Achieving High Adolescent
HPV Vaccination Coverage

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Pediatric Immunization Skills Building Conference

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DISCLOSURES

• I, Anna-Lisa Farmar, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during my presentations.
• I have no relationships to disclose.
• I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration, but in accordance with ACIP recommendations.
OVERVIEW

- Background
- Strategies
- Next Steps
BACKGROUND – HPV

What is HPV?

- Common family of viruses affecting epithelial tissue of males and females
- More than 150 types
- 40 types infect mucosal epithelial cells (genitals, mouth, throat)
- Most infections are asymptomatic or spontaneously resolve

CDC: HPV Vaccine Information for Clinicians
Persistent infections cause:

- **Women:** cervical, vaginal, vulvar cancers
- **Men:** penile cancer
- **Both genders:** oropharyngeal, anal cancers

Types **16 & 18:** cause 80% of HPV-related cancers

Types **6 & 11:** genital warts & papillomas
Whom does HPV affect?

- The most common STI in the US
- ~79 million people with genital HPV
- 14 million new cases/year
- 33,000 cancer cases per year
- 4,000 cervical cancer deaths
Three HPV vaccines licensed

- Bivalent
- Quadrivalent
- 9-valent
  - Only type now available in US
  - 7 types that cause cancer
  - Of the 32,500 cancers/year, 30,000 are caused by strains that could have been prevented by vaccine
Advisory Committee on Immunization Practices (ACIP) Recommendations

- Recommended HPV vaccination for females since 2006, for males since 2011
- 2016 - changed to 2-dose schedule if started prior to age 15
AAP Policy Statement (2011): “The AAP, the CDC, and the AAFP all recommend that girls receive HPV vaccine around age 11 or 12. That’s because this is the age at which the vaccine produces the best immune response in the body, and because it’s important to protect girls well before the onset of sexual activity...This is a life-saving vaccine that can protect girls from cervical cancer.”
Healthy People 2020 Goal:

- Increase the percentage of female and male adolescents aged 13 through 15 years who receive 2 or 3 doses of HPV vaccine as recommended
- Goal of 80% by 2020
Despite the ACIP and AAP recommendations for routine adolescent HPV vaccination as well as a Healthy People 2020 goal of 80% vaccine coverage in adolescents, HPV vaccination rates have lagged behind those of meningococcal conjugate vaccine (MCV) and tetanus, diphtheria and acellular pertussis vaccine (Tdap).
BACKGROUND – Vaccine Coverage

Coverage Rates (2017, %):

<table>
<thead>
<tr>
<th></th>
<th>HPV up to date - females</th>
<th>HPV up to date - males</th>
<th>Tdap</th>
<th>MenACWY</th>
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<tr>
<td>United States</td>
<td>53.1</td>
<td>44.3</td>
<td>88.7</td>
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<tr>
<td>Massachusetts</td>
<td>67.4</td>
<td>63.7</td>
<td>96.2</td>
<td>94.0</td>
</tr>
</tbody>
</table>

HPV:
- By 2017, 49% of adolescents were up to date
- 66% of adolescents ages 13-17 received the first dose
- On average, the percentage of adolescents who started the HPV vaccine series increased by 5 percent each year over the past 5 years (2014-2017)

www.healthypeople.gov
State-level Data
Female adolescents receiving 2 or 3 doses of HPV vaccine by age 13–15 years (percent)

2016

States with no available data are shown in white

Data Source: National Immunization Survey-Teen (NIS-Teen): Centers for Disease Control and Prevention, National Center for Immunization National Center for Health Statistics (CDC/NCIRD and CDC/NCHS)
Lower coverage among:

- Males (58.6% vs. 72.7%)
- Non-Hispanic whites
- Adolescents at or above the federal poverty level
- Rural adolescents
BACKGROUND – Other Barriers

- Parental factors
- Provider level
- Systems level
BACKGROUND – Barriers

Parents may...

• Underestimate burden of disease
• Have concerns about vaccine safety (beware the Google search!)
• Not think kids are or will become sexually active soon
• Think receiving the vaccine will cause kids to become sexually active
• Not understand reasoning for vaccinating boys
If there were a vaccine against cancer, wouldn’t you get it for your kids?

HPV vaccine is cancer prevention. Talk to the doctor about vaccinating your 11–12 year old sons and daughters against HPV.

www.cdc.gov/vaccines/teens

YOU WOULD DO ANYTHING TO PROTECT YOUR CHILD FROM CANCER.
BACKGROUND – Barriers

Provider level

- Lack of a strong recommendation for the vaccine
- Financial concerns
- Missed opportunities for vaccination
BACKGROUND – Barriers

Systems level

- Missed opportunities for vaccination
- Concerns about reimbursement, insurance coverage
- School systems’ lack of mandate for HPV
BACKGROUND – Barriers

Our population:

- Transportation
- Access to care
- Time off work
- Insurance less of an issue, most on public insurance, VFC
Talking to a doctor about HPV is a great way to learn how to protect yourself against cervical cancer and to meet a doctor.
The vaccination program at Denver Health addresses the provider factors of giving a strong recommendation for all vaccines, including HPV, and the systems-level factor of minimizing missed opportunities.
OBJECTIVES

1. Describe tactics used to achieve high HPV vaccination coverage in a large urban safety-net health care system.

2. Examine factors affecting HPV vaccine uptake.
METHODS - SETTING

- Urban safety-net integrated health system
- Serving:
  - > 50% of the uninsured and Medicaid population in Denver
  - 40% of the city’s children
  - 43% of the Denver Hispanic community
  - 33% of the Denver African-American community
  - 17,000 adolescents annually
METHODS - SETTING

Pediatric/Adolescent Population (0-18y):
- 79% Medicaid
- 5% CHP+
- 5% Uninsured
- 9% Private insurance

Adolescent vaccine delivery sites:
- 8 FQHCs
- 17 School-based health centers (SBHCs)
- Denver Public Health Immunization Clinic
METHODS – DATA SOURCES

- Vaccine registry and utilization statistics were used to determine vaccination coverage rates in adolescents ages 13–17 years from 2004-2014 for Tdap, MCV and HPV (1 & 3 doses).
- Data were examined separately for males and females.
- Rates were compared with national data reported by the Centers for Disease Control and Prevention.
Vaccine Delivery Methods:
Involves several steps that result in a “bundling” of the three adolescent vaccinations (Tdap, MCV and HPV)

- Standing order for immunizations
- Medical assistants check the vaccine registry for recommended vaccines at every visit (sick or well)
- Vaccines are given early in the visit
- Providers present Tdap, MCV and HPV as standard immunizations recommended for the adolescents' health
METHODS

Routine use of vaccine registries:

- **Vax Trax**
  - Internally developed immunization registry
  - Multiple functions: recommend, vaccine inventory, historic information storage
  - Contraindications & refusals

- **CIIS**: state registry
  - MAs use the recommend functionality to create list of specific vaccines for which the patient is due
Standing Order for Vaccinations:

- Recommend list becomes standing order
- Signature required only for vaccines given outside standard of care
- Vaccines may be given before or after provider sees patient

![Immunization History](image)
METHODS

Presenting Vaccines in Standard Bundle:

- Providers encouraged to present all 3 adolescent vaccines together, rather than as required vs. optional
- Weekly educational meetings
  - QI data
  - Addressing vaccine refusal
- Provider- and clinic-level report cards
# HPV Rates By Medical Home and PCP

**Medical Home:** DH PAV G PEDS MEDICAL HOME  
**Age Group:** 11-18 years

<table>
<thead>
<tr>
<th>PCP</th>
<th>Total</th>
<th>Never Had Vaccine</th>
<th>%</th>
<th>Due For 2nd</th>
<th>%</th>
<th>Due For 3rd</th>
<th>%</th>
<th>Complete</th>
<th>%</th>
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<td>16.67%</td>
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<td>15.60%</td>
<td>4</td>
<td>1.42%</td>
<td>207</td>
<td>73.40%</td>
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<td>2</td>
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<td>0</td>
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<td>144</td>
<td>64.00%</td>
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<td>PROVIDER NOT IN SYSTEM</td>
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<td>7</td>
<td>46.67%</td>
<td>3</td>
<td>20.00%</td>
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<td>19.81%</td>
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<td>222</td>
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<td>47</td>
<td>13.51%</td>
<td>80</td>
<td>22.99%</td>
<td>8</td>
<td>2.30%</td>
<td>213</td>
<td>61.21%</td>
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METHODS

Other Interventions:
- SBHC vaccination drives
- QI measure focused on improving preventive visit rates
- Offering vaccines at every visit even if previously declined
**METHODS – SUMMARY**

- Routine use of a robust immunization registry for multiple functions, including recording vaccine history and recommending needed vaccines at every visit
- Medical Assistants check vaccine registry for recommended vaccines at every visit
- Standing order for routine immunizations
- Vaccines are given early in the visit when possible, to allow time to observe for immediate side effects such as syncope
- Education for providers to present Tdap, MCV, and HPV as a standard “bundle” of adolescent immunizations
- Provider-level “report cards” with adolescent vaccination coverage rates
- Vaccination drives at School Based Health Clinics
RESULTS

▪ Rates for Tdap, MCV and HPV rose steadily from 2004 to 2014.
▪ In 2014 (n=11,463), HPV coverage of ≥1 dose in females was 89.8% and in males was 89.3%, compared to national rates of 57.3% and 34.6%, respectively.
RESULTS

- HPV completion rates (3 doses) were 66.8% for females and 59.9% for males, versus 39.7% and 21.6% nationally.
- For both genders, Tdap coverage was 95.5% (87.6% nationally) and MCV coverage was 93.6% (74.0% nationally).
Chart 1: Denver Health Immunization Rates For Teens 13-17 (2004-2013)

- Tdap vaccine
- MCV4 vaccine
- HPV vaccine recommended for females
- HPV vaccine recommended for males

80% = Healthy People 2020 goal

- HPV1-G
- HPV1-B
National, State, and Denver Health Adolescent Immunization Rates (2013)
## RESULTS

### Adjusted Odds for receiving ≥3 Doses HPV

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Odds Ratio</th>
<th>95% Wald Confidence Interval</th>
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<tbody>
<tr>
<td>Age (Linear)</td>
<td>1.17</td>
<td>1.13 to 1.20</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>1.74</td>
<td>1.61 to 1.89</td>
</tr>
<tr>
<td>Race</td>
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<td></td>
</tr>
<tr>
<td>White</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>1.13</td>
<td>0.97 to 1.33</td>
</tr>
<tr>
<td>Latino</td>
<td>1.77</td>
<td>1.54 to 2.03</td>
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<td>Other</td>
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<tr>
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<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Spanish</td>
<td>1.26</td>
<td>1.15 to 1.38</td>
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<td>Other</td>
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<td>1.68 to 2.78</td>
</tr>
<tr>
<td>FPL</td>
<td></td>
<td></td>
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<tr>
<td>&gt; 200%</td>
<td>1.00</td>
<td>-</td>
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<tr>
<td>&lt;=200%</td>
<td>1.43</td>
<td>1.10 to 1.87</td>
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<td>0.67</td>
<td>0.50 to 0.90</td>
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</table>
RESULTS - UPDATE

Our most recent data (through January 2018):

- **HPV 1 dose:**
  - Female: 82.4% (↓) (US 65%)
  - Male: 83.3% (↓) (US 56%)

- **HPV ≥2 doses:**
  - Female: 63.5% (↓) (US 49.5%)
  - Male: 62.5% (↑) (US 37.5%)

- **Adult rates:**
  - Adult coverage rates (2018 – 19-26 year olds) 51.4%
CONCLUSIONS

Through low-cost, system-wide standard procedures, Denver Health achieved adolescent vaccination rates well above national coverage rates and surpassed the Healthy People 2020 goal of 80%, especially for HPV. Avoiding missed opportunities for vaccination and normalizing the HPV vaccine were key procedures that likely contributed to high coverage rates.
NEXT STEPS - Communication

Staff education (CDC info sheets)

- To encourage buy-in, enable all staff to give a strong recommendation
NEXT STEPS - Communication

Communication with Families:
- **CDC**: #HowIRecommend videos [https://youtu.be/zyrrRQgtlrs](https://youtu.be/zyrrRQgtlrs)
  - Grouped by question (e.g., “what do you say to parents who decline or refuse the HPV vaccine?”)
- **CE course for clinicians and staff**
- **AAP**: CME courses
NEXT STEPS - Communication

Parent/patient resources
- CDC fact sheets/website
- CHOP vaccine site
- VIS sheets
State & local level:

- Forming coalitions
- State Coalitions and Roundtable Guide
- Immunization advocates, cancer prevention organizations, dental organizations
NEXT STEPS – NVAC Recommendations

- Develop practical tools to increase clinicians’ skills and confidence in promoting HPV vaccination as a routine adolescent vaccine, emphasizing cancer prevention
- Develop evidence-based, culturally competent communication strategies for parents/guardians and adolescents
- Utilize multiple methods for communication
- Promote science-based media coverage
- Vaccination in venues outside the traditional primary care office
- Develop strategies to overcome barriers regarding reimbursement
- Strengthen immunization information systems
- Encourage development of state-centralized reminder-recall system
- Encourage review of available data that could lead to a simplified HPV vaccination schedule
ACKNOWLEDGMENTS

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REFERENCES


REFERENCES


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