Chlorhexidine Gluconate Bathing in Hospitalized Patients: Reducing Barriers and Increasing Compliance Rate

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Chlorhexidine Gluconate Bathing in Hospitalized Patients:

Reducing Barriers and Increasing Compliance Rate

Maria R. Dominguez

NURS 653: Internship: Clinical Nurse Leader

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School of Nursing & Health Professions
Chlorhexidine Gluconate Bathing in Hospitalized Patients: Reducing Barriers and Increasing Compliance Rate

Abstract

The organization-wide implementation of Chlorhexidine Gluconate (CHG) bathing protocol is one of many measures used to help reduce hospital-acquired infections (HAI) at the 30-bed, Medical-Surgical Specialties and Palliative Care Unit. CHG bathing compliance rate for the unit for the week of August 14-20 was 82.9%, with a 40.4% refusal rate. This is below the 90% desired performance rate. The purpose of this project is to identify the barriers to CHG compliance and to implement interventions that will aid in reducing these barriers and increase CHG compliance rate. Patient declining was identified as one of the main barriers to CHG bathing. The specific aim of the project is to reduce the number of patients who decline CHG bathing in the unit by 30% by the end of November 2016. A cause and effect analysis was done to explore the reasons for noncompliance to CHG bathing. Direct observations, nurse surveys, and EMR documentation reviews were performed to gather data. Results revealed the need to provide teaching and visual reminders to staff nurses and provide education to patients in the efficacy of CHG bathing in infection prevention. Staff nurses received education on CHG bathing protocol. Visual reminders were placed in common areas. Informational handouts were placed in each admission folder to help patients understand the benefits of CHG bathing as well as the potential risk of their refusal. CHG bathing compliance rate for the week of November 6-12 was 90.9%, with a refusal rate of 31.5%. This showed an 8% increase in compliance and a 22% reduction in the number of patients refusing CHG bathing.
Chlorhexidine Gluconate Bathing in Hospitalized Patients: Reducing Barriers and Increasing Compliance Rate

Introduction

Over recent years, hospital reimbursements are based on performance with patient satisfaction and the ability to prevent “never-events” such as hospital-acquired infections (HAI). Hospitals struggle to improve processes and seek out the best practices to keep patients safe and prevent sentinel events (Sievert, Armola, & Halm, 2011). Approximately 1.7 million patients suffer from HAIs in the United States yearly, with nearly 100,000 deaths (Dick et al., 2015). Recent figures estimate the mortality rate of central line-associated bloodstream infection (CLABSI) is 35% or 14,000 to 28,000 deaths per year (Jock, Emery, Jameson, & Woods, 2016). In addition, patients who develop CLABSI may increase their length of hospital stay for up to 24 additional days (Jock et al.). Due to the significant costs and effects on patients’ health, the U.S. Department of Health and Human Services has included the reduction of CLABSI as part of its national Healthcare Associated Infection Action Plan (Jock et al.). Chlorhexidine gluconate (CHG) bathing of in-patients is one of many measures used by various facilities to help prevent CLABSI.

The site for this quality improvement project is a large, nationally recognized academic medical center located in Northern California. The microsystem of focus for this project is a 30-bed acute care unit that manages adult medical-surgical patients with a wide variety of medical conditions and healthcare needs. Patients admitted to the unit typically are coming from the post-op surgical floor unit, the emergency department, and the ICU. Other patients are directly admitted from a skilled-nursing facility or their home. The average length of hospital stay for
the Medical-Surgical unit in 2016 is 5.56 days, a slight increase from 2015 data, 5.42 days (UCDHS, 2016). The average varies greatly depending on the patient’s stability and the severity of the medical condition.

**Clinical Leadership Theme**

This clinical nurse leader (CNL) project focuses on the essential element of *Quality Improvement and Safety*. As a CNL, I will use performance measures to assess current nursing practices in regards to CHG bathing in hospitalized patients and identify potential barriers to compliance. Nurse surveys and EMR documentation reviews will be used to assess current nursing practices. A cause and effect analysis will be done to identify potential barriers to daily CHG bathing compliance. I will use data collected to improve patient safety and promote the best possible outcomes and deliver the highest-quality, most current evidence-based practices (AACN, 2013).

**Statement of the Problem**

Despite having a nursing policy in place that states that CHG bathing to be used daily instead of soap and water for all patients, compliance rates are below the desired performance level on the Medical-Surgical Specialty Unit. The most recent data acquired for the week of August 14-20, 2016, showed that actual compliance rate was 82.9%, below the desired goal of 90%. To be considered compliant, the staff nurse must either document that CHG bathing was performed on the patient, CHG bathing is contraindicated, or the patient/family declined CHG bathing. Further assessment of the data revealed that out of the 82.9% compliance rate, 40.4% are refusing CHG bathing (UCDHS, 2016). Therefore, the purpose of this project is to identify the barriers to CHG compliance and to implement interventions that will aid in reducing these
barriers and increase actual CHG compliance rate for the unit. This project seeks to determine whether implementing planned interventions will aid in reaching the goal.

**Project Overview**

The aim of this project is to improve the process of CHG bathing compliance on a Medical-Surgical Specialty and Palliative Care Unit. The process begins with offering to bathe the patient using CHG wipes or shower with CHG soap, instead of basin bath with soap and water. The process ends with proper electronic medical record (EMR) documentation of CHG bathing by the staff nurse. By working on the process, we expect (1) improved patient safety and quality of care, (2) increased patient satisfaction, (3) improved communication between staff and patient, (4) a reduction in healthcare-acquired infections (HAI), and (5) a reduction in hospital length of stay. It is important to work on this now because we have identified the need to improve (1) patient safety, (2) patient satisfaction, (3) communication between staff and patient, (4) prevention of HAIs, and (5) cost of hospital stay.

The purpose of this project is to identify the barriers to CHG compliance and to implement interventions to reduce these barriers and increase actual CHG compliance rate for the unit. The project aims to reduce one of the biggest barriers identified being patient/family declining CHG bathing. The specific aim of the project is to reduce the number of patients who decline CHG bathing in the acute care adult unit by 30% by the end of November 2016. In order to achieve this goal, a cause and effect analysis was done to explore the reasons for noncompliance to CHG bathing. Various methods were used to gather data. Documentations on the EMR were reviewed and evaluated for proper adherence to the protocol.
Direct observations were done to assess current CHG bathing practices. Nurse surveys were distributed to staff nurses to aid in identifying potential barriers and resistance to performing daily CHG bathing to all patients admitted to the unit. The specific aim of the project relates to the global aim to improve patient safety and quality of care leading to a reduction in hospital-acquired infections, a reduction in length of hospital stay, increased patient satisfaction, and improved communication between staff and patient.

**Rationale**

The CHG compliance weekly report was analyzed to identify the need for this CNL project (Appendix A). Week 1 begins on July 3, 2016 and ends on July 9, 2016. There were a total of 145 CHG bathing counts for this week. One hundred twenty-seven were classified as noncompliant and forty-five were classified as patient/family declined. Compliance rate for this week was 87.6% and there was a 31% refusal rate. Actual compliance rate for CHG bathing was 69% (UCDHS, 2016).

A cause and effect analysis was done and documented using a fishbone diagram to explore the reasons for noncompliance to CHG bathing (Appendix B). Various causal factors were identified to influence adherence to daily CHG bathing. These factors include the patients, the nursing staff, the materials and environment, technology and the process. A SWOT Analysis was done to identify the organization’s strengths, weaknesses, opportunities, and threats (Appendix C).

Nurse surveys were distributed to registered nurses to aid in identifying potential barriers and resistance to performing daily CHG bathing to all patients admitted to the unit (Appendix D). Out of 24 surveys distributed, 21 surveys were collected. The nurses were asked to answer
four questions. The first question asked whether the nurses received training on how to perform CHG and whether the training that they received was adequate. All nurses answered ‘yes’ to the first part of the question. Only 13 out of 21 nurses believed that the training that they received was adequate.

The nurses were asked to list two benefits to CHG bathing. All of the nurses listed that CHG helps prevent or reduce infections. They were also asked to list three barriers to CHG compliance. They identified patient refusal and time constraints as the top 2 barriers to performing CHG bathing. Other barriers identified include CHG is contraindicated, patient’s medical condition, and staff nurses’ belief. When asked to rate CHG bathing in regards to priority level high, moderate, or low, compared to other daily nursing tasks, the response was 2, 8, and 11, respectively.

Direct observations were done to assess current CHG bathing practices (Appendix E). A total of twelve direct observations were performed on twelve different nurses. Results showed that all nurses observed performed hand hygiene, wore gloves, and changed gloves appropriately. Only 7 out of 12 nurses educated the patient about the rationale of daily CHG bathing. Eight out of 12 nurses followed proper CHG bathing technique, cleansed all exposed skin areas and appropriately used all six washcloths inside the packet, according to the manufacturer’s recommendations.

The EMR documentation was reviewed and analyzed to identify the reasons for patient refusal. Data from September 1, 2016 through September 30, 2016 was collected and included in this review. The results were charted using a bar graph (Appendix F). There were inconsistencies found in the nurses’ knowledge and practice to proper EMR documentation.
Some nurses were improperly selecting both patient/family declined and CHG bath performed in
the same patient entry.

**Cost Benefit Analysis**

A cost benefit analysis was done to determine the potential saving for the unit of this
CNL project (Appendix G). A single incident of CLABSI can lead to significant additional costs
of care delivery. In our facility, the estimated per-incident cost ranges from $12,000 to $56,000,
with an average of $36,000 (UCDHS, 2016). The variation in cost is due to the severity of the
patient’s condition and the level of care that the patient needs. According to the Sage Products
website, the cost of a six-pack CHG 2% impregnated wipes is $8.47. A one-hour educational in-
service for 48 registered nurses, with an average hourly salary of $61.75, will cost the unit
$2,964.00 (UCDHS, 2016). Paper, printing supplies, and other miscellaneous items to make
flyers and handouts are estimated to cost $1200.00. The potential saving for the unit is
$23,366.00 per CLABSI incident.

**Methodology**

The objectives of this quality improvement CNL project includes (1) to reinforce to the
nursing staff the importance of daily CHG bathing through education and visual reminders, (2) to
encourage patients to participate in CHG bathing even after they decline, (3) to improve nursing
staff knowledge and practice to proper EMR documentation, and (4) to improve communication
between nurses during shift report. Lewin’s Change Theory with its three stages was used to
guide my CNL project. The *unfreezing stage* included preparing the nursing staff for the change.
In this stage, the unfreezing of old methods and behaviors occurred to make room for new ways.
The nursing staff must be ready for the change and believe that CHG bathing is implementing
best practice for their patients. During the *change stage*, the planned interventions were implemented. Training and support from nurse leaders helped minimize resistance to change. In the *refreezing stage*, the new change was integrated into practice to become the new norm (Grossman & Valiga, 2013). Reinforcement helped ensure that the change becomes permanent.

The plan phase of the Plan-Do-Study-Act (PDSA) cycle was completed and interventions were ready for implementation. The importance of daily CHG bathing was reinforced to the nursing staff through education and visual reminders. Opinion leaders aided to help educate staff nurses who were uncertain about the practice of CHG bathing. The teaching included a review of the manufacturer’s recommendation on the proper use of CHG impregnated washcloths (Appendix H). Based on the results of the direct observations, staff nurses needed to be reminded to use one washcloth or wipes per body part, a minimum of six wipes per patient. Posters were placed in common areas, such as the staff lounge and nurses’ station, to serve as a visual reminder for staff nurses that performing CHG bathing was implementing best care practice for their patients.

The nursing staff was asked to provide encouragement to patients who initially decline CHG bathing. To aid in this process, an informational handout regarding the efficacy of CHG bathing in infection prevention was included in each admission folder. The purpose of these handouts was to act as a guide for the nursing staff while providing patient education. This helped patients understand the benefits of CHG bathing as well as the potential risk of their refusal. Caya et al. (2015) believes in the importance of patient buy-in for an intervention such as CHG bathing.
Based on the review of the EMR documentation, the need to improve nursing staff knowledge and practice to proper documentation has been identified. The unit champion provided coaching to nurses on an as-needed basis. Coaching included a review of the documentation entries that constitutes compliance. Nurses were asked to select one of the following when documenting bathing activities, (1) bath chin to toes with CHG on all exposed skin, (2) shower chin to toes with CHG on all exposed skin, (3) patient/family declined, document reason in comment, or (4) CHG contraindicated as per MD. All other entries were counted as noncompliant.

**Literature Review**

CHG is a topical antiseptic solution that has been found to be effective against gram-positive and gram-negative bacteria (Petlin et al., 2014). CHG has broad-spectrum, residual activity against many organisms with minimal adverse effects. Daily bathing with CHG reduces the patients’ baseline bacterial skin burden. The literature review supports the concept that the implementation of using CHG for bathing hospitalized patients reduces the development of hospital-acquired bloodstream infections and the risk of MDRO acquisition (Climo et al., 2013, Jock et al., 2016, & Rupp et al., 2012).

This CNL project is important for the microsystem to reach the goal of reducing HAIs and maintaining a zero CLABSI rate. Climo et al. (2013) conducted a multicenter, crossover trial to evaluate the effect of daily bathing with CHG on hospital-acquired bloodstream infections. Prior to the study, nurses were trained on the proper bathing techniques using CHG-impregnated washcloths. Climo et al. found that daily bathing with CHG-impregnated washcloths reduced the development of HAIs and the risk of acquisition of multidrug-resistant
organisms (MDRO). The rate of HAIs was reduced by 28% during the intervention period. Results of this trial revealed a reduction in the rate of central-catheter-associated bloodstream infections from 3.30 to 1.55 cases per 1000 catheter days (Climo et al.). This translates to a 53% lower during the intervention period than the control period.

Jock et al. (2016) recognized that there are numerous points of contamination in which CLABSI can develop. Some potential sources include improper hand hygiene, insertion site contamination, and extraluminal contamination (Jock et al.). Patients with major comorbidities and previous histories of HAI have an increased risk for infection. In 2009, their intensive care unit (ICU) reported 10 CLABSIIs, yielding a rate of 1.9 per 1,000 catheter days (Jock et al.). Because of this, several interventions have been implemented in an attempt to reduce HAIs. In 2015, their organization implemented the intervention called ‘nose to toes’ in which a patient is bathed from nose to toes with 2% CHG wipes. Following implementation, the unit has been able to maintain a zero CLABSI rate.

In another study, CHG bathing in the form of bed basin baths or showers were administered to patient at least three times per week to as often as daily (Rupp et al., 2012). This study consisted of a quasi-experimental, dose-ranging, staged-introduction trial in three cohorts of patients (Rupp et al.). Compliance with CHG bathing was assessed and HAIs were monitored. The results showed a significant decline in infections in all cohorts of patients during the CHG bathing intervention period (Rupp et al.). CLABSI rate decreased from 3.2 per 1,000 central-venous catheter (CVC) days to 1.91 per 1,000 CVC days during the daily CHG bathing period (Rupp et al.).
CHLORHEXIDINE GLUCONATE BATHING

Timeline

This CNL improvement project ran for three months, beginning at the end of August 2016 and was completed in the middle of November 2016. It began with an assessment of the microsystem with the aid of a preceptor. As a member of the unit-based practice council, the preceptor has been involved in numerous quality improvement projects. Unit goals for 2016 were discussed, specifically the goal to improve CHG compliance rate to at least 90%. By the end of August, a review of the current CHG protocol was done with the guidance of the quality and safety champion for the unit. The project theme and global aim were discussed with both the unit champion and the preceptor. Data analysis was used to identify the need for this CNL improvement project.

By the middle of September 2016, the nurses’ surveys were distributed to assess knowledge and identify potential barriers. A week later, direct observations were done to assess current nursing practice in regards to CHG bathing. A meeting with the infection preventionist took place at the end of September and pre-intervention data analysis was performed. With the guidance of the preceptor, the unit champion, and the nurse manager, the implementation of planned interventions began in early October and continued until the end of the month. Post-intervention data analysis was performed during the second week of November followed by an evaluation of the CNL project and the overall efficacy of the interventions. A Gantt chart was prepared to show the project outline timeline (Appendix I).

Results

An evaluation of the effectiveness of each intervention was done to measure the success of the project. A secondary survey was distributed to the registered nurses to evaluate the
effectiveness of the teaching. Out of 22 secondary surveys distributed, 20 surveys were collected. The nurses were asked to answer the same four questions from the initial survey. The first question asked whether the nurses received training on how to perform CHG bathing and whether the training that they received was adequate. All nurses answered ‘yes’ to the first part of the question. When asked about the adequacy of the training that they received, 19 out of 20 nurses agreed that the training that they received was adequate.

Post-intervention direct observations were done to assess learning of proper bathing techniques. A total of ten post-intervention direct observations were performed on ten different nurses. Result showed that all nurses observed performed hand hygiene, wore gloves, and changed gloves appropriately. All nurses provided patient education about the rationale of daily CHG bathing. The nurses showed competence in the knowledge of proper bathing techniques as evidenced by the demonstration when performing CHG bathing. Eight out of 10 nurses followed proper CHG bathing technique, cleansed all exposed skin areas and appropriately used all six washcloths inside the packet, according to the manufacturer’s recommendations. This was a 13.3% improvement in competence compared to pre-intervention data.

The Medical-Surgical Specialty and Palliative Care Unit maintained a zero CLABSI rate throughout the project. Pre-intervention data collected for the week of August 14-20, 2016 showed that CHG bathing compliance rate was 82.9% with a 40.4% refusal rate. Post-intervention data collected for the week of November 6-12, 2016 showed that CHG bathing compliance rate was 90.9% with a 31.5% refusal rate (Appendix K). This showed an increase of 8% in the overall compliance rate and a 22% decrease in the refusal rate. Although the results show improvement, the goal to reduce the refusal rate by 30% was not met. Regardless, these
interventions prove that small changes can lead to quality improvements in the microsystem with proper execution.

**Nursing Relevance**

Patients are at the mercy of health care providers when they are hospitalized. It is our responsibility to implement best practice and provide the highest standard of care to protect their safety. The organization-wide implementation of CHG bathing protocol has numerous implications in the nursing profession. A higher compliance rate is a measurement of our commitment to ensuring that patient safety is our priority. Providing continued education with staff on current practices is vital to ensure that nurses are aware of the rationale behind their interventions. This helps maintain adherence to the protocol and allows the new practice to become the norm.

Most literature reviewed examined the efficacy of daily CHG bathing. Few studies investigated implementation factors that are necessary for translating evidence into nursing practice (Caya et al., 2015). This CNL project did just that. It delved deeper than simply looking at the CHG compliance rate. This project assessed implementation factors that caused the significant number of patient refusal. It examined the system around the CHG bathing process including the nursing staff practices and patients perception of the process.

**Evaluation**

This CNL improvement project began with resistance from staff nurses and the unit champion. The initial proposal to do a project to improve CHG compliance rate was not given priority. The CHG bathing compliance rate of 82.9% was seen as an acceptable rate by staff members and other project ideas were proposed and given higher priorities. This project delved
deeper and sought to find answers to explain the high percentage of patient refusing CHG bathing. Data was misleading. The compliance rate of 82.9% did not mean that 82.9% of the patients were given daily CHG baths. This data included patients who were refusing CHG bathing. In fact, further assessment of the baseline data showed that 40.4% out of 82.9% were refusing CHG bathing. This data was never before assessed and prompted the need for this CNL project.

A cause and effect analysis was done to explore the reasons for noncompliance to CHG bathing. Direct observations, nurse surveys, and EMR documentation reviews were performed to gather data. Results revealed the need to provide teaching and visual reminders to staff nurses and provide education to patients in the efficacy of CHG bathing in infection prevention. Staff nurses received education on CHG bathing protocol. A teaching aid was used to review the manufacturers recommendation on the proper use of CHG impregnated washcloths (Appendix H). An evaluation of the effectiveness of each intervention was done to measure the success of the project. A secondary survey was distributed to the registered nurses to evaluate the effectiveness of the teaching. Staff nurses reported a higher level of competence and knowledge in proper bathing techniques.

Visual reminders were placed in common areas. An indicator board entitled “Journey to Excellence” was posted on the hallway wall with the goal to help nurses reflect on their own performance and stimulate healthy competition. Informational handouts were placed in each admission folder to help patients understand the benefits of CHG bathing as well as the potential risk of their refusal. CHG bathing compliance rate for the week of November 6-12 was 90.9%,
CHLORHEXIDINE GLUCONATE BATHING

with a refusal rate of 31.5%. This showed an 8% increase in compliance and a 22% reduction in the number of patients refusing CHG bathing.

**Conclusion**

The measurement of success of any quality improvement project depends on its sustainability. There are multiple factors that may affect the sustainability of this CNL project. These include some of the barriers that were identified during the course of this project including lack of support from the nursing staff and perceived low prioritization. Part of the sustainability plan for this project is to continue having a unit champion and to improve the perceived benefits of the staff and patients.

Having a Quality & Safety champion for the unit has helped launch this CNL project and will be key in sustaining its success. The unit champion helped by coaching nursing staff on how to educate patients on the effectiveness of CHG bathing in infection prevention. Patient buy-in increased because of this and thus, reducing the number of patients declining CHG baths. The plan is to continue coaching the nursing staff as necessary and to provide ‘just-in time’ coaching directly to nurses who fail to comply. The nurse champion will also be responsible for updating the indicator board weekly and posting the most current CHG compliance rate to remind nurses of their achievements.

Staff perception of the benefits of CHG bathing needs to be improved to sustain the changes and outcomes from this project. They must understand the value of this quality improvement project, both for the patients and the organization. Data will continuously be monitored, collected and measured to demonstrate the cost-savings and benefits to the unit. Monitoring and reporting these data will be valuable to continually engage the stakeholders.
Recognizing that implementing a change in culture is not an easy task, promoting standardized evidence-based protocols and providing expert-led educational sessions are needed to improve clinicians’ adherence and patient safety (Dick et al., 2015). Improving the organizational culture is achieved by investing in multi-faceted infection prevention programs such as CHG bathing (Dick et al., 2015).
References


Appendix A

CHG Compliance Weekly Report for Medical-Surgical Specialty Unit
Appendix B

Cause & Effect Analysis (Fishbone Diagram)

CHG Bathing Noncompliance

NURSING STAFF
- Lack of training on proper CHG bathing technique
- Staff belief that daily bathing is unnecessary
- Low prioritization given to CHG bathing
- Patient has unmanaged pain
- Patient too cold for a bed bath
- Decreased level of consciousness

MATERIALS
- Staff resistance to CHG bathing
- Time constraints
- Lack of variety of options on CHG products
- Lack of knowledge in regards to benefits of CHG bathing in infection prevention
- Patient feels embarrassed or vulnerable

PROCESS
- Resistance to change to new bathing protocol
- Lack of supply availability
- Lack of education on proper CHG bathing technique
- Room to cold for a bed bath
- Inconsistent knowledge or practice to EMR documentation

PATIENTS

ENVIRONMENT

TECHNOLOGY
Appendix C

SWOT Analysis

Strengths
- Highly skilled nursing staff
- Unit with a culture of great teamwork
- Positive support from the leadership team and Quality & Safety unit champion

Opportunities
- Improve patient safety and quality of care
- Maintain zero CLABSI rate for the unit
- Reduce HAIs
- Decrease length of hospital stay
- Reduce cost & increase revenue
- Improve patient satisfaction & HCAHPS score

Weaknesses
- No available support staff for RNs (CNAs, PCAs)
- Limited options/variety of CHG bathing products available

Threats
- Staff resistance to change
- Staff considering this change as an increase in workload
- Time constraints
- Patient beliefs in regards to daily CHG bathing

Weaknesses
- Staff resistance to change
- Staff considering this change as an increase in workload
- Time constraints
- Patient beliefs in regards to daily CHG bathing
Appendix D

CHG Bathing Nurse Survey

CHG BATHING NURSE SURVEY

The purpose of this survey is to:
- assess current practice related to CHG bathing
- seek feedback regarding specific issues that may be contributing to our current rate of compliance.
- develop an action plan to increase our current CHG compliance rate.

Directions:
Thank you for agreeing to complete this survey. Please read each question carefully and answer each question to reflect your own practice. Your answers are completely anonymous.

1. I received training on how to perform CHG bathing?    Yes          No
   If Yes, was your training ADEQUATE?    Yes          No
2. List 2 BENEFITS to CHG bathing.
   a. ____________________________________________________
   b. ____________________________________________________
3. List 3 BARRIERS to performing CHG bathing.
   a. ____________________________________________________
   b. ____________________________________________________
   c. ____________________________________________________
4. Rate CHG bathing compared to other daily nursing tasks
   a. High Priority
   b. Moderate Priority
   c. Low Priority
**Appendix E**

**Direct Observation Assessment Tool**

Please record your observations when monitoring a patient being bathed with CHG.

<table>
<thead>
<tr>
<th>Observed CHG Bathing Practices</th>
<th>Total Time: __________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Please circle your answer:</strong></td>
<td></td>
</tr>
<tr>
<td>Y    N</td>
<td>Performed Hand Hygiene</td>
</tr>
<tr>
<td>Y    N</td>
<td>Wore Gloves</td>
</tr>
<tr>
<td>Y    N</td>
<td>Changed Gloves Appropriately</td>
</tr>
<tr>
<td>Y    N</td>
<td>Educated patient about rationale and process</td>
</tr>
<tr>
<td>Y    N</td>
<td>Cleanses entire neck area well including skin folds and around lines.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Massages skin <em>firmly</em> with CHG cloth to ensure adequate cleansing.</td>
</tr>
<tr>
<td>Y    N</td>
<td>States rationale for not using soap below jaw line at any time.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Used 1 washcloth/wipes per body part (at least 6) neck, body, 2 arms, 2 legs</td>
</tr>
<tr>
<td>Y    N</td>
<td>Cleans armpit and back of knee well.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Cleans in between toes and fingers.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Cleans between all folds in perineal and gluteal area.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Wipes occlusive and semi-permeable dressing with CHG cloth.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Cleans tubing, lines, and drains closest to body (after emptying drains).</td>
</tr>
<tr>
<td>Y    N</td>
<td>Bathing is completed with no skin below jaw line missed.</td>
</tr>
<tr>
<td>Y    N/N/A</td>
<td>Uses CHG on superficial wounds, rash, and stage 1 &amp; 2 decubitus ulcers.</td>
</tr>
<tr>
<td>Y    N/N/A</td>
<td>Uses on closed surgical wounds.</td>
</tr>
<tr>
<td>Y    N</td>
<td>Allows to air dry/does not wipe off CHG</td>
</tr>
<tr>
<td>Y    N</td>
<td>CHG bathing documented.</td>
</tr>
</tbody>
</table>
Appendix F

Patient Refusal Reasons – EMR Data

CHG Refusal Reasons

- no reason documented: 45
- prefers later time: 41
- tired/wants to sleep: 21
- in pain: 4
- skin irritation: 8
- prefers shower at home: 7
- prefers family member: 4
- doesn’t like CHG: 10
- feels cold: 3
- miscellaneous: 6
- documented "pt refused": 43
Appendix G

Cost Benefit Analysis

<table>
<thead>
<tr>
<th>COST BENEFIT ANALYSIS</th>
<th>Medical/Surgical Specialty Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLABSI cost (per incident)</td>
<td>$ 36,000 *</td>
</tr>
<tr>
<td>Sage CHG 2% cloths/soap cost (per bath) - $ 8.47 ** X 1000 central line days</td>
<td>8,470</td>
</tr>
<tr>
<td>Education In-Service</td>
<td>2,964</td>
</tr>
<tr>
<td>Average $ 61.75 per hour X 48 RNs</td>
<td></td>
</tr>
<tr>
<td>Paper, Printing, &amp; Other Miscellaneous items</td>
<td>1,200</td>
</tr>
<tr>
<td>Potential Savings for the Unit (per incident)</td>
<td>$ 23,366</td>
</tr>
</tbody>
</table>

* UCDHS

** Sage Products Website
Appendix H

CHG Bathing Protocol

- Chlorhexidine gluconate (CHG) replaces routine bathing for entire ICU stay.
- Do NOT use soap below the jawline. Certain soaps and lotions can inactivate CHG.
- Only use CHG-compatible lotions and/or barrier products.
- Dispose of all cloths in the trash. Do NOT flush.

**BATHE WITH CHG USING FIRM MASSAGE TO REMOVE BACTERIA**

**INCONTINENCE:**
- Clean with chux and water, NOT soap.
- Then bathe with CHG cloths, air dry.
- Use as many CHG cloths as needed.
- Apply CHG compatible barrier.
- Repeat throughout the day, as needed.

**LINES AND TUBES:**
- CHG is safe on lines, tubes, and devices.
- Bathe with CHG right up to dressing.
- Okay to bathe over occlusive dressings.
- After bathing skin, clean 6 inches of tubes/Foley nearest patient.

**ONLY USE CHG CLOTHS BELOW THE JAWLINE**

1. Neck, shoulders, and chest.
2. Both arms and hands.
3. Abdomen then groin and perineum.
4. Right leg and foot.
5. Left leg and foot.
6. Back of neck, back, and then buttocks.

Skin may feel sticky for a few minutes. Do NOT wipe off. Allow to air dry.
Appendix I

GANNT Chart

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-May</td>
<td>Microsystem Assessment</td>
</tr>
<tr>
<td>19-Jun</td>
<td>CHG Policies &amp; Procedures Review</td>
</tr>
<tr>
<td>9-Jul</td>
<td>CHG Bathing PDSA</td>
</tr>
<tr>
<td>29-Jul</td>
<td>RN Survey Distribution</td>
</tr>
<tr>
<td>18-Aug</td>
<td>Direct Observation of CHG Bathing</td>
</tr>
<tr>
<td>7-Sep</td>
<td>Pre-Intervention Data Analysis</td>
</tr>
<tr>
<td>27-Sep</td>
<td>Intervention</td>
</tr>
<tr>
<td>17-Oct</td>
<td>Post-Intervention Data Analysis</td>
</tr>
<tr>
<td>6-Nov</td>
<td>Evaluation</td>
</tr>
<tr>
<td>26-Nov</td>
<td></td>
</tr>
<tr>
<td>16-Dec</td>
<td></td>
</tr>
</tbody>
</table>
Appendix J

CHG Compliance Weekly Report for Medical-Surgical Specialty Unit

Post-Intervention

![CHG Compliance Weekly Report](image)
Appendix K

Results

Pre- and Post-Intervention Results

Aug 14-20 Pre-Intervention: 82.9%
Nov 6-12 Post-Intervention: 90.9%

Aug 14-20 Pre-Intervention: 40.4%
Nov 6-12 Post-Intervention: 31.5%

Compliance Rate
Refusal Rate