My project was to work with undergraduate students, the student health center, and faculty and staff members, including Healthy Carolina, at USC to develop HPV vaccination print materials (e.g., flyers, posters, pictograms/infographics) and a social media campaign (e.g., Facebook, Twitter, Instagram) for college students based on best practices and formative research results from an independent research study conducted in fall 2013.

South Carolina (SC) is ranked among the top in the nation for sexually transmitted infections (STIs) as well as cervical cancer incidence and mortality. Reasons for high rates of STIs and cervical cancer in SC are not well known and are likely the cause of multiple, complex, and intersecting factors. There are two vaccinations licensed by the Federal Food and Drug Administration (FDA) that offer protection against some of the most common types of human papillomavirus (HPV) infection, a common and usually harmless STI linked to cervical cancer. While there is a vaccination to help protect populations against common types of HPV linked to cervical cancer (and other types of cancer), uptake of the HPV vaccine is still extremely low. In SC, only 27% of females have received or completed more than three of the three-dose HPV vaccination series, and there is not applicable data for males. College students, who have not received HPV vaccinations before turning 18 years of age and entering higher education institutions, still have the opportunity to become vaccinated. However, most students are unaware of their risk and the availability of HPV vaccinations for college-aged males and females due to the lack of availability of information which college students can relate to. College students are making their own choices not just regarding health care, and need access to proper, informative information.

A review of existing health education and health communication messages and materials for college students, especially for HPV vaccination, and best practices were reviewed. The SAM (Suitability Assessment of Materials) tool was used to review characteristics of existing materials and messages, including assessing reading grade level. The SAM tool (Doak et al., 1996) facilitates review of the following categories to assess the appropriateness of a material:

1. Organization
2. Literacy Demand
3. Graphics
4. Layout and Typography
5. Learning Stimulation, Motivation
6. Cultural Appropriateness

Evaluating content focused on HPV-related information for college students. HPV content was assessed based on a score of 0 (low) – 5 (high). Content was rated based on language, HPV information, and graphic content. Reading grade level was calculated using the Flesch-Kincaid Index.

Aim 1

Reviewed existing health education and health communication messages and materials for college students, especially for HPV vaccination. Review of materials included current infographics on college health and vaccinations to determine the most effect and current way to portray the information. Reviewed CDC’s best practices for use of social media. Used content analysis methods such as SAM (Suitability Assessment of Materials) and other readability assessment tools to determine “best examples”. Took the “best examples” of messages and materials to start development of materials for USC students. See Table 1.
### Table 1: Summary of Evaluation of Existing Materials

<table>
<thead>
<tr>
<th>ID #</th>
<th>Title</th>
<th>Source</th>
<th>SAM Percentage / Interpretation</th>
<th>Reading Grade Level (Flesch-Kincaid)</th>
<th>HPV Content Score (0=low-5=high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Genital Herpes</td>
<td>Source: College of Charleston Student Health Services</td>
<td>36% Not Suitable</td>
<td>8.2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Human Papillomavirus (HPV)</td>
<td>Source: University of Georgia University Health Center</td>
<td>50% Adequate</td>
<td>7.9</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Human Papillomavirus</td>
<td>Source: University of Mississippi Health Center</td>
<td>34% Not Suitable</td>
<td>8.4</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Are you interested in receiving the HPV vaccine?</td>
<td>Source: University of Pennsylvania Student Health Services</td>
<td>61% Adequate</td>
<td>7.9</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Ask the Sexpert</td>
<td>Source: NYU Health Promotion</td>
<td>32% Not Suitable</td>
<td>7.1</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>HPV Vaccine for Women and Men</td>
<td>Source: Penn State University Health Services</td>
<td>45% Adequate</td>
<td>8.2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Pap Test and HPV</td>
<td>Source: Vanderbilt Medical School</td>
<td>30% Not Suitable</td>
<td>9.4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Immunizations &amp; Lab Services</td>
<td>Source: City College of San Francisco Student Health Services</td>
<td>27% Not Suitable</td>
<td>10.3</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>HPV Vaccine Information</td>
<td>Source: University of Maryland University Health Center</td>
<td>68% Adequate</td>
<td>6.3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Go Ask Alice!</td>
<td>Source: Columbia University Health Promotion</td>
<td>34% Not Suitable</td>
<td>7.4</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Immunizations They’re Not Just for Children</td>
<td>Source: American College Health Association #1</td>
<td>55% Adequate</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>Get Vaccinated Rosie the Riveter</td>
<td>Source: UGA Image</td>
<td>55% Adequate</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>HPV Infographic #1</td>
<td>Source: National Research Center for Women and Families</td>
<td>52% Adequate</td>
<td>N/A</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Don’t forget your 3rd poke</td>
<td>Source: Planned Parenthood</td>
<td>59% Adequate</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>HPV Infographic #2</td>
<td>Source: Seattle Cancer Alliance</td>
<td>75% Superior</td>
<td>N/A</td>
<td>4</td>
</tr>
</tbody>
</table>

*Suitability Assessment of Materials (SAM) percentage ratings: 70-100 Superior; 40-69 Adequate; 0-39 Not Suitable*

For selected materials, reading grade level was unable to be calculated.

**Aim 2**

HPV vaccination messages will be developed based on research findings in Phase 1 along with the help of Dr. Brandt, Healthy Carolina, Campus Wellness, peer leaders, and the Sexual Health Council. Use of InDesign by Adobe to create messages using all appropriate university brand information found in the marketing toolbox (http://sc.edu/toolbox/). The messages will be in formats suitable for college students, such as print materials (e.g., flyers, posters, and pictograms/infographics) and social media (e.g., Facebook, Twitter, Instagram). See Figure 1 and Figure 2.
Aim 3/Recommendations for Next Steps

Plans were to work with Healthy Carolina, Campus Wellness, peer leaders, and the Sexual Health Council to distribute messages appropriately on campus to ensure distribution to students at USC. Distribution centers include the Student Health Center on campus and Healthy Carolina and Campus Wellness offices. The hopes are that the materials reviewed in Aim 1 and developed in Aim 2 will be given to campus partners for continuation of this project.

Dissemination

Results were presented as part of the Cancer Prevention and Control Program Colloquium Series on April 18, 2014 (see Photo 1); Discovery Day on April 25, 2014 (see Figure 3); and at the Annual Meeting of the South Carolina Public Health Association on May 21, 2014. In addition, results will be provided to partners on the USC campus.

This project, along with the other research I have completed under Dr. Brandt’s guidance, has inspired me to continue my education and continue with research in this field. Cancer research has always been my passion, however other research such as HPV/HPV vaccination research is also crucial for the protection of upcoming generations. During the process of conducting this research, I not only learned much about HPV and HPV vaccination, I also learned much about health education materials on college campuses. Many of the topics I studied in my biology classes were reflected in the scientific research I had to conduct to really understand HPV and how it affects the human body. Other courses I have taken in health promotion, education and behavior helped to show me how to communicate health materials and messages to those in communities.
Figure 3: Rosemary Corriero poster at Discovery Day, April 25, 2014 (PDF of poster attached to report)

Identifying Opportunities for Increasing HPV Vaccination at the University of South Carolina

Rosemary Corriero, PhD, OMESF, Heather A. Bynum, PhD, MPH, Jessica D. Bellinger, PhD

INTRODUCTION

South Carolina has high rates of sexually transmitted infections (STIs), including human papillomavirus (HPV), which commonly causes cervical cancer as well as genital warts and other sexual health conditions. The HPV vaccine is available to prevent against specific types of HPV. The correlation between these vaccines and specific cancers against these types of HPV is unknown. The demand for HPV vaccination varies among different populations, with higher uptake in regions with higher prevalence of HPV. Despite the benefits, many underserved populations lack access to HPV vaccination services.

METHODS

Fall 2013: Independent Research Study
- Conducted 21 individual interviews with USC faculty, staff, and students to assess awareness and attitudes toward HPV vaccination.
- Collected demographic, behavioral, and HPV-related knowledge data.
- Developed a questionnaire to assess current knowledge and attitudes toward HPV vaccination.

Fall 2014: Magneto-Resonance Imaging (MRI) Study
- Participants received an MRI scan to assess the correlation between HPV vaccination and cognitive function.
- Collected data on HPV-related knowledge, attitudes, and behaviors.

RESULTS

Barriers to HPV Vaccination
- Lack of awareness: Many participants stated that they did not know about HPV or its associated conditions.
- Cost concerns: Some participants expressed concerns about the cost of HPV vaccination.
- Limited access: Participants reported difficulty accessing HPV vaccination services, especially in rural areas.

SUCCESS FACTORS

- Education: Participants who received HPV vaccination were more likely to report increased knowledge about HPV and its prevention.
- Support: Participants who received support from family or friends were more likely to receive HPV vaccination.
- Cost: Participants who received financial assistance were more likely to receive HPV vaccination.

CONCLUSION

Increasing HPV vaccination rates requires a multifaceted approach, including education, support, and access to services. Further research is needed to identify effective strategies to increase vaccination rates in underserved populations.

Photo 1: Rosemary Corriero with Arnold School of Public Health graduate students, Cancer Prevention and Control Program Colloquium, April 18, 2014 (JPG of photo attached to report)
Photo 2: Rosemary Corriero with one of her mentors, Dr. Heather Brandt, at Discovery Day, April 25, 2014 (JPG of photo attached to report)