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Outcomes of a Positive Patient ID Campaign at a Pediatric Quaternary Care Center

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Abstract

Introduction. Positive patient identification (PPID) is critical to safe and accurate labeling of patient lab specimens. Accurate PPID is also an important priority of The Joint Commission's National Safety Goals. Inadequate PPID compromises may lead to waste of time and resources, and in the worst-case scenario can lead to significant patient morbidity and mortality. With a focus on PPID, this initiative examined the occurrence of mislabeled and unlabeled lab specimens as well as compliance with wearing ID bands in a cohort of hematology/oncology and bone marrow transplant inpatients at a large pediatric quaternary care center.

Methods. Using the Plan-Do-Study-Act Model, this initiative details educational interventions directed at staff, caregivers, and patients.

Results. While nursing education and posted reminders did not reduce reported unlabeled or mislabeled lab specimens, we document an increase in the percent of patients wearing ID bands from 67.5% to 95.6% following both parent education and a patient-friendly poster campaign. This work identified that older children were more likely to wear ID bands. The median age of those correctly wearing ID bands was 12 years old versus median age of 1.9 years of non-compliant children.

Conclusion. The PPID initiative identified a problem with mislabeled lab specimens and poor ID band compliance. ID band compliance improved with educational measures. Younger children may need additional measures to promote these patients wearing ID bands and they should be examined as a special population in future projects evaluating PPID.

Keywords

mislabeling, armband compliance, positive patient identification

Introduction

Positive patient identification (PPID) is defined as the correct identification of a patient and accurate association of laboratory specimens during sample collection, processing, and reporting (Morrison et al., 2010). Errors in PPID have a wide range of consequences: lab specimen re-collection leads to treatment delays and waste of resources, results may be attributed incorrectly to an individual, or interventions could be performed on the wrong person. In the worst-case scenario, errors with PPID can lead to patient death, such as in the setting of a specimen mislabeling leading to ABO-incompatible transfusion (Sazama, 1990). Given the clinical significance, the Joint Commission's National Patient Safety Goals identify improving patient identification as a top priority since 2003 (The Joint Commission, 2019).

Groups have reported on educating staff to a standardized process confirming PPID (Walley et al., 2013; Garnerin et al., 2008; Kim et al., 2013). A substantial proportion of studies that focus on PPID have cited ID band errors as a central issue impeding accurate PPID (Phillips et al., 2012). Phillips et al. (2012) identified this *sine qua non*, "Although many interventions to decrease medical error have focused on innovations . . . these require a critical element: a correct ID band on the patient" (p. e1588).

Problem

A pediatric quaternary care hospital in the South identified internal deficiencies in the use of PPID, including the occurrence of mislabeled and unlabeled lab specimens, as well as compliance with wearing ID bands in a cohort of hematology/oncology (heme/onc) and bone marrow transplant (BMT) inpatients.

Purpose and Aim of Initiative

The PPID quality improvement initiative sought to improve PPID on two inpatient units caring for hematology/oncology and bone marrow transplant patients. The project aim was to (1) improve the PPID process by reducing the number of mislabeled or unlabeled blood specimens submitted to the lab on the heme/onc and BMT units by 70% over a 3-month period and, (2) improve ID band compliance on these units by 20% during the same time.

Methods

Context

The PPID initiative was conducted as a part of an advanced quality improvement training course. The quality improvement team was led by a hematology/oncology physician and supported by leaders in the hematology/oncology lab, infection control, and patient safety and coached by a quality improvement expert. The inpatient heme/onc and BMT patients were the patient cohort of interest based on the specialty of the team members. These patients are housed on two separate units, totaling 58 beds. The nursing staff draws the blood and collects other lab specimens. There were 64 nurses working on this floor. The institution did not require formal IRB review of the quality initiative.

Baseline Data

The project planners worked closely with nursing staff and unit leadership to develop, implement, and evaluate project interventions. Baseline data of a prior 12-month period identified that 85% (n= 52/61) of internal laboratory safety reports submitted by staff working in the heme/onc and BMT units were mislabeled or unlabeled laboratory specimens. On initial data collection over a three-month period, 14 samples were rejected by the lab for having incorrect or missing labeling. This showed the need for improving the positive patient identification and thus reducing the mislabeling of lab samples.

Observation data showed a need for improving the ID band compliance of the patients in addition to improving the PPID process. The team identified that patients were non-compliant with ID band use. Observations of ID band compliance were conducted of 95 patients on the hematology/oncology and BMT units collectively

over a one-month period. If parents were present with the child, verbal feedback on the importance of ID band compliance was reviewed. Of these observations, 61% (n=58) of patients were compliant with hospital ID band policies (ID band on an arm or leg). ID bands were inappropriately located on the IV pole on 11 (12%) patients, the IV pump on 15 (16%) patients, other room environment on 2 (2%) patients, in the chart outside the room on 1 (1%) patient, and no ID bands on 8 (8%) of patients.

Quality Improvement Tools

Several quality improvement tools were utilized in this project including a process map, an Ishikawa or fishbone diagram, key driver diagram, and affinity diagram. After defining the lab collection process and highlighting the major causes of poor PPID, a key driver diagram was developed to identify primary drivers and state certain change initiatives to tackle each primary driver of mislabeled specimens, as seen in Figure 1.

Figure 1

Key Driver Diagram Identifying Primary and Secondary Drivers of Specimen Mislabeling and Potential Change Initiatives to Address Each Driver

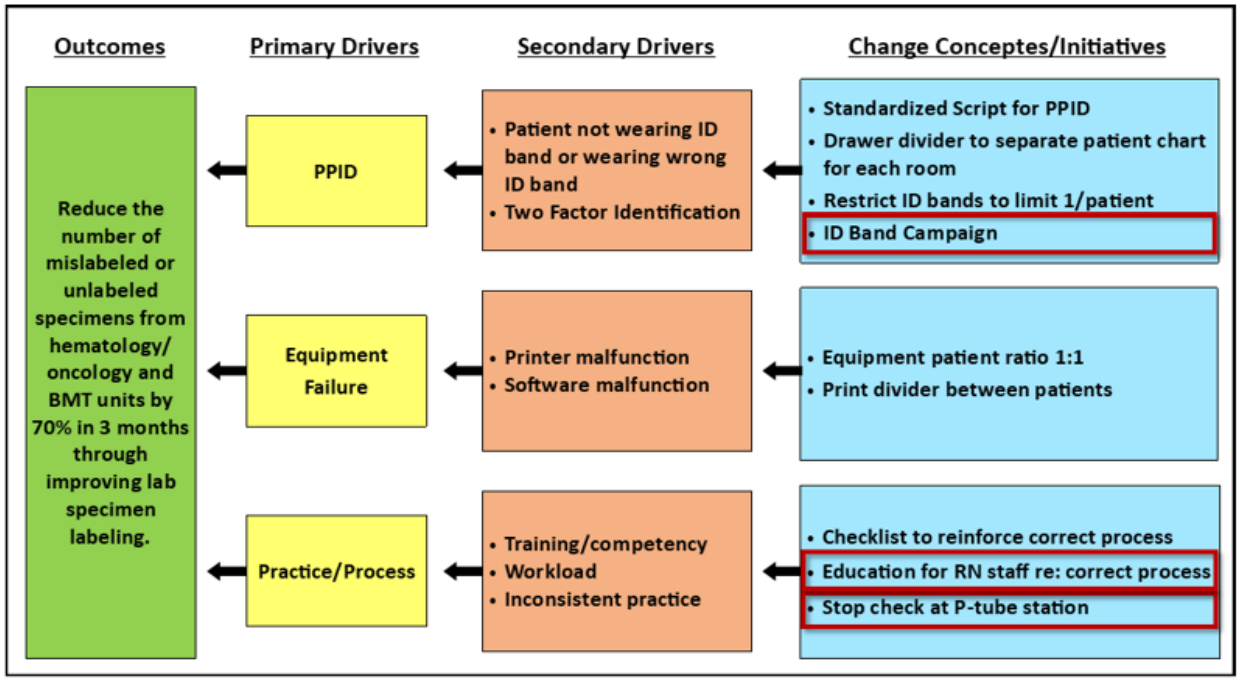


Figure 2

Affinity Diagram Stratifying Potential Interventions

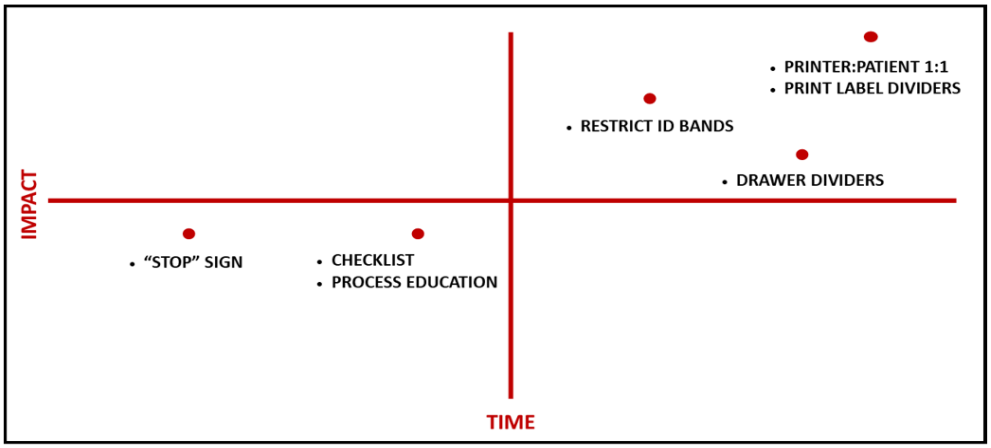


Figure 2 is an affinity diagram that stratifies potential interventions on the basis of anticipated impact and effort or time required to complete the intervention. Those with high impact but shortest time/least effort to complete were targeted. "STOP sign" reminders for staff and process education were chosen as initial interventions.

Measures

The outcome measures of the PPID initiative were (1) the quantity of mislabeled and unlabeled blood specimens submitted from the hematology/oncology and BMT units, and (2) the percentage of patients in compliance with hospital ID band policies. Mislabeled and unlabeled blood specimens were quantified from internal laboratory event reporting systems. The data set where ID band compliance was recorded was separate from the internal laboratory event reporting data set. Process measures included compliance with optimal PPID procedures as assessed by a nursing survey.

The balancing measure for this project was the time from lab draw order release by a nurse to the time of sample collection. Interventions were planned and their impact assessed using the Plan, Do, Study, Act (PDSA) Model of Change (Langley et al., 2009).

Interventions

Improving PPID Process

We developed a multifaceted approach to decrease the number of mislabeled and unlabeled blood specimens submitted from the hematology/oncology and BMT units and increase the percentage of patients in compliance with hospital ID band policies. The improvement plan included staff education, patient education, and the implementation of a systematic protocol for handling blood specimens from the drawing of the blood to the sendoff of a specimen to the pathology lab for analysis.

PDSA 1: Visual Reminder of Correct PPID Process. The institution recommended that PPID be carried out at bedside, using two unique patient identifiers, and involved labeling after specimen collection while at the patient bedside. A nursing survey of baseline practice showed variability on where (bedside or outside the patient room) PPID was assessed, which patient identifiers were used, and when a specimen label was affixed to the collection tube (before or after specimen collection). The new PPID protocol for staff to follow for each blood draw included (1) confirmation of PPID at bedside with two unique patient identifiers, (2) labeling samples after specimen collection at bedside and (3) two staff members check for correct specimen tubes and labeling.

A visual reminder highlighting key components of the correct PPID process was placed at the pneumonic tube (P-tube) stations where specimens are sent-off to pathology. Coined “STOP signs,” these posters depicted an image of a nurse performing a PPID check at the patient bedside, with two unique patient identifiers on both patent ID band and full blood specimen tube as shown in Figure 3.

Figure 3

STOP Sign Posted as Visual Reminder of Correct PPID Process

PDSA 2 and 3: RN Staff Education. Based on the initial survey showing no adherence to uniform process for blood specimen collection, we developed a didactic education session to educate the nursing staff on recommended, lab collection processes. The nurse education would take place during staff meetings. The didactic session detailed the scope of the problem, reported the percentage of mislabeled/unlabeled specimens at our hospital and on the hematology/oncology and BMT inpatient units, described PPID-related sentinel events at neighboring institutions, and described an eight-step PPID process.

After we provided the nursing staff education, we received informal verbal feedback that the education process was ineffective. This was attributed to the poor in-person attendance at the staff meetings. Many nursing staff call in to the staff meeting, which did not allow the staff to see the charts and other visuals incorporated into the teaching session. Based on this feedback, we collaborated with nursing leadership for both units to provide one-on-one education to the nursing staff. Handouts were created which summarized the key points from the in-person education sessions. Nursing leadership reviewed the handouts with each nurse and documented completion for all staff.

Improving ID Band Compliance

PDSA 4: **Multilingual Patient Handout.** A handout was placed in new admission packets that emphasized safety and explained the hospital's ID band policy requiring patients to wear an ID band on their arm or leg at all times. The new procedure was for bedside nursing staff to review the packets with each child and caregiver at the time of admission. The handout was translated into four languages: English, Spanish, Arabic, and Vietnamese.

PDSA 5: Patient Focused Poster Campaign. We implemented a poster campaign to engage the children admitted to the units regarding the wearing of ID bands. We implemented a poster campaign featuring puppies wearing ID bands as shown in Figure 4. Puppies were the same breed as our institution's popular therapy dogs. Posters were displayed in prominent locations in the inpatient pilot units.

Figure 4

Patient-Friendly Poster to Encourage ID Band Compliance

Ethical Considerations

For the PPID initiative, all patient data was deidentified. The project did not receive any financial support or sponsorship, and there were no identified conflicts of interest.

Results

Improving PPID Process

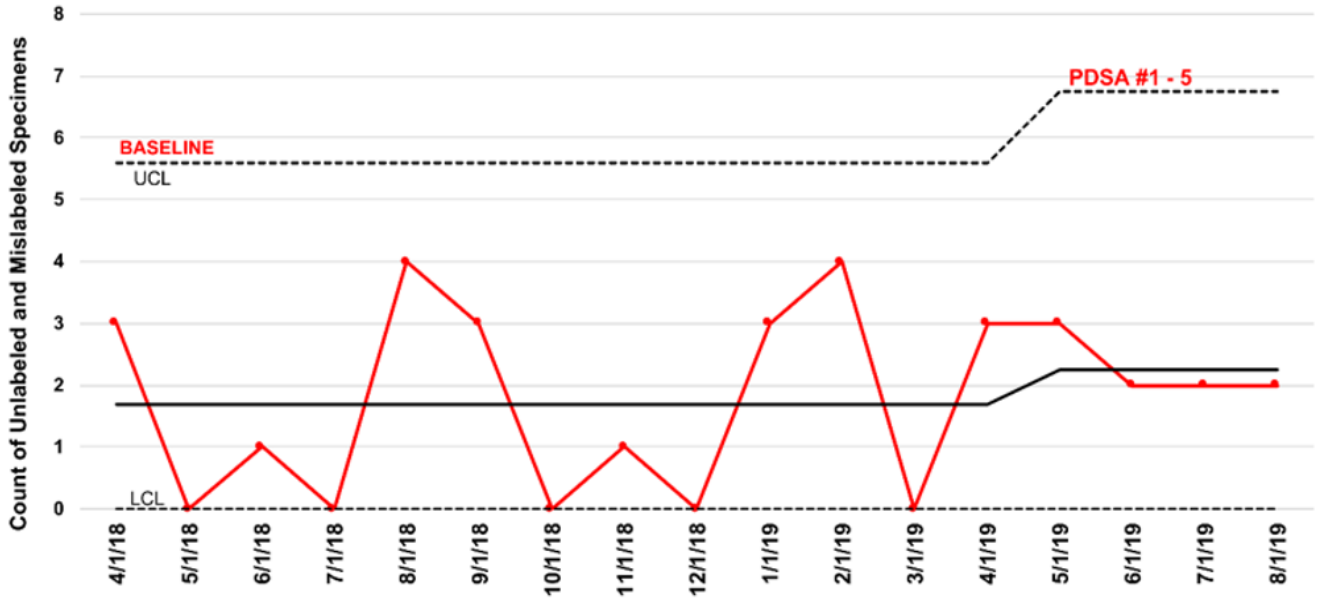
Nurses were queried on their PPID process from both inpatient units. Surveys were handed out during morning nursing huddles and collected by nursing leadership. The surveys contained 5 questions about PPID process as well as one area for open commentary. This survey indicated variation in the location and timing of specimen labeling. Some nursing staff were labeling before sample collection but at bedside (n=5), before sample collection outside the patient room (n=2), and after collection outside the patient room (n=7). We defined compliance with the PPID process as labeling specimens after sampling, inside the patient room. Eight nurses (46%) were in compliance on the initial survey.

Two weeks after the STOP signs were posted, nurses completed a post-implementation survey. Out of 29 survey responses, 86% of respondents stated the sign was a helpful reminder before sending blood specimen to laboratory, while 43% found it led to a practice change.

For the desired outcome to decrease the number of mislabeled and unlabeled specimens, no change was seen in the number of rejected samples due to mislabeled or unlabeled specimens assessed by internal event reporting data review or laboratory system data as shown in Figure 5.

Figure 5

Incidence of Unlabeled or Mislabeled Specimens



We repeated the nursing surveys examining their adherence to recommended PPID procedures. Though fewer staff responded, we saw an increase in the proportion of nurses who reported using the correct PPID process of labeling specimens inside the patient room following sample collection. Previously, staff reported 46% compliance with the recommended process, and this increased to 66% on repeat testing. No nurses reported labeling specimens before sample collection or outside the patient room. Three nurses still reported labeling specimens before sample collection at bedside. Overall, after nursing education, there was increased uniformity in how samples were labeled.

Balancing Measures

No increase was observed from the baseline mean time (M=6h 19m 7s, SD=3:49:30) compared to the post-PDSA mean time (M=6h 19m 55s, SD=20 h 17 min 42 s) (p=0.95), indicating no change in time required to collect a lab specimen based on our interventions.

Improving ID Band Compliance

We compared the median age of compliant patients versus non-compliant patients.

Statistical Analysis

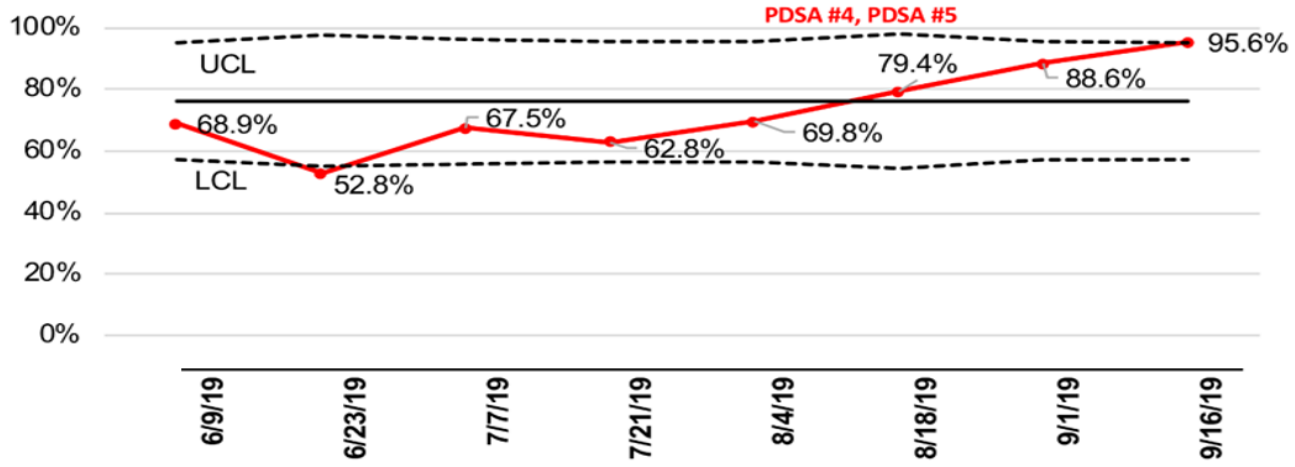
A Shapiro-Wilk's test was used to determine if data was normally distributed and a Mann-Whitney *U* test used to compare nonparametric data. A student's t-test was used to compare parametric data. Statistical analyses were performed using SPSS Statistics 25 (IBM, Armonk, New York). A $P < 0.05$ was defined as statistically significant.

ID band Compliance Improvements

ID band compliance was measured through bi-weekly observations of all patients on the BMT and hematology/oncology units as seen in Figure 6. Overall, compliance with armband policy increased from the first measures in July 2019, pre-PDSA 4/5, from 68%, (n=27) to post-PDSA 4/5 implementation on final measures in September 2019 to 96% (n=43).

Figure 6

Proportion of Patients Compliant with ID Band Policy



On the BMT unit, compliance with ID band policy increased after implementation of PDSA 3 and 4, as seen in Figure 7, as well as on the hematology/oncology unit, shown in Figure 8.

Figure 7

ID Band Compliance on the BMT Unit

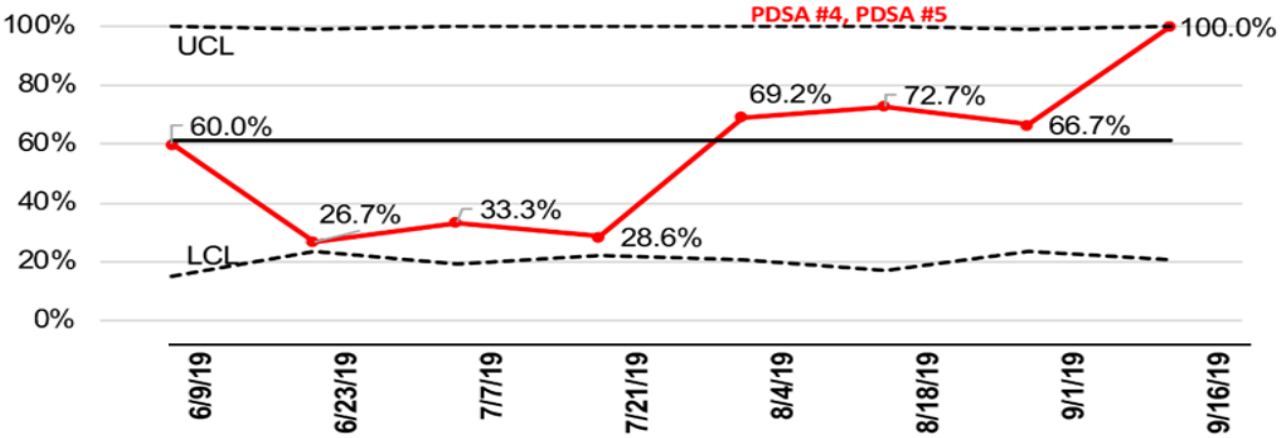
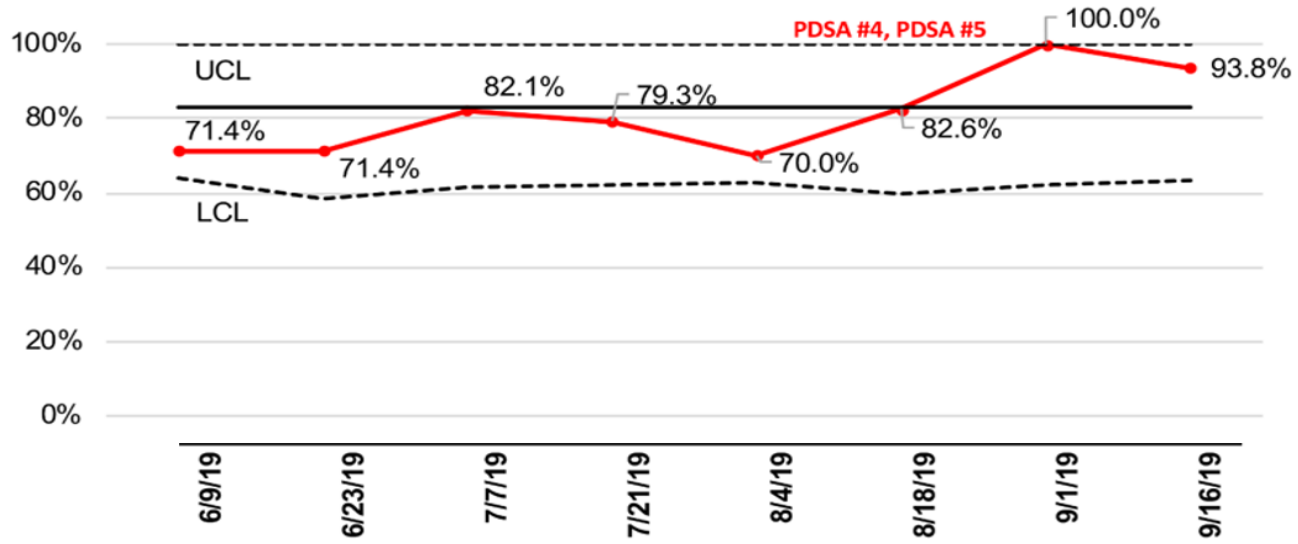


Figure 8

ID Band Compliance on the Hematology/Oncology Unit



Data suggest that ID band compliance improved via a combination of family education and advertising campaigns. Informal verbal feedback from patients, families, and staff regarding the poster campaign was overwhelmingly positive.

Impact of Age on ID Compliance

Anecdotal reports from nursing staff and patient families were that younger children did not tolerate well the irritating material of the ID bands and could easily remove them. To assess the impact of age on ID band compliance, in the final month of the study period we compared compliance by age. The median age of compliant patients was 12 years old and the median age of non-compliant patients was 1.9 years.

Discussion

This initiative is a quality improvement project that aimed to improve PPID in the hematology/oncology and BMT units at a pediatric quaternary care hospital. In preliminary data collection, we identified mislabeled or unlabeled laboratory specimens as an area for improvement. The process for establishing PPID at the bedside after sample collection using two unique patient identifiers was inconsistently followed. We further found that approximately 40% of our patients were not compliant in wearing their ID bands, with the highest proportion of non-compliant patients being under 2 years old. Given the deficiencies noted in this study, there is potential for patients to experience a sentinel event related to lack of PPID.

The PPID initiative adds to the literature citing a deficiency in ID band compliance in pediatric hospitals and reviews interventions made to augment PPID.

Mislabeled and Unlabeled Specimens

As a surrogate marker of correct PPID procedures being followed, we sought to reduce blood specimens rejected due to being mislabeled or unlabeled. Unfortunately, informing the nursing staff of the scope of the problem and educating them on a standard PPID process did not impact our primary outcome measures.

ID Band Compliance

Nursing staff provided anecdotal feedback that patient families were resistant to enforcing ID band compliance in their children. Families cited that the ID band was uncomfortable for the child or that it easily was removed. Families also reported to their nurse that they did not see value in wearing the ID band when staff

were familiar with their child. Handouts provided to families explaining that the ID band policy was a hospital-wide rule and that it was being enforced for safety targeted these comments. As a part of data collection, our team toured the hospital units every other week to tabulate ID band compliance. This process was intended for data collection but grew into a way of reinforcing ID band policies with families. We believe families became increasingly aware of the ID band policy and recognized the importance of compliance as staff members identified it a high priority safety issue in "ID band rounds."

We targeted patient compliance with ID bands through the use of child-friendly advertising with puppies depicted wearing armbands. We received verbal feedback from staff, parents, and patients that these posters were seen and that they were enjoyable. Utilization of family education on ID band policy, advertising, and ID band rounds improved ID band compliance during the study period.

Overall, we created a positive change in ID band compliance through the above measures. The PPID initiative identified patient age as a key issue impacting ID band compliance.

Limitations

The primary outcome measure was the number of samples rejected by the lab due to mislabeling or lack of a label. The laboratory reporting system provides data inclusive of all rejected specimens. It is not possible to separate samples rejected for mislabeling/no label from those rejected due to labeling issues unrelated to PPID. It is also impossible to identify rejected specimens which were directly linked to non-compliance with ID band policies. With a small number of mislabeled/unlabeled samples, it was difficult to show a meaningful change during the time frame of this project.

We assessed nursing adherence to correct PPID practices. This metric was limited by being a self-reported assessment and was completed by a small number of nursing staff. It would have been more optimal if completed by more staff or assessed by an external metric.

"ID band rounds" itself may have introduced bias in the form of the Hawthorn effect, causing family and staff to modify their behavior in response to being observed. Also, because ID band compliance was discovered as an issue in the midst of this project, there was less time spent on assessing this metric.

Finally, as an overall limitation, this project was conducted as a part of quality improvement training course and was limited in time and scope. More time would have been useful to more fully evaluate change and demonstrate sustainability.

Sustainability

Visual reminders and educational handouts are still used in these units. The educational materials created for the PPID initiative have been included in a hospital-wide campaign focused on ID band compliance.

We noted during the PPID initiative project that education may not be sufficient to impact specimen labeling. We identified issues with label printers resulting in workarounds by nursing staff, as well as concerns with patient charts and labels not always being physically well separated near the bedsides. While these issues were out of the scope of this project, they identify other potential avenues of intervention that might improve outcomes. Additionally, based on the engagement of caregivers during ID band rounds, future interventions should consider active engagement of parents or patients, if old enough, in ensuring specimens are labeled correctly.

A major identified barrier to ID band compliance was discomfort and durability of the ID band material. Not surprisingly, this was a more significant problem in younger age groups. This underscores that any future pilots of a new ID band material should focus on the comfort of the material as it pertains to young children. Making bands more colorful or decorated in a kid-friendly design might also improve palatability. Additionally, based on the engagement of caregivers during ID band rounds, future interventions should consider active engagement of parents or patients, if old enough, in ensuring specimens are labeled correctly.

Conclusions

The PPID initiative identified an issue that posed a risk to patient safety which was having mislabeled or unlabeled blood specimens. The metrics for measuring these mislabeled/unlabeled samples did not improve with nursing reminders and education. However, the processes of the PPID initiative identified the issue of poor ID band compliance, a known barrier to appropriate PPID. Interventions targeted at educating families and patients were successful at improving ID band compliance. Further, we identified that younger patients are the most likely to be non-compliant. This age group should be the unique focus of interventions related to ID band material.

References

Garnerin, P., Ares, M., Huchet, A., & Clergue, F. (2008). Verifying patient identity and site of surgery: Improving compliance with protocol by audit and feedback. *Quality and Safety in Health Care*, *17*(6), 454–458. https://doi.org/10.1136/qshc.2007.022301

Kim, J. K., Dotson, B., Thomas, S., & Nelson, K. C. (2013). Standardized patient identification and specimen labeling: A retrospective analysis on improving patient safety. *Journal of the American Academy of Dermatology*, *68*(1), 53–56. https://doi.org/10.1016/j.jaad.2012.06.017

Langley, G. J., Moen, R. D., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance* (2nd ed.). Jossey-Bass.

Morrison, A. P., Tanasijevic, M. J., Goonan, E. M., Lobo, M. M., Bates, M. M., Lipsitz, S. R., Bates, D. W., & Melanson, S. E. (2010). Reduction in specimen labeling errors after implementation of a positive patient identification system in phlebotomy. *American Journal of Clinical Pathology*, *133*(6), 870–877. https://doi.org/10.1309/ajcpc95yymsllrcx

Phillips, S. C., Saysana, M., Worley, S., & Hain, P. D. (2012). Reduction in pediatric identification band errors: A quality collaborative. *Pediatrics*, *129*(6), e1587–e1593. https://doi.org/10.1542/peds.2011-1911

Sazama, K. (1990). Reports of 355 transfusion-associated deaths: 1976 through 1985. *Transfusion*, *30*(7), 583–590. https://doi.org/10.1046/j.1537-2995.1990.30790385515.x

The Joint Commission. (2019). *Laboratory Services: 2021 National Patient Safety Goals*. Retrieved October 30, 2019, from https://www.jointcommission.org/lab_2017_npsgs/

Walley, S. C., Berger, S., Harris, Y., Gallizzi, G., & Hayes, L. (2013). Decreasing patient identification band errors by standardizing processes. *Hospital Pediatrics*, *3*(2), 108–117. https://doi.org/10.1542/hpeds.2012-0075