12-17-2022

Developing a quality improvement process: Impacting patient outcomes and achieving ambulatory accreditation

Colleen E. Nappi
James Madison University

Developing a Quality Improvement Process: Impacting Patient Outcomes and Achieving Ambulatory Accreditation

Colleen Elizabeth Nappi

A Clinical Quality Improvement Project submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

Doctor of Nursing Practice

School of Nursing

November 2022

FACULTY COMMITTEE:

Committee Chair: Jeannie Corey, DNP, RN, NEA-BC

Committee Members/Readers: Rahul Kataria, MD

Dedication Page

This project is dedicated to my husband Richard and my children Joseph, Alana, Vinny, Bella, Rico, and Mary Kate who tirelessly supported me throughout my journey to complete my education. I am also indebted to my extended family and friends who encouraged me to pursue my goals and never let me doubt my ability to succeed.

Acknowledgments

I would like to sincerely thank my project chair, Dr. Jeannie Corey, whose guidance, support, leadership, and intelligence provided me a roadmap for success. I am grateful to the JMU nursing faculty for their generous wealth of knowledge and expertise that challenged me to grow personally, professionally, and academically on my DNP journey. I am thankful for the assistance provided by my physician preceptor, Dr. Rahul Kataria, who graciously agreed to collaborate with me and was an invaluable IT resource. I am indebted to my husband and children who encouraged me to pursue my DNP goal knowing it would require so much of my free time. Your patience and encouragement were priceless. Finally, I thank God who put the most amazing people in my life as I encountered many personal hurdles along my journey.

Table of Contents

List of Figures

Abstract

Colon cancer is the second leading cause of cancer deaths in the United States (US) and colonoscopy is the best method for screening and detecting cancer before symptoms are present. A colonoscopies' ability to detect precancerous lesions or identify colorectal cancer (CRC) relies on patients having a high-quality bowel preparation. The US Multi Society Task Force (USMSTF) on colorectal cancer set quality standards for colonoscopy including bowel preparation quality, adenoma detection, and cecal intubation times. As a private gastroenterology practice in Northern Virginia was preparing for re-accreditation with the Accreditation Association for Ambulatory Health Care (AAAHC) it was determined that there was no standardized documentation process for recording the patient bowel preparation quality. AAAHC requires benchmarking studies to improve patient care. The purpose of the quality improvement project was to create a standardized process for recording bowel preparation quality. A documentation process was implemented in the Electronic Health Record (EHR) to consistently document results in the colonoscopy record. The quality improvement project utilized a pre-implementation phase to assess the organization’s documentation practices, identify deficiencies and conducted a feasibility study to explore the organization’s commitment to proposed changes and change efficacy. A standardized process was implemented using a template scoring the bowel preparation quality with the Aronchick Bowel Preparation Scoring (ABPS) tool. The standardized process allowed the organization to record, gather, and analyze the data on bowel preparation quality and compare the results to recommended standards set by the USMSTF. Four Plan Do Study Act (PDSA) cycles were utilized to

assess the adoption of the process by physicians at the organization and measure the bowel preparation quality. The feasibility study demonstrated organizational readiness and commitment to change. Consistent compliance with the documentation process was adopted at the end of the second PDSA cycle. The organization was found to exceed the national standards for bowel preparation quality set by the USMSTF with preparation quality ≥ 96% or better in all four PDSA cycles. The results were utilized to meet the benchmarking initiatives required for re-accreditation by the AAAHC in September 2022. The Ambulatory Surgery Center gained re-accreditation through 2025.

Keywords: Colorectal cancer, Colonoscopy, Indicators, quality metrics, Quality improvement

Developing a Quality Improvement Process: Impacting Patient Outcomes and Achieving Ambulatory Accreditation

Introduction

The Centers for Disease Control (CDC) ranks colorectal cancer as the second leading cause of cancer deaths in the US when considering cancers that affect both men and women. There is no question that colon cancer screenings save lives. Approximately 90% of colorectal cancers that are diagnosed early and treated properly have a five-year survival rate (cdc.gov). There are many options to screen for colorectal cancer including fecal occult blood test, fecal immunochemical test (FIT), DNA stool testing, virtual colonoscopy using low dose computerized topography (CT) scan, flexible sigmoidoscopy, and colonoscopy. There are differing options, and each has their own benefits and risks, however, colonoscopy is considered the best screening tool for its diagnostic and therapeutic ability. A colonoscopy can identify precancerous lesions or polyps in the colon when they are very small and remove their potential to become cancer. A colonoscopy can also identify colorectal cancer at early stages when treatments can be most effective. Kasi et al. (2019) found that the overall CRC incidence in the population ≥ 50 years of age is on the decline due to screening colonoscopy.

Following the groundbreaking publication by the Institute of Medicine, To Err is Human, the goal toward quality improvement in healthcare has become center focus. This spotlight on quality and safety has found its way to the field of gastroenterology. In between 2002 until 2005 the American Society for Gastrointestinal Endoscopy (ASGE) and the American College of Gastroenterology (ACG) specifically concluded that developing and implementing meaningful and quantifiable measures of quality needed to be a priority. In 2015 the ACG and the ASGE joined together to become what is known as the USMSTF on colon cancer and amended these

quality metrics to their present status (Mathews et al., 2019). The most prevalent quality metrics throughout the literature include adenoma detection rates, cecal intubation times, colonoscopy withdrawal time, and bowel preparation quality.

The key to managing these metrics is documentation. The appropriate documentation plays a key role in a gastroenterology practice's ability to follow quality metrics and develop benchmarks and performance goals. Absence of proper documentation and tracking measures prevents appropriate follow-up recommendations and can lead to repeat procedures occurring too early or a delay in care. Measurement and reporting of quality measures and meeting benchmark goals will shape the future in gastroenterology as there will be more penalties and financial incentives with respect to quality metrics from organizations and payers (Calderwood & Jacobson, 2013).

Project Type

According to Batalden and Davidorff (2007) the definition of QI is the combined and unceasing efforts of everyone including healthcare professionals, patients, their families, researchers, payers, planners, and educators to make the changes that will lead to better patient outcomes (health), better system performance (care), and better professional development (p. 2). Quality improvement seeks the best outcomes for the patient, families, healthcare providers, and healthcare institutions. Quality improvement projects use existing knowledge to systematically improve the methods for providing care to the patient. This Quality Improvement (QI) project standardized the documentation process of recording patient bowel preparation quality in the patient's colonoscopy record using a template in the EMR.

Quality metrics of colonoscopy for screening and surveillance of CRC should be routinely monitored since failure to meet quality standards could have an impact on subsequent

CRC development (Wadehra et al., 2021, p. 1). The quality of bowel preparation is critical as high quality preparation leads to therapeutic safety and the accuracy of the endoscopist to identify pre-cancerous polyps or lesions. Inadequate bowel preparation can lengthen procedure time, increased costs, increase the risk for adverse events, increase the risk of missed detection of colon cancer, and missed detection of adenomatous polyps. According to the latest Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE), repeat colonoscopy in less than one year is recommended for inadequate bowel preparation (Levin et al., 2008). The ASGE considers adequate bowel preparation as cleansing that allows a recommendation of a screening or surveillance interval appropriate to the findings of the examination and should be achieved in 85% or more of all examinations performed (Johnson et al., 2014). Proper documentation of this quality metric is seen as vital to the safety and quality of patient care.

This QI project initiated a process by which all endoscopists at the organization utilized the same valid and reliable bowel preparation scale in a standardized template to record patient bowel preparation quality. This method of standardized reporting, allowed for consistent data collection, reporting, and analysis such that the results were compared to national quality metric standards set by the USMSTF on colorectal cancer. This project allowed the organization to assess gaps in quality and adjust processes if indicated. The intervention evolved over time, demonstrating the organization was monitoring quality metrics and showed best practices in patient care while it also improved the flow of the organization’s process of documentation (Ogrinc et al., 2013).

Setting

The setting for this QI project is a private gastroenterology and hepatology medical practice in Loudoun County, Virginia. Loudoun County is a suburb of Northern Virginia with a highly educated population. The practice currently has three Physicians, two advanced practice providers (APP), and a support staff of approximately 40 people. The organization has an onsite ambulatory surgery center (ASC) endoscopy suite where the patient's endoscopic procedures are completed. The QI project was designed to specifically target documentation for patients having colonoscopies at the ASC. This included patients having bidirectional endoscopy.

Problem Statement

The practice did not have standardized guidelines and processes for recording, collecting, and analyzing the quality of patient bowel preparation. In the absence of a standardized process there had been no evaluation of bowel preparation quality at the organization. It was unknown if the bowel preparation quality was meeting or exceeding the national benchmarks. The organization is currently accredited by the Accreditation Association for Ambulatory Health Care (AAAHC) and has re-accreditation evaluation scheduled in late September 2022. The AAAHC looks for benchmarking studies that are data driven and assist with helping the organization improve patient care. Benchmarking enables the organization to trend performance over time and gage their key performance measures as compared to similar organizations and national standards. Quality improvement studies enable the organization to process challenges in the documentation process, identify problems and initiate efforts toward resolution as part of the benchmarking process. Staff was aware of the need to initiate positive changes in the quality improvement process. Documentation from the previous accreditation with AAAHC in 2019 noted benchmarking practices as deficient and the organization was

recommended to revise benchmarking practices and quality improvement metric reporting. Implementing a process to collect data, report, and analyze results to compare to national metrics provides corrective action advised by AAAHC's 2019 accreditation findings.

Literature Review

A comprehensive review of the literature was conducted using PUBMED, Cinahl, and the Cochrane Review databases. The literature provided a foundation to expand knowledge of quality improvement in colonoscopy. The relevant research gave a clear understanding of quality improvement initiatives and national standards for tracking quality metrics in colonoscopy. The results helped guide the methodology for this project and focus the project using available evidence. The literature reviewed for this project included only peer reviewed journals using the time frame from 2015 to the present. Pediatric data was excluded as were international studies as the quality standards are not comparable to US standards.

There is an increasing focus on quality indicators to establish delivery of the highest quality in healthcare. Implementation of quality improvement initiatives involves rapid assessment and changes on an interactive basis and can be carried out through individuals, groups, and facilities (Brunner & Calderwood, 2015, p. 617). The literature supports using Electronic Health Records (EHR) to document quality metrics, collect data, and analyze results promotes quality evaluation and documentation. Initiating a standardized documentation process within a healthcare practice facilitates the appropriate tracking of quality measures and allows these measures to be compared to national standards. The results can be used to identify gaps in the provision of care and make changes where indicated. Meeting the national benchmarks improves quality and safety in patient care. A theme throughout the literature included the use of quality metrics to guarantee a high-quality endoscopic exam. There was agreement in the

literature that bowel preparation quality, adenoma detection rates, and cecal intubation times are the quality metrics of greatest emphasis.

Background

The most recent Centers for Disease Control (CDC) data published for the United States (US) found 141,074 new cases of colon and rectal cancer (CRC). There were 52,163 deaths from the disease. The American Cancer Society predicts that in the US for the year 2022 there will be 151,030 new cases of CRC and 52,580 deaths. The US Preventative Services Task Force (USPSTF) found that the incidence of early onset CRC in the population < 50 years of age has been increasing by 2% annually. Survival rates are higher when CRC is detected early and CRC is preventable if people get screened. Colonoscopy is considered the best method for CRC screening in the US. The effectiveness for a colonoscopy to diagnose CRC and/or find precancerous lesions in the colon is directly related to the quality of the bowel cleanliness following the bowel preparation.

Johnson et al. (2014) reports that 20% - 25% of all colonoscopies are reported to have inadequate bowel preparation. The result of poor preparation quality leads to missed detection of CRC, missed detection of precancerous polyps, or leads to aborted/canceled procedures. The patient will need to return to repeat their procedures at an earlier surveillance interval. In addition to the clinical implications, cancellations, non-attendance, and aborted procedures lead to patient dissatisfaction and embarrassment as well as financial ramifications to the medical practice and the patient. The focus on quality metrics in healthcare through accurate recording, reporting and measurement, improves the landscape for the patient, healthcare providers, payers, and accrediting organizations. The ideal quality metric should correspond to decreased incidence of colon and rectal cancer (Brunner and Calderwood, 2015, p. 38).

In 2005 the American College of Gastroenterology (ACG) and the American Society for Gastrointestinal Endoscopy (ASGE) formed a Quality Taskforce to develop quality indicators for colonoscopy procedures (Pike, 2012). Benefits for measuring these quality indicators include improved outcomes, better care, higher quality, and improvement of resources both human and material. Adequately and precisely measuring quality indicators helps to establish if the outcome includes better health. An adequate bowel preparation is crucial to performing a good colonoscopy exam and inadequate bowel preparation is associated with longer procedure times, decreased polyp detection rates, and leads to earlier repeat exams (Abou Fadel et al., 2016, pp. 120–121). The specific quality indicators established for colonoscopy include documentation in the procedure record of the quality of the preparation. Appropriate use of electronic health records (EHR) can be a source for collecting and mining the data on the bowel preparation quality metric.

AAAHC is a nationally recognized organization that certifies institutions and healthcare programs in the US and sees quality of care and patient safety as core values. The AAAHC primarily provides accreditation for ambulatory services in surgical, procedural, and primary care settings. They are strong advocates for high-quality patient care through the adoption of national standards. Focusing on achieving positive measurable outcomes assists organizations with identifying and managing goals. Obtaining AAAHC accreditation ensures that the organization has a commitment to providing safe and quality care. It should be noted that the AAAHC accreditation is recognized by third party payers, medical associations, liability and insurance companies and state and federal agencies as well as the public (aaahc.org., 2022).

Quality improvement initiatives should be an ongoing process in the ASC setting. When organizations collect data that measures evidence-based practice initiatives and quality

improvement processes including patient outcomes they are ultimately improving patient care and safety. Using data collection can help the organization better manage and improve processes. Data can be the tool for identifying problems, prioritize issues, develop solutions, and tracking the success of changes. Data and information should be used to guide decisions and to understand variations in the performance of processes that support safety and quality.

Model/Framework

A widely used implementation framework, the Exploration, Preparation, Implementation, Sustainment (EPIS) framework, was chosen to guide this project. EPIS has four well-defined phases that align with the implementation process. The EPIS framework identifies outer system and inner organizational contexts that align with Evidence Based Practice (EBP) quality improvement processes being implemented and the interplay of both these context (Moullin et al., 2019). Examples of the outer context of the organization include policies, innovation factors, bridging factors and leadership at an organization. Inner context within an organization includes characteristics of organization leaders who are required to positively transform the environment to support needed change. Inter-organizational aspects include leadership, finance, quality and fidelity of monitoring processes and staff collaboration. These inner and outer context need to work in unison toward the same goals with commitment and continuity to process changes.

According to episframework.com, nd., EPIS is explained as follows:

- Exploration phase, the healthcare system and stakeholder(s) consider the emergent or existing health needs of the patients to identify the best-known strategies to address those needs, and subsequently decides whether to adopt the practice in question.
- Preparation phase, the primary objectives is to identify potential barriers and facilitators of implementation at the outer and inner contexts, further assess needs for adaptation, and

to develop a detailed plan to capitalize on implementation facilitators and address potential barriers.

- Implementation phase, EBP use is initiated and instantiated in the system and/or organization(s).
- Sustainment phase, the outer and inner context structures, processes, and supports are ongoing so that the EBP continues to be delivered, with or without some adaptation, to realize the resulting public health impact of the implemented EBP **(https://episframework.com/).**

This framework was selected specifically for the focus on sustainability. This QI project improved many aspects of QI data recording, collection, and analysis. The project focused on standardizing the recording of quality of bowel preparation. The EPIS framework guided the process to improve outcome measures and improve the quality and safety of patient care. It also prevents increased cost to the organization and patient associated with poor preparedness.

Figure 1

EPIS framework

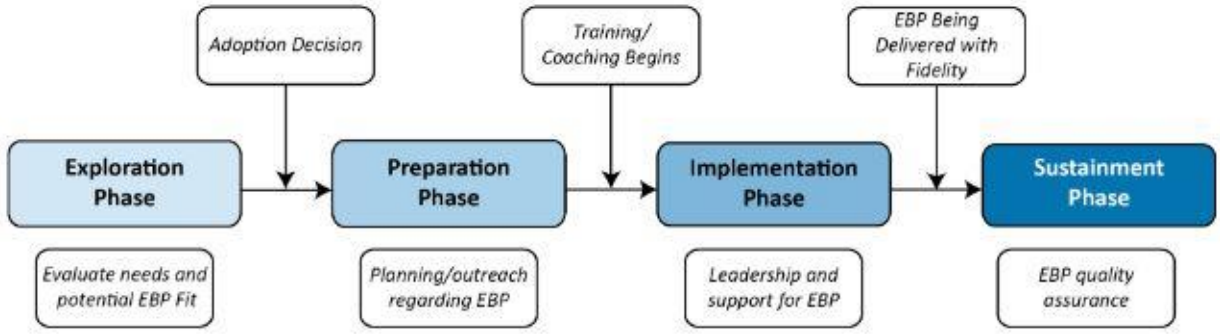


Figure taken from episframework.com, nd

The Plan Do Study Act (PDSA) Cycle was employed to evaluate the impact of the standardized process for recording and measuring the quality of patient bowel preparation in the EHR. There are four steps in the process which allow for the project implementation to be

broken down into manageable steps; execution of the project, evaluation the outcomes every two weeks for the first two cycles to ensure proper use and compliance with the documentation process. Once the process was successfully implemented and compliance and consistency with the documentation was established the quality metric data was monitored on a 30-day PSDA cycle. This allowed for re-education if required, improved the process after evaluation, and finally tested the outcomes after changes were implemented. The data is continually evaluated on a 30-day cycle and compared to national standards. Continued monitoring for high quality bowel preparation leads to outstanding patient care. The quality of the patient bowel preparation at the practice was compared to the national standards set by the USMSTF on colorectal cancer to identify gaps. The project team was able to adjust the process and made appropriate adjustments while continuously re-evaluating results at the end of each cycle. The organization was able to complete four full PDSA cycles.

Figure 2

Plan Do Study Act

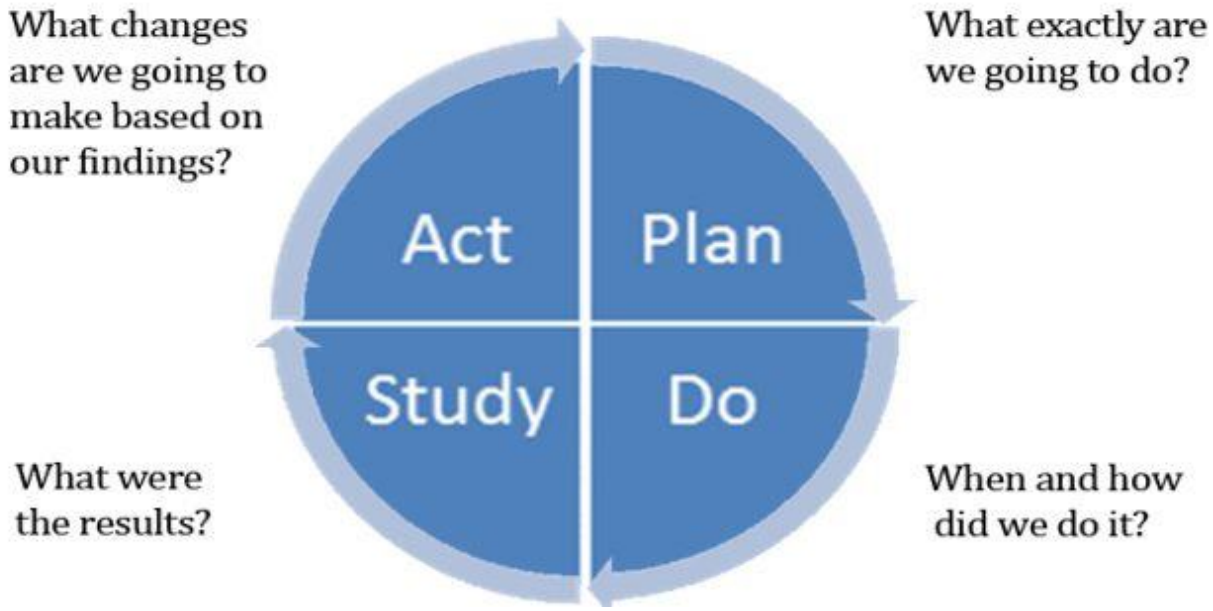


Figure taken from QAPI nd

Aims

The aims of this project were to establish readiness of the organization to implement documentation process change and establish commitment to change and change efficacy. A standardize documentation process for recording patient bowel preparation using a template in the colonoscopy record allowed the organization to execute registry reports for data collection, reporting, and analysis on the overall bowel preparation quality at the organization. The findings meet the AAAHC requirements for quality improvement benchmarking studies to trend performance overtime.

- Using an ORIC questionnaire, a feasibility evaluation was conducted to identify potential barriers to the successful implementation of change within the organization.
- Design and implement a standardized bowel preparation quality documentation/tracking process within the available EHR.
- Achieve adoption of the standardized documentation process by the endoscopists in $\geq$ 95% of the procedures.
- Collect and analyze the data to measure how well-prepared our patients are compared to the USMSTF on colorectal cancer benchmark of $\geq$ 85% overall fair to adequate or better preparation quality.
- Use the collected data to meet the AAAHC accreditation requirements toward safety and quality through benchmarking.

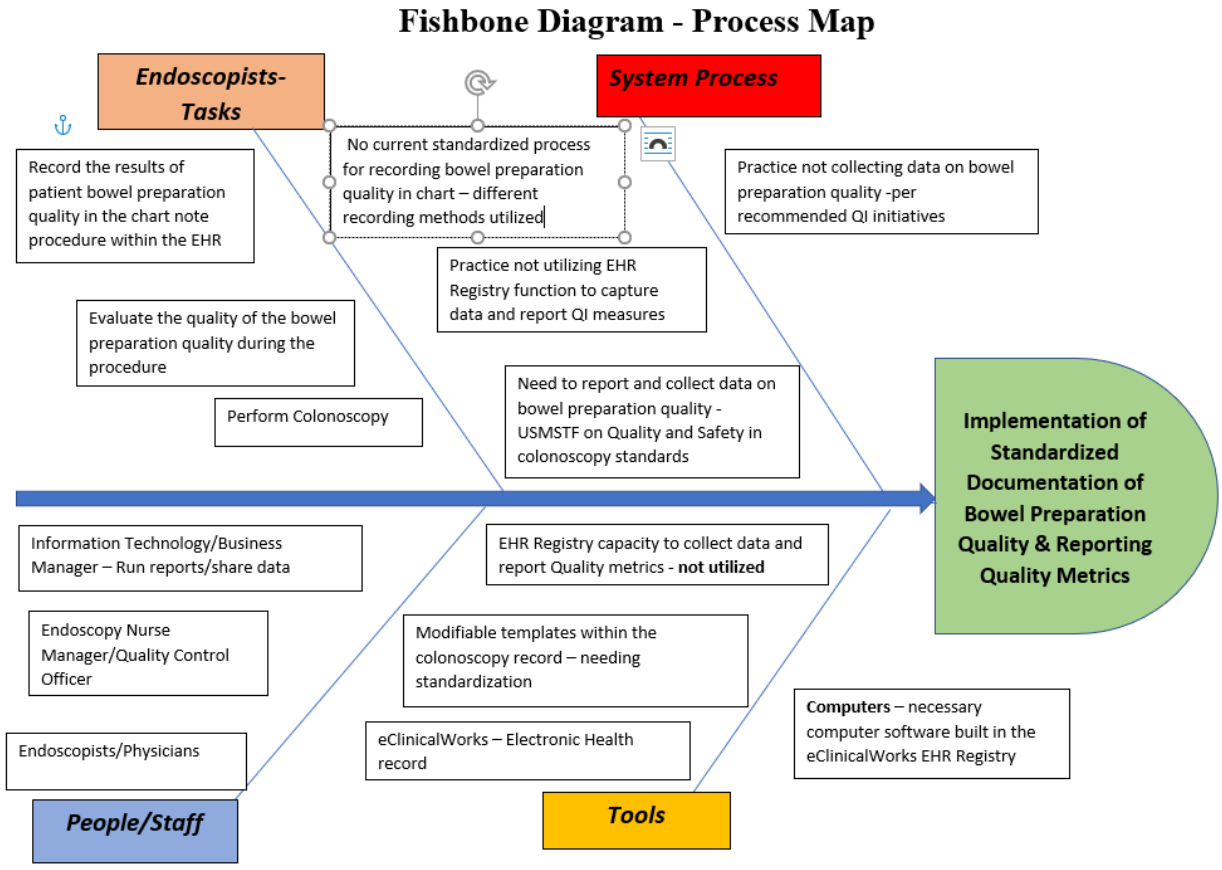
Methods and Plans

A fishbones process diagram map was developed to review the current processes, resources, activities, and stakeholders in the documentation, data collection, and reporting process for patient bowel preparation quality at the practice. A careful review of the

recommended quality initiatives proposed by the USMSTF on colorectal cancer and the process currently in place at the practice revealed gaps. Although the current EHR had the capacity to modify templates for gathering and recording data these resources were not being utilized. According to the USMSTF on colorectal cancer, the endoscopists are encouraged to submit procedure reports into a data registry that benchmarks performance and quality measures against minimally accepted national thresholds and mean levels of performance among peers. If the rate of adequate bowel preparation for an endoscopist is below the USMSTF recommended benchmark of 85% or better bowel preparation, an improvement initiative should be undertaken (Johnson et al., 2014, p. 546). There was no standardized method for gathering and analyzing data on USMSTF recommended quality metrics at the organization. In the absence of standardized processes for recording and collecting data the quality of patient bowel preparation at the practice as compared with national standards was unknown.

Figure 3

Fishbone Diagram Process map



Note. Image of Fishbone Diagram Process Map 2022. Own work.

A feasibility study was conducted prior to implementation of the project to assess organizational readiness. Ruest et al. (2019) found that many studies identified organizational readiness as a powerful indicator and facilitator for the adoption of new practices, policies, and programs (p.1). The term readiness with respect to this project refers to staff being both psychologically and behaviorally prepared to implement change. The organizational readiness for implementing change (ORIC) at the practice was measured using a validated and reliable

ORIC questionnaire. Prior to implementing changes to the documentation recording process, the anonymous ORIC questionnaire was distributed to the physicians, advanced practice providers, and managers and information collected was utilized to identify how prepared the organization was to implement changes to documentation and identified possible barriers to implementation of the quality metric tool. The ORIC instrument is theory based and is considered to have good to excellent reliability, structured validity, is brief and has known health-care provider validity (Adelson et al., 2021, p. 6). The ORIC instrument is psychometrically validated measurement tool. Due to the small number of participants solicited to complete the ORIC questionnaire, the findings are presented in a percentage of response to categories using the 12-item questionnaire with Likert scale responses.

Using the ORIC questionnaire in the pre-implementation phase was useful for identifying potential barriers to implementation of the standardization documentation process. The tool measured the two subconstructs of change efficacy and change commitment. Currently, there are no standardized measures for defining the organization or the survey respondent's role with respect to the ORIC tool (Hamilton et al. 2011). The 12-question assessment responses were exported into an Excel spread sheet available through PhenX Toolkit and the anonymous answers are presented by the percentage of responses on the five-point Likert scale with responses ranging from strongly agree to strongly disagree. As expected, the tool provided useful data prior to proceeding with the planned intervention. The results demonstrated that the organization was ready to support the proposed changes and had a high likelihood for supporting sustained change. Results are visualized using a bar graph.

The current electronic health records system at the organization is eClinicalWorks (eCW). Prior to implementing the standardized documentation process the DNP candidate

contacted the information technology specialists at eCW to determine how best to capture the required data in the procedure chart, how to report the data, and ultimately how analyze results while protecting the patient health information (PHI). Utilizing the reports' function, known as Enterprise Business Optimizer (EBO) within eCW, data is extracted from the practice's hosted application. These reports can be generated for many functions including clinical reporting, operational reporting, financial reporting, as well as custom reports. These reports can be scheduled to run on a periodic basis and exported to Excel to be shared with practice management, business management, and clinical managers. Reports can be customized to provide accurate data in easy-to-read formats and presentation. The project required a valid and reliable tool for recording data in colonoscopy record. Endoscopists use of a click box template in the procedure record provides consistent and accurate results.

There are multiple valid and reliable scoring tools used in colonoscopy to record the quality of the patient bowel preparation. The most well-known and frequently used tools include the Aronchick scale, Ottawa Bowel Preparation Scale (OBPS), and Boston Bowel Preparation Scale (BBPS). According to Kasenberg et al the differing scales currently in use have limitations and are dependent upon subjective descriptions of luminal contents expressed as categories ("excellent", "good", *etc*.) or numbers, depending on the scale utilized (p.13). There was no consensus in the literature to direct the best option of quality bowel preparation scale. The BBPS and the OBPS both document the cleanliness of the colon by segments to get at total score. Theses scoring tools were found to be valid and reliable scoring tools based on the literature. The Aronchick Bowel Preparation Scale (ABPS) is considered fully validated and universally accepted. Among the variety of scoring tools, the ABPS is the most well-known and widely used clinically and in clinical trials (Aronchick, CA., 2004, p. 1038). The limitation of this tool it that

although it rates the cleanliness quality of the colon as a total it does not provide specifics on the individual segments of the colon.

The bowel preparation scoring tool chosen for this project was the ABPS and was chosen for its reliability, validity and because it is the oldest and thought to be the easiest method to grade the quality of patient bowel preparation. The endoscopists use the ABPS scale to characterize the percentage of total colonic mucosal surface covered by fluid or stool. It does not break down the colon into specific segments and the bowel prep scores are documented prior to any washing or suctioning that may be required during the procedure (Kastenberg et al., 2018). Using this tool gives a score adequate to ensure successful visualization of the colon mucosa and enhance detection of lesions or polyps and ultimately provide a successful screening colonoscopy. Endoscopists have exposure to the varying tools for scoring bowel preparation quality as part of their initial training in residency and fellowship.

As seen in Appendix A, the DNP candidate and preceptor created a template for the ABPS in the current EHR system at the practice. The electronic health records system, eCW, allows for customized charting based on the practice needs and requirements for documentation and reporting. The ABPS template was found to be user friendly and required only brief education on its proper use for documentation in the colonoscopy procedure record. The endoscopists performing colonoscopies at the organization were individually instructed by the DNP candidate and the physician preceptor on the proper use of the template. This process excluded the DNP's preceptor who was instrumental in the design construction, format, and uploading of the template into the eCWprocedure record. The Endoscopists within the practice were provided a visual of the scoring tool and instructed in proper documentation of bowel preparation quality using the new tool. This documentation was completed in the patient

procedure document for each patient undergoing a colonoscopy. This was completed by the endoscopists in the same manner for every colonoscopy procedure.

Once education and implementation of the tool was complete a go live date as established and the standardized documentation process was initiated. Using the EMR template allowed the practice to create standardized processes and generate reports in the eCW EBO registry to compile data on the overall quality of the patient's bowel preparation at the organization. Results were characterized as inadequate/aborted, poor, fair/adequate, good, and excellent based on the ABPS. The results were then compared to the USMSTF benchmark of ≥ 85% of patients achieving fair/adequate or better preparation quality. According to the USMSTF on colorectal cancer, the endoscopists are encouraged to submit procedure reports into a data registry that benchmarks performance and quality measures against minimally accepted national thresholds and mean levels of performance among peers. If the rate of adequate bowel preparation for an falls below the USMSTF recommended benchmark an improvement initiative should be undertaken (Johnson et al., 2014, p. 546).

The report evaluating compliance with quality of bowel preparation was initiated on a bi-weekly basis for evaluation by the DNP candidate at the launch of the standardized documentation process. The review of the documentation by the physicians was evaluated for consistency and compliance. Upon the initial launch of the documentation process a two-week PDSA cycle was used to assess physician compliance with the process and their consistent use of the documentation process. two After the initial PDSA cycle another two-week cycle was competed to ensure that there was consistency and compliance with the bowel preparation scoring using the ABPS. The PDSA cycles also documented the bowel preparation quality for quality analysis.

The compliance with the documentation process was established and the consistency and compliance continued to be monitored. The bowel preparation quality data was collected simultaneously collected. This data collection was completed on a 30-day PDSA cycle beginning after completion of the second PDSA cycle. The 30-day cycle was implemented to continue to assess the quality data and compliance by the physicians with standardized documentation. Data collected through the EMR registry reporting process was converted to an Excel spread sheet with all patient and physician identifiers removed. The data was broken down into percentages in each ABPS category. Using the EMR template allowed the practice to create and generate a report in the eClinicalWorks registry under the structured data tab to compile data on the overall quality of the patient's bowel preparation at the organization. Results were characterized as inadequate/aborted, poor, fair/adequate, good, and excellent based on the Aronchick scale. The results were then compared to the USMSTF benchmark of ≥ 85% of patients achieving fair/adequate or better preparation quality. The results on bowel preparation quality were used to meet the AAAHC requirements for ongoing benchmarking studies to monitor quality care. The results of the project data collection were presented to the AAAHC representative inspector on September 29, 2022. The nurse manager for the Loudoun Endoscopy Group and the DNP preceptor worked in collaboration to present the data to AAAHC.

Evaluation

The first PDSA cycle gathered data on the use of the bowel preparation quality reporting template by individual endoscopist. This report aimed to identify user compliance with the new tool. The report was first run two weeks after the uploaded documentation tool was entered to the EHR. The aim of the reporting was to demonstrate ≥ 95% consistent and compliant use of the template by the endoscopists. The second report was generated to solicit data on the quality of

patient bowel preparation at the organization breaking down the data into the Aronchick subcategories of excellent, good, fair/adequate, poor and inadequate. The results were compared to the national benchmark set by the USMSTF on colorectal cancer

Analyzing the data allowed the practice to identify potential gaps in quality and safety. Using quality metrics allows for identification of areas needing improvement in patient care quality. The quality of patient bowel preparation data at the organization's ASC was used for accreditation through AAAHC 2022 to meet benchmarking requirements. Ultimately the ASC exceeded the quality metrics set by the USMSTF on colorectal cancer for bowel preparation quality.

Data Analysis

The ORIC questionnaire was disseminated to the organization managers, physicians, and APPs on July 10, 2022, through Question Pro survey platform. The survey was anonymous. Using anonymity was intended to gain unbiased feedback and protect the privacy of the participants. The survey was distributed to nine colleagues. After one week the response rate was 67%. The survey was redistributed on July 15, 2022. The respondents could only participate one time so there was no risk for duplicate responses. After re-distribution, the response rate was eight of the nine participants for an overall response rate of 89%.

There were two subconstructs measured using the ORIC questionnaire. The first five questions measure the commitment of the organization to change efficacy. The next seven questions measure the organizational members' belief in their collective capacity to implement the change (Adelson, et al., p. 3). These subconstructs can be seen in figure 4 and figure 5. The mean ORIC score was 4.08 (range 3.88 – 4.38) with respect to the first five questions. It was found that respondents had a favorable response to change efficacy with 85% of respondents

answering agree or strongly agree to these questions. The mean ORIC score was 4.09 (range 3.88-4.5) for organizational commitment to implementing proposed changes. The respondents answered the questions dealing with implementation of changes favorably with 87% answering that they agreed or strongly agreed to the organizations ability to implement change. Overall, the results highly supported that the staff was approaching organizational change with a sense of readiness and commitment to the change process.

Figure 4

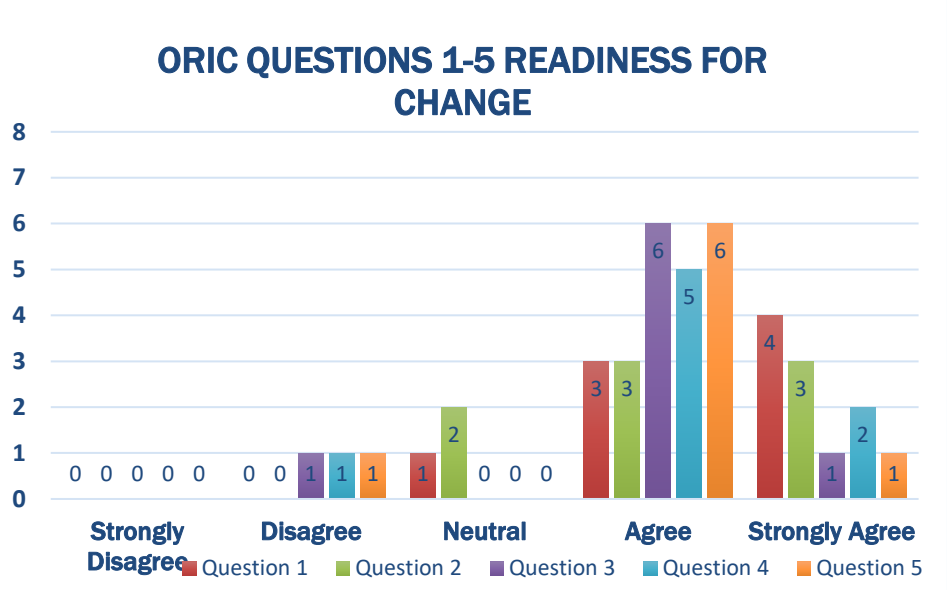
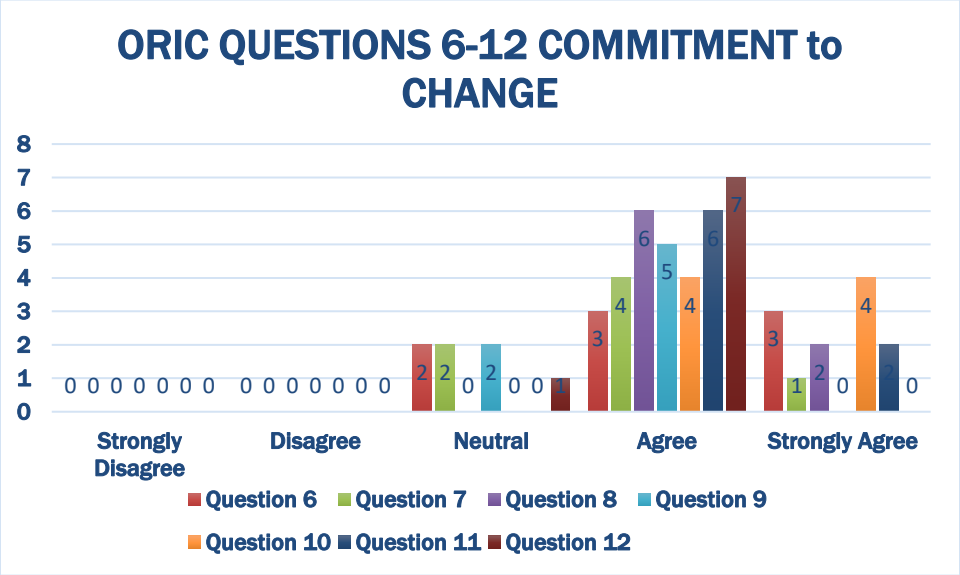


Figure 5



The results of the first two-week PDSA cycles showed 67% (2/3) of the physicians were accurately using the standardized ABPS to record bowel preparation quality in the patient procedure record. The physician not utilizing the documentation process was sent an email with instructions for appropriate documentation. The email contained visual aids as well as written instruction. The DNP candidate also conducted a brief re-education for the physician to ensure accurate adoption of the documentation process.

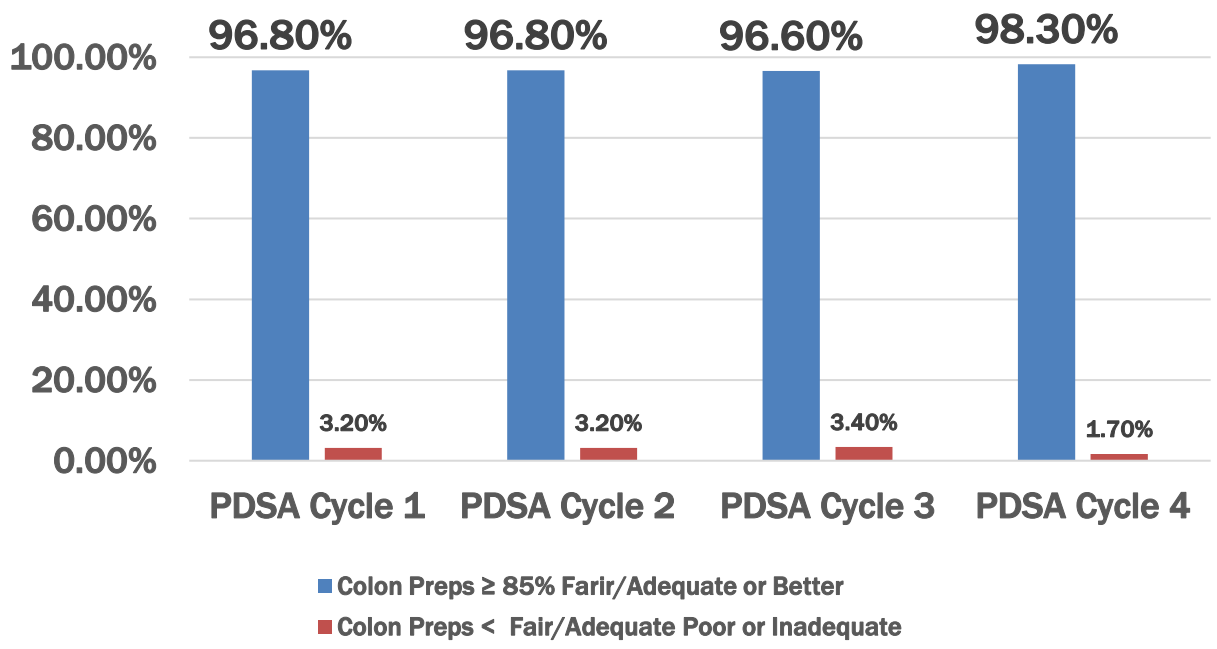
The results of the next two-week PDSA cycle demonstrated a 100% (3/3) compliance rate for accurate documentation using the ABPS in the patient procedure record. At this time the quality metric reports were run to collect data on the organization's bowel preparation quality. As seen in appendix D the results from July 25 through August 5, 2022, showed a total of 64 procedures with 62 procedures meeting the national benchmark of ≥ 85% fair/adequate or better. The results showed 96% of the overall bowel preparation quality met or exceeded the national standards. There was no need for changes or adjustments to the process or to remediate poor preparation quality.

As seen in Appendix E the next PDSA cycle was lengthened to 30 days. The data collected represented colonoscopy procedures completed from August 9 through September 16, 2022. There continued to be 100% compliance with the physician (3/3) use of the ABPS template to record results in the patient procedure record. This showed 100% adoption of the new standardized reporting tool which exceeded the aim three for this project with a target of 95% compliance. The number of colonoscopies completed over this cycle was 238 with 230 or 97% of procedures meeting or exceeding the national bowel preparation quality metrics.

Appendix F represents the final PDSA cycle which continued to be 30 days in length. The data collected represented colonoscopy procedures completed from September 19 through October14, 2022. There continued to be 100% compliance with the physician (3/3) use of the ABPS template to record results in the procedure record. This showed continued adoption and consistent reporting using the new standardized reporting process which exceeded the aim for this project with a target of ≥ 95% compliance. The number of colonoscopies completed over this cycle was 293 with 287 or 98% meeting or exceeding the national benchmark of ≥ 85% fair/adequate or better preparation quality.

Figure 6

RESULTS - BOWEL PREPARATION QUALITY by PDSA CYCLE



The results of the quality improvement project were documented in a visual power point slide for the purpose of presenting to the AAAHC accreditation surveyor. Findings were shared demonstrating that the organization is exceeding national quality metrics set by the USMSTF on colorectal cancer. This project served as a benchmarking study for accreditation and as a corrective response to previous accreditation deficiency in 2019. The organization's ASC received accreditation from AAAHC for the next three years on September 29, 2022. It should be noted that this quality improvement project was acknowledged as one of the three outstanding aspects of the inspection by the surveyor.

Ethics and Human Subject Protection

The approval from the Institutional Review Board from James Madison University was granted on July 7, 2022. The project was initiated on July 10, 2022, and completed October 14,

2022, however the organization continues to collect quality data to ensure that they are in compliance with national standards. There were no large-scale concerns for ethical matters presented by implementation of this project. The managerial staff, physicians, and advance practice providers were all supportive of the changes proposed and provided needed support for the DNP candidate. To protect the personal health information (PHI) of the patients, all data reports were run without patient identifiers. The identity of the physicians was de-identified on the reports. Data was collected and reported by the DNP candidate and all reports generated protected the patient and physician identifiable data.

The were no risks to the patients included in this project. There was minimal risk to the physicians in that they may be uncomfortable or embarrassed if identified as not following the standardized process. Re-education and support in these circumstances was provided discreetly to minimize the displeasure associated with remediation.

Results

The ORIC questionnaire demonstrated that the organizational leaders were ready and willing to back the proposed changes to documentation, data collection and reporting. The process of improving quality care at the organization can be challenging and needs to be an ongoing process to be successful. The readiness for change at the organization was well supported.

The Plan-Do-Study-Act design can be utilized in a variety of healthcare settings to promote quality improvement and improve patient safety and care. This quality improvement project demonstrates its use in establishing standardized documentation processes to report, collect, and analyze data to enable the ASC to attain quality improvement goals in colonoscopy. Maintaining quality bowel preparation metrics at the organization prevents missed cancerous

lesions and adenoma detection, need for repeat procedures, decreases cost to the ASC and the patient as well as improves patient satisfaction with the process. Continuing to monitor the bowel preparation metrics will allow continued high-quality care to the patients.

Strengths and Limitations

A strength of this study was the positive support from the managerial staff as well as the physicians. Staff was ready for the proposed changes and their willingness to implement proposed process changes allowed for a smooth transition with the adjustments in documentation. The physicians' consent and compliance with the project facilitated a successful outcome with documentation, data collection, reporting and analysis. Ultimately this allowed the organization to achieve the quality improvement aims.

A limitation of this quality improvement project was that it was conducted at a single site in a small private organization. It was a controlled environment for implementing changes to documentation processes. In a larger more complex organization, the education process and follow up may be more cumbersome and require more staff support. Another limitation was a risk for over estimation of the compliance data based on the circumstance that the endoscopists were aware of the PDSA cycle audits and without continuous monitoring there exists a risk for short term results with process consistency. People are more likely to adjust their behaviors when they have an awareness they are being observed. This is known as the Hawthorne effect. This project relied heavily on the ability of the EHR to incorporate unique templates into the chart record. Depending on individual organization's EHR there may be a need for more intensive IT support which may require or incur additional costs to the organization. Without the appropriate IT support, the implementation process may be more demanding and laborious.

Implications

The implementation of a standardized process for documentation, data collection, and analysis of the results for bowel preparation quality will continue to be an ongoing quality improvement initiative at the organization. Reports are continuing to be generated monthly and evaluated for continued excellence in outcomes. They will be reviewed at the quarterly quality improvement meetings. This demonstrates the sustainability of this QI project. The project has increased the awareness and understanding of the need to expand data reporting, collection and analysis for other quality metrics including adenoma detection rates and cecal intubation times. Currently the organization is working with IT staff at eCW to establish a documentation process for reporting on adenoma detection rates with plans to add tracking this quality metric by the end of 2022 or early 2023. The next step will be to implement a process to track the cecal intubation times at the organization. The project has helped increase the awareness and understanding of the need for expanding current quality metric tracking and reporting. The long-term goal is to continue to improve quality and safety at the organization with quality improvement initiatives and benchmarking studies. Finally, a long-range goal is for the organization to continue to maintain AAAHC accreditation every three years.

Appendices

Appendix A

Aronchick Bowel-Cleansing Scale

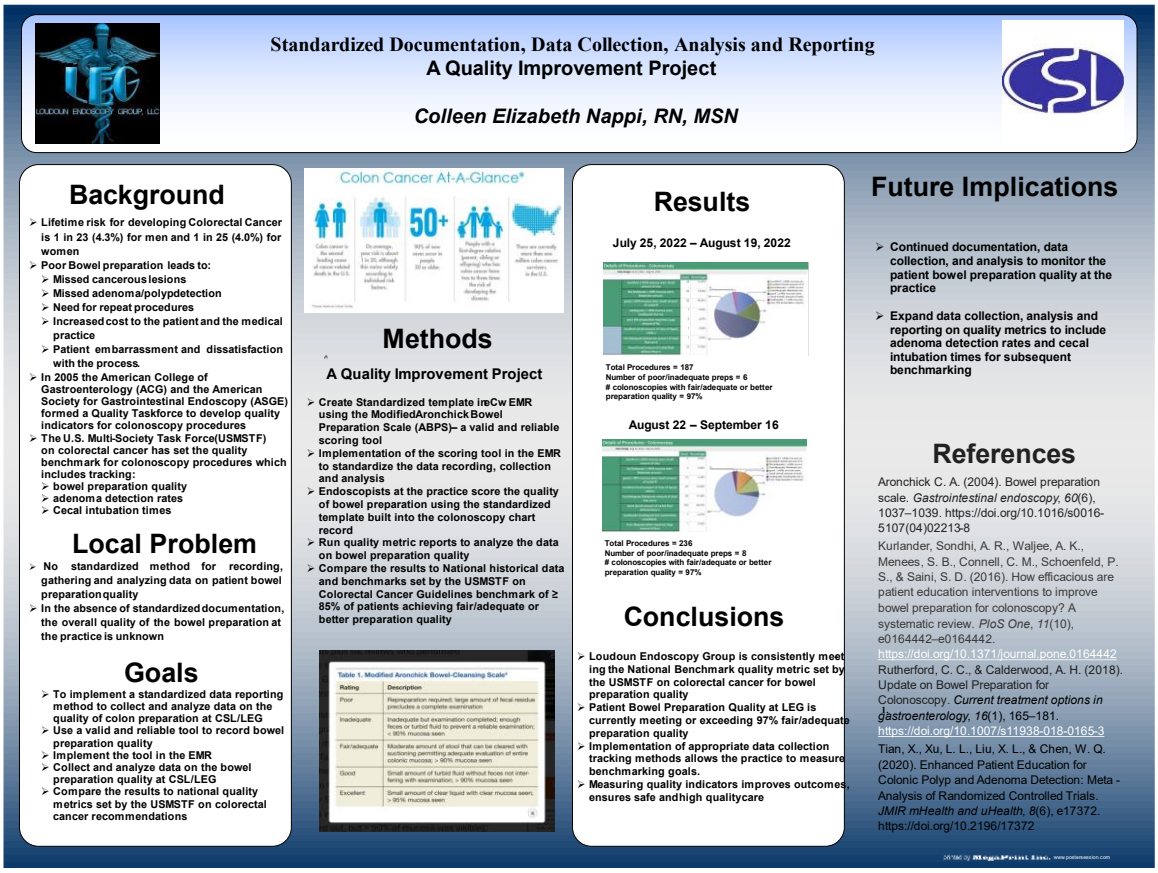
Table 1. Bowel-cleansing scale definitions: modified Aronchick scale

Rating	Description
Poor	Re-preparation required; large amount of fecal residue precludes a complete examination
Inadequate	Inadequate but examination completed; enough feces or turbid fluid to prevent a reliable examination; less than 90% mucosa seen
Fair–adequate	Moderate amount of stool that can be cleared with suctioning permitting adequate evaluation of entire colonic mucosa; more than 90% mucosa seen
Good	Small amount of turbid fluid without feces not interfering with examination; more than 90% mucosa seen
Excellent	Small amount of clear liquid with clear mucosa seen; more than 95% mucosa seen

Table taken from Gurudu S. R., & Ratuapli, S., et al (2010).

Appendix B

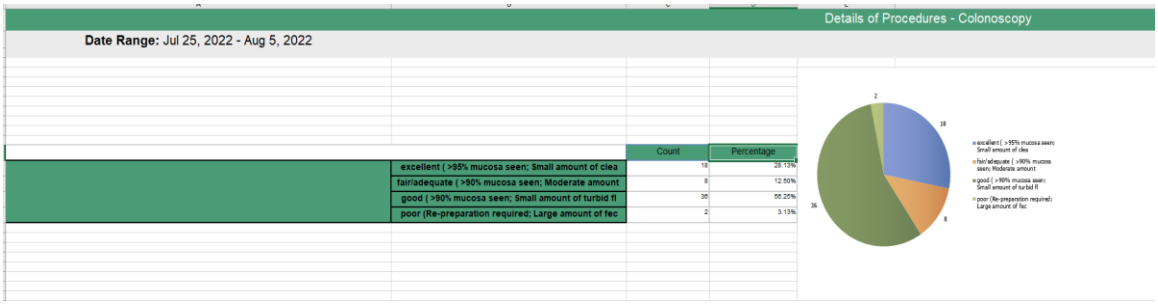
Ambulatory Surgery Accreditation Presentation



Presentation taken from Colleen Elizabeth Nappi, RN, BSN, (09/29/2022)

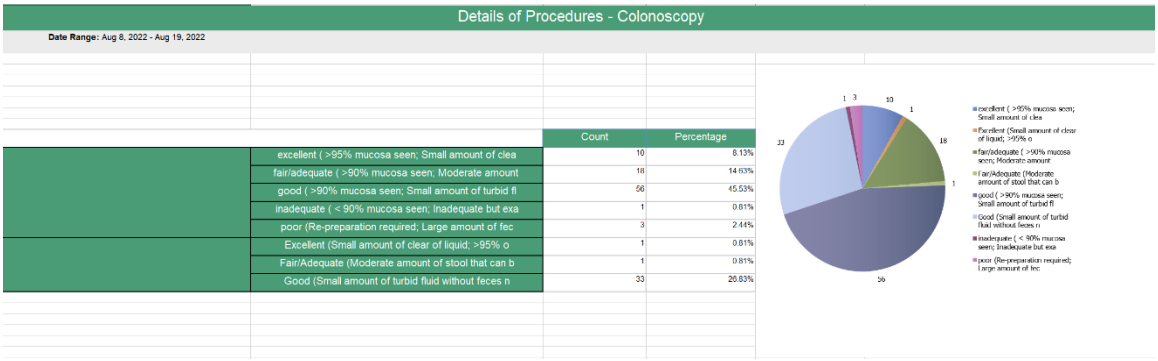
Appendix C

PDSA Cycle 1



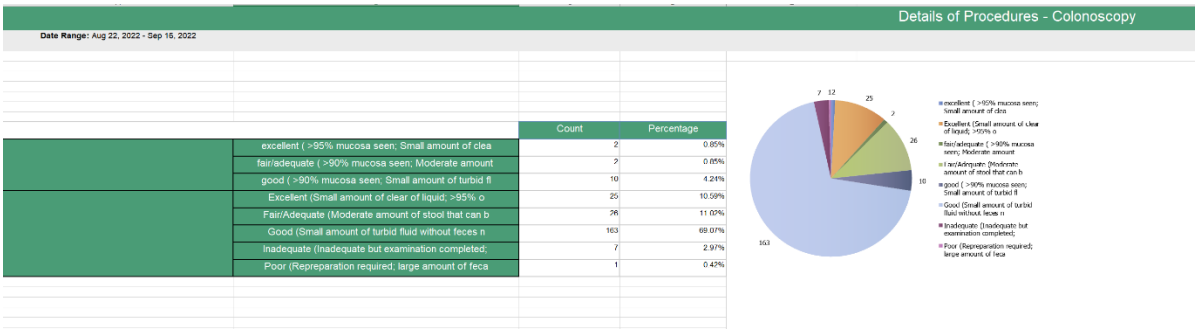
Appendix D

PDSA Cycle 2



Appendix E

PDSA Cycle 3



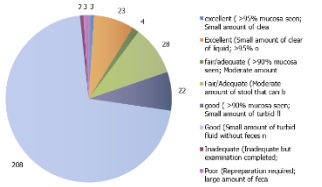
Appendix F

PDSA Cycle 4

Details of Procedures - Colonoscopy

Date Range: Sep 19, 2022 - Oct 14, 2022

		Count	Percentage
	excellent (>95% mucosa seen; Small amount of clea	3	1.02%
	fair/adequate (>90% mucosa seen; Moderate amount	4	1.37%
	good (>90% mucosa seen; Small amount of turbid fl	22	7.51%
	Excellent (Small amount of clear of liquid; >95% o	23	7.85%
	Fair/Adequate (Moderate amount of stool that can b	28	9.56%
	Good (Small amount of turbid fluid without feces n	208	70.99%
	Inadequate (Inadequate but examination completed;	2	0.68%
	Poor (Repreparation required; large amount of feca	3	1.02%



References

Abou Fadel, C. G., Shayto, R. H., & Sharara, A. I. (2016). Optimizing colonoscopy quality: From bowel preparation to surveillance. *Current Treatment Options in Gastroenterology*, *14*(1), 115–127. https://doi.org/10.1007/s11938-016-0073-3

Adelson, P., Yates, R., Fleet, J.-A., & McKellar, L. (2021). Measuring organizational readiness for implementing change (oric) in a new midwifery model of care in rural south australia. *BMC Health Services Research*, *21*(1). https://doi.org/10.1186/s12913-021-06373-9

Aronchick C. A. (2004). Bowel preparation scale. *Gastrointestinal endoscopy*, *60*(6), 1037–1039. https://doi.org/10.1016/s0016-5107(04)02213-8

Batalden, P. B., & Davidoff, F. (2007). What is "quality improvement" and how can it transform healthcare? *Quality and Safety in Health Care*, *16*(1), 2–3. https://doi.org/10.1136/qshc.2006.022046

Brunner, K. T., & Calderwood, A. H. (2015). Quality in colonoscopy. *Current Gastroenterology Reports*, *17*(10). https://doi.org/10.1007/s11894-015-0461-1

Calderwood, A. H., & Jacobson, B. C. (2013). Colonoscopy quality. *Gastroenterology Clinics of North America*, *42*(3), 599–618. https://doi.org/10.1016/j.gtc.2013.05.005

https://www.cdc.gov/cancer/colorectal/basic_info/

https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging.html

Hamilton, et al. (2011) The PhenX Toolkit: Get the Most From Your Measures. American Journal of Epidemiology, **174**(3), 253-60.

Hernandez, Deas, T. M., Catalano, M. F., Guda, N. M., Huang, L., Ketover, S. R., Etzkorn, K. P., Gutta, K. G., Morris, S. J., Schmalz, M. J., Klyve, D., & Allen, J. I. (2014). Longitudinal assessment of colonoscopy quality indicators: a report from the Gastroenterology Practice Management Group. Gastrointestinal Endoscopy, 80(5), 835–841. https://doi.org/10.1016/j.gie.2014.02.1043

Hopchik, & Jones, M. (2015). Colonoscopy Bowel Preparation Instructions. Federal Practitioner, 32(3), 35–37.

Johnson, D. A., Barkun, A. N., Cohen, L. B., Dominitz, J. A., Kaltenbach, T., Martel, M., Robertson, D. J., Boland, C., Giardello, F. M., Lieberman, D. A., Levin, T. R., & Rex, D. K. (2014). Optimizing adequacy of bowel cleansing for colonoscopy: Recommendations from the u.s. multi-society task force on colorectal cancer. *Gastrointestinal Endoscopy*, *80*(4), 543–562. https://doi.org/10.1016/j.gie.2014.08.002

Kasi, P. M., Shahjehan, F., Cochuyt, J. J., Li, Z., Colibaseanu, D. T., & Merchea, A. (2019). Rising Proportion of Young Individuals With Rectal and Colon Cancer. *Clinical colorectal cancer*, *18*(1), e87–e95. https://doi.org/10.1016/j.clcc.2018.10.002

Kastenberg, D., Bertiger, G., & Brogadir, S. (2018). Bowel preparation quality scales for colonoscopy. *World journal of gastroenterology*, *24*(26), 2833–2843. https://doi.org/10.3748/wjg.v24.i26.2833

Kerdsirichairat, T., & Shin, E. (2021). Important quality metrics and standardization in endoscopy. *Gastrointestinal Endoscopy Clinics of North America*, *31*(4), 727–742. https://doi.org/10.1016/j.giec.2021.05.009

Levin, B., Lieberman, D. A., McFarland, B., Smith, R. A., Brooks, D., Andrews, K. S., Dash, C., Giardiello, F. M., Glick, S., Levin, T. R., Pickhardt, P., Rex, D. K., Thorson, A., Winawer, S. J., American Cancer Society Colorectal Cancer Advisory Group, US Multi-Society Task Force, & American College of Radiology Colon Cancer Committee (2008). Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *CA: a cancer journal for clinicians*, *58*(3), 130–160. https://doi.org/10.3322/CA.2007.0018

ltc. (2014). *Pdsacycledebedits* [PDF]. CMS.gov. https://www.cms.gov/medicare/provider-enrollment-and-certification/qapi/downloads/pdsacycledebedits.pdf

Mangas-Sanjuan, C., Santana, E., Cubiella, J., Rodríguez-Camacho, E., Seoane, A., Alvarez-Gonzalez, M. A., Suárez, A., Álvarez-García, V., González, N., Luè, A., Cid-Gomez, L., Ponce, M., Bujanda, L., Portillo, I., Pellisé, M., Díez-Redondo, P., Herráiz, M., Ono, A., Pizarro, Á., Zapater, P., … QUALISCOPIA Study Investigators (2020). Variation in Colonoscopy Performance Measures According to Procedure Indication. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association*, *18*(5), 1216–1223.e2. https://doi.org/10.1016/j.cgh.2019.08.035

Mathews, S. C., Zhao, N., Holub, J. L., & Lieberman, D. (2019a). Improvement in colonoscopy quality metrics in clinical practice from 2000 to 2014.

Gastrointestinal Endoscopy, *90*(4), 651–655.e3. https://doi.org/10.1016/j.gie.2019.06.004

Moullin, J. C., Dickson, K. S., Stadnick, N. A., Rabin, B., & Aarons, G. A. (2019). Systematic review of the exploration, preparation, implementation, sustainment (epis) framework. *Implementation Science*, *14*(1). https://doi.org/10.1186/s13012-018-0842-6

Ogrinc, N. W., Adams, S. M., & O'Hara, A. E. (2013). An instrument to differentiate between clinical research and quality improvement. *UIR: Ethics and Human Research*, *35*(5), 1–8. Retrieved April 28, 2022, from

Quality improvement and data quality. (2013). In *Measuring data quality for ongoing improvement* (pp. e27–e39). Elsevier. https://doi.org/10.1016/b978-0-12-397033-6.00013-4

Ruest, M., Léonard, G., Thomas, A., Desrosiers, J., & Guay, M. (2019). French cross-cultural adaptation of the organizational readiness for implementing change (oric). *BMC Health Services Research*, *19*(1). https://doi.org/10.1186/s12913-019-4361-1

Gurudu, S. R., Ratuapli, S., Heigh, R., DiBaise, J., Leighton, J., & Crowell, M. (2010). Quality of bowel cleansing for afternoon colonoscopy is influenced by time of administration. *The American journal of gastroenterology*, *105*(11), 2318–2322. https://doi.org/10.1038/ajg.2010.235

Wadehra, A., Moein, H. R., Kakos, D., Pervez, E., Faidhalla, S., Habbal, H., Khan, H., Khalid, M., Naylor, P., & Mohamad, B. (2021). Evaluating the Improvement in

Colonoscopy Quality Indicators Subsequent to Publication of Professional Society Guidelines. *Cureus*, *13*(1), e13040. https://doi.org/10.7759/cureus.13040

Weiner, B. J., Clary, A. S., Klaman, S. L., Turner, K., & Alishahi-Tabriz, A. (2020). Organizational readiness for change: What we know, what we think we know, and what we need to know. In *Implementation science 3.0* (pp. 101–144). Springer International Publishing. https://doi.org/10.1007/978-3-030-03874-8_5