HPV Vaccination Rates

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Objectives

- Discuss the prevalence of HPV in adolescents
- Discuss the disease burden in this population
- Discuss vaccine use and barriers among adolescents

Why is HPV a problem?

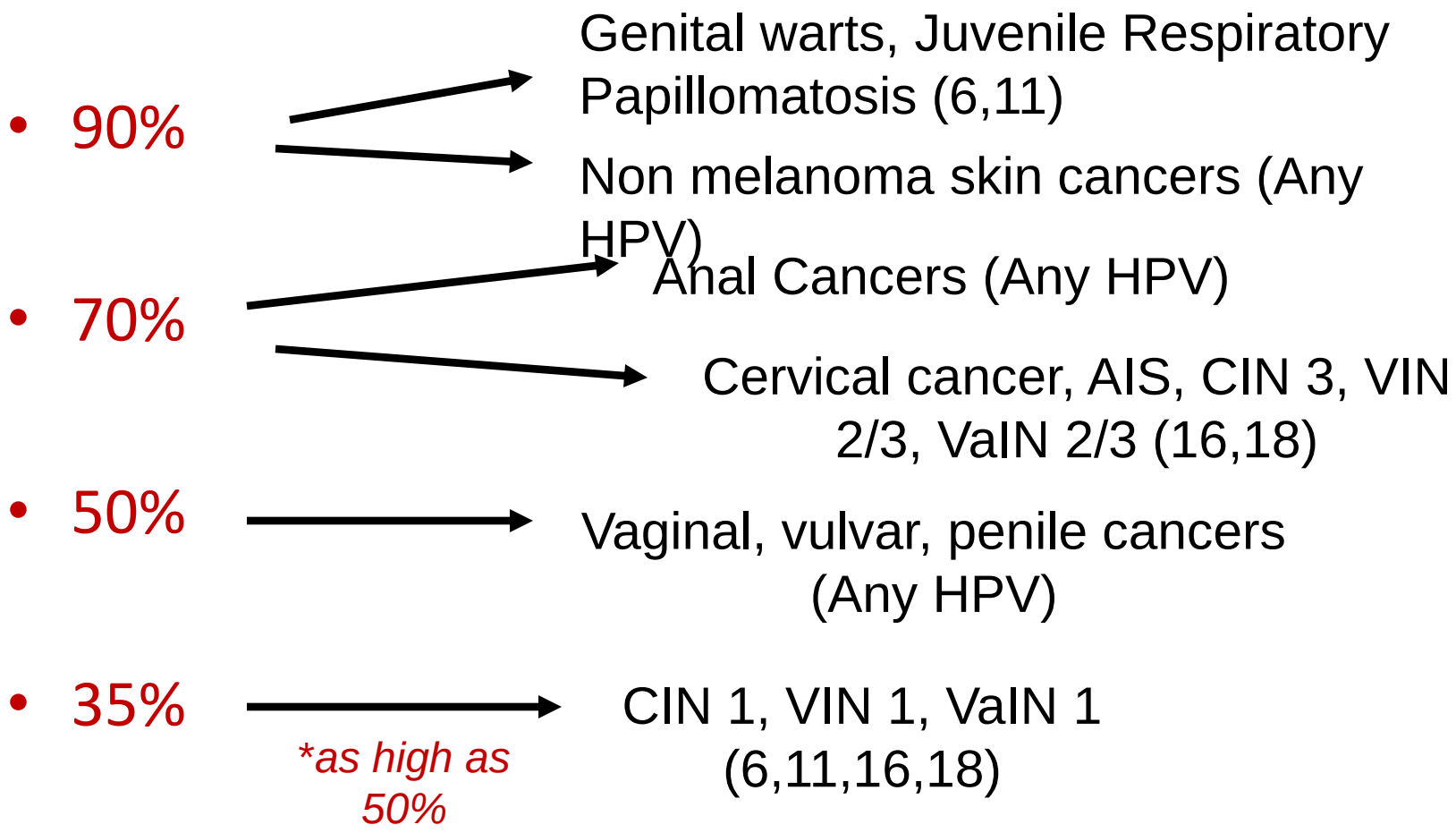
- It is the most prevalent STD in the world
- It is responsible for many cancers, with ~10,000 occurring from cervical cancer alone
- It is transmitted most commonly from asymptomatic individuals
- Costly to treat

Prevalence and Incidence

- The World Health Organization estimates that the prevalence of HPV is 9-13% worldwide with an incidence of 30 million cases/year
- In the US, the prevalence of HPV is 20 million and a reported incidence of 6.2 million new anogenital cases/year
- HPV accounts for over 1 million cases of genital warts/year
- Invasive cervical cancer cases in 2004: 12,000

1) World Health Organization 2001. 2) American Cancer Society Supplement to Cancer. 2008.

HPV Causes…


90%
Genital warts, Juvenile Respiratory Papillomatosis (6,11)
Non melanoma skin cancers (Any HPV)
70%
Anal Cancers (Any HPV)
Cervical cancer, AIS, CIN 3, VIN 2/3, VaIN 2/3 (16,18)
50%
Vaginal, vulvar, penile cancers (Any HPV)
35%
CIN 1, VIN 1, VaIN 1 (6,11,16,18)
*as high as 50%

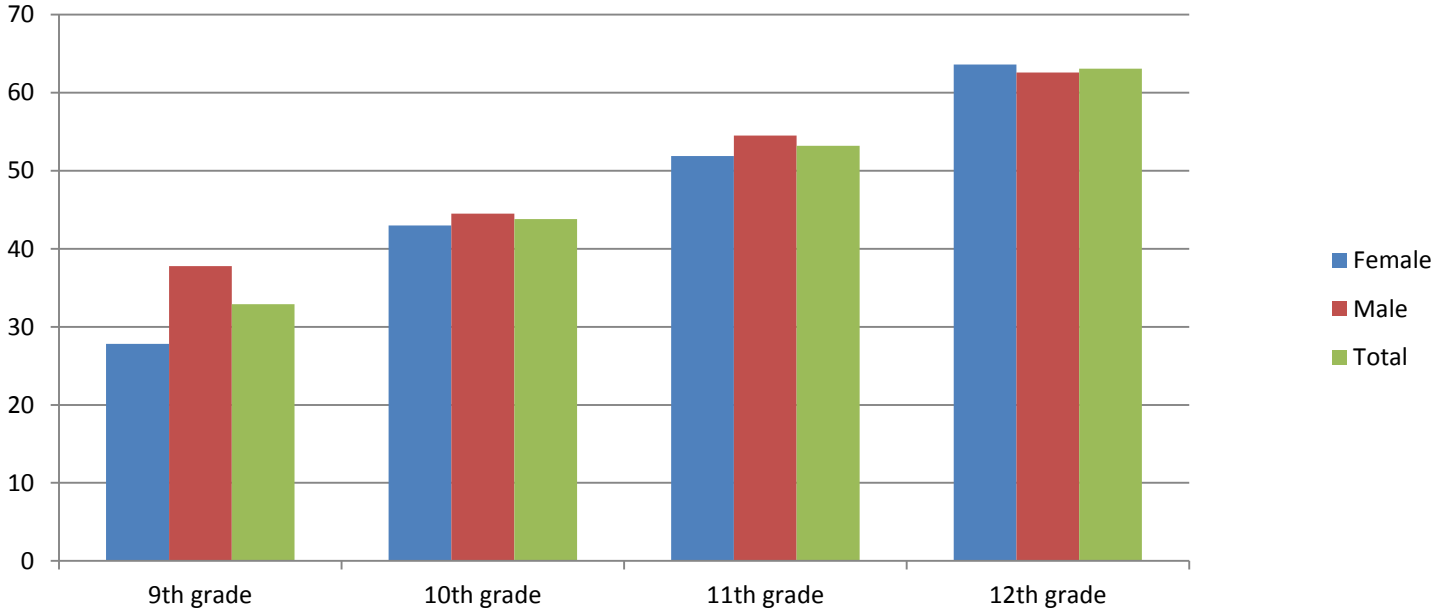
Overall Prevalence and Acquisition

Statistics	Percentage
Risk of acquiring HPV after first intercourse	60%
Overall prevalence for ANY HPV type in women age 14-59 years	26.8%
Overall prevalence for ANY HPV type in women age 14-19 years of age	24.5%
Risk of any female acquiring HPV by age 50	80%

1. NHANES. JAMA 2007; 297(8):813-9. 2. **2**. Centers for Disease Control and Prevention. *Genital HPV infection fact sheet*. CDC National Prevention Information Network; 2004. **3**. Weinstock H et al. *Perspect Sex Reprod Health*. 2004;36:6–10. **4**. Burk RD et al. *J Infect Dis*. 1996;174:679–689. **5**. Bauer HM et al. *JAMA*. 1991;265:472–477.

Percentage of US High School Students Who Have Had Sexual Intercourse

2011 YRBS involving 14,344 student questionnaires



* 7.0% of adolescents reported sexual debut before age 13

US Youth Risk Behavior Survey 2011

Texas Teens compared to US Overall Statistics

	Year	Texas	United States
Sexual Debut before age 13 years	2011	7.0%	6.2%
	2007	6.6%	7.1%
Report sexual activity in high school	2011	51.6%	47.4%
	2007	52.9%	47.8%

Youth Risk Behavior Survey 2007 and 2011 CDC Data

Inherent Risks

- Teens ARE sexually active
- Rate of HPV acquisition is HIGH
  - 25% at 12 months
  - 35% at 24 months
  - 45% at 36 months
  - 50% at 48 months
  - 60% at 60 months

Collins S, et. Al. BJOG. 2002. 109:96-98.

Current Vaccine Recommendations for HPV Vaccination in the US

- Quadrivalent vaccine approved for use in June 2006
- Bivalent vaccine approved for use in October 2009
- Females and Males 9-26 years of age
- Schedule: 0,2,6 months (quadrivalent) and 0,1,6 months (bivalent)
- Many supporting organizations
  - AAP, AAFP, ACOG, SAM, CDC, ACIP
- ACIP recommends that adolescents receive the HPV vaccine between 13-17 years of age (catch up period)

CDC MMWR Recommended schedules for persons aged 0-18 years-US. 2011; 60(5).

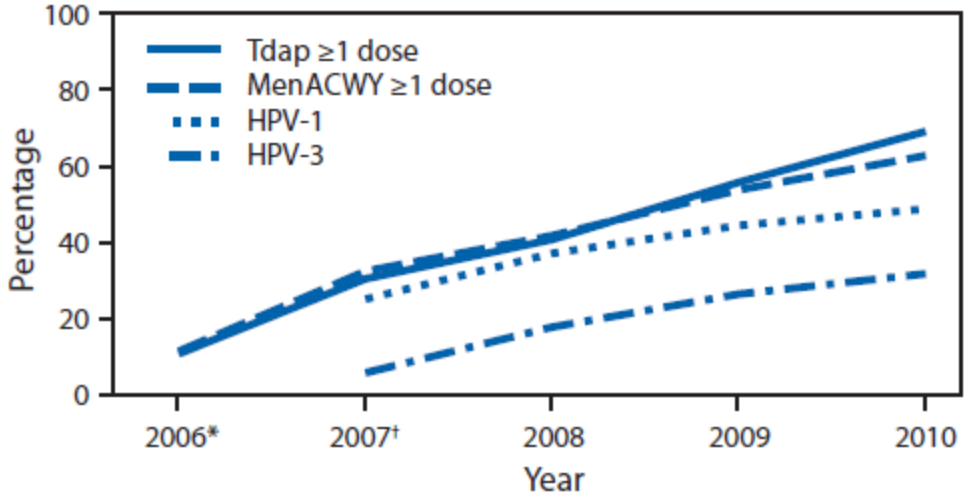
Healthy People 2020 Goal

- Immunization of adolescents 13-15 years of age
  - 80% coverage for >/=1 dose Tdap
  - 80% coverage for >/=1 dose Men ACWY
  - 80% coverage for >/=3 doses HPV
  - 90% coverage for varicella

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

HPV Vaccination Uptake

- Vaccination of teens 13-17 years of age has increased steadily since 2006
- 2012 HEDIS measures will help track teens receiving vaccines by age 13 years



Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

Vaccination Uptake in the US

- Variable from state to state
- Between 2009-2010, vaccination rates increased among teens 13-17 years of age
- Higher vaccination rates still observed in Tdap and MenACWY compared to HPV vaccination

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

HPV Vaccination Uptake in the US

- 53.0% of teens in this age group received >/= 1 HPV vaccine during 2011 compared to 48.7% in 2010

- 34.8% of teens in this age group received >/= 3 HPV vaccines during 2011 compared to 32.0% in 2010

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123. MMWR. CDC Weekly Report. 2012; 61(34):671-7.

HPV Vaccination Uptake

- Differences in vaccine uptake are based on gender, ethnicity, poverty status

- Only 1.4% of males received the HPV vaccine in 2010 and 8.3% in 2011

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123. MMWR. CDC Weekly Report. 2012; 61(34):671-7.

HPV Vaccination Coverage

HPV Vaccine Dose	Age (years) % coverage				
	13	14	15	16	17
>/=1	38.9	48.5	51.1	51.7	53.1
>/=3	23.2	30.5	31.9	36.9	37.5

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

HPV Vaccination Coverage in 2011

HPV Vaccine Dose	Age (years) % coverage				
	13	14	15	16	17
>/=1	41.6	45.5	56.4	59.2	62.8
>/=3	22.9	29.2	37.8	40.0	44.5

MMWR. CDC Weekly Report. 2012; 61(34):671-7.

HPV Vaccination Coverage

HPV Vaccine Dose	Ethnicity and % coverage					
	White	Black	Hispanic	American Indian/Alaskan Native	Asian	Other
>/=1	45.8	48.9	56.2	64.8	50.1	52.3
>/=3	32.4	30.2	29.5	40.5	39.8	37.3

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

HPV Vaccination Coverage in 2011

HPV Vaccine Dose	Ethnicity and % coverage				
	White	Black	Hispanic	American Indian/Alaskan Native	Asian
>/=1	47.5	56.0	65.0	59.4	55.8
>/=3	33.0	31.7	41.6	37.8	35.0

MMWR. CDC Weekly Report. 2012; 61(34):671-7.

Vaccination Uptake Nationally

US HPV Vaccine Uptake	At least 1 dose (%)	All 3 doses (%)
US Virgin Islands	22.5	NR
Idaho	28.8	17.6
Rhode Island	73.0	55.1
Texas	47.5	27.0
Overall	48.7	32.0

Estimated vaccination coverage among adolescents 13-17 years of age. NIS, 2006-2010. CDC MMWR. 2011; 60(33):1117-1123.

Vaccination Uptake Nationally in 2011

US HPV Vaccine Uptake	At least 1 dose (%)	All 3 doses (%)
US Virgin Islands	26.4	8.3
Idaho	45.5	30.0
Rhode Island	76.1	56.8
Texas *Houston*	47.5 *49.7*	27.0 *26.9*
Overall	53.0	34.8

MMWR. CDC Weekly Report. 2012; 61(34):671-7.

Vaccination Uptake Internationally in the 13-17 year old age group

Country HPV Vaccine Uptake	All 3 doses (%)
United States	20
Australia	75-80
Scotland	90*
United Kingdom	75-80
Canada	50

*among 12-13 year old girls

Bryn Nelson. Lagging HPV Vaccination Rates Dampen Outlook in US. Cancer Cytopath. 2010.

Vaccination Uptake

- Provider Statistics
  - Vast majority of Pediatricians and Family Practitioners offered the vaccine 18 months post HPV vaccine licensure
  - Fewer physicians offered the vaccine to younger adolescents compared to older adolescents
  - Reported obstacles for physicians included financial risk of purchasing vaccine for on-site delivery

Daley MF, et. Al. Pediatrics. 2010; 126(3):425-433.

Vaccination Uptake

- Patient statistics are always harder to gauge
- Recent study from Lau and colleagues sheds some light on underlying factors

Vaccination Uptake

- Cross sectional study in 2007 from National Survey of Children's Health
- Survey involved parents of female adolescents 12-17 years of age
- Main outcome measures: sociodemographic and healthcare factors influencing HPV vaccination
- 16139 surveys analyzed
- 20% reported prior vaccination of children at time of survey

Lau M, et. Al. Vaccine. 2012; 30:3112-3118.

Vaccination Uptake

- Main result
  - Parents whose healthcare providers had recommended the HPV vaccine were much more likely to receive the vaccine (adjusted odds ratio=18)
  - Insurance concerns, sociodemographic factors influenced initiation of HPV vaccination much less (adjusted odds ratios ranged from 1.05-2.84)

Lau M, et. Al. Vaccine. 2012; 30:3112-3118.

Perceived Barriers Among Patients

- Survey mailed to 1375 women ages 19-26 years between 2006-2007 regarding reasons for non-vaccination against HPV
  - Women identified as never having had the vaccine based on US claims data
  - Respondents: 185 (response rate=13.5%)
- Questions about background and perception were included

Zimet GD, et. Al. BMC Women's Health. 2010; 10 (27):1-6.

Perceived Barriers Among Patients

- Demographics
  - 25.4 % married
  - 83.2% Caucasian
  - 89.2% College education or higher
  - Vaccination described as important by 32.4%
  - Likely to discuss vaccine with physician 50%
- Reasons for Non-Vaccination
  - Perception of low risk: married or in a monogamous relationship (54.9%), concerns about side effects (24.4%), vaccine too new (35.4%), lack of information (31.7%), insurance coverage (24.4)

Zimet GD, et. Al. BMC Women's Health. 2010; 10 (27):1-6.

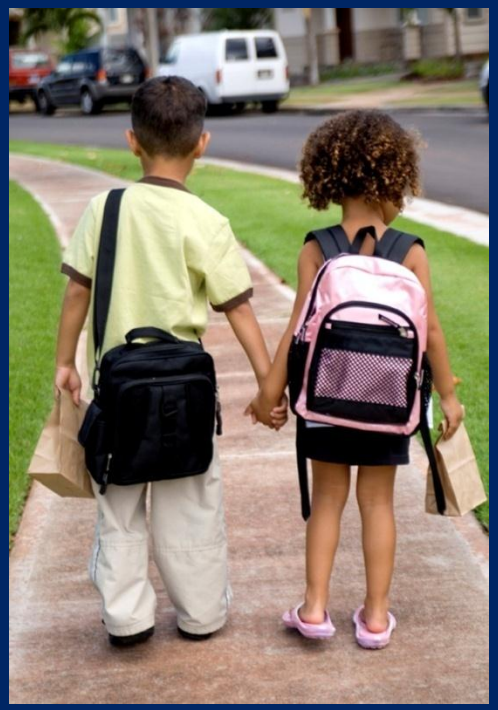
Conclusions

HPV infection is widespread around the world

Long-term data collection underway to determine length of immunity for the current FDA-approved vaccines

Degree of eradication of an infectious agent will depend on penetrance of immunity

The potential impact on the future of global health remains significant



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