Multi-Level Strategies to Improve HPV Immunization Coverage Rates Among Adolescents at the Clinic Level

March 12th, 2020

Presented by:
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Beth Glenn, Professor of Health Policy & Management
Suboptimal HPV Vaccine Rates in U.S.

- HPV vaccine coverage low despite vaccine’s availability for >10 years
- Challenges include rise in general vaccine skepticism in the U.S. and changing HPV vaccine schedule
- Evidence still emerging about most effective strategies to improve HPV vaccine uptake
- Limited research to identify effective strategies conducted in Federally Qualified Health Centers or other safety net settings
- Important to identify feasible and scalable interventions to have largest impact on population
HPV Vaccine Schedule and Dosing

2-dose schedule (0, 6-12 months) for those who initiate vaccination at ages 9 - 14 years.

3-dose schedule (0, 1-2, 6 months) for those who initiate at ages 15 through 26 years.

About 80% of people will get an HPV infection in their lifetime. Recommending HPV vaccination for all 11–12 year-olds can protect them long before they are ever exposed. CDC recommends two doses of HPV vaccine for all adolescents at age 11 or 12 years.

https://www.cdc.gov/hpv/hcp/schedules-recommendations.html
To evaluate the effectiveness and implementation of three parent reminder types on receipt of a needed HPV vaccine dose among 12-year old boys & girls at NEVHC.
Receipt of Next-Dose at 4-month Follow-up (N=877)

Tracking Intervention Implementation: Sent 1 mo. reminder to control group
UCLA-AltaMed: Pilot Clinic-Based Intervention Study

Randomization by Clinic

**Intervention Clinics (N=4 clinics)**
- Baseline HPV Rate (EMR) (N~6,000)
  - Standardized protocols for vaccine order and follow-up
  - Routine provider recommendation with cancer prevention frame
  - Patient education/reminders

**Usual Care Clinics (N=4 clinics)**
- Baseline HPV Rate (EMR) (N~9,000)
  - Usual Care

**Post-Intervention HPV Vaccine Rate (Initiation and Completion)**
- Assessed Quarterly over 15 Month Period via EMR

Grant Number: NIH/NCI: R01CA154549; 2012-2019.
Increasing HPV Vaccine Uptake at AltaMed

HPV Vaccine Initiation and Completion Rates
(N~17,000)

**Quarterly Initiation Rates**
- Significant overall effect
  and higher effect for males and younger patients

**Quarterly Completion Rates**
- No significant overall effect
  Significant effect for males and younger patients
A collaborative project between NEVHC and UCLA

Funded by Patient Centered Research Outcomes Research
PCORI Contract PCS-2017C1-6482
Project Overview (2017-2022)

The overall goal of this research study is to improve HPV vaccine completion rates among underserved, ethnic minority adolescents receiving care at NEVHC.

- 5 year study (2017-2022)
- 7 NEVHC clinics are participating in the study
  - Canoga Park
  - Pacoima
  - San Fernando
  - Santa Clarita
  - Sun Valley
  - Valencia
  - Van Nuys Pediatric
# Research Design

## Stepped Wedge Factorial Study Design *(Original)*

<table>
<thead>
<tr>
<th>HPV Vaccination Study</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
<th>Period 5</th>
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<tbody>
<tr>
<td><strong>Group A</strong></td>
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<td><strong>Group C</strong></td>
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</table>
Comparing the Effectiveness of Three Intervention Conditions

- **Parent Reminder Intervention**: Parents receive text or mailed letter reminders when their child is due for a dose of the HPV vaccine.
- **Combined Condition**: Simultaneous Implementation of Parent Reminder Intervention and System-Level Strategies.
- **System-Level Strategies**: Establish policies that prioritize HPV vaccination and educate providers/staff about the best approaches to recommend the HPV vaccine to parents.
## Participating NEVHC Clinic Sites

<table>
<thead>
<tr>
<th>Sites</th>
<th>Total Age-Eligible Patient Population (Ages 12-17)</th>
<th>HPV Vaccine Initiation Rates</th>
<th>HPV Vaccine Completion Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Clarita</td>
<td>933</td>
<td>84%</td>
<td>58%</td>
</tr>
<tr>
<td>Van Nuys</td>
<td>1619</td>
<td>81%</td>
<td>52%</td>
</tr>
<tr>
<td>San Fernando</td>
<td>2670</td>
<td>87%</td>
<td>64%</td>
</tr>
<tr>
<td>Valencia</td>
<td>976</td>
<td>85%</td>
<td>57%</td>
</tr>
<tr>
<td>Canoga Park</td>
<td>1067</td>
<td>80%</td>
<td>49%</td>
</tr>
<tr>
<td>Pacoima</td>
<td>2451</td>
<td>90%</td>
<td>63%</td>
</tr>
<tr>
<td>Sun Valley</td>
<td>1234</td>
<td>82%</td>
<td>50%</td>
</tr>
<tr>
<td>NEVHC Total</td>
<td>10950</td>
<td>85%</td>
<td>58%</td>
</tr>
</tbody>
</table>

### Randomization Stratification Factors
- Clinic size and location
- HPV vaccination rates
HPV Vaccination at NEVHC

Among 12-17 year olds at NEVHC as of 12/01/2019

- HPV Vaccine Initiation:
  - NEVHC: 85%
  - California: 72%
  - U.S.: 53%

- HPV Vaccine Completion:
  - NEVHC: 58%
  - California: 66%
  - U.S.: 49%

The California and U.S. Rates are the latest data available (2017)
Advisory Committees

Project Advisory Committee:
- Members of local organizations with HPV vaccine experience & knowledge
- Provided feedback and guidance on HPV promotion strategies

Parent Advisory Committee:
- For the first year, members came from the NEVHC Patient and Family Advisory Committee (PFAC)
- Provided input on the content of the reminder messages

Adolescent Advisory Committee:
- Adolescent students at a NEVHC school-based clinic
- Provided youth perspective regarding the patient experience and HPV vaccination
Parent Interviews

91 Total Interviews Completed
7 NEVHC Clinics
(October 2018 – January 2019)

- Provided an additional opportunity to learn about the barriers and facilitators to HPV vaccination

- Each interview lasted between 5-15 min

- Interviews were conducted in the waiting room

- Parents received a $15 gift card for participating in an interview
Parent Interviews

- 93% mothers
- 93% Latino(a)
- 85% had heard of the HPV vaccine
- 52% said their child had received at least one dose
Takeaways from Parent Interviews

Feelings About Vaccines

- Most had positive opinions about vaccines
- Most expressed trusting doctor’s recommendations
- Some were hesitant or concerned about the HPV vaccine

Awareness and Knowledge

- Most had only a basic understanding of the HPV vaccine
- A few confused it with HIV
- Some did not know that boys could also get HPV vaccine
- Most did not know the dosing schedule

The interviews seemed to raise awareness
Reasons for & against HPV vaccination

Reasons for HPV vaccination

- To protect their children
- To follow the pediatrician’s recommendations
- To prevent disease (specifically cancer)
- Because they think it is mandatory for school enrollment

Reasons against HPV vaccination

- They think the HPV vaccine is a “new vaccine”
- Child is too young to be engaged in sexual activity
- Getting the vaccine might give child permission to engage in sex
- Because it is optional and not mandatory for school enrollment
# Study Period 2

<table>
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<tr>
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Parent Reminder Intervention

Hi from NEVHC health center. Your child ROBERT needs the Human Papillomavirus Vaccine (HPV). Call for appt: 661-705-2040. Text STOP to end texts.

Northeast Valley Health Corporation
1172 North Maclay Avenue • San Fernando, California 91340–1300
(818) 898-1388 • Fax (818) 365-4031 • www.nevhc.org

MR# <PATIENT_MED_REC> <DATE>

Dear / Estimado (a) <PATIENT_FNAME> <PATIENT_LNAME>,

Our records indicate that you need the Human Papillomavirus (HPV). The HPV vaccine protects boys and girls against many diseases caused by the Human Papillomavirus. The number of doses you need depends on your age. Your doctor can tell you how many doses you need. It is important to complete the series.

Call the NEVHC Appointment Center at 818-270-9777 to schedule your appointment.
**HPV Parent Reminder Intervention**

Total Parent Reminders Sent = 5361  
Total Number of Parents Who Received a Reminder = 1874

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</thead>
<tbody>
<tr>
<td><strong>Santa Clarita</strong></td>
<td>443</td>
<td>347</td>
<td>322</td>
<td>293</td>
<td>260</td>
<td>279</td>
<td>1944</td>
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<tr>
<td><strong>Van Nuys</strong></td>
<td>745</td>
<td>636</td>
<td>534</td>
<td>498</td>
<td>517</td>
<td>487</td>
<td>3417</td>
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<tr>
<td><strong>Total</strong></td>
<td>1188</td>
<td>983</td>
<td>856</td>
<td>791</td>
<td>777</td>
<td>766</td>
<td>5361</td>
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</tbody>
</table>
Initial Effect of Text vs Letter Reminders

- On November 1, 2018 and December 3, 2018 parents at Van Nuys received letter reminders while parents at Santa Clarita received text reminders.
- After a preliminary analysis, we determined both clinics would receive text message reminders for the remainder of the study.
Effect of Any Parent Reminder vs Usual Care

HPV Vaccine Series Completion Rate:
Change between 11-01-2018 and 12-01-2019

Control: 3.36%
Intervention: 6.09%
# Study Period 3

## HPV Vaccination Study

<table>
<thead>
<tr>
<th>Location</th>
<th>Group</th>
<th>Period 1</th>
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<td>Sun Valley</td>
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</table>
Improving HPV Vaccination at NEVHC

Goal: Reduce Missed Opportunities for HPV Vaccination

- A **missed opportunity** is any visit during which a patient who is due for a dose of the HPV vaccine does not receive it (and no refusal was documented).

- Adolescents come to the clinic infrequently, so it is important to **vaccinate at every visit**

- **Refusal are uncommon:** Parents at NEVHC refuse an HPV vaccine only 5 times out of 100 when it is offered during sick or well visits.
Missed Opportunities for HPV Vaccination at NEVHC

**BY AGE**
- 54% of Total Missed Opportunities occurred during encounters of patients aged 15-17
- 46% of Total Missed Opportunities occurred during encounters of patients aged 12-14

**BY VISIT TYPE**
- 35% of Total Missed Opportunities occurred during “well-visit” encounters
- 65% of Total Missed Opportunities occurred during “sick-visit” encounters
## Site Visits & Provider/Staff Interviews

<table>
<thead>
<tr>
<th>Topic</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determining HPV vaccine doses due at visit</td>
<td>• Primarily determined by information on the CAIR routing slip. [] • The CAIR record is sometimes missing doses previously administered at NEVHC which could cause administration of duplicate vaccines.</td>
</tr>
<tr>
<td>Documentation of HPV doses</td>
<td>• Vaccines are always entered into the EHR (NextGen). [] • Doses do not always transfer to CAIR. Most clinic staff report that they do not manually enter missing vaccine information into CAIR.</td>
</tr>
<tr>
<td>HPV vaccine recommendation</td>
<td>• Some staff felt they would benefit from more information about how to recommend the vaccine to parents, while others felt very comfortable speaking with parents. [] • Providers and staff reported bundling recommendation for HPV with other vaccines (not singling it out). [] • Framing as “cancer prevention” vaccine was not consistent among providers and staff.</td>
</tr>
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# Site Visits & Provider/Staff Interviews

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| Vaccination practices by visit type | • Providers have discretion to decide when to recommend vaccines to patients.  
• Some providers do not recommend vaccines during same day/sick visits, despite established NEVHC policies to offer vaccines at every visit.  
• As a result, CAIR routing slip are not consistently printed for sick visits. |
| Handling follow-up doses            | • Most clinics give parents an updated vaccine record after administering a dose to indicate if and when they will need another dose.  
• Most clinics unsure of details regarding the “recall process” for follow-up doses due in over 3 months. |
| Documentation of parent refusals   | • Some clinics document refusals on the CAIR routing slip and scan the sheet into the medical record  
• Refusals are not consistently documented in the EHR (NextGen)  
• Some clinics are having the parents sign refusal forms |
Clinic-Based Intervention Activities

1. Implement **evidence-based** strategies to reduce missed opportunities
2. **Fine-Tune** intervention strategies as needed
3. **Provide feedback** regarding HPV vaccine rates and missed opportunities
4. **Monitor implementation** of intervention strategies
5. **Check-in** during monthly provider and staff meetings
6. **Conduct booster training** sessions as needed

*Evidence-based strategies recommended by the Centers for Disease Control and Prevention (CDC) and The American Academy of Pediatrics (AAP)*
Evidence Based Intervention Strategies

- Audit and Feedback Reports
- Provider & Staff Training
- Provide a Strong HPV Vaccine Recommendation
- Schedule Nurse Visits During Scrubbing
- Use Recall System for Follow-up Doses
- Print CAIR Routing Slip for Every Visit
- Document Refusals
Provider and Staff Training

- Training sessions were facilitated by Dr. Gina Johnson, Medical Director of Pediatrics at NEVHC.

- Two trainings sessions were conducted at each of the clinics participating in the clinic-based intervention (San Fernando, Valencia, Canoga Park).
Provider and Staff Training Components

- Overview of HPV Vaccination and Cancer Prevention
- Summary of HPV Vaccination rates at NEVHC
- Detailed review of workflow standardization and clinic-based intervention activities
- Role-Playing Activity
Main Takeaways

- Strong Provider Recommendation
- Vaccinate at All Visits
- Prioritize Follow-Up Doses
Timeline of Project Activities

- **Begin Parent Reminder Intervention**: 07/18-08/18
- **Parent Interviews (Baseline)**: 09/18-10/18
- **Provider and Staff Engagement Meeting (all clinics)**: 11/18-12/18
- **Site Visits and Provider and Staff Interviews**: 01/19-02/19
- **Begin Clinic-Based Intervention**: 03/19-04/19
- **Measuring Implementation of Clinic-Based Intervention (Ongoing)**: 05/19-06/19
- **07/19-08/19**
- **09/19-10/19**: 11/19-12/19
- **01/20-02/20**: 03/20-04/20

- **Meetings with Project, Parent, & Adolescent Advisory Committees (Ongoing throughout duration of the project)**
Next Steps

<table>
<thead>
<tr>
<th>Study Activities</th>
<th>Clinics Involved</th>
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<tbody>
<tr>
<td>Continuation of Parent Reminder Intervention</td>
<td>Santa Clarita</td>
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<tr>
<td></td>
<td>Van Nuys</td>
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<tr>
<td>Continuation of Clinic Based-Intervention</td>
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<td>Valencia</td>
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<td>Canoga Park</td>
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<tr>
<td>Parent and Provider interviews at Clinic-Based Intervention sites</td>
<td>San Fernando</td>
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<tr>
<td></td>
<td>Valencia</td>
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<td></td>
<td>Canoga Park</td>
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<tr>
<td>Adolescent and Parent Advisory Committee Meetings</td>
<td>All seven clinics</td>
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<tr>
<td>Meeting to prepare for Combined Intervention</td>
<td>All seven clinics</td>
</tr>
<tr>
<td>Initiate Combined Intervention in November 2020</td>
<td>Pacoima</td>
</tr>
<tr>
<td></td>
<td>Sun Valley</td>
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</table>
Thank You