PEER AUDIT AND FEEDBACK: A DOCUMENTATION-FOCUSED QUALITY IMPROVEMENT PROJECT

by

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ABSTRACT

MICHAL I. GLASS. Peer Audit and Feedback: A Documentation Focused Quality Improvement Project. (Under the direction of DR. KELLY POWERS)

Background: The most common cause of sentinel events is ineffective communication among the healthcare team. Nurses' documentation of communication, including documenting the notification of critical laboratory results (CLR), is important to ensure that information is accessible. Growing evidence supports the potential of ongoing peer review with feedback as a quality improvement (QI) intervention for documentation.

Purpose: This project sought to implement and evaluate a peer audit and feedback intervention focused on CLR documentation.

Methods: The project occurred on two units of a tertiary medical center where compliance for documentation of CLR was below goal for several years. The intervention was timely peer audit and feedback of CLR events, with a post-project survey to gain nursing perspectives on the process. Data collected included overall compliance rate for CLR documentation, data from the peer audits, and post intervention survey responses.

Results: The improvement in CLR documentation compliance was not statistically significant; however, results were clinically significant as compliance improved on one unit from 6.10% to 9.6% (57.4% improvement). Survey results showed overall positive perceptions of peer audit and feedback as a QI tool, and the intervention was perceived as being non-punitive and helpful for improving practice.

Conclusion: Results support continued examination of the peer audit and feedback process, and its potential for QI in nursing documentation. Future projects should consider strategies to address limited time for nursing staff to engage in quality improvement projects.

Keywords: nursing, documentation, peer review, audit and feedback, quality improvement

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LIST OF ABBREVIATIONS

ANA	American Nurses Association
ANCC	American Nursing Credentialing Center
CLR	Clinical Laboratory Results
EMR	Electronic Medical Record
ICU	Intensive Care Unit
IRB	Institutional Review Board
NPSG	National Patient Safety Goals
QI	Quality Improvement
QR	Quick Response
RCA	Root Cause Analysis
TJC	The Joint Commission
VAS	Visual Analog Scale

CHAPTER 1: INTRODUCTION

1.1 Background

In 2008, The Joint Commission (TJC) stated that the most common cause of sentinel events was ineffective communication (Lippincott Advisor, 2020). Despite efforts to improve communication practices in health care settings, this problem continues to persist and contributes to 9.7% of nursing liability cases (Reiner, 2021). Medical errors, which include failure in communication, are recognized as the third leading cause of death in the United States (Makary & Daniel, 2016). Documentation of communication is an important part of the nurse's role to ensure that relevant information is accessible to all involved health care providers, who must analyze patient data and make vital care decisions (Limandri, 2021). As "effective documentation provides the blueprint for nursing care rendered and a record of client's responses to that care" (Bernick & Richards, 1994, p. 203), interventions to improve nurse documentation are of utmost importance.

Documentation of nursing care helps to ensure the care provided is communicated to other members of the interdisciplinary team and allows for analysis of trending of patient responses to treatments and outcomes (Limandri, 2021). Documentation also demonstrates and supports the adherence to policies in place to guide clinical care of patients (Reiner, 2021). Further, nursing documentation also serves as a legal representation of the care provided to patients (Cartwright-Vanzant, 2010; Limandri, 2021). Complete and accurate documentation is part of nursing professional standards of care as it demonstrates actions and illustrates outcomes (Dos Santos et al., 2020).

Studies have shown that opportunities exist for improvement related to nursing documentation, including missing documentation (Wang et al., 2011). A recent observational

chart review study conducted in Germany looked at omissions in care, including documentation elements, and identified that on average, every patient experienced at least one type of omission during their hospital stay. These omissions included but were not exclusive to documentation. Common omissions were provision of emotional support, taking and recording of vital signs, and documentation of patient teaching (Saar et al., 2021). Electronic Medical Records (EMR) are now standard in most facilities in the United States. Concepts encouraging widespread adoption of EMRs were partially related to improved documentation. In 2018, Akhu & Bany Hani compared EMR documentation to handwritten documentation. Auditing over 800 medical records, they found that while the formatting, legibility, and structure of EMR records were better, there were still opportunities for improvement including missing and inaccurate (e.g., utilization of wrong abbreviations) documentation (Akhu & Bany Hani, 2018).

One of the most compelling reasons to focus on improving nurse documentation is evidence linking inadequate documentation to poor health outcomes. In a study reviewing nursing documentation patterns, Collins et al. (2013) were able to link documentation patterns with patient mortality. In another article specific to neonatal nursing, documentation accuracy was correlated with legal concerns. It was noted that documentation of the care provided to the patient is considered "just as important as testimony provided in the courtroom" (Cartwright-Vanzant, 2010, p. 134). Therefore, accuracy, completion, and timeliness of documentation are crucial to show the care provided. As a result of accumulated evidence, TJC identifies communication and documentation as key to patient safety (Lippincott Advisor, 2020).

To improve patient health outcomes, TJC has developed several national patient safety goals, many of which require monitoring by health care systems. One of these goals is the communication of critical laboratory results (CLR) (The Joint Commission Perspectives, 2008).

Critical values are identified and directed by facility laboratory and pathology departments. Specifically, critical values are either extremely low or high and detrimental to a patient's health, requiring intervention as soon as possible (Clavijo et al., 2020). It is imperative that nurses report such results to providers so that action can be taken as needed to safeguard patient well-being. It is also necessary for nurses to document the notification and what, if any, actions were prescribed because of the CLR. This project focused on improving nursing documentation related to nurses' communication of CLR.

1.2 Problem Description/Clinical Question

At a large urban medical center in the southeast United States, the documentation of CLR was identified as an opportunity for improvement. Audited for many years, this indicator had not shown marked improvement over time. CLR documentation was and is currently audited by a quality analyst working for the corporate quality department. A random sample of events, including at least one event for each department, is audited every month for compliance based on the system policy. System goal for this element is 90% compliance. In 2019, the overall rate of compliance with documentation of CLR and communication to providers within 60 minutes was 48%; it increased slightly to 53% in 2020 and stayed the same in 2021. The history of compliance at this facility shows the need for improvement, as it is important to have a record of the communication in the medical record to serve as proof of care provision, as well as to inform those team members who were not in direct line of communication.

According to Ivers et al. (2012), improvement in documentation from audit and feedback was more successful when the documentation was poor and there was room for improvement, as noted at the project facility. Historically at the facility, information about compliance has come from leadership and most often through generalized graphs and tables, however feedback from a

peer has been shown to be more effective than if received from supervisors (Rogers et al., 2015). A 1994 study focusing on peer audit and feedback supports the process as the nurses in the study reported that the feedback from peer auditors created a culture of support (Bernick & Richards, 1994). Peer audit and feedback has also been shown to promote accountability and provide nurses with direction on how to improve (Semper et al., 2016), and the act of performing audits has been identified by nurses as helpful for personal documentation improvement (Davis et al., 2013). Based on evidence supporting the use of peer audits, this project sought to improve nursing documentation through designing and implementing a peer audit and feedback process. The project was guided by the following PICO question: Among nurses working on inpatient adult units (P), can a peer audit and feedback program (I), compared to the existing auditing structure of corporate quality department audits (C), improve nursing documentation compliance rate (overall completion, timeliness, thorough documentation) of CLR (O)?

The desired outcome portion of this project's PICO question was guided by the facility's policy related to documentation of CLR. The policy states that CLR must be communicated to providers within 60 minutes (timeliness). Thorough documentation should include the time communicated, the provider to whom the nurse communicated the results, the type of laboratory test, and any actions prescribed. Overall completion is met when all elements of the required documentation are noted.

1.3 Project Purpose

There is growing evidence to support the potential of ongoing peer review and quality improvement. Commonly, it is perceived that peer review should be performed only at the time of evaluations or through a committee-based structure reviewing reported incidents, similar to a root cause analysis (RCA). However, peer review can also be an ongoing timely process that is

focused on general care or on specific elements for review (George & Haag-Heitman, 2011). Principles related to peer review established by the American Nurses Association (ANA) include: 1) feedback should be provided by nurses of the same rank, 2) it should be timely and integrated into the nursing culture, and 3) it should support continuous learning and growth with a focus on evidence-based practice and patient safety (Semper et al., 2016). Hospitals seeking American Nurses Credentialing Center's (ANCC) Magnet designation must ensure that peer review, as a best practice, is built into their nursing culture (Semper et al., 2016).

The purpose of this project was to implement peer audit and feedback in order to provide evidence that this intervention can address gaps in documentation within the project facility. The aim of the project was to improve nursing documentation compliance rate (overall completion, timeliness, thorough documentation) of CLR. The program sought to ensure that audit and feedback was timely, performed close to the triggering event. The nurses performing the audit and feedback were peers on the same unit and of the same rank. Feedback was provided to educate and engage nurses in dialogue, seeking to understand barriers to documentation that could then be investigated for potential process improvements. This project focused on one element of nursing documentation to minimize time requirements on each nurse in consideration of current workloads. Upon establishing project effectiveness, the program has potential to expand on the project units and hospital-wide to address other areas of concern pertaining to nurse documentation.

1.4 Project Objectives

The objective of this project was to demonstrate the benefit of peer audit and feedback as a quality improvement (QI) tool by implementing a straightforward audit and feedback process to address the documentation of CLR communication. A subset of objectives for this process

included the engagement and empowerment of nurses to participate in continuous peer interactions for improvement, as well as the identification of any barriers experienced by nurses to document this element of performance. The objectives were measured by a concurrent audit of documentation, collection and dissemination of any identified barriers, and a brief post-project survey to evaluate nurses' perceptions of the process as a means to aid future efforts to expand the intervention.

To achieve these objectives, education was developed and implemented for the audit teams and for the nurses working on the units involved in the project. For the audit teams, the project utilized volunteer nurses from each unit. In addition to information about CLR, the audit team members were educated on providing non-punitive, cooperative feedback through the use of practice scenarios. An audit tool was created to guide the auditors in their review of nurse documentation of CLR and contained a section to document any barriers reported. During the intervention period, the audit teams were given access to a report that pulled CLR events within the previous 24 hours for the unit. The auditor then chose and reviewed a case and spoke to the nurse involved to share findings and feedback and to seek knowledge of potential nurse barriers. Overall documentation compliance for the units involved was audited independently by the project lead to measure any change throughout the intervention period. Baseline data was collected for comparison. At the end of the project, a survey was sent via an online platform to all nurses on the units to explore their perceptions of the project. The post-project survey differentiated between the auditors and other nursing staff and asked if the responding teammate had a chart reviewed during the process.

CHAPTER2: LITERATURE REVIEW

To identify studies that examined peer audit and feedback in nursing, a literature search was undertaken using CINAHL, Cochrane Database, and PubMed. Search keywords included *peer review, audit, feedback, documentation, nursing, perspective, improvement,* and *quality*. Search terms were used independently and using Boolean term "AND" to further narrow list of articles. Only articles written in English were reviewed. The selected studies had elements similar to the plan for the current project.

2.1 Systematic Reviews

A search for systematic reviews identified studies that suggest an audit-and-feedback process has benefits (Hysong, 2009; Ivers et al., 2012; Rogers et al., 2015; Tang et.al, 2022; Whalen et al., 2021). Audits alone, without additional feedback, were correlated with quality improvement (Barbosa Maia et al., 2017) and it was suggested that existing opportunities for documentation improvement would benefit from further investigation (Wang et al., 2011).

Elements of audit and feedback noted to be effective included ongoing or frequent feedback (Hysong, 2009), feedback provided by a peer (Ivers et.al.,2012; Rogers et al., 2015; Whalen et al., 2021), performing the audit and feedback close to occurrence of events (Whalen et al., 2021), and guidance for improvement provided during feedback (Hysong, 2009; Rogers et al., 2015; Whalen et al., 2021). Audit and feedback were also noted to be more effective when baseline data were below standard performance (Ivers et al., 2012; Rogers et al., 2015). Timeliness of the audit and feedback were found to be important, as well as the use of more than one method of feedback delivery (verbal and written) (Rogers et al., 2015; Whalen et al., 2021). Borgert et al. (2016) reported that initial improvement was seen, but results were not easily sustained. A decrease in sustainability was linked to a decrease in compliance with the audit and

feedback tools, a situation often noted following QI projects (Borgert et al., 2016; Whalen et al., 2021). Peer review processes were noted to be time consuming and would require resources for full benefit (Tang et al., 2022). Overall, the researchers stated that more studies are needed to get a clearer picture of the role of peer feedback in improvement processes (Whalen et al., 2021)

The systematic reviews supported the potential of the current project for improving nurse documentation using peer audit and feedback. While only moderate or mixed results were reported in the reviews, all indicated that more study is required to improve understanding. Themes promoting the current project include peer feedback, low baseline performance, and timeliness of feedback.

2.2 Peer Review

Professional practice requires accountability to ensure that quality care is being delivered (George & Haag-Heitman, 2015). Peer review is one avenue toward the self-regulation that establishes a profession (ANA, 1988; George & Haag-Heitman, 2015). Peer review does not only occur within a committee structure or through yearly evaluations but should be ongoing and close in time to events being reviewed (George & Haag-Heitman, 2015). The one-to-one discussions related to patient care and documentation that occur daily on a unit help to improve engagement and support QI (George & Haag-Heitman, 2011). The process of simply performing chart audits also helps the reviewer better understand requirements and improve their own practice (Christensen, 1990).

Peer review is also an element to be met for Magnet designation (Roberts & Nones Cronin, 2017), which is a credential earned for nursing excellence from the ANCC (Drenkard, 2019). Along with the ANA guidelines for peer review (ANA, 2010; Peer Review Guidelines, 1988), there is support for peer review as a QI process as well as a strategy to improve nurse

autonomy. Continuous and timely peer review matches this project's goal of peer audit and feedback for quality improvement.

2.3 General Audit and Feedback Studies

Individual and timely feedback has been shown to have a positive effect on QI (Borgert et al., 2016; LeClair-Smith, 2016; Wong et al., 2009), and to be more effective than monthly data sharing (Borgert et al., 2016). Audit and feedback have also been utilized to help meet criteria for Magnet designation (LeClair-Smith, 2016). Peer audit and feedback have been linked to improvement in the engagement of nurses in QI processes (LeClair-Smith, 2016). Studies have shown improvement with use of bundle compliance audits (Borgert et al., 2016) as well as full chart reviews with observation (LeClair-Smith, 2016)

General studies on peer audit and feedback or peer review processes, while not specific to documentation, lend support to this project. When peer audits become part of the culture, nurses become empowered to engage and to creatively provide solutions (Brann, 2015). Having trained peer auditors was also found to be part of an effective peer audit program (Donati et al., 2020). A goal of this current project was to demonstrate the concept of peer audit and feedback as a process improvement tool for nursing documentation. These general studies support the overall theory that peer audit with feedback can help improve documentation. This project aimed to use several of the elements noted in prior studies, such as focus on a single documentation element, peer audit with timely feedback, and education for the entire team with focused education for the audit team.

2.4 Individual Studies Related to Documentation

In studies with a focus on documentation, feedback from peer audits was provided in different ways, yet improvement was still noted. Feedback was given via email (Gloger et al.,

2020), in group settings (Milchak et al., 2012; Moldskred et al., 2021), and individually (Murphy et al., 2018; O'Connor et al., 2014). Different audit tools were utilized, including checklists (Moldskred et al., 2021), audit forms (Milchak et al., 2012; O'Connor et al., 2014), and Kamishibai Cards (Stewart, 2021). Focus on identification of barriers was found to have merit (Moldskred et al., 2021) and peer audit alone, without feedback to individual nurses, was also effective in documentation improvement (Hayter & Schaper, 2015; O'Connor et al., 2014).

Peer audit with feedback was noted to improve engagement of nurses. The process was found to be empowering and encouraged nurses to have conversations about process improvement (Semper et al., 2016). Providing specific individualized feedback with identification of ways in which improvements can be made was impactful (Gloger et al, 2020). One element leading to better success and ease of implementation was education about the peer review process for all nurses (Murphy et al., 2018; Semper et al., 2016).

These documentation-specific studies demonstrate the potential promise of an audit and feedback program and indicate that the most important aspects are sharing guidance for how one can improve, along with seeking barriers to documentation.

2.5 Conceptual and Theoretical Frameworks

This project was guided by the principles of transformational leadership. Leadership is more than just a role, it is an individual’s capability of supporting and guiding other individuals, peers, or colleagues in performing activities that support health and quality (Marshall & Broome, 2017). Transformational leadership is a method for building a culture of collaboration and problem solving in which individuals help each other grow (Krinsky & Hickson, 2014). When transformational leaders support patient safety and process improvement, they are building a culture that is engaged in those activities (McFadden et al., 2015). Transformational leadership

style is not only used by official leaders; all nurses can hold these characteristics and utilize their charisma to influence others. An intervention of peer audit and feedback is supported by the principles of transformational leadership, with peers guiding peers to self-reflect and identify areas for documentation improvement.

In addition, the use of a change theory in the planning and implementation of a project helps to ensure that vital steps are not missed. Skipping steps can lead to failure of the change implementation in the long run (Kotter, 1996). Therefore, this project used Kotter's Change Theory as a guide. In this theory, each step to promote change builds on the previous one, helping to develop support for and engagement in the change proposal and implementation (Baloh et al., 2018; Kotter, 1996; Mbamalu & Whiteman, 2014). This change theory focuses on short-term wins, which fits one of the current project goals of identifying and addressing barriers.

The eight stages of change as described by Kotter are: establish a sense of urgency, create a guiding coalition, develop a vision and strategy, communicate the vision of change, empower employees for broad-based action, generate short-term wins, consolidate the gains and produce more change, and anchor new approaches in the culture (Kotter, 1996; Mbamalu & Whiteman, 2014). The eight steps can be separated into phases for implementation, helping to draw a picture for the strategic plan (Baloh et al., 2018)

The first phase incorporated the first three steps of Kotter's theory: urgency, coalition, and vision and strategy. In a project that aimed to improve discharge summary completion, a team combined steps one and two, creating a sense of urgency and building a guiding coalition (Richmond et al., 2021). For this current project, each unit's leadership team and clinical nurse specialist served as the coalition bringing in the identified audit team. Sharing background

information and unit specific data helped to bring that sense of urgency. This sharing continued throughout the project to keep the team motivated.

During the implementation phase, the plan was communicated to the nursing staff of the units. Background information, including past performance, and education was shared to help spread the sense of urgency beyond the initial coalition and audit teams. The mission and vision of the project, to improve documentation of CLR in order to protect patients, was shared with each unit. The plan was to empower the audit teams to collect information on barriers as they provided feedback to their peers. Empowerment of the reviewers, followed by the empowerment of staff to speak up and investigate barriers, is another outcome of transformational leadership (McFadden et al., 2015)

The third phase, which includes solidifying and spreading the process, is outside the purview of this current project timeline but is a part of the larger vision. This phase focuses on taking the wins from a small sample trial of peer audit and feedback (i.e. this project) and spreading it to address the same documentation concern (CLR) across the facility. A future goal of this project would then be to demonstrate that timely peer audit and feedback has potential to address and help close other gaps in documentation and care, and to spread the process across the system. Peer review and feedback have been identified to encourage engagement and empowerment of nurses to continuously improve (Semper et al., 2016).

CHAPTER 3: METHODS

3.1 Project Design

The purpose of this quality improvement project was to implement a peer audit and feedback process on two independent units. Data pre- and post-intervention were compared to assess for changes in outcomes. The project was designed to focus on one element of documentation that was identified by historical data to demonstrate an opportunity for improvement. Electronic format was used for tools within the project to both monitor for compliance and capture data from the audit process. The aim of the project was to improve nursing documentation compliance rate (overall completion, timeliness, thorough documentation) of CLR.

3.2 Setting

The project was implemented on two units on two separate urban campuses of a large not-for-profit tertiary medical center in the southeast United States. The first location was a 20 bed Cardiac Intensive Care Unit (ICU) at an 874-bed research and academic medical center, which will be referred to in this document as Unit One. The second location was a 24 bed Medical/Surgical Unit in a 184-bed hospital, to be referred to as Unit Two. This medical center, including both campuses, is a Magnet designated facility. The Magnet program includes elements specific to peer review (Roberts & Nones Cronin, 2017) which helps support this project. The target units were selected with the assistance of the facility's nursing leadership. Demonstrating positive outcomes from the two campuses will support future spread of this project's intervention. Having both an ICU and a medical/surgical unit participate in the project will improve the ability to apply findings across different settings.

3.3 Population

The population for the study was the nursing staff of approximately 100 nurses on the two selected units. The project included those working all nursing shifts (days, nights, weekends). Auditors for the intervention were staff nurses from each unit. The leadership of the ICU unit (Unit One) chose to ask for volunteers from the nursing staff. The medical/surgical unit (Unit Two) leadership chose to use charge nurses.

3.4 Intervention

This quality improvement project involved designing, implementing, and evaluating a CLR peer audit process on the selected units. The project lead provided education to the audit teams that included CLR notification documentation, National Patient Safety Goals (NPSG), and importance of documentation. The education also addressed the importance of ongoing peer review to the nursing profession and provided guidance for sharing non-punitive feedback to peers, including example scenarios. Education for the nursing staff (non-reviewers) on each unit was developed and included information related to NPSG and CLR notification documentation, along with an explanation of the project and the designed peer audit process. A conversation with a Human Factors Associate at the project site revealed that using the word “audit” could be intimidating; therefore, for the documents, education, and survey, the word “review” was used instead (B. Anderson-Montoya, personal communication, January 31, 2022). For Unit One, education started with a virtual meeting for the Unit Based Council on July 7th, 2022. Education for the entire Unit One nursing staff occurred via in-person daily unit huddles led by the leadership team and clinical nurse specialists, and an email that included specific unit-based data. The audit team was provided education via email. For Unit Two, the meeting with the Unit Based Council occurred on July 29th, 2022, and was followed by an educational email to the entire Unit Two nursing staff. The reviewer education was conducted via email to the audit team.

A report that would pull CLR events from the EMR was identified in collaboration with laboratory leadership and was made available to the audit teams through the EMR. The report pulled CLR events from the 24-hour period prior to running. Each reviewer was asked to complete one audit during each shift they worked. Once a patient was selected from the report by a reviewer, the reviewer then audited the patient's charting for that CLR event using an audit form created and provided by the project lead. The reviewer was also asked to engage the peer nurse who completed the reviewed documentation in a conversation related to their findings, with a focus on identifying barriers to complete and accurate documentation. To protect confidentiality and achieve nursing staff buy-in, the audit form did not include identification of patients or nurses involved. Audit forms were accessed by reviewers using a QR code or link. Conversation with peers could be completed in-person, or by phone. Any identified barriers or opportunities were brought to the nursing leadership for discussion and, if appropriate, were taken to a shared governance committee for further discussion. Outcomes from discussions were shared with the nursing staff by unit leadership and clinical nursing specialists during unit huddles.

3.5 Peer Review Audit Form

For monitoring of the intervention, a peer audit form (see Appendix A) was created by the project lead, using Microsoft Forms. The form included all the required CLR documentation elements, overall compliance, and an area to report discussion of barriers. The form also recorded the number of hours between the CLR event and provision of feedback. Information from the audit form completed by the reviewers was automatically collected within Microsoft Forms and available to the project lead in an Excel document. From the peer audit form, the number of barriers/system issues identified and the mean and median of time elapsed between

event and feedback was calculated. Descriptive statistics were used to evaluate and summarize the data related to the required documentation elements (overall completion, timeliness, thorough documentation), that were identified during the peer audit.

The only name collected in the audit form was that of the nurse reviewer in the event that the project lead had questions related to the form. Patient and nurse (who provided care) identifiers were not collected. The form was accessible via QR code or link (See Appendix A), and codes were distributed by email to the reviewers. The code was shared at the start of the project and then daily for ease of access for reviewers. The audit form was reviewed by a member of the facility nurse auditing team for input and was pilot tested and validated after implementation of the new EMR by having four quality nurses from the corporate quality department audit the same two events. The project lead assessed the results for agreement and accuracy, no discrepancies were noted, and pilot testers reported ease in using the audit form.

The total number of events that received a peer audit with feedback discussion depended on the number of events that occurred in clinical practice and the timing of those events along with availability of the audit team. The goal was to have a minimum of 10% of CLR events receive the intervention. An estimate of total events to expect per month was calculated using baseline data from each unit. Each month, the project lead evaluated the number of audit forms completed and shared results with the clinical nurse specialist and nursing leadership on each unit for ongoing action planning.

3.6 Nurse Survey

A nine-item post project survey tool was disseminated to all nurses on each unit via a QR code (see Appendix B). This survey was confidential and assessed the nurses' perceptions of the peer audit and feedback process. Four questions determined if the responding nurse was a

member of the audit team, had an event audited, shared any barriers with a peer auditor, and if so received follow up/feedback about the identified barrier. Next, questions were specific to the perceived helpfulness of the intervention and its perceived punitive nature. Again, the word reviewer was used instead of audit as per suggestion from a Human Factors Associate (B. Anderson-Montoya, personal communication, January 31, 2022). These items were assessed using a visual analog scale (VAS) that ranged from strongly disagree to strongly agree, with the responses assigned a value on a numerical scale from 0-100. Utilizing the same VAS, respondents who were part of the audit team answered questions about their perception of the audit process and whether the act of performing the peer audit had an impact on their own practice. Finally, there was one item for free text comments and thoughts about the project. The only demographic data collected was the number of years of nursing experience and unit they worked on.

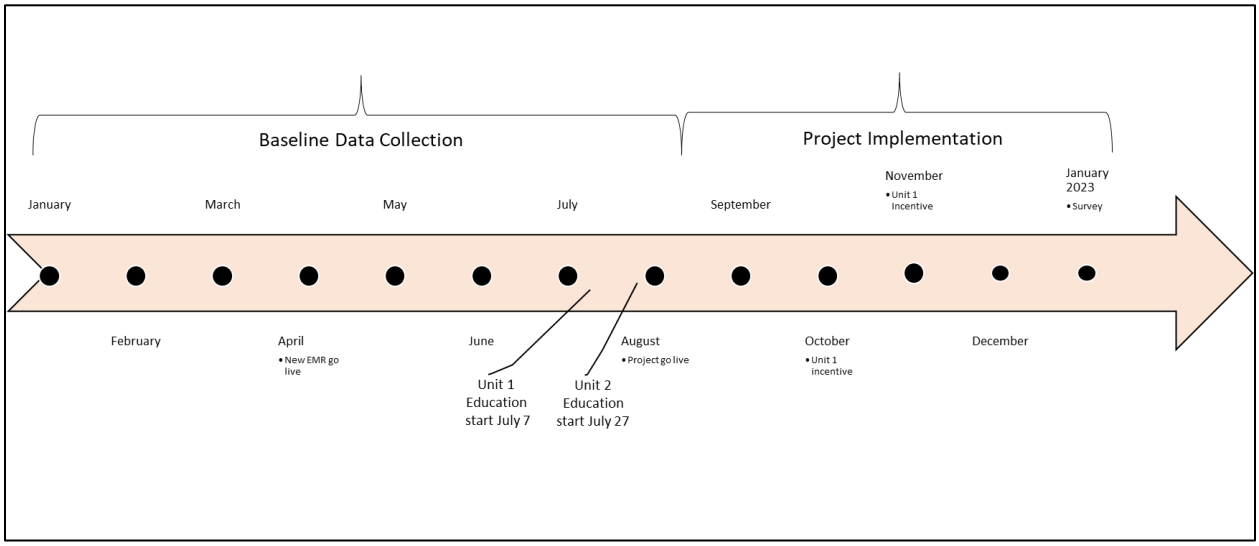
The post project survey was sent to all nurses on the two units in January 2023. The survey data was maintained in the Redcap database. The link remained open for two weeks with a reminder email sent out after week one. Post project survey questions were analyzed with descriptive statistics. Frequencies were used for first four questions which identified the number of respondents who had events audited, shared a system issue, received feedback for identified system issues, and whether they were provided feedback on the identified system issues. The perception questions rated by a VAS scale were evaluated for mean, median, and range of responses. Descriptive statistics related to years of experience were calculated and correlated to other responses to assess if there was any difference in perception of the intervention based on years of experience. Content analysis was planned for use to identify themes from the written comments.

3.7 Compliance Data Collection and Analysis Plan

To monitor the outcomes of the project intervention for the selected units, a retrospective audit of 100% of CLR events was conducted by the project lead starting with January 2022. In April 2022, four months prior to project implementation start, the facility moved to a new EMR. By collecting seven months pre-intervention data, the project lead was able to monitor documentation compliance before and after the new EMR implementation and identify any potential adjustments to the project plan. The elements of required documentation for the audit were based on facility policy and included documentation of lab name, name of provider notified, time of notification, and any prescribed actions. The notification to provider is to take place within 60 minutes of laboratory phone call to nurse, or nurse acknowledgement of lab result via EMR. The audit of 100% CLR events for each unit continued during the intervention which began in August 2022 and ended with December 2022.

Figure 1

Project Timeline



CLR events trigger an audit only if the laboratory calls the nurse with the result, or the nurse acknowledges the result via the EMR. When a provider acknowledges the result or

receives notification directly from the lab, nursing is not required to document that communication as it is recorded by the lab. An existing report developed by the laboratory was utilized to identify events to audit. Early in the course of project development, the project lead worked with the laboratory manager to ensure the report captured data accurately. Audit data was entered into a Redcap database which is a password-protected web-based platform utilized at the facility for research and registry data.

Overall CLR documentation compliance was assessed and reported by percent compliance on a monthly basis, comparing pre- and post-intervention compliance. For this project, run charts were used to display the percent compliance for each month and note any significant changes/occurrences that may have affected compliance rate on the chart, such as the new EMR implementation and project education and implementation. Run charts are often used in QI projects to show data points over time to highlight improvement patterns as they are effective in identifying variations even with a small number of data points (Chart, 2021). Descriptive statistics noting percent compliance for each element and overall compliance in documentation overall compliance was evaluated. Because of the small sample size pre- and post-intervention, and the assumption that the data would be non-parametric, the Mann-Whitney U test was selected to determine if changes were statistically significant.

3.8 Ethical Considerations

Upon review by the project facility and university Institutional Review Boards (IRBs), this project was deemed non-human study and approved as a quality improvement project (Appendices C and D). Confidentiality of project data was maintained with the utilization of systems within the facility firewall. The monthly compliance data that was collected was maintained in the Redcap database. Redcap is password protected and each project can only be

viewed by individuals given access. The post project survey data was also maintained within the Redcap database. No identifying data was collected in the survey (only years of experience and unit worked on). The audit form created for the reviewers to record audit and feedback responses did not contain any patient information. The form also did not record the names of the nurses being audited. Only names of the reviewers were collected. While all nurses had the potential of being audited, completing the post-project survey was not mandatory. Survey completion conveyed informed consent.

CHAPTER 4: RESULTS

4.1 Overall Compliance

A retrospective audit of CLR documentation compliance was performed prior to project initiation. 100% of CLR events called to nursing were audited starting in January 2022. In April 2022, the facilities went live with a new EMR. Data was compared before and after implementation of the new EMR, and throughout the intervention period (see Figures 2 and 3). Findings showed that for both units, CLR documentation compliance fell following the EMR change (See Table 1). Unit One, the ICU, had overall compliance for the pre-intervention period of 9% (January 2022 through July 2022). Compliance fell with the new EMR from an average of 12.5% (January 2022 through March 2022) to 6.4% (April 2022 through July 2022), representing a decline in compliance of 51%. Following the implementation of the project, average compliance for Unit One was 9.6%. When comparing this to the overall pre-intervention period compliance, there was a 6.9% increase in compliance (9% compliance to 9.6%). When comparing only to the post-EMR change time period (6.4% compliance to 9.6%), the percent increase was at 50% (see Table 1). The Mann-Whitney U test showed no statistically significant difference in the compliance rate pre-intervention post-EMR change and post-intervention ($p=.111$). In the first month post-intervention, an increase in compliance of 13% was noted for Unit One and this then dropped for the next several months, with an increase to 14.3% in the final month of the project (see Figure 2).

For Unit Two, the medical/surgical unit, overall compliance for the pre-intervention stage was 28.6% (January 2022 through July 2022). Compliance dropped from 49% (January 2022 through March 2022) to 13.2% (April 2022 through July 2022), which was a decline of 73.1% with the EMR change. Following the implementation of the project, average compliance for Unit Two was 12.7%, which represented a 55.6% drop when compared to the full pre-intervention

time period (January 2022 through July 2022). However, when compared with the period pre-intervention but post-EMR change (April 2022 through July 2022), the decrease in compliance was less extreme at 3.79% (see Table 1). The Mann-Whitney U test showed no statistically significant difference in the compliance rate pre-intervention post-EMR change and post-intervention (p=1.0). Unit Two compliance was low throughout the project with a jump to 30% compliance in the final month, however total number of events dropped for the unit throughout the intervention period which affected the averages (See Figure 3).

For both units, participation in peer audit and feedback intervention was low. Unit One never had more than 3% of events audited (goal was 10%). Several interventions were implemented in attempt to improve participation, such as emailing of CLR reports daily to audit team, use of secure chat in EMR to communicate when the CLR report was sent, and monetary incentives (see Figure 2). For Unit Two, there were no audits completed in the first and third month of the project, while other months had a higher percentage of audits completed, such as November which had 100% events audited. However, with the low volume of total events on Unit Two, no more than three events were ever audited in a month. Interventions were implemented in attempt to improve participation on this unit as well and included emailing of the CLR report daily and use of secure chat to communicate report readiness (see Figure 3).

Table 1

Overall Compliance: Comparison of Averages for the Different Time Periods

	Total Pre-Inervention period	Pre-EMR Change	Post-EMR Change	Project	% Change Pre & Post EMR Change	% Change Post EMR Change & Project	% Change Pre-intervention Period & Project
Average Overall Compliance							
Unit 1	9.00%	12.50%	6.10%	9.60%	↓51.2%	↑57.4%	↑6.7%
Unit 2	28.60%	49.00%	13.20%	12.70%	↓73.1%	↓3.79%	↓55.6%

Figure 2

Unit One: Critical Laboratory Result Notification Documentation Compliance

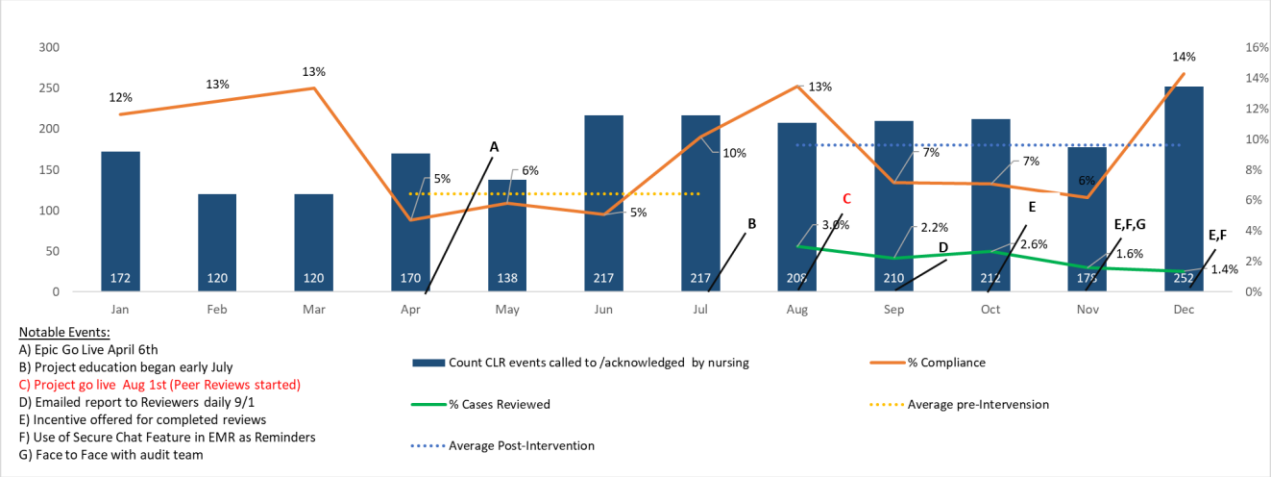
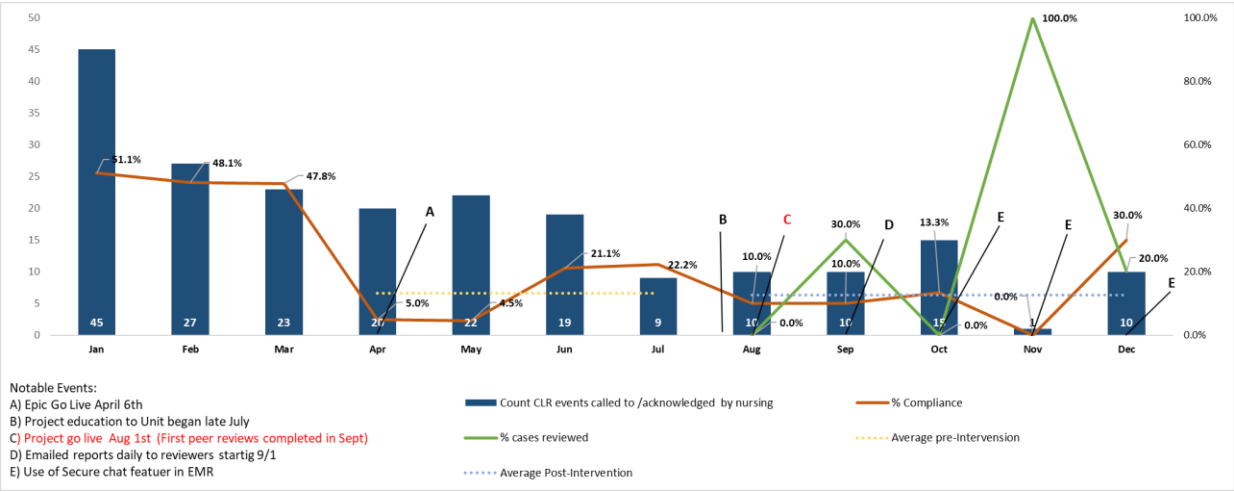


Figure 3

Unit Two: Critical Laboratory Result Notification Documentation Compliance



Overall compliance for CLR documentation includes documentation of name of provider informed, lab name, and actions prescribed. For overall compliance to be met, the communication also has to be completed within 60 minutes of the nurse receiving notification from the laboratory. Evaluation of the data for the specific elements pre- and post-EMR change, revealed that pre-EMR change, the most commonly documented element was the lab name,

while post-EMR, the change the most commonly documented element was provider name. This trend was noted for both units (see Table 2).

In assessing for change pre- and post-intervention, the greatest change was noted when comparing post-intervention results solely with the post-EMR change time period rather than the entire pre-intervention period. Unit One showed improved documentation compliance in all three elements. Unit Two only showed improvement in documentation compliance of the lab name, and the other two elements both decreased in compliance. The element with the most improvement for both units was the lab name which improved by 38.5% for Unit One and 68.8% for Unit Two (see Table 2).

Table 2

Documentation Elements: Average Compliance by the Time Periods

	Pre-Intervention Period All	Pre EMR Change	Post EMR Change	Project	% Change Pre-Intervention Period to Project	% Change Post EMR Change to Project
Documentation Lab Name						
Unit 1	12.70%	17.6%	9.1%	12.6%	↓0.79%	↑38.5%
Unit 2	32.90%	56.1%	15.4%	26.0%	↓21%	↑68.8%
Documentation Provider Name						
Unit 1	12.60%	13.8%	11.6%	13.3%	↑5.5%	↑14.7%
Unit 2	39.20%	50.8%	30.6%	30.0%	↓23.5%	↓2.0%
Documentation Action						
Unit 1	11.40%	13.1%	10.1%	11.5%	↑0.88%	↑13.9%
Unit 2	36.90%	53.3%	24.7%	17.3%	↓53.1%	↓30.0%

Run charts of the different elements are presented in Figures 4 and 5. For Unit One, there was a slight trend upwards in compliance during the intervention period which reflects the positive percentage change in documentation of each element shown in Table 2. For Unit Two, the run chart indicates more compliance with documentation in the project intervention time period than in the post-EMR change period; however, November shows as an outlier with 0% compliance. As a result of this outlier, Table 2 appears to show that two elements decreased in

documentation compliance. It should be noted that there was only one event of CLR that occurred in the month of November for the unit. If the November result is removed from the calculation, all but the documentation of actions component would have shown improved compliance.

Figure 4

Unit One: Documentation Elements Compliance Pre-Intervention

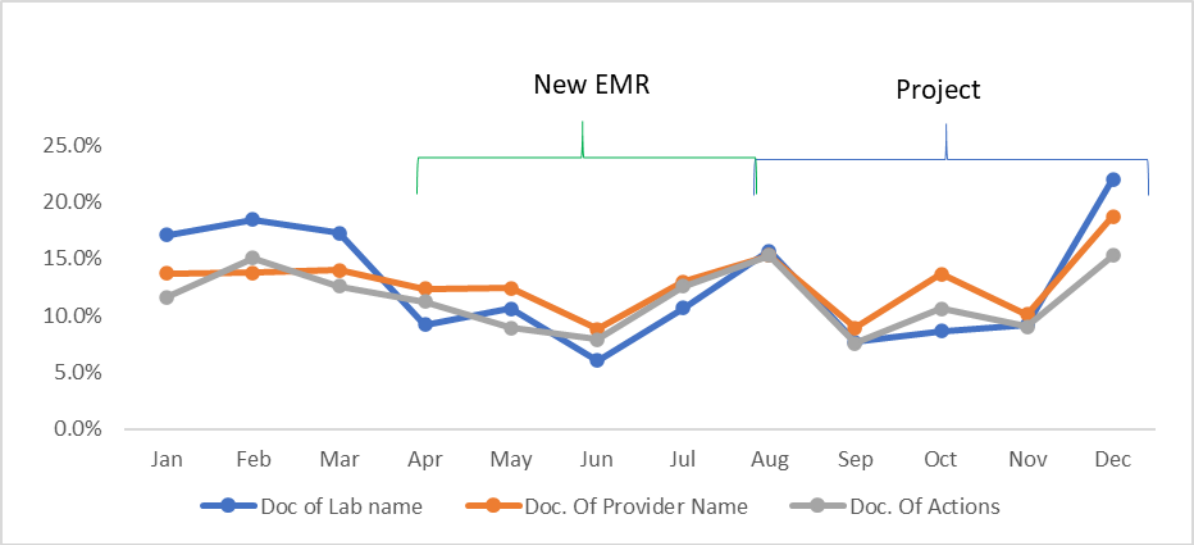
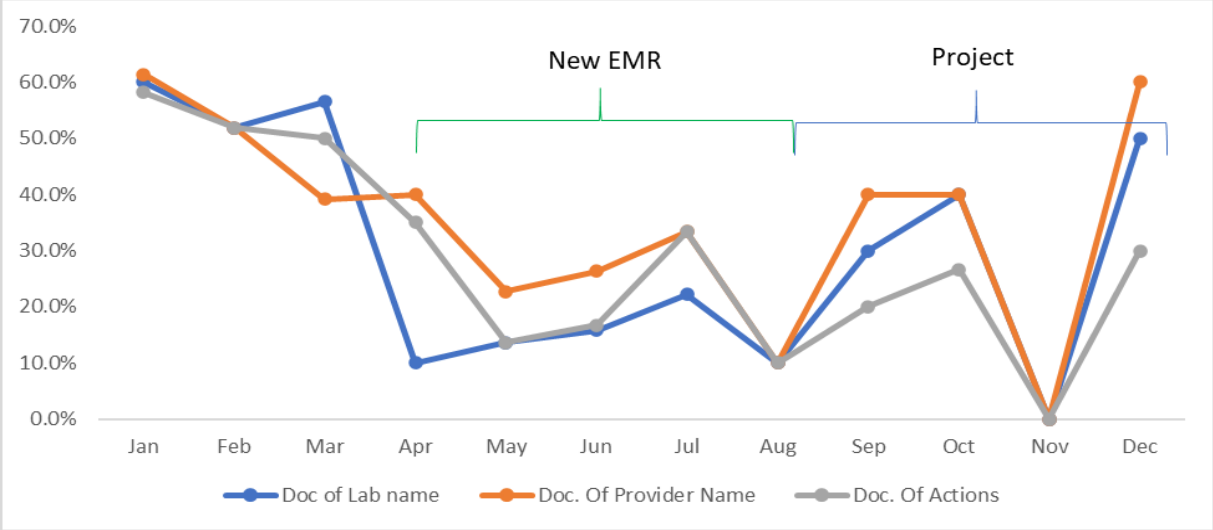


Figure 5

Unit Two: Documentation Elements Compliance Pre-Intervention



During the pre-intervention period from January through July 2022, Unit One had 158 CLR events with some documentation in the chart, with 12 (8%) of those not called within 60 minutes. During the project intervention time period, Unit One had 153 CLR events with some documentation in the chart, with 12 (8%) not being called within 60 minutes. For Unit Two, January through July 2022 data included 76 CLR events with some documentation completed, with 3 (3%) not completed within 60 minutes. During the project intervention time period, August through December 2022, there were only 15 CLR events with some documentation in the EMR, and 2 (13%) were not called within 60 minutes.

4.2 Peer Audit Completion

In the first month of the project intervention, Unit Two had no events reviewed. A general decrease in total CLR events for the month was also noted. Using the Plan Do Check Act improvement cycle, the project lead and unit leaders discussed the need to increase audits via different opportunities monthly. It was identified that during the initial month of the project, staffing was a concern and the charge nurses, who were the audit team, were often taking a full patient assignment and were unable to complete an audit along with their charge duties. The project lead and unit leadership were unable to engage additional volunteers to complete audits, so an additional intervention identified was to have the project lead run the CLR report for the team daily and email it and the audit link to the audit team. This improved audit completion, although CLR events remained low. In month three of the project, again there were no audits completed for Unit Two, and a new intervention to reach out to the audit team through the secure chat in the EMR was implemented for the fourth and fifth months. CLR events remained low throughout the project with very few audits being completed for Unit Two.

Unit One auditors started off strong, completing several audits in the first two weeks of the project intervention, but towards the end of the first month, audits stopped. Discussion with the unit Clinical Nurse Specialist and leaders identified that the volunteer auditors were also involved in another unit project that was coming to a close. Using the Plan Do Check Act improvement process, decisions were made each month to help improve participation in completing audits. The project lead first started to run and send the daily CLR report by email including a reminder to try and complete one audit every shift. During the second month of the project, the audit rate was still low with less than 3% of CLR events being audited. An incentive was offered to the audit team that if they completed two to three audits each week for the month, they would receive a gift card. Participation remained low through the third month, and a new incentive was offered for the fourth and fifth months with no improvement in percent of audits completed. The project lead also used the secure messaging feature in the EMR to let the audit team know that the CLR report for the day had been sent.

For both units, an additional strategy was implemented starting the second month of the project intervention. The run chart of compliance was emailed to the audit team at the start of each month, along with initial feedback on opportunities for each element of CLR documentation (example; documenting “at bedside” instead of noting actions prescribed). Barriers described in audit forms were also shared. The project lead sent thank you cards to each auditor after their first review was completed and had a face-to-face touchpoint with auditors on Unit One.

4.3 Findings from Peer Reviews

In total, 31 peer audits were completed, with the feedback given to the peer for 27 (87%) of those. Barriers were shared by the nurse for 16 of the 27 audits (59%). Auditor feedback was given to the nurse in as little as one-hour post-nurse documentation to up to 48 hours after

documentation. Table 3 shows the distribution of times that feedback was provided and the number of barriers noted.

Table 3

Feedback to Peer Timeframes with Response Rate

Feedback Provided Within (hrs)	Total Reviews	Barriers Shared
<=12	10	4 (40%)
12-24	9	6 (67%)
> 24	7	6 (86%)
Feedback provided no timeframe	1	0
No feedback provided	4	N/A

Auditors provided 16 comments related to barriers to CLR documentation that their peers had shared with them (Table 4). Most of the barriers were related to lack of knowledge about the documentation requirements when there is a protocol in place (44%). An example of this is that nurses still need to document a CLR even if a protocol is in place for the specific lab, such as troponin results that are trending downwards. The reported barriers were shared with the leadership team for targeted education to the units. In early November 2022, the project lead presented the current results and barriers noted to the Unit Based Council (UBC) for Unit One. The UBC discussed documentation requirements when protocols are in place with a decision to provide global education to the unit related to requirements.

Table 4

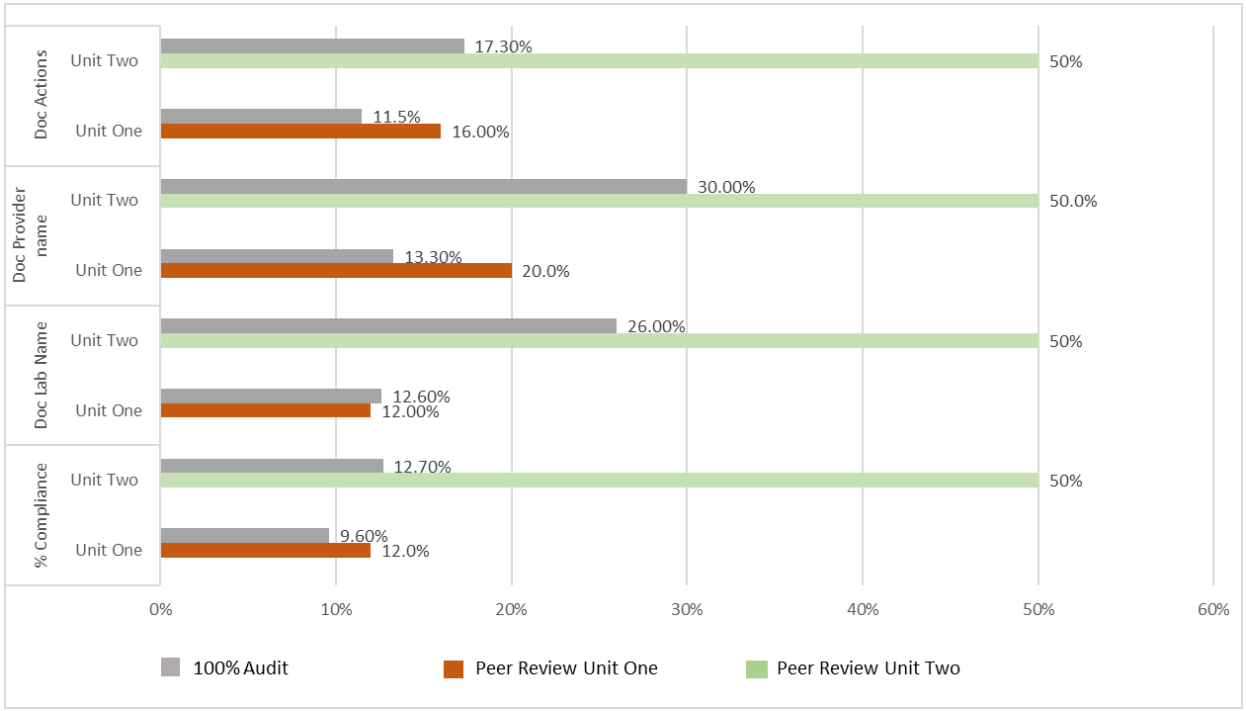
Reported Barrier Themes

Barrier Theme	% Barriers Noted
Knowledge of Documentation Requirements for Critical Labs when Protocol is in place	7 (44%)
Knowledge of Documentation Requirements for Critical Lab Results	3 (19%)
No Time to Document	4 (25%)
Forgot to Document	2 (13%)

Data gleaned from the peer audits demonstrated low overall compliance and low compliance of each element. This is similar to the results presented in section 4.1. In the peer audit data, Unit Two had 6 total peer audits completed with 50% compliant in all elements. Unit One had 25 peer audits completed. Overall compliance for Unit One was 12%, and provider name showed 20% compliance, followed by documentation of actions at 15%, and documentation of lab name at 12% (Figure 6). For each element and overall compliance, findings from the retrospective audit completed by the project lead were consistently lower than what was identified in the peer audits. This difference could reflect the smaller number of peer audits performed compared to the number of CLR events audited by the project lead. For both units with the peer audits in place, the compliance was still well below the facility goal of 90%.

Figure 6

Documentation Compliance noted in Peer Audits



Graph shows the peer audit data (colored bars) compared to the percent compliance from the overall compliance audit performed on 100% of CLR events (grey bar)

4.4 Nurse Survey Findings

At the end of the intervention period, a survey was emailed to all of the nurses on each unit. Nurses were given two and half weeks to complete the voluntary survey. Survey links and QR codes were emailed to the nurses when the survey opened and then three additional times as reminders. Emails came from nursing leadership to try and encourage participation. None of the 19 nurses on Unit Two completed surveys. Out of the 71 nurses for Unit One, 24 surveys were completed (34% response rate). Information about the nurses who completed the survey is shown in Table 5. The majority of respondents reported nursing experience between three to 10 years. Out of the 24 responses, three identified as being auditors for the project. There was a total of five nurses on the audit team so that represents a 60% response rate. Two of the surveys were completed by nurses who identified as having an event audited, one of whom was also a peer auditor. Only one nurse identified that they provided information on barriers during the feedback process, and this respondent also indicated that they did not recall hearing feedback related to the barrier noted.

Table 5

Response Numbers for Staff Survey

Demographics	n
Unit One Total Responses	24
Reviewer in project	3
Had event reviewed (One was also a reviewer)	2
Provided feedback	1
Nurses on Unit (Not part of audit team, did not have event audited	20
Years of Experience:	
1-2	4
3-5	10
6-10	5
>10	5

Survey tool used the word "review" instead of "audit"

In addition to the questions related to involvement with the project, several questions sought to glean perceptions of the intervention and with using peer audit and feedback as a QI tool. These questions used a visual analog scale (VAS) that ranged from strongly disagree to strongly agree, with the responses assigned a value on a numerical scale from 0-100. Data for these questions was entered into SPSS for descriptive statistical analysis.

A primary goal of the survey was to seek perceptions of peer audit and feedback as a QI tool. Only 18 of the 24 respondents chose to answer this question. Overall mean for this question was 74 (s.d 23.1), correlating with agreement with peer audit and feedback being helpful (Table 6). Only one response was strongly opposed to peer audit and feedback as a QI tool. All other responses were either neutral or positive.

Table 6

Response to Survey Question: "I believe that peer review and feedback can help in overall quality improvement."

	n	Minimum	Maximum	Mean	Std. Deviation
Nursing Experience 1-2 years	4	53	83	69.8	12.5
Nursing Experience 3-5 years	7	50	100	78.6	18.2
Nursing Experience 6-10 years	4	68	97	79.0	12.5
Nursing Experience Greater than 10 years	3	3	100	62.3	52.0
Overall	18	3	100	74.0	23.1

**Survey tool used the word "review" instead of "audit"*

The other two questions in the survey were directed at respondents who were auditors, or had an event audited (Table 7). The first question was aimed at the audit team and asked if performing the audits helped improve their own practice. Three respondents identified as being auditors for the project and all three answered the question. Results were positive with a mean of 75.7 (s.d. 25). The second question directed at both the audit team and nurses who had an event audited, asked if the process felt punitive. The response was strongly positive, indicating that the process did not feel punitive, with a mean of 91.7 (s.d. 11.9). Only three respondents answered

this question out of 4 possible respondents who could have answered the question, one who had an event reviewed and three auditors (one of which also identified as having an event reviewed).

Table 7

Response to Questions for Targeted Responders

	n	Minimum	Maximum	Mean	Std. Deviation
The process of performing peer review helped my own practice.	3	50	100	75.7	25.0
The experience of peer review and feedback in this project was not punitive	3	78	100	91.7	11.9

**Survey tool used the word "review" instead of "audit"*

The final question in the survey was a free text section for respondents to share any feedback or comments about experience. Only one respondent entered any information. They shared a suggestion for improvement in the documentation process within the EMR. This recommendation was shared with nursing leadership on the unit and also with administration.

CHAPTER 5: DISCUSSION

The goal of this QI project was to implement and evaluate a peer audit and feedback intervention to improve nursing documentation of CLR notification. This goal is significant because ineffective communication, including documentation, is noted to be the most common cause of sentinel events (Lippincott Advisor, 2020). Several studies support the need for documentation improvement (Akhu & Bany Hani, 2018; Collins et al., 2013; Saar et al., 2021; Wang et al., 2011) and the literature demonstrates that peer audit and feedback are useful QI tools (Hysong, 2009; Ivers et al., 2012; Rogers et al., 2015; Tang et.al, 2022; Whalen et al., 2021). Peer review, including ongoing peer audits, are supported by ANA guidelines (ANA, 2010; Peer Review Guidelines, 1988) and included in hospital Magnet designation guidelines (Roberts & Nones Cronin, 2017). For this project, the intervention and audit process focused on one element of documentation to help to encourage participation during a time of increased workload, while also seeking to garner support for this intervention if improvement occurred.

The project results included data from three specific time periods: pre-EMR change, post-EMR change and project implementation time periods. For discussion purposes, effectiveness of the intervention will the focus on changes between the post-EMR change period and the project period. The rationale is that the EMR change brought about differences in the documentation process and requirements, as well as revised policy. The initial review of the pre-EMR change to post-EMR change was completed to proactively identify ways the EMR change may affect compliance with CLR documentation so that the project could be adjusted as needed prior to implementation. The data showed that both units experienced a marked decrease in CLR documentation compliance after changing to the new EMR system. These compliance rates then remained low for the four months of review prior to project implementation. Evaluation related

to the change in documentation compliance as a result of EMR change is outside of the prevue of this project.

5.1 Documentation Compliance

Compliance in documentation of CLR remained low during the project, the goal of 90% compliance was not achieved, and the Mann-Whitney U Test did not show a statistically significant improvement; however, findings do have clinical significance. During the four-month project, there was an improvement in CLR documentation compliance of 50% for Unit One (see Figure 2). In this project, feedback was provided to nurses directly and close to the time of documentation, within 48 hours (see Table 3). This differed from the standard practice at the facility where monthly audits are performed outside of the units, with data provided to leadership in graph and table format long after the actual events occurred. The process change of this project is important because Borgert et al. (2016) found that implementing timely individual feedback compared to monthly team feedback showed greater improvement in implementation of transfusion bundles. Feedback provided directly to the individual has also been shown to be more effective than general feedback (Gloger et al., 2020; Murphy et al., 2018; O'Connor et al., 2014). Further, the project's peer audit and feedback approach is consistent with nursing professional association recommendations and is required to achieve and maintain Magnet status (ANA, 2010; Peer Review Guidelines, 1988; Roberts & Nones Cronin, 2017), which is a priority of the facility.

Unfortunately, Unit Two did not show any improvement in CLR documentation compliance and overall compliance actually dropped by 3.79%. The outcome difference among the two units was also seen in the various elements of documentation, with Unit One showing improvement in all three elements while Unit Two had improvement in just one element (see

Figure 3). It is unclear why results differed on the two units. This could have been due to the difference in CLR rates on the units. Unit Two had an average of under 20 monthly events for 2022, with just 10 monthly events on average during the intervention period. In comparison, Unit One consistently had an average greater than 200 monthly events for all of 2022. Another difference between the units was their nurse staffing. During the intervention time period, Unit Two staffing was reported by unit leadership to be stretched with even the charge nurses carrying full loads of patients. Additionally, the nurse: patient ratios differ on the two units, with Unit One (the ICU) having an average of 1:2 ratio, while Unit Two (medical-surgical unit) has an average of 1:6 ratio. These factors may have affected nurse auditors' time, as well as the time for quality discussion of audits that were completed. Each unit's leadership also elected different methods of choosing auditors, with Unit One asking for volunteer nurses and Unit Two having charge nurses assume the role of peer auditor. It may be that volunteers were more invested in the project. Finally, it is important to also note that Unit Two had very few CLR events during the project time period so events where documentation was non-compliant skewed results and made it difficult to assess the impact of the project.

The number of audits completed by the audit teams was low for both units during the project and this may have been a reflection of staffing and patient acuity on each unit. It was also noted during one face to face touchpoint that the auditors apologized for forgetting to do the audits, also indicating possibility for time constraints and conflicts with other responsibilities. This may have also been due to the project lead being at a distance. Email communication and secure messaging reminders may not have been enough to create continued buy-in and prevent forgetting to complete the audits. Thus, having a unit-based champion could be helpful for future interventions.

During the project, the audit team asked about barriers to CLR documentation from their nurse peers. One reported barrier that stood out was the lack of knowledge about documentation requirements when a protocol was in place (44%, see Table 4). For example, if a troponin result is still at a critical level but dropping, protocol on the unit does not require provider notification unless the troponin levels increase. After discussion with the leadership team and the UBC for Unit One, where the issue was noted, education was shared in team huddles and posted on the unit showing documentation requirements and specifically how to document CLR even when a protocol is in place. During the final month of audits, after the identification of the barrier, it was noted that a nurse followed the guidelines and education that was shared with the staff. This was shared with unit leadership to celebrate as a small win following Kotter's Change Theory (Kotter, 1996). In this instance, the educational opportunity was discussed amongst the UBC and leadership who formed a plan to educate the nursing staff, similar to another study that showed a multifaceted process with work towards overcoming barriers was effective (Moldskred et al., 2021).

5.2 Perceptions of Staff

Surveying staff about their perceptions of the project was completed to gauge level of support, as well as to gain input on recommended changes. Unfortunately, survey completion rates were low. No nurses completed the survey for Unit Two, while Unit One had a response rate of 34% consistent with what leaders from that unit stated has been average for any recent surveys or questionnaires. While there is no standard expected response rate from healthcare professionals, it would be desirable to have the sample size reflect the demographics of the population (Cooper & Brown, 2017). For this survey of the 18 nurses who responded to the main question, 22% (4) had 1-2 years' experience, 39% (7) had 3-5 years' experience, 22% (4) had 6-

10 years' experience, and 17% (3) had greater than 10 years' experience. In comparison experience levels for the unit as a whole was 35% (23) with 1-2 years' experience, 35% (23) 3-5 years' experience, 11% (7) 6-10 years' experience and 20% (13) greater than 10 years' experience. Comparing the experience distribution between the survey sample and the unit demographics using a Chi-Square test revealed no statistically significant difference in the distribution (X-squared = 3.55, p=.314).

Staff survey results showed overall positive perceptions of peer audit and feedback. Of the 24 respondents who completed surveys, 18 (75%) respondents answered the question related to usefulness of peer audit and feedback for QI. Most responses were at or above the neutral line (50), with only one respondent indicating strong disagreement. The mean score was 74, showing overall supportive perceptions. Respondents with 3-10 years of nursing experience showed the strongest positive perceptions (Table 6) and this experience level had the greatest number of responses to the survey. The one very strongly disagree response was from a respondent with greater than 10-years of nursing experience and if this one low response was removed, the mean for that age group would have been 92 and the overall mean for all respondents would have been 78. Relationships between nursing years of experience and attitudes toward QI need more investigation. In one study, DiCuccio et al. (2020) identified that tenured nurses had less positive attitudes towards patient safety than their peers with less nursing experience. The differences in attitudes could be related to education level for their study as the majority of the nurses were associate degree prepared (DiCuccio et al., 2020). Differences could also be related to years of experience as it translates to year of graduation. Inclusion of QI methods into nursing education curriculum started after 2003 (Balakas & Smith, 2016). In this current project, years of

experience was assessed to help support future efforts with QI (i.e. identifying opportunities for education).

The number of responses to the directed questions to the auditors and those having had CLR events audited was very low, with only three responses for each question. Without knowing the exact number of nurses who had CLR events audited, it is difficult to extrapolate understanding of actual perceptions. However, in this small sample, the mean of 91.7 indicates that the intervention was not perceived as punitive. For Unit One, the audit team was made up of five volunteer nurses. Three (60%) of them responded to the survey and indicated moderate agreement (mean = 75.7) that the process of peer audit helped improve their own practice. This indicates potential for utilizing peer audit and feedback to help improve nursing documentation. Addressing noted issues such as time constraints will be important for future projects.

5.3 Limitations

A major limitation of this project was the low rate of audits completed on each unit, with the goal of 10% of CLR events audited monthly not achieved. For Unit Two, the percentages were actually met for several months but due to the small number of actual CLR events, which dropped over the course of the project, the audit numbers remained low with never having more than three CLR events being audited in any month. Difficulties of this project in gaining participation from the audit team may be linked to high workloads and limited time available to participate in QI work. This was also noted by Tang et al. (2022) who investigated the experiences of healthcare professionals with performing peer audits for QI.

Another limitation was the short time frame of the post-EMR change but pre-intervention data collection. With the implementation of a new EMR system shortly before the project began, the pre-intervention time period was only 4 months, limiting the ability to analyze for

improvement. The new EMR system may also have been a barrier to compliance. This is supported by the drop in CLR documentation compliance post EMR change, and conducting the project now (in 2023, more than 6 months after the change to the new EMR) may provide different results. However, being able to quickly identify CLR documentation challenges with the new EMR is beneficial to the facility so that EMR adjustments can be made, or staff education can occur.

The two project units electing to perform the peer audit and feedback process differently, as well as differences in unit size and patient acuity (ICU versus medical/surgical) limits the ability to compare results between the units. However, this limitation also provides input for future expansion of the project as CLR events, as well as other documentation requirements, can be affected by different barriers in different environments. Therefore, peer audit and feedback may be helpful in identifying those barriers and opportunities for improvement.

5.4 Implications

With this project, a major limitation was the low number of audits completed. Even with these low numbers, a small positive change in compliance was noted for Unit One. This supports further investigation of this intervention. If peer audit with feedback could be incorporated into the culture of nursing units, more audits may be completed each month and greater improvements potentially could be achieved. Borgert et al. (2016) noted that once an intervention stops, there is a risk that the improvements may not be sustained. Having ongoing peer audits was also recommended by George and Haag-Heitman (2011), which supports further projects to help create a culture supportive of ongoing peer review.

To help maximize success of future peer review and feedback projects, unit-based champions are recommended. In this project, the lead was not located on the unit or even within

the facility. This may have affected participation of the auditors, some of whom claimed to forget they needed to complete the audits. Having someone on the unit encouraging participation and helping to support the audit team could increase participation. It may also be helpful to seek out volunteers to be peer auditors as this was the model used for Unit One where more audits were completed, an improvement in documentation compliance was noted, and survey participation was greater.

Leadership support to help develop a culture that embraces peer audit with feedback is important (Brann, 2014). Protecting time for nurse involvement in QI or practice change implementation was supported by a qualitative study exploring nurses' perceptions of practice change. A large component of concern from nurses in the study was the lack of time to engage in practice change or monitoring of the changes. It was concluded that a key element for nursing leaders is to identify ways to dedicate time for these activities (Arsenault Knudsen et al., 2021). Other studies that supported the use of peer audit and feedback as a quality tool also identified time and resources as a barrier, with the need for leadership to help support the process (Roberts & Nones Cronin, 2017; Tang et al., 2022)

Future projects of peer audit with feedback for documentation improvement could focus on different elements of documentation, such as an element of documentation that is more universal and not as dependent on patient condition and/or unit type. In this project, the number of CLR events stayed stable in the ICU allowing for the potential of increased auditing. For Unit Two, the number of CLR events became extremely low potentially affecting the outcome of this project. Repetition is part of what helps with improvement initiatives so there needs to be enough events for the intervention, as frequency has been noted to positively affect the outcome of audit with feedback (Hysong, 2009).

The nurses in this project had overall positive perceptions of peer audit and feedback as being a helpful tool for QI, and this shows promise for future projects in this area. Nurses participating on the audit team indicated that the process of performing audits helped improve their own practice, a finding also noted in a peer audit intervention to improve pain assessment and reassessment documentation (Hayter & Schaper, 2015). Nursing engagement has been shown to be important for the success of QI initiatives (George & Haag-Heitman, 2015). Nurses responding to this project's survey also indicated that it was perceived as non-punitive which has been shown to improve engagement and successfulness of initiatives (Borgert et al., 2016). Based on this project's finding that nurses with lower levels of experience had improved perceptions, it may be helpful for future projects to consider this when designing education and strategies to build support. Future projects should also gather additional demographic data, including highest level of education, to assess for differences in attitudes toward QI which would also help guide the design of projects.

5.5 Conclusion

This project sought to demonstrate that an intervention of peer audit and feedback could be a useful tool for QI, focusing on one documentation element as a small test of change. While the results did not show statistically significant improvements in nurses' CLR documentation, there was an increase in percent compliance with documentation for the one unit which had the most CLR events. Further, the project highlighted barriers to CLR documentation that were addressed with targeted nursing staff education. Nurses' perceptions supported the use of peer audit and feedback as a non-punitive QI tool. Support for this intervention may grow with repeated exposure to help change the culture, especially if efforts are made to provide nurses

with time to participate. Further projects using this intervention are needed to build more evidence of its potential.

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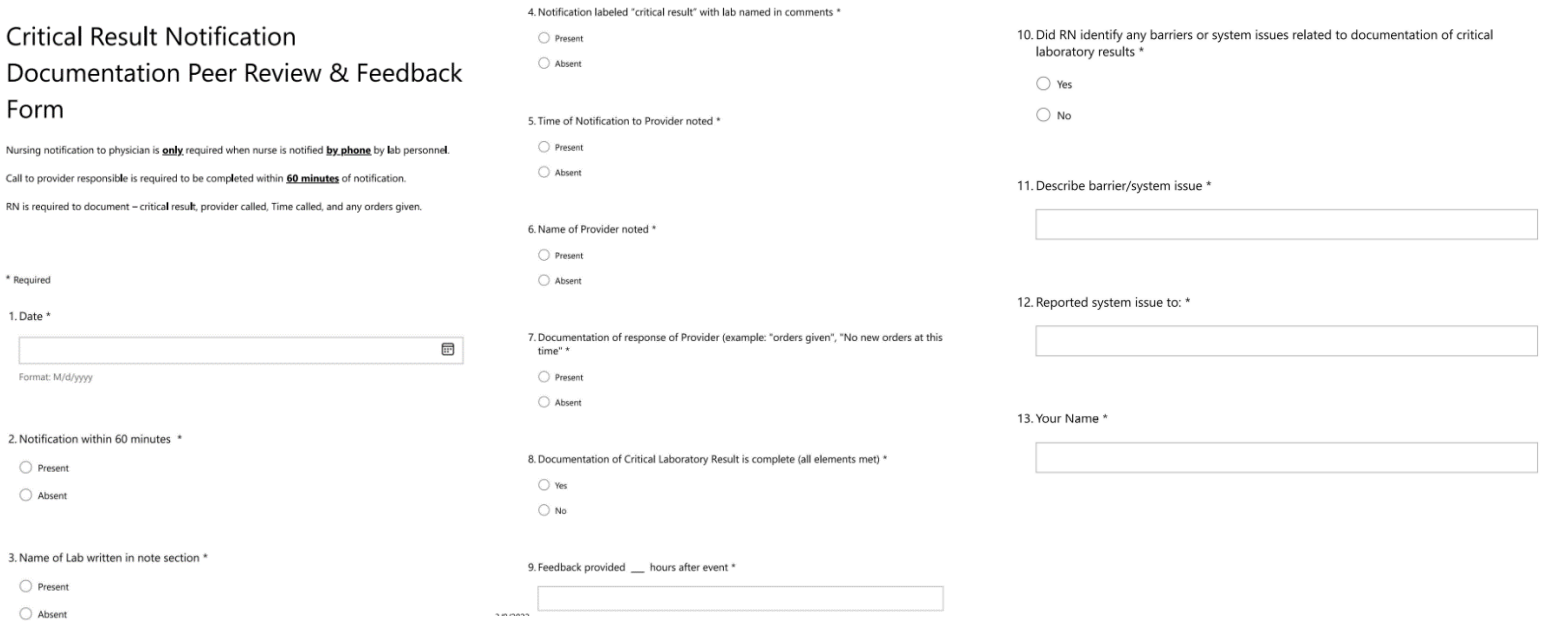
APPENDIX A: CRITICAL LABORATORY RESULT AUDIT AND FEEDBACK TOOL

Figure A.1 Critical Laboratory Result Audit and Feedback tool



Critical Result Notification Documentation Peer Review & Feedback Form

Nursing notification to physician is **only** required when nurse is notified **by phone** by lab personnel.

Call to provider responsible is required to be completed within **60 minutes** of notification.

RN is required to document – critical result, provider called, Time called, and any orders given.

* Required

1. Date *

Format: M/d/yyyy

2. Notification within 60 minutes *
- Present
- Absent

3. Name of Lab written in note section *
- Present
- Absent

4. Notification labeled "critical result" with lab named in comments *
- Present
- Absent

5. Time of Notification to Provider noted *
- Present
- Absent

6. Name of Provider noted *
- Present
- Absent

7. Documentation of response of Provider (example: "orders given", "No new orders at this time" *
- Present
- Absent

8. Documentation of Critical Laboratory Result is complete (all elements met) *
- Yes
- No

9. Feedback provided __ hours after event *

10. Did RN identify any barriers or system issues related to documentation of critical laboratory results *
- Yes
- No

11. Describe barrier/system issue *

12. Reported system issue to: *

13. Your Name *

Figure A.2 Audit Tool QR Code

APPENDIX B: AUDIT AND FEEDBACK PROJECT END SURVEY QUESTIONS

Figure B.1 Audit and Feedback Project End Survey Questions

Record ID

Where you a Reviewer for this project
* must provide value
○ Yes
○ No
reset

Did you have an event reviewed?
* must provide value
○ Yes
○ No
reset

Did you share any barriers or system isues with the peer reviewer?
* must provide value
○ Yes
○ No
reset

Where you made aware of any follow up to the barrier/system issue you identified?
* must provide value
○ Yes
○ No
reset

The experience of peer review and feedback in this project was not punitive
Strongly Disagree Neutral Strongly Agree
Change the slider above to set a response
reset

I believe that peer review & feedback can help in overall quality improvement.
Strongly Disagree Neutral Strongly Agree
Change the slider above to set a response
reset

The process of performing peer review helped my own practice.
Strongly Disagree Neutral Strongly Agree
Change the slider above to set a response
reset

Nursing Experience
* must provide value
○ 1-2 years ○ 3-5 years ○ 6-10 years ○ Greater than 10 years
reset

Please share feedback/comments about your experience.

Figure B.2 Survey QR Code

APPENDIX C: WAKE FOREST UNIVERSITY IRB APPROVAL

WAKE FOREST
UNIVERSITY
HEALTH SCIENCES

Office of Research
INSTITUTIONAL REVIEW BOARD

MEMORANDUM

To: Carmen Shaw
Atrium/ Carolinas Healthcare System

From: Brian Moore, Director
Institutional Review Board

Date: 5/27/2022

Subject: Not Human Subjects Research: IRB00084781
Peer Audit and Feedback: A Documentation-Focused Quality Improvement Project

The Wake Forest University School of Medicine Institutional Review Board has reviewed your protocol and determined that it does not meet the federal definition of research involving human subject research as outlined in the federal regulations 45 CFR 46. 45 CFR 46.102(f) defines human subjects as "a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information."

The information you are receiving is not individually identifiable. In recent guidance published by the Office of Human Research Protections (OHRP) on the Guidance on Research Involving Coded Private Information or Biological Specimens, OHRP emphasizes the importance on what is being obtained by the investigator and states "if investigators are not obtaining either data through intervention or interaction with living individuals, or identifiable private information, then the research activity does not involve human subjects."

Note that only the Wake Forest University School of Medicine IRB can make the determination for its investigators that a research study does not meet the federal definition of human subject research. Investigators do not have the authority to make an independent determination that a study does not meet the federal requirements for human subject research. Each project requires a separate review and determination by the Board. The Board must be informed of any changes to this project, so that the Board can determine whether it continues to not meet the federal requirements for human subject research. If you have any questions or concerns about this information, please feel free to contact our office at 716-4542.

The Wake Forest School of Medicine IRB is duly constituted, has written procedures for initial and continuing review of clinical trials; prepares written minutes of convened meetings, and retains records pertaining to the review and approval process; all in compliance with requirements of FDA regulations 21 CFR Parts 50 and 56, HHS regulations 45 CFR 46, and International Conference on Harmonisation (ICH) E6, Good Clinical Practice (GCP), as applicable. WFSM IRB is registered with OHRP/FDA; our

Medical Center Boulevard, Winston-Salem, NC 27157-1023 (336) 716-4542 / fax (336) 716-4480

IRB registration numbers are IRB00000212, IRB00002432, IRB00002433, IRB00002434, IRB00008492, IRB00008493, IRB00008494, and IRB00008495.
WFSM IRB has been continually fully accredited by the Association for the Accreditation of Human Research Protection Programs (AAHRPP) since 2011.

APPENDIX D: UNCC Appendix D: UNC CHAROLOTTE IRB APPROVAL

Miki Glass <mglass6@uncc.edu>

IRB-22-1224 - NHSR Submission Acknowledged

Catherine Price Runden <Niner-IRB@uncc.edu> Tue, Jun 14, 2022 at 11:56 AM
To: Mrs Michal Ida Glass <mglass6@uncc.edu>, "Dr. Kelly Ann Powers" <kpower15@uncc.edu>
Cc: "Dr. Kelly Ann Powers" <kpower15@uncc.edu>

UNIVERSITY OF NORTH CAROLINA CHARLOTTE | RESEARCH AND ECONOMIC DEVELOPMENT

To:	Michal Glass University of North Carolina at Charlotte
From:	Office of Research Protections and Integrity
Date:	14-Jun-2022
RE:	Determination that Activity is not Research and does not require IRB Approval
Study #:	IRB-22-1224
Study Title:	Peer Audit and Feedback: A Documentation-Focused Quality Improvement Project

This submission was reviewed by the Office of Research Protections and Integrity, which has determined that this submission does not constitute research as defined under federal regulations 45 CFR 46.102(l) and 21 CFR 56.102(c) and/or (l) and does not require IRB approval.

Study Description:
The aim of this project is to demonstrate the benefit of peer audit and feedback as a quality improvement tool by implementing a straightforward audit and feedback process to address the documentation of Critical Laboratory Result (CLR) communication. A subset of objectives for this process includes the engagement and empowerment of nurses to participate in continuous peer interactions for improvement, as well as the identification of any barriers experienced by nurses to document this element of performance. The objectives will be measured by concurrent audit of documentation, collection and dissemination of any identified barriers, and a brief survey to evaluate nurses' perceptions of the process as a means to aid future efforts to expand the intervention. To achieve these objectives, education will be developed and implemented for the audit teams and for the nurses working on the units involved in the project. For the audit teams, the project will utilize the existing Unit Based Council (UBC) for each unit. These nurses are already engaged in quality. In addition to information about CLR the UBC members will be educated on providing non-punitive, cooperative feedback through the use of practice scenarios. An audit tool has been created to guide the auditors in their review of nurse documentation of CLR and will contain a section to document any barriers reported. During the intervention period, the audit

teams will be provided records to review of patients with a CLR. The auditor will review the case and seek out the nurse involved to share findings and feedback and seek knowledge of potential nurse barriers. Overall documentation compliance will be audited independently by the project lead to measure any change throughout the intervention period. Base line data will be collected for comparison, At the end of the project, a survey will be sent via an online platform to all nurses on the units to explore their perceptions of the project. The survey will differentiate between the auditors and other nursing staff and ask if the responding teammate had a chart reviewed during the process.

Please be aware that approval may still be required from other relevant authorities or "gatekeepers" (e,g,, school principals, facility directors, custodians of records), even though IRB approval is not required.

If your study protocol changes in such a way that this determination will no longer apply, you should contact the above IRB before making the changes.