HPV Cancer Update
Alabama Adolescent Vaccination Task Force

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Disclosures

- *No disclosures*

HPV Infection

- Most females and males will be infected with at least one type of mucosal HPV at some point in their lives
  - Estimated 79 million Americans currently infected
  - 14 million new infections/year in the US
  - HPV infection is most common in people in their teens and early 20s
- Most people will never know that they have been infected

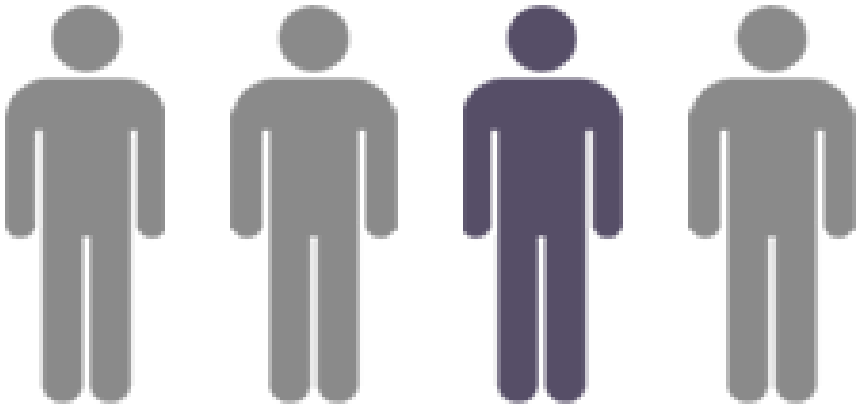
Satterwhite et al. Sex Transm Dis. 2013

Latest Update: HPV Prevalence

- During 2011–2014, prevalence of any oral human papillomavirus (HPV) for adults aged 18–69 was 7.3%; high-risk HPV was 4.0%.
- Any oral HPV was highest among non-Hispanic black adults.
- Prevalence of any and high-risk oral HPV was higher in men than women
- During 2013–2014, prevalence of any and high-risk genital HPV for adults aged 18–59 was 45.2% and 25.1% in men and 39.9% and 20.4% in women, respectively.
- Prevalence of any and high-risk genital HPV was higher among non-Hispanic black than both non-Hispanic white and Hispanic men and women.

McQuillan et al. NCHS Data Brief No. 280, April 2017

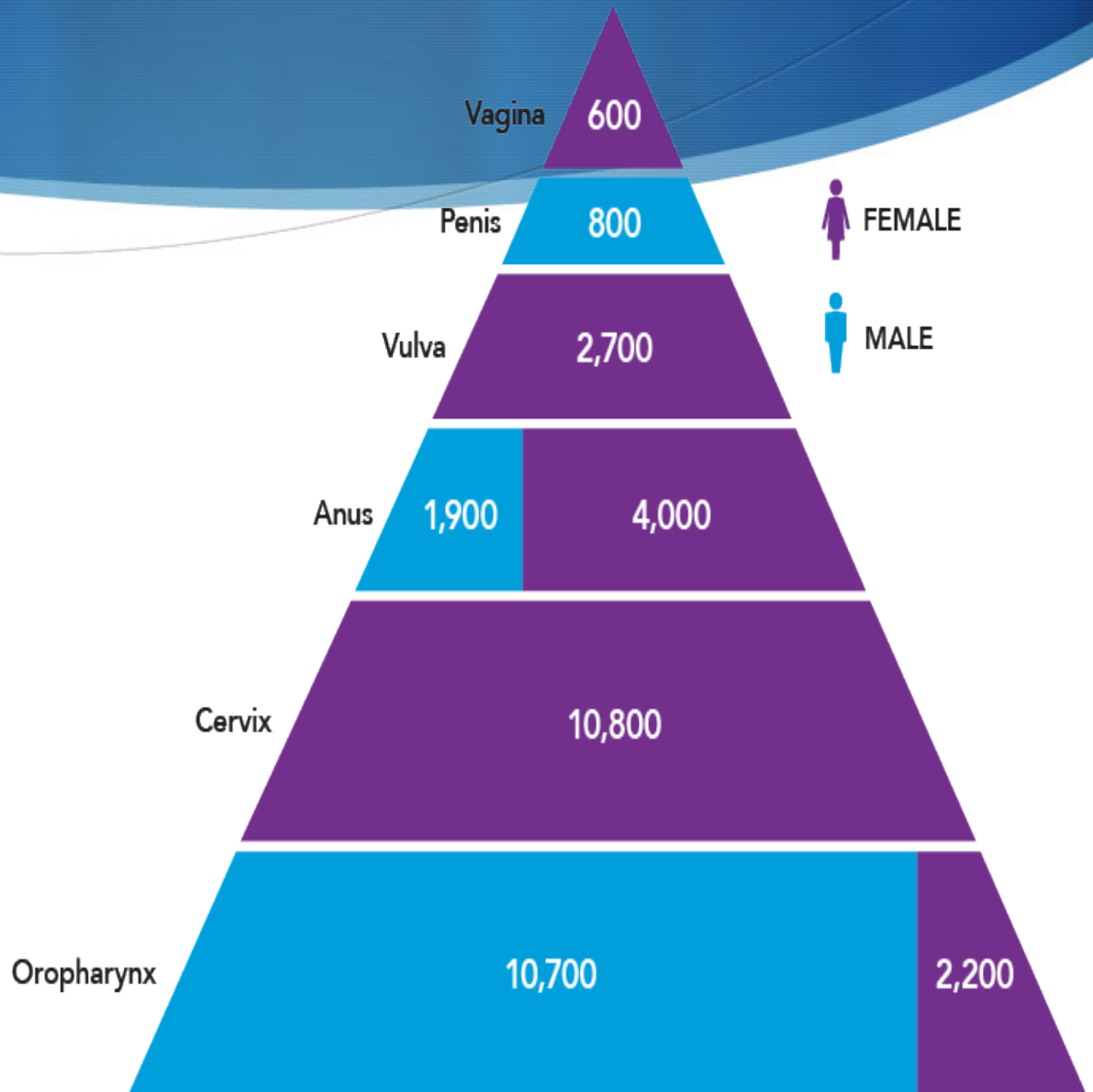
HPV Prevalence in the US



1 in 4 men CURRENTLY infected with cancer-causing HPV

1 in 5 women CURRENTLY infected with cancer-causing HPV

HPV causes 6 cancers



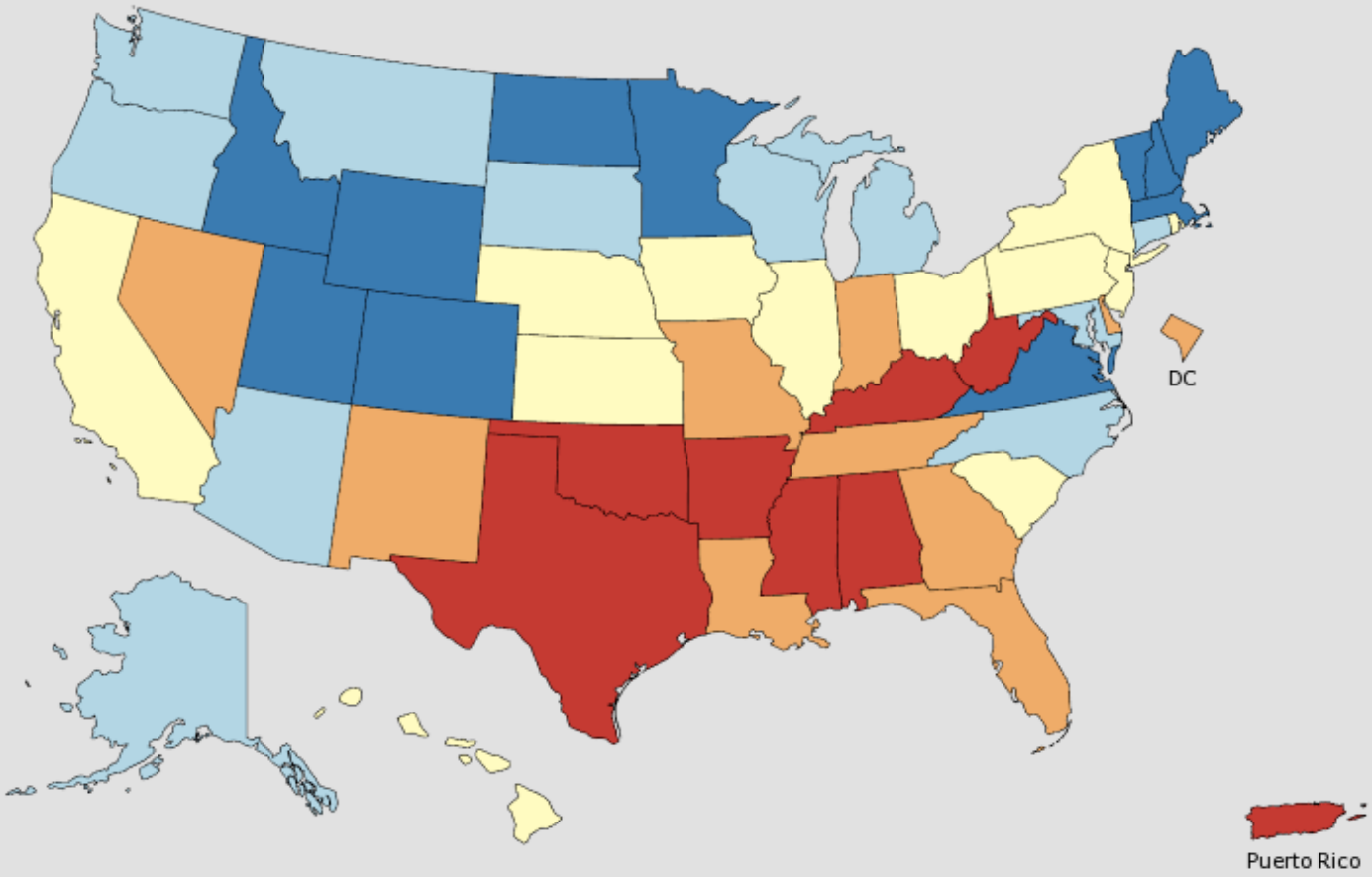
President's Cancer Panel Annual Report, 2018

Cancers Caused by HPV per Year, U.S., 2009-2013

Cancer site	Percentage probably caused by any HPV type	Number probably caused by any HPV type		
		Female	Male	Both Sexes
Cervix	91%	10,600	0	10,600
Vagina	75%	600	0	600
Vulva	69%	2,500	0	2,500
Penis	63%	0	700	700
Anus	91%	3,200	1,600	4,800
Rectum	91%	500	200	700
Oropharynx	70%	2,000	9,600	11,600
TOTAL		19,400	12,100	31,500

Based on Viens et al. MMWR 2016. https://www.cdc.gov/cancer/hpv/statistics

Incidence Rates† for United States by State
Cervix, 2012 - 2016
All Races (includes Hispanic), Female, All Ages



Age-Adjusted

Annual Incidence Rate

(Cases per 100,000)

Quantile Interval

- 4.1 to 6.3
- > 6.3 to 7.2
- > 7.2 to 7.7
- > 7.7 to 8.8
- > 8.8 to 12.6

US (SEER + NPCR)
Rate (95% C.I.)
7.6 (7.5 - 7.6)

Notes:

Note: Alaska, DC, Hawaii and Puerto Rico are not drawn to scale.

State Cancer Registries may provide more current or more local data.

Data presented on the State Cancer Profiles Web Site may differ from statistics reported by the State Cancer Registries (for more information).

† Incidence rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ... , 80-84, 85+). Rates are for invasive cancer only (except for bladder which is invasive and in situ) or unless otherwise specified. Rates calculated using SEER*Stat. Population counts for denominators are based on Census populations as modified by NCI. The 1969-2016 US Population Data File is used for SEER and NPCR incidence rates.

Rates are computed using cancers classified as malignant based on ICD-O-3. For more information see malignant.html

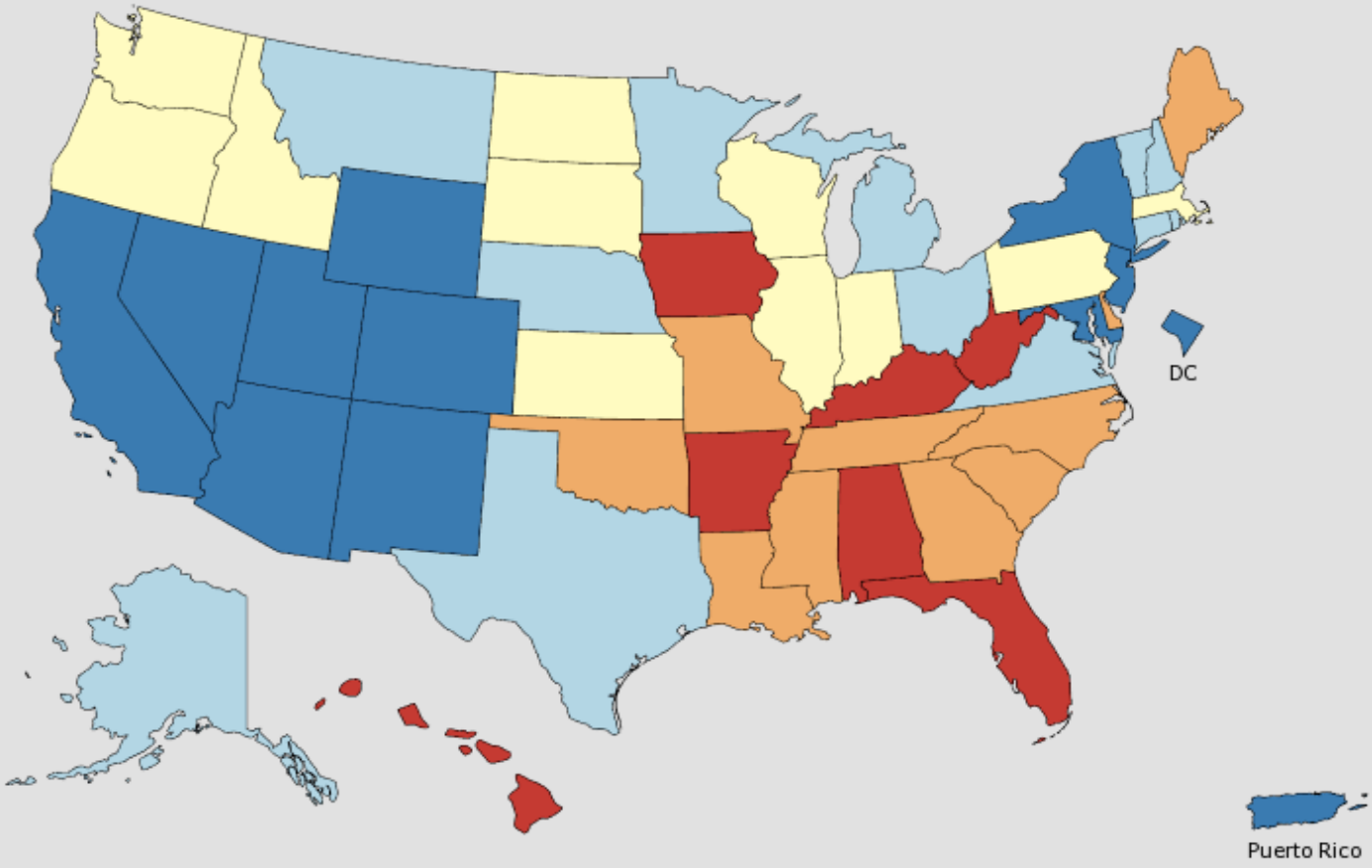
◇ Data not available for this combination of geography, statistic, age and race/ethnicity.

Data for the United States does not include data from Puerto Rico

Incidence Rates† for United States by State

Oral Cavity & Pharynx, 2012 - 2016

All Races (includes Hispanic), Both Sexes, All Ages



Age-Adjusted

Annual Incidence Rate

(Cases per 100,000)

Quantile Interval

- 8.8 to 10.9
- > 10.9 to 11.8
- > 11.8 to 12.3
- > 12.3 to 13.0
- > 13.0 to 14.2

US (SEER + NPCR)
Rate (95% C.I.)
11.7 (11.7 - 11.8)

Notes:

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How Alabama Is Doing with HPV Cancers

#1 **Cervical Cancer Deaths**

#3 **Cervical Cancer Incidence**

#5 **Oropharyngeal Cancer Incidence**

#7 **Oropharyngeal Cancer Deaths**

HPV cancers in Alabama

HPV-associated Cancer Incidence Rates and Counts for Alabama by Primary Site Group, by Sex, 2012-2015				
Primary Site Group	Female		Male	
	Rate	Count	Rate	Count
Cervix	9.2	942	N/A	N/A
Vagina	0.6	75	N/A	N/A
Vulva	2.0	243	N/A	N/A
HPV-associated Oropharynx*	2.1	254	9.2	1,038
Anus	1.7	216	1.1	115
Rectum and Rectosigmoid Junction	0.4	52	0.2	24
Penis	N/A	N/A	0.9	89

Rates are per 100,000 and age-adjusted to the 2000 U.S. (19 age groups) standard.

Rates and counts are for malignant tumors only.

* Includes the following ICD-O-3 site codes: C019, C024, C028, C051, C052, C090, C091, C098, C099, C100, C101, C102, C104, C108, C109, C140, C142, and C148.

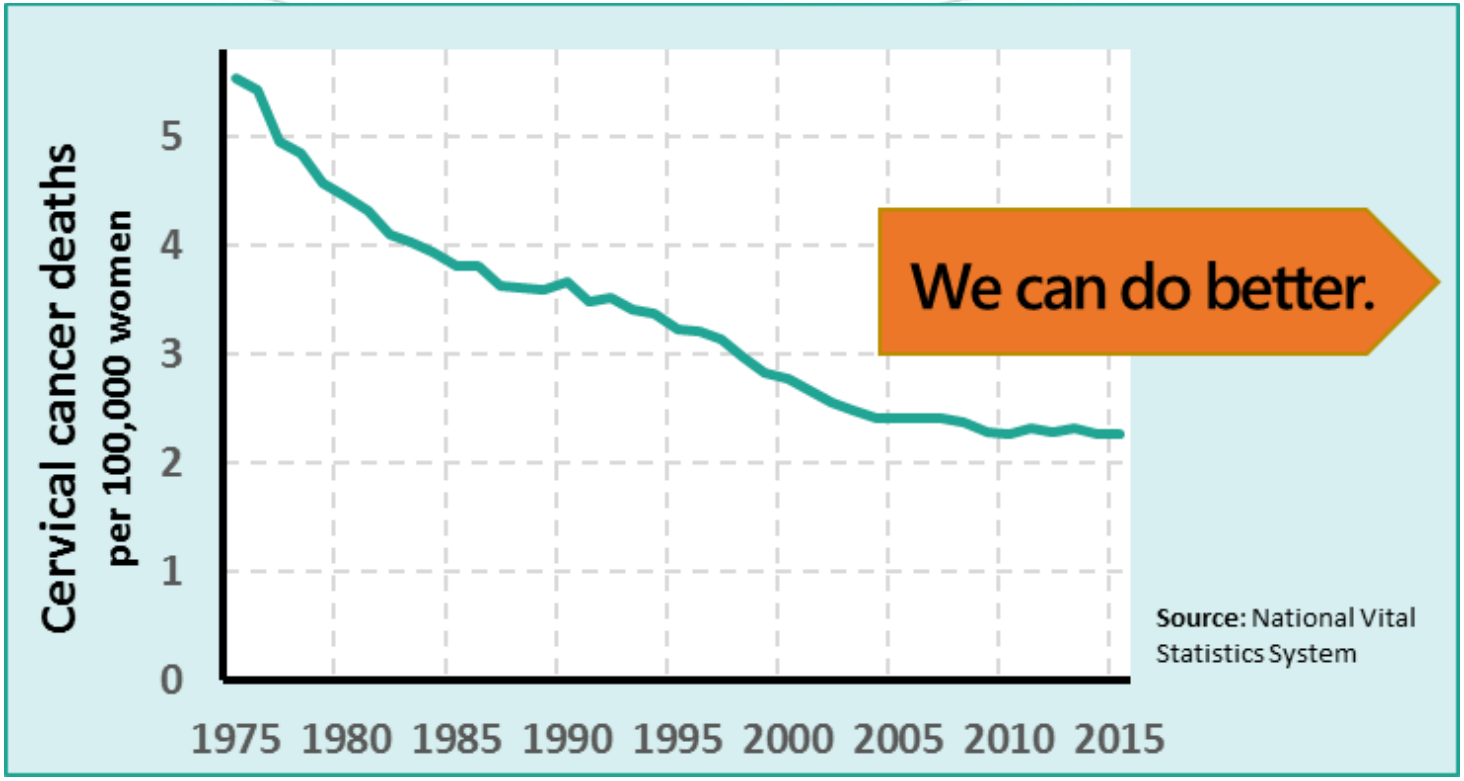
All cancer sites other than cervix were limited to squamous cell carcinomas only meaning ICD-O-3 histology codes 8050 to 8084 and 8120 to 8131.

Source: Alabama Statewide Cancer Registry, 2018.

Cancer Diagnosis and Treatment

- Orophyrangeal cancers
  - Most diagnosed Stage II or greater
  - Treated with life altering surgery or chemo/radiation or both
  - Survival is high 85-90% for lower stage disease
- Cervical cancer
  - > 50% diagnosed late stage
  - Disparities in minorities
  - Treated with radical surgery or chemo/radiation
  - Most treatments result in loss of fertility
  - 1/3 will recur and die, including patients with Stage I

Cervical Cancer

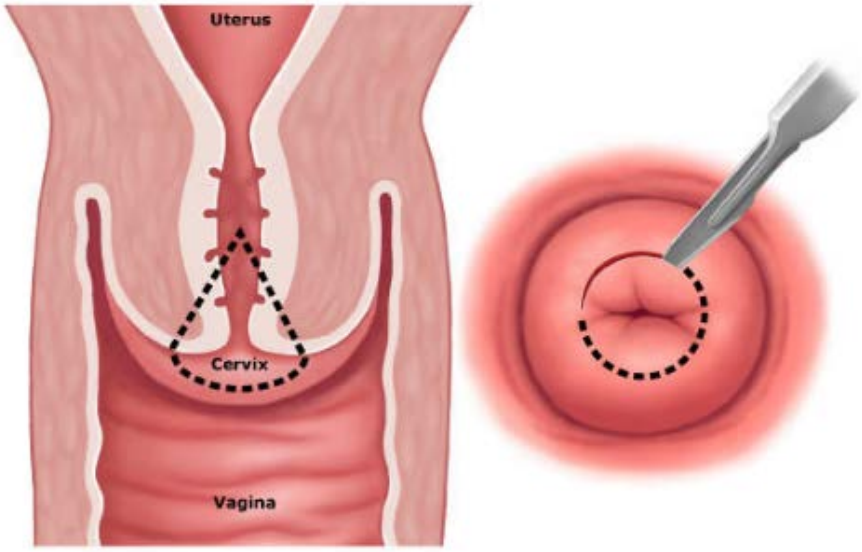


- Half of cervical cancers occur in women <50 years
  - A quarter of cervical cancers occur in women 25-39 years

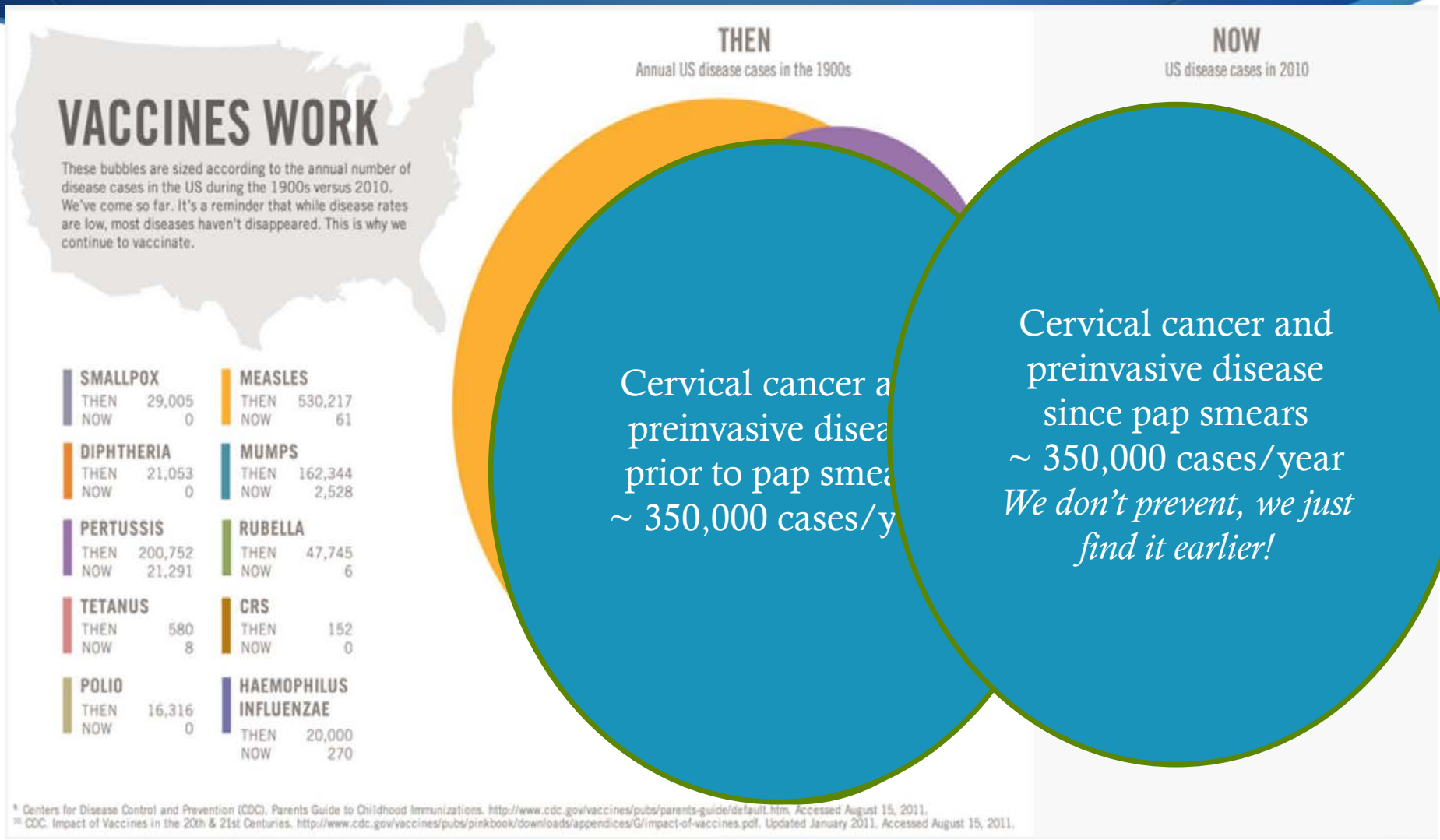
https://nccd.cdc.gov/uscs/ and http://gco.iarc.fr/today/home

Cervical pre-cancer in U.S. females

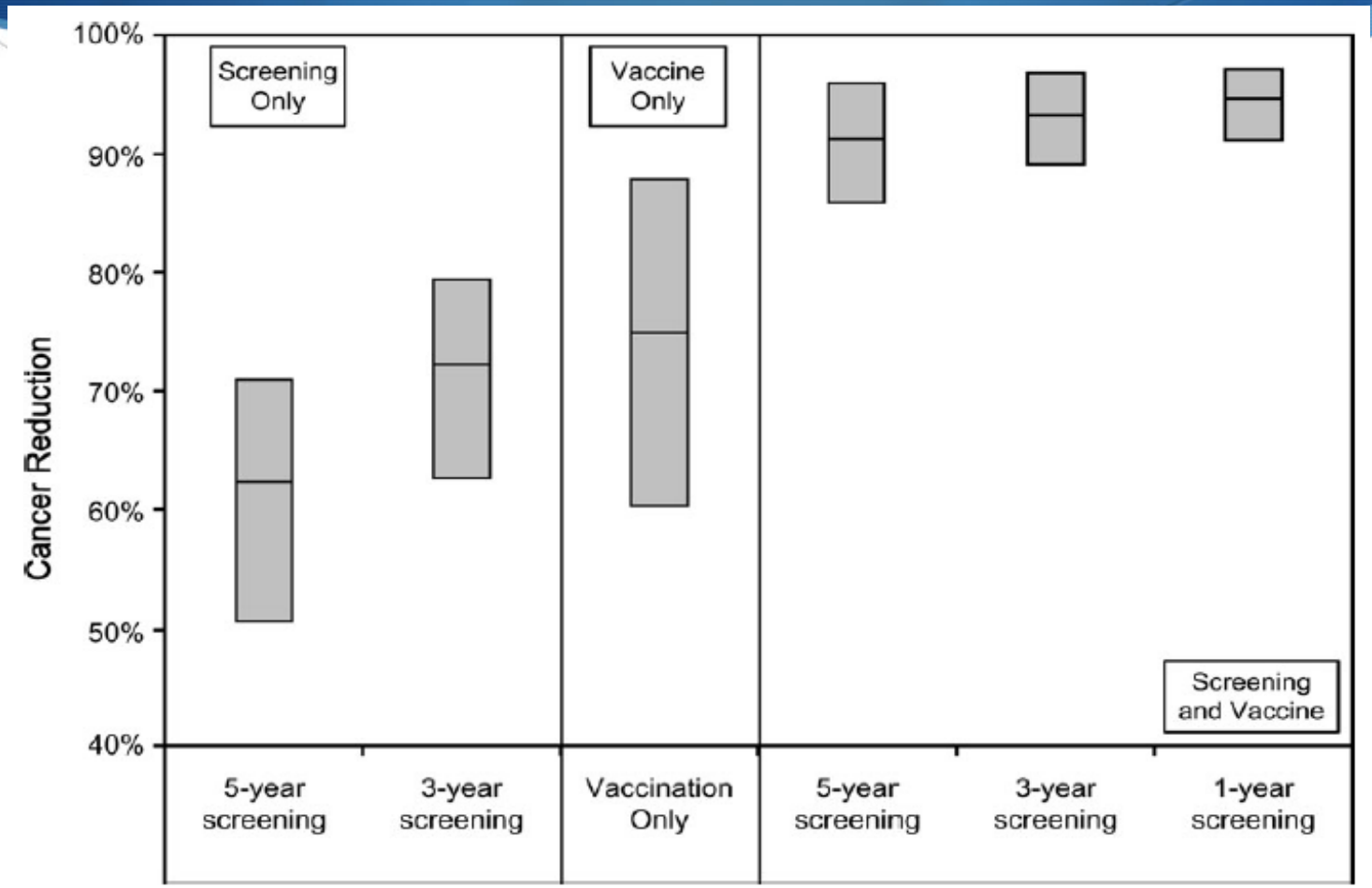
- 1.4 million new cases of low grade cervical dysplasia
- 330,000 new cases of high grade cervical dysplasia



Koshiol S*ex Transm Dis*. 2004.
Schiffman *Arch Pathol Lab Med*. 2003.


VACCINES WORK
These bubbles are sized according to the annual number of disease cases in the US during the 1900s versus 2010. We've come so far. It's a reminder that while disease rates are low, most diseases haven't disappeared. This is why we continue to vaccinate.
SMALLPOX
THEN 29,005
NOW 0
MEASLES
THEN 530,217
NOW 61
DIPHTHERIA
THEN 21,053
NOW 0
MUMPS
THEN 162,344
NOW 2,528
PERTUSSIS
THEN 200,752
NOW 21,291
RUBELLA
THEN 47,745
NOW 6
TETANUS
THEN 580
NOW 8
CRS
THEN 152
NOW 0
POLIO
THEN 16,316
NOW 0
HAEMOPHILUS INFLUENZAE
THEN 20,000
NOW 270
THEN
Annual US disease cases in the 1900s
NOW
US disease cases in 2010
Cervical cancer a
preinvasive disea
prior to pap smea
~ 350,000 cases/y
Cervical cancer and
preinvasive disease
since pap smears
~ 350,000 cases/year
We don't prevent, we just
find it earlier!
Centers for Disease Control and Prevention (CDC). Parents Guide to Childhood Immunizations. http://www.cdc.gov/vaccines/pubs/parents-guide/default.htm. Accessed August 15, 2011.
CDC. Impact of Vaccines in the 20th & 21st Centuries. http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/G/impact-of-vaccines.pdf. Updated January 2011. Accessed August 15, 2011.

Screening interval and cancer risk reduction



Goldhaber-Fiebert JD et al. JNCI 2008. 100(5): 308.

26 million: number of girls under 13 years of age in the United States

168,400: number who will develop cervical cancer if none are vaccinated

54,100: number who will die from cervical cancer if none are vaccinated

Adapted from Chesson HW et al, Vaccine 2011;29:8443-50

HPV YOU ARE THE KEY TO CANCER PREVENTION

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

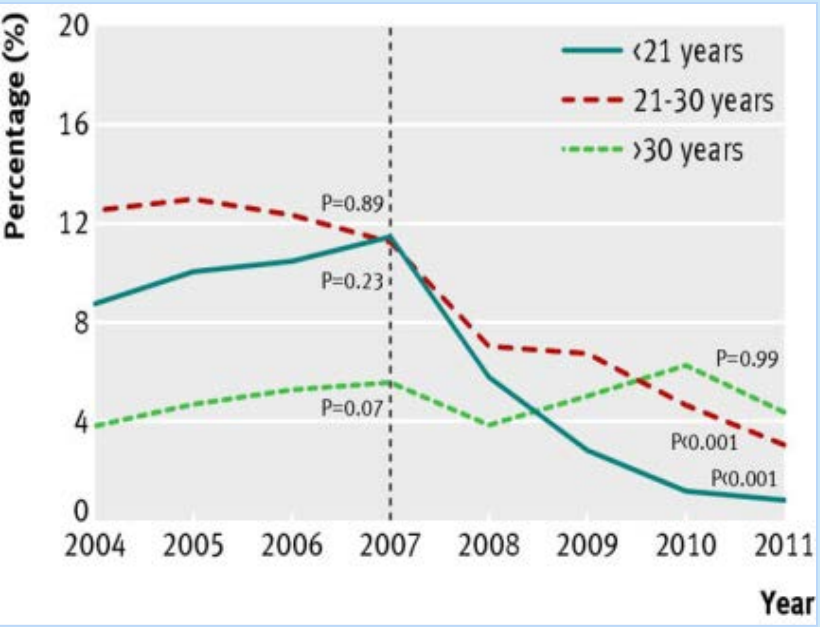
Chesson H et al. Vaccine 2012;30: 6016-19

RRP: recurrent respiratory papillomatosis

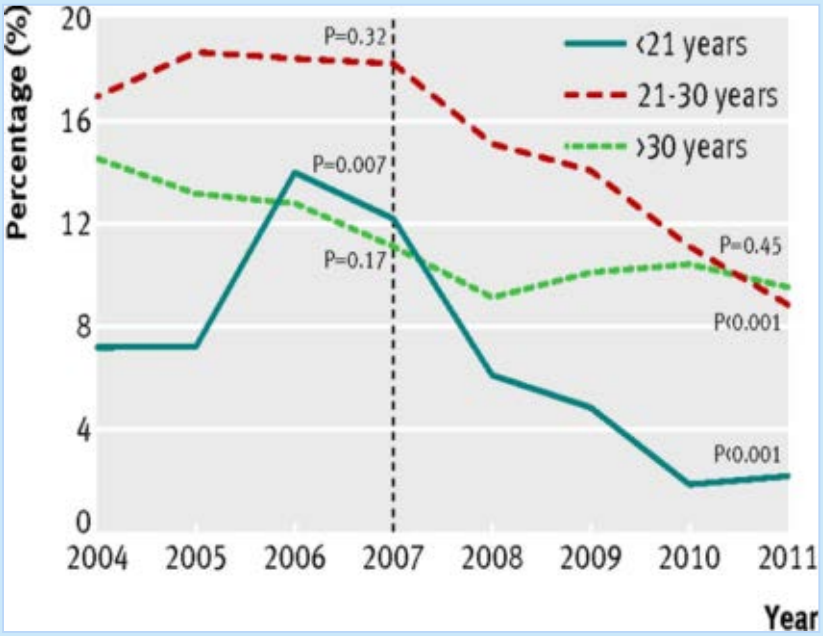
It works!: Impact of HPV vaccination

Proportion of Australian born females and males diagnosed as having genital warts at first visit, by age group, 2004-11

Females



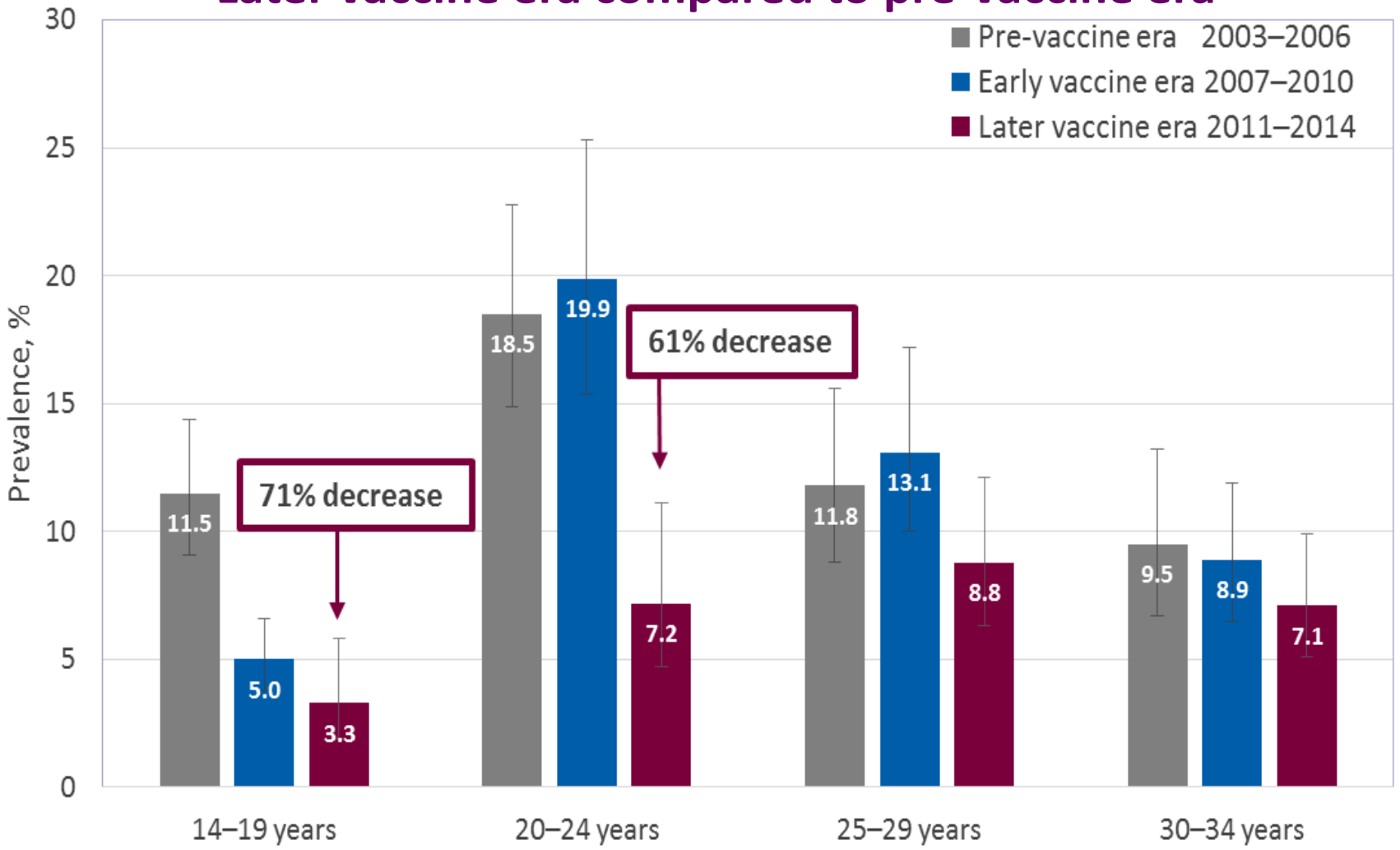
Males



Ali, et al., Genital warts in young Australians five years into national human papillomavirus vaccination programme: national surveillance data. British Med J 2013;346:f2032

Vaccine type prevalence, NHANES

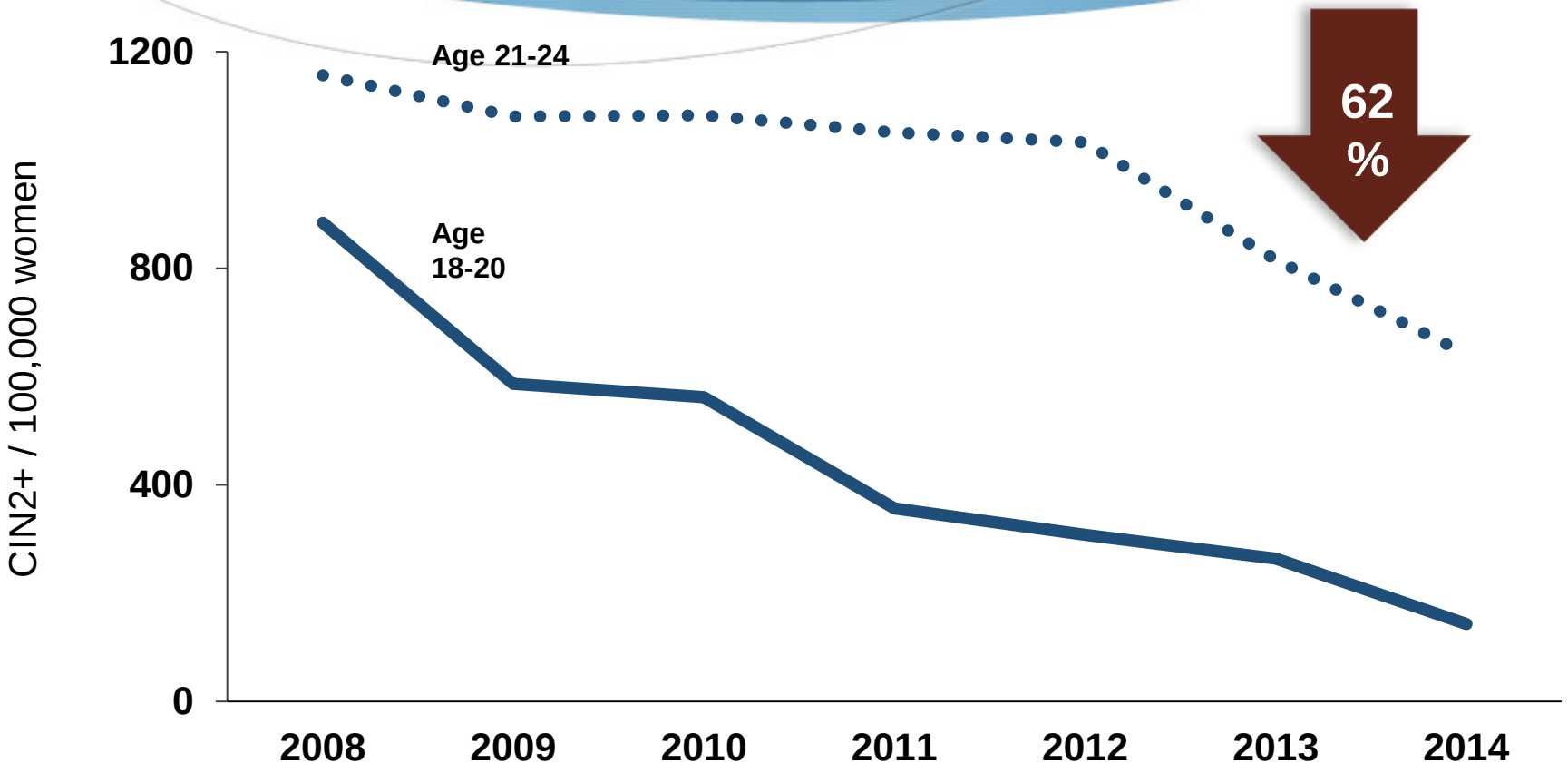
Later vaccine era compared to pre-vaccine era



Oliver et al. JID 2017

HPV vaccination impact

Sharp decline in cervical pre-cancers in screened young women



Gargano et al., 2017

Vaccination protects against Cancer!

Malignancy	HPV Vaccinated Women		Non-HPV vaccinated Women	
	Person years	n	Person years	n
Cervical cancer	65,656	0	124,245	8
Vulvar cancer	65,656	0	124,245	1
Oropharyngeal cancer	65,656	0	124,245	1
Other HPV cancers	65,656	0	124,245	0
All HPV cancers	65,656	0	124,245	10
Breast cancer	65,656	2	124,245	10
Thyroid cancer	65,656	1	124,245	9
Melanoma	65,656	3	124,245	13
Non-melanoma skin cancers	65,656	2	124,245	3
Total	65,656	8	124,245	45

Luostarinen et al. Int J cancer: 00,00-00 (2018)

Questions?

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Provider Education Work Group

Health Care Providers

- American Academy of Pediatrics Champion Toolkit https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Pages/HPV-Champion-Toolkit.aspx
- American Academy of Pediatrics EQIPP http://eqipp.aap.org/
- Academic Pediatric Association http://www.academicpeds.org/nipa/index.cfm
- American College of Obstetricians and Gynecologists http://immunizationforwomen.org/downloads/Toolkits/HPV/HPV-toolkit-2014.pdf
- American Academy of Family Physicians http://www.aafp.org/patient-care/immunizations/disease-population/hpv.html
- Immunization Action Program

Increasing HPV vaccine rates in your practice

- Educate entire staff on the importance
- Figure out how to get paid
- Advertise – flyers and posters
- Suggestions once you are doing these three:
  - Identify patients: take a good history
  - Standing orders
  - Reminder/recall systems
  - Utilizing all available visits

Coding for the HPV Vaccine

Code	Method	Route of Admin	Type of Service	Reporting Rules
90471	Injection	Any	Primary	Report only one primary vaccine administration per encounter.
+90472	Injection	Any	Additional	Report for secondary or subsequent vaccine administration. Report only with code 90460, 90471, or 90473.
90460	Any route	Any	Primary	Report only one primary vaccine administration per day. Physician or other Qualified Health Professional also provides counseling.*Patient is 18 years of age or younger*.
90461	Any route	Any	Additional	Report for secondary or subsequent vaccine administration. Physician or other Qualified Professional also provides counseling.*Patient is 18 years of age or younger*.

Identify Patients: Take a good history

- Make sure HPV vaccination status is on your intake/history form as well as for each annual exam
- Find a place to document this in the chart/standard H&P or annual note
- Make sure to ask about series completion not just initiation
  - HPV vaccine series can be completed AT ANY TIME from last dose, you don't need to start over
  - HPV vaccine series can be completed WITH ANY VACCINE, you don't need to do HPV-9 x 3
  - Completion is always recommended for maximum protection
  - Vaccinate regardless of HPV status

Standing Orders

- Data suggests use of standing orders for all eligible patients increases vaccine uptake
- Standing orders for eligible patients can increase HPV vaccine rate up to 24 percentile points
- Standing order example in HPV vaccine toolkit
- Acceptability of standing orders for women presenting to ob/gyn office is high:
  - 79% for adult patients
  - Higher for completion (88%) compared to initiation (70%)

Reminder/Recall systems

- Utilization of current reminder/recall systems for screening and follow-up can be used for completion of HPV vaccine series
- Use of technology based reminders improve HPV vaccine series completion
- If not available, consider low-tech options
  - Have the patient fill out 2 postcards to be sent
  - Set up next two appointments at check-out
  - Have patient set reminders in their calendar
  - If all else fails vaccinate the following year

Pharmacy partnerships

- In Alabama, pharmacists can vaccinate any age, any vaccine (including HPV) with a prescription
- Offer for your patients to get other two HPV doses at a local pharmacy rather than coming back to the office
  - May increase completion rates
  - If you provide the order, you can confirm that these doses were delivered

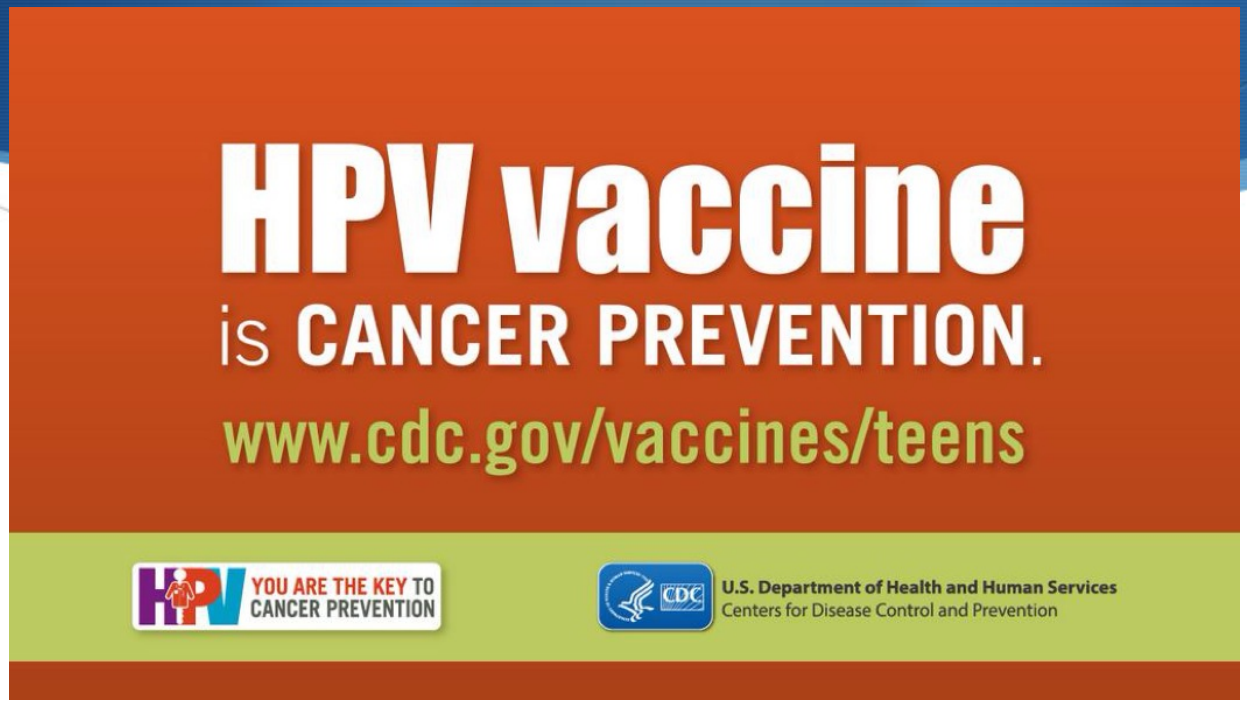
Utilizing all available visits

- Colposcopy or post appt – 40-45% reduction in recurrence in vaccinated population, Huh et al 2010
- Postpartum
- Birth control counseling
- STD treatment visit
- Patient's worried about cancer risk
- Patient's with chronic immunocompromise

Championing the HPV Vaccine

- Obvious
  - Giving presentations to groups of doctors, patients, parents
  - Sharing medically factual information on social media
- Maybe not so obvious
  - Policy change to encourage vaccination
  - Coalition building through cancer center networks and others

Health Care Providers



CDC You are the Key to Cancer Prevention

http://www.cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html

- **The Big "P" Policy**
  - National recommendations
  - Federal funding
  - Mandates
  - Legislation
  - President's Panel
  - Grant funding

- **The small "p" policy**
  - Insurance incentives
  - HEDIS measures
  - Quality assurance
  - Standing orders
  - Reminder/recall systems
  - Partnering with stakeholders
  - Immunization registries

Conclusions

- The burden of HPV-related disease continues to increase despite the vaccine
- We can all do more to partner with pediatricians to improve vaccination rates
- Championing the HPV vaccine
  - Start in your own practice
  - Use social media, traditional media, and small media to increase messaging
  - Build partnerships and coalitions to draw attention
  - Evaluate and advocate for policy change at all levels that will increase HPV vaccination

Questions?