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Learning Objectives

- Describe the relationship between HPV and oropharyngeal cancer.
- Describe evidence-based strategies for increased awareness and prevention of HPV-related oropharyngeal cancer.
- Understand how community/clinical linkages can increase health promotion efforts regarding the HPV vaccine.
- Describe Best Practices that can be used by oral health care providers to increase the acceptance of the HPV vaccine in a clinical setting.

Closing the HPV Vaccination Gap: The Fundamentals of HPV for Oral Health Care Providers

HPV and Oropharyngeal Cancer

HPV

- Human papillomavirus (HPV) can cause serious health problems (such as genital warts and certain types of cancers).
- In most cases, HPV goes away on its own without causing too many health problems.
- Oral HPV is the name given to the HPV found in the mouth and throat.

Natural History of HPV Infection

- ~80-85% of people acquire any HPV infection at some point in their lives
- ~90% infections clear in 1-2 years in healthy individuals
- Almost all cervical cancers are caused by HPV infections that persist more than 2 years.

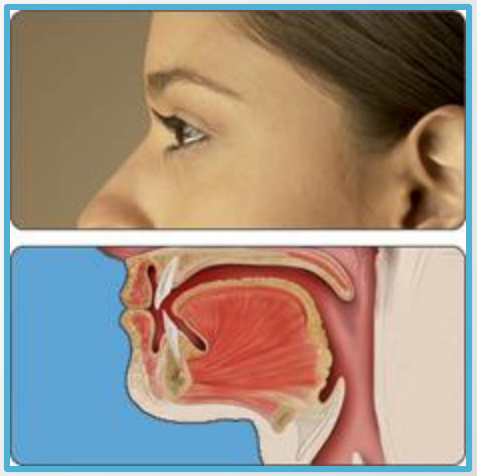
HPV Virology

- Mucosal (genital) ~ 40 types
  - High-risk (HR) HPV strains: HPV16, 18, 31, 45…others
  - Cervical (70-95%) and other cancers
  - Low-risk (LR) HPV strains: HPV6, 11….others
  - Genital warts (>90%)

- Cutaneous (skin) / non-mucosal ~60 types
  - Skin (epithelial) wart
  - Mainly hands, feet (common in children)
  - HPV1-4

Oral HPV

- HPV in mouth and throat
- "High Risk": head and neck cancers
- "Low Risk": warts in the mouth and throat
- 7% of people have oral HPV



- Only 1% have HPV type 16 (type causes oropharyngeal cancer)
- Oral HPV is about 3 times more common in men than in women

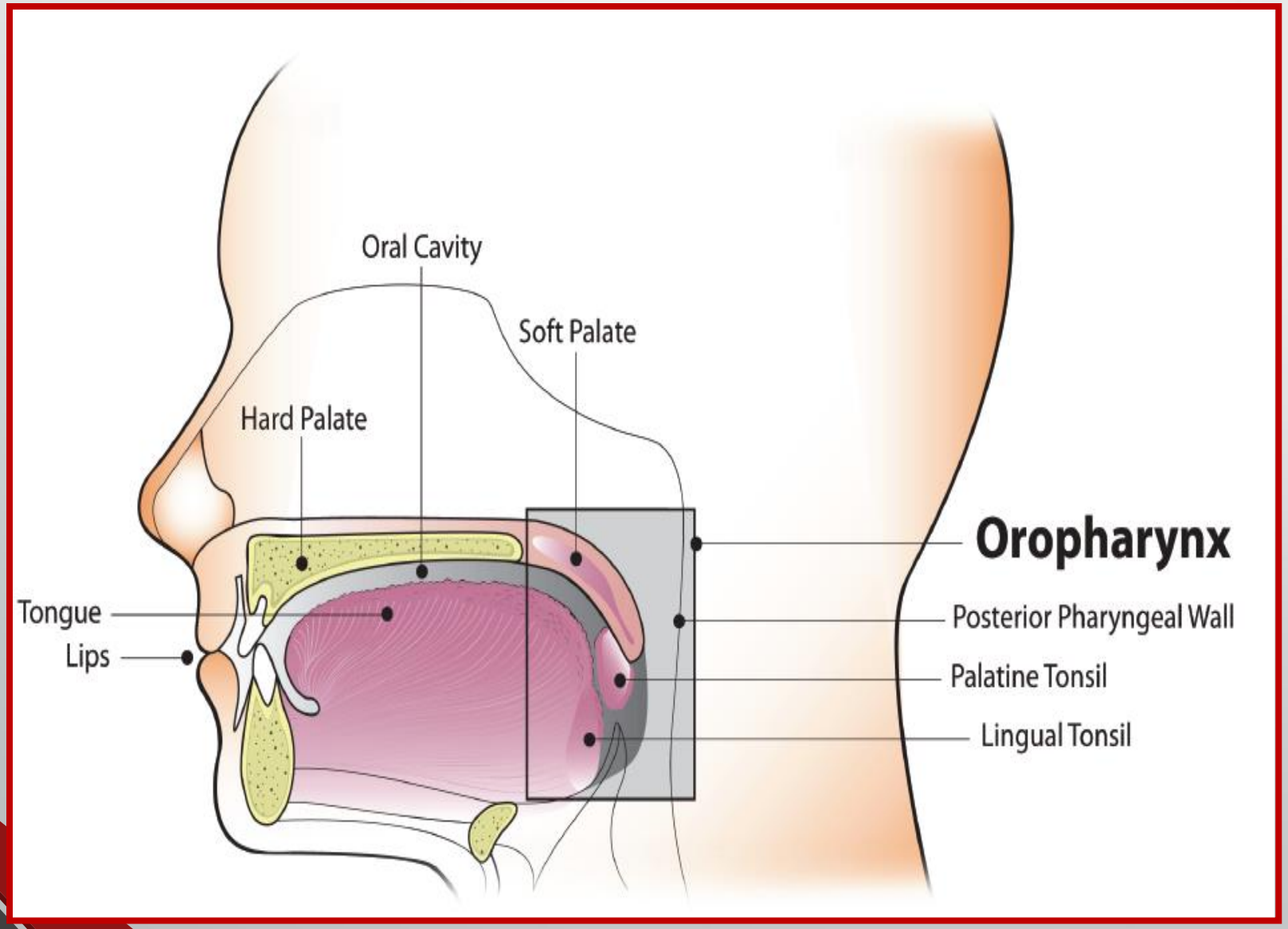
http://www.cdc.gov/std/hpv/stdfact-hpvandoropharyngealcancer.htm

HPV-Associated Oropharyngeal Cancer Prevalence

- Some cancers of the oropharynx (back of the throat, tongue and tonsils) have been linked with HPV
- Recent studies report that about 70% of oropharyngeal cancers are caused by HPV (previously tobacco and alcohol alone)
- Approximately 3,100 new cases in females each year in US
- 12,638 new cases in males each year in US

http://www.cdc.gov/cancer/hpv/statistics/headneck.htm

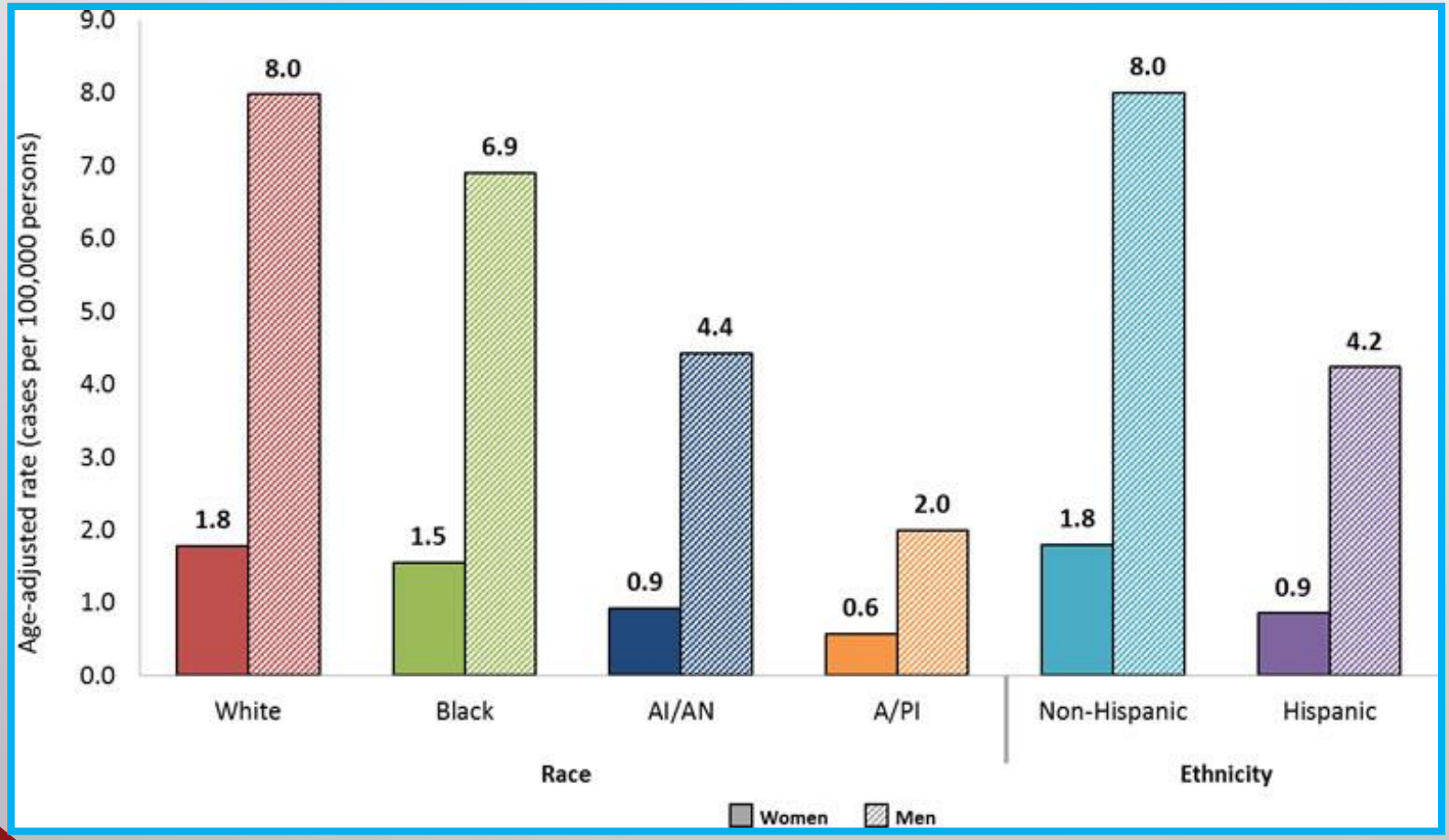
Oral Cavity and Oropharynx



Oropharyngeal Cancer Signs/Symptoms

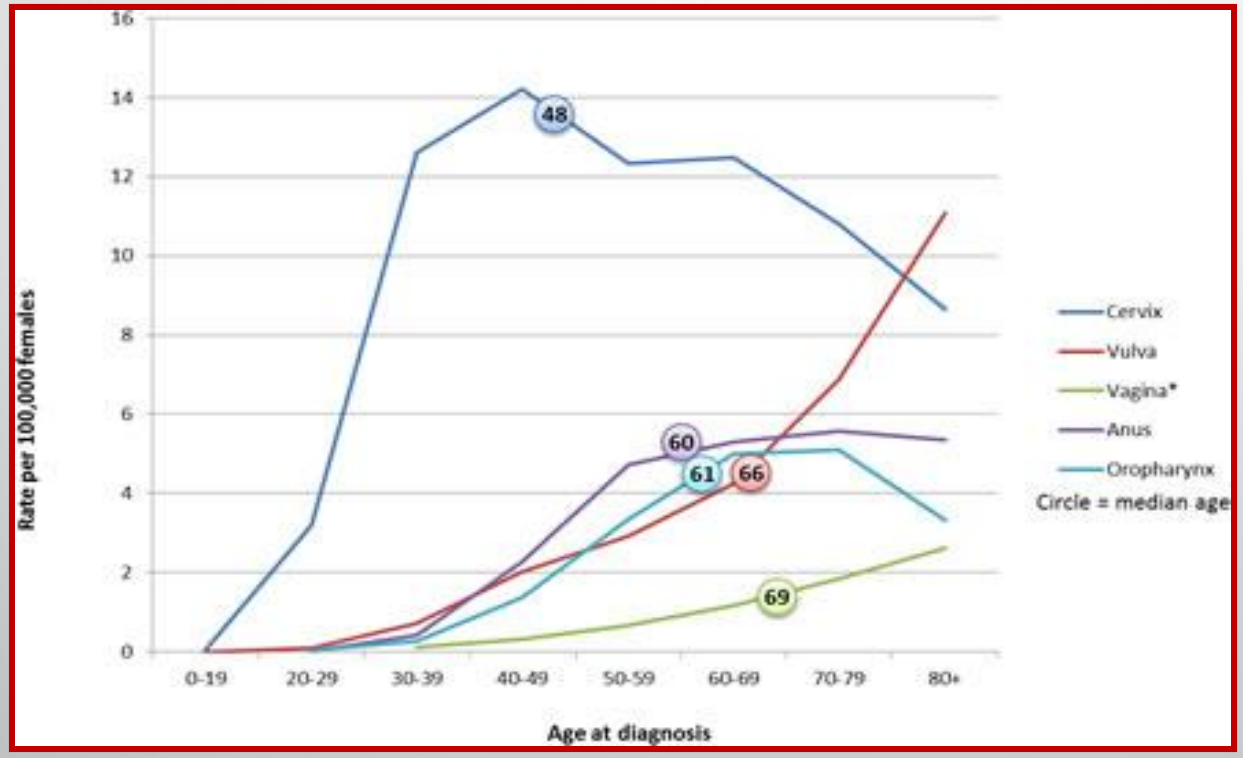
- Persistent soar throat
- Earaches
- Hoarseness
- Enlarged lymph nodes
- Pain when swallowing
- Unexplained weight loss
- Some people may have no signs or symptoms

HPV-Associated Oropharyngeal Cancer Rates by Race and Ethnicity



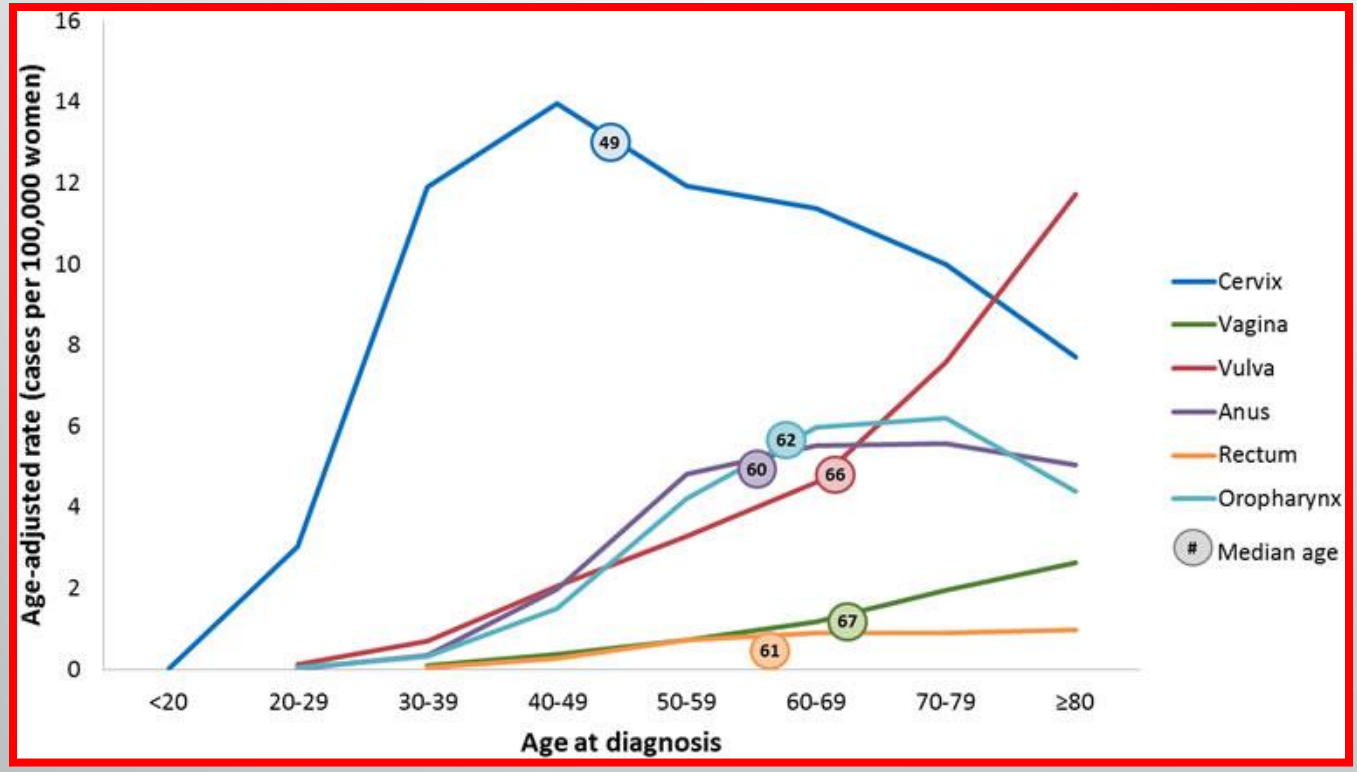
http://www.cdc.gov/cancer/hpv/statistics/headneck.htm

Rates of HPV-Associated Cancers and Median Age at Diagnosis Among Women in the United States, 2004–2008



http://www.cdc.gov/cancer/hpv/statistics/age.htm

Rates of HPV-Associated Cancers and Median Age at Diagnosis Among Women in the United States, 2008-2012



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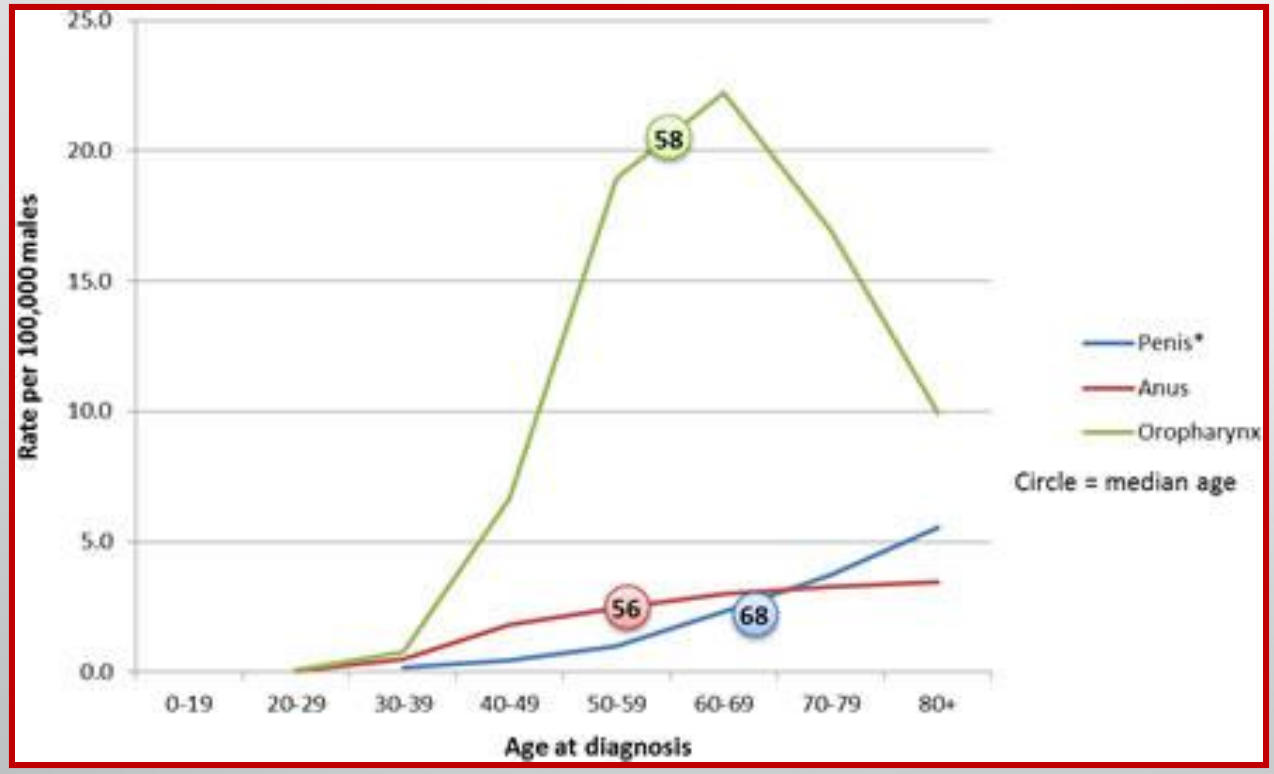
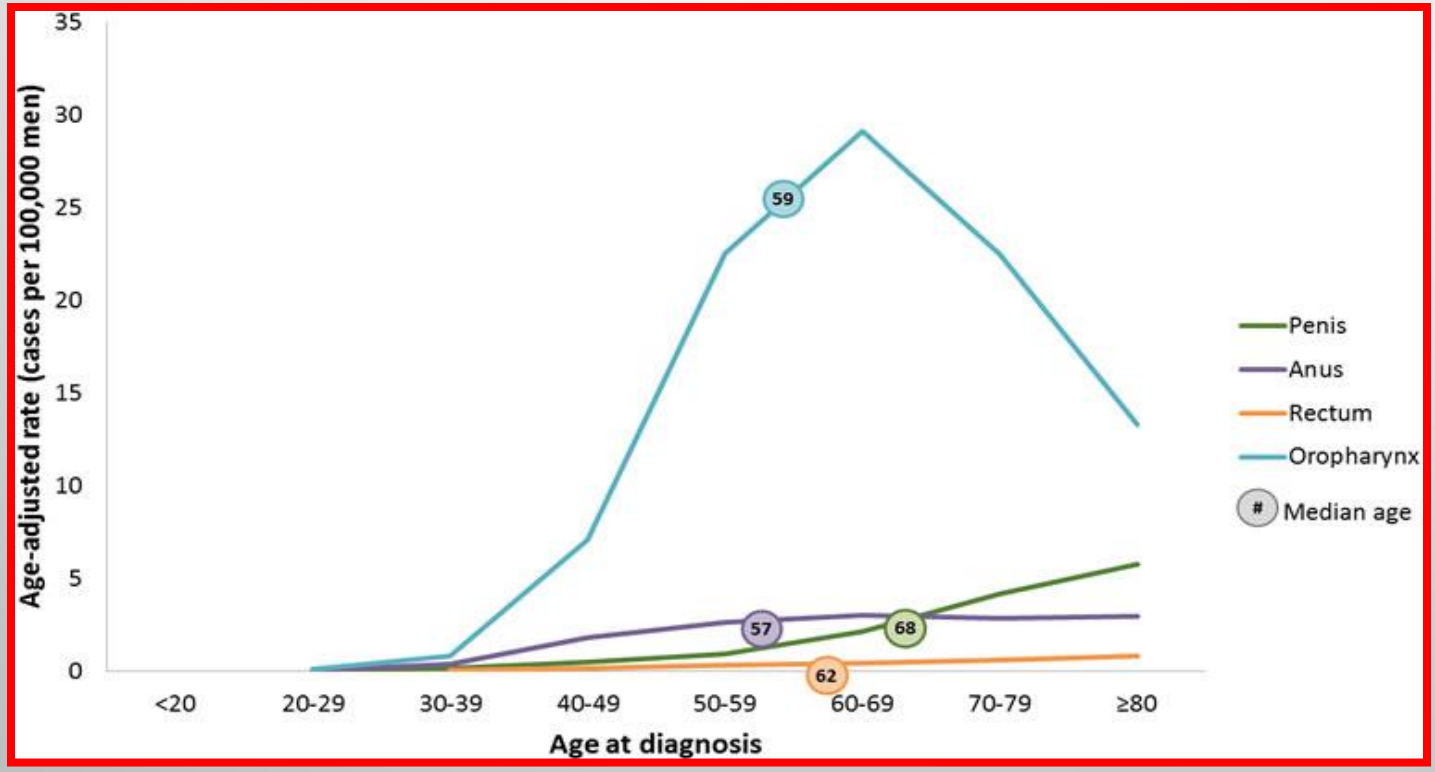
Rates of HPV-Associated Cancers and Median Age at Diagnosis Among Men in the United States, 2004–2008



http://www.cdc.gov/cancer/hpv/statistics/age.htm

Rates of HPV-Associated Cancers and Median Age at Diagnosis Among Men in the United States, 2008-2012



http://www.cdc.gov/cancer/hpv/statistics/age.htm

HPV Attributable Cancer Cases Each Year

Cancer site	Average number of cancers per year in sites where HPV is often found (HPV-associated cancers)			Percentage probably caused by HPV	Probably Caused by HPV 16, 18	
	Male	Female	Both Sexes			Number
Anus	1,750	3,260	5,010	91%	79%	4,000
Cervix	0	11,771	11,771	91%	66%	7,800
Oropharynx	12,638	3,100	15,738	70%	60%	9,500
Penis	1,168	0	1,168	63%	48%	600
Vagina	0	802	802	75%	55%	400
Vulva	0	3,554	3,554	69%	49%	1,700
Rectum	237	513	750	91%	79%	600
TOTAL	**15,793**	**23,000**	**38,793**			**24,600**

http://www.cdc.gov/cancer/hpv/statistics/cases.htm

Prevention of HPV-related Oropharyngeal Cancer

Risk Factors Associated with Oral and Oropharyngeal Cancer

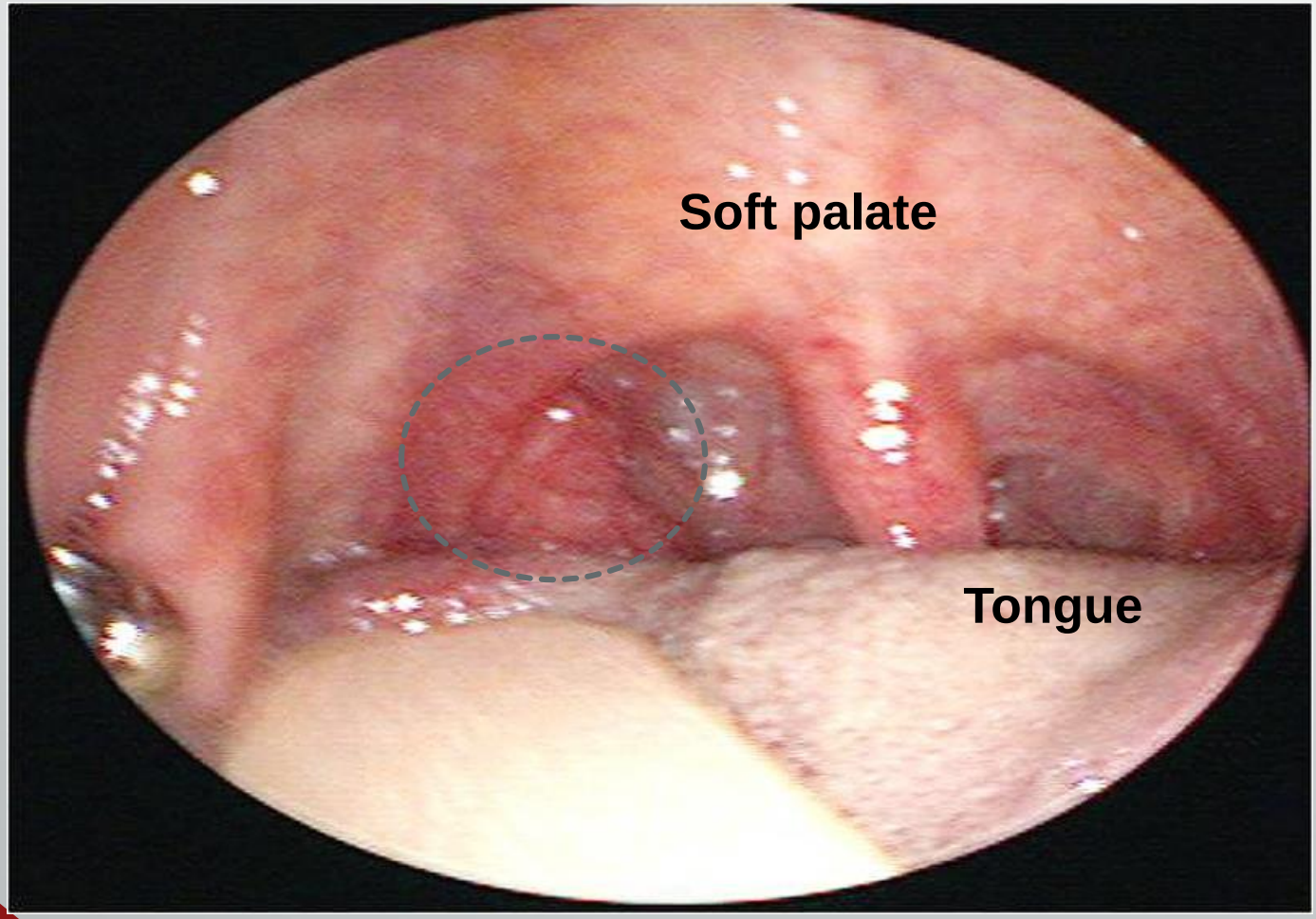
- Tobacco
- Alcohol
- Prolonged sun exposure
- HPV
- Poor diet/nutrition (low fruit/vegetable intake, Vit A deficiency, chewing betel nuts)
- Weakened immune system
- Marijuana use

U.S. Preventive Services Task Force Issues Draft Recommendation Statement: Screening for Oral Cancer

- WASHINGTON, D.C. – April 9, 2013 – The U.S. Preventive Services Task Force (Task Force) today posted a final evidence report and draft recommendation statement on screening for oral cancer
- The Task Force found that there is not enough evidence to recommend whether or not primary care professionals should perform oral cancer screenings on all of their adult patients

http://www.uspreventiveservicestaskforce.org/bulletins/oralcanbulletin.pdf

HPV-Related Oropharyngeal Cancer

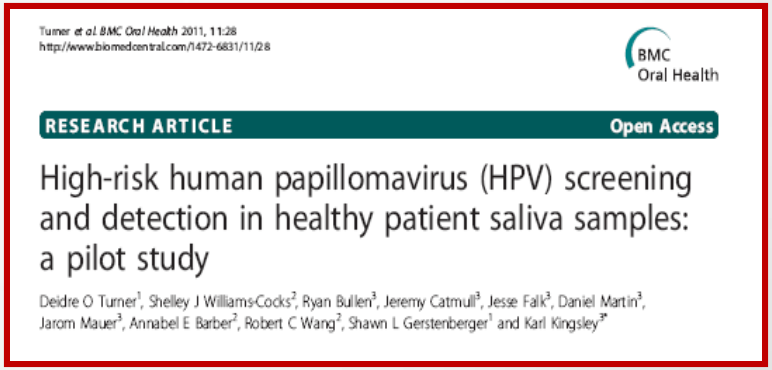


Screening for Oropharyngeal Cancers

- Difficult to detect at early stage (5 yr survival, <50%)
- No standardized screening test
- No FDA approved test for oral HPV infection
- No evidence that detection of oral HPV could be used to predict development of oropharyngeal cancer

HPV screening

- Oral
- Brush biopsy
  - Histology
  - Immunohistochemistry
- Saliva sampling
  - PCR
  - Serology (IgA)
  - Commercial kits/labs



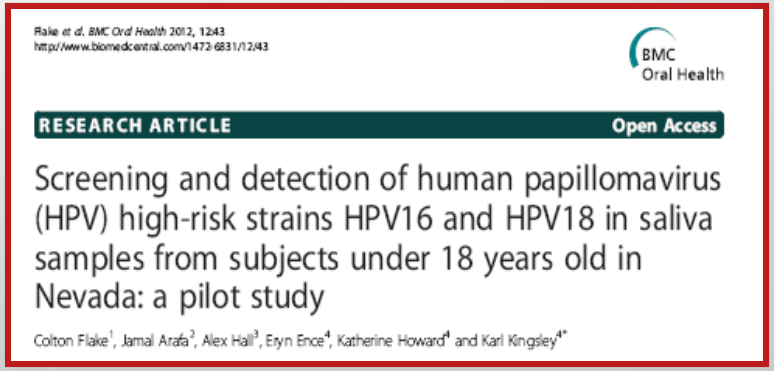
Turner et al. BMC Oral Health 2011, 11:28
http://www.biomedcentral.com/1472-6831/11/28

BMC Oral Health

RESEARCH ARTICLE Open Access

High-risk human papillomavirus (HPV) screening and detection in healthy patient saliva samples: a pilot study

Deidre O Turner[1], Shelley J Williams-Cocks[2], Ryan Bullen[3], Jeremy Catmull[3], Jesse Falk[3], Daniel Martin[3], Jarom Mauer[3], Annabel E Barber[2], Robert C Wang[2], Shawn L Gerstenberger[1] and Karl Kingsley[3*]



Flake et al. BMC Oral Health 2012, 12:43
http://www.biomedcentral.com/1472-6831/12/43

BMC Oral Health

RESEARCH ARTICLE Open Access

Screening and detection of human papillomavirus (HPV) high-risk strains HPV16 and HPV18 in saliva samples from subjects under 18 years old in Nevada: a pilot study

Colton Flake[1], Jamal Arafa[2], Alex Hall[3], Eryn Ence[4], Katherine Howard[4] and Karl Kingsley[4*]

HPV Vaccines

- In 2006, the FDA licensed a quadrivalent vaccine that protects against HPV 6, 11, 16, 18 for females to prevent genital warts and cervical cancer.
- In 2009, the FDA licensed a bivalent vaccine that protects against HPV 16 and 18 for females.
- In 2009, the quadrivalent vaccine was recommended for use in males to prevent genital warts.
- In 2010, the quadrivalent vaccine was approved by the FDA for prevention of anal cancers in males and females.
- In 2014, the 9-valent vaccine was approved by the FDA for males and females. [HPV 16, 18, 31,33,45,52,58]

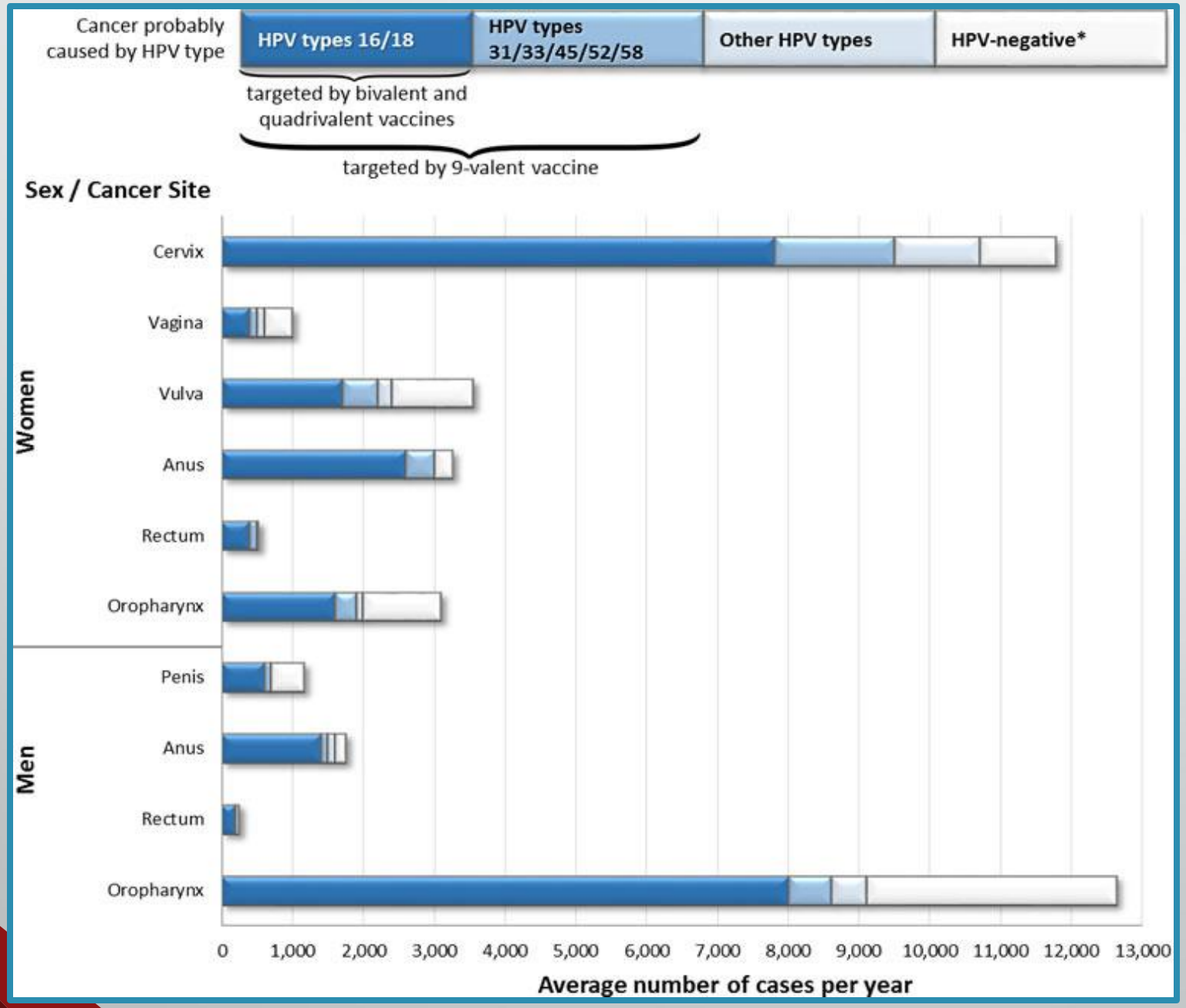
HPV Vaccines

- Gardasil (Male, Female); genital warts and other types of cancer
- Gardasil 9 (Male, Female); genital warts and other types of cancer
- Cervarix (Female only); cervical cancer
- Recommended 11-12 years of age (males, females) [can be given at age 9]
- Female catch up: 13-26 years of age
- Male catch up: 13-21 years of age [can go to age 26 if didn't complete the 3 doses]

** Advisory Committee on Immunization Practices (ACIP)

HPV Vaccine Schedule

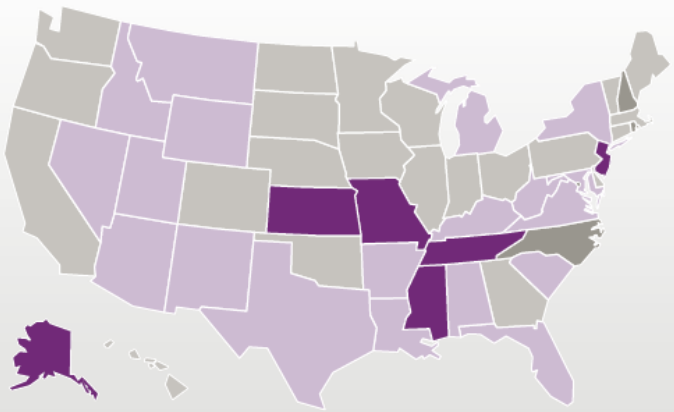
- All three HPV vaccines should be administered in a 3-dose schedule, with the second dose administered 1 to 2 months after the first dose and the third dose 6 months after the first dose. The minimum interval between the first and second doses of vaccine is 4 weeks.
- Most benefit is to complete series before initial exposure to HPV infection.


Cancer probably caused by HPV type
HPV types 16/18
HPV types 31/33/45/52/58
Other HPV types
HPV-negative*
targeted by bivalent and quadrivalent vaccines
targeted by 9-valent vaccine
Sex / Cancer Site
Women
Cervix
Vagina
Vulva
Anus
Rectum
Oropharynx
Men
Penis
Anus
Rectum
Oropharynx
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
11,000
12,000
13,000
Average number of cases per year

HPV VACCINATION IS THE BEST WAY TO PREVENT MANY TYPES OF CANCER
MANY ADOLESCENTS HAVEN'T STARTED THE HPV VACCINE SERIES

NATIONWIDE 4 OUT OF 10 GIRLS ARE UNVACCINATED

Percentage of adolescent girls who have received one or more doses of HPV vaccine*

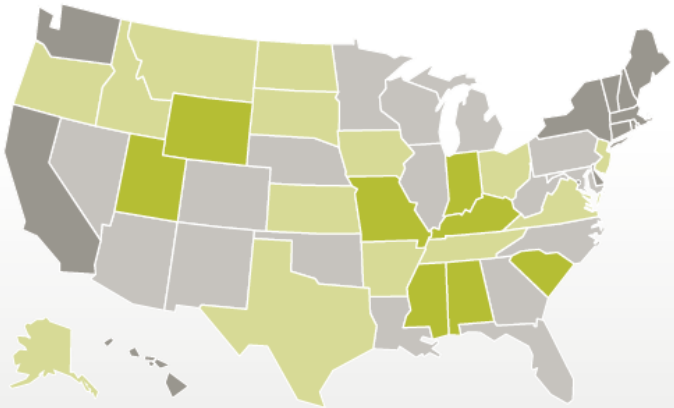


National coverage is 60%
Coverage by state:

- 49% or less
- 50-59%
- 60-69%
- 70% or greater

NATIONWIDE 6 OUT OF 10 BOYS ARE UNVACCINATED

Percentage of adolescent boys who have received one or more doses of HPV vaccine*



National coverage is 42%
Coverage by state:

- 29% or less
- 30-39%
- 40-49%
- 50% or greater

IMPROVING HPV VACCINATION RATES WILL HELP SAVE LIVES.
A high national Tdap vaccination rate of 88% shows that it is possible to achieve high HPV vaccination coverage.

*Estimated coverage with ≥1 dose of Human Papillomavirus (HPV) vaccine, either quadrivalent or bivalent, among adolescents aged 13-17 years, National Immunization Survey–Teen (NIS–Teen), United States, 2014

Source: MMWR July 31, 2015

www.cdc.gov/hpv

NCIRDig524 | July 31, 2015

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

Misconceptions

- Multiple vaccinations at the same time increases risk of harmful side effects and overloads the immune system
  - The Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) recommend simultaneous administration of all routine childhood vaccines when appropriate.
    1. May be increased immunity (better response)
    2. Fewer office visits for vaccinations, saves parents time and money and decreases trauma (child)

Four (4) evidence-based hints..

- Role of gender
  - "Why should I vaccinate my boy for cervical cancer?"
  - Did you know HPV infects girls AND boys?
  - Did you know other cancers (oral) can be prevented by this vaccine?
- Stigma of the STD
  - "Why should I vaccinate my child…he/she is not sexually active yet"
  - Did you know that HPV can infect other places? (mouth)

Four (4) evidence-based hints..

- Effectiveness: Multiple vaccination
  - "Why should I add another vaccination? Isn't this too many?"
  - Did you know immunity (protective antibodies) are higher when vaccines are given together than one by one?
- Misconceptions: Autism
  - "Why should we vaccinate? Doesn't this cause autism"
  - Did you know that study was fraudulent and has been retracted?
  - Did you know that study author had his medical license revoked?
  - Did you know that places where vaccination has dropped haven't seen ANY drop in autism rates?
  - Did you know the places where vaccination has dropped ARE now seeing whooping cough, measles, etc….?

Community and Clinical Linkages

What Oral Health Care Providers Can Do to Close the Gap

- Promote risk-based oral cancer screenings (children/adults)
- Talk to parents/caregivers about HPV vaccine (cancer prevention)
- Promote integrated health care model
- Oral HPV infections need to be studied and investigated thoroughly to help promote HPV awareness in oral health settings.

Public/Private Partnerships

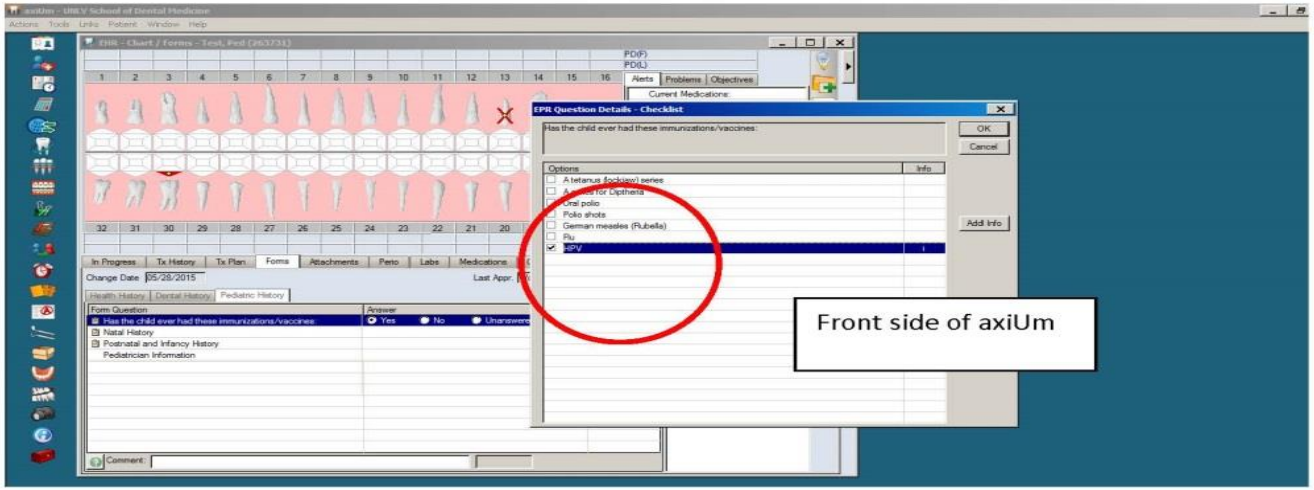
- Dental school/dental hygiene school curriculum (Higher Ed)
- Medical school curriculum (Higher Ed)
- Health care providers (dentists, dental hygienists, physicians, pediatricians, physician assistants, nurses, etc.)
- Allied health care providers (Community Health Workers, Community Health Nurses)
- Community clinics/immunization clinics
- Community-based immunization clinics associated with health fairs/back to school fairs

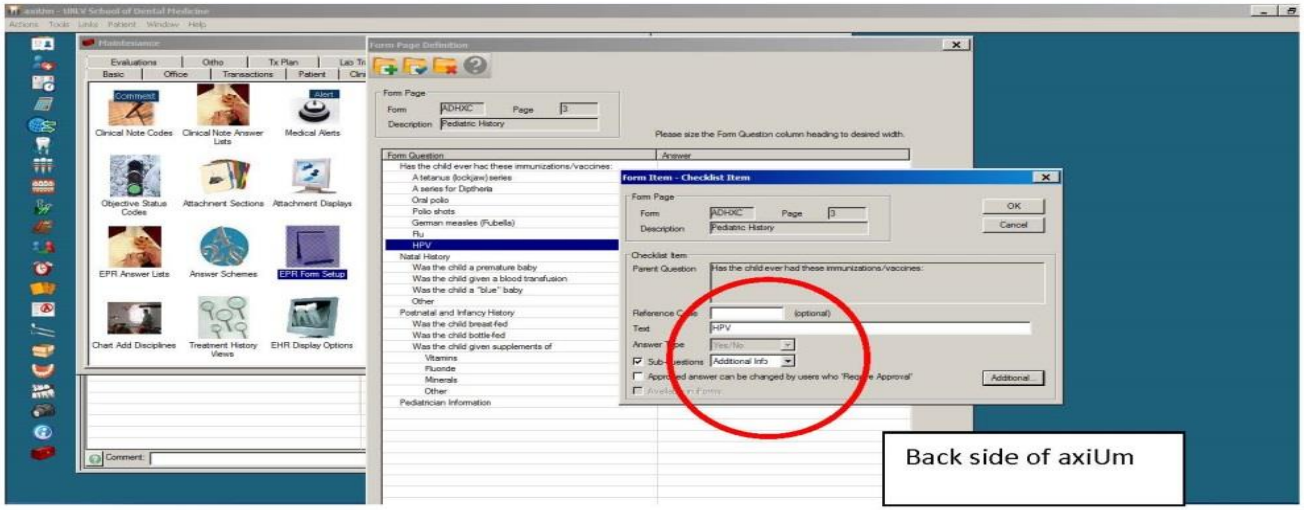
Best Practices

Medical History

- Ask about HPV vaccinations in the medical history (reminders to ask about completion of 3 doses)
- Conduct a thorough oral cancer screening frequently
- Discuss HPV and oropharyngeal cancer with patients

HPV Vaccination (children)





If the answer to this question is “no”, then please print the following on the walkout statement:

Your child has not yet been vaccinated for HPV. Here are some facts you should know regarding HPV and its vaccine:

- Lifetime risk of acquiring HPV infection is 75-80% and can occur with various forms of contact, not just sexual activity.
- Each year, an estimated 26,000 cancers are linked to HPV with an approximate 10,000 deaths from these cancers.
- HPV can cause cervical, mouth, throat and anal cancers, thus, the HPV vaccine is a safe and effective cancer prevention strategy for boys and girls if given at the recommended age of 11-12 years.

For more information, contact info@immuninzenevada.org or call 775-624-7117. You can also find additional information at ImmunizeNevada.org/HPVfreeNV. (ADD QR CODE)

Email:

Christina.Demopoulos@unlv.edu

Any Questions?

References and Resources

Centers for Disease Control and Prevention. CDC Grand Rounds: Reducing the Burden of HPV-Associated Cancer and Disease. MMWR 2014;63:69-84.

Centers for Disease Control and Prevention. HPV-Associated Cancers Diagnosis By Age (2016). Retrieved August 22, 2016 from the World Wide Web: http://www.cdc.gov/cancer/hpv/statistics/age.htm.

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U.S. Preventive Services Task Force. USPSTF Bulletin U.S Preventive Services Task Force Draft Recommendation Statement: Screening for Oral Cancer (2013). Retrieved August 13, 2014 from the World Wide Web: http://www.uspreventiveservicestaskforce.org/bulletins/oralcanbulletin.pdf