2014 Gage Awards

Reference #	7492100
Status	Complete
Name of hospital or health system	UC Davis Medical Center
Name of project	Reducing CLABSI events in the Nursing Unit
CEO name	Ann Madden Rice
CEO approval	Check here to confirm that your CEO approves of this project being submitted for a 2014 Gage Award
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Within which of the two categories does your application best align?	Quality

1. Provide a brief description of the project. (This section should resemble an abstract for a poster presentation or an abstract for a peer reviewed journal. Include an objective, data sources, study design, findings, and conclusions.)	Introduction: UC Davis Medical Center (UCDMC) is a 619 bed, Level-1 academic medical center with a 35-bed combined Medical Oncology and Stem Cell Transplant (SCT) unit. Historical attempts to improve our central line-associated blood stream infection (CLABSI) rate compared to the national benchmark set by the National Healthcare Safety Network (NHSN) had been unsuccessful. Herein, we created a multidisciplinary “tiger” team to address the infection rate, actions to improve, and data to show evidence of the successful initiative. Methods: The Rapid Cycles of Improvement (Plan-Do-Study-Act) Model was used to retrospectively evaluate CLABSI events from September 2012-June 2013. A six-member interdisciplinary team was formed to identify the types and number of infections, and created an action plan to mitigate CLABSI events in the department by implementing a deep root-cause analysis in conjunction with evidence-based practices. Proper documentation, surveys, and feedbacks from all constituents involved allowed for an effective way to capture and implement a novel approach within UC Davis Medical Center to mitigate the number of CLABSI events that occurred within the hospital setting. Implementation required proper Chlorhexadine Gluconate (CHG) bathing techniques, along with proper nurse and patient education. Results: Root-cause Analysis identified 12 infections in three categories - Common Skin Commensals (CSC) or maintenance related infections, Mucosal Barrier Injury (MBI), and unavoidable infections not associated with nursing care. Implementation of CHG bathing and education resulted in a compliance rate of 47% for CHG bathing and 11% for room bathing. Subsequent surveys with staff identified barriers to compliance and further initiatives were put into place to alleviate staff. Three months after implementation compliance improved to 89% for CHG bathing and 80% for room bathing. Adherence to the Institute for Health Improvement (IHI) CLABSI bundle compliance for the Central Line Bundle checklist climbed from 45% to over 90%. Conclusion: The creation of a CLABSI prevention protocol has eliminated CSC CLABSIs and decreased permanentline CLABIs to zero. Temporary line infections are still not outpreforming benchmark. However, we are trending downward and our last quarter depicts the lowest rate UC Davis Medical Center has witnessed within the past year. Impletmentation of the Institute for Healthcare Improvement’s (IHI) CLABSI bundle, CHG bathing, and wiping down rooms has led overall reduction in CLABSI events. Continual process improvements are underway to address preventable future CLABSI events.

1A. Attachment, if applicable (Applicable examples include a peer reviewed journal article, other content published in the literature, or a presentation at a national meeting)	All.Methods.docx (780k)

2. Describe the methods use in this project. Include where, why, and how the project was accomplished.	The Rapid Cycles of Improvement (Plan-Do-Study-Act) Model was used as a framework for the project. A multidisciplinary "tiger team" was formed, consisting of three staff nurses, a Quality and Safety Nurse Champion, a Infection Preventionist, and the Oncology Nurse Manager. The team performed a retrospective review of infections between September 2012 and June 2013, which resulted 27 CLABSIs. The average infection rate of 2.7 CLABSIs per month was well above the national benchmark of 1.7 (1.7 is the average of permanent line 1.4 and temporary line of 2.0). Root Cause Analysis (RCA) was conducted by the team to identify the types of infections that occurred. Data obtained from January-May 2013 were reviewed, which resulted in 12 CLABSIs. These infections were stratified into three groups: Mucosal Barrier Injury (MBI), Common Skin Commensal (CSC), and "other" (Table 1). MBI CLABSIs are generally considered to be not preventable, while CSC CLABSIs are bloodstream infections that are caused by microbes that live on the skin; these infections can be caused by inadequate line care. The classification of "other" was used to describe those infections for which it was not possible to determine the cause of infection with certainty. A review of the literature by the team resulted in an evidence-based practice prevention of CLABSI, which included Chlorhexadine Gluconate (CHG) patient bathing, through daily environmental cleaning, and adherence to the Institute for Health Improvement (IHI) CLABSI bundle (see Citation and Protocol attachment). A process was developed for patient bathing using CHG as well as environmental cleaning, including disinfection of all high-touch areas. All nurses were educated about each process prior to roll-out of the changes, which were implemented and documented from May-November 2013. During the implementation phase of the project, nurses were provided with "just-in-time" coaching on patient bathing, room cleaning, and CLABSI maintenance bundle adherence. Emails and posters containing educational materials were also distributed to all staff (Educational attachments). One month after initial implementation, nurses were surveyed and asked to identify perceived barriers to application of the evidence-based practices suggested. Barriers identified by the nurses were: finding time to perform room cleaning, inadequate equipment to perform tasks correctly, patient complaint of CHG smell, and making the bathing part of the shift routine (Graph 1a,1b). In order to address the equipment barrier, a bathing station with all necessary supplies was created by the Quality and Safety Nurse Champion, and "par" numbers of equipment were increased to meet the demands of the floor. Patients affected by the smell were offered masks. Ongoing staff education was also performed based on staff-identified areas of confusion related to the changes.

3. Describe the results of the project. What data was used to support improvement results?	Upon completion of a root-cause analysis to identify all CLABSI events from January – May 2013, we identified 12 CLABSI events which were categorized into three classifications (Table 1). The team lead by the Infection Prevention came up with an education plan to staff to address the reduce CLABSI events that are within their control. Using proper CHG bathing techniques and wipe down methods, drastic improvements were seen (see Results attachment). Educational materials, lectures, and emails were sent out to all nurses on the floor. Initial compliance one month after project implementation was poor, with 47% for patient CHG bathing, and 11% for room cleaning (Graph 1a, 1b). Surveys were sent out to all individuals to identify barriers. Survey results identified key barriers to be “finding time to perform room cleaning”, “inadequate equipment to perform tasks correctly” (Graph 1b). Just-in-time coaching, removal of barriers and additional staff education increased the compliance rate for bathing and room cleaning to 89% and 80%, respectively. Additionally, adherence to the Central Line Bundle checklist increased from 45% to over 90% over the three-month period. Implementation eliminated CSC CLABSIs and decreased permanentline CLABIs to zero (Graph 2, 3a,3b).
3A. Attachment, if applicable (Only graphically displayed data such as charts will be accepted. Data should include baseline and improvement data)	gagefinalgraphs.docx (84k)
4. Describe what happened as a result of the project. Was the improvement related to the intervention? Can the project be duplicated by other organizations?	As a result of the CLABSI initiative, compliance has increased and CLABSI events have significantly decreased over the past months. CSC CLABSIs were completely eliminated and we demonstrate a decrease permanentline CLABSIs to zero which is the first time in four quarters. Though temporary line infections are still not outpreforming benchmark, we are trending downward and quarter four is the lowest rate within a twelve month period (Graph 3a, 3b). These results are a true testament to having the stakeholders at the table, buy-in from the staff and implementing the Institute for Healthcare Improvement’s (IHI) CLABSI bundle, CHG bathing, and wiping down rooms. Creating a proper quality improvement team to identify and act will allow any organization to re-evaluate how to curtail CLABSI events, and barriers to decreasing such events can be clearly identified.

5. Describe how patients, families, and if appropriate, community was included in the work.	In order to improve the clinical outcome the multidisciplinary tiger team realized that they needed to form a partnership with patients and families. We found forming this partnership eliminated the barriers to CHG bathing and compliance increased. Knowing that they have the right to refuse, we standardized the teaching for the staff and family members on the procedure of CHG bathing and wiping down the rooms. We had buy-in from the families and volunteers on wiping down the rooms and patients using CHG in the showers. After implementing the importance of CHG bathing and room wipe downs with our nurses, two patients developed CSC CLABSI. Nursing interviewed each patient on their barriers and found that they did not understand the importance of the procedure or that it decreased the chances of infection. We educated the patients and families on the importance of CHG bathing with the decrease amounts of CSC organism being located on the skin. Upon completion of educating the patients, we saw no further infections.
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