HPV Immunization in School-Based Health Centers: Findings from Two Community-Partnered Research Studies

Megha Shah, MD, MPH, MS
UCLA NRSA Primary Care and HSR Program
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Disclosure

- I have no relevant financial relationships to disclose
- A few of the slides in my presentation have been borrowed from Dr. Peter Szilagyi
Agenda

- Background
- Projects: Overview, key findings, implications
- Acknowledgements
- Questions
Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the US.

- ~ 80% of adults will be exposed
- 79 million people currently infected
- 14 million new infection/year → 38,000 infections/day

Highest risk for contracting HPV is within the first few months after initiation of sexual activity: teens are especially at risk!

- Peak incidence occurs among 15 – 24 year olds
HPV Epidemiology

- HPV is spread by skin-to-skin contact
  - Infection can occur with *any* type of intimate contact!
- Condoms do not completely stop transmission
HPV-Associated Diseases

Numbers of U.S. Cancers and Genital Warts Attributed to HPV Infections

- Penis: 400
- Vagina: 500
- Juvenile-Onset RRP: 820
- Vulva: 1,600
- Anus: 2,900
- Oropharynx: 5,900
- Cervix: 11,500
- Genital Warts: 160,000 (Female), 180,000 (Male)

Includes Males and Females
Burden of HPV Infection

- Pre-cancerous lesions in women can lead to:
  - Prolonged medical follow-up
  - Cervical conization and loop electrosurgical excision procedure (LEEP) can cause adverse obstetrical outcomes

- Annual direct medical costs of preventing and treating HPV-associated disease estimated to be $8.0 billion (in 2010 USD) (Chesson et al., 2012)
HPV-Related Disease is a Health Disparity

HPV-Associated Cervical Cancer Rates by Race and Ethnicity, United States, 2008–2012

![Bar chart showing age-adjusted rates of HPV-associated cervical cancer by race and ethnicity.](chart.png)
HPV Vaccine

- HPV vaccines are safe and efficacious methods for preventing infection
  - Cervarix, Gardasil, Gardasil-9
- Routine immunization recommended for all boys and girls starting at age 11 years
  - Before Oct 2016: 3 dose schedule (0, 1-2, 6 months)
  - After Oct 2016: 2 dose schedule (0, 6 – 12 months) for teens ≤ 15 years
- Catch-up immunizations approved for older adolescents
The Problem . . .

2015 NIS Survey - Teen: Adolescent immunization coverage rates among 13 - 17 years olds

Healthy People 2020 Target
Barriers to HPV Immunization

Patient:
- Access
- Extra visit
- Knowledge
- Fear
- Costs

Provider:
- Weak recommendation
- No reminder/recall
- Missed opportunities
- No QA/practice rates
- Ordering vaccines

System:
- Vaccine shortages
- No tracking system
- Financing (despite VFC)
- Scattering of care
- Requirement of parental consent

Szilagyi et al, multiple papers including *Pediatrics*, 2008
Issues with Access to Care for Adolescents

- Inconsistent access to primary care contributes to low vaccine uptake among adolescents
  - Teens may access alternative settings, such as school-based health centers (SBHCs) or family planning clinics, for care
  - Teens may also present for care without their parent/guardian

In response, experts advocate:

1. Reducing missed opportunities (MOs) for HPV immunization
2. Using alternative sites such as SBHCs for HPV immunization
3. Allowing minors to consent for HPV vaccine
Missed Opportunities

- Missed opportunity (MO): a health encounter at which a patient is eligible for a vaccine but fails to receive it
  - *Simultaneous MO*: visit at which patient received at least one but not all eligible vaccines

- CDC MMWR Report (2013 and 2014): *if all simultaneous MOs for HPV immunization had been eliminated, 90% of girls (not 53%) would have received ≥ HPV vaccine dose!*
School-Based Health Centers

- Use of alternative settings, such as school-based health centers, may be one promising strategy to improve vaccination rates

Table 1. Major strengths of alternative settings for HPV vaccination.

<table>
<thead>
<tr>
<th>Promising alternative settings</th>
<th>Pharmacies</th>
<th>School health centers</th>
<th>Mass vaccination in schools</th>
<th>Other alternative settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBGYN clinics</td>
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<td>STI clinics</td>
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<tr>
<td>Family planning clinics</td>
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<tr>
<td>Emergency departments</td>
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<tr>
<td>Dental practices</td>
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</table>

- Reach
  - Adolescents, aged 11-12
  - Vulnerable populations

- Acceptability
  - Trust/preference among parents and patients
  - Trust/preference among providers
  - Convenience for families
  - Favorability by policy makers

- Feasibility
  - Trained providers
  - Within usual scope of practice
  - Storage capacity
  - Documentation
  - Billing/reimbursement
  - Supportive policy environment

Shah et al., 2014.
School-Based Health Centers

- These are clinics located on school campuses and are staffed by medical professionals.
- Offer a variety of health care services, including vaccines.
- Typically will see patients regardless of ability to pay.
- There are approximately 2000 SBHCs in the US – few in number but concentrated in medically underserved urban areas.
Some adolescent health advocates suggest that teens should be allowed to consent for immunizations.

Since 2012, CA adolescents ≥ 12 years can consent for HPV vaccine (as well as HBV) as STI prevention under state Minor Consent law.

No reports describe the implementation of this law in clinical settings where teens seek care.
My Projects

- Partnered with LAUSD’s Roosevelt High School Health Center and Hollywood High School Wellness Center

1. *Project 1:* HPV immunization of adolescents in the SBHC setting under CA Minor Consent Law

2. *Project 2:* Intervention to reduce MO for HPV immunization of adolescents in the SBHC setting
Clinical Setting

- Students primarily seen for:
  1. Confidential reproductive health care
  2. Other routine/episodic care (i.e., non-confidential care)

- Parental consent required to access non-confidential care

- Both clinics provide immunizations through the Vaccines for Children (VFC) program

- Immunization records are maintained using the California Immunization Registry (CAIR)
Project 1

HPV immunization of adolescents in the SBHC setting under CA Minor Consent Law
Project 1: Overview

- **Aim:** To explore and understand the process of providing HPV vaccine to teens visiting SBHCs under CA’s minor consent law.

- **Method:** Semi-structured interviews with all 8 SBHC providers at Hollywood and Roosevelt school clinics as well as 20 students visiting these clinics for confidential reproductive health care services.

- **Interviews explored issues within each step of the immunization process:**
  1. Accessing clinic
  2. Knowing HPV immunization status
  3. Discussing HPV immunization
  4. Deciding on HPV immunization
  5. Providing/obtaining HPV immunization
  6. Ensuring vaccine series completion
## Provider Demographics

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td><strong>Level of Training</strong></td>
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<td></td>
</tr>
<tr>
<td>MD or NP</td>
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<td>50</td>
</tr>
<tr>
<td>Medical Assistant</td>
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<td>50</td>
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<td><strong>Specialty (MDs or NPs Only)</strong></td>
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<tr>
<td>Family Medicine</td>
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<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Female</td>
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<td>100</td>
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<tr>
<td><strong>Median Total Years in Practice (Range)</strong></td>
<td>9</td>
<td>(1 – 18)</td>
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<tr>
<td><strong>Median Years in Practice in SBHC Setting (Range)</strong></td>
<td>1.75</td>
<td>(0.1 - 8)</td>
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## Project 1: Summary of Student Demographics

### Student Demographics

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<tbody>
<tr>
<td><strong>Age in Years</strong></td>
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<td></td>
</tr>
<tr>
<td>14 - 15</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>16 - 17</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>≥ 18</td>
<td>3</td>
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<td><strong>Race/Ethnicity</strong></td>
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<td>Hispanic/Latino</td>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Female</td>
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<td><strong>Primary Language Spoken at Home</strong></td>
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<td>English</td>
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<td>Both Spanish &amp; English</td>
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<td><strong>Maternal Education</strong></td>
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<td>Some High School or Less</td>
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</tr>
<tr>
<td>High School Graduate or Equivalent</td>
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<td>25</td>
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<tr>
<td>Some College or More</td>
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<td>25</td>
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</table>
School clinics are a preferred and trusted source of care, especially for confidential reproductive health care

“Well I like coming here because they’re really nice to me and I feel confident talking to them about personal things. If I go to a regular doctor, I don’t feel the same . . . Maybe because they try to understand you and a lot of girls my age come here and so it’s almost like . . . it’s easier for them to understand.” – Student

“Everyone seems so helpful and positive. There was no judgment. It was really good for me. They were really just trying to, I guess, give the best advice and trying to work around my situation and do what I feel comfortable with . . . It’s all confidential, too. Your parents don’t have to know that you’re here . . . I like that privacy.” – Student
Low awareness of school clinics’ existence and the full scope of services provided

“I had a girl come in to Hollywood Sunset Free Clinic, who comes here [to Hollywood High School]. I was like, “Why didn’t you go to the [school] clinic?” She was like, “What clinic?” She was a junior. There’s a lot kids in this high school, and I imagine at Roosevelt too, that don’t know about it . . . I think it’s crazy. This beautiful service is here and nobody is using it.” – Provider

“The Wellness Center, they mainly encourage birth control and mainly things you need when you’re sexually active. You don’t really know that they offer physicals and different types of shots. I feel like they don’t put it out there that much like they do about birth control.” -- Student
Providers stated that knowing students’ immunization status can be challenging

“The school clinic is completely dependent on the [state] registry when it comes to vaccination records so there’s always a question for the patients that aren’t in the registry, like there’s no way to know whether or not they’re up-to-date or if they need it.” – Provider

“If they’re coming in for an acute visit, they don’t have their [immunization] record with them. In order for us to really know if they need it or not, we need that [the immunization record] . . . Sometimes their record might have information CAIR doesn’t [or] vice-versa.” -- Provider
Majority of students believed they had not gotten HPV vaccine or were unsure of their status

Some recalled possibly having gotten at least one dose, and one was aware of her full immunization history

Several students believed they had not been immunized because they remembered their parent refusing the vaccine when it had been offered by their PCP

“I think they mentioned it [HPV vaccine] once when I had to take a physical, 2 years ago . . . My dad went with me that day. I think when they mentioned the thing about sex and diseases, he said he didn’t want me to get it” -- Student
Baseline knowledge about HPV and HPV vaccine among students is low

“They usually are not very much aware of what HPV is so we go into like a brief description of it and most of the time, they’re like, “Wow, I didn’t even know that existed,” or they really don’t have much knowledge of it because I don’t think that they go and emphasize it much in school.” – Provider

After learning more about HPV and HPV vaccine through the interviews, most students expressed wishing that knowledge about both was more widespread

“People don’t know about it [HPV vaccine]. If I would have known about it I would have gotten it . . . Maybe if you don’t know about it then obviously you’re not going to get it. That’s why it’s better if people talk about it because we’re all together . . . We should all know about this. The teacher’s know that in high school there’s a lot of sexually active kids so we should know about it. Just like they tell us [to] use condoms” -- Student
Both providers and students endorsed little hesitancy around discussing the HPV vaccine

“They’re very receptive to getting the information. Of course . . . Most people don’t like to get shots, but once it’s explained to them – the importance of it – they come in and they come in for their follow-up shots” – Provider

“I think they’d be very receptive, particularly the confidentiality students. I think they’d be very very receptive . . . Just the fact that they’re coming here for services and they’re managing their sex health. They want to be responsible, they want condoms, they want to be tested, they want other options . . . You know they’re seeking information and care” – Provider
Providers felt that teens can be capable decision makers, but parental input may still be important depending on the student

“I think the student plays a key role. They’re pretty educated. They’re pretty savvy. They Google health information all the time. So I think they’re very important. I think they’re the decision-makers” – Provider

“I’ve had some students say that they are not going to sign or accept the vaccine until their parent approves it . . . It’s just because they have that bond and they feel like they don’t want to break that trust with their parent.” -- Provider
Most students felt that HPV and HPV vaccine were relevant to their sexual health and thus would decide to obtain the vaccine, with or without parental consent/knowledge.

- “Yeah, I think it [the HPV vaccine] should be given like birth control because that’s our health and I didn’t even know about that. If I get it [HPV], I will be like “What the hell? I didn’t know about this.” – Student

- “It’s important to me that I give the right to take the vaccine because if a parent does find out, just let them know it was for the right reason - ‘I did it for my health. Would you want me to be healthy as well?’ – Things like that. I would explain to my mom why I did it. The confidentiality part, I wouldn’t mind if my mom did find out, but I would, I guess you can say, try to keep it from her.” – Student
Project 1: Key These for Providing/Obtaining HPV vaccine

- Most but not all providers were aware that teens can self-consent for HPV vaccine and that parental consent is not required
  
  "We know they can receive it [HPV vaccine] without parental consent. I know the doctor really talks to the student and sees if they feel comfortable going ahead and getting the vaccination without parent consent." – Provider

- Providers stated that accessibility of clinic makes it easy to provide HPV vaccine

- Important barrier identified by providers is that clinic can only provide vaccines to VFC-eligible teens and they cannot provide vaccine when clinic is closed (i.e., after hours, weekends, holidays)

- Students stated that school clinic was their preferred location to obtain HPV vaccine
Providers discussed that easy access to students may facilitate series completion, but students may still be lost to follow-up due to several important barriers:

- “[Barriers include] if their insurance status changes and they’re no longer eligible, if they are older and they no longer meet the age requirement of VFC . . . Even if they’re our students but they’re older, then we can’t give it to them. If they’re about to graduate too, then they may not come back” – Provider

Most students stated they would appreciate some sort of reminder to come back for needed vaccine doses (phone call/text/email)
Project 1: Implications

- HPV immunization of minors in SBHC setting under CA Minor Consent Law is highly acceptable to both providers and students.

- System-level barriers may limit overall feasibility or effectiveness of practice.

- Current efforts may be enhanced by widespread outreach and educational campaigns that also seek to engage parents.
Project 2

Intervention to reduce MO for HPV immunization of adolescents in the SBHC setting
Project 2: Aims

- **AIM 1**: Examine the impact of a SBHC intervention on reducing MOs for HPV vaccination among adolescents in the SBHC setting

- **AIM 2**: Identify the primary reasons for continued MOs for HPV vaccination among adolescents in the SBHC setting during the intervention period

- **AIM 3**: Explore the feasibility of providing the HPV vaccine to adolescents without parental consent under California’s minor consent law in the SBHC setting during the intervention period
Interviewed SBHC providers about clinics’ immunization process

Identified following key barriers:
1. Second visit frequently required to administer immunizations due to prior process of obtaining immunization consent and VIS distribution
2. Immunizations usually only addressed during physicals
3. Not all providers aware that minors can consent for the HPV vaccine under CA minor consent law
Project 2: Intervention

1. Distribute VIS forms to parents prior to adolescent’s visit to facilitate same-day administration of indicated immunizations
   a. For new patients, include forms in clinic enrollment packet
   b. For old patients, provide forms to take home to parent prior when next non-confidential visit is scheduled

2. Assess vaccine eligibility for all adolescents at all visits using CAIR and prompt providers for indicated immunizations

3. Administer indicated immunizations during all visits (when possible and appropriate)

4. Provide regular performance feedback to SBHC MDs and NP about their individual rate of MOs
Project 2: Overview

- Mixed-methods approach
  - Pre/post evaluation of intervention
  - Chart review of encounters found to have MOs for HPV immunization
  - Semi-structured interviews with SBHC providers
Summary of Patient Demographics (Jan – Dec 2016)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Hollywood</th>
<th>Roosevelt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients</strong></td>
<td>1101</td>
<td>457</td>
<td>641</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td>707</td>
<td>291</td>
<td>414</td>
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<tr>
<td><strong>Race/Ethnicity</strong></td>
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<tr>
<td><em>Latino</em></td>
<td>892</td>
<td>261</td>
<td>631</td>
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<tr>
<td><em>Black</em></td>
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<td>0</td>
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<tr>
<td><em>Asian</em></td>
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<td>26</td>
<td>4</td>
</tr>
<tr>
<td><em>Other</em></td>
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<tr>
<td><strong>Median Age</strong></td>
<td>16 years</td>
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<td>16 years</td>
</tr>
<tr>
<td>≥ 11 years</td>
<td>1016</td>
<td>418</td>
<td>598</td>
</tr>
<tr>
<td>&gt; 1 visit</td>
<td>401</td>
<td>172</td>
<td>229</td>
</tr>
<tr>
<td>VFC Eligible</td>
<td>909</td>
<td>341</td>
<td>568</td>
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<tr>
<td>CAIR Record</td>
<td>878</td>
<td>350</td>
<td>528</td>
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</tbody>
</table>
Summary of Visits and Eligible Encounters: Jan - Dec 2016

- **Total**: Visits (N=1900), Eligible Encounters (N=652)
- **Hollywood**: Visits (N=790), Eligible Encounters (N=270)
- **Roosevelt**: Visits (N=1110), Eligible Encounters (N=382)

Confidential vs. Non-Confidential
Project 2: Overall MO Rates

Overall MO Rates: Jan - Dec 2016

Estimated Baseline Median: 85%
Hollywood Median: 69%
Roosevelt Median: 44%

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<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>Hollywood</td>
<td>63.16%</td>
<td>74.19%</td>
<td>72.22%</td>
<td>62.96%</td>
<td>75.00%</td>
<td>62.50%</td>
<td>87.50%</td>
<td>52.50%</td>
<td>76.90%</td>
<td>65.50%</td>
<td>60.70%</td>
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</tr>
<tr>
<td>Roosevelt</td>
<td>43.75%</td>
<td>48.89%</td>
<td>51.28%</td>
<td>55.88%</td>
<td>42.22%</td>
<td>23.52%</td>
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<td>42.50%</td>
<td>26.90%</td>
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</table>
Project 2: MO Rates for Non-Confidential Encounters

MO Rates for Non-Confidential Encounters: Jan - Dec 2016

Estimated Baseline Median: 70%

Hollywood Median: 51%

Roosevelt Median: 19.2%

<table>
<thead>
<tr>
<th>Month</th>
<th>Hollywood</th>
<th>Roosevelt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>54.55%</td>
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<tr>
<td>Feb</td>
<td>66.67%</td>
<td>30.43%</td>
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<tr>
<td>Mar</td>
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<td>47.37%</td>
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<td>May</td>
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<td>Jun</td>
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<td>Aug</td>
<td>52.60%</td>
<td>19.20%</td>
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<tr>
<td>Sep</td>
<td>64.70%</td>
<td>18.20%</td>
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<td>Oct</td>
<td>46.70%</td>
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<tr>
<td>Nov</td>
<td>50.00%</td>
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<tr>
<td>Dec</td>
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Project 2: MO Rates for Confidential Encounters

MO Rates for Confidential Encounters: Jan - Dec 2016

Estimated Baseline Median: 100%
Hollywood Median: 89%
Roosevelt Median: 68%

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<tbody>
<tr>
<td>Hollywood</td>
<td>75.00%</td>
<td>90.00%</td>
<td>90.00%</td>
<td>100.00%</td>
<td>75.00%</td>
<td>87.50%</td>
<td>100.00%</td>
<td>50.00%</td>
<td>100.00%</td>
<td>85.71%</td>
<td>80.00%</td>
<td>100.00%</td>
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<tr>
<td>Roosevelt</td>
<td>65.00%</td>
<td>68.00%</td>
<td>62.50%</td>
<td>75.00%</td>
<td>60.00%</td>
<td>100.00%</td>
<td>78.50%</td>
<td>53.80%</td>
<td>72.20%</td>
<td>45.00%</td>
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Project 2: Summary of Reasons for MOs

Summary of Reasons for MOs: Jan - Dec 2016

- **Unknown**
- **Other**
- **VIS forms not distributed prior to visit**
- **Clinic failed to screen for immunization status**
- **Deferred by MD for valid reason**
- **VFC ineligible**
- **Declined**

<table>
<thead>
<tr>
<th>Location</th>
<th>Confidential</th>
<th>Non-Confidential</th>
<th>Total</th>
</tr>
</thead>
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<tr>
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<td></td>
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<tr>
<td>Roosevelt</td>
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Project 2: Implications

- Reducing MO appears to be feasible in the SBHC setting, especially for non-confidential visits
  - Reduction in MO for other adolescent immunizations (MCV4 and flu vaccine)?

- Official impact still to be determined – may be further augmented by wide-spread engagement with entire school and parents
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Questions?