Immunization Update 2019

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Medical Officer
Immunization Services Division
Disclosures

- The speaker is a federal government employee with no financial interest in or conflict with the manufacturer of any product named in this presentation.

- The speaker will not discuss a vaccine not currently licensed by the FDA.

- The speaker will discuss the off-label use of hepatitis A vaccine.
The recommendations to be discussed are primarily those of the Advisory Committee on Immunization Practices (ACIP):

- Composed of 15 nongovernment experts in clinical medicine and public health
- Provides guidance on use of vaccines and other biologic products to DHHS, CDC, and the U.S. Public Health Service

Watch the live webcast
- https://www.cdc.gov/vaccines/acip/meetings/webcast-instructions.html

CDC ACIP meeting website  http://www.cdc.gov/vaccines/acip/meetings/upcoming-dates.html

Next ACIP meeting
June 2019
Overview

- Vaccination coverage rates
- Vaccine Product Updates
  - HPV
  - Recombivax HB
  - Shingrix
- 2019 Immunization Schedules
- Measles Update
- Influenza
- ACIP Updates
  - Hepatitis A
  - Hepatitis B
  - Tdap
- Zoster vaccination
- Resources
Vaccination Rates
Vaccine Products Updates
FDA News Release

FDA approves expanded use of Gardasil 9 to include individuals 27 through 45 years old

For Immediate Release
October 5, 2018

The U.S. Food and Drug Administration today approved a supplemental application for Gardasil 9 (Human Papillomavirus (HPV) 9-valent Vaccine, Recombinant) expanding the approved use of the vaccine to include women and men aged 27 through 45 years. Gardasil 9 prevents certain cancers and diseases caused by the nine HPV types covered by the vaccine.
Since the introduction of the HPV vaccines (4- and 9-types), there has been a significant decrease in the covered strains infection rates.

Prevalence of these same types have also decreased in women who were not vaccinated.
- Prevalence of vaccine types decreased by 40 percent in women who were not vaccinated—implying a herd immunity.
Pediatric Vaccine Supply: Recombivax HB

- Merck anticipates having a limited supply of pediatric monovalent hepatitis B vaccine through 2019.
- GSK can address the gap in pediatric hepatitis B vaccine using a mix of single-component hepatitis B vaccine and DTaP-HepB-IPV (Pediarix).

CDC Current Vaccine Shortages and Delays [www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html](http://www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html). Accessed 03/21/2019

Merck is not currently distributing its adult hepatitis B vaccine and does not expect to be distributing adult hepatitis B vaccine throughout 2019.

GSK has sufficient supplies of adult hepatitis B vaccines to address the anticipated gap in Merck’s supply of adult hepatitis B vaccine during this period.

In addition, Dynavax makes an adult hepatitis B vaccine (Heplisav-B) that is available for use.

Adult Vaccine Supply: Shingrix

- Due to high levels of demand for GSK’s Shingrix vaccine, GSK has implemented order limits and providers have experienced shipping delays.
- Order limits and shipping delays will continue throughout 2019.
- GSK has increased the U.S. supply available and plans to release more doses on a consistent and reliable basis in 2019.

CDC Current Vaccine Shortages and Delays [www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html](http://www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html), Accessed 03/21/2019
ACIP Immunization Schedule Updates

2019 Immunization Schedules
# Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

## United States 2019

<table>
<thead>
<tr>
<th>Vaccines in the Child and Adolescent Immunization Schedule*</th>
<th>Abbreviations</th>
<th>Trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>DTap</td>
<td>Diphacol Infant</td>
</tr>
<tr>
<td>Diphtheria, tetanus vaccine</td>
<td>DT</td>
<td>No Trade Name</td>
</tr>
<tr>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-T)</td>
<td>ActHIB</td>
</tr>
<tr>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-OMP)</td>
<td>Hibrix</td>
</tr>
<tr>
<td>Diphtheria, tetanus vaccine</td>
<td>DT</td>
<td>No Trade Name</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix</td>
</tr>
<tr>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Engerix B</td>
</tr>
<tr>
<td>Human papillomavirus vaccine</td>
<td>HPV</td>
<td>Gardasil 9</td>
</tr>
<tr>
<td>Influenza vaccine (inactivated)</td>
<td>IRV</td>
<td>Flumist</td>
</tr>
<tr>
<td>Influenza vaccine (Live, attenuated)</td>
<td>LAIV</td>
<td>FluMist</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine</td>
<td>MMR</td>
<td>M-M-R B</td>
</tr>
<tr>
<td>Menigococcal serogroups A, C, W, Y vaccine</td>
<td>MenACWY-D</td>
<td>Menactra</td>
</tr>
<tr>
<td>Menigococcal serogroup B vaccine</td>
<td>MenB-FHbp</td>
<td>Merrem</td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate vaccine</td>
<td>PCV13</td>
<td>Prevnar 13</td>
</tr>
<tr>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PPSV23</td>
<td>Pneumovax</td>
</tr>
<tr>
<td>Poliovirus vaccine (inactivated)</td>
<td>IPV</td>
<td>IPOL</td>
</tr>
<tr>
<td>Rotavirus vaccine</td>
<td>RV1</td>
<td>Rotarix</td>
</tr>
<tr>
<td>Rotavirus vaccine</td>
<td>RV5</td>
<td>Rotarix</td>
</tr>
<tr>
<td>Tetanus, diphtheria, and acellular pertussis vaccine</td>
<td>Tdap</td>
<td>Adacel/Boostrix</td>
</tr>
<tr>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varivax</td>
</tr>
</tbody>
</table>

## How to use the child/adolescent immunization schedule

1. **Determine recommended vaccine by age (Table 1)**
2. **Determine interval for additional doses (Table 2)**
3. **Assess need for additional doses (Table 3)**
4. **Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)**

Report:
- Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
- Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or (800-822-7967)

## Helpful Information
- Complete ACIP recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)
- General Best Practice Guidelines for Immunization: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- Outbreak information (including case identification and outbreak response), see Manual for the Surveillance of Vaccine-Preventable Diseases: [www.cdc.gov/vaccines/pubs/surv-manual](http://www.cdc.gov/vaccines/pubs/surv-manual)

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

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*Administrative recommended vaccines if immunization history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. When a vaccine is not administered at the recommended age, administer at a subsequent visit. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.
Table 1: Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger
United States, 2019

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 in Table 1. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Birth</th>
<th>1 mo</th>
<th>2 mo</th>
<th>4 mo</th>
<th>6 mos</th>
<th>8 mos</th>
<th>12 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>19-23 mos</th>
<th>2-3 yrs</th>
<th>4-6 yrs</th>
<th>7-10 yrs</th>
<th>11-12 yrs</th>
<th>13-15 yrs</th>
<th>16 yrs</th>
<th>17-18 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td></td>
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<tr>
<td>Rotavirus (RV) RV1 (2-dose series); RV2 (4-dose series)</td>
<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<tr>
<td>Hemophilus Influenzae type b (Hib)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Inactivated poliovirus</td>
<td>1st dose</td>
<td>2nd dose</td>
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<td>Influenza (IV)</td>
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<td>Influenza (LAIV)</td>
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<tr>
<td>Measles, mumps, rubella (MMR)</td>
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<td>Varicella (VZV)</td>
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<td>Hepatitis A (HepA)</td>
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<tr>
<td>Meningococcal (MenACWY-D) (1-5 mos); MenACWY-CRM (6-11 mos)</td>
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<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (Tdap)</td>
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<tr>
<td>Human papillomavirus (HPV)</td>
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<tr>
<td>Meningococcal B</td>
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<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
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</tbody>
</table>

**Range of recommended ages for all children**

**Range of recommended ages for catch-up immunization**

**Range of recommended ages for certain high risk groups**

**Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision-making**

| No recommendation |

07/22/19

Centers for Disease Control and Prevention | Recommended Child and Adolescent Immunization Schedule: United States, 2019 | Page 2

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html) Accessed 3/31/2019
### Table 2

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubella</td>
<td>12 months</td>
<td>1 week</td>
<td>6 weeks and at least 3 months after first dose.</td>
<td>Minimum age for first dose in 12 weeks.</td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, and pertussis</td>
<td>6 weeks</td>
<td>2 weeks</td>
<td>6 weeks and at least 16 weeks after first dose.</td>
<td>Minimum age for first dose in 16 weeks.</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>No further doses needed if first dose was administered at age 12 months or older.</td>
<td>6 weeks (as final dose)</td>
<td>6 weeks (as final dose)</td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>No further doses needed for healthy children if first dose was administered at age 24 months or older.</td>
<td>6 weeks (as final dose)</td>
<td>6 weeks (as final dose)</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, tetanus, diphtheria, and pertussis</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
</tbody>
</table>

### Children age 4 months through 6 years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>12 months</td>
<td>4 weeks</td>
<td>6 weeks and at least 16 weeks after first dose.</td>
<td>Minimum age for the final dose is 24 months.</td>
<td></td>
</tr>
<tr>
<td>Diptheria, tetanus, and pertussis</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>Maximum age for final dose is 6 months and 6 years.</td>
<td>6 weeks (as final dose)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>No further doses needed if first dose was administered at age 12 months or older.</td>
<td>6 weeks (as final dose)</td>
<td>6 weeks (as final dose)</td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>No further doses needed for healthy children if first dose was administered at age 24 months or older.</td>
<td>6 weeks (as final dose)</td>
<td>6 weeks (as final dose)</td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, tetanus, diphtheria, and pertussis</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
</tbody>
</table>

### Children and adolescents age 7 through 18 years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, tetanus, diphtheria, and pertussis</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
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</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td>6 months</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
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</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td>6 weeks</td>
<td>6 weeks</td>
<td>6 weeks (as final dose) if at least 6 years of age.</td>
<td>6 months (minimum age 4 years olds)</td>
<td></td>
</tr>
</tbody>
</table>

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Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger: [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html) | Accessed 3/31/2019
<table>
<thead>
<tr>
<th>VACCINE</th>
<th>Indication</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pregnancy</td>
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<tr>
<td>Hepatitis B</td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP)</td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate</td>
<td></td>
</tr>
<tr>
<td>Inactivated poliovirus</td>
<td></td>
</tr>
<tr>
<td>Influenza (IV)</td>
<td></td>
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<tr>
<td>Influenza (LAIV)</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
</tr>
<tr>
<td>Meningococcal ACWY</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (TdP)</td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td></td>
</tr>
<tr>
<td>Meningococcal C</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide</td>
<td></td>
</tr>
</tbody>
</table>

¹ For additional information regarding HIV laboratory parameters and use of live vaccines, see the General Best Practice Guidelines for Immunization “Abridged Immunization Schedule” at www.cdc.gov/vaccines/hcp/vaccineschedule/downloads/2019gs.pdf, and Table 4.1 (figure 10) at www.cdc.gov/vaccines/hcp/vaccineschedule/downloads/2019gs.html.

² Severe Combined Immune Deficiency

³ IPV contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 3 months.

Accessed 3/31/2019
### Recommended Adult Immunization Schedule for ages 19 years or older

**UNITED STATES 2019**

**How to use the adult immunization schedule**

1. Determine recommended vaccinations by age (Table 1)
2. Assess need for additional recommended vaccinations by medical condition and other indications (Table 2)
3. Review vaccine types, frequencies, and intervals, and considerations for special situations (Notes)

### Vaccines in the Adult Immunization Schedule*

<table>
<thead>
<tr>
<th>Vaccines</th>
<th>Abbreviations</th>
<th>Trade names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemophilus influenzae type b vaccine</td>
<td>HIB</td>
<td>Act Hib</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix</td>
</tr>
<tr>
<td>Hepatitis A and hepatitis B vaccine</td>
<td>HepA-HeplB</td>
<td>Twinrix</td>
</tr>
<tr>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Entera-Bad</td>
</tr>
<tr>
<td>Human papillomavirus vaccine</td>
<td>HPV vaccine</td>
<td>Gardasil 9</td>
</tr>
<tr>
<td>Influenza vaccine, inactivated</td>
<td>1IV</td>
<td>Many brands</td>
</tr>
<tr>
<td>Influenza vaccine, live attenuated</td>
<td>1IV</td>
<td>Fluvir Quadrivalent</td>
</tr>
<tr>
<td>Influenza vaccine, recombinant</td>
<td>1IV</td>
<td>Flublok Quadrivalent</td>
</tr>
<tr>
<td>Meningococcal serogroups A, C, Y vaccine</td>
<td>MenACWY</td>
<td>Menactra Menevo</td>
</tr>
<tr>
<td>Meningococcal serogroup B vaccine</td>
<td>MenB-4C</td>
<td>BaroDimal Tramactin</td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate vaccine</td>
<td>PCV13</td>
<td>Prevnar 13</td>
</tr>
<tr>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PPSV23</td>
<td>Pneumovax</td>
</tr>
<tr>
<td>Tetanus and diphtheria toxoids</td>
<td>Td</td>
<td>Td vaccine</td>
</tr>
<tr>
<td>Tetanus and diphtheria toxoids and acellular pertussis vaccine</td>
<td>Tdap</td>
<td>Adacel Boostrix</td>
</tr>
<tr>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varivax</td>
</tr>
<tr>
<td>Zoster vaccine, recombinant</td>
<td>RZV</td>
<td>Shingrix</td>
</tr>
<tr>
<td>Zoster vaccine live</td>
<td>ZVL</td>
<td>Zostavax</td>
</tr>
</tbody>
</table>

*Admirastor recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

**Report**
- Suspected cases of reportable vaccine-preventable diseases or outbreaks to the local or state health department
  - Clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System at [vaers.hhs.gov](http://vaers.hhs.gov) or 800-822-7967

**Injury claims**
- All vaccines included in the adult immunization schedule except pneumococcal 23-valent polysaccharide and zoster vaccines are covered by the Vaccine Injury Compensation Program. Information on how to file a vaccine injury claim is available at [vacs.hrsa.gov/vaccinecompensation](http://vacs.hrsa.gov/vaccinecompensation) or 800-338-2302.

**Questions or comments**
- Contact CDC at 800-232-4636 in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.
- Download the CDC Vaccine Schedules App for providers at [www.cdc.gov/vaccines/schedules/hcp/app.html](http://www.cdc.gov/vaccines/schedules/hcp/app.html).

**Helpful information**
- Complete ACIP recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)
- General Best Practice Guidelines for Immunization: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- Vaccine Information Statements: [www.cdc.gov/vaccines/hcp/vis/html](http://www.cdc.gov/vaccines/hcp/vis/html)
- Travel vaccine recommendations: [www.cdc.gov/travel](http://www.cdc.gov/travel)
- Recommended Child and Adolescent Immunization Schedule, United States, 2019: [www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html)

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**Recommended Adult Immunization Schedule for ages 19 years or Older** [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html) Accessed 3/31/2019
### Table 1: Recommended Adult Immunization Schedule by Age Group

**United States, 2019**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–21 years</th>
<th>22–26 years</th>
<th>27–49 years</th>
<th>50–64 years</th>
<th>≥65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza inactivated (IIV) or Influenza recombinant (RIV)</td>
<td></td>
<td></td>
<td>1 dose annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza live attenuated (LAIV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Tdap or Td)</td>
<td></td>
<td></td>
<td>1 dose Tdap, then Td booster every 10 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)</td>
<td></td>
<td>1 or 2 doses depending on indication (if born in 1957 or later)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella (VAR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 doses (if born in 1980 or later)</td>
</tr>
<tr>
<td>Zoster recombinant (RZV) (preferred)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 doses</td>
</tr>
<tr>
<td>Zoster live (ZVL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2 or 3 doses depending on age at initial vaccination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2 or 3 doses depending on age at initial vaccination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>Hepatitis A (HepA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B (HepB)</td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal A, C, W, Y (MenACWY)</td>
<td></td>
<td></td>
<td>1 or 2 doses depending on indication, then booster every 5 yrs if risk remains</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal B (MenB)</td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine and indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b (Hib)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses depending on indication</td>
</tr>
<tr>
<td>Vaccine</td>
<td>Pregnancy</td>
<td>Immuno-compromised (excluding HIV infection)</td>
<td>HIV infection</td>
<td>Asplenia, complement deficiencies</td>
<td>End-stage renal disease, on hemodialysis</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>---------------------------------------------</td>
<td>--------------</td>
<td>-----------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>IIV or RIV</td>
<td>CONTRAINDED</td>
<td>PRECAUTION</td>
<td>1 dose annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAIV</td>
<td>CONTRAINDED</td>
<td>PRECAUTION</td>
<td>1 dose annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tdap or Td</td>
<td>1 dose Tdap each pregnancy</td>
<td></td>
<td>1 dose Tdap, then Td booster every 10 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR</td>
<td>CONTRAINDED</td>
<td></td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR</td>
<td>CONTRAINDED</td>
<td></td>
<td>2 doses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RZV (preferred)</td>
<td>DELAY</td>
<td></td>
<td>2 doses at age ≥50 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZVL</td>
<td>CONTRAINDED</td>
<td></td>
<td>1 dose at age ≥60 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV Female</td>
<td>DELAY</td>
<td>3 doses through age 26 yrs</td>
<td>2 or 3 doses through age 26 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV Male</td>
<td>3 doses through age 26 yrs</td>
<td>2 or 3 doses through age 21 yrs</td>
<td>2 or 3 doses through age 26 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13</td>
<td>1 dose</td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV23</td>
<td></td>
<td></td>
<td>1, 2, or 3 doses depending on age and indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA</td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepB</td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY</td>
<td></td>
<td>1 or 2 doses depending on indication, then booster every 5 yrs if risk remains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenB</td>
<td>PRECAUTION</td>
<td></td>
<td>2 or 3 doses depending on vaccine and indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib</td>
<td>3 doses HSCT recipients only</td>
<td></td>
<td>1 dose</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Precaution for LAIV does not apply to alcoholism. 2. See notes for influenza, hepatitis B, measles, mumps, and rubella, and varicella vaccinations. 3. Hematopoietic stem cell transplant.

Recommended Adult Immunization Schedule for ages 19 years or Older [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](http://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html) | Accessed 3/31/2019
Recommended Adult Immunization Schedule United States, 2019

Haemophilus influenzae type b vaccination

Special situations
- Anatomical or functional asplenia (including sickle cell disease): 1 dose Hib if previously did not receive Hib; if elective splenectomy, 1 dose Hib, preferably at least 14 days before splenectomy.
- Hematopoietic stem cell transplant (HSCT): 3-dose series Hib 4 weeks apart starting 6–12 months after successful transplant, regardless of Hib vaccination history.

Hepatitis A vaccination

Routine vaccination
- Not at risk but want protection from hepatitis A (identification of risk factor not required): 2-dose series HepA (Havrix 6–12 months apart or Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA–HepB (Twinstar at 0, 1, 6 months [minimum intervals: 4 weeks between doses 1 and 2, 5 months between doses 2 and 3]).

Special situations
- At risk for hepatitis A virus infection: 2-dose series HepA or 3-dose series HepA–HepB as above.
  - Chronic liver disease.
  - Clotting factor disorders.
  - Men who have sex with men.
  - Injection or non-injection drug use.
  - Homelessness.
  - Work with hepatitis A virus in research laboratory or 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, regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis A (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee’s arrival).

Hepatitis B vaccination

Routine vaccination
- Not at risk but want protection from hepatitis B (identification of risk factor not required): 2- or 3-dose series HepB (2-dose series Hepatitis B at least 4 weeks apart (2-dose series HepB only applies when 2 doses of Hepatitis B are used at least 4 weeks apart) or 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months [minimum intervals: 4 weeks between doses 1 and 2, 8 weeks between doses 2 and 3, 16 weeks between doses 1 and 3]) or 3-dose series HepA–HepB (Twinstar at 0, 1, 6 months [minimum intervals: 4 weeks between doses 1 and 2, 5 months between doses 2 and 3]).

Special situations
- At risk for hepatitis B virus infection: 2-dose (Hepatitis B) or 3-dose (Engerix-B, Recombivax HB) series HepB, or 3-dose series HepA–HepB as above.
- Hepatitis C virus infection.
- Chronic liver disease (e.g., cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, alaminaminotransferase ALT or asparagine aminotransferase AST level greater than twice upper limit of normal).
- HIV infection.
- Sexual exposure risk (e.g., sex partners of hepatitis B surface antigen HBsAg-positive persons; sexually active persons not in monogamous relationships, persons seeking evaluation or treatment for a sexually transmitted infection, men who have sex with men).
- Current or recent injection drug use.
- Percutaneous or mucosal risk for exposure to blood (e.g., household contacts of HBsAg-positive persons; residents and staff of facilities for developmentally disabled persons; health care and public safety personnel with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids; hemodialysis, peritoneal dialysis, home dialysis, and predialysis patients; persons with diabetes mellitus age younger than 60 years and, at discretion of treating clinician, those age 60 years or older).
- Incarcerated persons.
- Travel in countries with high or intermediate endemic hepatitis B.

Human papillomavirus vaccination

Routine vaccination
- Females through age 26 years and males through age 21 years: 2- or 3-dose series HPV vaccine depending on age at initial vaccination; males age 22 through 26 years may be vaccinated based on individual clinical decision (HPV vaccination routinely recommended at age 11–12 years).
- Age 15 years or older at initial vaccination: 3-dose series HPV vaccine at 0, 1, 6 months (minimum intervals: 4 weeks between doses 1 and 2, 12 weeks between doses 2 and 3; 5 months between doses 1 and 3; repeat dose if administered too soon).
- Age 9 through 14 years at initial vaccination and received 1 dose, or 2 doses less than 5 months apart: 1 dose HPV vaccine.
- Age 9 through 14 years at initial vaccination and received 2 doses at least 5 months apart: HPV vaccine complete, no additional dose needed.
- If completed valid vaccination series with any HPV vaccine, no additional doses needed.

Special situations
- Immunocompromising conditions (including HIV infection) through age 26 years: 3-dose series HPV vaccine at 0, 1, 2, 6 months as above.
- Men who have sex with men and transgender persons through age 26 years: 2- or 3-dose series HPV vaccine depending on age at initial vaccination as above.
- Pregnancy through age 26 years: HPV vaccination not recommended until after pregnancy; no intervention needed if vaccinated while pregnant; pregnancy testing not needed before vaccination.
New Mobile App: PneumoRecs VaxAdvisor

- Quickly and easily see which pneumococcal vaccines a patient needs and when
  - Enter a patient’s age (works for all ages)
  - Note any underlying medical conditions and prior vaccines
  - Get patient-specific guidance consistent with U.S. schedule

- iOS and Android devices
- cdc.gov/vaccines/pneumoapp
Measles Update
*Cases as of December 29, 2018. Case count is preliminary and subject to change.

**Cases as of March 21, 2019. Case count is preliminary and subject to change. Data are updated weekly.
Guidance for Health Care Personnel

- Be vigilant about measles
- Consider measles in patients with febrile rash illness and clinically compatible measles symptoms—cough, coryza, and conjunctivitis
- Ask patients about:
  - Recent international travel
  - Recent travel to domestic venues frequented by international travelers
  - Recent contact with international travelers
  - History of measles in the community
- Promptly isolate patients with suspected measles

www.cdc.gov/measles/hcp/index.html
MMR Vaccination Recommendations*

- Ensure all patients are up to date or have acceptable evidence of immunity
  - Routine recommendations:
    - Children: Dose 1 at 12-15 months; Dose 2 at 4-6 years of age
    - Adults: Health care personnel, college and other students need 2 doses, separated by at least 4 weeks, and all other adults need 1 dose
  - International travel:
    - Infants 6 through 11 months should receive 1 dose of MMR**
    - Previously vaccinated children 1 through 3 years can receive a second dose of MMR at least 4 weeks after the first dose
    - Persons 4 years of age and older should receive 2 doses, separated by at least 4 weeks

- People who received 2 doses of MMR vaccine as children according to the U.S. vaccination schedule are considered protected for life.

*Without evidence of immunity
**ACIP off-label recommendation

MMWR 2013;62(RR-4)
Evidence of Measles Immunity

- **Evidence of measles immunity:**
  - 2 appropriately spaced and documented doses of MMR vaccine,
  - Laboratory evidence of immunity, or
  - Laboratory confirmation of disease.

- **No additional doses are indicated or recommended**
- **No serologic testing is recommended.**

- For unvaccinated personnel born before 1957 who lack laboratory evidence of measles, mumps, or rubella immunity or laboratory confirmation of disease, facilities should consider vaccinating with 2 doses of MMR at the appropriate interval (for measles and mumps) or 1 dose of MMR (for rubella)
2018–19 Influenza Season
2018–19 Influenza Season and Disease Burden Estimates

34.9 million – 40.1 million flu illnesses

16.1 million – 18.8 million flu medical visits

482,000 – 585,000 flu hospitalizations

32,900 – 54,800 flu deaths

Influenza Estimates Reported by States and Territories
Week Ending April 6, 2019

Influenza activity continues to decrease but remains elevated in the United States.

Influenza A(H1N1)pdm09 viruses predominated October to mid-February, and influenza A(H3N2) viruses more commonly identified since late February. Small numbers of influenza B viruses also reported.

86 influenza-associated pediatric deaths have been reported

Continue to vaccinate—don’t stop!

## Interim Estimates of 2018–19 Seasonal Influenza Vaccine Effectiveness — United States, February 2019

<table>
<thead>
<tr>
<th>Influenza A and B</th>
<th>Vaccine effectiveness* Adjusted % (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>47 (34 to 57)§</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
</tr>
<tr>
<td>6 mos–17 yrs</td>
<td>61 (44 to 73)§</td>
</tr>
<tr>
<td>18–49 yrs</td>
<td>37 (9 to 56)§</td>
</tr>
<tr>
<td>≥50 yrs</td>
<td>24 (-15 to 51)</td>
</tr>
</tbody>
</table>

* Vaccine effectiveness was estimated as 100% x (1 – odds ratio [ratio of odds of being vaccinated among outpatients with influenza-positive test results to the odds of being vaccinated among outpatients with influenza-negative test results]); odds ratios were estimated using logistic regression.
† Adjusted for study site, age group, sex, race/ethnicity, self-rated general health, number of days from illness onset to enrollment, and month of illness (4-week intervals) using logistic regression.
§ Statistically significant at p<0.05.
ACIP to vote on recommendations in June

Many products will be available—IIV3, IIV4, and LAIV
  - Indications vary by product, including age, formulation, and type
  - More than one product may be appropriate for any given person

ACIP/CDC express no preferences for any one type of influenza vaccine product if more than one is appropriate and available

FDA approved 0.5 mL dose of Fluzone® in children as young as 6 months of age
Dosages (Volume) of Pediatric Flu Vaccine Products for Children

<table>
<thead>
<tr>
<th>Age</th>
<th>Product</th>
<th>Dosage (Amount)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 through 35 months</td>
<td>Afluria</td>
<td>0.25 mL</td>
</tr>
<tr>
<td></td>
<td>Fluzone</td>
<td>0.25 mL or 0.5 mL</td>
</tr>
<tr>
<td></td>
<td>Fluarix</td>
<td>0.5 mL</td>
</tr>
<tr>
<td></td>
<td>FluLaval</td>
<td>0.5 mL</td>
</tr>
<tr>
<td>3 years and older*</td>
<td>All products</td>
<td>0.5 mL</td>
</tr>
</tbody>
</table>

FDA approved 0.5 mL dose of Fluzone in children as young as 6 months of age

*Product eligibility may vary based on the FDA approved age indications
World Health Organization
2019–2020 Northern Hemisphere Vaccine Strains

- For 2019–2020, trivalent (three-component) vaccines are recommended to contain:
  - A/Brisbane/02/2018 (H1N1)pdm09-like virus*
  - A/Kansas/14/2017 (H3N2)-like virus*
  - B/Colorado/06/2017-like virus (Victoria lineage)

- Quadrivalent (four-component) vaccines, which protect against a second lineage of B viruses, include:
  - B/Phuket/3073/2013-like virus (Yamagata lineage)

*New
Advisory Committee on Immunization Practices (ACIP) Updates and MMWR Publications
Updates in ACIP Recommendations for Adults
Policy Statements Published 2018/2019

- Hepatitis A (Oct 2018)
  - Doshani et al. MMWR Feb 2019;68(6);153–156
    - Added homelessness as indication for HepA
  - Nelson et al. MMWR Nov 2018; 67(43);1216–1220
    - Recommendations for postexposure prophylaxis and preexposure prophylaxis for international travel

- Hepatitis B (Feb 2018 ACIP Meeting)
  - Schillie et al. MMWR Apr 2018;67(15):455–458
  - Recommended use of CpG-adjuvanted HepB

- Tdap (Summary)
  - Liang et al. MMWR Apr 2018;67(2):1–44

- Influenza (Jun 2018)
  - Grohskopf et al. MMWR Aug 2018;67(3):1–20
  - Updated use of LAIV as option for 2018–2019
ACIP Recommendations: Hepatitis A Vaccine
The Advisory Committee on Immunization Practices updated hepatitis A recommendations for children and adults during the recent meetings.

Updated recommendations were published in the *MMWR* on 11/2/2018.

*MMWR* 2018;67(No. 43):1208–10

*MMWR* 2018;67(No.43):1216–20
Hepatitis A Immunization Recommendations

- ACIP updated recommendations to add homelessness as an indication for routine hepatitis A vaccination during the October meeting
- Increasing vaccination coverage among all at-risk groups recommended
Updated Hepatitis A Immunization Recommendations: Children and Adults

- Recommended for adults who have a specific risk or lack a risk factor but want protection
  - Homelessness
  - Travel to or work in countries with high or intermediate hepatitis A endemicity
  - Men who have sex with men
  - Injection or noninjection drug use
  - Clotting factor disorders
  - Chronic liver disease
  - Close, personal contact with an international adoptee
  - Healthy adults through age 40 years who have recently been exposed to hepatitis A virus
  - Work with hepatitis A virus in a research laboratory or with nonhuman primates infected with hepatitis A virus

MMWR 2018;67(No. 43):1208–10
Advisory Committee on Immunization Practices, October, 2018 meeting
Hepatitis A Immunization Recommendations for Children

- Routinely recommended for children 12 through 23 months of age
  - 2-dose schedule (0, 6 months)

- Vaccination should be integrated into the routine vaccination schedule

- Children who are not vaccinated by 2 years of age can be vaccinated at subsequent visits
International Travel and Infants: 6 Through 11 Months of Age

- International travel recommendations* for children 6 through 11 months of age:
  - Hepatitis A: IG (previous)
  - Measles, mumps, rubella: MMR vaccine

- Problematic if both are indicated as IG and live, attenuated vaccines cannot be administered simultaneously

*Countries with high or intermediate hepatitis A endemicity

MMWR 2018;(No.43):1216–20
Hepatitis A Vaccine for International Travelers: Infants

- Administer a single dose of HepA vaccine to infants 6–11 months of age

- Infants should restart the 2-dose series of HepA vaccine at 12 months of age or older as recommended
### Summary: Hepatitis A Vaccine Recommendations and International Travel

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants 5 months of age or younger</td>
<td>IG</td>
</tr>
<tr>
<td>Infants 6 through 11 months of age</td>
<td>Vaccine (or IG(^1))</td>
</tr>
<tr>
<td>Healthy persons 1 year of age or older</td>
<td>Vaccine</td>
</tr>
</tbody>
</table>

#### Special Populations

| Persons with a vaccine contraindication                   | IG                   |
| Immunocompromised persons                                 | Vaccine with addition of IG\(^2\) |
| Persons with chronic liver disease                        | Vaccine              |
| Pregnant women                                            | Vaccine              |

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\(^1\)Based on provider risk assessment and availability of vaccine or IG

\(^2\)If measles is not endemic in the destination area

*MMWR 2018;(No.43):1216–20*
What Do You Think?

- Achal is 13 months old. A dose of hepatitis A vaccine was administered at 10 months of age due to international travel. When should the next dose of vaccine be administered?
  - 15 months of age
  - 18 months of age
  - Now
ACIP Recommendations: Hepatitis B Vaccine
# Heplisav-B (HepB-CpG)

<table>
<thead>
<tr>
<th><strong>Storage</strong></th>
<th>Store in the refrigerator between 2°C and 8°C (36°F and 46°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ages</strong></td>
<td>18 years of age and older</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>Administer 2 doses separated by 4 weeks</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM) injection in the deltoid</td>
</tr>
<tr>
<td></td>
<td>Can be administered at the same clinical visit as other vaccines. Administer in separate injection sites, 1 inch apart (if possible)</td>
</tr>
<tr>
<td><strong>Contraindication</strong></td>
<td>History of severe allergic reaction (e.g., anaphylaxis) after a previous dose of any hepatitis B vaccine or to any component of Heplisav-B, including yeast</td>
</tr>
</tbody>
</table>

Additional Heplisav-B Considerations

- 2-dose HepB series only applies when BOTH doses are Heplisav-B, administered at least 4 weeks apart
  - Any 2 doses of Heplisav-B separated by 4 weeks is considered complete, even if the patient has had other HepB vaccine products

- Until safety data are available for Heplisav-B, providers should vaccinate pregnant women needing HepB vaccination with Engerix-B or Recombivax HB
Scenarios

1. HepB
   Engerix-B or RecombivaxHB
   01/01/2018
   HepB-CpG
   Heplisav-B
   01/02/2018
   HepB-CpG
   Heplisav-B
   02/02/2018
   **Completed series**
   **No additional doses are needed**

2. HepB
   Engerix-B or RecombivaxHB
   01/01/2018
   HepB-CpG
   Heplisav-B
   02/01/2018
   HepB
   Engerix-B or RecombivaxHB
   05/01/2018
   **Completed series**
   **No additional doses are needed**
ACIP Recommendations: Tdap Vaccine
ACIP Recommendations: DTaP and Tdap

- DTaP/Tdap recommendations were published on April 27, 2018
- Compiles and summarizes all previously published ACIP recommendations regarding prevention and control of pertussis, tetanus, and diphtheria, specifically after the introduction of acellular pertussis vaccines, DTaP and Tdap vaccines
ACIP Adolescent Recommendations: Tdap

- Routinely recommended at 11–12 years of age
  - Don’t forget MenACWY, too!

- Catch-up adolescents 13 years of age and older who were not vaccinated

- Adolescents who received Tdap inadvertently or as part of the catch-up series between 7–10 years of age should be given the routine adolescent Tdap dose at 11–12 years of age
Strategies:

- Use the IIS
  - Assess at every encounter
  - Check for needed vaccines in the IIS BEFORE determining vaccine to administer
- Use standing orders
- Have resources and printable guidance available for staff

Adolescents and Catch-Up

Administer Tdap vaccine to persons 11 years of age and older who were NOT *previously vaccinated* and to those with unknown vaccination status

- Persons who were vaccinated with Tdap during adolescence (or at another time) = *previously vaccinated*, including:
  - Health care personnel
  - New fathers
  - Close contacts of newborns
  - Day care workers or babysitters
- No additional doses are recommended
No Additional Doses of Tdap for the General Population

- ACIP recognizes the increasing burden of pertussis and the need for an effective strategy to reduce this burden.
- A study evaluating additional doses of Tdap administered at either a 5- or 10-year interval suggested that the reduction in pertussis disease burden would be limited.
- ACIP concluded that the data do not support a general recommendation for a routine second dose of Tdap, and that the public health impact of routinely recommending a second dose of Tdap would be limited.
ACIP Recommendations for Pregnant Women

- **Pregnant women:**
  - Administer Tdap during each pregnancy, preferably at 27 through 36 weeks’ gestation
  - If not administered during pregnancy, Tdap should be administered immediately postpartum to women *not previously vaccinated* with Tdap
  - Additional doses of Tdap are not indicated for previously vaccinated postpartum women
    - History of an adolescent dose (or Tdap given at another time) = previously vaccinated
Vaccination coverage for pregnant women:

- 2010 and earlier: <1%
- 2013: 28%
- 2015: 53%

96% of Tdap vaccinations were administered in physicians’ offices or clinics.

MMWR 66(41):1105–1108
CDC Clinical Resources for Health Care Personnel: Tdap

- Pink Book webinar series with free CE
  www.cdc.gov/vaccines/ed/webinar-epv/index.html

- Updated ACIP recommendations
  www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6702a1-H.pdf

- Catch-up guidance for children 7 through 18 years of age

- HCP materials on vaccinating pregnant women
  www.cdc.gov/vaccines/pregnancy/hcp/index.html
What Do You Think?

- Lauren (age 24) and her new baby are being discharged today. She was not vaccinated with Tdap vaccine during the pregnancy. Her immunization history includes Tdap at age 16.

- Should you administer Tdap prior to discharge?
  - a) Yes
  - b) No
ACIP Recommendations: Shingrix
## Vaccines for Prevention of Zoster (Shingles)

<table>
<thead>
<tr>
<th>Product (ACIP Abbreviation)</th>
<th>Type</th>
<th>ACIP Age Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zostavax (ZVL)</td>
<td>Live, attenuated</td>
<td>60 years of age and older*</td>
</tr>
<tr>
<td>Shingrix (RZV)</td>
<td>Inactivated, adjuvanted</td>
<td>50 years of age and older</td>
</tr>
</tbody>
</table>

*Zostavax is FDA approved for persons 50 years of age and older*
RZV Zoster Vaccine: Shingrix

- **Storage:** Store vaccine AND diluent between 2°C and 8°C (36°F and 46°F)
- **Preparation:** Use the adjuvanted diluent supplied by the manufacturer to reconstitute the vaccine just before administering
- **Schedule:** 2 doses, 2 to 6 months apart
- **Route:** IM injection
  - Site: Deltoid or the thigh may be used if necessary
  - Needle gauge: 22–25 gauge
  - Needle length: Varies by weight and injection technique
- **May administer during the same clinical visit as other needed vaccines**
  - Administer in a separate limb from other vaccines, if possible

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**CDC recommends new shingles vaccine (Shingrix) for adults 50 and older**

- **50+ years old**
- **2-6 months apart**
- **Intra-muscular in the deltoid**
- **36°-46° refrigerate**

**Who should get Shingrix**
- Give Shingrix (Recombinant Zoster Vaccine) to immunocompetent adults 50 years and older, including those who:
  - had shingles in the past
  - received Zostavax® (Zoster Vaccine Live) at least 8 weeks prior
  - have health conditions, such as chronic renal failure, diabetes mellitus, rheumatoid arthritis, or chronic pulmonary disease
- are receiving other vaccines, such as influenza and pneumococcal vaccines, at the same visit
- are taking low-dose immunosuppressive therapy

**Who should not get Shingrix**
- You should not give Shingrix to a patient who has ever had a severe allergic reaction, such as anaphylaxis, to a component of this vaccine, or after a dose of Shingrix. Consider delaying vaccination if your patient is pregnant, lactating, or experiencing an acute episode of shingles.

**Administering and storing Shingrix**
- Adults 50 years and older should receive 2 doses of Shingrix. Give the second dose 2 to 6 months after the first.
- Administer Shingrix intramuscularly in the deltoid region of the upper arm with a 1- to 1.5-inch needle.
- Both sides of Shingrix must be refrigerated at a temperature of 36-46°F. Do not use if exposed to temperatures below 36°F.

**Reconstitution**
- Reconstitute Shingrix by reconstituting the antigen component with the adjuvant suspension component.
- Either administer it immediately, or store it in the refrigerator and use it within 6 hours of reconstitution. Otherwise, discard it.

**Cost and insurance**
- Shingrix is now covered by most health insurance plans. Tell your patients to contact their health insurance providers ahead of time to see if they will cover the vaccine.

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**MMWR 2018: 7(3)103–108**

Vaccine Efficacy and Effectiveness against HZ for HZ/su and ZVL, by Age Group, During the First 4‡ Years Following Vaccination

- 50-59 yrs: 97% (HZ/su), 70% (ZVL (ZOE 50/70)^), 62% (ZVL (Baxter 2017)), 64% (ZVL (Izurieta 2017))
- 60-69 yrs: 97% (HZ/su), 64% (ZVL (ZOE 50/70)^), 55% (ZVL (Baxter 2017)), 36% (ZVL (Izurieta 2017))
- 70 + yrs: 91% (HZ/su), 38% (ZVL (ZOE 50/70)^), 48% (ZVL (Baxter 2017)), 32% (ZVL (Izurieta 2017))

‡Median follow-up may be less than 3 yrs: Schmader 2012= 1.3 yrs
^ZOE 50/70= 50–59 and 60–69 yrs: Lal 2015, 70+ yrs: Cunningham 2016
*RCTs= 50–59 yrs: Schmader 2012, 60-69 and 70+ yrs: Oxman 2005
ACIP Zoster Recommendations

- Persons 50 years of age and older should be vaccinated with zoster vaccine
- Shingrix is preferred to Zostavax for persons 60 years and older
- Administer 2 doses of Shingrix to immunocompetent persons
  - Regardless of previous history of vaccination with varicella-containing vaccines—Varivax or Zostavax
  - Separate Shingrix and varicella-containing vaccines by at least 8 weeks
Ensure Your Patients Get Both Doses!

- There are currently ordering limits and intermittent shipping delays for Glaxo Shingrix vaccine
- Use proven strategies to help patients complete the series, including:
  - Use a reminder and recall system to contact patients when you have Shingrix
    - Give first consideration to patients due for their second dose of Shingrix
  - If you are out of Shingrix and a patient needs a second dose, refer the patient to another provider in the community that has Shingrix
  - Be sure to enter your patients’ current vaccination information into your state’s immunization information system (IIS)
  - As supply becomes less constrained, notify eligible patients so they can come in to get their first dose of Shingrix
### RZV (Shingrix) Adverse Reactions

<table>
<thead>
<tr>
<th>Reaction Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local reactions</td>
<td>49%</td>
</tr>
<tr>
<td>Local reactions – Grade 3</td>
<td>9.4%</td>
</tr>
<tr>
<td>Systemic reactions (headache, malaise, fatigue)</td>
<td>45–78%</td>
</tr>
<tr>
<td>Systemic reactions (headache, malaise, fatigue) – Grade 3</td>
<td>11%</td>
</tr>
</tbody>
</table>

*MMWR 2018;67(3);103–108*
Adverse Reactions after Shingrix

- Educate patients regarding:
  - Potential adverse reactions, including injection site and systemic reactions
  - The need for a second dose—even if s/he has an adverse reaction

- Offer comfort measures and strategies
CDC Clinical Resources for Health Care Personnel: Zoster

- Pink Book webinar series with free CE

- Shingles (Herpes Zoster) vaccination information for health care providers
  www.cdc.gov/vaccines/vpd/shingles/hcp/index.html

- Shingrix fact sheet

- FAQs on Shingrix
  www.cdc.gov/vaccines/vpd/shingles/hcp/shingrix/faqs.html

- Everything you need to know about Shingrix video
There are 2 zoster vaccines. Shingrix is administered as a 2-dose series. Can a documented dose of Zostavax count toward completion of the series if proper spacing is followed?

a) Yes
b) No
Table 1. Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2019

Always make recommendations by determining needed vaccines based on age (Table 1), determining appropriate intervals for catch-up, if needed (Table 2), assessing for medical indications (Table 3), and reviewing special situations (Notes).

Table 1. By age

- 8.5''x11'' print color [3 pages]
- 8.5''x11'' print black and white [8 pages]
- Compliant version of this schedule

Table 2. Catch-up schedule

- Vaccines in the Child and Adolescent Immunization Schedule
- Learn how to display current schedules from your website.

Table 3. By medical indications

- Changes to this year’s schedule

Legend

- Range of recommended ages for all children
- Range of recommended ages for catch-up immunization
- Range of recommended ages for certain high-risk groups
- Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision-making
- No recommendation

Accessed 3/31/2019
Table 2. Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind, United States, 2019

Always make recommendations by determining needed vaccines based on age (Table 1), determining appropriate intervals for catch-up, if needed (Table 2), assessing for medical indications (Table 3), and reviewing special situations (Notes).

The tables below provide catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

Table 1. By age

Table 2. Catch-up schedule

Table 3. By medical indications

Changes to this year's schedule

Parent-friendly schedule

Resources for health care providers

Vaccine Catch-Up Guidance

CDC has developed catch-up guidance tools to assist health care providers in interpreting Table 2 in the childhood and adolescent immunization schedule.

- Pneumococcal Conjugate Vaccine (PCV) Catch-Up Guidance for Children 4 Months through 4 Years of Age
- Haemophilus influenzae type b-Containing Vaccines Catch-Up Guidance for Children 4 Months through 4 Years of Age
  - Hib vaccine products: ActHIB, Pentacel, Hiberix, or unknown
  - Hib vaccine products: PedvaxHIB vaccine only
- Diphtheria-, Tetanus-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 4 Months through 6 Years of Age
- Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 7 through 18 Years of Age

https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html
Table 2. Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind, United States, 2019

Always make recommendations by determining needed vaccines based on age (Table 1), determining appropriate intervals for catch-up, if needed (Table 2), assessing for medical indications (Table 3), and reviewing special situations (Notes).

The tables below provide catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

- 8.5"x11" print color  [8 pages]
- 8.5"x11" print black and white  [8 pages]
- Vaccines in the Child and Adolescent Immunization Schedule

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- Haemophilus influenzae type b-Containing Vaccines Catch-Up Guidance for Children 4 Months through 4 Years of Age
  - Hib vaccine products: ActHIB, Pentacel, Hiberix, or unknown  [3 pages]
  - Hib vaccine products: PedvaxHIB vaccine only  [2 pages]
- Diphtheria-, Tetanus-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 4 Months through 6 Years of Age  [2 pages]
- Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines Catch-Up Guidance for Children 7 through 18 Years of Age  [2 pages]

https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html
# Catch-Up Guidance for Healthy Children 4 Months through 4 Years of Age

## Pneumococcal Conjugate Vaccine: PCV

The table below provides guidance for children whose vaccinations have been delayed. Start with the child’s age and information on previous doses (previous doses must be documented and must meet minimum age requirements and minimum intervals between doses). Use this table in conjunction with table 2 of the Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, found at [www.cdc.gov/vaccines/schedules/hcp/catchup.html](https://www.cdc.gov/vaccines/schedules/hcp/catchup.html).

<table>
<thead>
<tr>
<th>IF current age is</th>
<th>AND # of previous doses is</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 through 6 months</td>
<td>0 or unknown</td>
<td>Give Dose 1 today</td>
<td>Give Dose 2 at least 4 weeks after Dose 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Give Dose 2 today</td>
<td>Give Dose 3 at least 4 weeks after Dose 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It has been at least 4 weeks since Dose 1</td>
<td>No dose today</td>
<td>Give Dose 2 at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td>2 through 11 months</td>
<td></td>
<td>Give Dose 3 today</td>
<td>Give Dose 4 (final dose) at 12 months of age or older</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It has not been at least 4 weeks since Dose 2</td>
<td>No dose today</td>
<td>Give Dose 3 at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It has not been at least 4 weeks since Dose 1</td>
<td>No dose today</td>
<td>Give Dose 3 at least 4 weeks after Dose 2</td>
</tr>
</tbody>
</table>

---

*Refer to the notes of the 2019 Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger for immunization guidance for children as increased risk for pneumococcal disease.


[https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html](https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html)
## Haemophilus influenzae type B Vaccines: ActHIB, Pentacel, Hiberix, or Unknown

The table below provides guidance for children whose vaccinations have been delayed. Start with the child’s age and information on previous doses (previous doses must be documented and must meet minimum age requirements and minimum intervals between doses). Use this table in conjunction with table 2 of the Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, found at [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html).

### IF current age is

<table>
<thead>
<tr>
<th>AND # of previous doses</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
</table>

**Unknown of 0**

<table>
<thead>
<tr>
<th>4 through 6 months</th>
<th>1</th>
<th>It has been at least 4 weeks since Dose 1</th>
<th>Give Dose 2 today</th>
<th>Give Dose 2 at least 4 weeks after Dose 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>It has not been 4 weeks since Dose 1</td>
<td>Give Dose 3 today</td>
<td>Give Dose 3 at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>It has not been 4 weeks since Dose 2</td>
<td>Give Dose 4 (Final Dose) at 12 months of age or older</td>
<td>Give Dose 4 at least 4 weeks after Dose 2</td>
</tr>
</tbody>
</table>

**Unknown of 0**

<table>
<thead>
<tr>
<th>7 through 11 months</th>
<th>1</th>
<th>It has been at least 4 weeks since Dose 1</th>
<th>Give Dose 2 today</th>
<th>Give Dose 2 at least 4 weeks after Dose 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>It has not been 4 weeks since Dose 1</td>
<td>Give Dose 3 today</td>
<td>Give Dose 3 at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>It has not been 4 weeks since Dose 2</td>
<td>Give Dose 4 (Final Dose) at least 8 weeks after Dose 3 and no earlier than 12 months of age</td>
<td>Give Dose 4 at least 4 weeks after Dose 2</td>
</tr>
</tbody>
</table>

**Dose 1 was given before 7 months of age**

<table>
<thead>
<tr>
<th>12 through 14 months</th>
<th>1</th>
<th>If Dose 1 was given before 7 months of age, give Dose 3 at least 4 weeks after Dose 2</th>
<th>Give Dose 4 (Final Dose) at least 8 weeks after Dose 3 and no earlier than 12 months of age</th>
<th>Give Dose 4 at least 4 weeks after Dose 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>If Dose 1 was given before 7 months of age, give Dose 3 at least 4 weeks after Dose 2</td>
<td>Give Dose 4 (Final Dose) at least 8 weeks after Dose 3 and no earlier than 12 months of age</td>
<td>Give Dose 4 at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>If Dose 1 was given before 7 months of age, give Dose 3 at least 4 weeks after Dose 2</td>
<td>Give Dose 4 (Final Dose) at least 8 weeks after Dose 3 and no earlier than 12 months of age</td>
<td>Give Dose 4 at least 4 weeks after Dose 2</td>
</tr>
</tbody>
</table>

### IF current age is

<table>
<thead>
<tr>
<th>AND # of previous doses</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
</table>

### Catch-Up Guidance for Children 4 Months through 6 Years of Age

**Diphtheria-, Tetanus-, and Pertussis-Containing Vaccines: DTap/DTaP**

The table below provides guidance for children whose vaccinations have been delayed. Start with the child’s age and information on previous doses (previous doses must be documented and must meet minimum age requirements and minimum intervals between doses). Use this table in conjunction with Table 2 of 18 months, of the child and Adolescent Immunization Schedule for Ages 18 Years or Younger, found at [www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html](https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html).

<table>
<thead>
<tr>
<th>IF current age is</th>
<th>AND # of previous doses of DTaP or DT is</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown or 0</td>
<td>Give Dose 1 (DTaP) today</td>
<td></td>
<td></td>
<td>Give Dose 2 (DTaP) at least 4 weeks after Dose 1</td>
</tr>
<tr>
<td>4 months to 11</td>
<td>has at least 4 weeks since Dose 1</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>has been at least 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 6 calendar months after Dose 3 and at least 5 months of age or older</td>
</tr>
<tr>
<td></td>
<td>has not been 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td>2 through 3 years</td>
<td>Give Dose 2 (DTaP) today</td>
<td></td>
<td></td>
<td>Give Dose 2 (DTaP) at least 4 weeks after Dose 1</td>
</tr>
<tr>
<td></td>
<td>has at least 4 weeks since Dose 1</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>has been at least 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 6 calendar months after Dose 3 and at least 5 months of age or older</td>
</tr>
<tr>
<td></td>
<td>has not been 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td>3 through 18 years</td>
<td>Give Dose 2 (DTaP) today</td>
<td></td>
<td></td>
<td>Give Dose 2 (DTaP) at least 4 weeks after Dose 1</td>
</tr>
<tr>
<td></td>
<td>has at least 4 weeks since Dose 1</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>has been at least 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 6 calendar months after Dose 3 and at least 5 months of age or older</td>
</tr>
<tr>
<td></td>
<td>has not been 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td></td>
<td>has at least 6 calendar months since Dose 5</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td></td>
<td>has been at least 6 calendar months since Dose 5</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td></td>
<td>has not been 6 calendar months since Dose 5</td>
<td></td>
<td></td>
<td>Give Dose 3 (DTaP) at least 4 weeks after Dose 3</td>
</tr>
</tbody>
</table>

1. Vecor information: DTap—Administer to children 4 weeks through 6 years of age without a contraindication or precaution to diphtheria, tetanus, or pertussis vaccine. DTap products include Infanrix, Adacel, and Boostrix. Use the current product based on the approved age indications. DTaP—Administer to children 6 weeks through 6 years of age with a contraindication to pertussis vaccine.

### Catch-Up Guidance for Children 7 through 18 Years of Age

**Tetanus-, Diphtheria-, and Pertussis-Containing Vaccines: Tdap/Td1**

The table below provides guidance for children whose vaccinations have been delayed. Start with the child’s age and information on previous doses (previous doses must be documented and must meet minimum age requirements and minimum intervals between doses). Use this table in conjunction with Table 2 of 18 months, of the child and Adolescent Immunization Schedule for Ages 18 Years or Younger, found at [www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html](https://www.cdc.gov/vaccines/schedules/hcp/imz/catchup.html).

<table>
<thead>
<tr>
<th>IF current age is</th>
<th>AND # of previous doses of DTaP or DT is</th>
<th>AND</th>
<th>THEN</th>
<th>Next dose due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown or 0</td>
<td>Give Dose 1 (Tdap) today</td>
<td></td>
<td></td>
<td>Give Dose 2 (Tdap) at least 4 weeks after Dose 1</td>
</tr>
<tr>
<td>3 through 18 years</td>
<td>has at least 4 weeks since Dose 1</td>
<td></td>
<td></td>
<td>Give Dose 3 (Tdap) at least 4 weeks after Dose 2</td>
</tr>
<tr>
<td></td>
<td>has been at least 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (Tdap) at least 6 calendar months after Dose 3 and at least 5 months of age or older</td>
</tr>
<tr>
<td></td>
<td>has not been 4 weeks since Dose 2</td>
<td></td>
<td></td>
<td>Give Dose 3 (Tdap) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td></td>
<td>has at least 6 calendar months since Dose 5</td>
<td></td>
<td></td>
<td>Give Dose 3 (Tdap) at least 4 weeks after Dose 3</td>
</tr>
<tr>
<td></td>
<td>has been at least 6 calendar months since Dose 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>has not been 6 calendar months since Dose 5</td>
<td></td>
<td></td>
<td>Give Dose 3 (Tdap) at least 4 weeks after Dose 3</td>
</tr>
</tbody>
</table>

1. Vecor information: Tdap—Administer to persons 7 years of age and older without a contraindication or precaution to diphtheria, tetanus, or pertussis vaccine. Tdap products include Infanrix, Adacel, and Boostrix. Use the current product based on the approved age indications. Td—Administer to persons 7 years of age and older previously vaccinated with Tdap or with a contraindication to pertussis vaccine.

1. For persons age 7 to 10 years who receive a dose of Tdap as part of the catch-up series, an adolescent Tdap vaccine dose should be administered no earlier than 6 months following the Tdap dose and no later than 1 year following the Tdap dose. If a second Tdap dose is given to persons age 11 to 18 years old, the second Tdap dose should be administered no earlier than 6 months following the first Tdap dose and no later than 1 year following the first Tdap dose.

### References
- Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger—United States, 2019: [www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent-schedule.pdf](https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent-schedule.pdf)
Multiple education products available free through the CDC website:
- Immunization courses (webcasts and online self-study)
- You Call the Shots self-study modules

Continuing education available

CDC Resources for Staff Education

Immunization Education and Training: www.cdc.gov/vaccines/ed/index.html
Current Issues in Immunization Netconferences (CIINC) and 2019 EpiVac Pink Book Webinars

- Provide clinicians with the most up-to-date information on immunizations
- Archived versions available
- Sign up for e-mail alerts at
Immunization Questions?

- Questions? E-mail CDC nipinfo@cdc.gov or www.cdc.gov/cdcinfo
- Vaccines and Immunizations website www.cdc.gov/vaccines
- HCP education www.cdc.gov/vaccines/hcp.htm
- Twitter @DrNancyM_CDC
- Influenza www.cdc.gov/flu
- Vaccine safety www.cdc.gov/vaccinesafety
CDC Immunization Apps for Health Care Personnel

**Childhood and adult immunization schedules**
www.cdc.gov/vaccines/schedules/hcp/schedule-app.html

**Influenza information**
www.cdc.gov/flu/apps/cdc-influenza-hcp.html

*Morbidity and Mortality Weekly Report (MMWR)*
www.cdc.gov/mobile/applications/mobileframework/mmwrpromo.html

**PneumoRecs VaxAdvisor**
www.cdc.gov/vaccines/vpd/pneumo/hcp/pneumoapp.html
Additional Slides
FYI – PEP for Hepatitis A

- PEP with HepA or IG is effective when administered within 2 weeks of exposure
- Persons 1–40y should receive HepA, persons >40y may also receive IG depending on risk
- Persons ≥1y with immunocompromising conditions or chronic liver disease should receive HepA and IG at same time
- Completing 2-dose series HepA not necessary for PEP; however, for long-term immunity, second dose HepA should be administered ≥6 mos