HPV VACCINATION: WHAT TO DO? HOW ARE WE DOING? HOW CAN WE DO BETTER?

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Think About The Link Conference
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Evolution of Recommendations for HPV Vaccination in the United States

- **Quadrivalent**
  - For females 11 or 12 yrs* and 13–26 yrs
- **Quadrivalent Bivalent**
  - For females 11 or 12 yrs* and 13–26 yrs
  - For males 9–26 yrs
  - May be given
- **Quadrivalent**
  - For males 11 or 12 yrs* and 13–21 yrs*
- **Quadrivalent Bivalent**
  - For females 9–valent
- **Quadrivalent 9-valent**
  - For males

**Recommended as 3-dose series**

- Can be given starting at 9 years; Vaccination is also recommended for men who have sex with men through age 26 years and for immunocompromised persons (including those with HIV infection), if not vaccinated previously; May be given to males age 22-26 years.

*Slides: Lauri Markowitz, CDC, ACIP Meeting October 19, 2016*
Basics of HPV Vaccine Recommendation

• 11-12 years: 2-dose series (spaced 6-12 months apart)
  ▫ High exposure risk (sexual abuse concern), initiate at age 9 years
• Catch up: all females through 26 years, all males through 21 years (all MSM or immunocompromised through 26). Other males 22-26, if desired
  ▫ 2 dose series 6-12 months apart if dose 1 given before 15\textsuperscript{th} birthday
  ▫ 3 dose series (0, 1-2m, 6m) if dose 1 given on/after 15\textsuperscript{th} birthday
  ▫ If you start the HPV series before turning 27, complete it even if patient turns 27 before finishing series
HPV Vaccine: New 2-dose schedule (Fall 2016)

- Among younger children, 2 doses yield same or better antibody response than 3 in young adults
  - ACIP: Immunocompromised (HIV+, etc.): always 3 doses
- If 2-dose interval <5 calendar months? Complete 3 doses (all 3 interval criteria must be met):
  - **Dose 1 → Dose 2 → Dose 3**
    - Minimum 12 weeks
    - Minimum 4 weeks
    - Minimum 6 months
- Apply same schedule rules to people who got HPV2 and HPV4 vaccines (not just HPV9)
Figure 1. Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2017.

(For those who fall behind or start late, see the catch-up schedule [Figure 2]).

These recommendations must be read with the footnotes 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 Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 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 mos</th>
<th>4 mos</th>
<th>6 mos</th>
<th>9 mos</th>
<th>12 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>19-23 yrs</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>
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</thead>
<tbody>
<tr>
<td>Hepatitis B (HepB)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<tr>
<td>Rotavirus (RV) RV1 (2-dose series); RV5 (3-dose series)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<tr>
<td>Diphtheria, tetanus, &amp; acellular pertussis (DTaP; &lt;7 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td>4th dose</td>
<td></td>
<td>5th dose</td>
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<tr>
<td>Haemophilus influenzae type b (Hib)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
<td></td>
<td>3rd or 4th dose</td>
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<td>See footnote 4</td>
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<tr>
<td>Pneumococcal conjugate (PCV13)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<td>4th dose</td>
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<tr>
<td>Inactivated poliovirus (IPV; &lt;18 yrs)</td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
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<td>4th dose</td>
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<tr>
<td>Influenza (IV)</td>
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<td>Annual vaccination (IV) 1 or 2 doses</td>
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<tr>
<td>Measles, mumps, rubella (MMR)</td>
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<td></td>
<td></td>
<td></td>
<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Varicella* (VAR)</td>
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<td></td>
<td></td>
<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Hepatitis A (HepA)</td>
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<td></td>
<td></td>
<td></td>
<td>1st dose</td>
<td>2nd dose</td>
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<td>3rd dose series, See footnote 10</td>
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<tr>
<td>Meningococcal B (Hib-MenCY) 26 weeks; MenACWY-D 2-9 mos; MenACWY-CRM 2-2 mos</td>
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<td>1st dose</td>
<td>2nd dose</td>
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<tr>
<td>Tetanus, diphtheria, &amp; acellular pertussis (Tdap; ≥7 yrs)</td>
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<td>Tdap</td>
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<tr>
<td>Human papillomavirus (HPV)</td>
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</tbody>
</table>

Footnotes:
1. Range of recommended ages for all children
2. Range of recommended ages for catch-up immunization
3. Range of recommended ages for certain high-risk groups
4. Range of recommended ages for certain high-risk groups, subject to individual clinical decision making
5. Range of recommended ages for non-high-risk groups that may receive vaccine
6. No recommendation
# 2017 Adult Immunization Schedule by Age

<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>
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<tbody>
<tr>
<td>Influenza¹</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Td/Tdap²</td>
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<tr>
<td>MMR³</td>
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<tr>
<td>VAR⁴</td>
<td></td>
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<tr>
<td>HZV⁵</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>HPV–Female⁶</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
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<tr>
<td>HPV–Male⁶</td>
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<td></td>
<td></td>
<td></td>
<td>3 doses</td>
</tr>
<tr>
<td>PCV13⁷</td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
<td></td>
</tr>
<tr>
<td>PPSV23⁷</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 dose</td>
</tr>
<tr>
<td>HepA⁸</td>
<td></td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td>HepB⁹</td>
<td></td>
<td></td>
<td></td>
<td>3 doses</td>
<td></td>
</tr>
<tr>
<td>MenACWY or MPSV4¹⁰</td>
<td></td>
<td></td>
<td></td>
<td>1 or more doses depending on indication</td>
<td></td>
</tr>
<tr>
<td>MenB¹⁰</td>
<td></td>
<td></td>
<td></td>
<td>2 or 3 doses depending on vaccine</td>
<td></td>
</tr>
<tr>
<td>Hib¹¹</td>
<td></td>
<td></td>
<td></td>
<td>1 or 3 doses depending on indication</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**
Human Papillomavirus Vaccine: Critical Cancer Prevention in Tennessee

State vs. U.S. HPV-Associated Cancer Incidence per 100,000 Population (2009-2013)²

- **Oropharyngeal Cancer**:
  - TN 19.3
  - U.S. 17.1

- **Cervical Cancer**:
  - TN 8.7
  - U.S. 7.6

Source: CDC and National Cancer Institute’s WONDER Online Database
US and Tennessee Immunization Coverage
Teen girls who have gotten first dose: 59.7%

Human papillomavirus (HPV) vaccination coverage among adolescents 13-17 years by State, HHS Region, and the United States, National Immunization Survey-Teen (NIS-Teen), 2015

https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/index.html
Teen girls who completed 3 doses: 38.9%

Human papillomavirus (HPV) vaccination coverage among adolescents 13-17 years by State, HHS Region, and the United States, National Immunization Survey-Teen (NIS-Teen), 2015

https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/index.html
Teen boys who have gotten first dose: 38.2%

https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/index.html
Teen boys who completed 3 doses: 16%
Tennessee vs. US Adolescent Vaccine Coverage

Source: CDC NIS-Teen, 2015 results, MMWR 65(33),850-858.
Tools you can use:
Bundle Tdap, HPV, Men-ACWY at same visit

• 3-Star Report (tracking for public health)
  ▫ Encounter-based QI measure in LHDs
  ▫ Do 11-13 year old children eligible for VFC who present to an LHD for immunization receive all 3 recommended vaccines?
3-star report for August 2016, Counties in NER

<table>
<thead>
<tr>
<th>County</th>
<th>Total number*</th>
<th>Number non-HPV</th>
<th>% non-HPV</th>
<th>Number HPV</th>
<th>% HPV</th>
<th>Number</th>
<th>%</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carter</td>
<td>68</td>
<td>6</td>
<td>10.3%</td>
<td>14</td>
<td>21.6%</td>
<td>24</td>
<td>37.8%</td>
<td>24</td>
<td>37.8%</td>
</tr>
<tr>
<td>Greene</td>
<td>37</td>
<td>8</td>
<td>21.6%</td>
<td>7</td>
<td>18.9%</td>
<td>14</td>
<td>37.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hancock</td>
<td>9</td>
<td>0</td>
<td>0.0%</td>
<td>4</td>
<td>44.4%</td>
<td>1</td>
<td>11.1%</td>
<td>4</td>
<td>44.4%</td>
</tr>
<tr>
<td>Hawkins</td>
<td>33</td>
<td>4</td>
<td>12.1%</td>
<td>3</td>
<td>9.1%</td>
<td>9</td>
<td>27.3%</td>
<td>17</td>
<td>51.5%</td>
</tr>
<tr>
<td>Johnson</td>
<td>28</td>
<td>2</td>
<td>7.1%</td>
<td>9</td>
<td>32.1%</td>
<td>2</td>
<td>7.1%</td>
<td>15</td>
<td>53.6%</td>
</tr>
<tr>
<td>Union</td>
<td>25</td>
<td>3</td>
<td>12.0%</td>
<td>3</td>
<td>12.0%</td>
<td>7</td>
<td>28.0%</td>
<td>12</td>
<td>48.0%</td>
</tr>
<tr>
<td>Washington</td>
<td>79</td>
<td>23</td>
<td>29.1%</td>
<td>9</td>
<td>11.4%</td>
<td>24</td>
<td>30.4%</td>
<td>23</td>
<td>29.1%</td>
</tr>
</tbody>
</table>

269 46 17.1% 49 18.2% 65 24.2% 109 40.5%

* Total number of fully VFC-eligible children (excluding under-insured) aged 11 through 13 years who received at least one of the following 3 vaccines: Tdap, MCV4, and/or HPV

3-star report for August 2016, Statewide

<table>
<thead>
<tr>
<th>Region</th>
<th>Total number*</th>
<th>Number non-HPV</th>
<th>% non-HPV</th>
<th>Number HPV</th>
<th>% HPV</th>
<th>Number</th>
<th>%</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide</td>
<td>5192</td>
<td>1415</td>
<td>27.3%</td>
<td>624</td>
<td>12.0%</td>
<td>974</td>
<td>18.8%</td>
<td>2179</td>
<td>42.0%</td>
</tr>
</tbody>
</table>

* Total number of fully VFC-eligible children (excluding under-insured) aged 11 through 13 years who received at least one of the following 3 vaccines: Tdap, MCV4, and/or HPV

NER visits over the past 13 months

Number of visits by Region, August 2016

Percent of 3-star visits by Region, August 2016

Stars represent the percent of 3-star visits over the past 13 months (right y-axis)
Impact of focus on bundling

• Since 2013, 3-Star visits during back to school rush have increased every year 2013-2016
  - 25% $\rightarrow$ 42%

• 1-Star, non-HPV visits have declined every month, with back to school rush month showing greatest decline 2013-2016
  - 49.4% $\rightarrow$ 27%
Tools you can use

• Communication Strategies
  ▪ Prepare parents
    – The preteen well-child visit is a major vaccination visit
  ▪ Empower parents
    – “HPV infection can cause your son to get cancer. You can protect your son by getting him vaccinated today.”
  ▪ Directive, not participatory decision-making
  ▪ “Today your child needs the HPV cancer vaccine, their first meningitis vaccine and the Tdap vaccine they have to have for school”
“Doctors rarely used language showing they assumed the patient would be vaccinated, but... it was linked with higher rates of vaccination (73% with presumptive language compared to 22% when there was no presumptive language).

Doctors offered to delay the vaccine 65% of the time, often before parents expressed any concerns. Roughly 6% of patients received the vaccine the same day if a delay was offered compared to 82% if no delay was mentioned.”--AAP News, July 7, 2017.

Doctors’ presumptive language increases HPV vaccine acceptance by Melissa Jenko
Meharry Medical College-Vanderbilt-Tennessee State University
Cancer Partnership: www.get3shots.org