicella vaccines given at least 4 weeks apart **OR**
- Serologic testing to indicate proof of immunity to varicella. Documentation of previous varicella disease (i.e., chickenpox/shingles) is not acceptable proof of immunity.
  - If the varicella serologic test is negative or equivocal, the student will repeat the varicella series with doses at least 4 weeks apart.
  - No test is required after the varicella vaccine series.

### **Tuberculosis Testing**

Upon matriculation, health science students should undergo baseline testing for tuberculosis with a blood test (interferon gamma release assay [IGRA]) or a 2-step tuberculin skin test. Tests for TB infection aid in the diagnosis of M. *tuberculosis* infection; neither can differentiate latent tuberculosis infection (LTBI) from tuberculosis disease. Factors in selecting which test to use may depend on facility requirements. Generally, it is not recommended to test a person with both a TB skin test and a TB blood test.<sup>45</sup>

<sup>&</sup>lt;sup>45</sup> https://www.cdc.gov/tb/testing/?CDC\_AAref\_Val=https://www.cdc.gov/tb/topic/testing/tbtesttypes.htm

- IGRA: Two IGRAs are currently available in the U.S. for initial screening and surveillance -- QuantiFERON<sup>®</sup>- TB Gold Plus (QFT-Plus) and T-SPOT<sup>®</sup>.TB test (T-Spot).
- **Tuberculin Skin Test (TST) 2-Step:** Initial repeat testing is recommended for persons with a negative TST who are to undergo periodic TST screening and who have not been tested with tuberculin recently (within 1 year). This is intended to avoid "booster phenomenon" a misclassification of a subsequently reactive TST after initial testing as a TST conversion indicating recent infection.
  - Individuals who have received the BCG vaccine should have their results interpreted according to standard criteria.
  - 2-Step TST is performed by intradermal injection of PPD (purified protein derivative) with the student returning in 48-72 hours to record induration and interpreted according to risk factors. If negative, a second TST 7-21 days after initial negative results and the results are interpreted in the standard fashion.
  - If the repeat TST is positive, this is a true positive result and the student should be evaluated for latent or active TB.

Serial Testing: Utilize same testing methodology, TST or IGRA. Utilize same brand of IGRA for serial testing.

Annual TB testing of health care personnel is **not recommended** unless there is a known exposure or ongoing transmission at a healthcare facility.<sup>46</sup> Additional details for TB risk screening can be found in ACHA's Resources.<sup>47</sup>

**Note:** Local requirements and clinical circumstances should be taken into consideration when using these guidelines to develop an institutional immunization policy for health science students.

### Thank you to the ACHA Immunization Recommendation Workgroup

This Guideline was prepared by ACHA's Immunization Recommendation Workgroup, a subgroup of the Vaccine-Preventable Diseases Committee. Workgroup members include: Chris Amidon, MSN, APRN, FNP-C; Albert Chang, MD, MPH; Ashlee Halbritter, MPH; Emily Lenz, MSN, APRN, FNP-BC; Joyce McNeil, MPH, MN, CNM; and Annette Smiach, MSN, FNP-BC, CSN.



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<sup>&</sup>lt;sup>46</sup> <u>https://www.cdc.gov/tb-healthcare-settings/hcp/screening-</u>

testing/?CDC\_AAref\_Val=https://www.cdc.gov/tb/topic/testing/healthcareworkers.htm

<sup>&</sup>lt;sup>47</sup> <u>https://www.acha.org/resource/tuberculosis-screening-and-targeted-testing-of-college-and-university-students/</u>