Immunization Update 2018

Dane County Immunization Coalition

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Immunization Services Division
Disclosures

- JoEllen Wolicki 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, MMR, and Tdap vaccines.
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](https://www.cdc.gov/vaccines/acip/meetings/webcast-instructions.html)

Next ACIP meeting
June 20–21, 2018
Vaccination Coverage Rates
**Estimated Vaccination Coverage among Children Aged 19–35 Months, NIS 2016**

<table>
<thead>
<tr>
<th>State/Area</th>
<th>Combined Series*</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>70.7%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>79.4%</td>
</tr>
</tbody>
</table>

*The combined (4:3:1:3:3:1:4) vaccine series includes ≥4 doses of DTaP, ≥3 doses of poliovirus vaccine, ≥1 dose of measles-containing vaccine, full series of Hib vaccine (≥3 or ≥4 doses, depending on product type), ≥3 doses of HepB, ≥1 dose of varicella vaccine, and ≥4 doses of PCV*
Estimated Vaccination Coverage among Adolescents Aged 13–17 Years, NIS-Teen, 2016

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>United States</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥1 Tdap</td>
<td>88.0%</td>
<td>91.6%</td>
</tr>
<tr>
<td>≥1 HPV (M and F)</td>
<td>60.4%</td>
<td>61.9%</td>
</tr>
<tr>
<td>UTD HPV (M and F)</td>
<td>43.4%</td>
<td>45.5%</td>
</tr>
<tr>
<td>≥1 MenACWY</td>
<td>82.2%</td>
<td>85.6%</td>
</tr>
</tbody>
</table>
Vaccine Supply Update
Vaccine Supply: Recombivax HB

- Merck is not currently distributing pediatric and adult formulations of hepatitis B vaccine through 2018.
- GSK can address the gap for pediatric hepatitis B vaccine using a combination of single-component hepatitis B vaccine and DTaP-HepB-IPV (Pediarix).
- CDC anticipates there will be approximately 10% less single-component pediatric hepatitis B vaccine than normal during the rest of 2018.
- GSK has sufficient supplies of adult hepatitis B vaccine to address these anticipated gaps.
  - Preferences for a specific presentation (i.e., vial versus syringe) may not be consistently be met.

CDC Current Vaccine Shortages and Delays: [https://www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html](https://www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html)
Clinical Job Aid for the Hepatitis B

Pediatric Hepatitis B Vaccination Guidance during the 2018 Supply Shortage

- Shortage of pediatric hepatitis B vaccine (Recombivax HB®) continues for the remainder of 2018 due to manufacturing issues.
- CDC provides guidance for giving vaccine during this time.
- Immediate hepatitis B vaccine
  - Single component
  - HepB

- Follow the recommended schedule:
  1. Using Pediarix for all doses after the birth dose
  2. Using Pediarix and single component DTaP
  3. Using Pentacel and single component HepB

- Infants born to hepatitis B surface antigen-positive or unknown status mothers:
  1. Completing the hepatitis B series using Pediarix for all doses after the birth dose
  2. Completing the hepatitis B series using Pentacel
  3. Completing the hepatitis B series using all single-component vaccines

- Pediatric Hepatitis B Vaccination Guidance during the 2018 Supply Shortage

ACIP Immunization Recommendations: Seasonal Influenza Vaccine
2017–18 Influenza Season Summary

- Flu activity has peaked and is now below the national baseline
  - Overall, influenza A(H3N2) viruses have predominated this season
- Influenza B viruses have been more common than flu A viruses since early March
- CDC reports 151 flu-related deaths in children this season
- Though the flu season is coming to a close, CDC routinely recommends flu vaccination as long as influenza viruses are circulating

CDC Flu website accessed April 18, 2018: www.cdc.gov/flu
2017–18 Influenza Season
ILI Activity for the Week Ending April 14, 2018
Indications vary by product, including age, formulation, and type

More than one might be appropriate for any given recipient

- ACIP/CDC express no preferences for any one type of influenza vaccine if more than one is appropriate and available
- Vaccination should not be delayed in order to obtain a specific product

Table 1 Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2017–18

Influenza Season www.cdc.gov/vaccines/hcp/accip-recs/vacc-specific/flu.html
2018–2019 Influenza Vaccine Strains

- **Trivalent vaccine includes:**
  - A/Michigan/45/2015 (H1N1)pdm09-like virus
  - A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus
  - B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)

- **Quadrivalent vaccine includes:**
  - A/Michigan/45/2015 (H1N1)pdm09-like virus
  - A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus
  - B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)
  - B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage)
2018–19 ACIP Recommendations: Influenza

- Annual influenza vaccination continues to be recommended for persons 6 months of age and older without contraindications or precautions
  - **DRAFT:** Immunization providers may choose to administer any licensed, age-appropriate influenza vaccine product, including LAIV, IIV, RIV, or cclIV **DRAFT**

- 2018–19 ACIP recommendations for influenza will be discussed and voted on at the June meeting and published soon after
Mumps and Measles 2018
U.S. Mumps Cases as of March 30, 2018

From January 1 to March 30, 2018, 39 states* and the District of Columbia in the U.S. reported mumps infections in 633** people to CDC.

*AK, AL, AR, AZ, CA, CT, DC, DE, FL, GA, HI, IA, ID, IN, KS, KY, LA, ME, MD, MA, MI, MO, NE, NH, NJ, NM, NY, OH, OK, OR, PA, RI, SC, TN, TX, VA, VT, WA, WI and WV

**Preliminary data reported to CDC. Mumps outbreaks are not reportable.
Mumps Vaccination and Outbreaks

- Persons previously vaccinated with 2 doses of a mumps-virus-containing vaccine who are identified by public health authorities as being part of a group or population at increased risk for acquiring mumps because of an outbreak should receive a 3rd dose of a mumps-virus-containing vaccine.

MMWR 67(1):33-38
Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, 2018
ACIP Recommended Immunization Schedule for Adults 19 Years of Age or Older, 2018 www.cdc.gov/vaccines/schedules/hcp/adult.html

Recommendation of the Advisory Committee on Immunization Practices for Use of a Third Dose of Mumps Virus-Containing Vaccine in Persons at Increased Risk for Mumps During an Outbreak
Published January 12, 2018
Recommended Immunization Schedule for Children and Adolescents
Aged 18 Years or Younger, 2018

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>Abbreviation</th>
<th>Brand(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria, tetanus, and acellular pertussis vaccine</td>
<td>DTaP</td>
<td>Diphtheria, Tetanus, Pertussis</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-T1)</td>
<td>Act-HIB, HibTITER-NB</td>
</tr>
<tr>
<td>Haemophilus influenza type b vaccine</td>
<td>Hib (PRP-OMP)</td>
<td>Menactra, Menveq</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix, Vaqta</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>HepA</td>
<td>Havrix, Vaqta</td>
</tr>
<tr>
<td>Hepatitis B vaccine</td>
<td>HepB</td>
<td>Engerix B, Recombinex HB</td>
</tr>
<tr>
<td>Human papillomavirus vaccine</td>
<td>HPV</td>
<td>Gardasil 9</td>
</tr>
<tr>
<td>Influenza vaccine (inactivated)</td>
<td>IIV3, IIV4</td>
<td>Multivax, Fluvirin 4, Fluvirin 3, Fluzone, Fluzone High Dose</td>
</tr>
<tr>
<td>Measles, mumps, and rubella vaccine</td>
<td>MMR</td>
<td>M-M-R 8</td>
</tr>
<tr>
<td>Meningococcal serogroup A, C, W, Y vaccine</td>
<td>MenACWY-DHWCW</td>
<td>Menactra, Menveq</td>
</tr>
<tr>
<td>Meningococcal serogroup B vaccine</td>
<td>MenB-4C, MenB-HPD</td>
<td>Baxten, Trisenivia</td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate vaccine</td>
<td>PCV13</td>
<td>Prevenar 13</td>
</tr>
<tr>
<td>Pneumococcal 23-valent polysaccharide vaccine</td>
<td>PCP23</td>
<td>Prevancys</td>
</tr>
<tr>
<td>Poliovirus vaccine (inactivated)</td>
<td>IPV</td>
<td>OPV, BOPV, Focuson</td>
</tr>
<tr>
<td>Rota viruses</td>
<td>RV1, RV2</td>
<td>Rotarix, Rotasafe</td>
</tr>
<tr>
<td>Tetanus, diptheria, and acellular pertussis vaccine</td>
<td>Tet</td>
<td>Teviva, No Trade Name</td>
</tr>
<tr>
<td>Tetanus and diptheria vaccine</td>
<td>Tet</td>
<td>Teviva, No Trade Name</td>
</tr>
<tr>
<td>Varicella vaccine</td>
<td>VAR</td>
<td>Varilrix</td>
</tr>
</tbody>
</table>

Combination Vaccines
- DTP, hepatitis B and inactivated polio virus vaccine (DTP-Hb-IPV) | Pediarix |
- DTP, inactivated poliovirus and Haemophilus influenza type b vaccine (DTP-PiHib) | Pentacel |
- DTaP, hepatitis B and inactivated polio virus vaccine (DTaP-Hb-IPV) | Trivac |
- Mesnex, mumps, rubella, and varicella vaccines (MMRV) | ProQuad |

Approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip)
American Academy of Pediatrics (www.aap.org)
American Academy of Family Physicians (www.aafp.org)
American College of Obstetricians and Gynecologists (www.acog.org)

This schedule includes recommendations in effect as of January 1, 2018.
Footnote Simplification

- Remove unnecessary text while preserving all pertinent information and maintaining clarity
  - Transition from complete sentences to bullets
  - Removal of unnecessary or redundant language
  - Formatting changes
### 2017 HPV footnote

**Human papillomavirus (HPV) vaccine. (Minimum age: 9 years)**

**Routine and catch-up vaccination:**
- Administer a 2-dose series of HPV vaccine on a schedule of 0, 6–12 months to all adolescents aged 11 or 12 years. The vaccination series can start at age 9 years.
- Administer HPV vaccine to all adolescents through age 18 years who were not previously adequately vaccinated. The number of recommended doses is based on age at administration of the first dose.
- For persons initiating vaccination before age 15, the recommended immunization schedule is 2 doses of HPV vaccine at 0, 6-12 months.
- For persons initiating vaccination at age 15 years or older, the recommended immunization schedule is 3 doses of HPV vaccine at 0, 1–2, 6 months.
- A vaccine dose administered at a shorter interval should be readministered at the recommended interval.
  - In a 2-dose schedule of HPV vaccine, the minimum interval is 5 months between the first and second dose. If the second dose is administered at a shorter interval, a third dose should be administered a minimum of 12 weeks after the second dose and a minimum of 5 months after the first dose.
  - In a 3-dose schedule of HPV vaccine, the minimum intervals are 4 weeks between the first and second dose, 12 weeks between the second and third dose, and 5 months between the first and third dose. If a vaccine dose is administered at a shorter interval, it should be readministered after another minimum interval has been met since the most recent dose.
- Persons who have completed an age-appropriate HPV vaccine series (i.e., either 2 or 3 doses of 2vHPV, 4vHPV, or 9vHPV at the recommended intervals) are considered adequately vaccinated.

**Special populations:**
- For children with history of sexual abuse or assault, administer HPV vaccine beginning at age 9 years.
- Immunocompromised persons* aged 9–26 years, including those with human immunodeficiency virus (HIV) infection, should receive a 3-dose series at 0, 1–2 months, and 6 months.

Note: HPV vaccination is not recommended during pregnancy, although there is no evidence that the vaccine poses harm. If a woman is found to be pregnant after initiating the vaccination series, no intervention is needed; the remaining vaccine doses should be delayed until after the pregnancy. Pregnancy testing is not needed before vaccination.


### 2018 HPV footnote

**Human papillomavirus (HPV) vaccine (Minimum age: 9 years)**

**Routine and catch-up vaccination:**
- Routine vaccination at 11–12 years (can start at age 9) and through age 18 if not previously adequately vaccinated. Number of doses dependent on age at initial vaccination:
  - Age 9–14 years at initiation: 2-dose series at 0 and 6–12 months. Minimum interval: 5 months (repeat a dose given too soon at least 12 weeks after the invalid dose and at least 5 months after the 1st dose).
  - Age 15 years or older at initiation: 3-dose series at 0, 1–2 months, and 6 months. Minimum intervals: 4 weeks between 1st and 2nd dose; 12 weeks between 2nd and 3rd dose; 5 months between 1st and 3rd dose (repeat dose/s given too soon).
- Persons who have completed a valid series with any HPV vaccine do not need any additional doses.

**Special situations:**
- History of sexual abuse or assault: Begin series at age 9 years.
- Immunocompromised* (including human immunodeficiency virus [HIV]) aged 9–26 years: 3-dose series at 0, 1–2 months, and 6 months.
- Pregnancy: Vaccination not recommended, but there is no evidence the vaccine is harmful and no intervention needed for women who inadvertently received a dose of HPV vaccine while pregnant. Delay remaining doses until after pregnancy. Pregnancy testing not needed before vaccination.

*See MMWR, December 16, 2016;65(49):1405–1408, at www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6549a5.pdf.
### ACIP Recommended Immunization Schedule for Adults 19 Years of Age or Older, 2018

#### Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>19–21 years</th>
<th>22–26 years</th>
<th>27–59 years</th>
<th>60–64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1 dose annually</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Substitute Tdap for Td once, then Td booster every 10 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HZV&lt;sup&gt;5&lt;/sup&gt;</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV-Female&lt;sup&gt;6&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV-Male&lt;sup&gt;4&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV23&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1 or 2 doses depending on indication</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA&lt;sup&gt;8&lt;/sup&gt;</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepB&lt;sup&gt;8&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY or MPSV4&lt;sup&gt;11&lt;/sup&gt;</td>
<td>1 or more doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MenB&lt;sup&gt;10&lt;/sup&gt;</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib&lt;sup&gt;11&lt;/sup&gt;</td>
<td>1 dose</td>
<td>1 or 3 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection**
- **Recommended for adults with additional medical conditions or other indications**
- **No recommendation**

#### Figure 2. Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications, United States, 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Pregnancy&lt;sup&gt;12&lt;/sup&gt;</th>
<th>HIV infection (including HIV infection CD4+ cell count &lt; 200 or &gt; 200)</th>
<th>Asplenia, persistent complement deficiencies&lt;sup&gt;13&lt;/sup&gt;</th>
<th>Albinism</th>
<th>End-stage renal disease, on hemodialysis&lt;sup&gt;14&lt;/sup&gt;</th>
<th>Congenital heart disease</th>
<th>Chronic liver disease&lt;sup&gt;15&lt;/sup&gt;</th>
<th>Diabetes&lt;sup&gt;16&lt;/sup&gt;</th>
<th>Healthcare personnel&lt;sup&gt;17&lt;/sup&gt;</th>
<th>Men who have sex with men&lt;sup&gt;18&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1 dose annually</td>
<td></td>
<td>Substitute Tdap for Td once, then Td booster every 10 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1 dose Tdap every 10 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td>1 or 2 doses depending on indication</td>
<td>2 doses</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td>1 dose</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HZV&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td>1 dose</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV-Female&lt;sup&gt;6&lt;/sup&gt;</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
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<tr>
<td>HPV-Male&lt;sup&gt;4&lt;/sup&gt;</td>
<td>3 doses through age 21 yrs</td>
<td></td>
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</tr>
<tr>
<td>PCV13&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV23&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1, 2, or 3 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA&lt;sup&gt;8&lt;/sup&gt;</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepB&lt;sup&gt;8&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY or MPSV4&lt;sup&gt;11&lt;/sup&gt;</td>
<td>1 or more doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenB&lt;sup&gt;10&lt;/sup&gt;</td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib&lt;sup&gt;11&lt;/sup&gt;</td>
<td>1 dose</td>
<td>3 doses post-HSCT, prophylactic only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection**
- **Recommended for adults with additional medical conditions or other indications**
- **Contraindicated**

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ACIP Recommended Immunization Schedule for Adults 19 Years of Age or Older, 2018

[www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html)
Advisory Committee on Immunization Practices (ACIP) Updates and MMWR Publications
ACIP Recommendation: Hepatitis A Vaccine
Hepatitis A Vaccine ACIP Vote February 2018

- Hepatitis A vaccines should be administered for postexposure prophylaxis for all persons age 12 months of age or older

- In addition to hepatitis A vaccine, IG may be administered to persons older than 40 years of age, depending on the provider’s risk assessment

Provider Guidance

- Factors to consider in the decision to use IG in addition to vaccine
  - Age
  - Immune status and underlying conditions
  - Exposure type (risk of transmission)
  - Availability of IG
Hepatitis A Immunization Recommendations

- Routinely recommended for children at 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
ACIP HepA Vaccine Recommendations: Adult

- Administer vaccine to adults at increased risk, including:
  - Travel to or work in areas with high or intermediate 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 from an area with high or intermediate endemicity
  - Work with nonhuman primates or in a hepatitis A research laboratory setting
  - Healthy adults who have recently been exposed to hepatitis A
Hepatitis A and International Travel
Hepatitis A Vaccine for International Travelers: Children and Adults

- 1 dose of a monovalent hepatitis A vaccine protects most healthy people 1–40 years of age

- Administer HepA vaccine to persons 1 year of age and older
  - Start the series as soon as travel is being considered to an area outside the U.S. where protection against hepatitis A is recommended
  - The series should be completed for long protection—even if the trip is over
  - Postvaccination testing is not recommended
International Travel and Infants 6–11 Months of Age

- **Previous recommendations:**
  - Hepatitis A: IG was recommended for infants 6 through 11 months of age BUT
  - MMR vaccine is also recommended for this age group

- This could be problematic as IG and live, attenuated vaccines cannot be administered simultaneously
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

This recommendation has been adopted by the CDC Director and will become official once published in MMWR.

Persons at risk of severe disease from hepatitis A planning to travel in 2 weeks or sooner should receive the first dose of vaccine and also can receive immune globulin.
**Summary: Hepatitis A Vaccine Recommendations and International Travel**

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants 6 months of age or younger</td>
<td>IG</td>
</tr>
<tr>
<td>Infants 6 through 11 months of age</td>
<td>Vaccine$^1$ (or IG$^2$)</td>
</tr>
<tr>
<td>Healthy persons 1 year of age or older</td>
<td>Vaccine</td>
</tr>
</tbody>
</table>

**Special Populations**

<table>
<thead>
<tr>
<th>Special Populations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons with a vaccine contraindication</td>
<td>IG</td>
</tr>
<tr>
<td>Immunocompromised persons</td>
<td>Vaccine with addition of IG$^3$</td>
</tr>
<tr>
<td>Persons with chronic liver disease</td>
<td>Vaccine</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>Vaccine</td>
</tr>
</tbody>
</table>

$^1$This recommendation has been adopted by the CDC Director and will become official once published in *MMWR*

$^2$Based on provider risk assessment and availability of vaccine or IG

$^3$If measles is not endemic in the region
ACIP Recommendation: Hepatitis B Vaccine
Heplisav-B (HepB-CpG)

- FDA licensed November 2017
- Indicated for active immunization against hepatitis B
- Studies demonstrate high rates of seroprotection:
  - 90.0%-100.0% of subjects receiving HEPLISAV-B
- Adverse events
  - Mild: 45.6%
  - Serious: 5.4%
# 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</td>
</tr>
<tr>
<td></td>
<td>vaccines. Administer in separate injection sites, 1 inch</td>
</tr>
<tr>
<td></td>
<td>apart (if possible)</td>
</tr>
<tr>
<td><strong>Contraindication</strong></td>
<td>History of severe allergic reaction (e.g., anaphylaxis) after a</td>
</tr>
<tr>
<td></td>
<td>previous dose of any hepatitis B vaccine or to any component of Heplisav-B, including yeast</td>
</tr>
</tbody>
</table>

Heplisav-B may be used to vaccinate persons age 18 years and older against infection caused by all known subtypes of HBV

ACIP does not state a preference for vaccine product versus another if the patient is eligible for more than one product

Policy note was published in the *MMWR* April 20, 2018
Additional Considerations

- 2-dose HepB series only applies when BOTH doses consist of Heplisav-B (HepB-CpG), administered at least 4 weeks apart
- A mixed product series that includes Heplisav-B and single-component vaccine is acceptable
  - 2 doses of Heplisav-B separated by 4 weeks is considered complete
- Until safety data are available for Heplisav-B, providers should vaccinate pregnant women needing HepB vaccination with Engerix-B or Recombibax HB (HepB-alum)
ACIP Recommendation: Tdap Vaccine
Adolescent Recommendations

- Adolescents who received Tdap inadvertently or as part of the catch-up series between 7–10 years of age may receive the routine adolescent Tdap dose (11–12 years of age)

Footnote 13: Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, 2018

DTaP, PCV13, and Hib too!
ACIP Recommendation: HPV Vaccine

HPV Yoga
Human Papillomavirus Vaccine Routine Recommendations

- Routinely vaccinate boys and girls at 11–12 years of age*

- Catch up those who are unvaccinated or are missing doses, including:
  - Females age 13 through 26 years
  - Males age 13 through 21 years
  - High-risk males age 22 through 26 years
    - Men who have sex with men and immunocompromised men (including HIV-infected men)

- Males 22 through 26 years of age may be vaccinated

*Vaccination series can be started at 9 years of age

MMWR 2015;64:300-4
Based on 2015 data alone, as many as 9.1 million women and about 13.9 million men age 19–26 years were unvaccinated and might benefit from HPV vaccination.

These estimates reflect the current pool of females and males who could benefit from catch-up vaccination and the number of unprotected older adolescents adding to that pool annually.

Studies have found that although HPV infection increases with increasing age after sexual debut, most have not been infected with all the high-risk HPV types included in the vaccine.
Human Papillomavirus Vaccine Immunization Schedules

- Routine 2-dose schedule: 0, 6–12 months

- Routine 3-dose schedule*: 0, 1–2, 6 months
  - Dose #2: Administer at least 1 to 2 months after dose 1
  - Dose #3: Administer at least:
    - 12 weeks after dose 2 AND
    - 6 months (24 weeks) after dose 1

- An accelerated schedule using minimum intervals is not recommended

*ACIP off-label recommendation, MMWR 2015;64(29):300-4
ACIP recommends following the routine 2-dose schedule (0, 6–12 months) for children starting the HPV vaccination series between 9 and 14 years of age

If a 2nd dose is inadvertently administered prior to 5 months, follow a 3-dose series
HPV Immunization Schedule
Unvaccinated Persons 15 Years of Age and Older

- ACIP recommends following the routine 3-dose schedule (0, 1–2, 6 months) for adolescents starting the HPV series on or/after their 15th birthday
ACIP recommends HPV vaccination for immunocompromised females and males age 9 through 26 years with 3 doses of HPV vaccine (0, 1–2, 6 months)

Administer a 3-dose series to immunocompromised persons, including those with:

- Primary or secondary immunocompromising conditions that might reduce cell-mediated or humoral immunity, such as B lymphocyte antibody deficiencies, T lymphocyte complete or partial defects, HIV infection, malignant neoplasm, transplantation, autoimmune disease, or immunosuppressive therapy
Previously Vaccinated Persons
Assessing Immunization Records

- **2-dose series = completed if:**
  - 2 doses at the recommended dosing schedule (0, 6–12 months) AND
  - 1st dose was given between 9–14 years of age

- **3-dose series = completed if:**
  - 3 doses at the recommended dosing schedule (0, 1–2, 6 months)

- **All doses do not have to be 9vHPV**

- **No additional doses are recommended, regardless of their current age and the vaccine received (2vHPV, 4vHPV, or 9HPV)**
ACIP HPV Immunization Recommendations Schedule Considerations

- **Number of recommended doses is based on:**
  - Age the first dose was given AND
  - Health status—immunosuppression

- **Series does not need to be restarted if it is delayed or interrupted**
  - There is NO maximum interval between HPV vaccine doses

- **HPV vaccine can be administered during the same clinical visit as other vaccines**

- **No booster doses are recommended – even if the series was completed years ago**
ACIP Recommendation: Zoster Vaccine (Shingrix)
Vaccine Efficacy and Effectiveness against HZ for HZ/su and ZVL, by Age Group, During the First 4‡ Years Following Vaccination

<table>
<thead>
<tr>
<th>Age Group</th>
<th>HZ/su (ZOE 50/70)^</th>
<th>ZVL (RCTs*)</th>
<th>ZVL (Baxter 2017)</th>
<th>ZVL (Izurieta 2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59 yrs</td>
<td>97 ± 70 ± 62</td>
<td>64 ± 55</td>
<td>36 ± 38</td>
<td>48 ± 32</td>
</tr>
<tr>
<td>60-69 yrs</td>
<td>97 ± 64 ± 55</td>
<td>55 ± 36</td>
<td>48 ± 38</td>
<td>32 ± 32</td>
</tr>
<tr>
<td>70+ yrs</td>
<td>91 ± 38 ± 48</td>
<td>36 ± 32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

‡ Median follow-up may be less than 3 yrs: Schmader 2012= 1.3 yrs
^ ZOE 50/70= 50-59 and 60-69yr: Lal 2015, 70+yrs: Cunningham 2016
* RCTs= 50-59 yrs: Schmader 2012, 60-69 and 70+ yrs: Oxman 2005,
Vaccine Efficacy and Effectiveness against PHN for HZ/su and ZVL, in Adults 70 Years and Older During the First 4 Years Following Vaccination

<table>
<thead>
<tr>
<th>70 + yrs</th>
<th>VE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>HZ/su (ZOE 50/70)^</td>
<td>89</td>
</tr>
<tr>
<td>ZVL (RCTs*)</td>
<td>67</td>
</tr>
<tr>
<td>ZVL (Baxter 2017)</td>
<td>73</td>
</tr>
<tr>
<td>ZVL (Izurieta 2017)</td>
<td>55</td>
</tr>
</tbody>
</table>

^ Pooled ZOE 50/70: Cunningham 2016
* Shingles Prevention Study: Oxman 2005,
Zoster Shingrix (RZV)

- Administer Shingrix to immunocompetent persons 50 years of age and older
- Storage: Store vaccine AND diluent in the refrigerator between 2°C and 8°C (36°F and 46°F)
- Preparation: Reconstitute the vaccine with the diluent (adjuvant) supplied by the manufacturer 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 age/weight
  - May administer during the same clinical visit as other needed vaccines. Administer in a separate limb from other vaccines, if possible

MMWR 2018;67(3);103–108
## RZV (Shingrix) Adverse Reactions

<table>
<thead>
<tr>
<th>Condition</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*
Clinical Considerations

- RZV (Shingrix) is preferred to Zostavax for persons 60 years and older
- RZV (Shingrix) is recommended for persons previously vaccinated with Zostavax
  - Wait at least 8 weeks after Zostavax before administering RZV
- Administer RZV (Shingrix) regardless of previous history of varicella or varicella vaccination
Shoulder Injury Related to Vaccine Administration

- Shoulder injury related to vaccine administration (SIRVA) was added to the Vaccine Injury Compensation Table in March 2017.
- Shoulder injuries related to vaccine administration are injuries to the musculoskeletal structure of the shoulder, including the ligaments, bursa, and tendons.
  - They are thought to occur as a result of the unintended injection of vaccine antigen and/or trauma from the needle going into and around the underlying bursa of the shoulder.
  - Symptoms include shoulder pain and limited mobility after the injection.
Shoulder Injury Related to Vaccine Administration and Vaccine Administration Best Practices

- When administering a vaccine by intramuscular (IM) injection in the deltoid muscle, use:
  - Proper landmarks and technique to identify the injection site
  - Proper needle length based on the age, patient size, and injection technique
Clinical Resources for Shoulder Injury Related to Vaccine Administration

- CDC Vaccine administration web page for information and materials for health care personnel, including
  - Web-based module with CE
  - Job aids and infographics
  - IM demonstration video

www.cdc.gov/vaccines/hcp/admin/admin-protocols.html

www.cdc.gov/vaccines/hcp/administer-vaccines.html
www.cdc.gov/vaccines/hcp/infographics/call-the-shots.pdf
Intramuscular Injection Sites

JoEllen Wolicki, BSN, RN
Nurse Educator, CDC

Vaccine administration resource library: https://www.cdc.gov/vaccines/hcp/admin/resource-library.html
Additional Resources
CDC Resources for Staff Education

- Multiple education products available free through the CDC website:
  - Immunization courses (webcasts and online self-study)
  - Netconferences
  - You Call the Shots self-study modules
- Continuing education available

Current Issues in Immunization Netconferences (CIINCs)

- Provide clinicians with the most up-to-date information on immunizations
  - Live, 1-hour webinars
  - Conducted 4 to 5 times a year
  - Topics announced prior to each one
  - Webinars are archived
  - CE available

- Sign up for e-mail alerts at www.cdc.gov/vaccines/ed/ciinc/index.html
You Call the Shots Web-Based Training

- **YCTS** is a series of modules on each vaccine-preventable disease and ACIP recommendations for the use of vaccines
- Each module provides learning opportunities, self-test practice questions, reference and resource materials, and an extensive glossary
- CE available
- New and updated modules
  - Influenza
  - Human Papillomavirus
  - Vaccines For Children (VFC)
  - Vaccine Storage and Handling

*You Call the Shots: [www.cdc.gov/vaccines/ed/youcalldresshots.html](http://www.cdc.gov/vaccines/ed/youcalldresshots.html)*
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

**Travel well**
www.nc.cdc.gov/travel/page/apps-about
Questions??

JoEllen Wolicki
jwolicki@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)

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