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Major Article

Impact of personalized report cards on nurses managing central lines

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Background: The purpose of this quality improvement project was to determine the effect of providing feedback to managers and bedside nurses on the nurses' central line–associated bloodstream infection (CLABSI) contributing factors, found on visual and documentation audits.

Methods: This nonexperimental, quality improvement project was conducted in a 715-bed, 2-campus acute care community hospital health care system in Southwest Florida. The intervention consisted of providing confidential feedback on central line audits deviations, through the systematic delivery of unit case reports and personalized nurse report cards. Analysis of central line audit deviations and subsequent report cards was undertaken.

Results: Of the 620 lines visually audited from 14 nursing units, over 16 weeks, 113 lines (19.2%) failed the audit. Each line triggered an electronic medical record audit, which identified 628 CLABSI contributing factors. Subsequently, nurse managers received 113 unit case reports and 487 bedside nurses received report cards. Over time, the frequency of CLABSI contributing factors decreased ($\rho = -0.12$, $n = 620$, $P = .003$).

Conclusions: Central line audit analysis, providing unit case reports to nursing managers and 1-on-1 personalized nurse report cards, has shown an increase in compliance with established guidelines for the management of central lines.

"Good afternoon, a central line–associated bloodstream infection (CLABSI) has been identified and is attributable to your unit. Please complete the attached root cause analysis form." The nurse manager's heart sinks at seeing the e-mail, and the investigation begins. CLABSI is defined as a laboratory-confirmed bloodstream infection where a central line was in place for >2 calendar days on the date of event.[1] CLABSI is associated with high morbidity, mortality, and health care costs.[2] CLABSIs are recognized as largely preventable hospital-acquired infections when nurses follow central line evidence-based practices.[2,3] The good news is that in the United States, from 2001 to 2009, there has been a 58% decrease of CLABSI incidences,[4] and again between 2008 and 2013 there was another 46% decrease.[1]

Significant literature has been published on ways to reduce CLABSI contributing factors, principally medical insertion bundles, antimicrobial technologies, and decreased catheter dwell time.[1,2,5] Medical insertion bundles address checklists, used at the time of line insertion, to ensure standardized infection control practices. Checklists are categorized into insertion process actions based on clinical procedures (skin preparation and barriers) and hygiene practice.[1,2,6] Absent from the literature about CLABSI prevention was data detailing specific nurse-related feedback interventions. After a qualitative study of the lived experiences of the bedside nurses,[7] several multifaceted interventions were implemented. The foundational intervention was a mandatory 4-part computer-based training module for the purpose of teaching nurses how to manage central lines. The module covers content on insertion site and dressing assessment, a detailed 16-step dressing change procedure, intravenous (IV) tubing and central line management, and a guide to appropriate documentation. Content was aligned with Joint Commission National Patient Safety Goals.[2] In addition to the module, other interventions included the following:

- February 2011—central line dressing change handout available online
- March 2011—alcohol-impregnated cap trial
- July 2011—central line audits begins
- November 2011—updating policies and procedures with details about dressing change, flushing, and IV tubing equipment care
- February 2012—second annual CLABSI computer-based training assigned
- March 2012—redesigning central line dressing change and implantable venous access needle insertion trays
- March 2012—alcohol-impregnated cap house-wide

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- May 2012—improving access to IV maintenance and dressing supplies in each unit
- August 2013—initiating the use of color-coded day of the week connector labels[8]

CLABSI CONTRIBUTING FACTORS

Visual and documentation central line audits, and subsequent feedback, begin with a thorough and specific identification of postinsertion CLABSI contributing factors. For this quality improvement project, 3 CLABSI contributing factor clusters were identified, 2 that can be observed during a visual audit (dressing and IV tubing factors), and 1 from documentation review. Clusters were identified during a common cause analysis of 30 CLABSI root cause analyses during the last 3 years. Common cause analysis allows an investigator to aggregate inconsistent delivery of acts and causes of a problem in evidence-based care.[9] The common cause analysis focused on deviations of established guidelines for management of central lines. There are 15 CLABSI contributing factors as follows.

For dressing-related requirements this included the following:

- Using a chlorhexidine gluconate–impregnated sponge.
- Maintaining a dry and intact (occlusive) dressing.
- Writing the date dressing was changed on the dressing.

For tubing-related requirements this included the following:

- Labeling tubing.
- Clearing the luer access, needleless connectors of blood.
- Using an alcohol-impregnated cap on unused lumen.
- Maintaining the integrity of the IV set by not looping into y-site.
- Using a female luer-access cap.

For documentation requirements on each shift, this included the following:

- Describing site condition (no complications, ecchymosis, sanguineous, etc) and care (change of connector, primary tubing, or dressing).
- Describing patency for each lumen (no complications, difficulty aspirating, difficulty flushing, etc).
- Describing patency documented on correct lumen color (blue, red, white, or pink).
- Describing reason for dressing change.
- Describing dressing (dry and intact, securement device intact, etc).
- Confirming dressing or implantable port needle changed every 7 days.
- Confirming last dressing change date corresponds with date on dressing.

Contributing factors may not have a measureable contribution to CLABSI rates, but for this project it is assumed that the presence of any contributing factor is deemed a risk.

FEEDBACK INTERVENTION THEORY

A review of the literature on feedback intervention was undertaken, and tools to deliver feedback intervention were developed. To be successful, feedback intervention must have parameters. In accordance with the feedback intervention theory,[10] to impact performance, feedback must be timely, detail focused, delivered in a goal-setting context, and provide information to change behavior and improve performance. Auditing performance indicators and providing feedback assists health care professionals' understanding of the care they provide and may lead to better outcomes.[9,10] The feedback intervention theory proposes that restating feedback, at a minimum, must be timely, about the right target, nonpunitive, and customizable.[11] When the data engage the individual, they become an active participant in the process, rather than a passive recipient of information. From the common cause analysis, the action plan was to design a unit case report and personalized nurse report card template.

STUDY QUESTION

In the direct bedside nurse population, will unit case reports and personalized nurse report cards lower the number of CLABSI contributing factors found on visual and documentation audits over a 16-week period?

METHODS

Ethical issues

Prior to electronic medical record documentation review and manager contact, the institutional review board of the health care system granted exempt status and waived informed consent because there was no collection of personal health information and no alterations of care. The venous access nurses conducting the audits were not aware of the content of the unit case reports or which nurses received report cards.

Setting

Elements of the local care environment, a 715-bed health care system comprised of 2 acute care community hospitals in Southwestern Florida, that influenced the improvement were having access to weekly visual audits, working in a *Hospitals & Health* Most Wired hospital. and allowing nurse leaders time to conduct quality improvement projects.

Sample

The sample was comprised of inpatients with a condition requiring a central line on critical care and medical-surgical units whose central line had at least 1 contributing factor on the visual audit. The population was adult patients >18 years of age with a peripherally inserted central catheter, implantable venous access (port), or other central line.

Intervention

The intervention was comprised of the confidential feedback of CLABSI contributing factor audit data, unit case reports, and personalized nurse report cards. The delivery of the intervention is displayed in Figure 1.

For 16 weeks, weekly visual audits were performed by a venous access nurse on every central line. From the list of lines identified with a dressing- or tubing-related CLABSI contributing factor, the certified nurse specialist (CNS) and doctorate of nursing practice (DNP) student reviewed and printed a copy of the patient's central line documentation. From the audit results and the documentation, a unit case report was written which included the following:

- Date the visual audit occurred.
- Nurse(s) employee identification number (based on their employee identification number, a sequential number given to all new employees)