Human Papillomavirus – 2018

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Immunization Services Division
Human Papillomavirus (HPV) Disease

- Most common sexually transmitted infection in the U.S.
- Small DNA virus
- More than 150 types
- First vaccine was licensed in 2006
Human Papillomavirus Type and Disease Association

“High-risk” Types (16, 18, others)
- Low-grade cervical abnormalities
- High grade abnormalities/
- Cancer precursors
- Anogenital cancers

“Low-risk” Types (6, 11, others)
- Low-grade cervical abnormalities
- Genital warts
- Respiratory papillomas

Mucosal (~40 types)

Cutaneous (other types)
“Common” Warts (hands/feet)
Natural History of HPV Infection

Within 1 Year

Initial HPV Infection

1-5 Years

Persistent Infection

CIN* 1

Cleared HPV Infection

Up to Decades

CIN* 2/3

Cervical Cancer

*CIN = cervical intraepithelial neoplasia
HPV Clinical Features

Most HPV infections are asymptomatic and result in no clinical disease

Clinical manifestations of HPV infection include:
  • Anogenital warts
  • Recurrent respiratory papillomatosis
  • Cervical cancer precursors (cervical intraepithelial neoplasia)
  • Cancer (cervical, anal, vaginal, vulvar, penile, and some oropharyngeal cancers)
<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Average number of cancers per year in sites where HPV is often found (HPV-associated cancers)&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Percentage per year by any HPV type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Anus</td>
<td>2,197</td>
<td>4,333</td>
</tr>
<tr>
<td>Cervix</td>
<td>0</td>
<td>11,866</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>14,814</td>
<td>3,412</td>
</tr>
<tr>
<td>Penis</td>
<td>1,269</td>
<td>0</td>
</tr>
<tr>
<td>Vagina</td>
<td>0</td>
<td>846</td>
</tr>
<tr>
<td>Vulva</td>
<td>0</td>
<td>3,934</td>
</tr>
<tr>
<td>Total</td>
<td>18,280</td>
<td>24,391</td>
</tr>
</tbody>
</table>

<sup>1</sup>HPV types detected in genotyping study; most were high-risk HPV types known to cause cancer (Saraiya M et al. US assessment of HPV types in cancers: implications for current and 9-valent HPV vaccines. Journal of the National Cancer Institute 2015;107:djv086).
HPV Epidemiology

- Reservoir: Human
- Transmission: Direct contact (usually sexual)
- Temporal pattern: None
- Communicability: Presumed to be high
Cumulative Incidence of any HPV Infection Months after Sexual Initiation

4 years, >50%

Am J Epidemiol 2003;157(3):218-26
HPV Disease Burden in the U.S.

- Estimated 79 million persons are infected
  - ~ 14 million new infections annually

- Common among adolescents and young adults
  - 50% of new infections occur in persons 15–24 years of age

- About $8 billion spent annually on management of sequelae of HPV infections
Cervical Cancer Screening

- Revised in 2018
- Screening should begin at age 21 years
- Screen women 21 to 29 years of age with Pap test every 3 years
- Screen women 30 to 65 years of age with Pap test every 3 years; HPV test every 5 years; or Co-testing (Pap and HPV testing) every 5 years

https://www.cdc.gov/cancer/cervical/basic_info/screening.htm
Human Papillomavirus Vaccine

- HPV L1 major capsid protein of the virus is antigen used for immunization
- L1 protein produced using recombinant DNA technology
- L1 proteins self-assemble into virus-like particles (VLP)
- VLPs are noninfectious and nononcogenic
# Human Papillomavirus Vaccine

<table>
<thead>
<tr>
<th>HPV Vaccines</th>
<th>9-valent 9vHPV (Gardasil9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 VLP types</td>
<td>6, 11, 16, 18, 31, 33, 45, 52, 58</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Merck</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Hypersensitivity to yeast</td>
</tr>
</tbody>
</table>

**FDA Indications**
- Females (9-26 yrs): Anal, cervical, vaginal, and vulvar precancer and cancer; genital warts
- Males (9-26 yrs): Anal precancer and cancer; genital warts

Only 9vHPV vaccine is available in the US
Human Papillomavirus Vaccine Efficacy

- High efficacy among females without evidence of infection with vaccine HPV types (>95%)

- No evidence of efficacy against disease caused by vaccine types participants were infected with at the time of vaccination

- Prior infection with one HPV type did not diminish efficacy of the vaccine against other vaccine HPV types
9vHPV (Gardasil9)

- Licensed by the FDA for males and females 9-26 years of age
- Trials conducted with 3-dose schedule
- Targets 5 additional high-risk types:
  - 6, 11, 16, 18, 31, 33, 45, 52, 58
9vHPV (Gardasil9)
Efficacy and Safety

- **Efficacy**
  - ~97% protection against 31-, 33-, 45-, 52-, 58-related outcomes
  - Similar protection against 6-, 11-, 16-, 18-related disease

- **Noninferior immunogenicity to 4vHPV**

- 5 additional types account for 11% of invasive cancers
  - Differences by gender: 14% for females; 5% for males

- 9vHPV can be administered at the same medical visit with MenACWY and Tdap

- Safety profile similar to 4vHPV across age, gender, race, ethnicity groups
Human Papillomavirus Vaccine
Duration of Immunity

- The duration of immunity after a complete 3-dose schedule is not known
  - Available evidence indicates protection for at least 8 years for 4vHPV and at least 9 years for 2vHPV
  - Multiple cohort studies are in progress to monitor the duration of immunity
# Recommended Schedule for Children and Adolescents Aged 18 Years and Younger 2018

![Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger — United States, 2018.](https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf)

NOTE: The above recommendations must be read along with the footnotes of this schedule.

## Recommended Schedule for Children and Adolescents Aged 18 Years and Younger 2018

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
<th>Dose</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningococcal (MenACWY-D ≥ 2 mos; MenACWY-CRM ≥ 2 mos)</td>
<td>Not Applicable (N/A)</td>
<td>8 weeks&lt;sup&gt;11&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis</td>
<td>7 years&lt;sup&gt;12&lt;/sup&gt;</td>
<td>4 weeks</td>
<td>4 weeks if first dose of DTaP/DT was administered before the 1st birthday. 6 months (as final dose) if first dose of DTaP/DT or TTaP/Td was administered at or after the 1st birthday.</td>
</tr>
<tr>
<td>Human papillomavirus&lt;sup&gt;13&lt;/sup&gt;</td>
<td>9 years</td>
<td>6 months</td>
<td>Routine dosing intervals are recommended.&lt;sup&gt;14&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hepatitis A&lt;sup&gt;15&lt;/sup&gt;</td>
<td>N/A</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B&lt;sup&gt;16&lt;/sup&gt;</td>
<td>N/A</td>
<td>4 weeks</td>
<td>8 weeks and at least 16 weeks after first dose.</td>
</tr>
<tr>
<td>Inactivated poliovirus&lt;sup&gt;17&lt;/sup&gt;</td>
<td>N/A</td>
<td>4 weeks</td>
<td>6 months&lt;sup&gt;6&lt;/sup&gt; A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.</td>
</tr>
<tr>
<td>Measles, mumps, rubella&lt;sup&gt;18&lt;/sup&gt;</td>
<td>N/A</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Varicella&lt;sup&gt;19&lt;/sup&gt;</td>
<td>N/A</td>
<td>3 months if younger than age 13 years. 4 years if age 13 years or older.</td>
<td></td>
</tr>
</tbody>
</table>

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[https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html](https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html)
Recommended Schedule for Children and Adolescents Aged 18 Years and Younger 2018
### Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2018

This figure should be reviewed with the accompanying footnotes. This figure and the footnotes describe indications for which vaccines, if not previously administered, should be administered unless noted otherwise.

<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&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1 dose annually</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tdap&lt;sup&gt;2&lt;/sup&gt; or Td&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1 dose Tdap, 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 (if born in 1957 or later)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR&lt;sup&gt;5&lt;/sup&gt;</td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RZV&lt;sup&gt;6&lt;/sup&gt;(preferred) or ZVL&lt;sup&gt;7&lt;/sup&gt;</td>
<td>2 doses RZV (preferred)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV—Female&lt;sup&gt;8&lt;/sup&gt;</td>
<td>2 or 3 doses depending on age at series initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPV—Male&lt;sup&gt;8&lt;/sup&gt;</td>
<td>2 or 3 doses depending on age at series initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCV13&lt;sup&gt;9&lt;/sup&gt;</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV23&lt;sup&gt;10&lt;/sup&gt;</td>
<td>1 or 2 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HepA&lt;sup&gt;11&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;12&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenACWY&lt;sup&gt;13&lt;/sup&gt;</td>
<td>1 or 2 doses depending on indication, then booster every 5 yrs if risk remains</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MenB&lt;sup&gt;14&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;15&lt;/sup&gt;</td>
<td>1 or 3 doses depending on indication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<sup>1</sup> Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection.

<sup>2</sup> Recommended for adults with other indications.

<sup>3</sup> No recommendation.

Recommended Immunization Schedule for Adults Aged 19 Years or Older 2018

Human Papillomavirus Vaccine
Routine Recommendations

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

- Catch-up those previously 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 aged 22 through 26 years of age may be vaccinated

*Vaccination series can be started at 9 years of age
Human Papillomavirus Vaccine
ACIP Recommendations

- **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
HPV Vaccination Schedules

- FDA has approved a 2-dose schedule for 9vHPV (Gardasil9)
- ACIP reviewed data on 2-dose schedules including data and studies of immune response, vaccine effectiveness, and duration of protection. Specifically:
  - Data from clinical trials showed two doses of HPV vaccine given in younger adolescents (aged 9-14 years) produced an immune response that was similar or higher than the response in young adults (aged 16-26 years) who received three doses
  - Data available to date show that a 3-dose schedule in older adolescents and young adults provides long-lasting protection.
  - Study data suggest that a 2-dose schedule given to younger adolescents will also provide long-lasting protection
ACIP HPV Immunization Recommendations
Previously Unvaccinated Adolescents

- Administer 2 doses of HPV vaccine to adolescents starting the series at 9 through 14 years of age

- Follow the routine 2-dose schedule
  - Administer dose 2 6-12 months after the 1st dose

- If a 2nd dose is inadvertently administered prior to 6 months default to a 3-dose series

MMWR 2016;65(49):1405-08
ACIP Immunization Recommendations
Previously Unvaccinated Adolescents

- Administer 3 doses of HPV vaccine to adolescents starting the series on or after the 15th birthday

- 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

MMWR 2016;65(49):1405-08
ACIP Immunization Recommendations
Persons with an Incomplete Series

- Adolescents who initiated vaccination with 9vHPV, 4vHPV, or 2vHPV
  - Before their 15th birthday, are fully vaccinated if they received
    - 2 doses at the recommended dosing schedule (0, 6-12 month), OR
    - 3 doses at the recommended dosing schedule (0, 1-2, 6 month)
  - On or after the 15th birthday are fully vaccinated if they received,
    - 3 doses at the recommended dosing schedule (0, 1-2, 6 month)

- All doses do not have to 9vHPV
- No additional doses are recommended, regardless of their current age

MMWR 2016;65(49):1405-08
ACIP HPV Immunization Recommendations
Medical Condition Considerations

- ACIP recommends HPV vaccination for immunocompromised females and males aged 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

MMWR 2016;65(49):1405-08
Human Papillomavirus Vaccine Administration

- Administer HPV vaccines via intramuscular (IM) injection
  - Needle size: 1- to 1½- inch, 22- to 25-gauge
  - Site: Deltoid muscle in the upper arm

- Follow proper injection practices
  - Use aseptic technique
  - Use a new needle and syringe for each injection

- Administer at the same medical visit as other vaccines
ACIP HPV Immunization Recommendations
Schedule Considerations

- Number of recommended doses is based on:
  - Age at administration of the first dose OR
  - Health status – immunosuppression

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

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

- 9vHPV may be used to continue or complete a series started with 4vHPV or 2vHPV regardless of the dosing schedule
2-Dose Clinical FAQs

What has changed in the new HPV vaccine recommendation?

In October 2016, the CDC updated HPV vaccination recommendations regarding dosing schedules. In this update, recommendations 2 doses of HPV vaccine for the creation of vaccination series before the 15th birthday of HPV vaccine are recommended for people starting the vaccination series on or after the 15th birthday. This is a change from the previous recommendation which required 3 doses of HPV vaccine for people starting the vaccination series before the 15th birthday. The second dose should be given 1 month after the first dose. If the first dose is given before the 15th birthday, the second dose should be given at least 6 months later.

Remember patients’ questions: We recommend 2 doses of HPV vaccine for people who start the vaccination series by the 15th birthday. If you receive 2 doses, you will have a second dose - 12 months after the first dose.

Who should still receive 3 doses?

CDC continues to recommend 3-dose schedule for persons entering the HPV vaccination series before the 15th birthday or the first dose is given at or after the 15th birthday.

Remember patients’ questions: We recommend 2 doses of HPV vaccine for people who start the vaccination series before the 15th birthday. If you receive 2 doses, you will have a second dose - 12 months after the first dose.

Why did CDC make the recommendations change to a 2-dose schedule?

Over the past year, CDC and the Advisory Committee on Immunization Practices (ACIP) have been reviewing data on higher-dose HPV vaccine that compared the antibody response after 3 doses and 2 doses. On the basis of this data, the ACIP recommended that the recommended schedule for HPV vaccination should be changed from 3 doses to 2 doses for people who start the vaccination series on or after their 15th birthday.

Remember patients’ questions: CDC and ACIP of experts that make vaccine recommendations reviewed data on higher-dose HPV vaccine for people who start the vaccination series on or after their 15th birthday. The recommendation states that the vaccine given at least 6 months apart in younger adolescents was good for 1 or 2 doses. The recommendations stress the importance of providing your child with the protection against any disease.

Remember patients’ questions: Since your child received the first dose of the HPV vaccine before 1 year of age, you will only need to give 1 more dose.

Why is the 2-dose schedule change recommended only for girls and boys age 9-14 years?

ACIP makes recommendations based on the best available scientific evidence. Immunogenicity studies have shown that when 2 doses of HPV vaccine given to 9-15-year-olds at least 6 months apart were good or better, than 3 doses given to older adolescents and young adults. Outbreaks have not been shown to occur in this young age group.

Remember patients’ questions: The data currently have Come from scientific studies (clinical trials) showed that 2 doses of HPV vaccine given at least 6 months apart was as good as 3 doses in children. However, older adolescents have shown to give more granulocytes and inflammatory capabilities for this age group. The best approach to determine which schedule is best for this age group is ongoing.

What is the recommendation for persons with immunocompromising conditions?

CDC recommends 3 doses of HPV vaccine for persons with immunocompromising conditions age 9-16 years. (See the hpv vaccine section for persons with compromised immune systems.)

Remember patients’ questions: Even though CDC has recommended a 2-dose schedule for 9 to 15-year-olds, you will need to give your child 3 doses because he has a health problem that weakens his or her immune system.

If a HPV vaccine series was started with quadrivalent HPV vaccine or bivalent HPV vaccine and will be completed with a trivalent HPV vaccine, what are the instructions for the remaining doses in a 3-dose or 2-dose schedule?

If the first dose of any vaccine was given before the 15th birthday, vaccination should be completed according to the 3-dose schedule as in 3-dose series, the second dose is recommended at 6 months after the first dose (6-12 months). If the first dose was given after the 15th birthday, vaccination should be completed according to the 2-dose schedule as in 2-dose series, the second dose is recommended at 12 months after the first dose.

If a vaccination schedule is interrupted, vaccination doses do not need to be repeated.

If a girl or boy received 2 doses of HPV vaccines before 5 months apart, do they need to start a third HPV vaccine dose?

No, a 2-dose schedule of HPV vaccine, the recommended interval is 6-12 months, and the minimum interval is 3 months between the first and second dose. If the second dose is given sooner than 3 months, a third dose should be given.

Remember patients’ questions: The recommended schedule is 2 doses given at 12 months apart. The minimum interval between doses is 6 months. Because your child received 2 doses less than 6 months apart, we need to give your child a third dose.

If someone is age 15 years or older and started the vaccination series at age 15 but only received 1 dose, how many more doses do they need?

This person needs 1 more dose to complete a 2-dose series, which is recommended because the vaccination was started between 15-16 years. A 2-dose series, the second dose is recommended 6-12 months after the first dose. In this case, the first dose was given several years ago, so the second dose can be given right away.

In the unlikely event of a false positive on a 2-dose schedule?

Yes, as of October 2016, FDA approved the 2-dose schedule for 2-months interval of bivalent HPV vaccine for use in girls and boys 9-14 years in the United States.

What HPV vaccines are currently available in the United States?

Three HPV vaccines are licensed for use in the United States: Gardasil, Gardasil 9, and Cervarix. Gardasil and Gardasil 9 are the HPV vaccines. However, after the end of 2014, only Cervarix vaccine will be sold in the United States.

ACIP HPV Immunization Recommendations

Additional Considerations

- For persons who have completed a series of 4vHPV or 2vHPV, there is no ACIP recommendation for additional vaccination with 9vHPV

- No therapeutic effect on HPV infection, genital warts, cervical lesions

- Prevaccination assessments not recommended
  - HPV
  - Pregnancy
Human Papillomavirus Vaccine
Special Situations

- Administer vaccine to:
  - Females who:
    - Have equivocal or abnormal Pap test
    - Have positive HPV DNA test
    - Are breast-feeding
  - Males and females who:
    - Have genital warts
    - Are immunosuppressed
Human Papillomavirus Vaccine and Pregnancy

- Initiation of the vaccine series should be delayed until after completion of pregnancy
- If a woman is found to be pregnant after initiating the vaccination series, remaining doses should be delayed until after the pregnancy
- If a vaccine dose has been administered during pregnancy, there is no indication for intervention
- Women vaccinated during pregnancy should be reported to the respective manufacturer
  - Active pregnancy registry for 9vHPV established; others are closed
  - Contact information is in the package insert
Human Papillomavirus Vaccine
Contraindications and Precautions

- **Contraindication**
  - Severe allergic reaction to a vaccine component or following a prior dose

- **Precaution**
  - Moderate or severe acute illnesses (defer until symptoms improve)
## Adverse Events Following Any Dose of HPV Vaccine Among Females*

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>2vHPV</th>
<th>4vHPV</th>
<th>9vHPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>92%</td>
<td>84%</td>
<td>89%</td>
</tr>
<tr>
<td>Swelling</td>
<td>44%</td>
<td>29%</td>
<td>40%</td>
</tr>
<tr>
<td>Erythema</td>
<td>48%</td>
<td>25%</td>
<td>34%</td>
</tr>
<tr>
<td>Fever</td>
<td>13%</td>
<td>13%</td>
<td>5%</td>
</tr>
<tr>
<td>Nausea</td>
<td>7%</td>
<td>GI 28%**</td>
<td>4%</td>
</tr>
<tr>
<td>Headache</td>
<td>12%</td>
<td>55%</td>
<td>11%</td>
</tr>
</tbody>
</table>

*FDA product approval data

**GI = Gastrointestinal symptoms, including nausea, vomiting, diarrhea, and/or abdominal pain
Syncope Following Vaccination

- An increase in the number of reports of syncope has been detected by the Vaccine Adverse Event Reporting System (VAERS)
  - Most of the increase among females 11-18 years

- Serious injuries have resulted

- ACIP recommends providers strongly consider observing patients for 15 minutes after they are vaccinated
Vaccine Storage and Handling

- Store HPV vaccine in a refrigerator between 2°C - 8°C (36°F - 46°F)
- Store HPV vaccines:
  - In the original packaging with the lids closed
  - In a clearly labeled bin and/or area of the storage unit
- Do not freeze the vaccine
- Protect the vaccine from light

Vaccine storage label example
Available at www.cdc.gov/vaccines/hcp/admin/storage/guide/vaccine-storage-labels.pdf
# HPV Immunization Rates
## Females 13-17 Years of Age, 2017

<table>
<thead>
<tr>
<th>HPV Vaccine</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females</td>
</tr>
<tr>
<td>1 or more doses*</td>
<td>68.6%</td>
</tr>
<tr>
<td>HPV UTD**</td>
<td>53.1%</td>
</tr>
</tbody>
</table>

Percentages ≥1 human papillomavirus vaccine, either 4vHPV, or 2vHPV

**HPV UTD includes those with ≥3 doses, and those with 2 doses when the first HPV vaccine dose was initiated before age 15 years and time between the first and second dose was at least 5 months minus 4 days

[Teen VaxView](https://www.cdc.gov/vaccines/imz-managers/coverage/teenvaxview/data-reports/hpv/dashboard/2017.html)
HPV Vaccine Communications during the Health Care Encounter

- HPV vaccine is often presented as optional, whereas other adolescent vaccines are recommended.
- Some expressed mixed or negative opinions about relatively new vaccines and concerns over safety and efficacy.
- When parents express reluctance, providers are hesitant to engage in discussion.
- Some providers share parents’ views that teen is not at risk for HPV and vaccination can be delayed until older.
Strategies for Increasing HPV Vaccination Rates in Clinical Practices

- Recommend HPV vaccine!
  - Include HPV vaccine when discussing other recommended vaccines

- Integrate standard procedures supporting vaccination
  - Assess for needed vaccines at every clinical encounter.
  - Immunize at every opportunity
  - Use standing orders

- Reminder and recall

- Tools for improving uptake of HPV at [www.cdc.gov/vaccines/teens](http://www.cdc.gov/vaccines/teens)
HPV Vaccination Resources for HCP

www.cdc.gov/vaccines/YouAreTheKey
Human Papillomavirus Vaccine Resources

- Includes information for
  - Health care providers on
    - Disease and treatment
    - Vaccine administration, storage and handling
  - Parents and patients on
    - Disease
    - Vaccine safety
  - Partners and programs
    - Print, matte articles, online, video and audio resources