VACCINE INTERVENTION ON A COLLEGE CAMPUS TO INCREASE HPV VACCINATION RATES

Daniel VanDerhoef, BS
&
Shaida Omid BS, MS

Creighton University School of Medicine

Disclosures

• We received grant from the Immunize Nebraska Task Force of metro Omaha medical society.
Human Papillomavirus (HPV)

- HPV is contracted via skin to skin contact, commonly through engaging in vaginal, anal, or oral sexual intercourse.
- Causes a variety of lesions, from benign skin warts to malignant anogenital tract lesions.
- Linked to cancers of the penis, anus, vulva, vagina, and cervix.
- Estimated that 99.7% of cervical cancers contain HPV DNA.
- 30,000 people in the United States develop a cancer linked to HPV each year.

HPV Vaccine

- Bivalent Vaccine (16, 18)
- Quadrivalent Vaccine (6, 11, 16, 18)
- 9-Valent Vaccine (6, 11, 16, 18, 31, 33, 45, 52, 58)
- Age 11-12; 3 dose series over 6 months.
- 98% of individuals develop an antibody response following the third dose.
- All vaccines available have been shown to be effective in preventing vaccine-type persistent infection, Cervical intraepithelial neoplasia 2/3, and adenocarcinoma in-situ.
- It works - 71% decrease in infection of HPV types linked to cancers and genital warts in teen girls.
National Data

- As of 2016, 60.4% of adolescents have received at least one dose of a HPV vaccine (65.1% females, 56% males).
  - Up by 4.3% overall, 6.2% for males, from 2015
- As of 2016, 43.4% of adolescents had completed the HPV vaccine series (49.5% females, 37.5% males).
  - Up by 2.2% overall, 3.4% for males, from 2015
Previous Interventions

- Systematic review published in *Human Vaccines & Immunotherapeutics* analyzed different intervention techniques
  - Combination of community education and provider follow up ("reminder and recall") was the most promising.
  - No significant evidence exists to endorse community education as lone intervention.


Objective of our Study

1. To increase awareness of HPV and its vaccine across Creighton’s Campus.
2. To increase vaccination rates against HPV across Creighton’s campus through educational interventions.
Methods

• Created posters, “table tents”, and e-posters.
• Content and images derived from public education tools from the Center for Disease Control.
• Data was drawn every three months to follow ideal timeline of HPV vaccination (completing the vaccination series in 6 months, and checking progress every three months).
• Baseline data was collected from the six months preceding our first intervention, 9/2016 - 2/2017.

Methods

• Timeline of interventions
  • February 2017
    • Posters hung in residence halls, dining halls, academic buildings, and student activity areas across campus.
  • March 2017
    • “Table tents” distributed across campus dining halls and cafes
  • October - November 2017
    • Student Health Services offering HPV vaccine information at Flu vaccine clinics.
  • January 2018
    • E-posters sent to each individual college list-serv.
  • February 2018
    • New set of posters were posted around campus in the same areas.
Posters for Educational Intervention

Table 1. Count of Students Who Received HPV Vaccination

<table>
<thead>
<tr>
<th>Series</th>
<th>First Dose Given</th>
<th>Second Dose Given</th>
<th>Third Dose Given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention (09/2016 – 02/2017)</td>
<td>99</td>
<td>78 (78/99: 79%)</td>
<td>47 (47/99: 47%)</td>
</tr>
<tr>
<td>Cycle One (03/2017 – 08/2017)</td>
<td>136</td>
<td>62 (62/136: 46%)</td>
<td>17 (17/136: 13%)</td>
</tr>
<tr>
<td>Cycle Two (09/2017 – 02/2018)</td>
<td>81</td>
<td>39 (39/81: 48%)</td>
<td>5 (5/81: 6%)</td>
</tr>
</tbody>
</table>

Total Cases = 4,672
Table 2: Number of HPV vaccine given at Student Health Services.

<table>
<thead>
<tr>
<th>Period</th>
<th>Numbers of Vaccines Given</th>
<th>Number of Students Receiving Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/2016 - 4/47/2017</td>
<td>417</td>
<td>367</td>
</tr>
<tr>
<td>7/1/2017 – 4/27/2018</td>
<td>317</td>
<td>302</td>
</tr>
</tbody>
</table>

Table 3: Male and Female Vaccination Rate Compared to National Rate

<table>
<thead>
<tr>
<th>Gender</th>
<th>Received Initial Dose</th>
<th>Total students</th>
<th>Creighton Vaccination Rate</th>
<th>National Vaccination Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>3,296</td>
<td>5065</td>
<td>65%</td>
<td>65%</td>
</tr>
<tr>
<td>Male</td>
<td>1,376</td>
<td>3589</td>
<td>38%</td>
<td>56%</td>
</tr>
</tbody>
</table>

Table 4. Number of Creighton Students Who Have Received One Dose Of HPV Vaccine

<table>
<thead>
<tr>
<th>College</th>
<th>Received Initial Dose</th>
<th>Total</th>
<th>Vaccination Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>3,296</td>
<td>5065</td>
<td>65%</td>
</tr>
<tr>
<td>Male</td>
<td>1,376</td>
<td>3589</td>
<td>38%</td>
</tr>
<tr>
<td>College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and Sciences</td>
<td>1,765</td>
<td>2405</td>
<td>73%</td>
</tr>
<tr>
<td>Business</td>
<td>760</td>
<td>1036</td>
<td>73%</td>
</tr>
<tr>
<td>Dentistry</td>
<td>166</td>
<td>337</td>
<td>49%</td>
</tr>
<tr>
<td>Graduate School</td>
<td>8</td>
<td>646</td>
<td>1%</td>
</tr>
<tr>
<td>Law</td>
<td>93</td>
<td>296</td>
<td>31%</td>
</tr>
<tr>
<td>Medicine</td>
<td>481</td>
<td>620</td>
<td>78%</td>
</tr>
<tr>
<td>Nursing</td>
<td>678</td>
<td>961</td>
<td>71%</td>
</tr>
<tr>
<td>Pharmacy and Health Professions</td>
<td>675</td>
<td>1187</td>
<td>57%</td>
</tr>
<tr>
<td>Unknown College</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4672</td>
<td>8654</td>
<td>54%</td>
</tr>
</tbody>
</table>
Potential Barriers to Intervention Method

- Holidays (ie. students off campus, lack access to student health facility to obtain vaccine)
- Location of interventions (ie. dorms vs. different campus colleges)
- Undergraduate has no immunization record document requirements, lack of incentive
- Student Health Appointments arrangements only by phone (ie. office hours, privacy)
- Costs (ie. insurance coverage)
- Climate of healthcare insurance regulation shaping costs and access
- Lack of awareness of HPV or its vaccine
- Misconstrued education (ie. safety of vaccines) WHEN to get vaccinated (ie. ‘already sexual activity’, ‘too old’, ‘not symptomatic’)

Potential Barriers to Intervention Method

- Interventions remained more passive, than active interactions with our target population
- Classic barriers of primary care - how to motivate healthy populations to vaccinate later in life.
Discussion

Data from other intervention studies demonstrated effective intervention strategies with an increase vaccination rate outcome that utilize other methods incorporating styles representative of more Direct Communication Intervention such as:

- Provider/physician/healthcare staff phone calls with feedback
- Follow up appointment reminders, and on site/appointment visits with questioning/screening/education/reminders
- Annual Vaccine Days (Flu shot day for employees)

Addressing this weakness: The goal of our intervention strategy (posters etc.) was to communicate HPV vaccination awareness and promote immunization. The posters were an effective form of communication evidenced by the pull-off tabs that were utilized (see figure). Thus, it can be concluded that the form of intervention strategy is not the sole impact factor that led to our negative results.

Discussion

Other possible factors influencing poorer HPV vaccination rates

- Social stigma of HPV infection - It is not only protecting against a sexually transmitted disease; but a cancer.
- Attempting to increase awareness about the HPV vaccine on a Catholic campus.
- A campus divided - many students live off campus, and some programs study off the main university campus. How do we communicate with those who are not around campus?
Conclusion

- There was no statistical difference in the rate of vaccinations between the pre-intervention and post-intervention populations.
- This results was the same regardless of gender, campus colleges, graduate or science based school degree program.
- Campus interventions in the form of posters, pull-off tabs, table tents and e-mails to promote HPV vaccination awareness and immunization was not effective.
- Other vaccine strategy interventions that utilize more direct communication have been successful in other settings (workplace annual flu shot day etc.) but the utilization of pull-off tabs provide evidence that our intervention strategy was successfully being received by the target population. The lack of action to get vaccinated is thus a separate issue of incentive not awareness.
- Digital platform to follow up with students for follow up vaccines, perhaps via text message reminders etc.
- Student health online appointment scheduling.

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### Sources


