**Background**

Most sexually-active men and women (estimated 80%) will be infected with HPV at some point in their lives. Despite having a safe and effective vaccination available since 2006, the estimated HPV national vaccination rate is 54% (38.9% for girls and 15% for boys) (1).

HPV can cause genital warts and cancer of the cervix, vulva, vagina, anus, penis, & oropharyngeal cancer. While there are about 33,000 HPV-related cancers diagnosed in the U.S. every year, about 28,000 of these cancers could be prevented by HPV vaccination (2).

Texas HPV vaccination rates lag behind national averages with less than one third of Texas adolescents being up to date with HPV vaccinations (2).

HPV infection rates are highest in young adults between the ages of 20-24 (3).

An audit of vaccination records of the Texas Christian University (TCU) 2017-2018 freshman student class revealed only 30% of these students were fully vaccinated.

**Aim**

100% of eligible TCU health center students would be screened for HPV vaccination status, participate with use of a shared decision-making tool, and receive follow-up reminders within 90 days.

**Planned Improvement**

- **The Plan, Do Study, Act (PDSA) model** was utilized to create and improve upon new and current processes through 4, two-week cycles with new tests of change added at each cycle.
- **Various tools from AAP (4), ACOG (5), and ACCORDS (6)** HPV vaccination toolkits were used to promote screening with SDM fact sheets, and info-posters.

- **Process**
  - Process improvements and changes included:
    - Weekly team huddles
    - Screening of all patients
    - Creation of a vaccination reminder system to encourage completion of all vaccinations
    - Additional changes were added throughout such as placement of info-posters in residence halls.

- **Sustain**
  - To successfully sustain the process changes after the project:
    - Continued team engagement was planned
    - All student HPV vaccination records will be entered
    - Screening questions will be added to patient history forms
    - Decision tool forms were laminated for repeat use
    - A text message reminder follow-up system was planned.

**Measures**

- **Team Engagement**
  - Goal: 60% of team members will:
    1. Attend weekly team huddles
    2. Report satisfaction with process changes through surveys
  - 50-80% were present at each team huddle
  - 100% reported project satisfaction and showed engagement by offering ideas to improve outcomes

- **Patient Engagement**
  - Goal: 80% of patients will:
    1. Receive decision tool & have a documented strong recommendation for vaccination
    2. Report satisfaction with their decision through survey
  - Within 2 weeks, 100% received decision tools.
  - The documented strong recommendation varied as processes and providers changed throughout
  - Patient satisfaction remained at 100% as evidenced by patient surveys

- **Screening**
  - Goal: 60% of patients will:
    1. Receive the HPV vaccine screening form
    2. Report satisfaction with the screening form through survey
  - 100% of patients received the screening form within 2 weeks.
  - 100% of patients reported satisfaction with the screening form throughout the project

- **Provision**
  - Goal: 60% of vaccinated patients will:
    1. Be entered into the follow-up reminder system
    2. Receive an appropriate follow-up reminder
  - 90% of the 42 students vaccinated from Jan-March, 2018 were entered in the reminder system
  - 100% of patients were sent an email reminder when vaccination was due

- **Balancing Measure**
  - Average patient visit times will not increase by more than 6 minutes. (measured twice weekly)
  - Most remained within time limit with the exception of one visit that included a “same day” HPV vaccination follow-up exam.

**Conclusions**

- As a result of system changes with assistance from the team, HPV vaccine patient uptake numbers increased dramatically during the project and continued after the project ended.

- 42 HPV vaccinations were provided during the project (January through March 2018). 64 were provided January – May 2018 (Pre-project total for the entire year of 2017 was 57)

- Based on the prompt success of this clinic’s system changes, it is reasonable to assume that these systems are both sustainable and translatable to other health care clinics that also serve high numbers of adolescent and young adult patients.

**Lessons Learned**

- Many students were unsure if they had been HPV vaccinated, making it imperative that these patients were encouraged to verify this information. Now that HPV vaccinations will be verified from records upon admission, this will no longer be a problem.

- Some students who reported being vaccinated were not aware of what the HPV vaccine was, indicating that all students could benefit from the HPV vaccination decision tool - both vaccinated and unvaccinated students.

- As ideas to improve vaccination numbers were lacking, the team members were asked for ideas, and several excellent patient engagement and screening ideas were received which underlined the importance of including team members in planning.

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**References**

6. ACOG, University of Colorado, School of Medicine (2018).