Increasing Patient Safety using Positive Patient Identification and Bedside Specimen Scanning

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A hospital located in the United States, has been selected as the basis for this capstone project which is centralized in a large county with several competing hospitals in its near vicinity. The hospital is in a health system which is comprised of five other hospitals. For the purpose of this project, the hospital's name has been removed for privacy.

The hospital's mission is to be committed to innovation and excellence in patient care, teaching, research and service to our communities. The organizations' strategic plan is based on this premise. One of the frameworks of the strategic plan is to become one of the most highly reliable health systems in the country by reducing serious safety events. Hospital leaders uphold patient and staff safety as a priority. The hospital has a quality and safety shared governance committee where staff meets with senior leaders to determine ways to increase safety throughout the hospital. Employees are encouraged to enter safety issues into an online application called RL Solutions. Once incidents are entered into this system, managers and senior leaders are made aware of the incident. Senior leaders gather during daily safety huddles to review these incidents and determine ways to resolve the issues to prevent them from occurring again.

The hospital selects metrics to determine performance on safety issues which are transparent across the organization. Data elements are extracted through medical health records and uploaded into a database. The metrics are updated monthly and are reviewed during senior leader meetings. Increased education and other interventions are determined to assist in rectifying safety issues. This information is then reported to the Joint Commission and to the Centers for Medicaid and Medicare Services (CMS). Information is also received by CMS through insurance claims data.

The Institute of Medicine (IOM) brought patient safety into the forefront of healthcare in 1991 with the release of the report *To ERR is Human: Building a Safer Health System*. The release of this report highlighted the lack of safety for patients in healthcare facilities. After the release of the report, initiatives and guidelines were created to assist in improving patient safety (Ulrich & Kear, 2014). Although improvements were made to aid in patient safety, harm still occurs. The World Health Organization (WHO) estimates that in developed countries, one in ten patients are harmed while receiving hospital care and seven out of 100 hospitalized patients will acquire health care associated infections (WHO, 2014). Medical errors rank as the eighth leading cause of death in the United States resulting in an estimated 44,000 deaths per year (Patient Safety, n.d.).

The hospital currently has a moderate patient safety rating with an average score of two out of five (Medicare.gov, 2016). Consumer Reports reported the hospital as having a safety score of 35 out of 100 with the US top rated hospital at 79. One area where safety is a concern lies with mislabeled patient specimens.

Between the 1960's and 1990's, the hospital employed a phlebotomy team of approximately 25 employees. The sole responsibility of the phlebotomy team was to draw laboratory specimens from patients throughout the hospital. Since this task was their only responsibility, mislabeled specimen errors were less than 20 per year.

Around 1991, the hospital decentralized the phlebotomy team and allowed patient care technicians (PCT's) and registered nurses to collect patient specimens. The removal of the phlebotomy team allowed for a faster turnaround time to receive patient specimens. However, when this decentralization occurred, mislabeled specimens rose to about 40-50 per month. Due to the increase in the number of errors, interventions were implemented; including increased

education and punitive consequences around 1999. A three strike policy, where employees were terminated after submitting three mislabel specimen, was enacted which reduced the error rate to about 20 per month. However, the new policy created a decrease in self-reporting errors. In 2002, the policy was again revised, discontinuing punitive actions.

In 2003, a project was initiated to reduce mislabeled blood specimens. The goal of this project was to standardize the blood ordering process, reorganize labels in the critical care units and install additional label printers. This project emphasized a focused approach to prevent any errors when an employee is drawing blood. Employees retrieving specimens would not have any distractions and would refrain from multitasking. Reeducation was also provided to all staff. Despite retraining, proper labeling behaviors were not sustained.

In 2013, the hospital's health system produced a system-wide initiative to reduce patient identification error called the final check. During the final check, the employee drawing patient specimens would verify the last three numbers of the medical record number (MRN) the number from the patient's wristband, by saying the numbers out loud. This initiative further reduced the mislabeled specimens to about seven per month. Although this is a huge reduction from the 40-50 per month back in 1991, it is still unacceptable.

By increasing patient safety, the hospital can acquire a higher portion of the market share. Market share is the percentage of business that a hospital obtains related to the entire targeted customer base (Healthcare Market Resources, 2008). Due to the relatively large number of local hospitals, it is important for the hospital to increase patient safety in order to increase its perception as a safe organization. A strong track record for patient safety has been known to improve the reputation of the organization which has the ability to increase market share and will

encourage more patients to seek out the services of that organization (Corrigan, Wakeam, Gandhi, & Leape, 2015).

Literature Review

An observational study conducted by Hill et al. (2010), compares pre and post intervention data to determine if implementing a barcode specimen labeling process can reduce specimen labeling errors. The study was conducted in a large urban emergency department over a 61 month period. Prior to implementing the new process, patients wore standard wristbands. Specimen labels would be created by the nurse at a central location and then the specimen would be collected at the bedside. Once the specimen is collected, the labels would be affixed to the specimen and sent to the lab (Hill et al., 2010).

The new intervention implements a positive patient identification (PPI) to reduce errors. Standard wristbands are changed to electronically generated wristbands that contain a bar code linked to the patient's identity. Patient wristbands are scanned with a handheld barcode reader along with the specimen. The electronic health record system verifies that the label and proposed tests are correct for the intended patient. Once the specimen is collected, the labels are once again scanned to verify accuracy. Data was collected during the pre and post intervention period in order to measure the error rate. During the pre-intervention period, 724,465 specimens were collected with 3,007 reported as mislabeled for a 0.42% error rate. During the post intervention period, 334,039 specimens were collected with 379 mislabeled specimens for a 0.11% error rate (Hill et al., 2010).

A decrease in specimen errors was noted with the new implementation of bedside patient scanning. However, patient identification errors still persist due to shortcuts and workarounds. One shortcut noted was that additional bar coded patient labels, which are preprinted for various

uses, were being used rather than entering the patient's room to scan the patient's wristband. In a pilot for the next phase of this study, bedside label printing will only be available after scanning the patient's bar coded wristband and not the barcoded patient labels (Hill et al., 2010).

Morrison et al. (2010) conducted a before-after design study to determine the effects of a bar code-based positive patient identification system (PPI) on the frequency of mislabeled specimen. The study took place at a 777 bed hospital in Boston, Massachusetts. Prior to implementing bedside specimen scanning, a nurse would generate specimen labels and manually affix them to the correct requisition form. The phlebotomist would then verify that the preprinted label matched the requisition. There was a total of 181,758 specimens collected during this time with 55 specimens (0.030%) determined to be mislabeled. After implementing bedside specimen scanning, a decrease in errors was noted with 184,043 specimens collected and 32 specimens (0.017%) deemed to be mislabeled (Morrison et al., 2010).

Morrison et al, (2010) also conducted a five item survey to determine the effects of PPI on patient satisfaction. The survey consisted of two yes/no questions to determine if the patient's wristband had been checked or scanned and whether the specimen was labeled at the bedside. There were also three questions that used the five-point Likert scale to determine the professionalism of the specimen collector, the adequacy of the technology and the overall experience. The patient surveys determined that with the implementation of barcode scanning, there was an increase of professionalism from 67% to 84%, an increase from 69% to 92% confirming that the wristbands were checked verses scanned and patient's confidence rose from 49% to 68% with regards to the technology used to prevent the mislabeling of specimens. The results for confirming that the patient's specimen was labeled and overall experience was not significantly altered (Morrison et al., 2010).

Snyder et al. (2012) conducted a system review of 17 observational studies to determine if barcoding for positive patient identification reduces patient specimen errors. Each study was reviewed using the *A-6 Cycle* systematic review method sponsored by the Centers for Disease Control and Prevention's (CDC) Laboratory Medicine Best Practices Initiative (LMBPI). The review team consists of a review coordinator and staff trained in applying LMBPI methods. Each study demonstrated a reduction in errors due to the incorporation of barcoding for positive patient identification. Due to this conclusion, Snyder et al, (2012) recommends barcoding systems for the collection and labeling of patient specimens as a best practice initiative to reduce errors.

Brown, Smith and Sherfy (2011) state that recognizing patient misidentification and inaccurate specimen labeling relies on a voluntary reporting system versus a systematic approach. Due to inconsistent and inadequate detection, it is possible to have under estimated error rates. The procedure for the hospital in this study requires that each patients' specimen be placed in a single transport bag. If there were additional patient specimens in one bag, then that would signify that there was an error in patient identification and a mislabeled specimen. Despite changing the font and size of the patient's name on the labels, inserting a blank label in between each patient's labels and increasing education, mislabeled specimens continued to occur (Brown, Smith, & Sherfy, 2011).

The number of errors, during the year prior to implementing bedside barcode scanning, was obtained using adverse event reports. There was a baseline pre-implementation error rate of 103. Positive patient identification was implemented at the hospital which allowed for label printing on demand at the patient's bedside after properly identifying the patient both by visually reading the wristband and by using the handheld barcode reader to scan the wristband. After the

implementation of the positive patient identification system, the hospital error rate dropped to eight. Two months post implementation; there was an elimination of all specimen labeling errors with only an infrequent error related to a new staff member. The elimination of specimen errors also reduced patient discomfort and inconvenience as well as, a reduction in additional work for the staff related to the need to redraw specimens (Brown, Smith & Sherfy, 2011).

Ning et al's. (2016) observational study depicts a reduced specimen identification number of 1,023 out of 2,000,345 to 58 errors out of 3,761,238 specimens. This culminated to a 97% reduction in errors after a computer-assisted positive patient identification system was implemented. The study took place in an academic medical center in Taiwan over a ten year period from 2005 to 2014. The Department of Laboratory Medicine maintained extensive quality assurance and control records for documenting any and all patient specimen errors (Ning et al., 2016).

Prior to the implementation of the barcode scanning to ensure positive patient identification, nurses would complete requisition forms at the nurses station then retrieve specimen from the patient at the bedside. After the implementation, nurses would scan the patient's wristband and then scan the barcode label on the collection tubes. If the patient identification numbers do not match between the patient's wristband and the collection tubes, a warning would alarm and an error message would appear on the screen. Once the patient identification number is confirmed, the nurse could then retrieve the required specimen (Ning et al., 2016). This new process allowed for the reduction in mislabeled specimen. However, no further information was given as to why there was still an error rate present using the barcode scanning process.

Spain et al. (2015) conducted a prospective before-and-after intervention study that occurred between 2009 and 2010. The study was performed in three phases, which included pre-intervention, after education alone was initiated, and after education was combined with patient barcode scanning. During each phase of the study, staff was observed collecting specimens by a research nurse with specific training delivered by chief investigators. A total of 282 collections were analyzed throughout the study of which 115 were analyzed prior to any interventions, 95 after education alone and 72 after implementing education along with barcode scanning. This study measured the frequency of key behaviors during specimen collection. Key behaviors included , patient armband applied before specimen collection, armband checked by the staff before collection, patient asked to state name, patient asked to state date of birth, label applied immediately, label signed at the bedside, and specimen was never left unattended before properly labeling (Spain et al., 2015).

The number of correctly performed critical key behaviors improved significantly between pre and post-intervention phases. Pre-intervention held a 90.49% accuracy in performing key behaviors, while education only increased the accuracy to 98.9% and after implementing both education and barcode scanning the accuracy of performing key behaviors increased to 100%. Although Spain et al's. (2015) study did not measure actual error rates in mislabeled specimens, it did document how often the key behaviors were performed. Failure to comply with the key behaviors can lead to an increased risk of obtaining mislabeled specimens. Spain et al. (2015) also mentions that a barcode does not guarantee that the information on the wristband is correct. It only validates that the information on the wristband is transmitted electronically and matches the specimen. If a wrong wristband is placed on a patient, this technology will not assist in reducing errors involving mislabeled specimens (Spain et al., 2015).

Each study presented as evidence, depicts a decrease in specimen errors or the ability to decrease specimen errors related to patient identification using a barcode scanning device. However, both the studies by Hill et al. (2010) and Spain et al. (2015) concluded with alternate ways in which errors could continue to exist even with the implementation of bedside patient scanning. Hill et al. (2010) mentioned the possibility of nurses working around the procedures by printing additional patient wristbands at the nurses' station rather than at the bedside. This work around can be eliminated by removing the additional printers located at the nurses station. Spain et al. (2015) mentioned that placing a wristband on a patient with inaccurate information can also cause specimen collection errors. One way to reduce this type of error is to have a two person verification process in place to ensure that the information is accurate.

Action Plan for Change

Currently at the hospital, patient specimen labels are printed by both the patient care technicians (PCT's) and the registered nurses using a centralized printer located at the nurses' station. The labels are then packaged into individual bags with all of the required supplies needed to collect the specimen. The bags are then brought into the patient's room where the nurse or PCT compares the patient's information on the wristband to the label. Once the information is validated, collection of the specimen can commence and the label would be affixed to the specimen container. Upon completion, the nurse or PCT would then conduct a final check by re-verifying that the information on the patient's wristband matches the information on the specimen label while reading the last four digits of the medical record out loud.

Bringing multiple patients' bags into patient rooms increases the chance of mislabeling specimens. Also, failure to perform a final check increases the risk for errors. Currently, the hospital has an average of seven mislabeled specimens per month.

Each year, hundreds of mislabeled laboratory specimens result in unnecessary specimen collection. These errors increase cost and patient inconvenience, and can lead to unnecessary treatment, lack of treatment or even death in the case of mislabeled type and screen test. By implementing bedside specimen label printing using barcode scanning for PPI, mislabeled specimens can be reduced by 88%. This intervention will reduce manual lab specimen processing which in turn decreases the opportunity for human error (Stein et al., 2011).

The implementation change would include the installation of specimen label printers on each computer on wheels and the removal of the centralized printer at the nurses' station. The new bedside scanning process would be integrated with Epic, the hospital's current electronic health record. Handheld scanners are currently used for the use of positive patient identification for medication administration. Nurses and PCT's would enter a patient's room with only the supplies needed for that individual's specimen collection needs. The staff member would open the desired patient's record in Epic and scan the patient's wristband. The system would then validate that the correct patient has been scanned and the staff member can then print out the labels needed for the specimen collection. The staff member is then required to visually verify the label to the patient's wristband. Specimen collection can then occur. Upon completion, staff will perform the final check by reviewing the information on the specimen's label to the patient's wristband while stating the last four digits of the medical record out loud. A final scan of the specimens' label will complete the process. Implementing barcode scanning at the patient's bedside will assist in ensuring that positive patient identification is achieved in order to reduce specimen labeling errors and increase patient safety.

Hospital leaders are very transparent in sharing information with staff members. The organization has excellent employee engagement results (90%) and strives for patient and staff

safety. These strengths will assist with the acceptance needed to transition to a barcoding system for positive patient identification. One hindrance could be from staff members who have worked at the hospital for several years and are accustomed to a particular way of doing things. However, due to the ease of use, the potential to reduce labeling errors, increase in patient safety and reduction in staff work from not having to redraw a specimen, the change will likely be accepted.

The change theory to be used to implement the intervention is Kurt Lewin's change model. The Lewin change model identifies that there are driving forces, restraining forces and equilibrium when introducing a new change (Nursing Theory, 2016). The Lewin change model uses a three phase process: unfreezing, changing and refreezing to allow for acceptance and for the creation of new standard operating procedures.

The first phase would be unfreezing the current state. During this phase, it is important to identify any barriers. A national survey suggests that implementation of evidence based practices is hindered due to resistance from nursing leaders and other barriers (Nurses.com, 2010). Open communication with all stakeholders, including administration, managers, nurses and PCT's is imperative for the success of the change. Lack of communication during periods of change can cause employee resentment (Meyer, 2010). Emails in SBAR format, documenting the need for change should be sent to the appropriate managers, nurses and PCT's. Flyers can be posted educating staff regarding the need for change. Demonstration of the new innovation can also be performed in order to encourage acceptance.

The second phase of the Lewin change model is the actual change. This phase includes the planning and implementation of the change process. During this phase, an interprofessional change team will be created to lead the implementation of the new barcode scanning process. A

work plan will be created which depicts the objectives, responsible person to lead the change and a timeframe for project completion. The implementation will then be initiated throughout the hospital. Evaluations will be performed to ensure the desired outcomes. Upon completion of the evaluations, phase three of the Lewin change model will be initiated.

The final stage of the Lewin change model is called refreezing. During this phase, the implementation of the new process has been completed. There is acceptance of the change and it has become a standard operating procedure. Ongoing support is available to assist any staff member with any questions. There is an evaluation of any issues, successes and challenges. Emails can be sent to staff discussing the new implementation change and the post implementation results depicting the number of specimen errors pre to and post intervention. Appreciation should also be shown to all staff involved during the town hall meetings and through an email thanking all individuals involved in the change process.

Plan to Implement the Change

In order to initiate bedside specimen scanning for positive patient identification, the hospital will use the Plan-Do-Study-Act (PDSA) model to organize and document the progress. During the Plan stage, the aim is identified as the need to reduce mislabeled specimens in order to increase patient safety. Currently, the hospital experiences an average of seven specimen errors per month. Each error in specimen labeling increases the time for interventions to occur, increases the risk of adverse reactions; including death, and decreases the patient's satisfaction due to the need to recollect the specimen. Hill et al. (2010) mentioned that errors due to patient identification occur in 0.005 to 1% of laboratory samples with one in 18 samples leading to an adverse event. By implementing bedside barcode scanning, there will be a decrease in mislabeled specimens, thus increasing patient safety.

The interprofessional change team is responsible for informing all responsible parties of the new innovation, gaining acceptance of the change, coordinating the integration of the Epic EMR with the Beaker application, which is the bedside specimen scanning application, training staff how to use the new application, resolving issues that may arise with the new implementation, and evaluating the success of the new process. The leader of the interprofessional change team would be the clinical systems resources team (CSRT) committee leader. The team leader is a nurse education specialist with affiliations with both the Epic and Beaker teams. Upon receiving the approvals and funding for the new process by the Vice President of nursing, the CSRT leader can begin communicating with the other committee members and begin informing stakeholders regarding the need for the new process. Nurses and PCT's are affected by the change due to an alteration in the current process of collecting patient specimens. Although many nurses and PCT's will be supportive of the change due to the ease of use and faster label printing, there will be some resistance from more senior staff members due to the requirements of learning a new process. The CSRT leader would then work with the Epic and Beaker teams to ensure a streamlined integration. Once the application is integrated, the CSRT leader can then work with the nurse educators to begin educating all staff on the new process. The total time to implement the performance improvement model is ten months. A Gantt chart will be created to depict each task and the time each step is determined to take. (See Appendix A).

During the implementation process, acceptance for the new procedure is imperative for the success of the project. Open lines of communication and demonstration of the intervention will assist in approval by all employees involved. The implementation process will take approximately one month to complete.

Once the project receives acceptance, the Beaker and Epic team can begin working together to implement the positive patient identification application. This portion of the implementation takes the longest time due to the integration of the two systems. The time set aside for this portion of the performance improvement model is six months. Quality assurance testing is performed to ensure that there are no issues in the applications.

While the configuration of the software is in progress, each unit manager should be contacted to determine the number of printers required for their unit and an order placed for the equipment. Once the printers are received, the information technology (IT) department can begin to install the printers to the appropriate computers. Two months will be allocated for determining the number of printers needed, installation and configuration.

Creation of an online training class can be done by the nurse educators. Once completed, the training class can be uploaded to the hospital's online learning center and alert notifications sent to all nurses and PCT's requiring them to complete the training. Upon completion of the Beaker and Epic interface, live drop-in sessions will be offered to allow the staff hands-on experience to practice the new process. Staff can attend one of the multiple drop-in sessions at a time that is most convenient. Drop-in sessions are mandatory for all staff. Education will last for one month. The new bedside printing with positive patient identification will then be piloted on one designated unit, for a period of two months.

The Do stage of the PDSA model begins the implementation of the project. The change plan will be implemented as a pilot test on a single hospital unit. Data regarding the number of mislabeled specimen will be collected during this time. Any issues that arise with the application or process will be documented, reviewed and rectified.

The Study phase will evaluate the data collected to determine if the implementation of the bedside specimen label scanning causes a reduction in the number of mislabeled specimen. Based on the results, a determination can be made as to the validation of the investment. There are costs associated with purchasing the Beaker application. Costs include: integration of the application into the current system, purchase of bedside printers, and the funds to train staff. The cost of implementing the change is approximately $250,000.00. Although there are upfront costs including the purchase of printers, there will be savings in the long run due to the prevention of patient fatalities and specimen labeling errors which can cost hospitals and estimated $200 - $400 million per year (Mahony, 2013).

The final phase is the Act stage. During this time, bedside specimen scanning will be rolled out hospital-wide. Reexamination continues throughout this phase to validate the continued success. Should further improvement be needed, then there will be a return to the plan stage to create modifications.

Plan to Evaluate the Change

Any mislabeled specimens are documented daily in the hospital's dashboard. Processing of the specimen begins immediately upon receipt in the laboratory. The results of the specimen are automatically entered into a computer system that compares the results with values from prior testing. If multiple values are out of range compared to prior results, the specimen is flagged for the possibility of being mislabeled. Each specimen is also compared to prior samples by a laboratory technician to see if there are any abnormalities. Mislabeled specimens are recognized when several items are out of range from the patient's last specimen collection. Critical thinking is used to determine if there was a contamination of the specimen or if the specimen was mislabeled. For instance, if blood was collected from a patient with a normal

saline infusion and the infusion was not stopped, the patient's blood sodium level would be increased. If there is a suspicion that a blood specimen was mislabeled, the laboratory would send the sample to the blood bank to run a type and screen on the sample to assist in confirming a possible mislabeled specimen. All mislabeled specimens are documented in the hospital's RL solutions application and entered into the dashboard. Control charts can be created to monitor the process.

During the implementation phase, each step is monitored and evaluated to ensure that the process is progressing as planned and that the project is on target with the proposed completion date. Upon completion of the project, data regarding any mislabeled specimen will continue to be documented in the RL solutions application and uploaded to the dashboard where control charts will be used to compare data pre and post intervention. A reduction in mislabeled specimens are expected which will demonstrate a successful intervention. Any mislabeled specimen found after the implementation of bedside specimen scanning would need further investigation to determine how the incident occurred along with further planning to prevent the continuation of mislabeled specimens.

The first objective to evaluate is the communication and acceptance of the change by all stakeholders. One month prior to the implementation of the bedside specimen scanning, the CSRT leader will email all stakeholders describing the need for bedside specimen scanning along with a survey. Stakeholders would be encouraged to complete the survey which documents feelings about the current specimen collection process along with thoughts about the need for a new process. The survey would use a likert scale. After implementation of the bedside specimen scanning project, another survey will be emailed to all stakeholders to determine how individuals

felt about the new process. This survey would again use the same type of likert scale to document feelings.

The next area to evaluate is the purchasing and installation of the printers on each computer on wheels. The CSRT leader will be responsible for contacting each unit manager to determine the number of printers needed for each unit. This individual would then place the order to purchase the printers. Once the printers arrive, the CSRT leader would then get the IT department involved in installing and configuration the printers onto the computers on wheels. Once the IT department has completed the installation and configured of the printers, the CSRT leader will validate that each unit has the predetermined number of printers installed as requested using a dashboard report.

While the number of printers is being determined for each unit, the integration of the Beaker application with the Epic health record system will commence simultaneously. The CSRT leader will meet with both the Beaker and the Epic teams to discuss the integration.

The integration will take approximately six months to complete. Every two weeks, the CSRT leader will be in contact with both teams to ensure that the project is on target for timely completion. The CSRT leader can begin involving the education team in the creation of a training program to assist with using the new bedside specimen scanning. Also, a dashboard report will be created listing the names of each nurse and PCT. Once the educational video is complete, the CSRT leader will send an email out to all the nurses and PCT's informing them of the required training that will be available online via Healthstream. All required staff members will have a two week time period in which to complete the required training. The dashboard report will be automatically updated once the user completes the education. The CSRT will be able to verify that each individual completed the education. If there are individuals that were

unable to complete the education, then the CSRT leader would reach out to those individuals and ensure that the education is completed. Each end user will also be required to attend a live training session. Once again, the dashboard that contains all of the nurses' and PCT's names will be used. Upon completion of the live training session, the individual's name will be removed from the dashboard. Those employees who do not attend the live session will be contacted to ensure that they receive this training.

Upon completion of the education, the bedside specimen scanning will be piloted on one unit for a two month trial. During this time, any application issues will be identified and rectified prior to release throughout the hospital. Also, any mislabeled specimen will be documented in the RL Solutions application and the dashboard updated. Each month, data from the dashboard will be monitored and reviewed. After the two month pilot test, the application will roll out throughout the hospital. Any mislabeled specimen that would occur will be investigated to determine the cause. The quality and safety department will ensure that nurses and PCT's are following the proper procedure and that work arounds are eliminated in order to enhance patient safety. Should any work arounds be identified or improper procedure steps be used, additional education will need to be delivered. A benchmark of zero mislabeled specimens is the goal of this performance improvement plan.

Implications & Conclusion

This project supports the hospital's mission and assists in improving patient quality of care while decreasing healthcare expenses associated with patient harm or mortality. The performance improvement plan has the ability to increase patient safety and ensure that interventions are performed in a timely fashion. Patient satisfaction is expected to increase as a result of not having to recollect specimens and waiting on lab results prior to delivering care. When patients

feel safe and are treated promptly, satisfaction with the institution increases. This project has the potential to enhance the hospital's patient safety rating on the Medicare Hospital Compare website. The increase in this rating may, in turn, result in an increase in market share due to the improved safety reputation of the hospital.

The role of the nurse leader is significant to the success of the performance improvement project. The nurse leader guides the process and ensures that each step is carried out appropriately and timely. Excellent communication skills are necessary when interacting between different team members. These leaders are responsible for encouraging the staff and supporting each team member during this period of change. They are called to sustain an organized environment and empower and motivate the staff to fulfill the hospital's common goals and uphold the mission, vision and values of the hospital. The nurse leader will be able assist other leaders within the system to incorporate bedside specimen scanning. They will be a source of knowledge to guide other nurse leaders to achieve the positive patient safety outcomes using management and transformational leadership skills.

Errors in mislabeled specimen can cause undesired ramifications including a decrease in patient safety and satisfaction along with an increase in costs. Implementing the process to improve the hospital's current issue of mislabeled specimen assists the organization to achieve its priority of increased patient safety. Evidence based research confirms the ability to reduce mislabeled specimen by implementing bedside specimen scanning. The nurse leader assists in the implementation and evaluation of the project. Incorporating this technology can rectify mislabeled specimen while increasing patient satisfaction and the hospital's safety ratings.

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Appendix A

Gantt Chart

Implementation of Bedside Specimen Scanning for Positive Patient Identification

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11
Communication											
Purchase and install printers											
Application integration											
Education											
Pilot											
Hospital wide release											