INCREASING PATIENT SAFETY THROUGH BARCODE MEDICATION ADMINISTRATION COMPLIANCE

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BACKGROUND

Barcode Medication Administration (BCMA) is a best practice (Billstein-Leber et al., 2018; Institute for Safe Medication Practices [ISMP], 2022; Leapfrog Group, 2017).

- Every Year:
  - Medication errors kill up to 98,000 hospitalized patients (Owens et al., 2020).
  - Medication administration errors (MAE) account for 30% of all medication errors (Ho & Burger, 2020).
  - Seventy-five percent of hospitalized patients will be exposed to medication errors, and 10% will incur harm (Küng et al., 2021).
  - One-third of harmful medication errors are preventable (Küng et al., 2021).
  - BCMA improves efficiency, reduces dispensing errors by up to 66%, and reduces documentation errors by 80% (Naidu & Alicia, 2019).
  - A Mayo Clinic study showed that errors potentially resulting in patient harm were decreased by 55% when using BCMA (Thompson et al., 2018).

PURPOSE AND HYPOTHESIS

Purpose:

- Provide safe patient care by improving BCMA compliance.
- Increase knowledge of patient safety when using BCMA.
- Decrease MAEs through compliance.
- Increase BCMA compliance to 95%.

Hypothesis:

- By addressing staff barriers to BCMA, such as technical issues or lack of equipment, and educating staff on the importance of BCMA in patient safety and decreasing MAEs, scanning medications will reach the benchmark of 95% compliance.

PROJECT QUESTION

Will nurses and ED medication techs reach a BCMA compliance of 95% in five weeks after being educated and addressing barriers?

METHODS

A PowerPoint presentation, pre-test, post-test, survey, and attestation were developed. A poster presentation was created from the PowerPoint. Flyers were posted in January 2023 in staff restrooms and lounges. The education program was administered on-site for four days, one hour before shift change for both dayshift and nightshift on the emergency department (ED) and Medica-surgical/Telemetry (MedSurg/Tele) units during the first week of March 2023. A list of test questions with correct answers and rationale was developed and submitted for the content validity index. The post-test was the same as the pre-test, with the order of the questions altered. A survey was used to gain insights into improvements needed for the education program. An attestation of intent to comply with the BCMA policy was signed by staff attending the education program. Before the presentation, a pre-test was given. After the presentation, the post-test, attestation, and survey were completed. The survey had eight questions rates on a five-point scale and two open-ended questions. Continued compliance with BCMA was monitored weekly for four weeks. Continued monitoring will be done monthly to verify the sustainment of BCMA compliance.

BCMA scanning compliance rates were entered into the codebook from July 2022 through March 2023. MAEs were entered into the codebook from September 2022 through March 2023. Statistical analysis was done using paired t-tests for pre-test and post-test results. BCMA and MAEs were graphed. Descriptive analysis was used for survey results. All educational materials were provided on a flash drive to the education nurse to be added to new employee orientation to sustain compliance. The number of participants was compared to the number of staff on the MedSurg/Tele and ED units to determine if the sample size was significant. A confidence level of 95% (CI of 0.05) was used. IBM SPSS software was used to generate statistical data. Data were analyzed using paired t-tests, descriptive statistics, and graphs. Patients in isolation rooms and those requiring immediate stabilization in the ED were excluded from scanning percentages.

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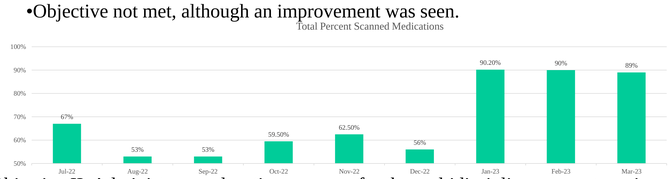
RESULTS

Objective I: Improve staff compliance with national standards for medication scanning rates to 95%.

- Objective not met, although an improvement was seen.

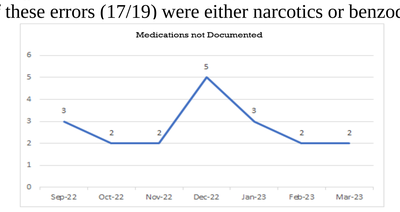


Objective II: Administer an education program for the multidisciplinary team to train staff on BCMA with post-test knowledge scores of 100%.

- Objective not met. There was no statistical significance in differences from the pre-test to post-test scores.
  - Seventeen of 30 scored 100% on the post-test. Nine scored 100% on both.
  - Four scored lower on the post-test.
  - Seven had no change in test scores but did not score 100% on the post-test.

Objective III: Decrease administration-related medication errors by 80%.

- Objective not met:
- No administration errors were reported.
- Medications given but not documented (documentation errors) occurred.
  - Most of these errors (17/19) were either narcotics or benzodiazepines.



CONCLUSIONS

The project aimed to increase BCMA compliance at a critical access hospital in Southwestern Nevada in the ED and MedSurg/Tele units. One PDSA cycle was run on both units, including a pre-test, a poster presentation, a post-test, a survey, and an attestation to comply with the BCMA policy. Thirty out of 58 staff were able to attend the program. The program was given over one week, and the results were pulled from the medical record. Isolation and patients requiring immediate stabilization were excluded.

There was a significant improvement in BCMA percentages from when the flyers were posted compared to the six months previous, but the percentages dropped in the four weeks post-implementation. The paired t-test showed no significant difference in pre-test scores compared to post-test scores; this led to the conclusion that the learners knew what they were supposed to be doing with BCMA but were not compliant. Descriptive statistics showed that most of the participants found the education useful.

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