

# Evaluation of the HPV Vaccination Rate and Identification of Facilitators and Barriers to the HPV Vaccination Uptake

Hao McKenna, MSN, RN, DNP-FNP Student  
Mercy West Liberty Family Medicine Clinic

## Introduction

- Background:**
- The HPV vaccine is 90% effective in preventing nine types of cancer.<sup>1</sup>
  - High prevalence in rural Iowa.<sup>2</sup>
  - 2<sup>nd</sup> most costly STI next to HIV (\$775 million in 2018).<sup>3</sup>
- Problem:**
- HPV uptake remains lower than the Healthy People 2020 goal of 80% of adolescents age 13-15 years vaccinated.<sup>3</sup>
- 2019 HPV Completion Rate:**<sup>4,5</sup>
- National: 54.2%
  - Iowa: 44.9%
  - Muscatine County: 43.6%
- ✓ *Although the Mercy West Liberty (MWL) Family Medicine Clinic the HPV wanted to improve adolescent HPV vaccination rates the prevalence of HPV vaccination provided by the clinic was unknown.*

## Purpose

- Purpose:**
- To conduct a quality improvement project that will:
- Determine baseline data of the HPV vaccination rate at Mercy West Liberty (MWL).
  - Identify facilitators and barriers to the HPV vaccination uptake.
- Objectives:**
- Determine baseline HPV vaccination rates and compare to rates of other adolescent vaccines at MWL.
  - Describe MWL health professional's knowledge and attitudes about the HPV vaccine.
  - Identify facilitators and barriers to HPV vaccination uptake at MWL

## Methods

- Project was deemed not human subjects research.
  - The Iowa Model<sup>6</sup> guided this quality improvement project (Fig. 1)
- Setting:** Mercy West Liberty (MWL) Family Medicine Clinic.
- Sample:**
- 125 visit records of adolescents (age 11-18) January 1, 2019 to September 1, 2020
  - 6 healthcare professionals currently employed at MWL

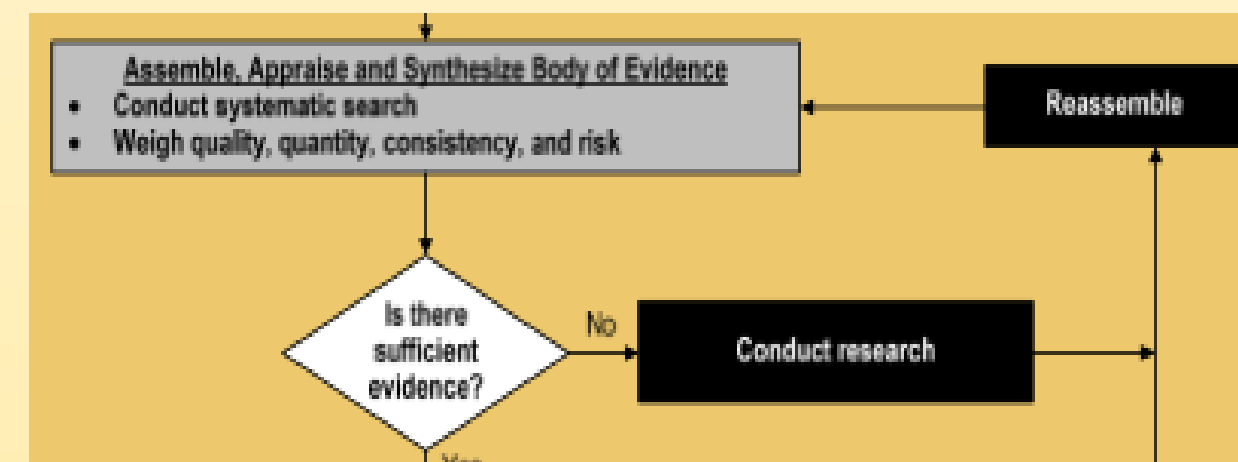


Figure 1. Focal step of The Iowa Model ( Excerpted)<sup>6</sup>



Figure 2. Mercy West Liberty (MWL) Family Medicine Clinic.

- Approach**
- Objective 1:** Determine baseline HPV vaccination rates.
- Intellectus™ software used to analyze 20 months of EHR
  - Derived descriptive statistics (e.g. counts, means)
  - Evaluated group differences through chi-squared tests of significance (e.g. age, race, and biological sex).
- Objective 2:** Describe health professional's knowledge and attitudes about the HPV.
- Used survey questions adapted from existing tools and the literature.<sup>7-9</sup> (Table 1.)
  - Demographic data collected included age, role in clinic, years at clinic
  - Knowledge measured by correct/incorrect response to True/False questions
  - Attitudes and perceived barriers were indicated based on a Likert scale
  - Derived descriptive statistics (e.g. counts, means) using Intellectus™<sup>10</sup> software
- Objective 3:** Identify facilitators and barriers to HPV vaccination uptake.
- Open-ended interviews used to gain health professional perspectives
  - Questions developed using clinical experience and the literature. (Table 1.)
  - Identified themes and subthemes in the data analyzed using basic content analysis.<sup>11</sup>

Table 1. Examples of Survey and Interview Questions	
<b>Knowledge</b>	The HPV vaccine is most effective if given to the people who never had sex. [True/False] The HPV vaccine is effective at preventing many forms of cancer. [True/False]
<b>Attitudes/Experiences</b>	I encounter less resistance from parents and patients to begin the HPV series at age 13 versus at age 11 years. [Strongly Agree, Somewhat Agree, Somewhat Disagree, Strongly Disagree]
<b>Perceived Barriers</b>	Access to the HPV vaccine for Medicaid patients [is]: [A significant barrier, A major barrier, A minor barrier, No barrier]
<b>Interview</b>	Tell me how you introduced the HPV vaccine to parents and adolescents?

## Results

**Table 2. Characteristics of the Clinical Data Sample of Adolescents, 11-18 years old seen at Mercy Clinic, West Liberty for vaccination from January 1, 2019 to September 1, 2020. (N = 125)**

Characteristic	n (%)
<b>Age</b>	
11-14 years old	53 (42.4%)
15-18 years old	72 (57.6%)
<b>Gender</b>	
Male	60 (48.0%)
Female	65 (52.0%)
<b>Race</b>	
Caucasian	62 (49.6%)
Hispanic	54 (43.2%)
Other	9 (7.2%)
<b>Received at least one dose of HPV vaccine</b>	
Yes	65 (52.0%)
No	60 (48.0%)
<b>Completed HPV series (n=65; 52.0%)</b>	
Yes	29 (44.6%)
No	36 (55.6%)

### Demographics of EHR adolescent sample (Table 2.)

- Differences within sample by age (p<.001)
- No significant differences in race and gender (p=.567, p=.062)

### Objective 1: Determine baseline HPV vaccination rates (Figure 3.)

- All adolescent vaccine administration rates were below HHP2020 goals for the study period
- HPV series completion rates lower than national and state standards but higher than Muscatine county
- Peak vaccination rate in August (Figure 4.)
- Unexpected gap in vaccination visits related to COVID19 (Figure 4.)

### Demographics of Healthcare Professionals at MWL (Table 3.)

- Ages ranged from 25 to more than 60 years
- Majority are females
- Years of experience ranged from 1-5 years to more than 20 years

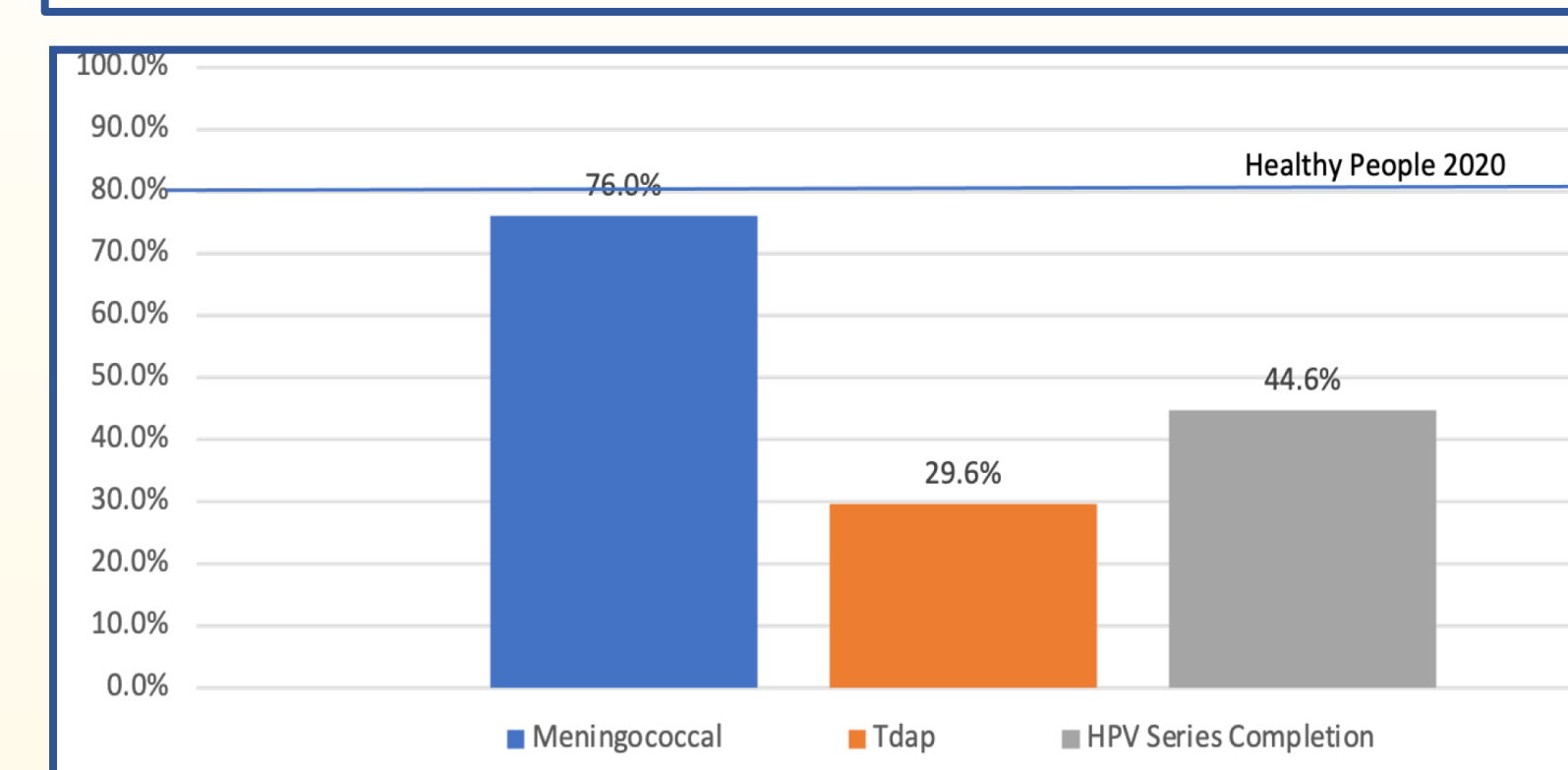
### Objective 2: Describe health professionals' knowledge and attitudes about HPV.

- Knowledge**
  - Average score of 91% correct
  - Areas of lowest knowledge related to:
    - Treatment of HPV infection
    - When to give the HPV vaccine
- Attitudes**
  - All health professionals agreed that HPV vaccination was important for cancer prevention.
  - Prior experiences varied and impacted perceptions of the need for change or improvement
  - Health professionals attributed low rates of vaccination to different causes
    - Responsibility of HPV vaccine delivery
    - Approach and timing of vaccine introduction
    - Perception of access
    - Perception of parent or adolescent vaccine hesitancy

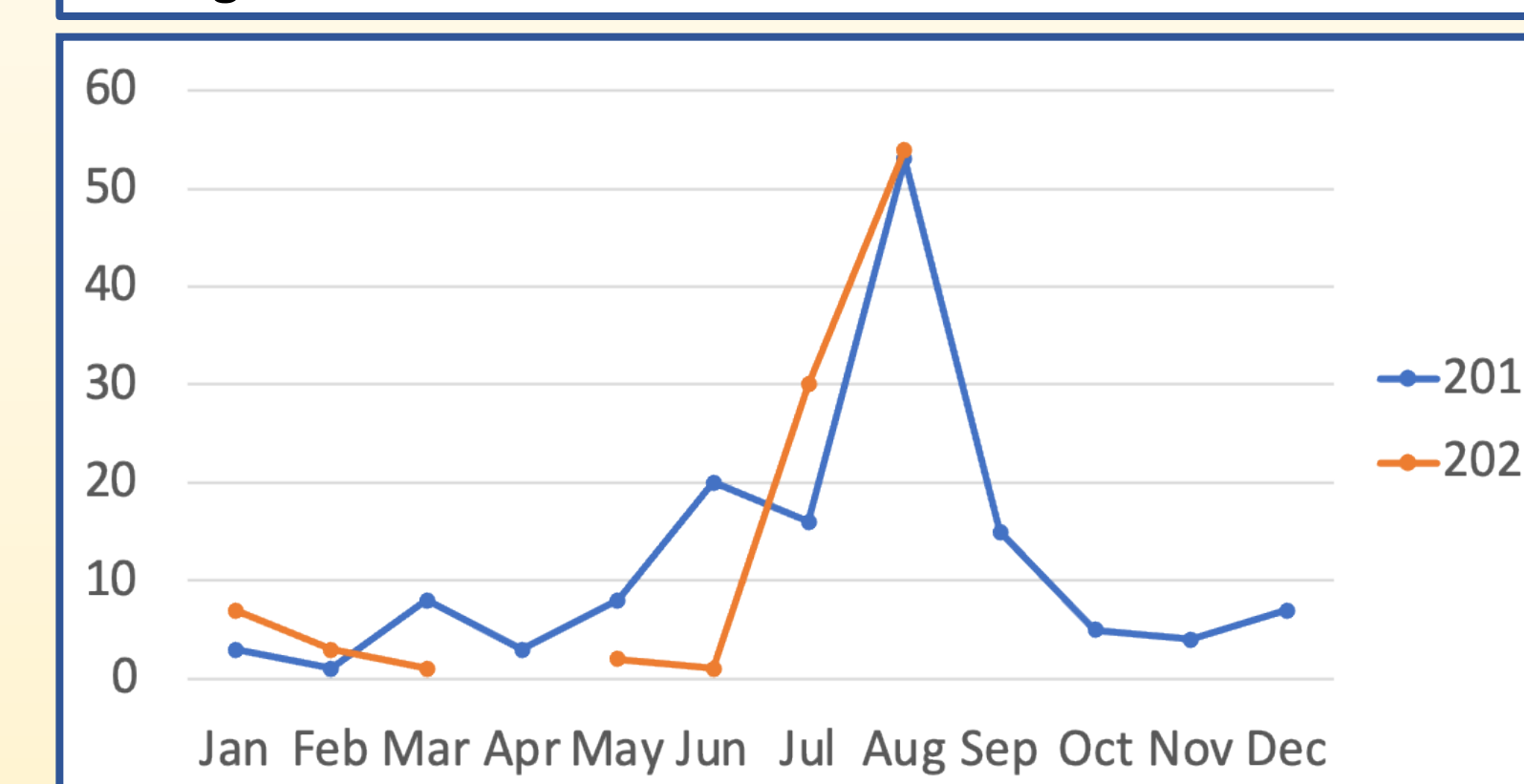
### Objective 3: Identify facilitators and barriers to HPV vaccination uptake.

- Facilitator:** Cancer prevention promotion (1 theme only)
- Barriers:** Three main themes
- Vaccine Hesitancy of parents and adolescents
  - Clinic processes
  - System influences on health access

**Figure 3. Adolescent Vaccines Rates-1/2019 to 9/2020**



**Figure 4. Trends in clinic vaccination rates 2019 & 2020**



**Table 3. Characteristics of Healthcare Professionals at Mercy Clinic, West Liberty (N=6)**

Characteristic	n(%)
<b>Age</b>	25 to >60 years of age
25-50	3 (50%)
51-60	2 (33.3%)
> 60	1 (16.7%)
<b>Gender</b>	
Male	1
Female	5
<b>Role</b>	
Primary care providers	3
MD	2
ARNP	1
Nursing Staff	3
RN	1
LPN	1
MA	1
<b>Years of experience</b>	
1 year to 5 years	3 (50%)
10 years to 20 years	2 (33.3%)
More than 20 years	1 (16.7%)

**Table 4. Supporting interview quotes for main themes**

<b>Vaccine Hesitancy</b>	<ul style="list-style-type: none"> <li>"Parents believe getting the HPV vaccine is a "green light" or "permission slip" for sex."</li> <li>"Adolescents do not want an extra shot [than those required for school]."</li> <li>"Parents only want vaccines that are required for school."</li> <li>"I tell them I got [the vaccine], and I am fine."</li> <li>"I tell them the HPV vaccine is to prevent cancer."</li> </ul>
<b>Clinic Process Barriers</b>	<ul style="list-style-type: none"> <li>"There is a huge gap in yearly physicals between 12 to 16 years old unless they are in sports."</li> <li>"There is no walk-in for vaccination."</li> <li>"Can't get [parent] consent when adolescents come to visit by themselves."</li> <li>"I have yet to make it a habit to review vaccines every time adolescents are in the office."</li> </ul>
<b>System Barriers</b>	<ul style="list-style-type: none"> <li>"We are not a VFC clinic [and can't administer vaccines to Medicaid patients]."</li> <li>"Muscatine Public Health comes to the clinic one a month to vaccinate VFC qualified adolescents."</li> </ul>

## Evaluation

- Objective 1: EHR Analyses**
- Younger age associated with increased reception rate (p<.001)
  - No significantly association with gender or race (p=.06, p=.57)
  - Only 17.6% of adolescents received the HPV vaccine along with Meningococcal and Tdap (p<.001)
- Objective 2: Survey Analyses**
- Opportune time to implement interventions would be prior to August
  - Healthcare professionals were generally informed
  - Variability in attitudes, experiences, and perceptions could impede how healthcare professionals make recommendations
- Objective 3: Interview Analyses**
- Identified three common barriers

### Limitations

- Retrospective EHR review period may not have captured HPV completion because it is given in series.
- This project only look at administered vaccines.
- COVID-19 disrupted vaccination from March to May of 2020.

## Recommendations

<b>Addressing Vaccine Hesitancy</b>	<ul style="list-style-type: none"> <li>Healthcare professionals training: <ul style="list-style-type: none"> <li>Announcement delivery of HPV vaccine information</li> <li>Bundle recommendation of vaccines</li> <li>Establish strong, universal, and consistent recommendation</li> </ul> </li> <li>Avoid missed opportunities: <ul style="list-style-type: none"> <li>Walk-in vaccination</li> <li>Implement preset orders to allow for nurse only visits</li> <li>Vaccinate at sick visits</li> <li>Consent reminder process prior visits</li> <li>Install reminder systems [letters, electronic messages]</li> </ul> </li> </ul>
<b>Clinic Process Change</b>	<ul style="list-style-type: none"> <li>Re-enrollment into the VFC program</li> <li>Increase frequency of Muscatine Public Health visits</li> </ul>
<b>System Change</b>	<ul style="list-style-type: none"> <li>Re-enrollment into the VFC program</li> <li>Increase frequency of Muscatine Public Health visits</li> </ul>

## Conclusions

- HPV completion rate along with other adolescents' vaccines are below the Healthy People goal of 80%.
  - HPV vaccination uptake is complex and will require multi-faceted interventions.
  - It is important to establish baseline vaccination rate prior to implementation of a quality improvement project.
  - Targeted interventions will ensure success.
- Dissemination:**
- This project will be presented at the MWL monthly staff meeting.
  - Journal manuscripts in progress.

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