

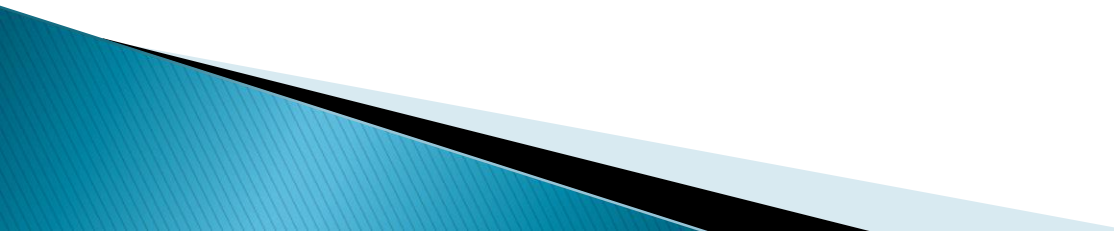
HPV Update

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Disclosures

- ▶ I have no financial disclosures.

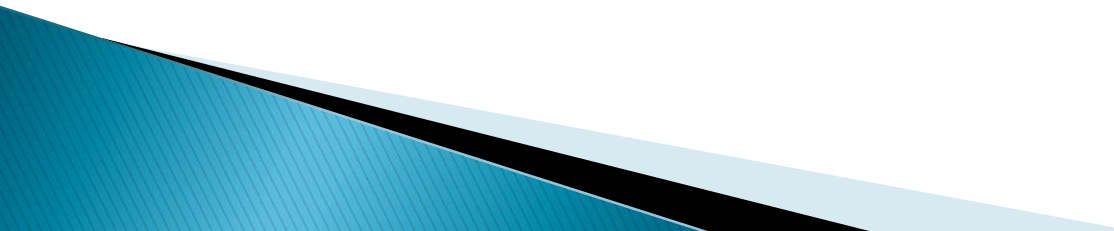
Objectives

- ▶ Provide information on HPV virus including transmission and burden of disease
 - ▶ Discuss current status of HPV vaccines in US
 - ▶ Review ACIP recommendations for HPV vaccine
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HPV: Virus and Target Tissue

- ▶ DNA virus
- ▶ Tumor virus
- ▶ Infects squamous epithelium

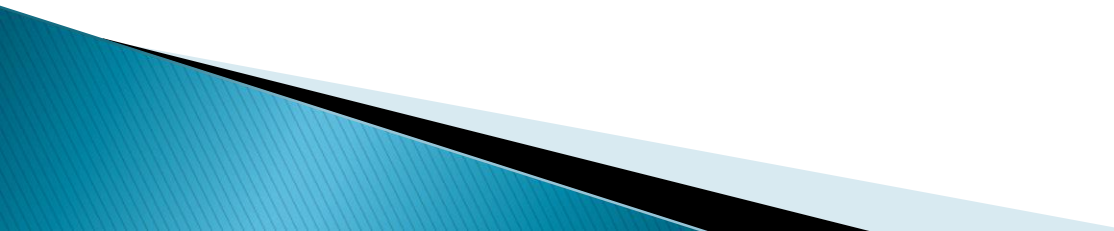
HPV: Practical Understanding

- ▶ Approximately 40 types of HPV
 - ▶ Oncogenic types
 - ▶ Nononcogenic types
 - ▶ Multiple sites affected
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HPV: Disease Association: Oncogenic Types

- ▶ HPV 16
 - ▶ HPV 18
 - ▶ HPV 31
 - ▶ HPV 33
 - ▶ HPV 45
 - ▶ HPV 52
 - ▶ HPV 58
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Oncogenic HPV: Disease Sites

- ▶ Cervical
 - ▶ Anogenital
 - ▶ Oropharyngeal
 - ▶ Low grade cervical disease
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HPV: Disease Association: Non Oncogenic Types

- ▶ HPV 6
- ▶ HPV 11

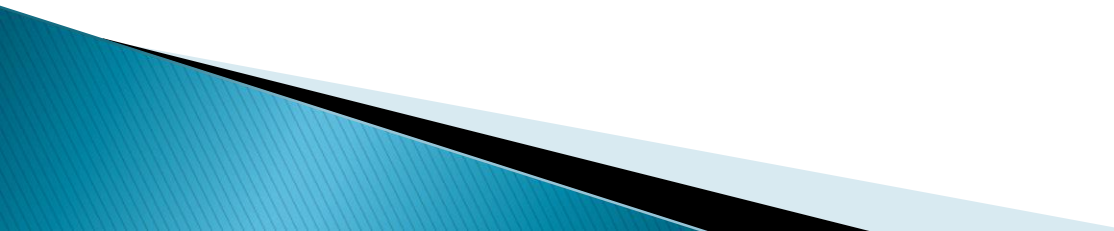
Non oncogenic HPV: Disease Sites

- ▶ Genital warts
- ▶ Laryngeal papillomas
- ▶ Low grade cervical disease

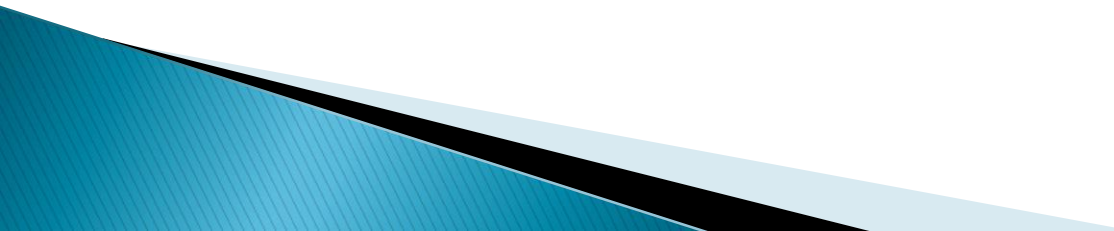
HPV: Pathogenesis

- ▶ Incubation range 1 month to two years
- ▶ Average 4 months
- ▶ Can clear spontaneously or progress to disease

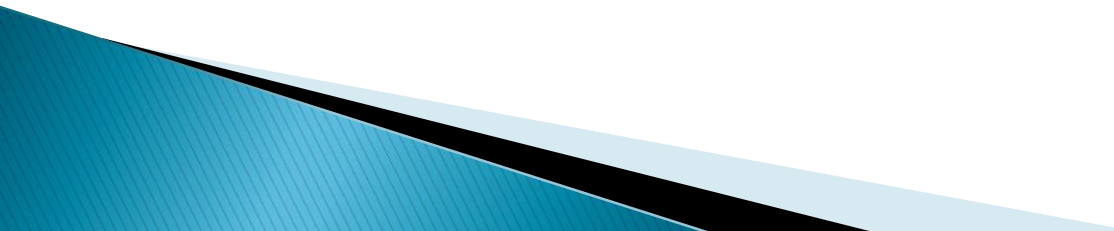
HPV: Transmission

- ▶ Sexual behavior
 - ▶ Early onset sexual activity
 - ▶ Number of partners–male or female
 - ▶ Age
 - ▶ Ethnicity
 - ▶ Smoking
 - ▶ OC use, immunosuppression, pregnancy
- 


HPV: Infection

- 79 million Americans currently infected with HPV
 - 14 million new infections/year in the US
 - HPV infection—most common in people in their teens and early 20s
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HPV: The Burden of Disease

- ▶ Cervical cancer
 - ▶ Vaginal cancer
 - ▶ Vulvar cancer
 - ▶ Penile cancer
 - ▶ Anal cancer
 - ▶ Oropharynx cancers
 - ▶ High-grade intraepithelial neoplasias
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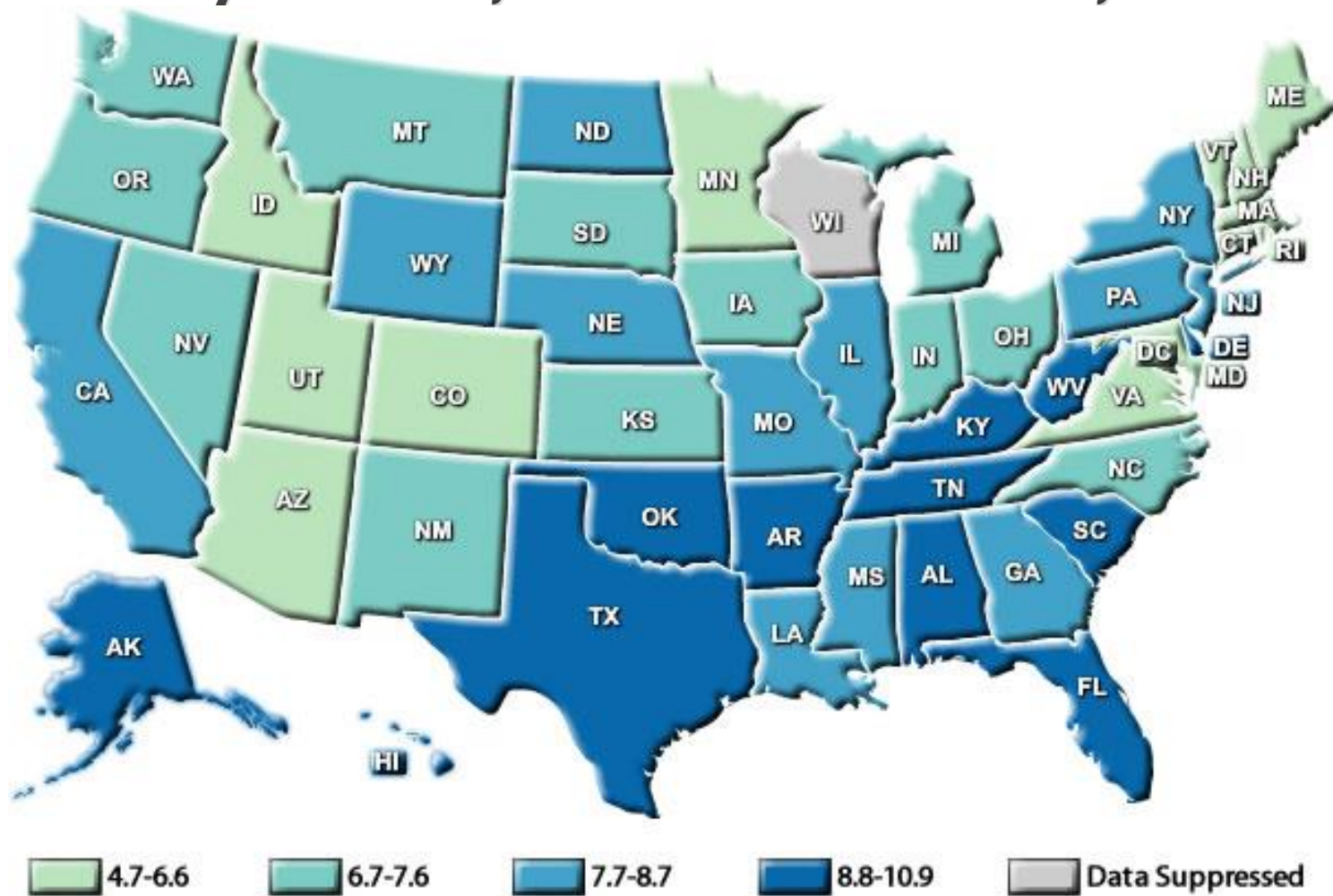
HPV: Cervical Cancer

- ▶ Cervical cancer is the most common HPV-associated cancer among women
 - ▶ 25.9% cervical cancers occur in women between the ages of 35 and 44
 - 14% between 20 and 34
 - 23.9% between 45 and 54
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HPV: Complications related to current methods of cervical cancer prevention

- ▶ Infertility due to treatment of cervical cancer by hysterectomy
 - ▶ Cervical conization and loop electrosurgical excision procedure (LEEP) procedures associated with adverse obstetric morbidity
 - ▶ Subsequent pregnancies are at risk of
 - Perinatal mortality
 - Severe and extreme preterm delivery (<32/34 or <28/30 weeks)
 - Severe and extreme low birth weight (< 2000g or 1500g)
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HPV-Associated Cervical Cancer Rates by State, United States, 2009



United States Cancer Statistics: 1999–2009 Incidence and Mortality Web-based Report.
Atlanta (GA): DHHS, CDC, and NCI, 2012. Available at: <http://www.cdc.gov/uscs>.

Economic Impact Related to HPV–Associated Disease, 2010

Event	Cost (\$ billions)
Cervical cancer screening*	6.6
Cervical cancer	0.4
Other anogenital cancers	0.2
Oropharyngeal cancer	0.3
Anogenital warts	0.3
RRP**	0.2
TOTAL	8.0

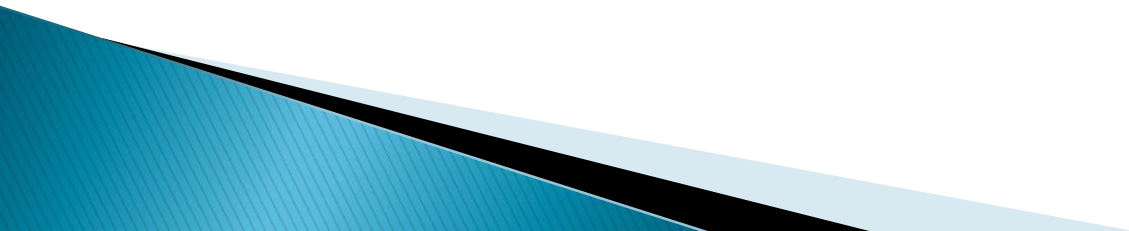
*Cervical cancer screening costs: ~ 80% routine screening, ~20% follow-up

**RRP costs: ~ 70% juvenile-onset, ~ 30% adult-onset

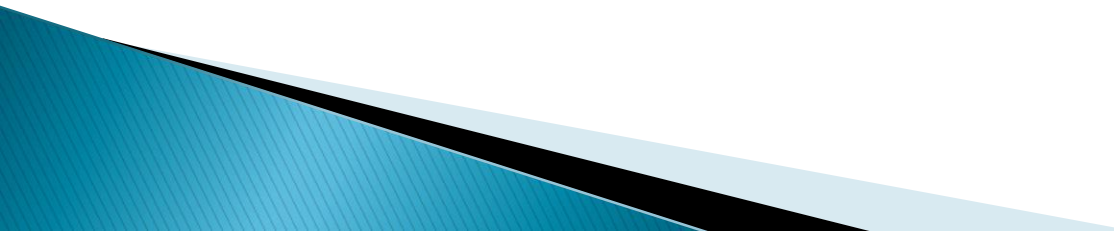
HPV: Adolescents and Transmission

Nearly 50% of high school students have already engaged in sexual (vaginal–penile) intercourse

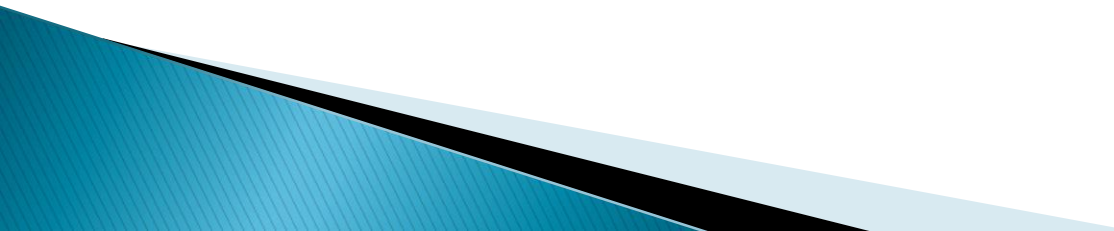
- 1 / 3 of 9th graders and 2 / 3 of 12th graders have engaged in sexual intercourse
- 24% of high school seniors have had sexual intercourse with 4 or more partners



HPV Vaccine: Current Status

- ▶ 9v HPV is currently the only HPV vaccine distributed in the United States
 - ▶ Targets HPV 16 and 18 responsible for 66% cervical cancers in US
 - ▶ Targets HPV 6 and 11 responsible for anogenital warts
 - ▶ Targets HPV 31, 33, 45, 52, and 58 responsible for about 15 % of cervical cancers in US
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HPV Vaccination: Current Recommendations

- ▶ Ages 9–14 years–2 doses of HPV vaccine with second dose given 6–12 months after the first
 - ▶ Age 15 years and above–3 doses of HPV vaccine with second dose given 1–2 months after the first and the third given 6 months after the first.
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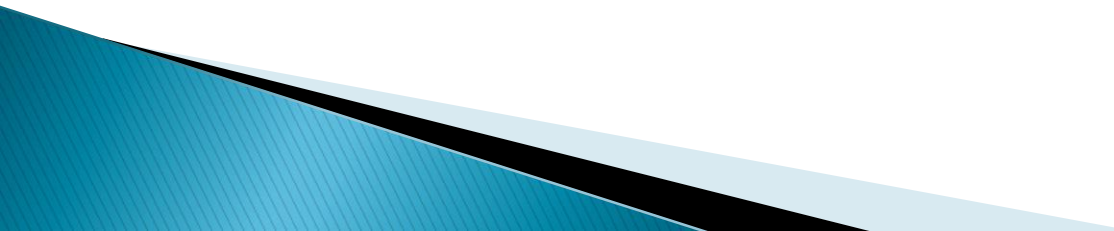
HPV Vaccination: Current Recommendations

- ▶ Females ages 9–26 years of age
- ▶ Males ages 9–21 but may be give up to age 26 for high risk men
- ▶ FDA approval for HPV use in ages 27–45
 - Expect Advisory Committee on Immunization Practices (ACIP) guidance on this

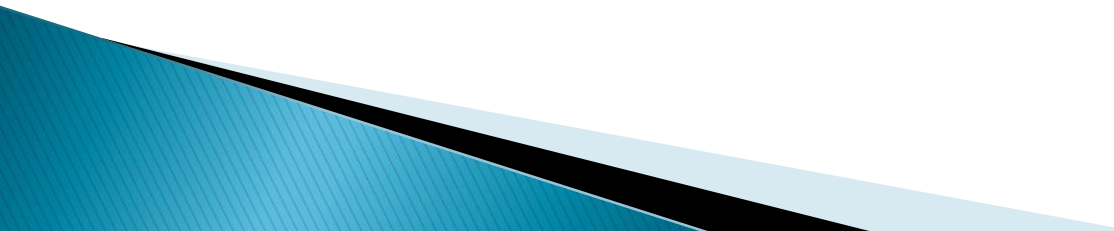
HPV Vaccine: Current Information

- ▶ Interchangeability of products
- ▶ No recommendations for revaccination regardless of product received at time of first vaccination

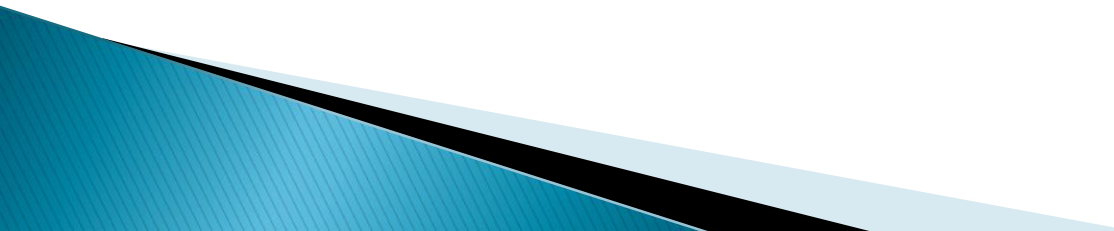
HPV: After the Vaccine

- ▶ Pain, redness or site swelling–20% to 90% of recipients.
 - ▶ Temperature of 100°F during the 15 days after vaccination–10% to 13% of recipients
 - ▶ Syncope–reported among adolescents who received HPV and other vaccines recommended for this age group (Tdap, MCV4). Recipients should always be seated and observed for about 15 minutes after vaccine.
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HPV: Vaccine Safety

- ▶ Most common adverse events reported were mild
 - ▶ For serious adverse events reported, no unusual pattern or clustering that would suggest that the events were caused by the HPV vaccine
 - ▶ Findings are similar to the safety reviews of MCV4 and Tdap vaccines
 - ▶ 57 million doses of HPV vaccine distributed in US since 2006
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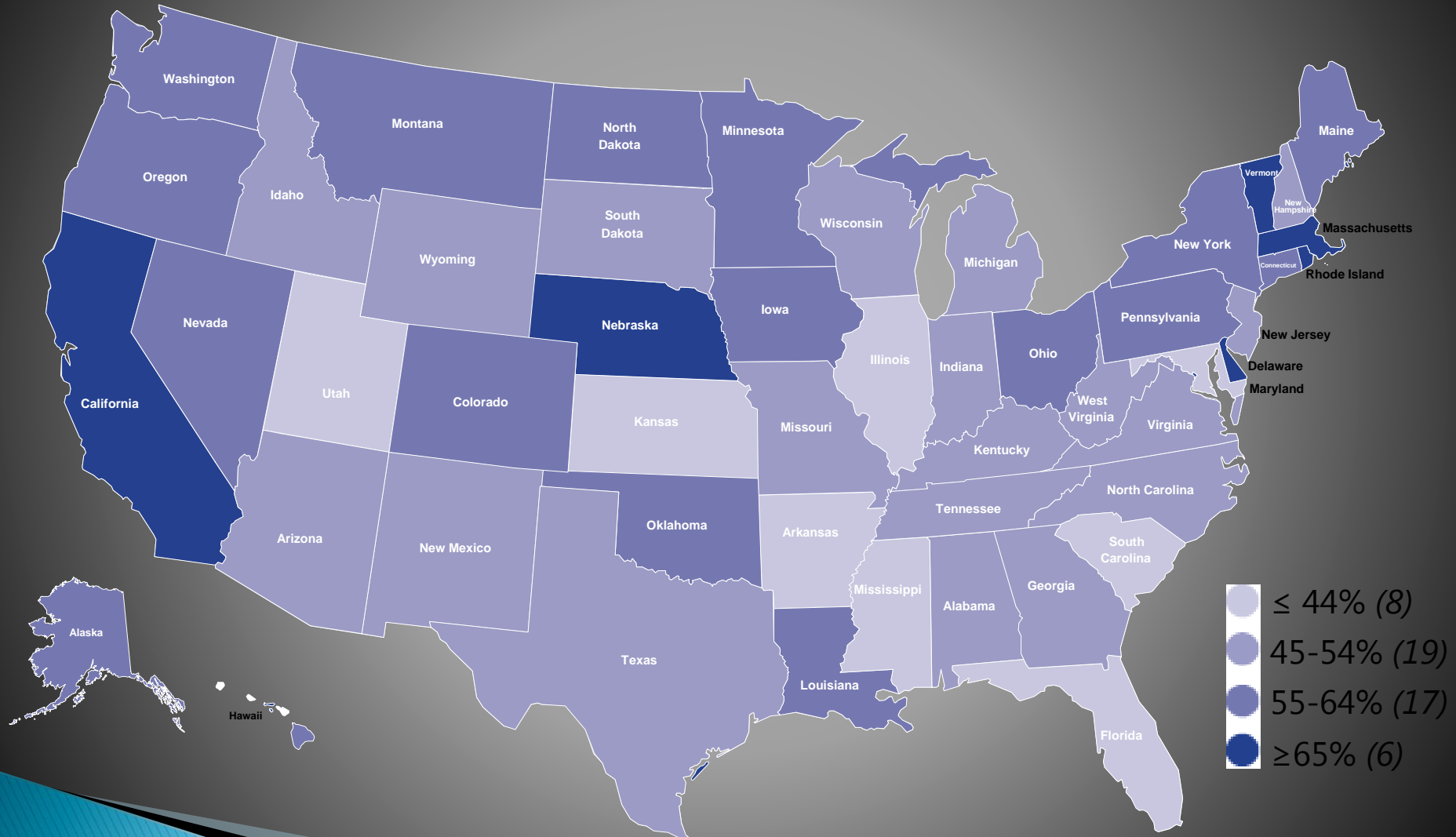
HPV Vaccine: Contraindications

- ▶ Immediate hypersensitivity to any vaccine component.
 - ▶ History of immediate hypersensitivity to yeast.
 - ▶ Pregnancy
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HPV Vaccination: Alabama

- ▶ 2015 National Immunization Survey (NIS) for Teens–Alabama
 - Girls' completion rate of 3 HPV doses–41%
 - Boys' completion rate of 3 HPV doses–23%

Coverage of 1 of More Doses of HPV among Adolescent Girls 13-17 Years by State, NIS-Teen 2012

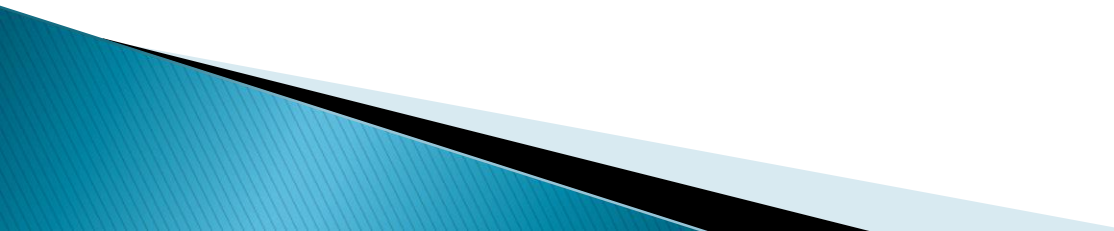


HPV: Avoid Missed Opportunities

- ▶ HPV vaccine can safely be given at the same time as the other recommended adolescent vaccines
 - ▶ Provide HPV vaccine during routine sports, or camp physicals
 - ▶ Review immunization record even at acute care visits
 - ▶ Encourage parents to keep accurate vaccination records and to review the immunization schedule
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HPV: Concerns from Parents/Caregivers

HPV vaccine issues sensationalized by popular media
Different reasons for why some girls and boys don't get the first shot and why some don't finish all 3 shots
Parents think sexuality instead of cancer prevention
Some clinicians aren't giving strong recommendations
Parents have questions that are seen as hesitation by some doctors
Phased girls-then-boys and other changing recommendations confusing
Systems interventions to improve coverage rates depend on clinician commitment



References

- ▶ <https://www.cdc.gov/hpv/index.html>
 - ▶ <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/adolescent-sexual-health/Pages/HPV.aspx>
 - ▶ 2018 Report of the Committee on Infectious Diseases, Red Book, American Academy of Pediatrics
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