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
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.
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

- Vagina: 600
- Penis: 800
- Vulva: 2,700
- Anus: 1,900
- Cervix: 10,800
- Oropharynx: 10,700

Epidemiology of HPV-related cancers.
<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Percentage probably caused by any HPV type</th>
<th>Number probably caused by any HPV type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Cervix</td>
<td>91%</td>
<td>10,600</td>
</tr>
<tr>
<td>Vagina</td>
<td>75%</td>
<td>600</td>
</tr>
<tr>
<td>Vulva</td>
<td>69%</td>
<td>2,500</td>
</tr>
<tr>
<td>Penis</td>
<td>63%</td>
<td>0</td>
</tr>
<tr>
<td>Anus</td>
<td>91%</td>
<td>3,200</td>
</tr>
<tr>
<td>Rectum</td>
<td>91%</td>
<td>500</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>70%</td>
<td>2,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19,400</td>
<td>12,100</td>
</tr>
</tbody>
</table>

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

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

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.

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)
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

<table>
<thead>
<tr>
<th>Primary Site Group</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>Count</td>
<td>Rate</td>
<td>Count</td>
</tr>
<tr>
<td>Cervix</td>
<td>9.2</td>
<td>942</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Vagina</td>
<td>0.6</td>
<td>75</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Vulva</td>
<td>2.0</td>
<td>243</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>HPV-associated Oropharynx*</td>
<td>2.1</td>
<td>254</td>
<td>9.2</td>
<td>1,038</td>
</tr>
<tr>
<td>Anus</td>
<td>1.7</td>
<td>216</td>
<td>1.1</td>
<td>115</td>
</tr>
<tr>
<td>Rectum and Rectosigmoid Junction</td>
<td>0.4</td>
<td>52</td>
<td>0.2</td>
<td>24</td>
</tr>
<tr>
<td>Penis</td>
<td>N/A</td>
<td>N/A</td>
<td>0.9</td>
<td>89</td>
</tr>
</tbody>
</table>

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.

Cancer Diagnosis and Treatment

- Oropharyngeal 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

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

Deaths from cervical cancer, ~175,000
Cervical cancer and preinvasive disease prior to pap smears, ~350,000 cases/year

We don't prevent, we just find it earlier!

Cervical cancer and preinvasive disease since pap smears, ~350,000 cases/year

We don’t prevent, we just find it earlier!
Screening interval and cancer risk reduction

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
# Economic Impact Related to HPV-Associated Disease, 2010

<table>
<thead>
<tr>
<th>Event</th>
<th>Cost ($ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical cancer screening*</td>
<td>6.6</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>0.4</td>
</tr>
<tr>
<td>Other anogenital cancers</td>
<td>0.2</td>
</tr>
<tr>
<td>Oropharyngeal cancer</td>
<td>0.3</td>
</tr>
<tr>
<td>Anogenital warts</td>
<td>0.3</td>
</tr>
<tr>
<td>RRP**</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8.0</strong></td>
</tr>
</tbody>
</table>

*Cervical cancer screening costs: ~ 80% routine screening, ~20% follow-up
**RRP costs: ~ 70% juvenile-onset, ~ 30% adult-onset

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

HPV vaccination impact
Sharp decline in cervical pre-cancers in screened young women

Gargano et al., 2017

Gargano et al., 2017
## Vaccination protects against Cancer!

<table>
<thead>
<tr>
<th>Malignancy</th>
<th>HPV Vaccinated Women</th>
<th>Non-HPV vaccinated Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Person years</td>
<td>n</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>65,656</td>
<td>0</td>
</tr>
<tr>
<td>Vulvar cancer</td>
<td>65,656</td>
<td>0</td>
</tr>
<tr>
<td>Oropharyngeal cancer</td>
<td>65,656</td>
<td>0</td>
</tr>
<tr>
<td>Other HPV cancers</td>
<td>65,656</td>
<td>0</td>
</tr>
<tr>
<td>All HPV cancers</td>
<td>65,656</td>
<td>0</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>65,656</td>
<td>2</td>
</tr>
<tr>
<td>Thyroid cancer</td>
<td>65,656</td>
<td>1</td>
</tr>
<tr>
<td>Melanoma</td>
<td>65,656</td>
<td>3</td>
</tr>
<tr>
<td>Non-melanoma skin cancers</td>
<td>65,656</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>65,656</td>
<td>8</td>
</tr>
</tbody>
</table>

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

jypierce@health.southalabama.edu
@JYPierce
Provider Education Work Group
Health Care Providers

- American Academy of Pediatrics Champion Toolkit

- American Academy of Pediatrics EQIPP

- Academic Pediatric Association

- American College of Obstetricians and Gynecologists

- American Academy of Family Physicians
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
<table>
<thead>
<tr>
<th>Code</th>
<th>Method</th>
<th>Route of Admin</th>
<th>Type of Service</th>
<th>Reporting Rules</th>
<th>Reporting Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>90471</td>
<td>Injection</td>
<td>Any</td>
<td>Primary</td>
<td>Report only one primary vaccine administration per encounter.</td>
<td></td>
</tr>
<tr>
<td>+90472</td>
<td>Injection</td>
<td>Any</td>
<td>Additional</td>
<td>Report for secondary or subsequent vaccine administration. Report only with code 90460, 90471, or 90473.</td>
<td></td>
</tr>
<tr>
<td>90460</td>
<td>Any route</td>
<td>Any</td>
<td>Primary</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>90461</td>
<td>Any route</td>
<td>Any</td>
<td>Additional</td>
<td>Report for secondary or subsequent vaccine administration. Physician or other Qualified Professional also provides counseling. Patient is 18 years of age or younger.</td>
<td></td>
</tr>
</tbody>
</table>
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?

jypierce@health.southalab.com
@JYoungPierce