**Closing Perceived Care Gaps Through Process Development**

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**Notes from the Author**

I have found myself in a profound season of gratitude as I have worked towards completing this project and I’d like to express that in a small way here. I would like to thank my project faculty Dr. David Campbell-O’Dell who was supportive, flexible, and encouraging mentor in this process. I would like to thank my project site champion who allowed me to learn and grow in this process and with his support.

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This DNP paper, the pinnacle of my academic career thus far, is dedicated in memoriam to my grandfather, Kazimierez Miskow. Grandpa, your kindness and resilience have inspired me and shaped the trajectory of my life. You were a survivor in the most honorable way imaginable. The tragedies you experienced and the unthinkable you walked through have led to this moment in time-your granddaughter on the cusp of earning a doctoral degree and none of this would have happened without you and the way in which you lived your life. I think of you and Grandma often and see all of the ways you’re both still woven into my life.

**Abstract**

Cancer screening is an important aspect of primary care in terms of caring for patients and in terms of hitting benchmarks for reimbursement. When a primary care clinic transitioned to a new electronic health record and none of the cancer screening data transferred into the new system, they were not meeting organizational goals for cancer screening percentages and recognizing patients who actually had care gaps was nearly impossible. Through process development and collaboration, cancer screenings documentation was increased helping to work towards meeting standards and metrics set forth by the parent organization and helping to uncover actual care gaps.

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**Section I. Introduction**

**Background**

This project took place in a rural community in eastern North Carolina at a primary care clinic that is part of a large, non-profit healthcare organization. The clinic provides primary care services to adolescents and adults in Snow Hill and surrounding communities (E. Pearson, personal communication, March 6, 2021). The clinic serves a small community with a population of 1,699 that is also economically impoverished with the median household income being $25,278 (less than half of the North Carolina average) (U.S. Census Bureau, 2019). In this community, 33.8% of people living below the poverty line, which is double the North Carolina average. This rural practice transitioned to a new electronic health record (EHR) system in October 2020 (E. Pearson, personal communication, March 6, 2021). Previously, the practice utilized NextGen, and, currently, the practice uses EPIC EHR.

**Organizational Needs Statement**

The problem addressed here is twofold. First,health maintenance data such as cancer screenings, diabetic foot examinations, and diabetic eye exam dates did not transfer to EPIC EHR when the practice transitioned from NextGen (E. Pearson, personal communication, March 6, 2021). Much of this data is currently unknown. This has caused many perceived care gaps for patients of this practice. The health maintenance data is flagged as *overdue* on charts but may not be overdue and simply not currently updated in the EHR. It is also concurrently camouflaging actual care gaps as the data is not readily available for the provider to determine if there is a care gap that needs to be addressed. By reviewing a patient’s chart, it is difficult to determine if they are overdue on health maintenance or if they are up to date due to the absence of updated health maintenance dates in the EHR.

A sole nurse practitioner performs the care of this clinic, and the clinic has been flagged by the quality department of the health organization as having too many care gaps (E. Pearson, personal communication, March 6, 2021). However, as previously discussed, these care gaps are often perceived versus actual. This is causing a downward trend in accountable care organization (ACO) metrics, negatively impacting the metrics and financials of the organization. This issue was addressed to close perceived and actual care gaps to provide timely and effective primary and preventative care to patients.

The Institute for Healthcare Improvement Triple and Quadruple Aims help establish goals that increase healthcare performance (Beckett & Melnyk, 2018). Quadruple Aim focuses on improving patients' experience of care and overall population health while decreasing healthcare costs and healthcare staff burnout (Beckett & Melnyk, 2018). The above-discussed issue relates to all the aims in the Quadruple Aim. Having out-of-date health maintenance data can decrease patient experience, the quality of healthcare, and population health by failing to follow guidelines and provide appropriately timed health maintenance screenings. Having poor ACO metrics can increase healthcare costs, creating a financial burden on the healthcare organization and, eventually, patients. Finally, this problem affects staff burnout and satisfaction. A large amount of missing data may feel like an obstacle the staff is facing without any subsequent increase in the time allowed to perform these needed updates or any additional compensation. Healthy People 2030 helps set goals as a guide to improving the overall health of the United States Population (Healthy People 2030, n.d.). Healthy People 2030 explicitly addresses increasing appropriate cancer (breast, colorectal, and cervical) screenings which intersect with the very purpose of this project.

**Problem Statement**

Due to a recent EHR transition, perceived care gaps for patients of a rural eastern North Carolina primary care clinic were skewing ACO metrics and camouflaging actual care gaps that need to be addressed.

**Purpose Statement**

This project aims to create an efficient, realistic process to update health maintenance data in patient charts at a rural eastern North Carlina primary care clinic to eliminate perceived care gaps and ensure actual care gaps are recognizable.

**Section II. Evidence**

**Literature Review**

There exists an abundance of literature related to making changes to processes in healthcare, business, and other areas. To narrow this literature to be specific to this project, the search terms utilized were *process changes in primary care* and *rural*. The use of these terms revealed the literature most relevant to the population at hand. This initial search utilizing the PubMed database yielded 1,061 results. Inclusion criteria then applied were articles published within the past five years with full text available for viewing in English. Exclusion criteria were articles older than five years, without full text available, or in a language other than English. Additionally, Fineout-Overholt et al.’s (2005) levels of evidence were considered, and the search was narrowed again. Meta-analysis and systematic review are the highest level of evidence regarding the efficacy of interventions, followed by randomized control trials. To obtain the highest level of evidence for this literature review, only meta-analyses, systematic reviews, and randomized controlled trials were included. This search yielded 118 articles for review. All articles were reviewed by title and abstract. 13 articles were deemed potentially relevant to this project and reviewed in depth. Finally, nine of the articles were deemed definitely relevant and were included in this literature review.

***Current State of Knowledge***

The literature revealed that there is little direct data describing how to create a successful and efficient practice change. No literature was found that directly addressed a practice change related to lost data during an EHR transition. However, there is evidence that addresses process changes and quality improvement made within healthcare settings. Boiled down with the above inclusion criteria and several trends were noted among studies that implemented quality improvement projects or new process projects within healthcare organizations.

A characteristic noted of projects or interventions that did not meet targets was resource-poor area or practice clinic (Parchman et al., 2019a; Larson et al., 2020; Odendaal et al., 2020). However, support and training may help overcome this barrier (Parchman et al., 2019b; Haskins et al., 2020). Staff buy-in is an integral part of making any quality improvement or process development a success. When implementing a new program or project, staff value being asked for their feedback and input throughout the process (Harry et al., 2020; Odendaal et al., 2020). Integrating systems is also important to workers as it impacts their workflow. Buy-in and support from leadership figures were also crucial in satisfaction among staff implementing a new process or program. Adequate training on a new process can increase staff confidence in their ability to perform the new process competently and increase success rates (Wells et al., 2017; Odendaal et al., 2020).

Support and follow-up through the process is also an integral quality in successful projects (Parchman et al., 2019b). Additionally, feedback to the staff throughout the process is essential (Khalil et al., 2017). There is a fine line to be walked when considering implementing a new process. The staff responsible for the new process may already feel overwhelmed by their current workload and may find a new process or request too overwhelming and consider it more work than it is worth (Muke et al., 2020; Odendaal et al., 2020). Practices can also already be committed to too many different projects at one time to fully participate in another (Parchman et al., 2019b). Having flexible training options may help alleviate some of this barrier as it allows staff to learn the process when they have the time rather than attending another meeting or scheduled orientation (Muke et al., 2020). The utilization of a framework was also recommended for beginning a new process (Harry et al., 2020). Flexibility and adaptability throughout the process of change were also recognized as characteristics of a good project. Motivation for improvement can also indicate how successful a quality improvement project may be (Parchman et al., 2019a).

***Current Approaches to Solving Population Problem***

Many of the studies included in this literature review utilized or attempted to utilize technology during quality improvement or process development processes. There are many pros and cons to using technology as a part of this process. If staff are not familiar with technology, it can certainly be a barrier to success in using a process that is centered around a technologically based intervention (Odendaal et al., 2020). Technologically based interventions are also susceptible to issues with functionality, internet connectivity, or any number of other technology-specific vulnerabilities (Harry et al., 2020; Odendaal et al., 2020). However, each of the studies utilized a different method for implementation. One commonality was that all of the studies had a multimodal plan for their project or intervention. Having multiple types of interventions with multiple steps seems to be a standard that strengthens process development and quality improvement projects.

***Evidence to Support the Intervention***

Based on this literature review, there is no single best way to implement a process improvement project. The method largely depends on resources available, staff motivation, setting, and training. This project will involve the staff of the process development and implementation to invite and encourage honest feedback (Harry et al., 2020; Odendaal et al., 2020). Fortunately, I have worked as a clinical student within this agency and have developed a rapport with the staff members. To create strong staff willingness and buy-in to the process, there will be adequate and flexible training and ongoing modifications as needed based upon feedback from the staff (Parchman et al., 2019b; Muke et al., 2020). The below-discussed framework will assist in helping organize and continuously assessing the intervention for necessary modifications and improvements (Harry et al., 2020).

**Evidence-Based Practice Framework**

***Identification of the Framework***

This project will be completed utilizing the Institute for Healthcare Improvement’s Plan-Do-Study-Act (PDSA) model. PDSA is a four-step cycle that represents the steps of the scientific method in a concise and applicable manner (Institute for Healthcare Improvement, n.d.). In the first step, planning took place. Partnership with the project site, identification, and prioritization of the issue occurred, and a literature review occurred. This is represented in the material presented in sections I, II, and III of this paper. The proposed intervention detailed in section III of this paper was initiated at the clinic site in the second step. The intervention was created after a literature review. The data was studied and summarized in the third step, as represented in sections IV and V of this paper. Finally, the data was reflected upon to suggest further actions based upon the summarized data. In this project, this was represented by a discussion of the recommendations to other and recommendations for further study found in section VI of this paper.

**Ethical Consideration & Protection of Human Subjects**

There are no ethical considerations for this project. The intervention is equal and equitious to everyone in the target population as this project aims to improve cancer screening documentation and completion for every patient at the selected clinic. There is no potential for harm to the target population due to the nature of the project. The project was a quality improvement project aimed at streamlining and improving clinic documentation. It can only improve upon current practices and does not post harm to the target population. There was no potential for anyone in the target population to be taken advantage of during the project implementation as no specific patient identifiers were used. Aggregate clinic statistical data was the data utilized rather than individual, specific patient data.

To prepare for the formal approval process, a letter of support was obtained from the president of the outpatient and ambulatory services from the large health system included in this project. Then, the Collaborative Institutional Training Initiative’s Group 2: Social and Behavioral Research for Investigators and Key Personnel was completed. Following this, a quality improvement/program evaluation self-certification tool was completed and reviewed by the project’s faculty member. Finally, the responses from the quality improvement/program evaluation self-certification tool were entered into the East Carolina University Self-Certification Qualtrics survey. This project was confirmed to be a quality improvement project through this survey, and Institutional Review Board approval was given.

**Section III. Project Design**

**Project Site and Population**

The project site will be a rural primary care clinic in Eastern North Carolina. The target population is the clinic staff.

***Description of the Setting***

The clinic provides primary care services to adolescents and adults in a community of approximately 1,700 residents year-round on a regular Monday through Friday, regular business hours basis. The practice was using its current EHR system for a little under a year. The clinic sees about 10 to 20 patients per day for chronic disease management, physical assessments, and acute problem visits.

***Description of the Population***

The population targeted by this intervention will be the staff at the clinic. This includes a nurse practitioner (NP), licensed practical nurse (LPN), an Xray technician functioning as a medical assistant, an office manager, and a receptionist. These individuals are responsible for the data collection and maintaining EHR records in an updated fashion.

**Project Team**

The project team included the DNP student, the project site champion, and the student’s academic faculty. The student was primarily the driver of the project and responsible for the contents of this paper. The project site champion assisted the student in formulating a project to serve a current need, met with the student for project updates, provided necessary data, and collaborated with the student on project design. The academic faculty member provided advice and support throughout the entire process through meetings scheduled at multiple points in the project. The faculty member assisted the student in navigating proper IRB approval and assisted the student in editing the final paper.

**Project Goals and Outcome Measures**

This project aims to create a realistic, working process at the above-described clinic to update health maintenance data in patient charts to eliminate perceived care gaps and ensure actual care gaps are recognizable.

***Description of the Methods and Measurement***

After initial meetings with the site champion to identify the problem to be addressed by this project, the DNP student had a meeting with the staff (except the NP) to introduce the goal of this project and ascertain what the current process was. The pre-implementation process to input cancer screening data was described as informal and relied upon the Xray technician or LPN inputting the data during their work up of the patient. However, the staff noted challenges and barriers in the pre-implementation process. Many patients did not have this information readily available. There are many other tasks and responsibilities during the work up process including a medication reconciliation, vital signs, and initial review of systems. Assessing for cancer screenings was likely to fall to the wayside due to the busyness of clinic day and the complexity and multiple medical issues of the patients.

During the meeting with staff, alternatives to the current informal processes were discussed in a collaborative brainstorming session. By the end of the session, we agreed to create a more formal process with multiple steps and fail safes. The new process created involved the receptionist and office manager screening the patients scheduled for the day for care gaps in cancer screenings. If a patient scheduled had one, the front desk staff members would provide the patient with a form created by the DNP student with input from the staff (see Appendix) to complete regarding their last completed screening while the patient was waiting for their appointment. This was helpful in two ways: it allowed patients time to pull up their online charts or look in their calendars for cancer screening dates while also taking some stress and time away from the clinical staff’s initial workup making it less likely to be overlooked. If the patient wasn’t able to recall the information and could not find out, the next step would be the clinical staff doing a chart review of available documents to try to find this information. If it was obtained, it was input into the proper section of the chart to eliminate the care gap. Also, if the patient stated that they refused the screening, this was also input to the system to close out the care gap. The third step of this process involved the NP at the clinic reviewing the care gaps that actually existed and then discussing appropriate cancer screenings with the patient and ordering cancer screenings if the patient agreed which helped close out even more care gaps.

Throughout the semester, the DNP student visited the project site to assess for any needs the staff had. A PDSA cycle was completed in October, however, after discussions with the staff members, the process was moving along smoothly and fitting into workflow well, so the PDSA cycle did not yield any major changes to the originally implemented process. Of note, during the creation of the form for patients to fill out regarding their cancer screening status, there was extra room on the form. The DNP student and clinic staff agreed this was valuable space to include cancer screening facts and information. In this space, data related to the number of deaths related to cancer and the survival rates for early-stage cancers versus late-stage cancers were included along with an encouragement at the bottom to speak with the NP regarding cancer screenings to determine if cancer screenings were right for the individuals reading the form. We hoped that this may help even just a few patients think further about cancer screenings and consider screenings prior to entering the examination room for their appointment.

The measurements included quantitative data in the form of quality data regarding the percentage of patients who appear to have health maintenance gaps. Measurements will also include qualitative data in the form of open-ended and closed-ended verbal questions of the staff regarding their experiences and opinions working with the new process.

***Discussion of the Data Collection Process***

The project site champion provided the quality data he receives from the larger parent organization of the clinic regarding the number of patients who apparently have out-of-date health maintenance data in the EHR. This data will be collected at multiple points during the project to determine if there is an overall downtrend in the percentage of patients who appeared to have care gaps (but likely do not have actual care gaps due to incomplete data input in the EHR system). Qualitative data was also collected from the staff at the clinic to determine their thoughts on the new process and if they believe the new process is both efficient and effective.

**Implementation Plan**

The student worked on-site with the clinic. The student spoke with each staff member individually and as a group to ask staff members for feedback and ideas regarding starting a new process. This supports the literature review findings that staff members are more likely to participate in a process and feel less overwhelmed by it when they are involved in creating the new process. The student collaboratively created a process that heavily incorporated staff input and ideas and presented it to the clinic staff to determine the final process. A PDSA cycle was conducted to ensure the process fit the current workflow and was realistic for long term use.

**Timeline**

This project was implemented between August 2021 and November 2021, during the academic fall semester. The student was on-site at the clinic intermittently during this time for implementation. During the implementation phase, the student completed a PDSA cycle to make improvements to the process. Afterward, the data collected was analyzed and synthesized for presentation and dissemination during the following academic semester, in April 2022.

**Section IV. Results and Findings**

**Results**

Objective data which included the percentage of patients with up-to-date cervical, breast, and colorectal cancer screenings was collected on a weekly basis from August 29 until November 28 (the implementation period). Qualitative data was collected from the staff during five onsite visits to the clinic during the implementation period.

***Outcomes Data***

During the implementation period, there was an increase in documentation for all three of the cancer screening types being monitored: cervical, breast, and colorectal cancers. Cervical cancer screening documentation increased from 38% at the beginning of the implementation period to 49% during the last month (beginning of November) of the implementation period but saw a decrease back down to 39% at the end of the implementation period. Breast cancer screening documentation increased from 53% at the beginning of the implementation period to 62% by the end of the implementation period. In the breast cancer screening, growth was steady and linear, unlike the cervical cancer screening data. Colorectal cancer screening increased from 33% to 51% during the implementation period in a linear fashion, similar to the breast cancer screening.

Qualitative data collection included ongoing discussions with clinic staff regarding the new process put in place. Throughout the implementation period, the staff reported the process was working smoothly, easily fit into their current workflow, and did not cause a strain on time or resources. The site champion (the NP at the clinic) noted his care gaps list was growing shorter and more manageable.

**Discussion of Major Findings**

There was not a linear increase in the cervical cancer screenings as with the other screenings. The staff postulated some ideas for why this may be occurring. The NP at this clinic was a male and many female patients expressed they would rather have a pap smear completed by a female healthcare provider. However, since this clinic was located in a rural, resource poor area, it seemed that many patients did not ever see another provider, such as a gynecologist, to have this screening completed and it was never completed.

There was a notable increase in both breast and colorectal screening documentation. Through discussions with staff, they noted that they most people were willing to schedule breast and colorectal screenings or had already completed them when asked. The staff also began to pay more attention to the screening data and took patients out of the EHR system who were no longer active patients or patients who made appointments, then never arrived. The staff did notice a trend of some patients who would tell this office they were willing to have screenings, were appropriately referred for screenings, then when the referral center (like the gastrointestinal office or breast cancer screening facility) called, they would then refuse the screening.

Though there was an overall increase in the documentation of all of these screenings, neither one increased to goal set forth by the organization. The organization’s goals for cervical screening documentation was greater than 75% and greater than 80% for both breast and colorectal cancer screenings. However, the implementation period was short and not all patients of the clinic were seen during the implementation period. Data over the next year or so (when most patients of the clinic will likely make a visit to the clinic at least once) may reveal a continuing upward trend until the organizational goals are met.

As noted in the literature review, staff buy-in was completely integral to implementing this project. This project would not have been possible whatsoever without the staff’s willingness to participate. Staff feedback and input was obtained through a PDSA cycle and though no changes were ever made, the feedback was asked for and gathered. Additionally, the project had support of the site champion as well as the administrative team over the clinic which also likely led to the success and engagement of the clinic staff.

**Section V. Interpretation and Implications**

**Cost Benefit Analysis**

The costs were very minimal with this project. The only identifiable cost was printing of black and white copies of the cancer screening questionnaire. This was done with the paper and ink already allotted to the clinic and did not incur an additional cost. The clinic is small, serving approximately 300 patients per month, so this is not likely to be a large cost, especially considering that as the project continues, the number of patients needing a printed questionnaire will dwindle as more data is input. Even considering this small cost, the benefits are much greater. Meeting organizational and ACO goals for the documentation of cancer screenings can lead to increased reimbursements from third party payors that far outweighs the cost of ink and paper.

**Resource Management**

The nonfinancial resources included in this project were time spent by clinic staff on the process. Fortunately, this new project and process fit in well to the established workflow of the clinic and did not create a detectable strain upon employee time. The project highlighted the need for attention to cancer screening data and brought this need to the forefront of the minds of the clinic staff. It did not really require much extra time or time spent away from normal clinic duties to complete. On a larger scale, having a process in place like the one placed in this project, would likely have the same impact-simply making the cancer screening questionnaire and addresses the cancer screening care gaps part of the typical workflow without additional strain or time away from normal duties needed.

**Implications of the Findings**

This project has multifaceted implications as it decreased perceived cancer screening care gaps as well as helping to reveal and highlight actual cancer screening care gaps for patients.

***Implications for Patients***

The potential implications for patients are great. Cancer screenings and early detection are integral to decreasing morbidity and mortality from cancer. Being able to rapidly, accurately determine that a patient is due or overdue for an appropriate screening can save lives. Also, having money and increasing reimbursements makes healthcare more affordable for all.

***Implications for nursing practice***

This project adds to the findings from the literature review regarding the importance of staff engagement in the creation of a new process. This project also can be applied to other care gaps and utilized in other areas of nursing practice as a nursing driven process that can create a large and sustainable impact.

***Impact for Healthcare Systems***

This project can help healthcare systems meet goals related to cancer screening documentation and care gaps. It can also help increase ACO metrics leading to increased reimbursements and financial incentives. Creating more efficient, cost-effective healthcare systems can benefit many and lead to a healthier, more affordable healthcare future for healthcare systems, patients, and providers and staff.

**Sustainability**

The clinic has decided to continue the project. It is a low-cost, already established project and has improved metrics at the clinic which makes this process sustainable and realistic for this clinic. The clinic has already been charged with improving these metrics before the project started. This project and established process could also be used for other care gaps that the clinic has been charged with improving such as diabetic eye examinations and fall risk screenings.

**Dissemination Plan**

This project will be disseminated via an in-person presentation at East Carolina University on April 5, 2022. The presentation will include an approximately 10-minute oral presentation of the project and associated poster followed by a question-and-answer session. The project paper will also be uploaded into the university’s online repository and will be available publicly.

**Section VI. Conclusion**

**Limitations**

The largest limitation recognized during the completion of this project was time. Though significant increases to some of the screening data goals were made, the organizational goals were not met and there remains a significant number of patients with delinquent cancer screening data remaining at the end of the implementation period. More time during the implementation period likely would have revealed even more compliance towards or exceeding the established goal. Over the course of a year, the vast majority of the clinic patients likely would have come into the clinic for a sick visit, chronic disease visit, or annual physical and so most patients would likely be captured during this time period so having a year-long implementation phase may have worked out more favorably for this project.

**Recommendations for Others**

I would recommend to others attempting this project to gain the perspective and insight of the staff. This was likely one of the strongest points of the project leading to its success. To further strengthen this process, I have pondered the introduction of financial and other incentives for staff members to further increase engagement in the process. Incentivizing staff would have likely further increased the interest of the staff in the project and helped keep the project even more at the forefront of the minds of the staff.

**Recommendations Further Study**

This project could easily be adapted to fit another care gap area such as diabetic retinopathy screenings or pneumonia vaccinations in older adults. The applicability of this project towards other problems is wide and can be easily tailored to meet the needs of individual clinics under individual circumstances as the design of the project is to be easily woven into current workflow and work practices. Additionally, continuing this project and bringing new life to it as it progresses through continued PDSA cycles could be an opportunity for another DNP student to continue to help this clinic improve their cancer screening ACO metrics.

**References**

Beckett, C.D., & Melnyk, B.M. (2018). Evidence-based practice competencies and the new EBP C credential: Keys to achieving the Quadruple Aim in health care. *Worldviews on Evidence-Based Nursing, 15*(6), 412-413. <https://doi.org/10.1111/wvn.12335>

Fineout-Overholt, E., Melnyk, B.M., & Schultz, A. (2005). Transforming healthcare from the inside out: Advancing evidence-based practice in the 21st century. *Journal of Professional Nursing, 21*(6), 335-344. https://doi.org/10.1016/j.profnurs.2005.10.005

Harry, M.L., Saman, D.M., Truitt, A.R., Allen, C.I., Walton, K.M., O’Connor, P.J., Ekstrom, H.L., Sperl-Hillen, J.M., Bianco, J.A., & Elliott, T.E. (2020). Pre-implementation adaptation of primary care cancer prevention clinical decision support in a predominantly rural healthcare system. *BMC Medical Informatics and Decision Making, 20*(1), 117. https://doi.org/ [10.1186/s12911-020-01136-8](https://doi.org/10.1186/s12911-020-01136-8)

Haskins, L., Chiliza, J., Barker, P., Connolly, C., Phakathi, S., Feeley, A., & Horwood, C. (2020). Evaluation of the effectiveness of a quality improvement intervention to support integration of maternal, child and HIV care in primary health care facilities in South Africa. *BMC Public Health, 20*(1), 318. https://doi.org/ 10.1186/s12889-020-8397-2

Healthy People 2030. (n.d.). *Healthy People 2030: Building a better future for all.* Healthy People 2030. <https://health.gov/healthypeople>

Institute for Healthcare Improvement. (n.d.). *How to improve.* Institute for Healthcare Improvement. <http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChan> es.aspx

Khalil, H., Bell, B., Chambers, H., Sheikh, A., & Avery, A.,J. (2017). Professional, structural and organisational interventions in primary care for reducing medication errors. *Cochrane Database of Systematic Reviews, 10*(10), CD003942. <https://doi.org/> [10.1002/14651858.CD003942.pub3](https://doi.org/10.1002/14651858.cd003942.pub3)

Larson, E., Mbaruku, G.M., Cohen, J., & Kruk, M.E. (2020). Did a quality improvement intervention improve quality of maternal health care? Implementation evaluation from a cluster-randomized controlled study. *International Journal for Quality in Healthcare, 32*(1), 54-63. https://doi.org/[10.1093/intqhc/mzz126](https://doi.org/10.1093/intqhc/mzz126)

Muke, S.S., Tugnawat, D., Joshi, U., Anand, A., Khan, A., Shrivastava, R., Singh, A., Restivo, J.L., Bhan, A., Patel, V., & Naslund, J.A. (2020). Digital training for non-specialist health workers to deliver a brief psychological treatment for depression in primary care in India: Findings from a randomized pilot study*. International Journal of Environmental Research and Public Health, 17*(17), 6368. https://doi.org/ [10.3390/ijerph17176368](https://doi.org/10.3390/ijerph17176368)

Odendaal, W.A., Watkins, J.A., Leon, N., Goudge, J., Griffiths, F., Tomlinson, M., & Daniels, K. (2020). Health workers’ perceptions and experiences of using mHealth technologies to deliver primary healthcare services: A qualitative evidence synthesis. *The Cochrane Database of Systematic Reviews, 3*(3), CD011942. <https://doi.org/> [10.1002/14651858.CD011942.pub2](https://doi.org/10.1002/14651858.cd011942.pub2)

Parchman, M.L., Anderson, M.L., Coleman, K., Michaels, L., Schuttner, L., Conway, C., Hsu, C., & Fagnan, L.J. (2019a). Assessing quality improvement capacity in primary care practices. *BMC Family Practice, 20*(1), 103. https://doi.org/ [10.1186/s12875-019-1000-1](https://doi.org/10.1186/s12875-019-1000-1)

Parchman, M.L., Anderson, M.L., Door, D.A., Fagnan, L.J., O’Meara, E.S., Tuzzio, L., Penfold, R.B., Cook, A.J., Hummel, J., Conway, C., Cholan, R., & Baldwin, L. (2019b). A randomized trial of external practice support to improve cardiovascular risk factors in primary care. *Annals of Family Medicine, 17*(Suppl1), S40-S49. <https://doi.org/> [10.1370/afm.2407](https://doi.org/10.1370/afm.2407)

U.S. Census Bureau. (2019). *Snow Hill, NC.* Census Reporter.https://censusreporter.org/profiles/16000US3762760-snow-hill-nc/

Wells, S., Rafter, N., Kenealy, T., Herd, G., Eggleton, K., Lightfoot, R., Arcus, K., Wadham, A., Jiang, Y., & Bullen, C. (2017). The impact of a point-of-care testing device on CVD risk assessment completion in New Zealand primary-care practice: A cluster randomised controlled trial and qualitative investigation. *PloS One, 12*(4), e0174504. <https://doi.org/> [10.1371/journal.pone.0174504](https://doi.org/10.1371/journal.pone.0174504)

**Appendix**

Cancer Screening Form for Patients During Check In

**Patient Cancer Screening Information**

Are you a male or female between the ages of 45 and 75? If so, what was the date of your last colorectal cancer screening?

Typically, this is a colonoscopy, but can include other tests too. See the front desk if you believe you are being screened for colorectal cancer with a mode other a colonoscopy every 10 years.

Are you a female between the ages of 50 and 75 OR a female between the ages of 40 and 75 WITH a sibling, parent, or child with breast cancer? If so, what was the date of your last mammogram?

Are you a female between the ages of 21 and 65? If so, what is the date of your last pap smear?

**Why is cancer screening so important?**

* Cancer screening helps detect cancer or precancer before you have symptoms which means it is usually caught in an earlier stage. Cancer caught in earlier stages is typically more treatable and gives you a higher chance of survival
* Colorectal cancer kills over 51,000 Americans each year and is the second most common cause of cancer deaths
* 1 in 8 women will have breast cancer in their lifetime. 85% of women diagnosed with breast cancer will have no family history of breast cancer
* Cervical cancer has a 91% survival rate at 5 years when caught in early stages. When caught in late stages, cervical cancer has only a 14% survival rate at 5 years

If you have any questions about what cancer screenings apply to you or questions about how screenings work, please ask [redacted] during your visit today.