IMPROVEMENT OF CERVICAL CANCER SCREENING IN A RURAL PRIMARY CARE SETTING: A QUALITY IMPROVEMENT PROJECT

by

Katie Carla Kelleher

A scholarly project submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Nursing Practice

in

Family Nurse Practitioner

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2024

ACKNOWLEDGEMENTS

I would like to thank Dr. Amanda Lucas and all the faculty at Montana State University for their endless support, guidance, and encouragement throughout the course of this project. I greatly appreciate all the time, effort, and devotion from Dr. Lucas to ensure this project was a success. Next, thank you to the site quality representative and staff at the project site for all their participation and hard work and for allowing me to spearhead this quality improvement project. Lastly, a huge thank you to my boyfriend, Colton, and my parents for their endless support, encouragement, and positivity. I wouldn't have made it without you all!

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

TABLE OF CONTENTS CONTINUED

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

ABSTRACT

Background: Cervical cancer (CC) is the fourth most diagnosed cancer among women. Cervical cancer screening (CCS) is a vital component of routine health care, as any individual with a cervix is at risk of developing cervical cancer, and nearly all diagnoses of aggressive cervical cancer are directly associated with a lack of screening, underscreening or inadequate follow-up of abnormal results. Unfortunately, the number of women overdue for CCS continues to increase gradually nationally and in Montana.

Local Problem: At a rural primary healthcare clinic in northwestern Montana, 37.0% of patients have a current CCS completion documented, compared to Healthy People's 2030 benchmark of 84.3%.

Methods: Participants included female patients ages 21-65 who presented to the clinical for an annual exam. Using the Plan-Do-Study-Act cycle, the intervention outcomes were measured biweekly throughout the six-week initiative. Measures assessed included: Adequate CCS eligibility determination, proper CCS documentation with the EHR, and the overall site CCS completion percentage. Data was collected over six weeks, de-identified, and analyzed using percentages and bar graphs.

Interventions: Literature supported a multifactorial approach to standardize workflows and documentation practices among the nurses and medical assistants (MA) through the provision of educational material and a CCS clinical decision tree. Key process changes included offering of same-day CCS screening, follow-up scheduling prior to the patient leaving, and EHR alert creation if patient records were requested.

Results: A total of 30 patients presented to the clinic. 100% of patients who presented to the clinic were assessed for CCS eligibility. 100% of eligible patients were offered CCS. 84.6% of patients had correct CCS documentation by the staff within the EHR, with four patients lacking proper documentation. A 4.1% increase was seen in the overall facility CCS completion percentage, reaching a total CCS completion percentage of 41.1%.

Conclusions: Implementing education, standardized workflows, and the use of the CCS clinical decision tree improved CCS documentation and completion rates.

Keywords: Cervical cancer screening, rural, primary care, cervical cancer, quality improvement

CHAPTER ONE

INTRODUCTION, BACKGROUND, & LITERATURE REVIEW

Clinical Problem

Cervical cancer (CC) is the fourth most diagnosed cancer among women, with 41 reported cases in Montana in 2020 (Center for Disease Control and Prevention [CDC], 2023; Zhang et al., 2022). CC develops on the cervix, with nearly 99% of cases associated with an infection of high-risk human papillomaviruses (HPV) (World Health Organization, 2023). HPV is an exceptionally common sexually transmitted virus, as nearly all individuals who are sexually active will acquire HPV at some point in their lives (National Cancer Institute [NCI] 2023c). Often, over one to two years, HPV will clear without intervention. Short-term HPV infections are not cancer-causing, but cellular changes occur when high-risk infections last years, resulting in precancerous lesion formation on the cervix. CC is remarkably preventable and curable if recognized early through adequate screening processes (NCI, 2023c).

Rimel et al. (2022) report that nearly all diagnoses of aggressive CC are directly associated with a lack of screening, underscreening, or inadequate follow-up of abnormal results. The American Cancer Society (ACS) estimates that in 2023, approximately 13,960 new cases of invasive CC will be diagnosed in the United States, with over 4,300 women predicted to die from complications of CC. The five-year relative survival rate of one diagnosed with CC is estimated to be near 67%; however, if caught in the early stages, the five-year relative survival rate is increased to 91.2% (NCI, 2023b). With nearly 25% improvement in survival with early detection

and treatment, the data accentuates the importance of routine cervical cancer screening (CCS) for timely diagnosis and reduced risk of mortality.

Background and Significance

CCS is a vital component of routine health care, as any individual with a cervix is at risk of developing CC (CDC, 2023; NCI, 2023a). CCS aids in diagnosing HPV infections, pre-cancerous lesions, or early-stage cancers. Depending on the patient's age, routine screening methods used to detect cervical cellular changes include human papillomavirus (HVP) testing, cervical cytology testing, often called a Pap test, or co-testing of both methods. The HPV test assesses for the virus, whereas the pap test detects cellular changes that may advance to cervical cancer if untreated (NCI, 2023a).

Unfortunately, CC remains a significant health matter, with an increased prevalence in rural areas compared to non-rural areas. In return, evidence demonstrates lower CCS rates in rural areas, emphasizing the importance of initiatives to improve CCS completion in rural geographical areas such as Montana (Zhang et al., 2022). Additionally, primary care cancer prevention strategies often receive inadequate consideration and implementation due to time constraints, limited staffing, patient and provider knowledge deficits, and evolving guidelines (Elliott et al., 2022). Nearly all cases of CC are preventable when adequate methods are taken to reduce risk. Improving routine screening is necessary to reduce CC prevalence and mortality (NCI, 2023a). Thus, quality improvement initiatives targeting improved CCS in rural primary care settings are an imperative component of preventative healthcare.

Standards of Care

The United States Preventative Services Task Force (USPSTF) recommends CCS for women ages 21-65 (2018). Women ages 21-29 must be screened every three years with cervical cytology testing only. Women ages 30-65 must be screened every three years with cervical cytology and every five years with high-risk human papillomavirus (hrHPV) testing OR every five years with hrHPV and cytology, which is often referred to as "co-testing" (2018). The USPSTF does not recommend screening in women younger than 21 years of age, those who have had a hysterectomy with no history of high-grade precancerous lesions or CC, and women older than 65 who have completed appropriate testing and been determined low-risk (2018).

Role of the Nurse Practitioner

Nurse practitioners (NPs) are crucial in reducing barriers to increase the prevalence of CCS. NPs have advanced education and are required to obtain either a master's or doctoral degree, previous clinical experience, and meet national and state regulations to serve health areas for those who would otherwise be underserved. Family nurse practitioners (FNPs), in particular, aid in closing the provider gap and shortage that endures within primary care and rural settings, therefore playing an elemental role in supporting education, promotion, and completion of CCS (King & Busolo, 2022; Ortiz et al., 2018). The NP role uniquely focuses on health promotion interventions and delivering evidence-based, competent care. Recent evidence indicates that FNPs are more efficient than their physician counterparts at improving screening rates and providing preventative care recommendations (Bradley University, 2018). The NP's advanced medical training expands the nurse's scope of practice, allowing for the performance of medical procedures, diagnostic testing, and examinations, which entails CCS completion (King & Busolo, 2022).

Reimbursement

Meeting quality measures is a critical component of provider and facility reimbursement. The Merit-based Incentive Payment System (MIPS) Program was developed to drive improvement within healthcare facilities to reduce the cost of care, enhance outcomes, and, in return, provide payments based on quality and performance (U.S Centers for Medicare & Medicaid Services, 2023). Quality and interoperability measures are collected throughout the year, scored, and used to formulate a MIPS score. CCS is an annual measure within this facility for the MIPS Program. To meet MIPS Measure 309 standards, CCS must be completed in accordance with the current USPSTF guidelines. This emphasizes not only the significance of CCS for patients but also the fiscal importance of completion for the healthcare system.

Scope of the Problem

Preventative integration of CCS has dramatically reduced CC cases and mortality over the last 50 years (NCI, 2023a). However, the percentage of women overdue for CCS has, for unclear reasons, gradually increased over the last two decades (Winstead, 2022). The National Health Interview System data estimates that the percentage of women not current with CCS has increased from 14% in 2005 to 23% in 2019. Additionally, evidence suggests that women who live in rural areas or lack health insurance are more likely to be overdue for screening (Kurani et al., 2020; Winstead, 2022). Barriers and challenges associated with CCS completion were only exacerbated during and continue after the pandemic due to fear of COVID-19, prolonged delays, site closures, staffing shortages, and postponement of screening services (CDC, 2021).

The literature presents salient evidence of various interventions to support the uptake of CCS. This scoping review aims to identify, review, and synthesize interventions from various

levels of evidence, including systematic reviews, quality improvement projects, and case-controlled studies. Numerous reports demonstrate diverse applicable interventions; however, suggested methods vary among targeted populations, types of facilities, and identified organizational issues. This review will evaluate the effectiveness of innovative, multifactorial, systematic interventions to sustainably increase CCS percentages within a rural primary care setting. Supporting literature incorporated any involving primary care settings, including those that specified the use of a nurse practitioner.

Methods

Search Strategy

This review aims to investigate the application of interventions designed to improve CCS within a rural primary care clinic. The Preferred Reporting Items for Systemic Reviews and Meta-analysis (PRISMA) guidelines were utilized to identify, select, appraise, and synthesize evidence (Page et al., 2023). The search occurred from September 11th to September 20th, 2023. Databases searched included Web of Science, PubMed, CINAHL Complete, CatSearch, ANA Journal, and the Cochrane Library. The ANA Journal and Cochrane Library generated the least results, while Google Scholar and Web of Science produced the most. Web of Science and PubMed searches were supplemented by examining reference lists of relevant studies.

The initial search was filtered by peer-reviewed articles published in English between January 1, 2018, and September 20, 2023. Search terms included: “cervical cancer screening”, “CCS”, “improvement of cervical cancer screening”, “cervical cancer screening AND primary care”, “cervical cancer screening AND rural”, "cervical screening AND nurs*”, “cervical cancer screening AND document* OR EHR OR Intake OR Data Gathering”, “cervical cancer screening

AND electronic health record AND nurs*", "cervical cancer screening AND quality improvement."

Eligibility

Eligibility was first refined to articles published within the last five years, peer-reviewed, and in English. This search produced an abundance of research that focused on improving CCS. Studies completed in third-world countries were excluded to ensure that the literature selected was pertinent to healthcare settings and practices within the United States. There was a clear gap within the literature, as few articles explored interventions related explicitly to consistent data collection, nurse and medical assistant targeted interventions, and standardized processes concerning the improvement of CCS. In the initial search, the amount of critically appraised evidence was inadequate to support the topic; thus, article inclusion was expanded to include quality improvement projects and case-controlled studies to encompass literature supporting the issue. Publications included participants who ranged from 21 to 69 due to the difference in guidelines utilized and the location of study conduction. Studies focused on interventions pertinent to rural and or primary care settings and targeted facility-based interventions rather than patient-based strategies to improve CCS.

Study Selection

The initial search concentrated on CCS multi-disciplinary staff-focused interventions within a primary care setting. These results were filtered by publication date, peer-reviewed, and published in English only. The search yielded a total of 1,388 articles from the six databases. Duplicate and ineligible articles were then excluded. The principal examiner scanned all eligible articles for relevancy and duplicates. After this process, 768 articles were eliminated, leaving 687

articles. The remaining articles were scanned by title and abstract relevancy. Of these articles, 24 were identified as appropriate, and four could not be recovered. As seen in Appendix A, out of the remaining 20 accessible articles, nine were determined to meet inclusion criteria and relevancy.

Additional articles were selected by searching within the citation lists of the studies determined to meet inclusion criteria. This method revealed 48 eligible articles, 44 of which could be retrieved. Articles were again assessed for relevancy and eligibility by title and abstract. Two additional articles were determined to meet the inclusion criteria. Eleven studies were selected as eligible after the extensive search and completion of the exclusion process.

Quality Assessment

The USPSTF grade definitions were utilized to determine study results and suggestions for practice (2023). The suggestions for practice were determined by the primary investigator (PI) based on the level of evidence and quality of the study completed. The USPSTF grades the quality of evidence on a three-point scale. “Good” suggests the evidence is retrieved from a well-designed, well-controlled study that explicitly addresses effects on health outcomes. “Fair” indicates the strength of evidence is limited by generalizability, indirect nature, or quality of the study; however, the evidence is sufficient to determine outcomes. “Poor” designates insufficient evidence due to the type of study conducted, gaps in the evidence, or lack of sufficient health outcome information (USPSTF, 2023). A total of one “good” level of study, eight “fair” level studies, and one “poor” level study were evaluated.

The USPSFT grade definitions include letter grades A, B, C, D, and I, each indicating a level of recommendation (2023). The letter A indicates a high certainty, and the benefit of the

intervention would be substantial. Letter B indicates high certainty that the benefit of the determined intervention would be moderate to substantial. Letter C recommends the selective offering of this intervention should be determined by professional judgment or patient preference. The certainty of benefit from intervention is minor. Letter D recommends against the suggested intervention, and there is a high certainty that no associated benefit or potential harm is greater than the perceived benefit. Lastly, I indicates that the intervention or study is insufficient to assess the benefit or harm of the service (USPSTF, 2023). Articles with lower quality and levels of evidence were included in this review due to the large gap in the literature that explicitly targets interventions applicable to standardization of processes, workflow, and organizational factors within a primary care setting.

The included studies were appraised according to the USPSTF grading schema. Grades were based on the overall quality of the evidence. Studies were then given a letter grade, indicating overall recommendations for practice implementation. Four studies received a “B” letter grade, suggesting fair evidence, the proposed interventions would improve outcomes, and the benefits outweigh the potential harm (Becerra-Culqui et al., 2018; Chuang et al., 2019; Kurani et al., 2020; Rodríguez-Gómez et al., 2020.). Six studies received a “C” letter grade as a fair level of evidence suggested interventions would improve outcomes, but known benefits cannot be justified (Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018; Luckett, 2022; Prusaczyk et al., 2022). One study received an “I” letter grade as evidence was insufficient based on the quality to recommend for or against the interventions (Des Marais et al., 2022). No included studies received an A or a D letter grade.

Results

Overview of Studies

This review consisted of one literature review (Prusaczyk et al., 2022), one systematic review (Rodríguez-Gómez et al., 2020), three cross-sectional studies (Chuang et al., 2019; Kurani et al., 2020; Lofters et al., 2018), one cohort study (Becerra-Culqui et al., 2018), and five quality improvement studies (Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Luckett, 2022). All studies were completed within the United States (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020; Luckett, 2022; Rodríguez-Gómez et al., 2020) except for two, one of which was completed in Canada (Lofters et al., 2018), and the other in Poland (Prusaczyk et al., 2022). Three studies targeted facilities in urban areas (Becerra-Culqui et al., 2018; Heidemann et al., 2021; Jaqua et al., 2022), while two were completed in rural areas (Chuang et al., 2019a; Kurani et al., 2020), and the others did not specify the completion area (Des Marais et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018; Luckett, 2022; Prusaczyk et al., 2022). Eight studies reported a mean sample size of 9,956 after outliers of 23 and 126,731 were excluded (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Kiser & Butler, 2020; Kurani et al., 2020; Lofters et al., 2018; Luckett, 2022), and three studies did not report the sample size (Jaqua et al., 2022; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020).

All included studies researched adult female participants over the age of 21 based on the current CCS recommendations (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020;

Lofters et al., 2018; Luckett, 2022; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Eight studies utilized the USPSTF CCS recommendations (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Kiser & Butler, 2020; Kurani et al., 2020; Luckett, 2022a; Rodríguez-Gómez et al., 2020), while others used the Ontario CCS guidelines (Lofters et al., 2018), the National Health Fund Recommendations (Prusaczyk et al., 2022), and one study did not specify which guidelines were used (Jaqua et al., 2022). All of the included studies specifically assessed or recommended interventions that targeted organizational factors, clinical staff, or workflow improvement (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020; Lofters et al., 2018; Luckett, 2022; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Lastly, in several studies provider team members included resident physicians only (Heidemann et al., 2021; Jaqua et al., 2022). Other studies included primary care providers with unspecified degrees (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018; Prusaczyk et al., 2022) and two that specifically addressed the nurse practitioner role (Luckett, 2022; Rodríguez-Gómez et al., 2020).

Outcome of Interventions

Becerra-Culqui et al. (2018) demonstrated patients with healthcare visits within the last year were associated with a higher CCS screening initiation during the follow-up time frame. Chuang et al. (2019) suggested lower provider-to-patient ratios, the use of electronic health records to identify eligible patients, and the production of automated reminders significantly increased CCS completion rates within an underserved facility (2019). Five of the eleven studies identified successful uptake after implementing: team-based organizational changes; staff

education; improved systematic workflows; comprehensive utilization of EHR systems; and empowerment of staff to identify and prepare patients for CCS (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Luckett, 2022; Prusaczyk et al., 2022). Successful systematic changes included standardized data-gathering processes, enhanced identification of eligible patients, uniform documentation, and offering of same-day visit screening (Heidemann et al., 2021; Jaqua et al., 2022; Luckett, 2022; Prusaczyk et al., 2022). These specific studies executed consistent intake processes targeting nurses and medical assistants (MA's) to aid in patient eligibility identification and screening completion. Comparatively, outreach by telephone, financial incentives for patients, and supplemental patient education were impactful; however, these interventions were deemed less sustainable and effective over time (Heidemann et al., 2021; Lofters et al., 2018).

Several studies identified rural deprived areas, uninsured patients, and certain ethnicities within populations less likely to participate in CCS, recommending consideration of these factors to increase CCS rates (Becerra-Culqui et al., 2018; Chuang et al., 2019; Kiser & Butler, 2020; Kurani et al., 2020). It is worth noting that some evidence reported was contradictory. Two studies recommended a focus on enriching patient knowledge (Jaqua et al., 2022; Rodríguez-Gómez et al., 2020), while others report that although patient knowledge of screening guidelines is generally low, educating patients about the screening details was not a significant method to increase CCS adherence within primary care settings (Heidemann et al., 2021; Jaqua et al., 2022a; Lofters et al., 2018).

While many interventions were explored and proposed, evidence suggests the best approach entails an individualized multifactorial approach addressing all levels of the system for

effective uptake of CCS (Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Rodríguez-Gómez et al., 2020). Efficient documentation, reminder systems, staff education, and care protocols are necessary to aid facilities and clinicians in reducing barriers, providing timely screening, and facilitating evidence-based care recommendations (Becerra-Culqui et al., 2018; Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020; Lofters et al., 2018; Luckett, 2022; Prusaczyk et al., 2022).

Literature Gaps

Four studies included a large sample size, increasing the validity of their findings; however, it is worth mentioning that statistical power was not reported (Becerra-Culqui et al., 2018; Chuang et al., 2019; Kurani et al., 2020; Luckett, 2022). Several studies suggested strong generalizability to a rural primary health facility (Luckett, 2022; Rodríguez-Gómez et al., 2020), while others reported a lack of generalizability to various populations or healthcare facilities (Becerra-Culqui et al., 2018; Heidemann et al., 2021; Jaqua et al., 2022a; Kiser & Butler, 2020). Further strengths of the studies within this review included well-defined inclusion groups of participants and applicable interventions to address the uptake of CCS (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020; Luckett, 2022; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020).

The limitations of the included studies in this review are worth mentioning. Within several of the studies, the data produced was cross-sectional, which allowed for the identification of organization characteristics associated with below-standard CCS; however, this strategy

prohibited the determination of a designated cause and prevented longitudinal assessment of the variables (Chuang et al., 2019; Kurani et al., 2020). Only three studies utilized a control group, increasing the potential for outside variable influence on results (Chuang et al., 2019; Des Marais et al., 2022; Rodríguez-Gómez et al., 2020). Additionally, study length varied, and those conducted over a shorter duration may have negatively impacted the significance of results and outcome sustainability (Kiser & Butler, 2020; Luckett, 2022).

Discussion

Implementation of a multifactorial systematic approach demonstrated the most significant impact on increasing CCS uptake within the obtained literature. Evidence recommends implementing a team-based organizational approach that includes enhancing communication between all staff and empowering nurses and MAs in identifying eligible patients (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). The team-based organizational approach within the literature also involved providing supplementary education to primary care providers, nurses, and MAs. Instruction provided to staff concentrated on: CCS guidelines; uniform documentation methods; staff intake processes; and role clarity. Sessions included training focused on the proper determination of patient eligibility, frequency, and type of CCS necessary contingent on patient age and history (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Several studies distributed CCS educational material to simplify practice recommendations and clinical decision pathways for nurses and MAs to follow during the intake process (Heidemann et al., 2021; Jaqua et al., 2022;

Kiser & Butler, 2020; Luckett, 2022). The pathways allowed for rapid recognition of eligible patients and provided staff with appropriate options once eligibility was determined.

Research suggests adequate usage of the EHR software capabilities to provide automated alerts for providers and staff, in return increasing CCS uptake (Becerra-Culqui et al., 2018; Chuang et al., 2019; Jaqua et al., 2022; Luckett, 2022; Prusaczyk et al., 2022). EHR software should be programmed to automatically flag patients with outdated or upcoming CCS. This intervention decreased time spent examining charts and ultimately increased staff efficiency (Becerra-Culqui et al., 2018; Chuang et al., 2019; Luckett, 2022; Prusaczyk et al., 2022). Next, successful workflow changes within the literature included the designation of staff roles, responsibilities, and expectations for intake and documentation processes. Staff were trained on standardized documentation processes within the EHR, as well as how to utilize the EHR system to assess CCS status (Becerra-Culqui et al., 2018; Chuang et al., 2019; Luckett, 2022a; Prusaczyk et al., 2022). Documentation changes focused on systematizing location, ordering of CCS, and charting refusals within the EHR to correctly reflect within the flagging software (Becerra-Culqui et al., 2018; Chuang et al., 2019; Luckett, 2022; Prusaczyk et al., 2022). Kiser and Bulter (2020) found the use of a case log helpful in evaluating the reliability and validity of data entered within the EHR to confirm appropriate data entry and effectiveness of interventions. Additionally, staff roles were clarified to eliminate confusion of duties, missed data collection, and ensure documentation completion.

Furthermore, same-day CC testing for all women who do not have an up-to-date pap test documented is encouraged throughout the literature (Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018). Evidence indicates CCS should be offered to all

women without up-to-date records due to the high occurrence of inaccurate patient reporting of screening completion or inefficient obtainment of records and integration into the EHR (Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018). If patients elected to complete CCS at a later time, proactive scheduling at the time of the visit positively influenced CCS uptake. Additionally, the evidence advises that patient reminder notifications be distributed either through the patient portal, letters in the mail, or via email when screening is upcoming and continue if overdue (Becerra-Culqui et al., 2018; Des Marais et al., 2022; Lofters et al., 2018; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Three studies propose patients be offered the option of a female provider if preferred to enhance uptake of the CCS completion (Becerra-Culqui et al., 2018; Des Marais et al., 2022; Jaqua et al., 2022) Of note, two of these studies were completed in large urban health facilities with a considerably higher number of available providers. Lastly, two studies suggested the use of NPs to offset the provider shortage and allow for increased availability of appointments to complete CCS, especially within rural, underserved areas (Luckett, 2022; Rodríguez-Gómez et al., 2020).

In conclusion, literature supports CCS uptake with: the integration of staff education on CCS guidelines; standardized workflow modifications and documentation practices; EHR utilization to flag out-of-date screening; and offering of same-day screening or follow-up appointments scheduled at the time of the visit (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). A prospective multifactorial approach is obligatory to enhance preventative CCS rates in a rural primary care setting.

Implications for Practice and Future Research

Despite the evidence depicting the benefits of CCS and uptake in rural, underserved areas, screening completion remains suboptimal (Lofters et al., 2018). CCS ultimately leads to increased health promotion, enhanced patient outcomes, and cost savings. It is unmistakable that the CCS completion rate must be increased in order to reduce the CC prevalence and overall mortality of women (Becerra-Culqui et al., 2018; Chuang et al., 2019; Kiser & Butler, 2020; Kurani et al., 2020). This review identified significant yet sustainable system changes and processes to increase CCS completion in a rural primary care setting. Implementation of evidence-based recommendations and utilization of the FNP to aid in the execution of such interventions is a necessity to employ early CCS and cancer detection.

CC remains a national concern, and a significant gap exists in the current evidence focusing on organizational and workflow changes. Thus, the completion of future studies should assess organizational interventions to identify eligible patients and continue the investigation of streamlining workflow, accurate data collection, and documentation to improve health disparities and outcomes (Becerra-Culqui et al., 2018; Chuang et al., 2019; Des Marais et al., 2022; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Kurani et al., 2020; Luckett, 2022; Rodríguez-Gómez et al., 2020). The mindset surrounding CCS must shift from an opportunistic test available for women to a standardized practice necessity among clinical staff and primary care facilities.

CHAPTER TWO

PROJECT SETTING AND METHODS

Introduction

Cervical cancer screening (CCS) aids in detecting cancer at early stages when patients remain asymptomatic, ultimately resulting in decreased morbidity and mortality of women. CCS has significantly reduced the number of new cases and deaths caused by cervical cancer (CC) (NHI, 2023). While CCS is a readily available service, over the last 20 years the number of women overdue has continued to increase for unclear reasons. The American Cancer Society Action Network (ACSAN) (2020) estimates nearly one in five women are not appropriately screened for CCS. Furthermore, a later diagnosis of CC directly correlates with a decreased survival rate. Unfortunately, it is estimated that only 44% of CC cases are detected at a local stage (ASCAN, 2020). The CDC (2023) estimates that 11,500 new cases of CC are diagnosed in the United States, and nearly 4,000 women die yearly from CC. CC is the third most common type of gynecological cancer, with approximately 39 new cases diagnosed annually in Montana (Montana DPHHS, 2021).

Healthy People's 2030 target is to reach a CCS completion rate of 84.3% as a nation (NCI, 2023). In 2021, the National Cancer Institute (2023) reported the average U.S. CCS completion rate was 72.4%. While slightly above the national average, Montana currently ranks 38th with a CCS completion percentage of 74.8% (America's Health Rankings., 2022). While Montana's CCS completion rate does present slightly above the national average, it remains

significantly below the 2030 national target, emphasizing the necessity for proactive screening programs to improve CC detection (Montana DPHHS, 2021).

Problem Statement

CCS rates are considerably below Healthy People's 2030 goal of 84.3%, with a completion rate of 37% at one rural primary care clinic in Montana. Literature indicated: (a) staff education, (b) standardized workflows, (c) adequate EHR use, (d) accurate documentation, (e) utilization of the NP, and (f) cost reduction can increase CCS completion within a primary care setting (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Based on the practice recommendations retrieved from the recent literature appraisal and needs assessment, this project integrated a clinical decision tree to standardize intake, workflow, and documentation at this practice site. Additionally, staff were provided education containing the current USPSTF CCS guidelines, instruction on EHR navigation to determine patient CCS status, and the expected EHR documentation processes. With the implementation of the above interventions, which have demonstrated improvement in CCS in similar environments, uptake at the project site was anticipated.

Organizational Microsystem Assessment

The practice site specializes in providing primary care services, including CCS, to a large surrounding community, as the nearest obstetrician-gynecologist (OBGYN) provider is greater than 80 miles away. Significant travel distances to obtain OBGYN-specific services pose further barriers to CCS completion and accentuate the significance of targeting CCS uptake within this

facility. This location also provides various other medical services, including dental care, behavioral health, podiatry, and optometry.

The project site, located in a rural area in northern Montana, encompasses 20 exam rooms, with each including an exam table with stirrups along with pap and hrHVP collection supplies. Based on stakeholder discussion, in 2022 the practice saw 24,844 patients for primary care services, 3,031 for behavioral health, 2,178 for podiatry services, and 4,455 for dental care. The practice site accepts patients with Medicare, Medicaid, and private insurance. Furthermore, for purposes of this initiative, it is essential to note the site is a Federally Quality Health Center (FQHC), signifying a rural, medically underserved area. Evidence displays rural, underserved areas routinely demonstrate lower CCS rates and higher CC prevalence, again emphasizing the need for enhanced CCS uptake (Zhang et al., 2022).

The providers at this project site see a diverse range of patients including pediatrics, midlife adults, and geriatric patients. Based on the USPSTF guidelines, the project considered all women ages 21-65 eligible for CCS. The practice includes 73 employees; however, key project stakeholders consisted of three MAs, eleven nurses, and the quality improvement site representative. The providers, consisting of five nurse practitioners (NPs), one physician assistant (PA), one certified nurse midwife (CNM), and three physicians, responsibilities and workflow remained the same as they are already accustomed to performing CCS when informed by the MA or nurse.

While this rural primary care facility demonstrated a lower-than-benchmark CCS completion percentage, this finding was consistent with state and national reporting regarding CCS completion. Other network facility averages for CCS completion rates were near 43%, with

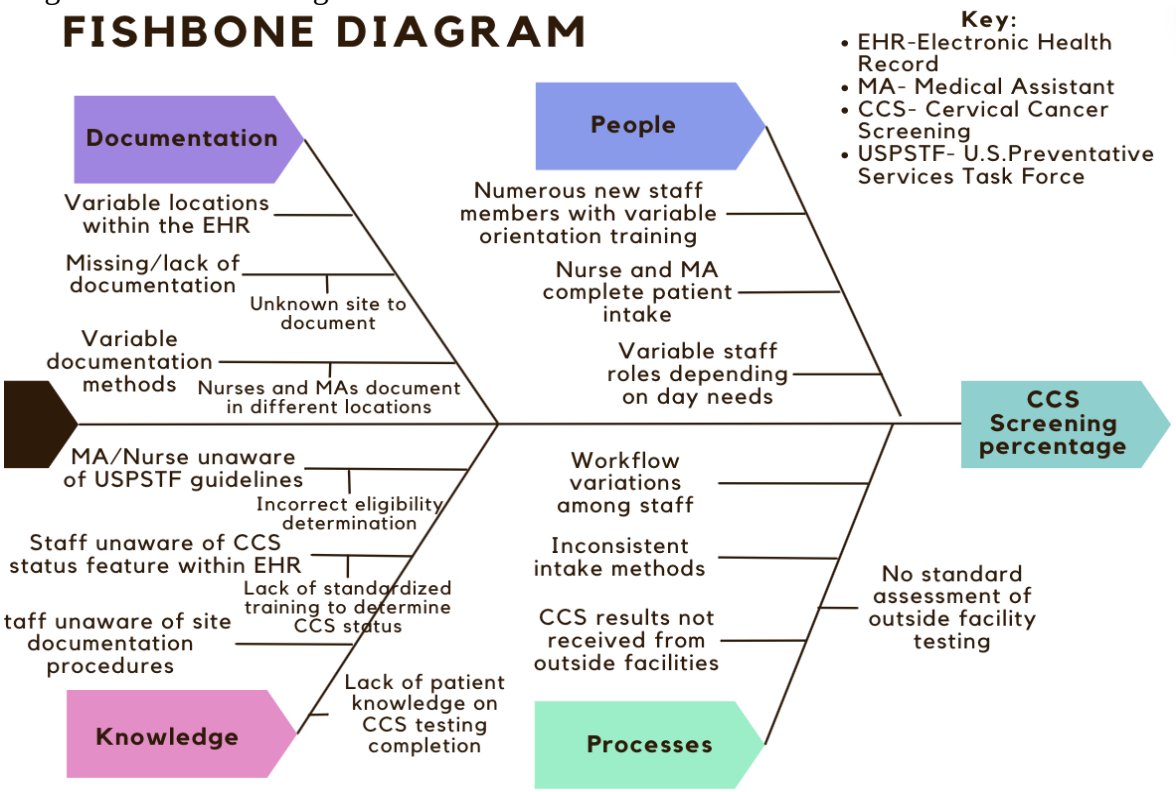
the highest comparative facility in Montana reporting a CCS completion of 59.3%. Since the project site's CCS completion percentages were nearly 50% below the Healthy People 2030 goals, there was a critical need for practice revision. A needs assessment was undertaken to determine possible factors contributing to the facility's low CCS outcomes.

Within this facility, data collection spanning from January 1, 2023, to October 1, 2023, identified 331 of 895 eligible females who were appropriately screened for CC, signifying 564 opportunities annually to capture CCS screening status. While significantly below metric standards, it is essential to note the report included the entire female population seen at the site, incorporating episodic, specialty, ophthalmology, behavioral health, and dentistry visits. The data was not exclusively extracted from visits coded for annual exams when CCS is most often performed. Unfortunately, if a patient only visits this facility for a dental appointment, the visit was included in the CCS screening completion percentages per the MIPS (Merit-based Incentive Payment System) reporting standards. MIPS standard scores are critical as the quality of care delivered and performance measures determine reimbursement payments for the facility (U.S Centers for Medicare & Medicaid Services, 2023).

Chart comparisons to the MIPS CCS report confirmed the low CCS percentages. The completion of chart reviews uncovered inconsistent charting practices by the nurses and MAs, increasing the risk of undetected CCS through the MIPS data software if not documented correctly within the EHR. Site observations demonstrated variable nurse and MA intake screening, workflows, and documentation processes. If CCS status was assessed, nurses and MAs disclosed patients often reported CCS completion at outside facilities. When inquired further about screening, nurses and MA said patients were unsure of which facility the CCS was

completed, uncertain of the results or duration since the last testing, or prior CCS results were requested and not obtained for the documentation in this practice's EHR. Figure 1 portrays the fishbone diagram that aided in determining causative agents to insufficient CCS. These findings were broadly consistent with issues noted and addressed within the literature review, enhancing the applicability of guideline education, standardized workflow modifications, EHR utilization, and documentation processes discussed within Chapter One.

Figure 1. Fishbone Diagram



Consistent with the literature recommendations, the site possessed numerous factors to aid the uptake of CCS and project success. The clinic site utilized an EHR with an integrated tracking system to monitor CCS status and provide reminders to staff. However, several staff were unfamiliar with this feature within the EHR therefore, had not used it as a reminder. Based

on CCS status within the EHR, the clinic also sent patient reminders via mail to notify of upcoming or past due CCS.

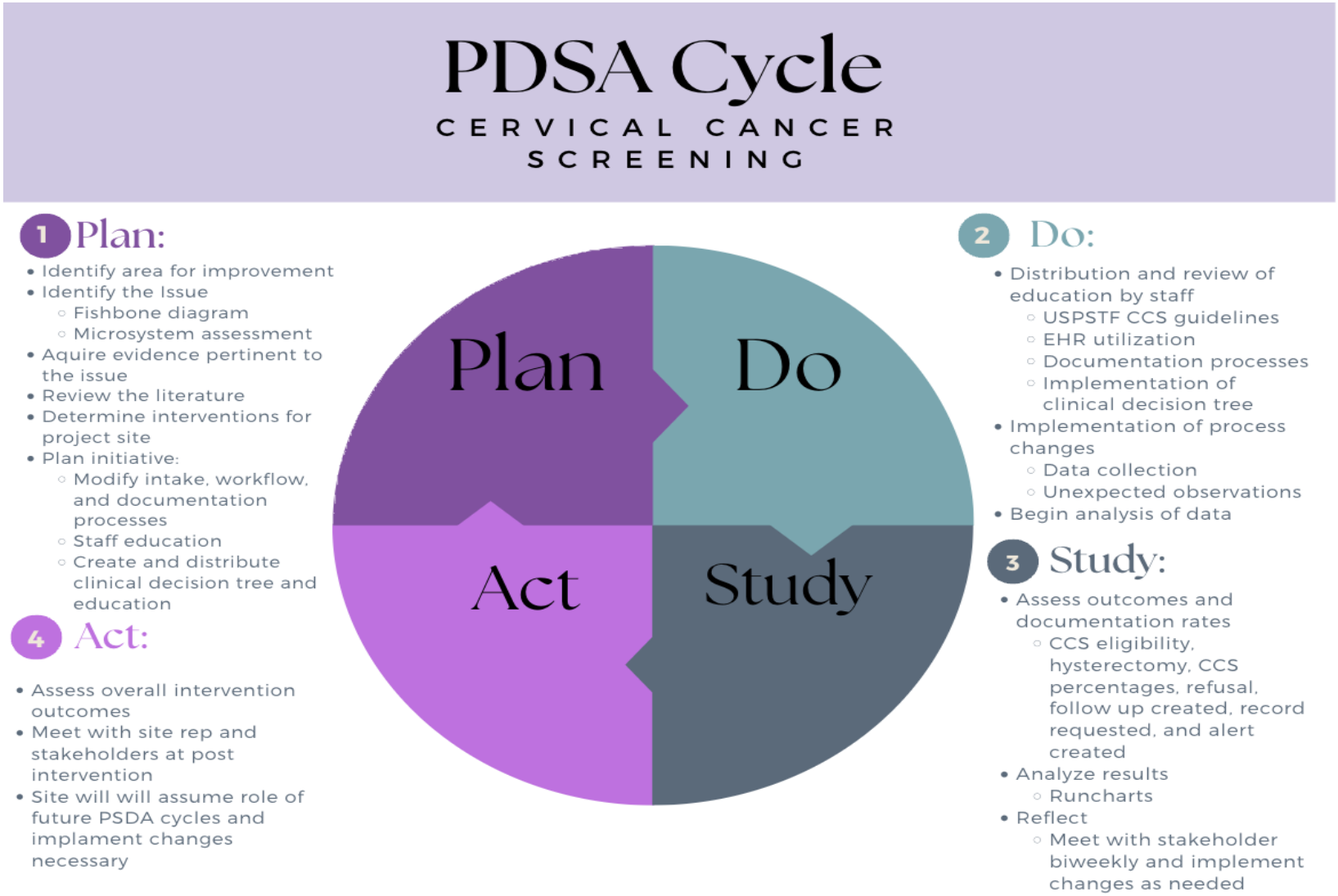
The project site staff demonstrated a clear understanding of role accountability, as the nurses and MAs were already responsible for obtaining and documenting a thorough intake from the patient. After the patient was roomed and intake was obtained, the MA or nurse participated in a brief huddle to relay pertinent information or concerns to the provider. This created a streamlined intake process that allowed the provider to avoid redundancy. Additionally, the site employs several advanced practice providers to reduce physician strain and patient wait times. Lastly, the site is an FHQC that participates in patient cost reduction programs for underinsured or uninsured patients, such as the Montana Cancer Control Program (MCCP). While this facility has numerous efficient processes in place, if the MA or nurse did not assess CCS status methodically and document appropriately, there was potential that CCS status could be easily overlooked or data integration into the EHR missed. Thus, the site assessment revealed the importance of standardized MA and nurse intake workflow and documentation methods.

Quality Improvement Model

This quality improvement project aimed to improve CCS uptake through (a) staff education, (b) implementation of standardized intake, (c) workflow modifications, (d) consistent documentation through the integration of a clinical decision tree, and (e) proper staff EHR utilization based on the microsystem assessment and literature recommendations. The project was developed using the Institute for Healthcare Improvement (IHI's) Quality Improvement Essentials Toolkit, emphasizing the Plan, Do, Study, Act (PDSA) method to establish a theoretical interventional guide.

The PDSA cycle began with the “plan” phase, which focuses on identifying the problem and opportunities for improvement, examining current processes, identifying potential change strategies, and developing a plan to test the change (Institute for Healthcare Improvement [IHI], 2023). During phase two, the “do” stage, the interventions were implemented into the practice, with data collection co-occurring. Within the “study” phase, outcomes were assessed, and effectiveness determined. The phase ultimately answered the question, did the proposed plan result in the uptake of documented CCS? Lastly, in the “act” phase, the change was refined based on the previous cycle's results, and if the plan was successful, the initiative was standardized into practice (IHI, 2023). See Figure 2 for an outline of the PDSA cycle for this quality improvement project.

Figure 2. Implementation of the PDSA Cycle to Increase CCS



Specific Aims

This quality improvement project aimed to increase CCS completion rates in adult women aged 21-65 in a rural primary care setting in Montana. Evidence depicted the importance of CCS completion among women. Increased CCS completion, decreased CC prevalence, and reduced morbidity and mortality were the ultimate goals of this project; however, these goals surpassed the extent of the initiative's project timeline. Short-term goals included by January 15th, 2024: 1. 100% of nurses and MAs would receive the clinical decision tree and staff education materials. 2. 100% of nurses and MAs would be educated on the USPSTF CCS guidelines, use of the EHR to identify eligibility, correct documentation processes, and clinical decision tree implementation.

Mid-term goals included by March 1st, 2024: 1. 100% of patients indicated for CCS would have one of the following documented within the EHR: CCS completion; CCS refusal; a follow-up appointment scheduled for CCS; or an alert created denoting record requisition. 2. A 6% increase in the total CCS percentage would occur to reach a goal of 43%. Long-term goals that were outside the immediate project timeline, but were set for project sustainability included by January 2025: 1. 100% of female patients who present for an annual exam will be assessed for CCS eligibility and documented appropriately within the EHR using the clinical decision tree guidance; 2. A 48% increase from baseline in CCS completion to reach Healthy People's 2030 goal of 84%. See Table 1 for an in-depth review of project SMART Goals.

Methods

Implementation Summary

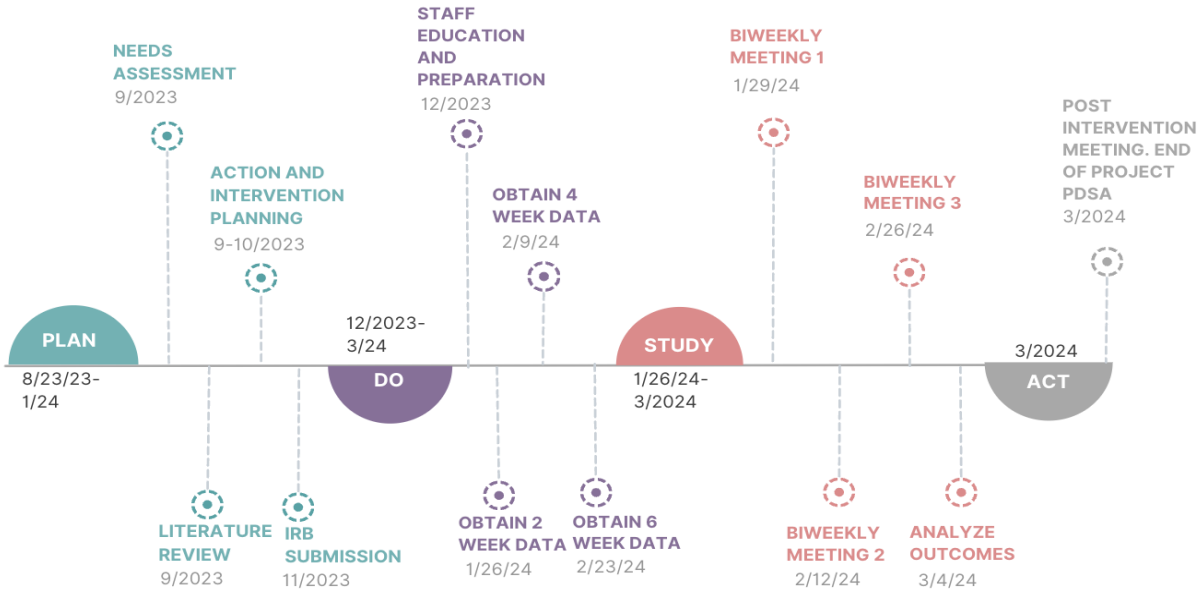
This Doctor of Nursing Practice (DNP) quality improvement (QI) project occurred at a rural primary care facility in northwestern Montana. This QI initiative aimed to standardize the intake, workflow, and documentation process of nurses and MAs through the provision of education and the implementation of a clinical decision tree; see Appendix C for education and process change documents provided. The initiative aimed to determine if integrating an evidence-based clinical decision tree and staff education would improve workflow and ultimately increase CCS completion and documentation rates over time. Implementation of the proposed intervention began on the 15th of January, 2024. Data was collected by the primary investigator (PI) at the site every two weeks during the project implementation. The outcomes of the QI project were assessed, evaluated, and reviewed by the PI with the site representative biweekly, lending to three PDSA cycles. After the six-week initiative, an overall evaluation of the interventions and a post-initiative meeting occurred at the beginning of March. See Figure 3 for an overview of the PDSA cycle timeline.

Intervention & Implementation

Plan Phase. Within this phase, the site analysis illuminated a lower-than-standard metric for CCS completion within the facility. Observations revealed the previously discussed variations in nurse and MA practices, the need for knowledge regarding EHR capabilities, and unawareness of USPSTF CCS guidelines for screening and documenting. A fishbone diagram was constructed to aid in identifying the causative agents and their effect on the issue; see Figure 1. The literature review indicated the implementation of standardized workflow, intake,

documentation, and use of EHR features could increase CCS. Therefore, planned strategies to implement change include the distribution of staff education material surrounding EHR utilization, documentation, USPSTF CCS guidelines, along with the integration of a clinical decision tree guiding staff to standardize CCS eligibility determination and documentation practices. The initial steps to completing the proposed interventions included the creation of education materials and a CCS clinical decision tree.

Figure 3. Proposed Timeline for the Quality Improvement Project



Educational materials encompassed a condensed figure displaying the current USPSTF CCS guidelines and instructions on documentation practices. The documentation education provided step-by-step instructions regarding the following: (a) how to properly chart CCS, CCS refusal, and a prior hysterectomy; (b) the creation of an EHR alert to denote record requests and that the patient remained due for CCS; and (c) where within the EHR the patient's CCS status was located. Refer to Appendix C for education materials provided to staff members. These

materials were distributed to all nurses and MAs who worked at the clinic and aimed to standardize eligibility determination and documentation practices among all staff.

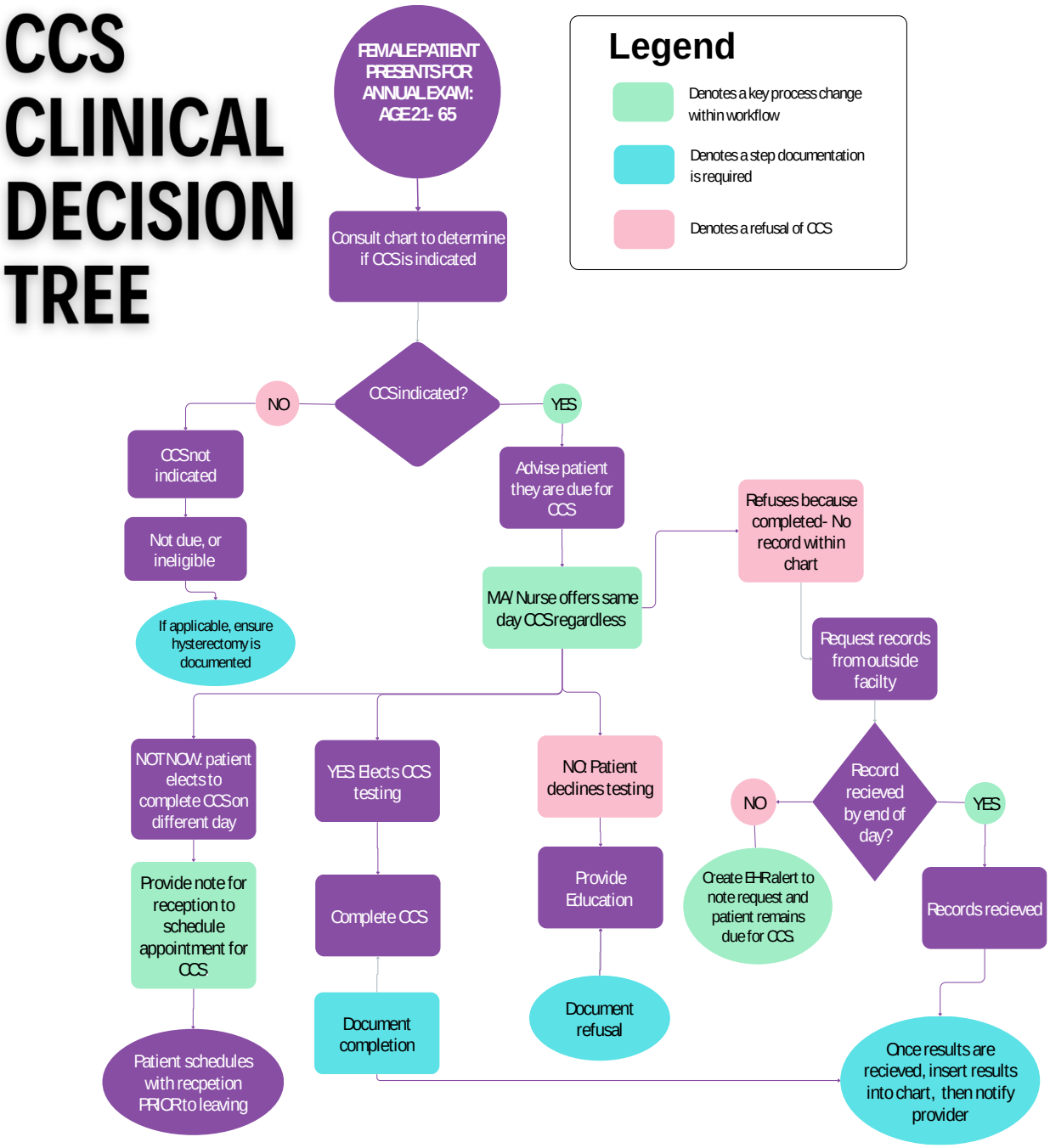
The clinical decision tree was constructed from recent evidence-based practices obtained from the literature to address the concerns identified in the microsystem assessment. First, the decision tree guided staff to determine patient CCS eligibility. If the patient was determined ineligible or not due based on the USPSTF guidelines, the decision tree led staff to stop the CCS intake process and, if applicable, prompt staff to ensure a hysterectomy was documented with the EHR. If the patient was determined eligible and due for CCS according to the USPSTF guidelines, staff were prompted to advise the patient. Next, a fundamental process change within the workflow included the clinical decision tree prompting staff to offer same-day CCS to the patient regardless if there was no documented CCS result within the EHR, or the last documented CCS indicated the patient was due for CCS.

The decision tree then guided staff through the process depending on patient response. If notified and the patient agreed to same-day CCS, the MA or nurse informed the provider to complete CCS and document completion in the standardized location. If the patient elected to complete CCS on a different day, the decision tree reminded staff to provide the patient with a note for reception to schedule a future follow-up appointment for the CCS prior to the patient leaving. If the patient was advised that they were due to CCS and refused the testing, the decision tree prompted staff to educate the patient and document the refusal. If the patient refused CCS due to having completed it elsewhere, the decision tree prompted staff to request patient records and create an alert within the patient's chart to denote record requisition and the

patient remained due for CCS. This notified staff anytime the patient's chart was reopened of the date CCS records were requested, and the patient remained due for screening.

Lastly, to ensure results were entered into the EHR, the decision tree prompted staff to document the results once received from an outside facility or the contracting lab prior to provider handoff. This last modification to the workflow ensured that completed CCS results were documented within the location captured by the MIPS data collection software. An increase in CCS percentages was anticipated by offering patients same-day CCS, when determined eligible, regardless of the patient response, having patients who elected completion of a different day schedule CCS before leaving the clinic. Figure 4 displays the clinical decision tree that was provided to nurses and MAs. The “plan” phase occurred from September into November of 2023 and provided the groundwork leading into the “do,” “study,” and “act” phases that transpired in December and span into March of 2024.

Figure 4. CCS Clinical Decision Tree



Do Phase. The “Do” phase began after receiving approval from Montana State University’s Institutional Review Board (IRB) in December. The initial step within this phase included distributing the education materials and the CCS clinical decision tree discussed within the planning phase. The material was delivered via email to all nurses and MAs who worked at the clinic, but printed copies of the CCS clinical decision tree were also distributed to each pod to provide staff with a quick, accessible reference. Additionally, the educational material and CCS clinical decision tree served as a simple method for staff to reference long-term to support the initiative's sustainability. Within the email, staff were also provided with the primary investigators' contact information and encouraged to reach out with questions or concerns at any point throughout the project implementation. The distribution of guidelines and educational material occurred prior to project implementation to ensure all team members were aware of current CCS standards and project expectations. The number of staff who received and reviewed the educational materials was recorded in a data table, see Figure 5.

Figure 5. Staff Email Receival and Response Tracking Data

	Total Number	**Total Percentage**
Number of staff who received email		
Number of staff who responded to email with three takeaways		

	Total Number	**Total Percentage**
Number of staff who responded to “What other questions do you have at the end of this education?”		

Staff responses to “What other questions do you have at the end of this education?”
1.
2.
3.
4.

Next, the process change was integrated into practice beginning the third week of January. The PI was present throughout this week to assist staff with the integration of the clinical decision tree, answer questions, and address any initial challenges. Data collection occurred every two weeks, totaling three PDSA cycles, by the PI throughout the six-week quality initiative. The PI met with the site representative every two weeks to review project implementation, outcomes, and inquire about barriers and unexpected observations. Data was gathered using a data collection tool, see Figure 6, that was provided to each receptionist. In the collection tool, the receptionists were asked to document all female patients ages 21-65 who present for an annual exam and document the date of visit, patient name, and date of birth. Data security and confidentiality for the collection tool are detailed later.

Figure 6. CCS Data Collection Tool

Female Patients Aged 21-65 Presenting for Annual Exam

Reception to Complete			**CHART AUDIT PURPOSES: Reception Leave Blank**					
				Not Eligible:	**Eligible:**			
Patient Name	**DOB**	**Date of Visit**	CCS Eligibility Determination Correct?	Hysterectomy documentation? (Only if applicable)	CCS completed?	Refusal documented?	Follow-up appointment created?	Record request and CCS alert created?
1.								
2.								
3.								
4.								
5.								

Study Phase. The third stage of the cycle was the "study" phase. Throughout the implementation of project interventions, it was predicted CCS documentation would improve and overall CCS completion rates would increase. During this phase, data collection continued

biweekly through chart audits completed by the PI. Chart audits occurred every other Friday and assessed for adequate CCS eligibility determination by the staff and corresponding documentation within the EHR. After the data was extracted from the chart audits and computed into run charts, the calculated outcomes were reviewed biweekly with the site representative on the following Monday. With each of these PDSA cycles, any necessary process adaptions were implemented and carried out during the following weeks of the initiative to enhance the overall success and sustainability of the project. The PI emailed project updates and necessary changes to initiative participants so they remained informed of project changes and progress. After the six-week implementation phase was completed, analyzed data for the total duration of the quality improvement project was reported via bar charts in March 2024. See the evaluation and analysis section for further data analysis processes.

Act Phase. Lastly, the “act” phase commenced. A post-intervention meeting with stakeholders discussed the implementation's outcomes, barriers, and overall success. Due to this phase extending beyond the project's timeline, the facility site representative will assume control of the initiative and any future PSDA cycles. Depending on the results of this project's interventions, the site representative and stakeholders will determine if future modifications and PDSA cycles are necessary. Changes implemented within the project will be standardized into practice, modified, or the interventions may be abandoned entirely.

Budget

Necessary supplies required for the project implementation included an exam room, exam table, CCS supplies, and adequate EHR capabilities, all of which the facility already had available. The budget required for this quality improvement initiative included only the material

to print the clinical decision tree, as education materials were provided via email to staff. The estimated cost to print one page in color is 15 cents. If each care pod was supplied with four copies, the cost was approximately $6.00. With the cost estimated to be relatively low, an additional benefit to the site includes the 270 hours the DNP student volunteered. This results in nearly a $6,750 savings when the volunteered hours are multiplied by a conservative nursing rate of $25 per hour.

Barriers

A potential barrier to initiating proposed interventions was resistance from the nursing and MA staff. Staff could have found the education redundant and time-consuming, as there was no scheduled time allotment for staff to review the project education material. Staff members were expected to review the educational material at work prior to the beginning of the intervention. They were allotted enough time to review the material, which was estimated to take, at most, ten minutes. Providing the education via email allowed staff to refer to material at any point throughout the initiative.

Staff could have believed implementation of the clinical decision tree would take time and effort to change the current workflow. The intervention implementation consisted of only minor changes to staff workflow and required minimal utilization time. Implementing the clinical decision tree intended to keep the intake length the same and was anticipated to enhance staff efficiency. The email sent out to staff containing the educational materials and clinical decision tree highlighted the minor changes within the workflow, emphasized the minimal time required to review the material, and the overall importance of the initiative and practice change.

Lastly, a potential challenge that would likely persist throughout the initiative was the low rate of patient records received from outside facilities. While the clinical decision tree prompted staff to record the request within the patient chart and create an alert within the EHR record, unfortunately, this was an independent factor reliant on the outside site. It was presumed the change within the workflow would, at a minimum, allow for follow-up of unreceived patient records, and an alert would be created to remind the patient of CCS at the next visit.

Evaluation and Analysis

Staff receival of the email containing the educational material was intended to be tracked through the review of read receipts, which the primary investigator performed. Data collection was meant to record the number of staff members confirmed to have, at minimum, opened the email. Receipt rates were to be calculated by dividing the number of staff with confirmed receival by the total number of staff members sent the email. Next, to track the percentage of staff members who reviewed the material, staff were asked within the email to respond with three takeaways from the educational material. The primary investigator attempted to record the number of staff members who responded with takeaways within a data table. This number was then to be divided by the total number of staff members sent the email to determine the number of educated staff members. The data was to be recorded within the data table, analyzed as fractions, and transmitted into percentages. Within this email, were asked, “What other questions do you have at the end of this education?” Staff responses were recorded within the data table and analyzed as a quality metric for future project adaptations. See Figure 5, detailed above for the data collection tables that were utilized.

To track the CCS documentation, a chart audit was performed on all female patients listed within the data collection tool biweekly, on Fridays. The chart audit, completed by the PI and site representative to ensure accuracy, first reviewed if the patient was appropriately determined eligible or ineligible for CCS screening based on the USPSTF guidelines. If deemed ineligible, the investigators validated the determination and, if applicable, that a hysterectomy was documented with the EHR. If the patient was determined eligible, the investigators again validated the determination and assessed for adequate documentation with the EHR. Satisfactory documentation for eligible patients included: documented CCS completion; a documented patient refusal of CCS; or a follow-up visit scheduled; or an alert created within the patients' chart indicating that a record request occurred and the patient remained due for CCS. The chart audit results were recorded within the data collection tool, see Figure 6, detailed above.

After data was extracted from the chart audits, statistical analysis converted the collected data into fractions and percentages. Rates of appropriate CCS eligibility were calculated by dividing the number of appropriately determined patients by the total number of patients who presented for an annual exam. CCS documentation rates were calculated by taking the number of patients who had accurate EHR documentation in one of the five respective categories (Hysterectomy documented (if ineligible), CCS completed, CCS refusal documented, follow-up appointment scheduled, or records requested and CCS alert created) divided by the total number of patients who presented for an annual exam. This produced an overall documentation percentage and allowed investigators to determine if any steps in the clinical decision tree appeared ineffective. Bar charts were utilized to visualize data every two weeks and at the end of the six-week initiative. Lastly, rates of general facility CCS were assessed through the MIPS

reporting software utilized by the facility to gauge the clinical significance of the implementation. See Table 1 for further details pertaining to project goals.

Table 1. SMART Goals

<table>
<tr><td colspan="3">SMART Goal #1: By January 15th, 2024, 100% of staff received distributed project material regarding:
1. the determined problem within the site.
2. the QI initiative and aim.
3. USPSTF CCS guidelines.
4. step-by-step documentation instructions and EHR use.
5. the CCS clinical decision tree.</td></tr>
<tr><td colspan="3">Description of strategies and resources used to accomplish goal.
The principal investigator:
- developed CCS USPSTF education material, see Appendix C.
- created the nurse/MA educational material handouts including EHR use and documentation processes, see Appendix C.
- developed the clinical decision tree for CCS, Figure 4.</td></tr>
<tr><td>Data to be collected:</td><td>Method of Collection and who is responsible.</td><td>Planned data analysis</td></tr>
<tr><td>Numerator: Nurses and MAs who opened email and verified receipt.

Denominator: All project site nurses and MAs.</td><td>The primary investigator monitored and tracked all staff members who received the educational materials via email by reviewing email read receipts that occurred when the email was opened.</td><td>The principal investigator documented the percentage of staff who received the email.</td></tr>
<tr><td colspan="3">SMART Goal #2:
By January 15th, 2024, all employed nurses and MA’s were educated on:
- the USPSTF CCS guidelines.
- use of the EHR to determine patient CCS eligibility.
- correct documentation processes within the EHR.
- workflow changes surrounding the integration of the clinical decision tree.
Description of strategies and resources used to accomplish goal.
The principal investigator:
- emailed all nurses and MAs the educational material, see Appendix C, including the USPSTF CCS guidelines, documentation processes, EHR alert creation, and the clinical decision tree.
- provided written education via email surrounding the workflow changes that were expected with the integration of the clinical decision tree:</td></tr>
</table>

Table 1. SMART Goals Continued

<table>
<tr><td colspan="3">

Offering CCS if eligibility was determined regardless of patient response.
Offering same day testing, if the patient elected a different day, a note was provided to the patient to schedule the appointment prior to leaving.
if offered and refused, the refusal was documented.

if the patient refuses and states the testing was completed at an outside facility, request records and create EHR alert.
- implemented use of the clinical decision tree for all patients ages 21-65 who presented for an annual exam into workflow.
- assessed for further questions after the review of the educational material.
- implemented use of the clinical decision tree for all patients ages 21-65 who presented for an annual exam into workflow.
- assessed for further questions after the review of the educational material.
</td></tr>
<tr><td>Data to be collected</td><td>Method of Collection and who is responsible</td><td>Planned data analysis</td></tr>
<tr><td>Numerator: Nurses and MAs who opened the email and verified review of education material by responding with three takeaways.

Denominator: All project site nurses and MAs.
_____
Numerator: Nurses and MAs who reviewed the education material and responded with further questions.
Denominator: All project site nurses and MAs.</td><td>The principal investigator monitored and tracked all staff members by having staff reply to the email with three takeaways to signify they had reviewed the material.
_____
The principal investigator monitored emails
from staff denoting further questions after reviewing the educational material.</td><td>Principle investigator documented percentage of staff who reviewed the education via responses from staff.
_____
Principal investigator documented questions from staff via responses from email for qualitative project data. The data was used to adapt future project adaptations</td></tr>
<tr><td colspan="3">SMART Goal #3: By March 2nd, 2024, 100% of patients determined eligible for CCS would have one of the following documented within the EHR: CCS completion; CCS refusal; a follow-up appointment scheduled; or an alert created within the EHR.</td></tr>
<tr><td colspan="3">Description of strategies and resources used to accomplish goal.
- Completion of Goals 1 and 2.
- Nurses and MAs would use the clinical decision tree with each female patient who presented for an annual exam and is age 21-65. This prompted staff to follow one of the pathways and the corresponding documentation required.</td></tr>
<tr><td>Data to be collected</td><td>Method of Collection and who is responsible</td><td>Planned data analysis</td></tr>
</table>

Table 1. SMART Goals Continued

Numerator: Number of female patients aged 21-65 who presented for an annual exam and number who had documentation of: -completed CCS -refused CCS -scheduled follow up -EHR alert created Denominator: Total number of female patients age 21-65 who presented for an annual exam.	Reception tracked patients ages 21-65 who presented for an annual exam daily. The primary investigator and site representative reviewed the data collection tool every two weeks and performed chart audits.	Each component (CCS completion, CCS refusal, scheduled follow up, and EHR alert created) was observed, and a corresponding percentage result was tallied and presented through the use of a run chart distributed every other week via secure staff email.
SMART Goal #4: By March 1st, 2024, the total CCS screening percentage would increase by a minimum of 6% to a goal of 43%.		
Description of strategies and resources used to accomplish goal. -As noted in SMART Goals 1-3. -integration of EHR alert system to signify record requisition and note the patient remained due for CCS until received. -integration of process to document results within EHR prior to provider handoff.		
Data to be collected	**Method of Collection and who is responsible**	**Planned data analysis**
Numerator: number of female patients aged 21-65 with documented CCS or refusal of CCS in the EHR. Denominator: number of female patients ages 21-65 who presented to the facility deemed eligible for CCS	The primary investigator reviewed the total facility CCS percentage determined by data collection software program.	Data collection software utilized by facility determined overall CCS completion percentage integrated into a run chart to analyze data and distributed every other week via secure email.

Safety and Confidentiality

The quality improvement initiative was submitted in November 2023 to Montana State University's Institutional Review Board (IRB) to ensure patient confidentiality was protected. This site did not encompass an IRB representative, but the quality improvement site representative provided approval of the stated interventions of the initiative. Furthermore, the

proposed implementation changes focused on process and documentation changes, were evidence-based, and posed no risk to patients; thus, expedited approval was attained.

Email responses were voluntary on the part of the staff, and all responses were deidentified after summarizing within the data table. All patient information was kept confidential and did not leave the clinical site. While the patient information was utilized to complete the chart audits and assess outcomes, this process occurred at the facility only, and the data collected remained on a password-protected computer monitored by the site's information technology for security. The patient information collection tool was kept in a locked, secure room when not in use and at the end of operating hours. The PI and site representative secondarily collected data via the EHR. After the chart audit was completed, the data collection tool containing personal information was shredded. The information abstracted from the EHR did not contain any identifying patient information, and numerical values were utilized to assess the outcomes of the intervention. All data collection tools were destroyed after the 6-week initiative was completed and data analysis occurred.

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

Contribution of Authors and Co-Authors

Manuscript(s) in Chapter(s) 4

Author: Katie Kelleher, DNP-FNP Graduate Candidate

Contributions: Investigation of the problem, literature review, intervention implementation, and data collation and analysis.

Co-Author: Amanda Lucas, DNP, MSN, RN, APRN-CNS, ACHPN

Contributions: Editorial review, project design guidance, result oversight, and content approval.

Co-Author: Elizabeth Johnson, PhD, MS-CRM, RN

Contributions: Project design guidance and second editorial review.

Manuscript Information

Katie Kelleher, Amanda Lucas, and Elizabeth Johnson

Improvement of Cervical Cancer Screening in a Rural Primary Care Setting: A Quality Improvement Project

Status of Manuscript:
☒ Prepared for submission to a peer-reviewed journal
☐ Officially submitted to a peer-reviewed journal
☐ Accepted by a peer-reviewed journal
☐ Published in a peer-reviewed journal

Abstract

Background: Cervical cancer screening (CCS) is a vital component of routine healthcare, as any individual with a cervix is at risk of developing cervical cancer (CC). Nearly all diagnoses of aggressive CC are directly associated with inadequate screening.

Local Problem: At a rural primary healthcare clinic in northwestern Montana, 37.0% of patients had a current CCS completion documented, compared to Healthy People's 2030 benchmark of 84.3%.

Methods: Participants included female patients ages 21-65 who presented to the clinic for an annual exam. Intervention outcomes were measured biweekly throughout the six-week initiative. Measures assessed included: Adequate CCS eligibility determination, CCS documentation within the electronic health record (EHR), and the site's CCS completion percentage.

Interventions: Literature supported standardizing workflows and documentation practices among the nurses and medical assistants (MA) through the provision of educational material and a CCS clinical decision tree. Key process changes included: offering same-day CCS screening, follow-up CCS scheduling prior to the patient leaving, and an EHR alert creation if patient records were requested.

Results: A total of 30 patients presented to the clinic, with 100% assessed for CCS eligibility. Of those found eligible for CCS, 100% were offered the exam. Correct CCS documentation by the staff occurred in 84.6% of patients, with four patients lacking proper documentation. The QI

intervention yielded a 4.1% increase in the facility's CCS completion percentage, reaching a total CCS completion percentage of 41.1%.

Conclusion: Implementing education, standardized workflows, a CCS clinical decision tree improved CCS documentation and completion rates.

Keywords: Cervical cancer screening, cervical cancer, rural, primary care, quality improvement

Introduction

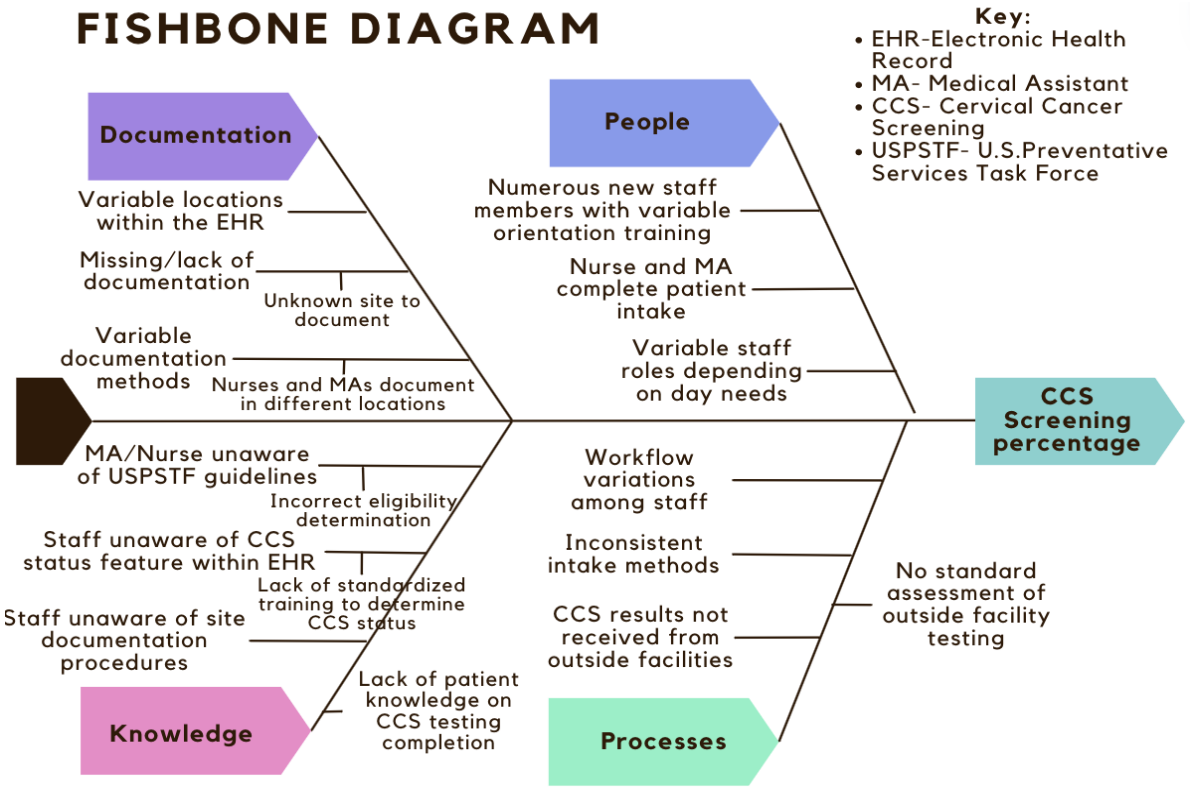
Cervical cancer screening (CCS) has proven to aid in the detection of HPV infections, precancerous lesions, or early-stage cancers when patients remain asymptomatic. While CCS is a readily available service, the National Health Institute (NHI) estimates the percentage of women not current with CCS has increased from 14% in 2005 to 23% in 2019 (2023b). The American Cancer Society Action Network (ACSAN) (2020) estimates nearly one in five women are not appropriately screened for cervical cancer (CC). Additionally, evidence suggests that women who live in rural areas are more likely to be overdue for screening (Kurani et al., 2020; Winstead, 2022). The Centers for Disease Control and Prevention (CDC) (2023) estimates that 11,500 new cases of CC are diagnosed in the United States yearly, with approximately 39 new cases being diagnosed annually in Montana (Montana DPHHS, 2021). Improving routine screening is necessary to reduce the prevalence of CC and mortality of women, particularly in rural, underserved areas, as the literature reflects lower CCS rates in these areas (NCI, 2023a). The United States Preventative Services Task Force (USPSTF) recommends routine CCS for women ages 21-65 (2018). Women ages 21-29 must be screened every three years with cervical

cytology testing only. Women ages 30-65 must be screened every three years with cervical cytology and every five years with high-risk human papillomavirus (hrHPV) testing OR every five years with hrHPV and cytology (co-testing) (2018). The USPSTF does not recommend screening in women younger than 21 years of age, those who have had a hysterectomy with no history of high-grade precancerous lesions or CC, and women older than 65 who have completed appropriate testing and been determined low risk (2018).

Problem Description

At a rural primary clinic in Montana, CCS rates of 37% are significantly below benchmark national standards from Healthy People's 2030 goal of 84.3% (NCI, 2023a). While the site's CCS metric was 47.3% below benchmark, it is essential to note the CCS percentage reported included the entire female population seen at the site, incorporating episodic, specialty, ophthalmology, behavioral health, and dentistry visits. The data was not exclusively extracted from visits coded to annual exams when CCS was most often performed. Based on the USPSTF guidelines, the project considered all women ages 21-65 eligible for CCS who presented for an annual exam despite the nature of the annual exam. In this drastically underserved area, patients residing within the area must travel greater than 80 miles away to obtain OBGYN-specific services, thus, accentuating the significance of achieving consistent CCS status evaluation in the rural primary care clinic. In observation and chart reviews, the lower-than-metric CCS rate was found to be related to several issues. Refer to Figure 1, which highlights several notable contributing factors.

Figure 3.1. Fishbone Diagram



Available Knowledge

Evidence suggests improved CCS uptake requires a multifactorial, tailored approach which empowers nurses and MAs in eligible patient identification (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). The provision of staff education focused on current CCS guidelines contingent on patient age and history was proven successful in enhancing CCS eligibility determination (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Successful workflow changes included staff training on documentation processes within the EHR, as well as how to utilize the EHR system to assess prior CCS status (Becerra-Culqui et al., 2018; Chuang et al., 2019; Luckett, 2022; Prusaczyk et al.,

2022). Additionally, effective interventions focused on systematizing CCS documentation location, ordering, and charting refusals within the EHR in order to correctly reflect the CCS status within the facility's data collection software (Becerra-Culqui et al., 2018; Chuang et al., 2019; Luckett, 2022; Prusaczyk et al., 2022).

The distribution of CCS educational material and the development of a clinical decision pathway were recommended to aid in simplifying practice recommendations and serve as a staff guide during the intake and documentation process (Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Luckett, 2022). Furthermore, the evidence suggested offering same-day CCS for all women who do not have a documented up-to-date pap test (Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Lofters et al., 2018). If patients elected to complete CCS at a later time, proactive scheduling at the time of the visit positively influenced CCS uptake (Becerra-Culqui et al., 2018; Des Marais et al., 2022; Lofters et al., 2018; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). In conclusion, the literature supports CCS uptake through the provision of staff education regarding CCS guidelines; standardized workflow modifications and documentation practices through the integration of a clinical decision tree; EHR utilization to flag out-of-date screening; and offering of same-day screening or follow-up appointments scheduled at the time of the visit (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020)

Transitional Framework

The project was developed using the Institute for Healthcare Improvement (IHI's) Quality Improvement Essentials Toolkit, emphasizing the Plan, Do, Study, Act (PDSA) method. This method was chosen to establish a theoretical interventional guide to quickly learn the

outcomes of the intervention and adjust accordingly to enhance quality improvement project (QIP) outcomes. Throughout the course of the project, implementation cycles were completed in two-week increments, with the total interventional period time spanning over six weeks. After each two-week cycle, outcomes were assessed by the primary investigator (PI) and reviewed with the site representative. Necessary interventional modifications were implemented and carried forth during the remaining period.

Specific Aims

This QIP aimed to improve CCS completion rates within a rural primary care setting by standardizing the intake, workflow, and documentation processes among nurses and MAs. This QIP assessed the outcomes of CCS completion rates after the provision of staff education and the implementation of a CCS clinical decision tree.

Methods

Context

This QIP analyzed CCS completed rates in females aged 21-65 before and after intervention implementation. The project took place at a clinic located in a rural area of northern Montana that specializes in providing primary care services to a large surrounding community. The practice reports seeing 24,844 patients for primary care services in 2022, accepts patients with Medicare, Medicaid, and private insurance, and employs 73 employees. QIP clinical staff included three physicians, five nurse practitioners (NPs), one physician assistant (PA), one certified nurse midwife (CNM), eleven nurses, and three MAs. Project stakeholders consisted of nurses, MAs, and the quality improvement site representative. Furthermore, it is essential to note

the site is a Federally Quality Health Center (FQHC), signifying a rural, medically underserved area.

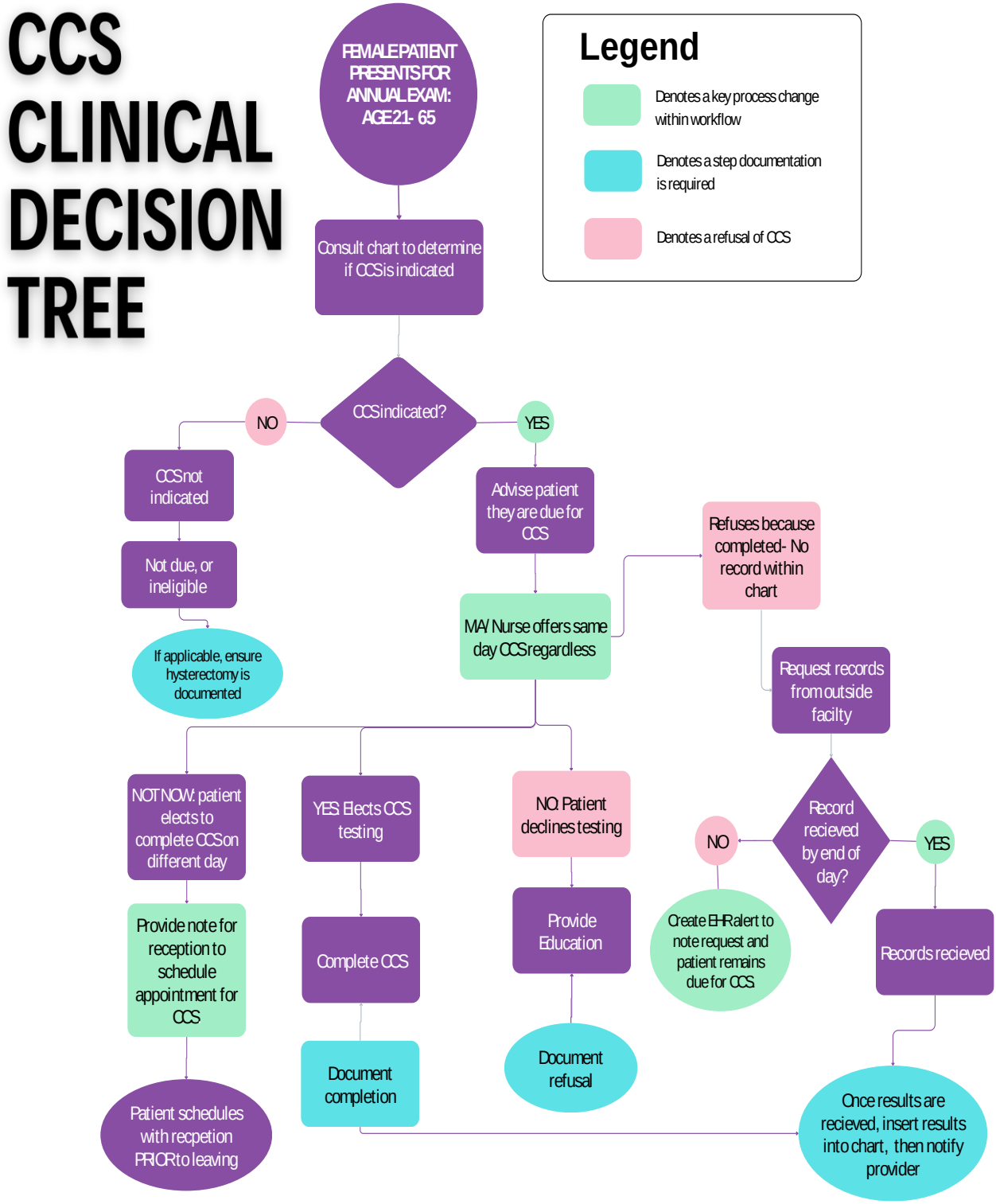
The nurses and MAs at this site were primarily responsible for rooming patients, acquiring vital signs, and obtaining and documenting a thorough patient intake. After the patient was roomed and a preventative screening intake was obtained, the MA or nurse participated in a brief huddle to relay pertinent information or concerns to the provider, including the patient's CCS status. If the patient was determined eligible and elected to complete CCS during the visit, the nurse or MA would prepare the room. The provider would complete the CCS, and the nurse or MA was expected to update the CCS status within the EHR. If the patient refused, elected to complete on a different day, or had completed elsewhere, staff would document accordingly. Additionally, the practice site utilized an EHR with a specific location to document CCS cytology and HPV testing results, which was necessary for the data-capturing software to recognize screening completion. If the MA or nurse did not assess CCS status methodically and document CCS appropriately, the CCS status could be easily overlooked, or data integration into the EHR could be missed.

Intervention

Based on the site's needs assessment and literature recommendations, an educational material bundle containing a condensed figure of the USPSTF CCS guidelines, instructions on EHR navigation to rapidly determine patient CCS status, and the expected EHR documentation processes for this site was created. Additionally, a clinical decision tree (see Figure 3.2) was constructed with a focus on standardizing intake, workflow, and documentation practices among the nurses and MAs. Before QIP implementation, the project aims, educational material, and

CCS clinical decision tree were distributed via email to all employed nurses and MAs. Physical copies of the USPSTF CCS guidelines to direct staff in eligibility determination and the CCS clinical decision tree, aimed to standardize intake and documentation, were also distributed to each nurse and MA. Staff were encouraged to respond to the email with at least three takeaways and any questions or feedback. Implementation of the six-week initiative began on January 15th, 2024, two weeks following the distribution of QIP aims and material.

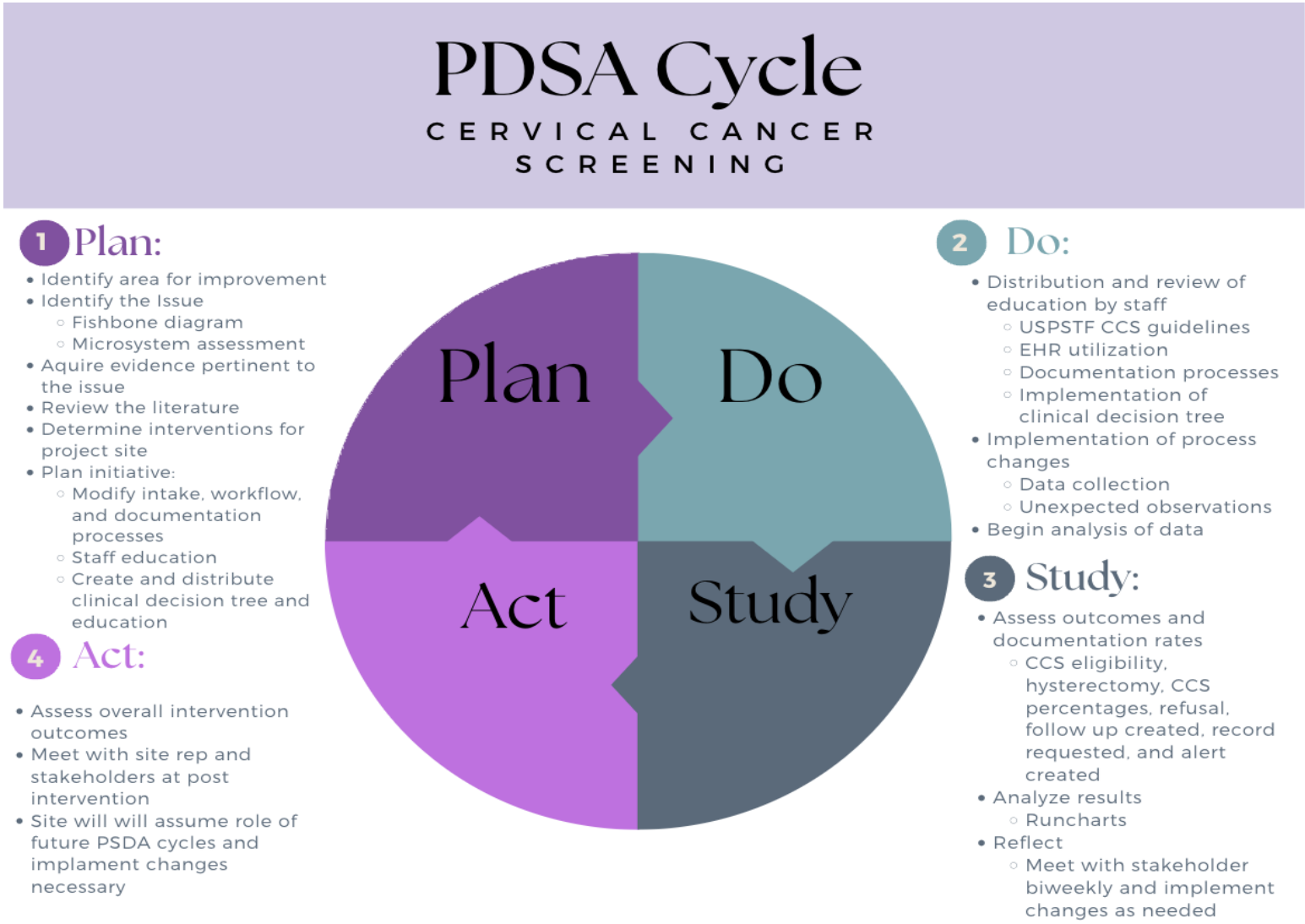
Figure 3.2. CCS Clinical Decision Tree



Staff were instructed to apply the knowledge they obtained from the educational material and utilize the clinical decision tree during the intake process when any female aged 21-65 presented to the clinic for an annual exam. Staff could either take the physical copy of the CCS clinical decision tree into the room when completing the intake process or leave it outside of the exam room. In order to address significant issues observed during the site assessment, key process changes within the CCS clinical decision included: if the patient was determined eligible, same-day CCS was offered for all women who did not have an up-to-date pap test documented; if the patient elected to complete CCS at a later time, proactive scheduling of a follow-up visit at the time of the visit was encouraged; if the patient refused CCS due to report of having CCS completed elsewhere, staff were instructed to request patient records, create an alert within the patient's chart to denote record requisition, and the patient remains due for CCS. Process changes were noted on the QIP CCS clinical decision tree by green shapes.

The PI was on-site during the first week of implementation and biweekly to aid with the process change and address any questions or unexpected barriers. Staff participants were aware of the PI contact information and were strongly encouraged to provide feedback throughout the QIP. At week three, staff were emailed a QIP update, reminded of the adequate documentation requirements, and asked to provide QIP feedback or concerns. Biweekly meetings with the site representative were held to review project outcomes and address barriers. Figure 3.3 displays an overview of the QIP PDSA cycle.

Figure 3.3 QIP PDSA Cycle



Evaluation

Measures

The primary measures for the QIP included the percentage of correct CCS eligibility determination, accurate documentation percentages, and the facility CCS completion rate during the six-week initiative. Additional outcome measures included the percentage of staff who received and were educated on the QIP aims and educational material within the email. Rates of CCS eligibility determination and accurate documentation determined the effectiveness of the education material, and the CCS clinical decision tree clarity. The CCS completion rate captured by the facility data reporting software was obtained prior to implementation and compared to the post-QIP intervention CCS completion rate. Data findings were used to evaluate if workflow modifications and integration of the clinical decision tree were successful.

Data Collection

To track CCS eligibility determination and documentation practices, reception staff were provided with a data collection tool. They were instructed to record the patient's full name and date of birth within the data tool for all female patients ages 21-65 who presented for an annual exam. The PI utilized this tracking sheet to perform three PDSA cycles of biweekly chart audits to monitor QIP interventions. The number of staff who received the email and educational material was initially planned to be measured through read receipts. Due to the EHR's inability to send read receipts and attachments, this data could not be collected from the initial staff email. However, a second email was sent via Outlook, which included read receipts received and this data was recorded within a data table. After reviewing the emailed material, staff were instructed

to reply with three brief takeaways. This data was planned to be collected and reviewed by the PI to ensure all staff members were educated on and reviewed the material two weeks after the second email was sent. Due to a lack of any responses from staff, this data could not be collected.

Analysis

Interventions were analyzed using descriptive statistics. CCS eligibility determination and accurate documentation percentages were converted into bar graphs using Microsoft Excel. The facility's CCS completion rates were analyzed using the organizational data reporting software. Results were reviewed at in-person biweekly meetings following data collection with the site representative. Any necessary adaptions were communicated by the PI to the site representative during the meetings. Project changes, along with requests for feedback, were relayed after each cycle to the nurses and MAs via the EHR email in hopes of enhancing project success and sustainability. An in-person meeting was held post-QIP completion with stakeholders to review the project outcomes, barriers, and intervention adaptions or adoption.

Ethical Considerations

The project received approval from the Montana State University Institutional Review Board (IRB) before implementation to ensure patient safety was protected. Site approval was also granted by the quality improvement representative prior to the needs assessment and project implementation. Participation from the facility staff was voluntary.

All patient information was deidentified and kept in a locked, secure location when not in use. After the chart audits were completed, only numerical data was extracted and utilized to assess project outcomes in order to ensure patient confidentiality. After the six-week initiative

was completed, the data collection tool was shredded. The QIP interventional changes focused on evidence-based process implementation and documentation changes among the staff. Therefore, there was no anticipated patient harm.

Results

A total of 30 female patients ages 21-65 presented to the clinic for an annual exam during this six-week initiative. All patients, n=30 (100%), were appropriately screened for CCS and determined eligible or not eligible for CCS. N=26 (84.6%) patients had accurate documentation of CCS completion, refusal, EHR alert creation, a follow-up appointment scheduled, or a hysterectomy present with the EHR. Of the n=30 patients that presented to the clinic: n=6 (20%) patients completed same-day CCS; n=4 (13.3 %) refused CCS completion. Of the four that refused, n=0 (0%) agreed to schedule a CCS appointment before leaving for follow-up; n=1 (3%) reported completion of CCS elsewhere; and n=19 (63.3%) were determined ineligible as they had an updated CCS previously completed or a hysterectomy documented within the EHR.

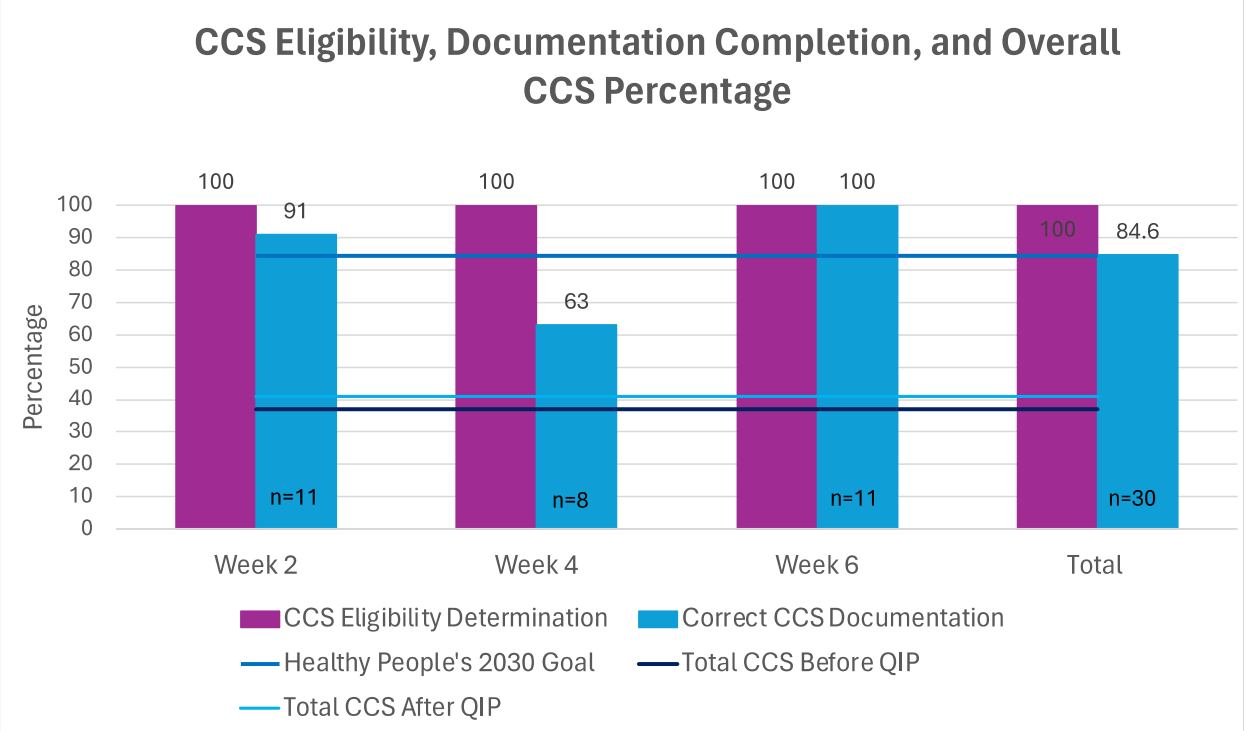
The goal of the QIP was to obtain accurate documentation practices 100% of the time; however, there was a total of four documentation errors. During weeks one and two, the one documentation error consisted of incorrect CCS location documented within the EHR. During weeks three and four, the three documentation errors consisted of one incorrect CCS location documentation in the EHR, a lack of CCS refusal documentation, and a missing EHR alert creation for a patient who completed CCS at an outside facility. Moreover, after the documentation misses were reviewed biweekly, further education was provided to the staff responsible, and the corrected documentation rates reached n=30 (100%) by the end of the six-week initiative.

The overall CCS completion percentage reported by organizational data reporting software increased from 37.0% (n=331/895) preintervention (Jan-Dec 2023) to 41.4% (n=148/360) postintervention (Jan-Feb 2024), indicating a 4.1% increase after QIP implementation. The overall goal of this QIP was to increase CCS screening percentages by 6% to reach a total of 43%. While an increase in CCS completion was demonstrated, this goal was not fully reached. See Table 3.1 and Figure 3.4 for an overview of the QIP results.

Table 3.1. CCS Eligibility and Documentation Completion

	Number of Annual Exams	Correct CCS Eligibility Determination	Correct CCS Documentation
Week 2	n=11	n=11 (100%)	n=10 (91%)
Week 4	n=8	n=8 (100%)	n=5 (63%)
Week 6	n=11	n=11 (100%)	n=11 (100%)
Total	**n=30**	**n=30 (100%)**	**n=26 (84.6%)**

Figure 3.4 CCS Eligibility, Documentation Completion, and Facility CCS Percentage



For the remaining measure outcomes, the initial goal of distributing the QIP aims, educational material, and CCS clinical decision tree to 100% of employed nurses and MAs via email was not met. Due to the inability to send read receipts and attachments through the EHR email software, the percentages of staff who received the email via the EHR system could not be analyzed. In the second email that was sent via Outlook with read receipts, only n=2 (14%) of the staff read receipts were received. The second goal of educating 100% of employed nurses and MAs through email and tracking their responses was not met either, as n=0 (0%) of staff responses were received following the distribution of either email. Due to a response rate of 0%, it is worth noting the primary investigator personally informed the nurses and MAs of the project

aims and distributed physical copies of the condensed figure of the USPSTF CCS guidelines and the CCS clinical decision tree to n=14 (100%) of the nurses and MAs.

Discussion

Within six weeks, CCS screening rates improved from 37.0% preintervention to 41.1% postintervention, but remained significantly below Healthy People's 2030 national benchmark goal of 84.3% (NCI, 2023a). CCS eligibility assessment was 100% throughout the QIP intervention. CCS documentation rates were 91% (n=10) in the first two-week PSDA cycle, drastically decreased to 63% (n=5) in the second PDSA two-week period, and increased to 100% (n=11) in the final two weeks of the intervention (Table 3.1, and Figure 3.4).

As demonstrated in Table 3.1, it was observed that during the first two weeks of QIP, only one documentation error occurred. The error was reviewed with the MA responsible for the charting error, and it was found they remained unaware of the correct documentation expectations. The lowest CCS documentation rates occurred during weeks three and four of implementation. Three documentation errors occurred within PDSA cycle two, and it was found that the misses transpired from one nurse and the provider with whom she worked. It was found that the nurse and the provider were unaware of the expected documentation practices and did not follow the CCS clinical decision accordingly. Due to these factors, additional education was provided by the PI to the responsible nurse and the provider. To combat the continuation of the documentation errors, at the midpoint of the QIP, an email was again sent out to staff to remind them of correct documentation practices, use of the CCS clinical decision tree, and provide an update on observed outcomes. During the final two-week PSDA cycle, zero documentation errors occurred.

Consistent with the evidence, the provision of educational material and implementation of the CCS clinical decision tree was successful in improving CCS completion rates (Chuang et al., 2019; Heidemann et al., 2021; Jaqua et al., 2022; Kiser & Butler, 2020; Prusaczyk et al., 2022; Rodríguez-Gómez et al., 2020). Although the increase in the overall CCS completion percentages among female patients ages 21-65 was only 4.1%, this rise still represents an improvement and positive impact on the overall CCS completion percentage.

While little staff feedback was received throughout the intervention, staff did report that they found that the CCS clinical decision tree and education material provided clear expectations, and they obtained a better understanding of both the current USPSTF recommendations as well as the importance of CCS completion. One staff reported the step-by-step documentation instruction provided helpful guidance and clarification on documentation expectations. Lastly, staff stated the CCS clinical decision was simple to follow, enhanced their intake process, and served as a reminder to assess the CCS status with each visit.

Limitations

This QIP had several limiting factors. The PI investigator relied on reception staff to adequately track and report the eligible patients who presented for an annual exam. The manual process could have allowed for missed patient visits and subsequent omitted chart auditing. This QIP had a short intervention period of only six weeks, and the data relied on the number of patients who presented for annual exams during that time, resulting in a rather small sample size of 30 patients.

In addition to the QIP's small sample size, the majority of patients who presented for an annual exam were determined ineligible for CCS. While six patients agreed to complete same-

day CCS, there were no takers on CCS follow-up appointment scheduling at the time of the visit. The four patients who refused CCS were not interested in completing the exam at any point. Thus, it was indeterminable if the process change of integrating same-day follow-up appointment scheduling for those who refused same day CCS completion was successful.

Next, although the PI distributed physical copies of the USPSTF CCS guidelines and CCS clinical decision tree to all staff members, it is worth noting a physical copy of the documentation instructions was not distributed to staff due to the length of the material. This project change may have contributed to the lack of review of documentation standards and the subsequent errors that occurred within the QIP.

Staff engagement and their provision of feedback from the interventions also served as a limitation; although buy-in was emphasized within the QIP aims, project participation remained optional. The lack of staff feedback and report of encountered barriers potentially limited QIP adaption and the sustainability of the interventions. This factor, combined with the challenge of distributing the QIP educational material and CCS clinical decision tree coupled with the application of the integrated process changes, posed a risk to project validity. The validity of the intervention was also limited due to the lack of continued chart audits after the summation of the QIP.

The QIP successfully integrated a CCS clinical decision tree into the daily workflow to standardize intake and documentation practices and ultimately improve CCS completion rates. However, because the project took place in a rural primary care setting and targeted the standardization of intake, workflow, and documentation among nurses and MAs, the project's generalizability may be limited to similar settings.

Lastly, the facility's CCS completion percentage reported includes the entire female population seen at the site, incorporating episodic, specialty, ophthalmology, behavioral health, and dentistry visits. The data was not exclusively extracted from visits coded for annual exams when CCS is most often performed. This factor likely results in a lower than actual CCS completion percentage when compared to data that exclusively incorporates patients who present for an annual exam. Since historical data was obtained in this way, there was no way to change the facility's reporting process.

Implications of Practice

The evidence demonstrated that a multifactorial approach that included: the provision of staff education regarding CCS guidelines; standardization of workflow and documentation practices through integration of a clinical decision tree; offering of same-day screening or follow-up appointments scheduled at the time of the visit; and EHR utilization to flag out-of-date screening successfully increased facility CCS completion percentages in a rural primary care setting. While the QIP was limited in several aspects, the project utilized interventions that could be successfully integrated into similar sites to enhance the CCS completion percentages. This is a significant matter as CCS is a readily available service for women, and the lack of CCS can lead to undiagnosed CC and even death in women. Additionally, for this FQHC, performance that is lower than benchmark can lead to decreased reimbursement for the facility.

Implications for Future Studies

Future QIP should focus on the enhancement of staff education approaches. Staff education could be performed through an in-service, virtual learning software, or at a staff meeting. Completion of a pre-test and post-test intervention could be integrated to formally

assess staff knowledge. The method must guarantee that staff members are adequately educated on the provided materials and the interventional changes, allowing for heightened application and opportunity to provide pre-implementation feedback. Future QIPs should also consider including the facility providers in the provision of educational material and application of the CCS clinical decision tree. While the nurses and MAs were primarily responsible for the intake and documentation processes, the providers often aided them in determining CCS eligibility and completing the required documentation.

Next, future QIP should assess the sustainability of the QIP interventions long term. Designating a staff member to continue the chart audits of the patients ages 21-65 presenting for an annual exam would ensure adequate CCS screening, eligibility determination, and documentation continues long-term. This would additionally serve to enhance the overall validity and sustainability of the QIP interventions. Furthermore, the facility should consider modifying its reporting software to include ICD-10 codes specific to annual exams, as this is primarily when CCS completion takes place. This would serve to provide a more accurate representation of the facility's CCS completion percentages.

Lastly, future exploration of the QIP should consider the integration of a patient education component with the consideration of emotional vulnerability for women completing CCS. As demonstrated within the QIP, a high percentage of patients who were determined eligible refused CCS completion. Incorporation of a short educational video or provision of education prior to the patient visit or before the CCS offering would heighten the patients' knowledge and provide them with an overview of the procedure. Educating the patient on the importance of CCS completion, explaining the why, and walking them through the screening

may enhance their amenability to participate. Implementation of additional patient education may aid in further enhancement of women's health and decreased CC prevalence.

Conclusion

This QIP aimed to enhance CCS uptake in a rural primary care setting through the provision of education and implementation of a clinical decision tree use among the nurses and MAs. While the QIP was limited in several factors, the project utilized evidence-based, low-cost interventions to enhance the intake workflow and processes within the facility. Ultimately, as the evidence suggested, a standardized process, delineated roles, and a proactive approach in one rural Montana primary care clinic proved that CCS could be increased. The long-term goals for this QIP were to increase CCS completion uptake, decrease CC prevalence, and reduce morbidity and mortality among women. Although this QIP was successful, enhancing education delivery, expanding responsibilities to include the providers, and the integration of patient education would not only increase CCS completion and potentially decrease women's morbidity but would also heighten the sustainability of the QIP interventions.

Funding

There was no outside funding to disclose. The PI provided a small amount of funding for this project to print the CCS clinical decision tree and USPSTF guidelines.

Conflict of Interest

There were no conflicts of interest to disclose.

CHAPTER FOUR

ADVANCED NURSING ESSENTIALS REFLECTION

Introduction

The American Academy of Colleges of Nursing (AANC) developed eight curricular essentials that must be present within the curriculum and met by students in order to confer the Doctor of Nursing Practice (DNP) degree (AANC, 2006). The essentials define foundational competencies required for advanced practice roles. Montana State University's (MSU) DNP-FNP (Family Nurse Practitioner) Program has extensively integrated these foundational elements into the curriculum through various academic activities. Within this final chapter of the quality improvement (QI) project manuscript, I will reflect on how each essential was amalgamated through exams, assignments, clinical rotations, and completion of the quality improvement (QI) scholarly project.

Essential I: Scientific Underpinnings for Practice

Essential I discusses utilizing scientific knowledge combined with the foundation of nursing practice to adequately prepare students for advanced practice (AANC, 2006, pp. 8-9). This element was integrated into the curriculum throughout several courses, but advanced pathophysiology, ethics, health assessment, and pharmacology courses prepared students to operate at a higher level of nursing. Within our pathophysiology course, students were required to construct a case study and questions to enhance the learning of the student developer as well as the rest of the group. Completing this assignment required a foundational knowledge of the

appointed system and the incorporation of new knowledge to create a detailed and reputable case. Additionally, a group healthcare informatics project was composed to assess the development and evaluation of a hypothetical new practice intervention based on current nursing scientific findings. As a DNP, this scientific foundational knowledge will continue to propagate as I develop as a clinician. Because MSU has provided me with a vast array of knowledge, I will be able to quickly adapt as a new graduate and translate this knowledge to benefit the care and outcomes of patients.

Essential II: Organization and System Leadership for Quality Improvement and Systems Thinking

Essential II emphasizes the importance of organization and systematic leadership for QI (AANC, 2006, pp.10-11). Within the DNP curriculum several courses that emphasized this essential focused on system design, finance and budget, program planning and evaluation, and QI within the Design of Healthcare Systems course. These courses allowed me to develop several diagrams and flow charts demonstrating workflow, process, and systematic operations within various settings of healthcare. Numerous assignments required me to gain an understanding of organizational operations on a macro, mezzo, and micro level within various interprofessional fields. For example, I created a spaghetti map of a laboratory to better understand the workflow and hypothetically analyze processes that may serve to enhance efficiency and patient outcomes.

While completing the QI project, these skills were reinforced to evaluate nursing and medical assistant workflows for cervical cancer screening and develop a proposal to improve outcomes. Additionally, this essential highlights the use of advanced communication skills to

lead quality improvement and patient safety. These skills were required throughout the QI project planning and implementation to ensure adequate discussion and education occurred with the stakeholders and staff participants. I will continue to utilize the knowledge obtained as a DNP to assess policy and care delivery practices, as well as effectively lead future QI initiatives.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

Essential III entails the attainment of evidence-based practice (EBP) principles and involves mastering the appraisal and translation of literature into practice (AANC, 2006, pp.11-12). This core concept was addressed through the EBP I and II courses. The EBP courses allowed me to enhance my foundational knowledge and focused on adequate identification of reputable resources, critical appraisal of literature, and implementation of best practices. In the EBP II course, I worked with two fellow students to compare integrative versus allopathic treatment modalities in adults with anxiety disorders. A literature review and development of a PICO question sought to determine the efficiency of current pharmacological treatment in comparison to integrative treatment in adults with generalized anxiety disorder. We completed lengthy strategic search processes in order to select high-quality, peer-reviewed evidence to support our conclusion.

Additionally, I received training in a statistical applications course to further understand statistical analysis, strength, and the ability to interpret and critique research results. These skills were refined through the completion of several discussion assignments that required an understanding of statistical tests for analysis, conduction of inferential statistics, differentiation of clinic and statistical significance, and application of statistical theory. Growth and knowledge

obtained throughout the DNP program will continue to be utilized to guide practice recommendations and ensure patients are provided with accurate information.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Healthcare

Essential IV highlights the use of technology and information systems to improve and transform healthcare (AANC, 2006, pp. 12-13). This core concept also implicates the designation and evaluation of programs to advance healthcare systems and patient outcomes (AANC, 2006). Within the healthcare informatics course, I assessed the quality of electronic health records, as well as completed lengthy discussions surrounding artificial intelligence (AI) use and its integration into the healthcare environment. Furthermore, these core essentials were required during all clinical rotations and courses and were especially integrated during the completion of my quality improvement project. My scholarly project quality improvement solution proposal heavily relied on technology, electronic health record (EHR) use, and data-capturing software to adequately implement, track progress, and assess outcomes. Moreover, I was to utilize EHRs, computers, search engines, and several device applications daily throughout the completion of the MSUs hybrid online program.

As a DNP, information systems and technology use will become a part of my routine practice. EHRs will be utilized to efficiently document patient encounters, analyze laboratory results, and monitor screening measures daily. As technology continues to advance, AI may serve as an immensely beneficial tool and provide support to improve patient care and outcomes. Due to having a strong foundational understanding of technology and AI, I will have the ability to assess its impact and head the selection and integration of the technology as a DNP.

Essential V: Health Care Policy for Advocacy in Health Care

Healthcare policy, advocacy, and the role they play within healthcare are the focus of essential V (AANC, 2006, pp.13-14). These two concepts were heavily integrated throughout the entirety of the DNP program. As mentioned previously, an entire course that focused on ethics, law, and policy was completed. Within this course, I completed ethical and legal cases focusing on self-awareness, patient advocacy, and health policy analysis. I was able to compose a letter to Congress advocating for policy change that prohibits insurance companies from dictating the length of service, number of sessions necessary, and governing whether rehabilitation therapy such as physical, occupational, and speech therapy will be covered. Montana Medicare, Medicaid, and various other insurance provider's policies pertaining to rehabilitation service coverage were heavily analyzed for this assignment. This project advocated for better access and increased length of insurance coverage for essential rehabilitation services.

Similarly, during the completion of the QI project, I served as an advocate to improve cervical cancer screening, with the goal of decreasing the mortality of women in the rural community. Additionally, I served as a leader for the organization to facilitate transformation and advocate for procedural changes. Throughout courses and clinical experiences, I have learned that DNPs play an influential role in policy development and change promotion. The ability to identify an issue, develop a proposal based on current evidence, and advocate for change will be carried forward into my role as a DNP. I will continue to serve as an advocate for patients, staff, and the facility in which I am employed.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

Essential VI, which emphasizes the influence of interprofessional collaboration to overcome barriers and improve patient and population health outcomes, was another core concept that was heavily integrated with the DNP curriculum (AANC, 2006, pp. 14-15). Within several core DNP courses, group projects and activities were necessitated. Within the Healthcare System Design course, I worked in coordination with medical engineering students to enhance the creation of visual tools and system mapping. The engineering students would review the work created by the DNP students and provide constructive criticism and advice to strengthen the production of second versions. These assignments required strong communication from all entities and greatly enhanced our collaborative skills between two different professions.

During the completion of the QI project, I worked closely with the site representative for project development, intervention planning, integration, and data collection. I also worked synchronously with the nurses and medical assistants (MA) at the organization to implement and carry out the initiative. Without their participation and teamwork, the project would have been unsuccessful. Completion of these activities enhanced my self-confidence and allowed me to refine my ability to employ leadership among an interprofessional team to create change and improve the delivery of care.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

Essential VII involves core concepts of health promotion, risk reduction, and illness prevention among individuals, families, and populations (AANC, 2006, pp. 15-16). Essential VII

was an element that was present within every core DNP course as well as each clinical rotation. This concept was especially reinforced within the Vulnerability and Healthcare in Diverse Communities course. Throughout the semester, a project was completed in which a vulnerable population was identified, and their cultural, psychosocial, and diverse needs were assessed. Our group's population of study was the elderly, specifically those living in assisted living or nursing homes.

Furthermore, as discussed, several nursing essentials were integrated throughout the completion of the DNP QI project. However, the main goal of my project was to enhance the clinic's cervical cancer screening (CCS) and prevention to improve women's health. EBP clinical prevention strategies were synthesized and integrated, and disease prevention care delivery models were carried out. In the future, as a practicing clinician, I will continue to provide special attention to health promotion and disease prevention, especially among vulnerable populations.

Essential VIII: Advanced Nursing Practice

Lastly, Nursing Essential VII, advanced nursing practice, touches on the prominence of advanced knowledge and preparation of competent students to practice within highly complex areas (AANC, 2006, pp. 16-17). DNP-prepared students are expected to demonstrate refined skills and foundational knowledge of psychosocial, biophysical, cultural, economic, and nursing science pertaining to their specialty of focus (AANC, 2006). Within the MSU curriculum, this standard of practice has been taught and emphasized throughout courses including pathophysiology, health assessment, pharmacology, and several didactic clinical courses. These foundational skills learned within the classroom setting were then able to be applied practically

within various clinical settings when caring for pediatrics, women's health, geriatrics, and midlife adult patients.

When performing at clinical rotations, I demonstrated advanced levels of critical thinking, clinical judgment, and delivered of EBP care to provide optimal patient outcomes and successfully complete the course. I worked with preceptors to form meaningful relationships with patients and effectively obtain their history, assessment, diagnoses, and formulate a plan of care. Furthermore, a compilation of skills obtained throughout the DNP program was applied to determine a clinical issue, perform research, and create a proposed solution for the QI project. This project was disseminated by providing the facility with the project executive summary and a defense presentation. Upon graduation, these skills will unquestionably be valuable when caring for patients and participating in future quality improvement projects.

Conclusion

As demonstrated within this reflection, MSU has designed an elaborate DNP program to meet all nursing essentials and produce efficacious, proficient nurse practitioners. Through completion of the core courses, QI scholarly project, and numerous clinical rotations, I am confident I have demonstrated attainment of all eight nursing essentials and knowledge necessary to transition into practice. I am honored to be a soon-to-be MSU graduate and will continue to integrate all eight core essentials into practice as a nurse practitioner.

REFERENCES CITED

American Cancer Society Cancer Action Network. (2020). Screening leads to cervical cancer decline in the United States. https://www.fightcancer.org/sites/default/files/FINAL%20-%20Cervical%20Cancer%20General%20Factsheet%2001.08.20.pdf

America's Health Rankings. (2022). *Explore cervical cancer screening in Montana: AHR.* https://www.americashealthrankings.org/explore/measures/cervical_cancer_screen_women/MT

Becerra-Culqui, T. A., Lonky, N. M., Chen, Q., & Chao, C. R. (2018). Patterns and correlates of cervical cancer screening initiation in a large integrated health care system. *American Journal of Obstetrics and Gynecology*, *218*(4), 429.e1-429.e9. https://doi.org/10.1016/j.ajog.2017.12.209

Bradley University. (2018, June 15). *How FNPs can help in the fight against cervical and breast cancer*. Bradley University Online. https://onlinedegrees.bradley.edu/blog/how-fnps-can-help-in-the-fight-against-cervical-and-breast-cancer/

Centers for Disease Control and Prevention. (2023). *Cancer Statistics at a Glance*. Centers for Disease Control and Prevention. https://gis.cdc.gov/Cancer/USCS/#/AtAGlance/

Centers for Disease Control and Prevention. (2021, June 30). *Sharp declines in breast and cervical cancer screening*. Centers for Disease Control and Prevention. https://www.cdc.gov/media/releases/2021/p0630-cancer-screenings.html

Chuang, E., Pourat, N., Chen, X., Lee, C., Zhou, W., Daniel, M., Hoang, H., & Sripipatana, A. (2019a). Organizational factors associated with disparities in cervical and colorectal cancer screening rates in community health centers. *Journal of Health Care for the Poor and Underserved*, *30*(1), 161–181. https://doi.org/10.1353/hpu.2019.0014

Des Marais, A. C., Brewer, N. T., Knight, S., & Smith, J. S. (2022). Patient perspectives on cervical cancer screening interventions among underscreened women. *PLOS ONE*, *17*(12). https://doi.org/10.1371/journal.pone.0277791

Heidemann, D. L., Adhami, A., Nair, A., Haftka-George, A., Zaidan, M., Seshadri, V., Tang, A., & Willens, D. E. (2021). Using a frontline staff intervention to improve cervical cancer screening in a large academic internal medicine clinic. *Journal of General Internal Medicine*, *36*(9), 2608–2614. https://doi.org/10.1007/s11606-021-06865-8

Institute for Healthcare Improvement. (2023). *Science of improvement: Testing changes: IHI*. Institute for Healthcare Improvement. https://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx

Jaqua, E., Nguyen, V., Morton, K., Chin, E., Brougher, A., & Dawes, J. (2022). Improving Cervical Cancer Screening Rates at an Urban Federally Qualified Health Center Family Medicine Residency Clinic. *The Permanente journal*, *26*(2), 21-27. https://doi.org/10.7812/tpp/21.066

King, E. M., & Busolo, D. S. (2022). The role of primary care Nurse Practitioners in reducing barriers to cervical cancer screening: A literature review. *Canadian Oncology Nursing Journal*, *32*(2), 233–244. https://doi.org/10.5737/23688076322233244

Kiser, L. H., & Butler, J. (2020). Improving Equitable Access to Cervical Cancer Screening and Management. *AJN The American Journal of Nursing*, *120*(11), 58-67. https://doi.org/10.1097/01.Naj.0000721944.67166.17

Kurani, S. S., McCoy, R. G., Lampman, M. A., Doubeni, C. A., Finney Rutten, L. J., Inselman, J. W., Giblon, R. E., Bunkers, K. S., Stroebel, R. J., Rushlow, D., Chawla, S. S., & Shah, N. D. (2020). Association of Neighborhood Measures of Social Determinants of health with breast, cervical, and colorectal cancer screening rates in the US midwest. *JAMA Network Open*, *3*(3). https://doi.org/10.1001/jamanetworkopen.2020.0618

Lofters, A. K., Telner, D., Kalia, S., & Slater, M. (2018). Association between adherence to cancer screening and knowledge of screening guidelines: Feasibility Study Linking Self-reported survey data with medical records. *JMIR Cancer*, *4*(2). https://doi.org/10.2196/10529

Luckett, K. L. (2022). Implementing a standardized protocol to improve cervical cancer screening rates in primary care. *Journal of the American Association of Nurse Practitioners*, *34*(9), 1077-1082. https://doi.org/10.1097/jxx.0000000000000758

Montana DPHHS. (2021, March). *Cancer in montana.* Montana health alert network. https://dphhs.mt.gov/assets/publichealth/Cancer/TumorRegistry/MCTRAnnualReport20142018.pdf

National Cancer Institute. (2023a). *Cervical cancer screening*. National Cancer Institute. https://www.cancer.gov/types/cervical/screening#:~:text=The%20goal%20of%20screening%20for,is%20usually%20easier%20to%20treat.

National Cancer Institute. (2023b). *Cancer Stat Facts: Cervical Cancer*. National Cancer Institute. https://seer.cancer.gov/statfacts/html/cervix.html

National Cancer Institute. (2023c, August 18). *Cervical Cancer Causes, Risk Factors, and Prevention—NCI*. https://www.cancer.gov/types/cervical/causes-risk-prevention

Ortiz, J., Hofler, R., Bushy, A., Lin, Y., Khanijahani, A., & Bitney, A. (2018). Impact of Nurse Practitioner Practice Regulations on Rural Population Health Outcomes. *Healthcare*, *6*(2), 65. https://doi.org/10.3390/healthcare6020065

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*, n71. https://doi.org/10.1136/bmj.n71

Popalis, M. L., Ramirez, S. I., Leach, K. M., Granzow, M. E., Stoltzfus, K. C., & Moss, J. L. (2022). Improving cervical cancer screening rates: A scoping review of resources and interventions. *Cancer Causes & Control*, *33*(11), 1325–1333. https://doi.org/10.1007/s10552-022-01618-2

Prusaczyk, A., Żuk, P., Guzek, M., Bogdan, M., Nitsch-Osuch, A., Oberska, J., & Karczmarz, S. (2022). An overview of factors influencing cancer screening uptake in primary healthcare institutions. *Family Medicine & Primary Care Review*, *24*(1), 71–77. https://doi.org/10.5114/fmpcr.2022.113019

Rodríguez-Gómez, M., Ruiz-Pérez, I., Martín-Calderón, S., Pastor-Moreno, G., Artazcoz, L., & Escribà-Agüir, V. (2020). Effectiveness of patient-targeted interventions to increase cancer screening participation in rural areas: A systematic review. *International Journal of Nursing Studies*, *101*, 103401. https://doi.org/10.1016/j.ijnurstu.2019.103401

United States Centers for Medicare & Medicaid Services. (2023). *Traditional MIPS overview*. Quality Payment Program. https://qpp.cms.gov/mips/traditional-mips

United States Preventive Services Taskforce. (2018, August 21). *Cervical cancer: Screening*. Recommendation: Cervical Cancer: Screening. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/cervical-cancer-screening

United States Preventive Services Taskforce. (n.d.). https://www.uspreventiveservicestaskforce.org/uspstf/about-uspstf/methods-and-processes/grade-definitions

Winstead, E. (2022, February 22). *Rate of overdue cervical cancer screening is increasing*. National Cancer Institute. https://www.cancer.gov/news-events/cancer-currents-/2022/overdue-cervical-cancer-screening-increasing

World Health Organization. (2023). *Cervical cancer*. World Health Organization. https://www.who.int/health-topics/cervical-cancer

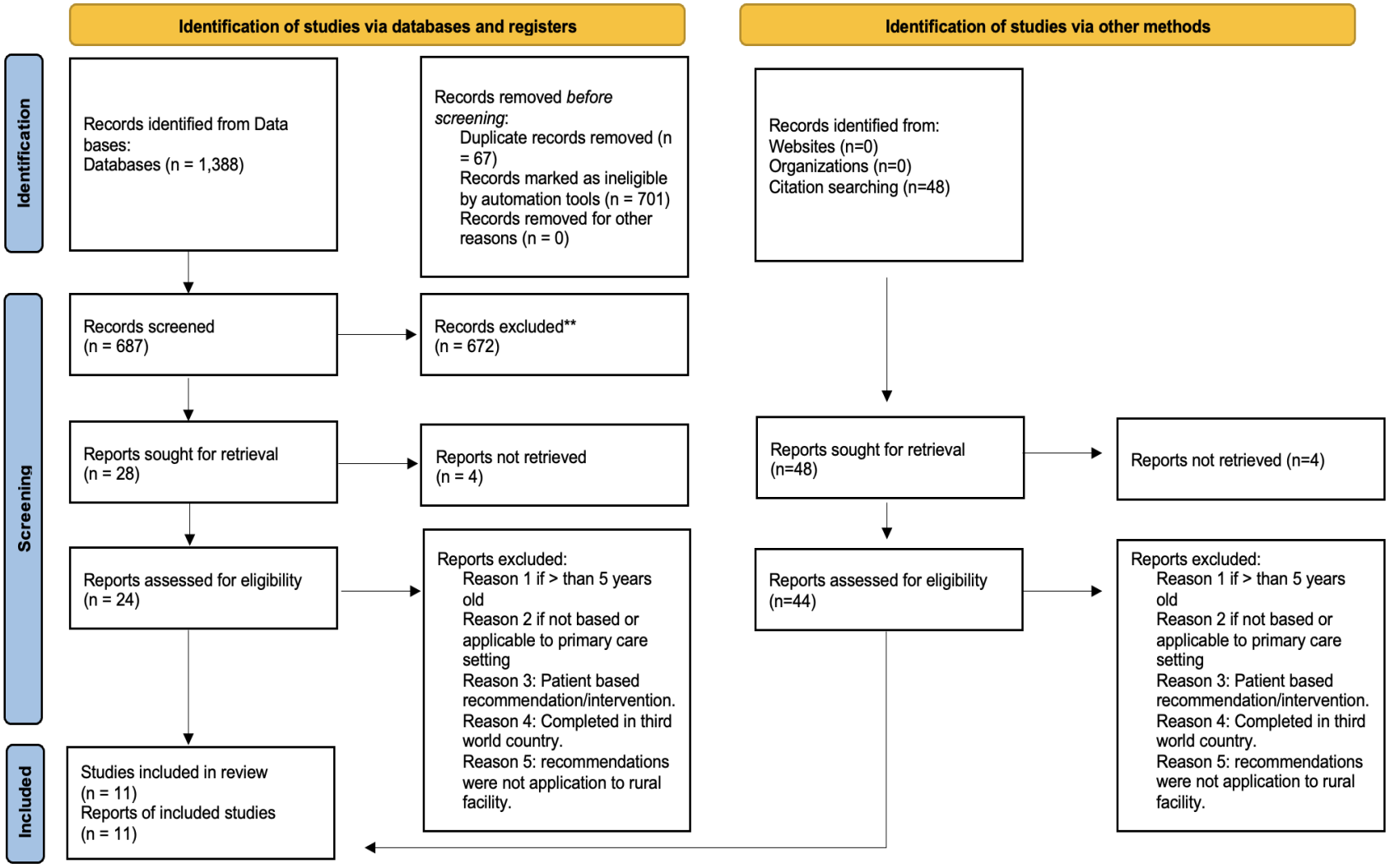
Zhang, M., Sit, J. W., Chan, D. N., Akingbade, O., & Chan, C. W. (2022). Educational interventions to promote cervical cancer screening among rural populations: A systematic review. *International Journal of Environmental Research and Public Health*, *19*(11), 6874. https://doi.org/10.3390/ijerph19116874

APPENDICES

APPENDIX A

PRISMA DIAGRAM OF STUDY SELECTION

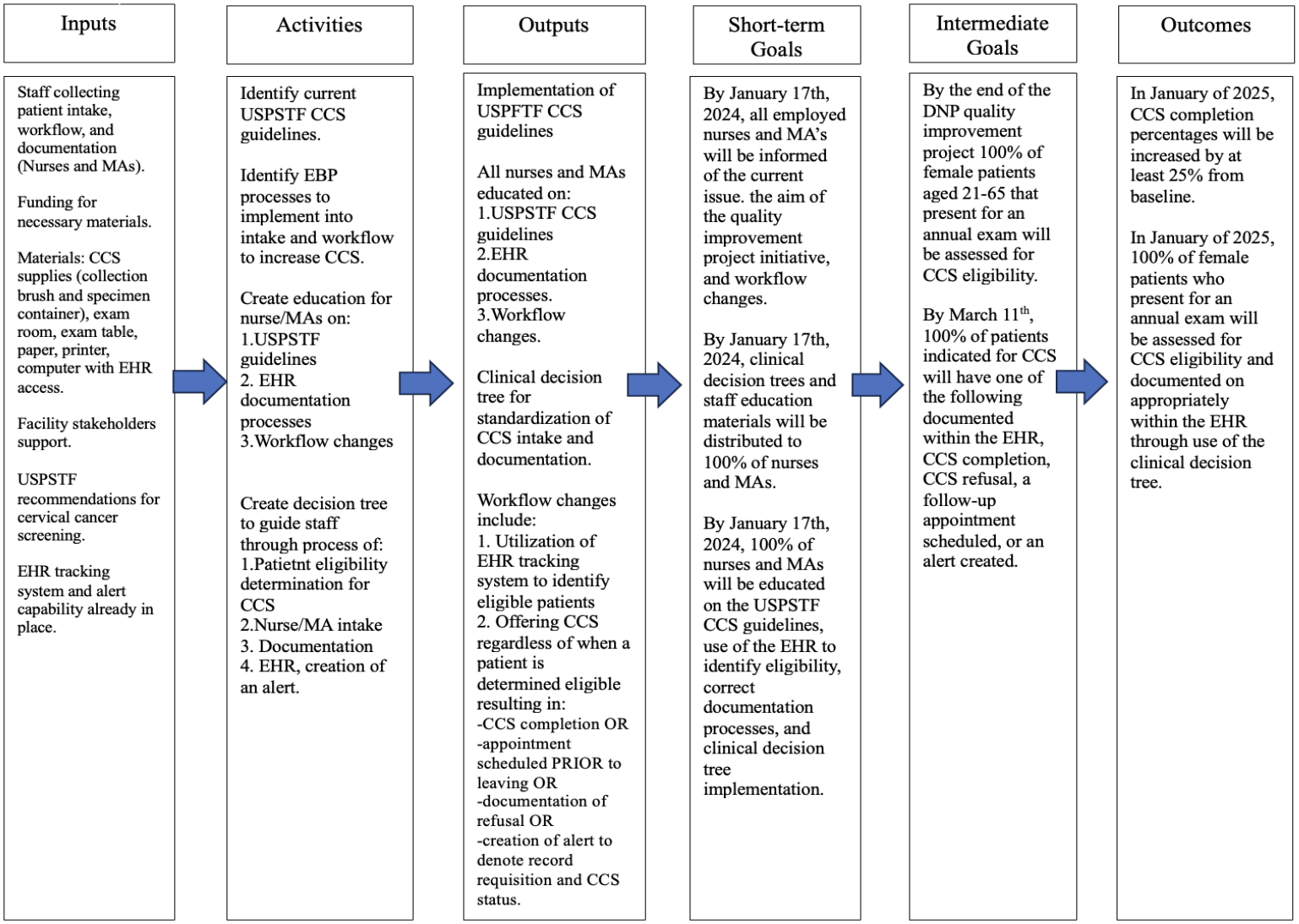
Prisma Diagram of Study Selection



APPENDIX B

LOGIC MODEL

Project Logic Model



APPENDIX C

EDUCATIONAL MATERIALS PROVIDED TO STAFF

Cervical Cancer Screening USPSTF Guidelines

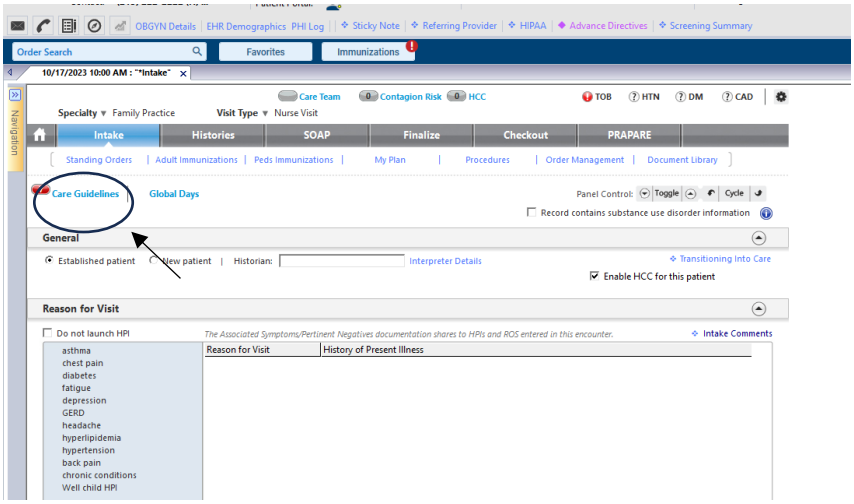
Population	Recommendation
Women 21-65	• Women ages 21-29, CCS every 3 years with cervical cytology **alone.** • Women ages 30-65, CCS every 3 years with cytology **alone** and every 5 years with hrHVP testing **alone**, or every 5 years with **both** hrHPV testing and (co-testing).
Women younger than 21 years	• No screening indicated
Women who have had a hysterectomy	• Hysterectomy with removal of the cervix and **do not** have a history of a high-grade precancerous lesion (CIN grade 2 or 3) or cervical cancer no screening indicated.
Women older than 65 years	• Women who have had adequate prior screening* and are not otherwise at high risk for cervical cancer**, no screening indicated.
Congenital absence of cervix, Hospice care, or palliative care received for any part of measurement period	• No screening indicated.

***** Adequate prior screening is defined as 3 consecutive negative cytology results or 2 consecutive negative co-testing results within 10 years before stopping screening, with the most recent test occurring within 5 years. Screening may be clinically indicated in older women with an inadequate or unknown screening history.
** Certain considerations may also support screening in women older than 65 years who are otherwise at high risk (ie, women with a history of high-grade precancerous lesions or cervical cancer, in utero exposure to diethylstilbestrol, or a compromised immune system.

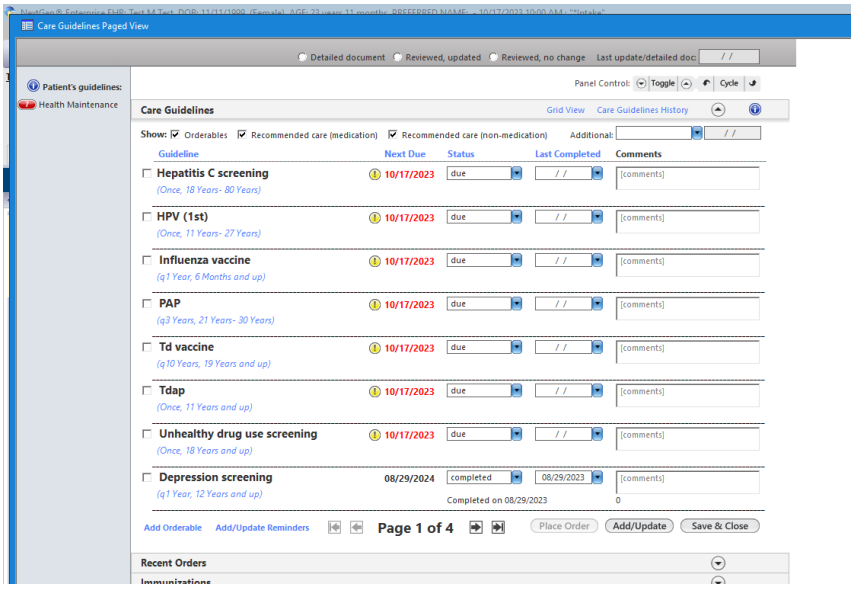
Cervical Cancer Screening Guidelines and Documentation in Nextgen EHR

Determination of CCS Status

1. Open the patient chart under today's encounter and click "Care Guidelines."

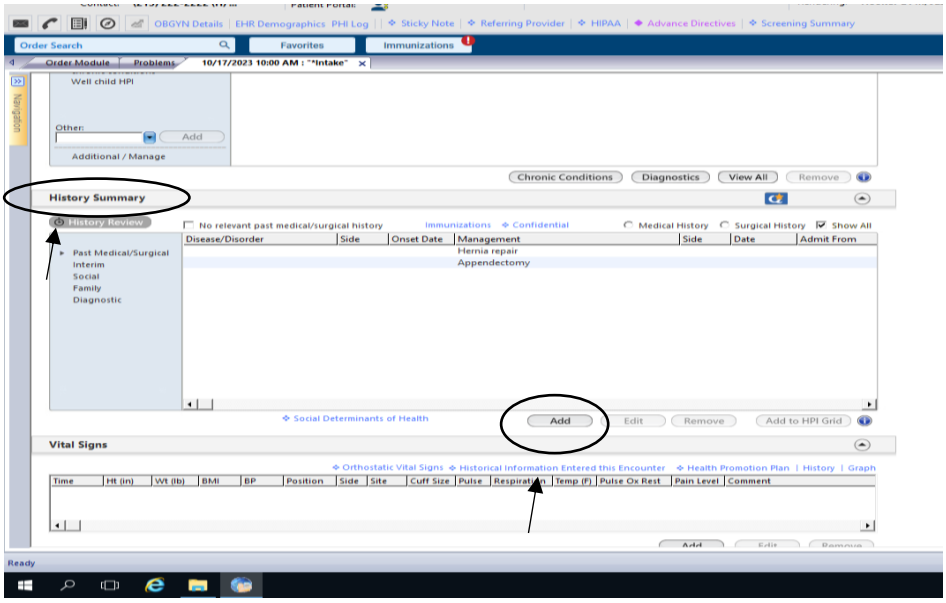


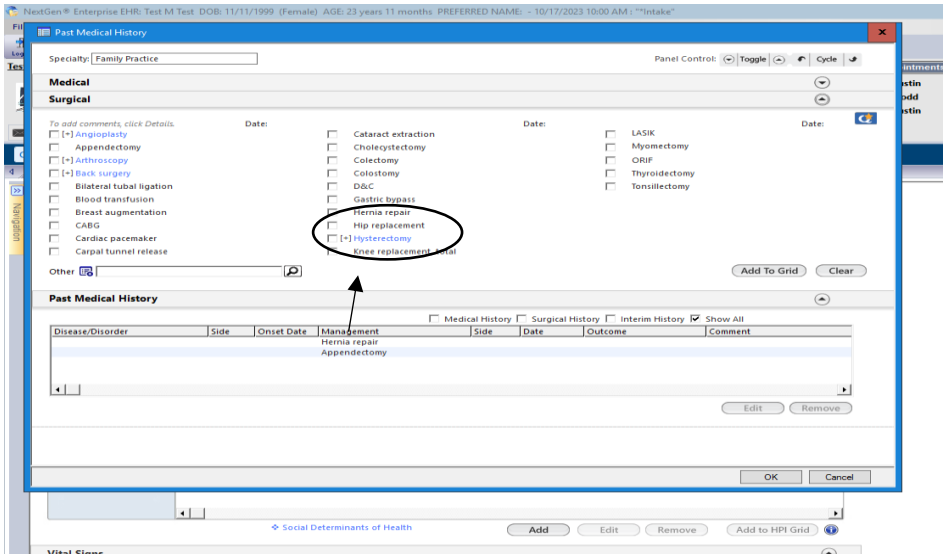
2. Assess Pap and HVP (if indicated based on patient's age) status and determine CCS eligibility according to USPSTF guidelines.



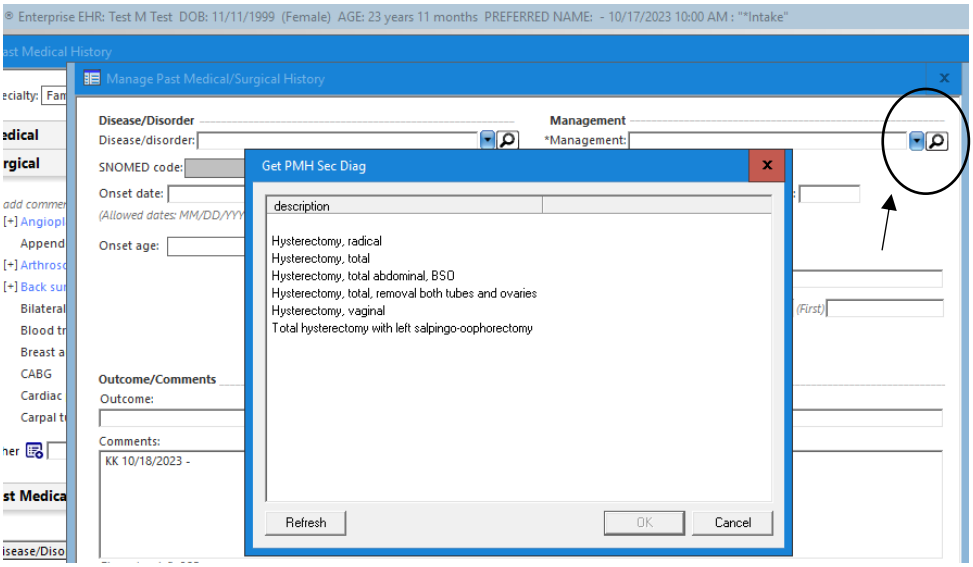
Documentation if the patient reports a history of a hysterectomy.

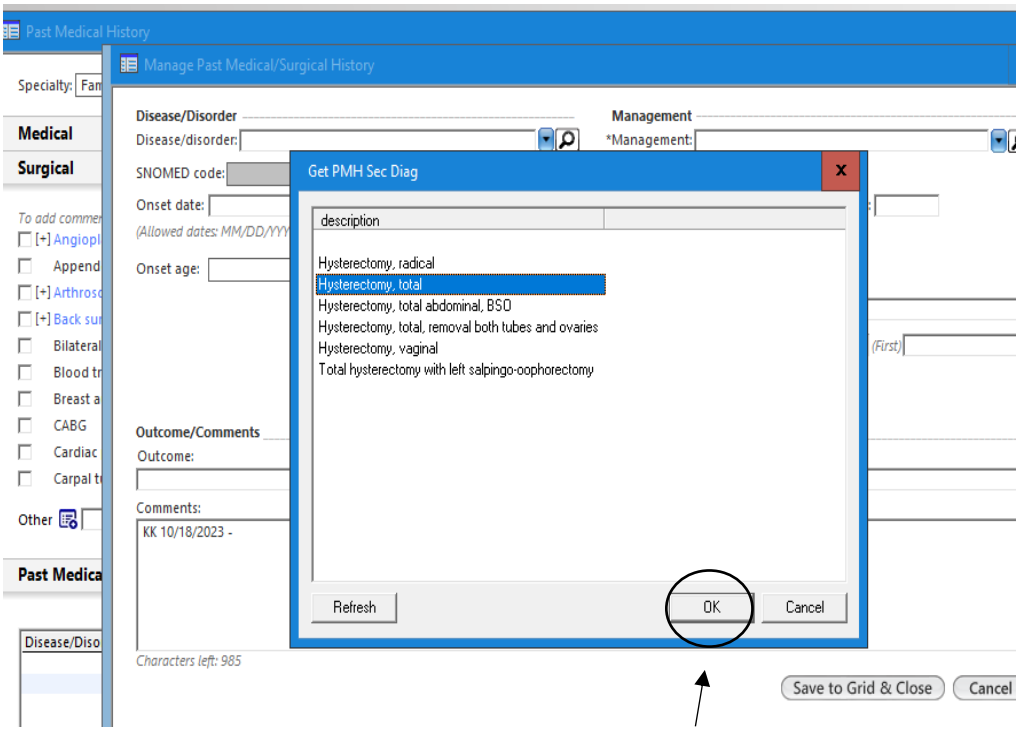
1. Open the patient chart under today's encounter. Under the intake section, scroll down until you reach "History Summary," and click "Add."
2. Expand the surgical history tab and select hysterectomy.

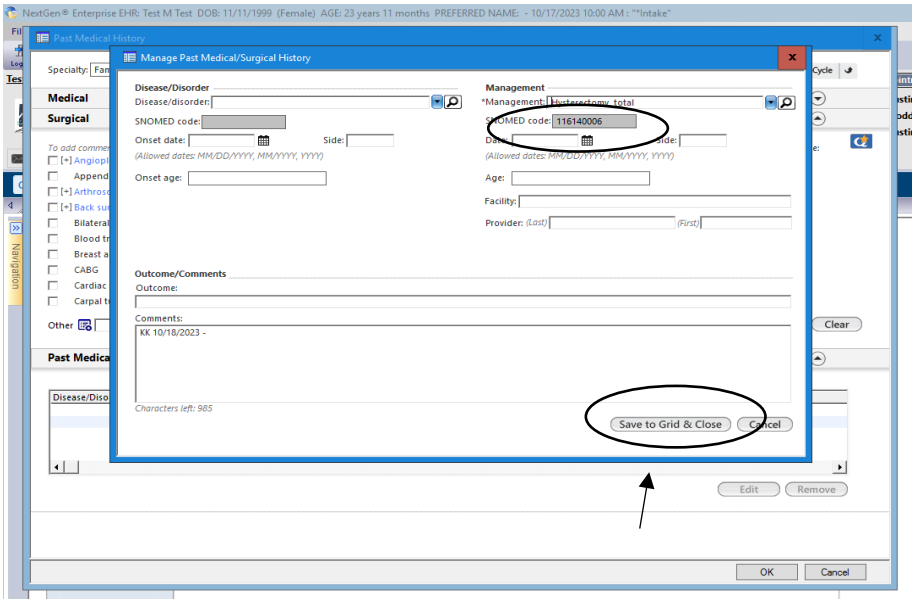




3. Select the drop-down menu next to management and select the type of hysterectomy the patient had. Click “ok.” If the date is known, this can be entered here as well. Then click “Save to Grid & Close.”

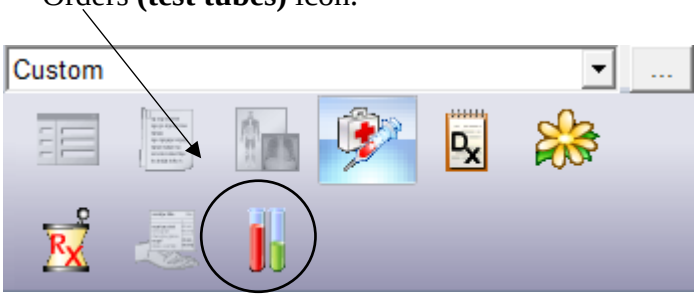




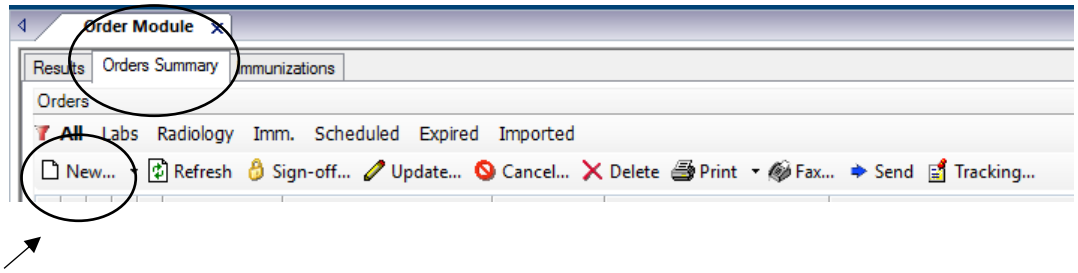


CCS Completion Ordering and Documentation

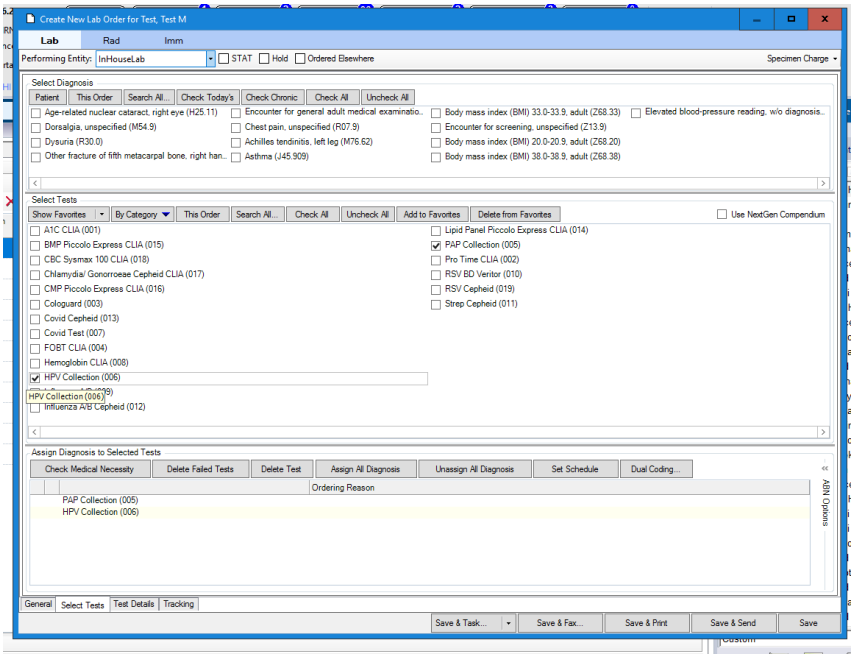
1. When documenting Pap and/or HPV, documentation should be completed using the Orders **(test tubes)** icon.



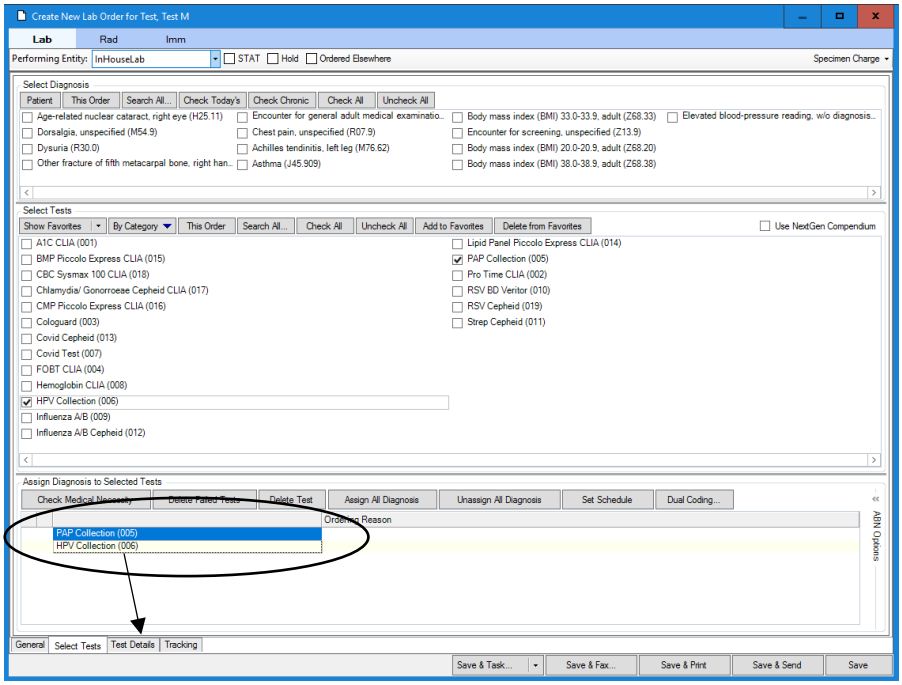
2. After clicking on the orders icon, select order summary to create a new PAP/HVP order.

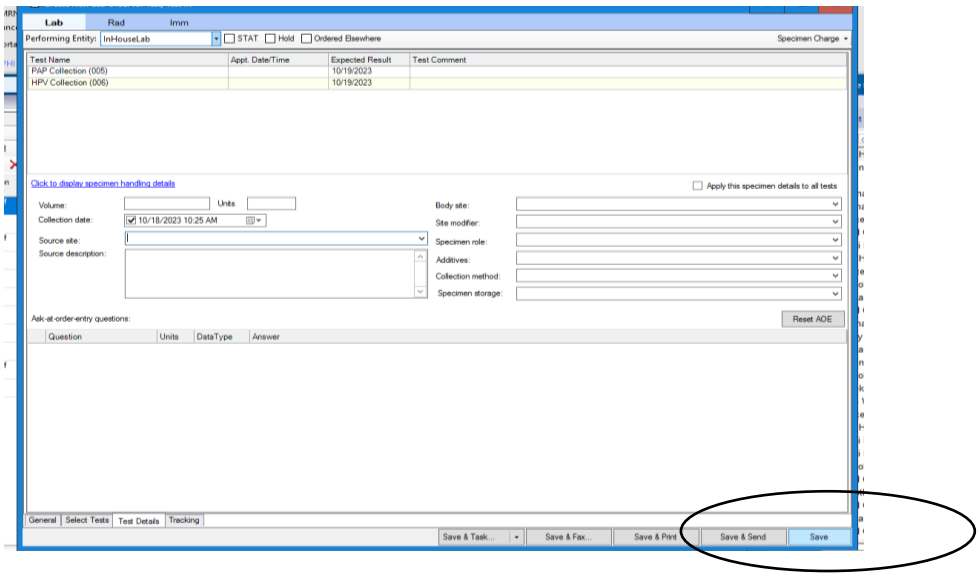


3. Click the drop-down menu, select in InHouseLab and select which tests have been performed.



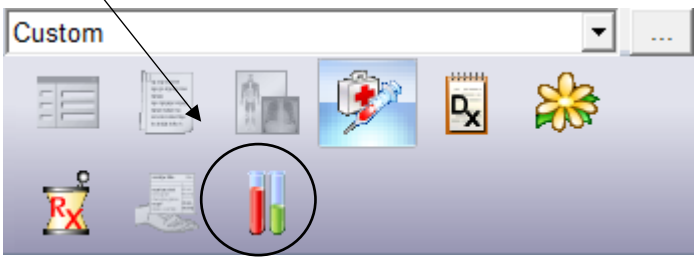
4. By clicking on the test and then under test details, this will allow you to enter the date the test was performed. Then click “save.”



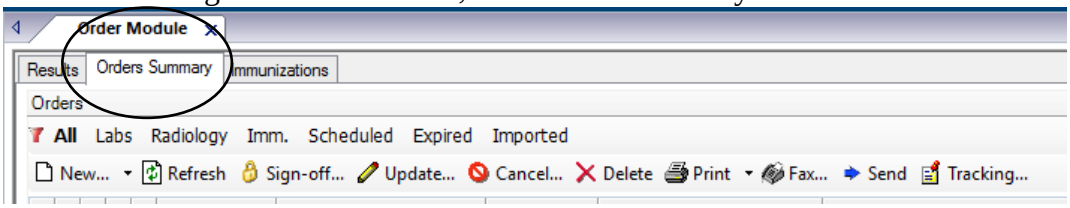


Entering CCS Results, Refusal, or CCS completed at an outside facility

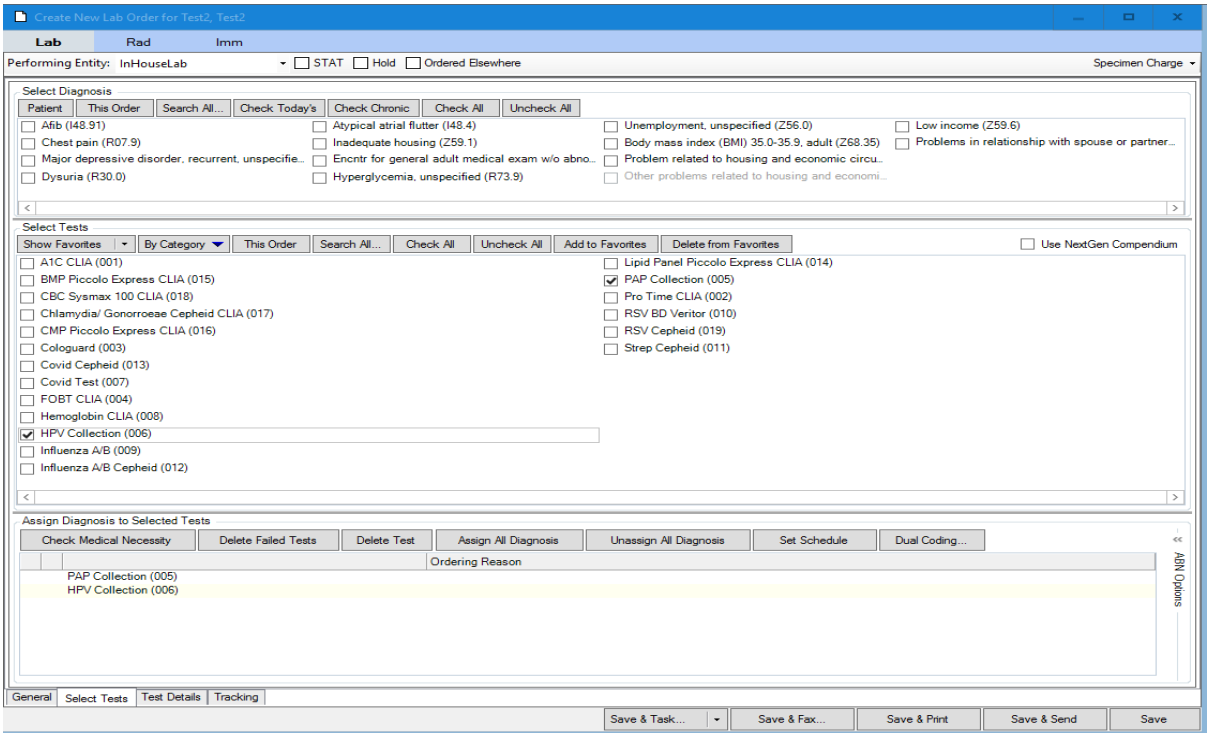
1. When documenting Pap and/or HPV, documentation should be completed using the Orders (test tubes) icon.



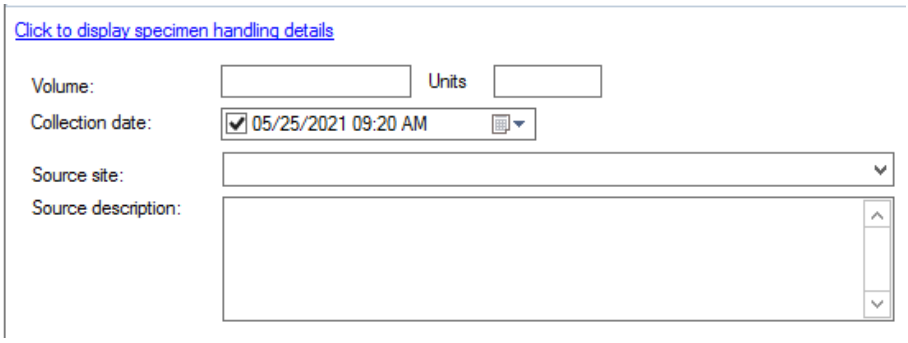
2. After clicking on the orders icon, select order summary to create a new PAP/HVP order.



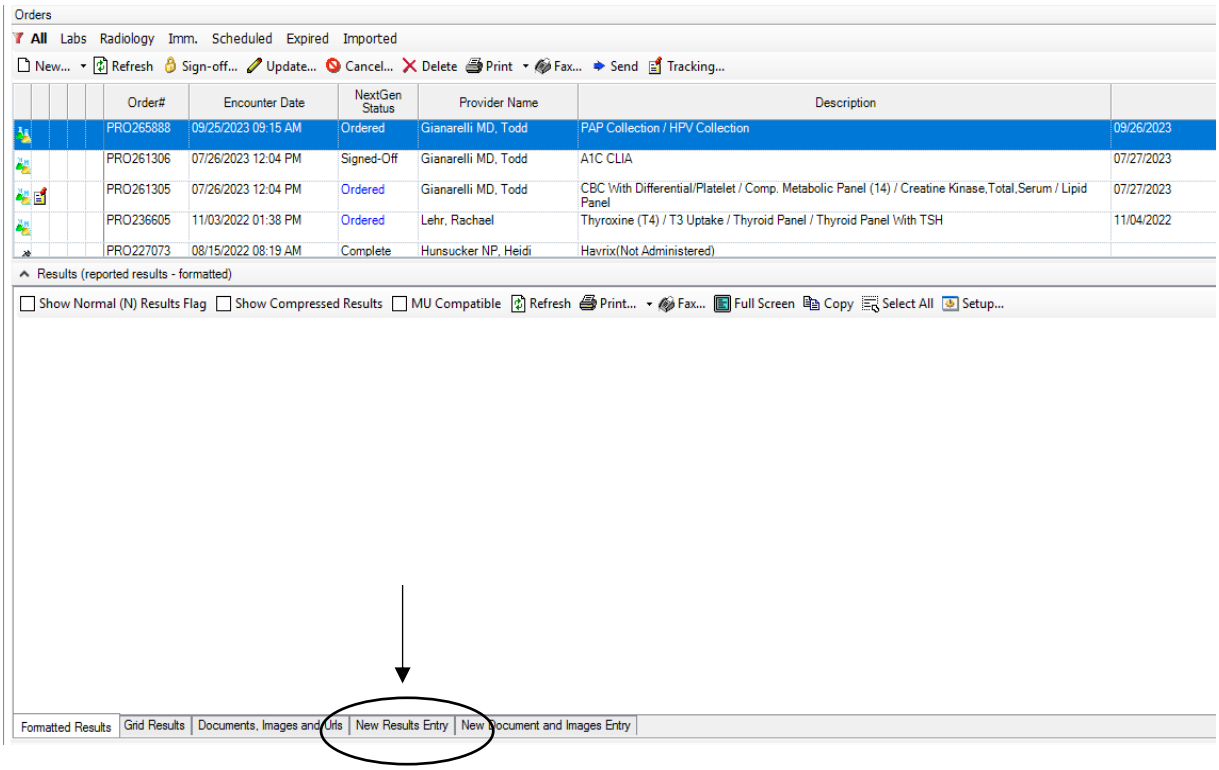
3. If entering a historical PAP/HVP test, first enter it under InHouseLab and select which tests have been performed. Clicking on the test and then under test details will allow you to change the date the testing was performed. If the test was previously ordered, you will not need to re-enter the orders; you will begin by selecting the test to enter the results under and continue to step 5.



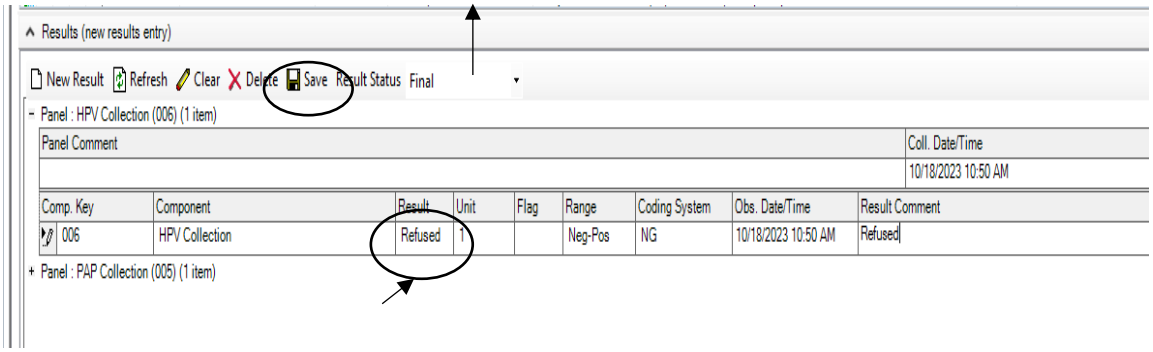
4. Enter date the CCS was performed (do not chart a result per patient report, if they insist they had completed elsewhere request the record, if they are unsure offer them CCS and if they refuse, document as a refusal).

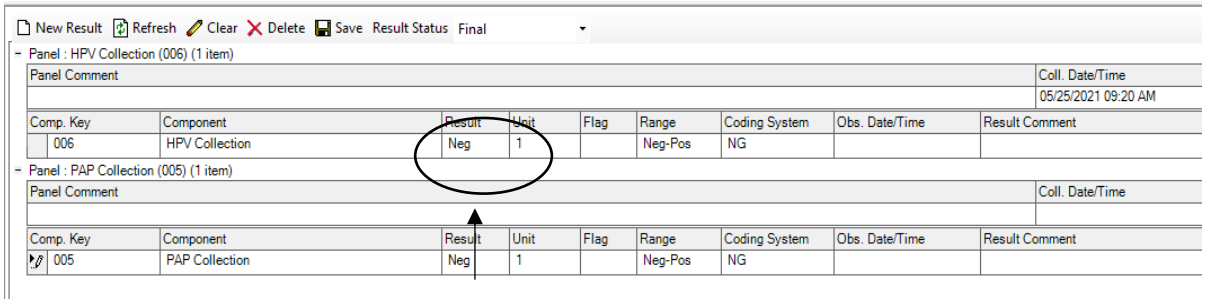


5. The order will then appear within order summary. Select the test, it will appear as highlighted, and click “New Results Entry” to then enter the results of the test.



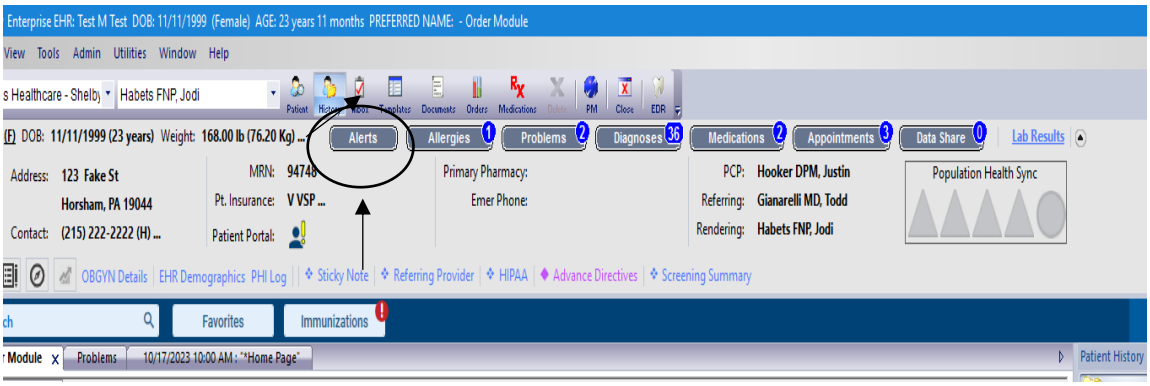
6. If a patient refuses CCS, these same steps must be taken; instead of inserting the results, chart refused within the result column. (NOTE*: the CCS must still be ordered). Enter results or enter refusal and hit “save.”





Creating an Alert within the EHR

1. Open patient chart and select the "alert" tab.



2. Under "Orders" column, click the empty line and enter the alert information. Click the box "show in Red & Bold" and "Pop-Up for Acknowledgment." Click "Save and Close."