Closing the HPV Vaccination Gap: Best Practices for Oral Health Care Providers

Learning Objectives

- Describe the relationship between HPV and oropharyngeal cancers, prevalence, and associated risk factors.
- Describe evidence-based strategies for increased awareness and prevention.
- Understand how public/private partnerships can work together to increase health promotion efforts regarding the HPV vaccine.

Speakers

- Karl Kingsley, PhD, MPH
- Christina A. Demopoulos, DDS, MPH
HPV epidemiology

- 79 million currently infected with HPV (US)
- 14 million newly infected with HPV each year (US)
- 360,000 new cases of (HPV) genital wart
- 23,000 new cases of HPV-related cancer
  - Overwhelming majority are cervical cancer

[http://www.cdc.gov/std/hpv (updated April 2014)]

HPV virology

- Mucosal (genital) ~ 40 types
  - High-risk (HR) HPV strains: HPV16, 18, 31, 45...others
  - Cervical (90-95%) 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

HPV screening

- Cervical
  - Papanicolaou-stained
    - Pap smears
    - 40-70% resolve
  - Removal or treatment
    - Surgery
    - Cryotherapy
    - Topical (cidofovir)
HPV vaccine

- Gardasil (Merck)
- Quadrivalent
- HPV 16, 18, 6, 11
- L1 proteins (capsid)
- VLP (virus-like proteins)
- Non-infectious, > 90% effective

Recommendation
- Females 11-12 yrs
- Catch up 13-26 yrs.
- Males 9 – 26 yrs (approved)

ACIP recommendations

- One dose HPV vaccine
  - Females 13 - 17: 57.3% in 2013 (53.8% in 2012)
  - Male 13 – 17: 34.6% in 2013 (20.8% in 2012)
- Three dose HPV vaccine
  - Females 13 – 17: 32.6% in 2013 (33.4% in 2012)
  - Male 13 – 17: 13.9% in 2013 (6.8% in 2012)

Arm yourself with data (and more..)

Lessons from HBV (Hepatitis B)

- Nurses and other health care providers (HCP) encounter vaccine barrier
- “Why are you vaccinating my NEWBORN against an STD?”

Evidence-base demonstrates simple information helps:

- Yes, Hep B is an STD……but did you know that Hep B can also be transmitted from close family contact?
- Did you know many people infected with Hep B don't know it (20-30 years)….and can be infective without symptoms?
- Did you know vaccination at birth can prevent long-term and permanent harm to your newborn baby…..?
(updated) HPV epidemiology

- HPV is a STD
- HPV is also non-STD
  - Head & Neck cancers
  - 25% HNCC
- Oral cancers
  - 45 – 90% OSCC
  - 25-50% tobacco-induced cancers
  - 90-95% non-tobacco induced cancers
  - 2 or 3-to-1 male
- Dx genital warts
- Dx Pap smear

(new) HPV incidence and prevalence

- Oral HPV increasing
- HPV in oral cancers
- HPV in healthy mouths

HPV screening

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

- HPV newly associated with
  - Breast cancers: 192,000/yr in US
  - May modulate growth and metastasis
  - 20 – 40% tobacco-induced breast cancers
  - HPV may initiate (carcinogenesis)
  - >80% non-tobacco associated breast cancers
- Oral HPV transmitted from partner (males > 90%)

Simoes et al., 2012; Grimes et al, 2014

HPV virology

- Transmission
  - Vertical (birth)
  - Breast feeding
  - Saliva
  - Close-family contact
  - Fomites
  - Shared eating utensils
  - Kissing
- Healthy children
  - ~50% oral HPV
  - Transient (mostly)
  - Non-sexual
  - Few (or one) strain
  - Equal among genders
- 39-month follow up
  - 40% HPV+ → HPV-
  - 69% HPV- → HPV+
  - <5% integrated

Mant et al., 2003; Pinheiro et al, 2011

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)
Misconceptions

- Vaccination may be causing autism
- Dr. Andrew Wakefield, 1998 BMJ study of 12 kids
  - Vaccinations dropped 80% in Britain
  - Vaccinations dropped in US
  - New cases of measles, mumps, rubella, others
- Study retracted, co-authors admitted FRAUD
- No study could replicate findings
- No proven link with autism.....

Misconceptions

- Vaccination rates have dropped
- Autism rates have not changed (still increasing) – may even be higher in unvaccinated children
- Incidence of vaccine-preventable illnesses are rising

Barriers and Challenges

- Role of gender
  - "female problem"
- Stigma
  - STD
- Effectiveness
  - More = less
  - Later is better
- Misconceptions
  - Link with autism

- Role of gender
  - Males and females
- Stigma
  - STD but also non-STD
  - "routine" transmission
- Effectiveness
  - More = more
- Misconceptions
  - No link with autism
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...?

The Fundamentals of HPV for Oral Health Care Providers
**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)
- 90% of infections clear in 1-2 years in healthy individuals

http://www.cdc.gov/std/hpv/STDFactHPVandOropharyngealCancer.htm

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**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 72% of oropharyngeal cancers are caused by HPV (previously tobacco and alcohol alone)
- >2,370 new cases in females each year in US
- 9,356 new cases in males each year in US


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**HPV-Associated Oropharyngeal Cancer Rates by Race and Ethnicity**

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

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

HPV Attributable Cancer Cases Each Year


http://www.cdc.gov/cancer/hpv/statistics/cases.htm
HPV Attributable Cancer Cases Each Year

| Cancer Site | Average number of cancers per year where HPV is often found (HPV-associated cancer) | Percentage probably caused by HPV | Number probably caused by HPV
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Both sexes</td>
<td>Male</td>
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<tr>
<td>Anus</td>
<td>1,549</td>
<td>2,821</td>
<td>4,370</td>
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<tr>
<td>Cervix</td>
<td>0</td>
<td>11,422</td>
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<tr>
<td>Oropharynx</td>
<td>9,974</td>
<td>2,443</td>
<td>12,417</td>
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<tr>
<td>Penis</td>
<td>1,048</td>
<td>0</td>
<td>1,048</td>
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<tr>
<td>Vagina</td>
<td>0</td>
<td>735</td>
<td>735</td>
</tr>
<tr>
<td>Vulva</td>
<td>0</td>
<td>3,168</td>
<td>3,168</td>
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<tr>
<td>TOTAL</td>
<td>12,571</td>
<td>20,589</td>
<td>33,160</td>
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http://www.cdc.gov/cancer/hpv/statistics/cases.htm

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

- 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.

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

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 curriculum (Higher Ed)
- Medical school curriculum (Higher Ed)
- Health care providers (dentists, 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
References and Resources


