Disparities in collaborative patient-provider communication about HPV vaccination

Jennifer L. Moss, PhD\textsuperscript{1,2}, Melissa B. Gilkey, PhD\textsuperscript{3}, Barbara K. Rimer, DrPH\textsuperscript{1}, Noel T. Brewer, PhD\textsuperscript{1}

\textsuperscript{1}University of North Carolina
\textsuperscript{2}National Cancer Institute
\textsuperscript{3}Harvard Medical School
Disclosures

- JLM, MBG, and BKR have no potential conflicts to report.
- NTB has served on paid advisory boards or received research grants from Merck, GSK, CDC, and FDA, and now serves as chair of the CDC-funded National HPV Vaccination Roundtable.

- This research was supported by a grant from National Cancer Institute (\textit{F31 CA189411}; \textit{PI: Moss}) and data support from the National Center for Health Statistics.
- Opinions do not necessarily reflect the official positions of the NCI or the NCHS.
Introduction: HPV

- Infection can lead to
  - Genital warts (>300k cases/yr in US)
  - Cancer (26k cases/yr in US)
- High-priority populations
  - Racial/ethnic minorities
  - Un/underinsured
- Vaccine
  - Lack of health disparities in uptake
  - Suboptimal uptake overall

| U.S. HPV vaccine initiation, 2014 |
|-------------------|------------------|
| Girls             | 60%              |
| Boys              | 42%              |

*National Cancer Institute
Cancer Prevention Fellowship Program*
Introduction: Patient-provider interactions

- Provider recommendation
- Communication style?
  - Paternalistic v. collaborative
  - Association with HPV vaccination: Mixed findings
- Differences in communication style by patient characteristics
Methods

- National Immunization Survey-Teen, 2010
  - $n=4,124$ parents of girls
- Measures
  - Collaborative communication (Charles et al., 1997, 1999, 2006)
  - HPV vaccine initiation (verified by healthcare providers)
- Formal test of mediation (Iacobucci, 2012; Sobel, 1982)
Results: Participant characteristics \((n=4,124)\)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic white</td>
<td>61%</td>
</tr>
<tr>
<td>Privately insured</td>
<td>62%</td>
</tr>
<tr>
<td>Mother with &gt;HS degree</td>
<td>64%</td>
</tr>
<tr>
<td>At/above poverty</td>
<td>78%</td>
</tr>
<tr>
<td>Urban</td>
<td>85%</td>
</tr>
</tbody>
</table>
**Results: Communication and vaccination**

- **Overall HPV vaccine initiation:** 49%

  ![](image)

  **OR=4.70**
  
  (95% CI=4.12-5.36)

  ***p<.001***

  Non-collaborative communication

  Collaborative communication
Results: Collaborative communication

- Overall prevalence = 53%

NH White v Hispanic
Private v public insur
Mom > HS v mom ≤ HS
At or above v below pov
Urb/suburb v rural

* p<.05
** p<.01
*** p<.001
Results: Mediation (I) – Ethnicity

Controlling for provider recommendation for vaccination.

* p < .05
Results: Mediation (II) – Health insurance

Mediation $z = -2.28^*$

Controlling for provider recommendation for vaccination.

*p<.05
Summary

Underserved groups → Collaborative communication → HPV vaccine initiation

\[ a = - \quad c' = ++ \quad (c = +) \quad b = + \]

<table>
<thead>
<tr>
<th>Underserved group</th>
<th>z score for mediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic ethnicity</td>
<td>-2.94*</td>
</tr>
<tr>
<td>Public insurance</td>
<td>-2.28*</td>
</tr>
<tr>
<td>Below federal poverty level</td>
<td>-1.83†</td>
</tr>
<tr>
<td>Spanish-speaking</td>
<td>-1.40†</td>
</tr>
<tr>
<td>Lower maternal education</td>
<td>-1.14</td>
</tr>
</tbody>
</table>

\[ \dagger p < .10 \quad * p < .05 \]
Strengths and limitations

- **Strengths**
  - Nationally-representative sample
  - Provider-verified vaccination status

- **Limitations**
  - Cross-sectional analysis
  - Parental self-report of communication
Conclusions

- HPV vaccination
  - Higher when parents reported collaborative communication
  - Equal or higher in high-priority groups
- Evident disparities in collaborative patient-provider communication
  - Lower in high-priority groups
- Disparities in communication suppressed differences in vaccination

Equalizing communication styles across groups could result in more favorable vaccination outcomes overall and for high-priority groups.
Mediation results (III): Poverty

Collaborative v non-collaborative

Below v above poverty level

Vaccination v no vaccination

-0.42*

1.55*

0.53* (0.31)

Mediation $z = -2.59^*$

*p<.01
Mediation results (IV): Rurality

Mediation $z = 2.87^*$

$p < .01$
Results (V.a.): Moderation

Moderation p = .02
Results (V.b.): Moderation

Non-Hispanic white: +44%
Non-Hispanic black: +16%
Hispanic: +40%
Other: +18%

Moderation $p=.01$
Step 1: Demographics & vaccination

- Hispanic (v. non-Hispanic white ref.)
  OR = 1.30
- Public ins. (v. private insurance ref.)
  OR = 1.11
- Below pov. level (v. at/above poverty ref.)
  OR = 1.36
Step 2: Demographics & communication

![Graph showing odds ratios for different factors.]

- **Hispanic** (v. non-Hispanic white ref.): OR=0.54*
- **Public ins.** (v. private insurance ref.): OR=0.63**
- **Below pov. level** (v. at/above poverty ref.): OR=0.66*

*p<.01  **p<.001
Step 3: Communication & vaccination

- HPV vaccination: 49%

<table>
<thead>
<tr>
<th>Dem.</th>
<th>Vacc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm.</td>
<td>Vacc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collaborative Communication</th>
<th>HPV vax</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did NOT report</td>
<td>31%</td>
<td>ref.</td>
</tr>
<tr>
<td>Did report</td>
<td>66%</td>
<td>4.70 (4.12-5.36)</td>
</tr>
</tbody>
</table>

(OR is controlling for provider recommendation for vaccination)
Step 4: Demographics, communication, and vaccination

Demographics (underserved groups) → Collaborative communication

Collaborative communication → HPV vaccination

a = -
b = +
c' = ++ (c = +)
Differences in vaccination odds

- Hispanics (v. non-Hispanic white ref.) $z = -3.04^*$
- Public ins. (v. private insurance ref.) $z = -3.67^*$
- Below pov. (v. at/above poverty ref.) $z = -2.59^*$

*p < .01*