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Improving Cervical Cancer Screening Rates in a Community Health Center: A Quality Improvement Project

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Abstract

Purpose: The purpose of this quality improvement (QI) project was to increase the rates of routine cervical cancer screening (CCS) in eligible women of ages 21-64 years in an Adult Health Clinic (AHC) at a Community Health Center (CHC). The specific aim of this project was to determine the effect of a new CCS protocol and "Pap & Physical" appointments on cervical cancer screening incidence rates (CCSIRs).

Methods: A QI committee developed a new CCS protocol and provided staff training on it. Pap & Physical appointments were also implemented along with client and provider reminder/recall interventions. A pretest/posttest design was used to determine effectiveness of these interventions.

Results: The sample ($N = 3354$) consisted of all women of ages 23-64 years who presented for care during the pre- and post-intervention periods. The chi-square test did not reveal a significant association between the screening status and the pre- and post-intervention periods. The effect size was small ($\chi 2 = 2.89$, $df = 1$, $p = 0.089$, $\varphi = 0.067$). The overall CCSIRs did not improve from the pre- to post-intervention period (23% and 19.6% respectively).

Discussion: There was no improvement in CCSIR from the pre- to post-intervention period despite interventions that targeted multiple barriers. Patients, staff, and system related factors affected CCSIRs. Information gleaned from this preliminary study should be used in further PDSA cycles and this has the potential to streamline processes and improve CCS rates in the AHC.

Conclusion: To meet Healthy People 2020 goal for CCS, healthcare environments should evaluate their current CCS rates and implement evidence-based interventions in a manner that is adaptable to the healthcare environment's workflow. Effective training and post-training assessment should be provided to staff. Providers should administer Pap smears on the same day as physical exams to reduce the need for multiple appointments. Studies addressing provider unwillingness to perform Pap smears are needed.

Improving Cervical Cancer Screening Rates in a Community Health Center: A Quality Improvement Project

Worldwide, the fourth most common cancer in women is cervical cancer (Ferlay, et al., 2015). The incidence of cervical cancer and its associated mortality in the United States (U.S) have been declining since the cervical cytology screening programs were introduced in the 1950s and 60s (Vesco, et al., 2011). There is a negative correlation between prevalence of Papanicolaou (Pap) testing and cervical cancer incidence rates (Jemal, et al., 2013). While the trend of declining incidence and mortality of cervical cancer is encouraging, White et al. (2017) reported a concerning trend of decline in the use of cervical cancer screening (CCS) in the U.S from 2000-2015. In the U.S, 83% of women received CCS according to guidelines in 2015 and this does not meet the Healthy People 2020 target of 93% (White, et al., 2017).

According to the Health Resources & Service Administration (HRSA) (n.d.), in 2016, the CCS rate for 48 HRSA-funded health center grantees in Florida was only 58.04%. This is worrisome as Siegel, Miller, and Jemal (2017) estimated that the number of new cases of cervical cancer in Florida in 2017 were 1,040 and some of these cases may have been missed. In one Community Health Center (CHC) in Florida, its Adult Health Clinic (AHC) had a CCS rate of only 48% in 2016 (P. Egan, personal communication, April 17, 2017). Therefore, the CHC undertook a Quality Improvement (QI) project to increase the CCS rates in the AHC. The purpose of this project was to increase the rates of routine CCS in eligible women of ages 21-64 years in the AHC. The specific aim of this project was to determine the effect of a new CCS protocol and "Pap & Physical" appointments on cervical cancer screening incidence rates (CCSIRs). Other interventions of the study included designated Pap & Physical days, and client and provider reminder/recall interventions.

Literature Review

Recommendations for Screening

The U.S Preventive Services Task Force (USPSTF), American College of Obstetricians and Gynecologists (ACOG) and the American Cancer Society (ACS)-American Society for Colposcopy and Cervical Pathology (ASCCP)-American Society for Clinical Pathology (ASCP) recommend that women of ages 21-65 years receive cervical cancer screening with cytology or Pap smear every 3 years (Moyer, 2012; "Practice Bulletin", 2016; Saslow, et al., 2012). Women of ages 30-65 years can also be screened for cervical cancer every 5 years with a combination of cytology and human papillomavirus (HPV) testing called as cotesting. The USPSTF recommends against cervical cancer screening in women of ages less than 21 years and over 65 years who have been previously adequately screening and are not at high risk for cervical cancer (Moyer, 2012). Similarly, ACOG and ACS-ASCCP-ASCP do not recommend screening for women in the aforementioned age ranges who have had adequate prior negative screening results ("Practice Bulletin", 2016; Saslow, et al., 2012).

Disparities

According to Jemal et al. (2013), from 1972-2009, mortality rates of cervical cancers for all ethnic and racial groups combined have decreased. With exception to American Indian/Alaska Native (AI/AN) women, incidence rates for all ethnic and racial groups have decreased from 2000-2009 (Jemal, et al., 2013). According to Howlander, et al. (2016), from 2009-2013, incidence of cervical cancer was higher in Hispanics (9.4%) and Blacks (8.9%). Meanwhile, the incidence in Whites was 7.5%. The trends with mortality rates of cervical cancer in 2009-2013 were slightly different from that of the incidence rates as Blacks had the highest mortality rate (3.9%). They were followed by AI/AN (3.2%) and Hispanics (2.6%). The

mortality rate of Whites was 2.1% (Howlander, et al., 2016). In Florida, although mortality rates have been declining for Blacks from 1975-2010, the declines were slow (Tabatabai, et al., 2014).

Disparities are not related to ethnicity alone, as Singh (2012) reported that in the 1969-2007 period, both Black and White women living in non-metropolitan areas had significantly higher mortality rates related to cervical cancer than their counterparts who reside in metropolitan areas. In both metropolitan and non-metropolitan areas, Black women had at least a two-fold higher risk of mortality than their White counterparts. Survival rates were also markedly lower for women in non-metropolitan areas and specifically so for Black women in rural areas (Singh, 2012). Cervical cancer rates were also distinctly increased in most women living in low socioeconomic status (SES) areas when compared to women living in high SES areas (Jemal, et al., 2013).

The prevalance of Pap testing is low in southern states and the highest burden of cervical cancer in the U.S is seen in these states (Jemal, et al., 2013). White, et al., (2017) reported that CCS use was lowest among Asian women and women from ages 21-30 years. Hispanic women had lower CCS use than their non-Hispanic counterparts. Compared to U.S born women, foreign-born women had lower CCS use. Women who were uninsured had lower CCS use than their insured counterparts. On a similar vein, women without a usual source of health care had lower CCS use than women who did have a usual source of health care. Higher CCS use was noted with increased income levels and education (White, et al., 2017).

Definitions of Interventions

According to Sabatino et al. (2012), one-on-one education entails providing information to individuals in person or by phone regarding indications and benefits of screening, and ways to overcome barriers to screening. The education is provided by health care professionals,

volunteers, or lay health advisors in medical, household, community, or worksite settings with the goal of informing, motivating, and encouraging individuals to seek screening. Client reminders or recall, collectively referred to as client reminders, advise individuals that their screening is due or overdue respectively and this is accomplished through telephone messages or textual messages such as letters, postcard and e-mail (Sabatino, et al., 2012; Baron, et al., 2008).

Provider assessment and feedback interventions evaluate and provide feedback to providers on their performance in delivering and/or offering screening to clients (Sabatino, et al., 2012). According to Baron et al. (2010), provider reminder and recall systems inform the provider that their client is due or overdue for their screening respectively. Reminders can be generated manually or electronically and they can be delivered by mail, by computer, in clients' charts or by other means (Baron, et al., 2010).

Baron et al. (2008) explained that small media consists of videos and printed materials such as flyers, pamphlets, brochures, letters, and newsletters. These materials which can convey educational or motivational information can be distributed from health care systems and other community settings to promote screening in the target population (Baron, et al., 2008). Finally, lay health workers (LHW) are community members trained to provide healthcare services and promote health in their community and they are not healthcare professionals (Taylor, et al., 2010).

Interventions to Improve Screening

Interventions which have strong evidence in increasing CCS are one-on-one education, client reminders, provider reminder and recall systems and small media (Sabatino, et al., 2012; Baron, et al., 2010; Baron, et al., 2008). There is also sufficient evidence that provider assessment and feedback can increase CCS (Sabatino, et al., 2012). Use of invitation letters to

women who are due for screening is also an effective intervention in increasing CCS uptake (Everett, et al., 2011).

For minority populations, there is moderate evidence that telephone support and navigation services are effective in improving CCS (Glick, Clarke, Blanchard, & Whitaker, 2012). LHW intervention has also increased cervical cancer screening rates in minority populations (Studts, et al., 2012; Taylor, et al., 2010; Thompson, et al., 2017).

The use of multimodal interventions to increase screening of breast and colorectal cancer have been studied (Fortuna, et al. 2014; Hendren, et al., 2014). Fortuna, et al. (2014) found that using letter & autodial and letter & autodial & prompt were more effective than a single letter in improving breast and colorectal cancer screening rates (Fortuna, et al., 2014). Hendren, et al., (2014) found that a relatively low-cost multimodal intervention which included letters, automated phone calls, prompts and a mailed Fecal Immunochemical Testing (FIT) kit increased colorectal cancer screenings. These studies demonstrate the effect of combining interventions and while they did not focus on CCS, these combinations could be tested in future CCS studies.

Gaps in Knowledge

During literature review, no articles addressing provider unwillingness to perform CCS were identified. One of the barriers to CCS in the AHC is the unwillingness of some providers to perform CCS. Anecdotal reports from clinicians who have worked in other healthcare facilities indicate that this problem is not isolated to this clinic. This is not a patient friendly practice as patients are forced to return for another appointment merely for the sake of a Pap smear. Studies addressing providers' unwillingness to provide Pap smears are needed to better understand this issue and its implications.

Theoretical Framework

This QI project used the model for improvement as its framework. The model consists of the Plan-Do-Study-Act (PDSA) cycle and the following fundamental questions (Langley, et al., 2009). The questions and answers relevant to this study are as follows:

1. What are we trying to accomplish?

   The goal was to increase the rates of routine CCS in eligible women of ages 21-64 years in the AHC.

2. How will we know that a change is an improvement?

   Statistically significant increase in CCSIRs from the pre- to post-intervention period will be considered as improvement.

3. What changes can we make that will result in improvement?

   Using the PDSA cycle as a guide for this QI project, a CCS protocol, Pap & Physical appointments, designated Pap & Physical days and client and provider reminder/recall interventions were instituted in an attempt to increase CCS rates.

Methods

Study Design, Setting and Sample

This QI project employed a descriptive pretest-posttest design to determine if there was an increase in CCSIRs at the Adult Health Clinic (AHC) of a Community Health Center (CHC) in Florida. The CHC offers women's, pediatric, and adult health, dental, and immunization services. It also offers testing and treatment for sexually transmitted infections. The AHC is an outpatient clinic that provides primary care services to the adult population in its community. The sample consists of all women of ages 23-64 years who presented to the AHC for care during

the measurement periods. Pregnant women were not included in the sample as the AHC does not serve this population.

CCS QI Committee

During the "plan" phase of the PDSA cycle, a multi-disciplinary CCS QI committee was formed. This committee consisted of Nurse Practitioners, administrative staff, nursing supervisors, staff from the Florida Breast and Cervical Cancer Early Detection Program (FBCCEDP), a QI specialist, a nurse, clerical staff and a Doctor of Nursing Practice student. The committee also collaborated with other nurses, a care gap manager, a medical assistant and a Health Systems Manager from the ACS. The committee members identified the purpose of the project, the outcome, current work flow, and the barriers to CCS (Figure 1). The barriers were categorized as patient, staff and system related.

The committee also set a timeline for the project and selected the interventions during the "plan" phase. Interventions went into effect during the "do" phase. The "study" phase overlapped with the "do" phase as the committee simultaneously monitored the progress of the project and identified problems encountered after implementation intervention. In this phase, data was collected and analyzed and the project was evaluated. Committee members discussed the results, and identified the factors that affected screening rates. The "act" phase overlapped with the "do" and "study" phases as well. While the project was in progress, encountered problems were addressed and interventions were added. After the study ended, the committee modified an intervention, and planned new interventions and work processes, thereby starting a new PDSA cycle.

Interventions

The interventions were multilayered and they distributed the roles and responsibilities to different staff members at the AHC. The key interventions implemented were a new CCS protocol (see Figure 2) and Pap & Physical appointments. The protocol outlined the processes to identify women who were due for a Pap smear and schedule them an appointment to receive it. It also identified the staff who were responsible for each task. The following are the steps in the protocol:

1. The protocol begins when the patient makes an appointment with the clerk. If a need for a Pap smear had previously been documented on the electronic Notepad in the electronic medical record (EMR), the clerk can schedule them for a Pap & Physical appointment. If there is no documentation for the need of a Pap smear, the patient will just be scheduled for their requested appointment.
2. The care gap staff, who check for compliance with Healthcare Effectiveness Data and Information Set (HEDIS) measures, are responsible for the next step. Several days prior to the appointment, they generate and review flowsheet reports on scheduled patients. The flowsheets provide information on cervical, breast and colorectal cancer screening status of a patient. The care gap staff identify any need for CCS directly on the flowsheet. The flowsheets are then forwarded to the check-in staff.
3. On the day of the appointments, the check-in staff generate any missing flowsheets for the patients to be seen that day. When the patient presents for the appointment, the check-in staff include the flowsheet in the outguide. Outguides are files which are used during the patient visit and they usually contain the superbill, return appointment

form and other relevant patient records. The outguide is then forwarded to the work-up staff.

4. The work-up staff review the flowsheet and prepare Pap supplies if the visit is for a Pap & Physical appointment. If the visit is not for a Pap & Physical appointment, and the patient meets criteria to receive a Pap smear based on her age and date of last Pap smear, a pink return appointment slip or "pink slip" is placed in the outguide.
5. Once the patient is in the exam room, the provider reviews the outguide and the flowsheet to determine if a Pap smear is needed. If CCS is needed, the provider can either choose to do the test during the appointment, or have the patient reschedule for a Pap & Physical appointment by giving her the pink slip. The patient can take this pink slip to the clerk, and be scheduled for a Pap & Physical appointment.
6. Certain women may be referred to the FBCCEDP depending on their age and financial situation. According to the Florida Department of Health (n.d.), the FBCCEDP offers breast and cervical cancer screening for free or low-cost to eligible women with need.

Pap & Physical appointments were scheduled like any other office visit. During these appointments, only physical exams and Pap smears were performed. These appointments were scheduled only with providers who were willing to perform Pap smears. Additionally, designated Pap & Physical days were introduced in the last two months of the study. On every first Friday and third Wednesday of the last two months, designated providers exclusively offered Pap & Physical appointments. On these days, other providers continued to provide care to all other patients in the clinic.

Client reminder/recall interventions were also used. Prior to their Pap & Physical appointment, patients were called on the previous business day to remind them of their upcoming appointment. Patients who were "no-shows" were called to reschedule their Pap & Physical appointment. If the patient did not attend the call, a voice message was left to remind them to reschedule. During the last two months of the study, letters were sent to no-show patients to remind them to reschedule. Finally, the pink slip which was the key component of the protocol, served as a provider reminder/recall that the patient needed a Pap smear.

The designed interventions addressed multiple barriers to CCS (see Figure 1 for barriers) in the clinic. A key barrier to CCS was that some providers at AHC were not performing Pap smears and they were referring patients to GYN for this. This QI project addressed this issue by creating the protocol. It was designed to offer clear directions to the staff on their roles and responsibilities with regards to routine CCS. This would eliminate confusion regarding roles and protocols on when Pap smears are done. Patients whose provider was unwilling to perform Pap smears were given the opportunity to have CCS from a willing provider on Pap & physical appointments. Another barrier to CCS in the AHC was inaccurate flowsheets. During the pre-intervention period, the flowsheet was updated to automatically populate the "Pap History" section with date of the last Pap smear from lab results as well as from patient history. Therefore, the updated flowsheet used in the protocol would not only reduce the time spent by clinicians in searching for the date of last Pap smear, but also help them identify who would be due for CCS. The Pap & Physical appointments would eliminate the problem of scheduling Pap and physical exams on separate days.

One month prior to the implementation of interventions, the providers and the AHC staff were educated on the QI project, the protocol and the Pap & Physical appointments. Copies of the protocols and the pink slips were distributed to the staff.

Ethics Approval and Consent

Institutional Review Board (IRB) approval for this project was received from Florida State University and the Florida Department of Health.

Data Collection and Analysis

All data were de-identified prior to statistical analysis and provided by an honest broker at the CHC. The measurement periods consisted of the entire year of 2016 and each month during the pre- and post-intervention period. The honest broker removed duplications from each measurement period. The data elements that were extracted from the EMR system were age, gender, ethnicity, race, clinic site, Pap date and test name.

In this project, women were considered to be current with CCS screening if they received it in the last three years. In this health center, cotesting is not performed routinely and HPV testing is done only when the cytology is abnormal. Therefore, the screening interval of five years was not applicable to this project.

Although the project aims to increase CCS in women of ages 21-64 years, only women of ages 23-64 years were included in the final data. Women of ages 21 and 22 years were excluded from the data because they would not be considered as non-compliant with screening until they are older than 23 years of age.

The data were downloaded and stored in Microsoft Excel spreadsheets for analysis. Cervical cancer screening incidence rates were calculated using the following formula:

$$\text{Baseline CCSIR (\%)} = 100m/(q - r) \quad (1)$$

$$\text{Pre- and post-intervention CCSIR (\%)} = 100m/(q - s) \quad (2)$$

Numerator: Number of women 23-64 years of age who received a Pap smear during the measurement period (m)

Denominator: Number of women 23-64 years of age with a medical visit during the measurement period (q)

Denominator exclusions:

1. Women who had a Pap smear during the years 2014 & 2015 (r)
2. Women who had a Pap smear in the years 2014, 2015, 2016 & in the year 2017 prior to the measurement periods (s). During the measurement periods in 2017, women who had their last Pap smear in 2014 were considered compliant, provided that it had not been three complete years since their test. Therefore, these women are included under denominator exclusions.

CCSIRs were calculated by excluding the women who had already been appropriately screened prior to the measurement period. CCSIRs were calculated rather than CCS rates to accurately represent the proportion of eligible women who were appropriately screened during the specific measurement period and thereby reflect the performance of the AHC for that specific measurement period.

Pre-intervention data consists of data for two months in 2017 prior to implementation of instructions. Post-intervention data consists of data for the five months in 2017 in which interventions were in effect. The CCSIR for each month as well as the overall CCSIRs for the pre- and post-intervention periods were determined. Overall pre- and post-intervention rates were analyzed using chi-square test to determine if there was a statistically significant increase in CCSIRs.

Baseline data consists of data for the entire year of 2016. Although the CCS rate of 48% for 2016 was already known, baseline CCSIR had to be calculated for comparability with pre- and post-intervention CCSIRs. The women represented in the baseline data were not included in the total sample size calculation as the baseline CCSIR was merely used to understand the performance of the AHC in 2016 and to visually compare pre- and post-intervention CCSIRs with it.

Results

The total sample consisted of 3354 women. Table 1 displays the distribution of the sample by race and ethnicity. The baseline data consisted of 2120 women and the baseline CCSIR was 33.95% (n = 567). The pre- and post-intervention data consisted of 1026 women and 2328 women respectively. The CCSIRs for the first and second month of the pre-intervention period were 23.84% (n = 72) and 22.15% (n = 66) respectively. The overall pre-intervention CCSIR was 23%. During the post-intervention period, the CCSIR ranged from 14.47% (n = 33) to 23.38% (n = 65). The overall post-intervention CCSIR was 19.6%. Figure 3 displays and compares the CCSIRs during the baseline and the study periods. A chi-square test of association did not reveal a significant association between the pre- and post-intervention periods and the screening status and lastly, the effect size was small ($\chi 2 = 2.89$, $df = 1$, $p = 0.089$, $\varphi = 0.067$).

Discussion

This project sought to increase CCS rates in the Adult Health Clinic of a Community Health Center by introducing a CCS protocol and Pap & Physical appointments. Other interventions were designated Pap & Physical days, and client and provider reminder/recall interventions.

Despite the implementation of interventions based on evidence based strategies that targeted multiple barriers, there was no improvement in CCSIRs from the pre- to post-intervention period. The CCSIR for the first pre-intervention month was the highest CCSIR (23.84%) during the study. This was followed by a disappointing trend of decrease in CCSIRs. The lowest CCSIR (14.47%) occurred in the third post-intervention month. Following this drop, the CCSIR of the fourth post-intervention month, increased to 23.38%. The CCSIR for the fifth and final post-intervention month was 20.26%. The CCSIRs of the pre- and post-intervention periods were lower than the baseline CCSIR (33.95%). The low post-intervention rates, particularly the CCSIR of 14.47%, were unexpected. The most influential factor that affected the third post-intervention month could not be determined. The key finding in this study is that CCSIRs were affected by several patients, staff and system related factors. The following are the various factors that affected CCSIRs.

A major drawback in the QI project was the lack of complete execution of interventions during the study period by the AHC staff. At an unknown point in the study, some staff ceased providing the pink slips to the providers. Further, the pink slips were not restocked and therefore were not available. Nevertheless, use of the pink slips resumed in the early portion of the third post-intervention month. As a result, the quality of the data for the first three post-intervention months were compromised and rendered inconsistent. Although the CCSIRs increased after these problems were addressed, it is unknown if resuming the use of pink slips played a role in this.

There were also obstacles encountered with regards to Pap & Physical appointments. Some women refused Pap smears during Pap & Physical appointments and instead treated them as sick visits. Further, there were high no-show rates for Pap & Physical appointments. There

were also cases where women canceled their appointments. The reasons for the no-show rates and cancellations in this study are not known. Dantas, Fleck, Cyrino Oliveira and Hamacher (2018) identified that young adults, low socioeconomic status, lack of private insurance, and having a residence distant from the clinic were patient characteristics that are associated with increased likelihood of no-show. A prior history of no-show and high lead time or time interval between when an appointment is scheduled in the system and the actual date of the appointment, are significant determinants of no-show (Dantas, Fleck, Cyrino Oliveira, & Hamacher, 2018). In the future, it would be helpful to ask women the reason for their cancellations and no-shows. Having knowledge of the reasons would allow the clinic to make any needed changes during the next PDSA cycle.

Although flowsheets were updated to more accurately reflect the patient's CCS status, they still had shortcomings. If a woman had CCS in another facility and the screening information was not documented in the appropriate place, then the date of last Pap smear will not appear on the flowsheet. This inaccuracy would lead staff to incorrectly identify these particular women as not being screened appropriately and this poses a risk of overscreening. The frequency of mistaking the screening status of appropriately screened women in this study is unknown.

The novelty of the interventions itself was a factor that affected CCSIRs. The obstacles encountered were unanticipated because the processes were new. It appears that the AHC staff need more time and training to get accustomed to the protocol, Pap & Physical appointments and their accompanying new processes. Further, as these changes were also new to the patients, they may need education on the nature of Pap & Physical appointments, and scheduling.

Findings from this study suggest that implementing evidence based interventions alone do not guarantee success in increasing CCS rates. This preliminary study was vital for the AHC because of its low CCS rates. The background work done for the study helped the CCS QI committee to understand the factors affecting CCS rates and the work processes at the AHC. Although there was no improvement in CCSIRs, the findings from this study provide valuable information that can be used in further PDSA cycles at the AHC. These findings can also provide useful information to other investigators seeking to implement QI studies to improve CCS rates in their healthcare settings. Subsequent PDSA cycles have the potential to streamline the processes and improve CCS rates in the AHC.

Limitations

The calculated CCSIRs may be lower than the actual CCSIRs for the following reasons. First, the dates of the Pap smears in the data, populated only from the CHC's laboratory results and not from documentations in the medical records. Therefore, dates of the Pap smears performed in other facilities were not included in the data. As a result, women who were appropriately screened in other facilities could not be identified in the data and be excluded from the denominator in the CCSIRs calculations. Finally, the de-identified data did not identify or exclude women who have had a total hysterectomy. Consequently, these women could not be excluded from the CCSIRs calculations.

Duplications in each individual month in the pre- and post-intervention periods were removed by the honest broker. However, when the data from different months were combined to calculate overall pre- and post-intervention rates, there may have been inadvertent duplications which could not be identified as the data was de-identified. Therefore, the overall pre- and post-intervention CCSIRs may not be accurate. As the chi-square test of association analyzed these

overall pre- and post-intervention CCSIRs, possible duplications may have also impacted the test and its results. Furthermore, the sample distribution by race and ethnicity may not be accurate as data from every month was combined.

Not only was there lack of complete execution of interventions, but there was also implementation of some new interventions at different points. The practice of mailing clients and introduction of designated Pap & Physical days occurred only in the last two months of the study. All other interventions were introduced during the first post-intervention month. It is challenging to accurately determine the effectiveness of these interventions for this study as they were not executed completely and uniformly during the entire study period.

Implications for Practice

To meet the Healthy People 2020 goal for CCS of 93%, healthcare centers should evaluate their current CCS rates and implement evidence-based interventions in a manner that is adaptable to the healthcare environment's workflow. Effective training and post-training assessment for staff is needed to ensure their understanding of their roles and responsibilities.

A key implication is that providers should provide Pap smears on the same day as the physical exam. This will remove the need for patients to re-visit the clinic merely for a Pap smear. Finally, studies addressing providers' unwillingness to provide Pap smears are needed to better understand this issue and its implications.

Conclusion

In this QI study, a CCS protocol, Pap & Physical appointments, designated Pap & Physical days and client and provider reminder/recall interventions were implemented in an attempt to increase CCS rates in the AHC. Although, there was no increase in CCSIRs from the pre- to post-intervention period, the findings gleaned from this preliminary study offer valuable

information that can be used in subsequent PDSA cycles in the AHC. Therefore, subsequent PDSA cycles are needed and they have the potential to streamline processes and improve CCS rates at the AHC. Health care providers should be diligent in addressing the decline in the use of cervical cancer screening (CCS) to meet Healthy People 2020 target of 93%.

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Table 1

Distribution of the Sample (N = 3354) by Race and Ethnicity

Characteristic	n	%
Race		
American Indian/Alaska Native	16	0.48
Asian	65	1.94
Black	693	20.66
White	2301	68.6
Other	225	6.71
Unknown/Unreported	54	1.61
Ethnicity		
Hispanic	805	24
Non-Hispanic	2466	73.52
Other	2	0.06
Unknown	81	2.42

Note. Duplications in each individual month in the pre- and post-intervention periods were removed by the honest broker. However, when data from all months were combined to determine the sample distribution by race and ethnicity, there may have been inadvertent duplications which could not be identified as the data is de-identified. Therefore, this distribution may not be accurate.

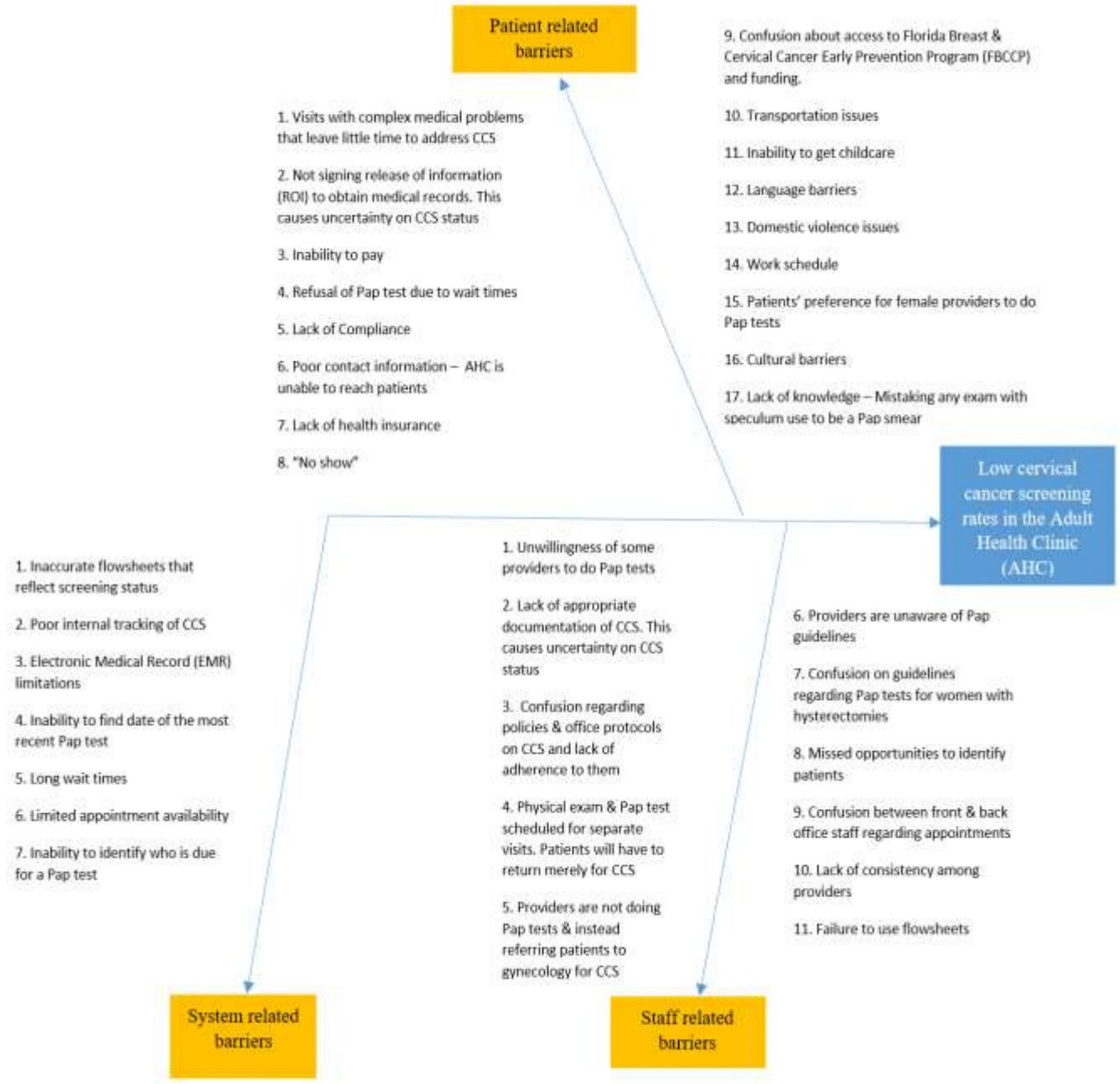

Figure 1. Fishbone diagram demonstrating the barriers to cervical cancer screening that were identified by the CCS QI committee.

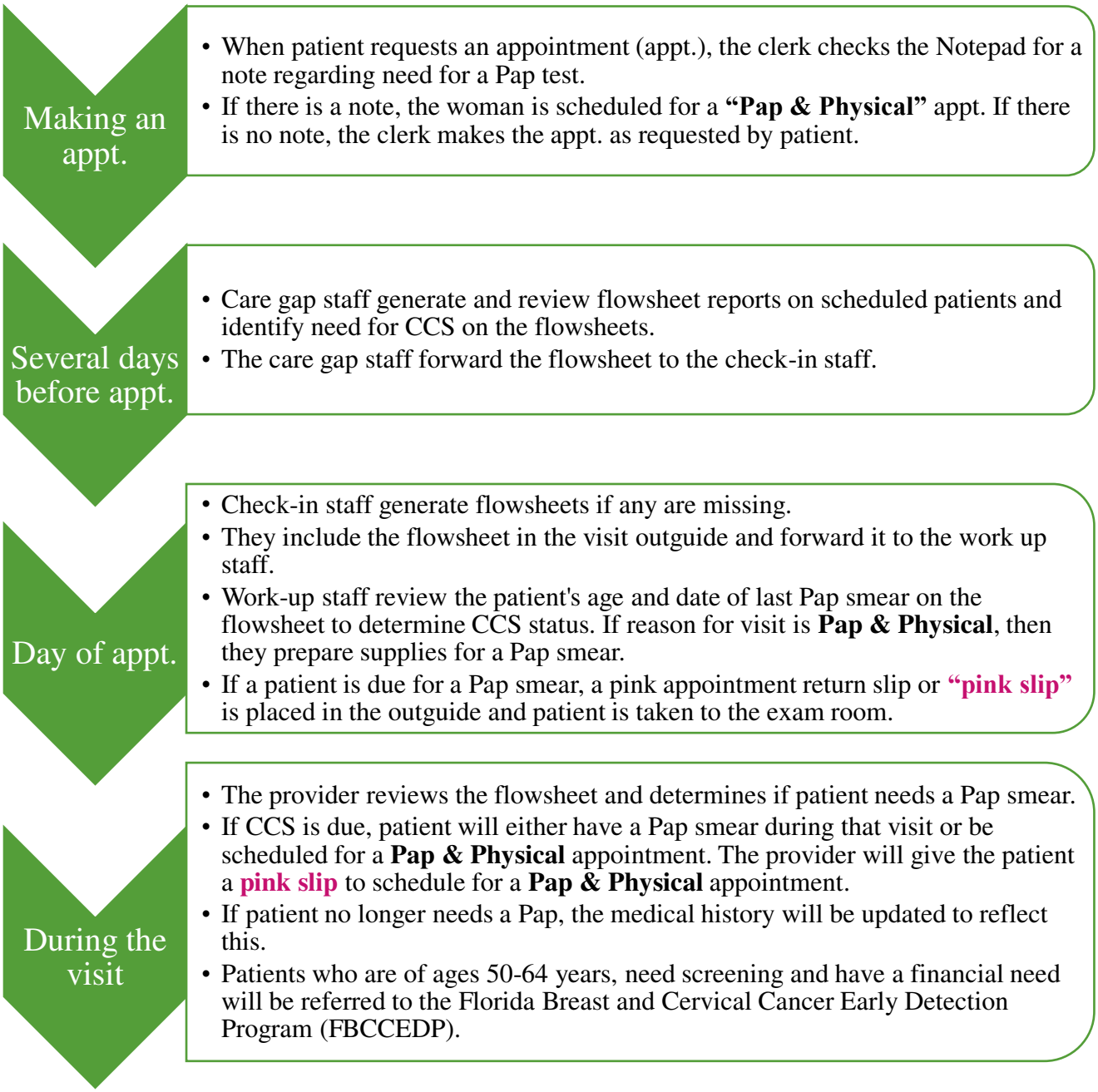

Figure 2. CCS protocol instituted at the AHC. The Notepad is a feature in the EMR system that allows the staff to enter notes.

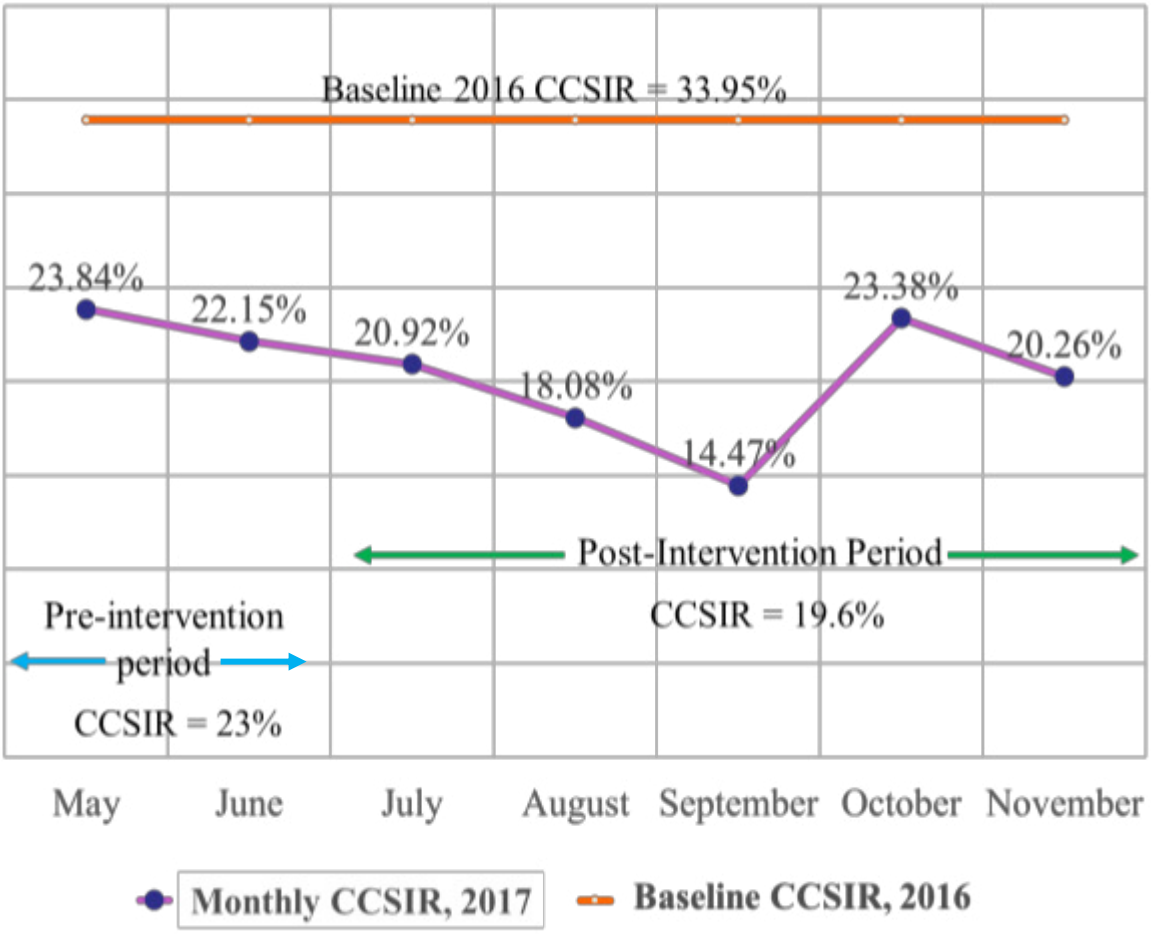

Figure 3. Comparison of cervical cancer screening incidence rates (CCSIRs) during the baseline, pre- and post-intervention periods.