Goldberg Innovation Award

The Award

The Goldberg Innovation Award is given in recognition of an innovative process or technology that supports long term care hospitals (LTCHs) and is usually presented in conjunction with the NALTH Annual Meeting. All employees and professional staff associated with NALTH member facilities in good standing are eligible to submit entries. The overarching principle in the review process is innovation. Please see the current Call for Submissions for details.

2010 Goldberg Innovation Award Recipient

Holy Family Medical Center
Des Plaines, Illinois

Reducing Long Term Care Hospital (LTCH)
Central Line Associated Bloodstream Infection (CLABSI) Episodes

Marti Edwards, Mark Palmer, Mary Jane Cullinan, Kathy Hollich, Shelami Cunanan and the entire Plan-Do-Study-Act (PDSA) CLABSI Team

Introduction

Our 105 bed Long Term Acute Care (LTACH) hospital, ranks in the top 5% acuity among all LTACHs nationwide based on publically available data on Medicare case mix index. Over seventy-five percent of our LTACH's patient population requires central line catheters.

Infection control surveillance identified a CLABSI rate of 2.8 (from July 2008-June 2009) above the National Healthcare Safety Network (NHSN) benchmark for medical ICUs of 2.4 per 1000 central line catheter days. Central line associated blood stream infections (CLABSI) are a common complication of central line catheters. In 2009 our LTACH had 49 episodes of CLABSI(s). A large percent of the patients admitted are colonized with multi-drug resistant organisms (MDRO). The cost per episode was valued at approximately $10,000 per case in additional pharmacy costs and related medical interventions (14 charts reviewed, average $10K per case).

Innovation Abstract

A PDSA (Plan-Do-Study-Act) multi-disciplinary team was formed to analyze the process and find the root cause(s) of the high CLABSI rate. The team adopted a new and unique paradigm from acute care evidence, implementing a Pilot Study on a North unit, using a 2% chlorhexidine bathing product. On this unit the CLABSI rate was reduced by 47% in the three-month pilot study, and the overall LTACH CLABSI incidents were reduced by 35%. The overall reduction in CLABSI incidents are used herein to meet the objectives of the Goldberg Award.

Team Objective

Reduce the CLABSI rate in a cost effective manner.

Method

Using the PDSA process improvement method, the team analyzed the cleaning practice of central line catheters and patients, and developed solutions to solve the root causes of each identified practice variation. North unit was chosen as the beta site for this analysis.

The PDSA team identified:

- Staff and product variations in patient bathing.
- Traditional soap and water bathing practice does not fully sanitize the patient's skin, and has a limited effect on the bacterial skin burden.
- The North unit had an individual CLABSI rate of 5.1 incidents per 1000 patient days from July 2008-June2009.

A recent article published by the Joint Commission, "Inside Joint Commission" February 1, 2010, has shown that a SICU in a North Carolina trauma center has significantly reduced their CLABSI rate using 2% chlorhexidine gluconate impregnated bathing cloths. Another article from Clinical Infectious Diseases references a supporting claim.

Solution to Root Cause: "Bath-by-Numbers"

A four month infection control intervention entitled by the team as "Bath-by-Numbers" was implemented in October 2009. The 2% chlorhexidine pre-packaged bath wipes and warmers for the trial period were provided. The product is packaged with six bathing wipes designated for use in a particular order to bathe a patient in a precise method.

The step-by-step bathing method associated with the chlorhexidine bath wipe eliminates nursing bathing technique variation, sanitizing the patient's skin with less labor (less time). The patient's skin remains sanitized for 24 hours, reducing potential contamination of the central line apparatus, the Root Cause of the PDSA Team's objective.

Goldberg Award...*continued on next page*

In partnership with the supplier, this LTACH also created a training video depicting the repeatable, step by step, Bath-by-Numbers technique. A physician from the Division of Infectious Diseases at an unaffiliated county hospital volunteered to demonstrate the product for the video. All shifts of the North unit were in-serviced by nursing education using the video.

Measurement

The "Bath-by-Numbers" Pilot Study measures were:

- Statistical Process Control Chart (SPC) of pre/post Pilot CLABSI Rate for the North unit
- SPC Chart of pre/post Pilot CLABSI Incidents for this LTACH
- Staff Product Evaluation
- Financial Analysis: Labor Savings and Lost Revenue

Uniqueness

The creation of the "Bath-by-Numbers" method is unique to LTACHs because much of the published evidence exists only for acute care hospitals, where the main benefit of reducing the CLABSI incidents is a reduction in the patient's extended Length of Stay (LOS), due to acquiring the infection.

Pilot Study Implementation Results

The results were compared in the pre- and post-pilot intervention time periods:

- 47% decrease in the monthly CLABSI Rate (4.3 down to 2.37) on the North unit.
- 35% decrease in the monthly CLABSI Episodes (4.6 down to 3) of this LTACH.
- 29% decrease in bathing labor time (35 min. down to 25 min per patient)
- $5.00 per patient bathing cost increase (basin-soap method cost miniscule)

The pilot study's effect on the entire LTACH was 35% reduction in the number of CLABSI episodes. The LTACH patients experienced a total of 49 CLABSI episodes from July 2008 – June 2009.

Current government reimbursement policies have historically covered theses costs.

Future indications of CLABSI episodes are considered Hospital Acquired Conditions by CMS, and will no longer be reimbursable. Below we looked at two scenarios: future and current financial reimbursement.

Financial Impact using future reimbursement

Medical Intervention Cost Reduction (future reimbursement)

49 episodes/yr x 35% reduction x $10,000 additional costs = $171, 500

Labor Cost Reduction (future and current reimbursement)

The bath by numbers can eliminate two positions with house wide implementation and one with central line patient implementation as follows:

31,000 patient days x 1 bath/day x 10 min/bath x 1hour/60 min = 5166 Labor Hours

5166 Hours/2080 hours per Patient Care Technician (PCT) at $20/hour = $83,200

This becomes $41,600 if used on only central line patients which represent 57% of patient days.

Material Cost Increase (for both future and current reimbursement)

31,000 patient days x 1 bath/day x $5.00/bath = $155,000

17,750 central line patient days x 1 bath/day x $5.00 bath=$88,750

Training Cost will be negligible with the on-line Bath-by-Numbers video instruction.

Net Gain (Loss) using future reimbursement

$171,500 + 83,200 - $155,000 = $99,700 if used on all patients.

$171,500 + 41,600 - $88,750 = $124,350 if used on all central line patients (17,750 central line days)

Financial Impact using current reimbursement

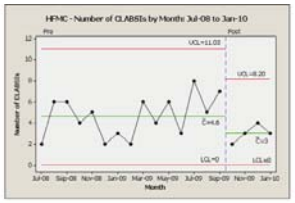
Medical Intervention Cost Reduction (using current reimbursement)

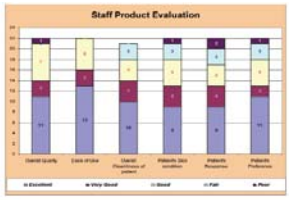
Since costs are currently reimbursed there is not a cost reduction. However the reimbursement impact is as follows. Our study revealed if we replaced the CLABSI patients with new admissions, our reimbursement would increase by $105/day. This would equate to $28,350 improved reimbursement using a 35% infection reduction rate.

Net Gain (Loss) using current reimbursement

$83,200 + $28,350 - $155,000 or ($43,450) loss if used on all patients.

$41,600 + $28,350 - $88,750 or ($18,800) loss if used on central line patients (17,750 central line days)





Lessons Learned

Implementing the "Bath-by-Numbers" method using 2% chlorhexidine impregnated bathing wipes throughout this LTACH is expected to decrease future CLABSI episodes to near zero levels, further improving the Financial Impact, beyond what has been documented herein.

A positive ROI is a good outcome; however, just as important is decreased patient suffering due to these results. With mandatory reporting, fewer CLABSIs will have an even stronger impact on the bottom line.

Patient acceptance of the bath wipe was between 80% - 97%. Variations were noted and can be found in the PDSA attachment. Employees were also pleased with the performance of the product and rated it good to excellent.

References

Holder, C., Zellinger, M. (2009). Daily Bathing with Chlorhexidine in the ICU to Prevent Central Line-Associated Bloodstream Infections. The Journal of Clinical Outcomes Management, 16(11).

Munoz-Price, MD, L.S., et al. (2009). Prevention of Bloodstream Infections by use of Daily Chlorhexidine Baths for Patients at a Long Term Acute Care Hospital. Infection Control and Hospital Epidemiology, 30(11), 1031-1035.

Munoz-Price, L.S. (2009). Long-term Acute Care Hospitals. Healthcare Epidemiology, 49, 438-443.

Paper with supporting attachments available at www.nalth.org\2010goldberg

Questions or want more information? Please contact Marti Edwards, VP of Patient Care Services, Holy Family Medical Center at medwards@reshealthcare.org

Attachment A

LTACH PDSA CLABSI PROJECT

Problem Statement: Reduce CLABSI rate to a level ≤ 2.4 Infections per 1000 Patient Days(NHSN Benchmark)

Specific Goals to be Achieved: Reduce the CLASBI Rate and maintain the NHSN Goal.

Project Scope: Begin Point: Patient arrives to LTACH with a Central Line

End Point: Patient is discharged

Team Name: CLABSI Improvement Team

Who will benefit from the outcomes of this team? Patients and Care Givers

Attachment B

Root Cause Analysis

Process Vulnerability	Why 1	Why 2	Why 3	Root Cause Solution
We do not screen patients for CLASBI upon admission (72 hours incubation period)			No policy about this	Create new Policy
The access port cleaning method is not consistant	Facility has different policies on cleaning	Various wiping techniques used	No protocol stating the use of Chlorhexadyne (chlorapreps) wipes	2% Chlorhexidine wipes to clean access port and patient in a step by step manner
Lack of cleaning insertion site properly	Lack of time / Not concerned	Not careful; ready	Lack of proper cleaning on caps	utilizing Chlorhexidine wipes to clean access port
Skin is agent that causes infection on IV access	Patient skin not throughly sanitized upon bathing with soap and water	Soap/Water and bathing efficacy is variable from PCT to PCT	Soap/Water method does not protect skin long enough.	2% Chlorhexidine wipes to clean patient skin in a step by step manner

Implementation Plan: Bath-By-Numbers

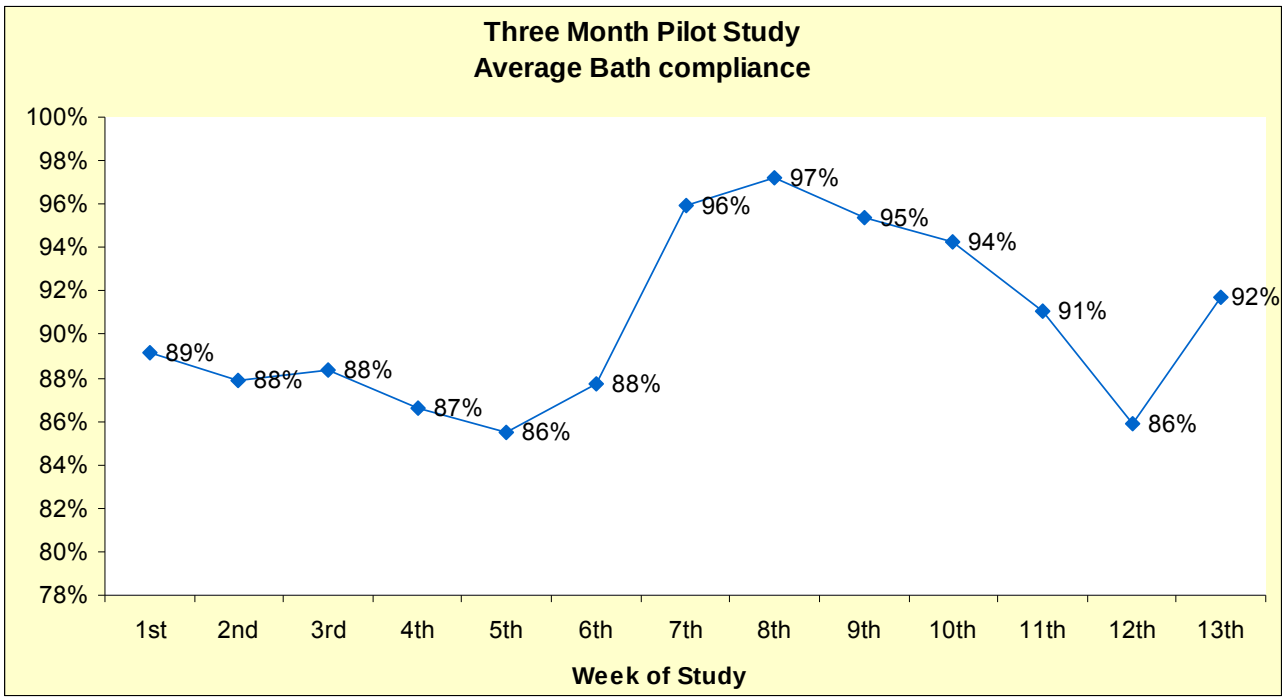
WHAT	HOW	WHO	TO WHOM	WHEN
All Nursing staff inservice in bathing techniques	demonstrate cleaning technique using dummy in auditorium setting		RN Staff and PCT covering unit North	Sep-2009
Receive Warmers	ship to , attention to Nurse Educator		Materials Management	Sep-2009
Receive Product	Nurse Educator		Materials Management;	Sep-2009
Mock demonstration	setup cart and warmer. help setup of warmer; supply Mannequin		CLABSI primary team	Sep-2009
Videotaping of Demonstration [Future HealthStream class]	Marketing		RN Staff and PCTs; Healthstream for future training	Sep-2009
Implement Pilot Study on Unit 3N	3N Nursing Staff			Oct-2009

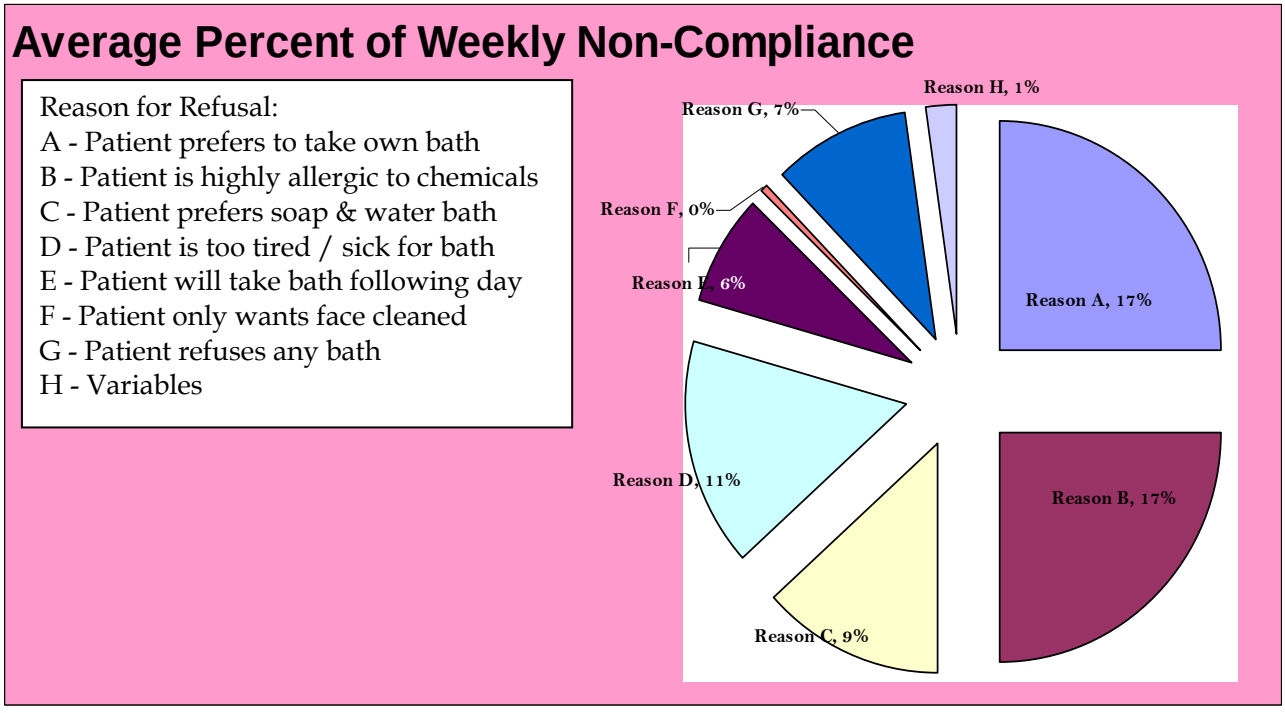
Attachment C

ACT Checklist

	Project Name: LTACH CLABSI PDSA Date: 2/13/2010
Evaluate the Team's Product	
X	Did the team accomplish its charter? Yes. 47% CLABSI rate reduction. Rate<2.4
X	What were your technical accomplishments? Utilize a 2% Chlorhexidine Bath Wipe
X	Have the improvements been standardized and error-proofed? "Bath-By-Numbers" How will the improvements be maintained? Monthly CLABSI Rate P-Charts
X	What other discoveries did you make? Initial process failpoint of cleaning the hub was not the final failpoint investigated.
X	What suggestions for future improvements can you make? Standardize bathing method for system.
Document the Team's Improvement	
X	Is your flowchart up-to-date? Does it contain your final results and conclusions?
X	Is this spreadsheet file completed?
X	Did you make a final report to the management team? Preventing Central Line Associated Blood Stream Infections (CLABSI) using 2% Chlorhexidine Bath Wipes and the “Bath-by-Numbers” Methodology: Paper/Goldberg Award Entry
Communicating the Ending	
X	How will the team's improvements be communicated to the rest of the organization?: Control Charts on Best Practice Sharepoint site
X	How can the end of this project or work sow the seeds for future initiatives? Become a model of the effectiveness in analyzing root causes of initial problems.
X	How will this team's learnings be communicated to management? Preventing Central Line Associated Blood Stream Infections (CLABSI) using 2% Chlorhexidine Bath Wipes and the “Bath-by-Numbers” Methodology: Paper/Goldberg Award Entry; National Patient Safety
X	What recommendations will the team make for follow-up after the work is completed? Present findings at the Quality Board.
The Celebration	
X	What is the appropriate way to celebrate this closure? Office Party to be held in LTACH Café, with PDSA Team, Pilot floor (3N) personnel and Management, upon completion of justification.
X	How will you say good-bye? Process improvement is continuous. More failpoints will be analyzed and new solutions piloted and implemented until the LTAC CLABSI Rate is Zero for 12 periods in a row.

Attachment D





Attachment E

[redacted]

BATHING PROTOCOL FOR [redacted]-NORTH PATIENTS

Removing bacteria with a moisturizing CHG [redacted] cloth prevents infections.

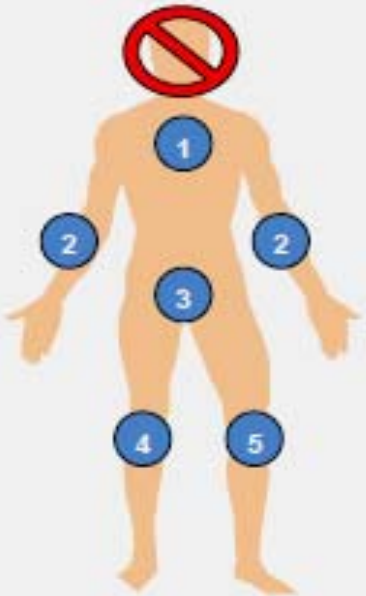
- CHG replaces routine bathing.
- DO NOT use CHG Cloths above the neck.
- DISPOSE of all cloths in a trash receptacle.
- Certain lotions will deactivate CHG; use compatible solutions only as needed.
- CHG remains active for 24* hours.

DO NOT FLUSH CLOTHS IN TOILET

Stool from Incontinence:
- Use Chux to clean bulk
- Washcloth, soap, and water for residual
- Wipe involved skin using CHG Cloths.

Foley Catheter Care:
- CHG normally used for catheter line care
- Apply around & over dressing
- Clean Foley (up to 7 in.) last & discard cloth

ONLY USE CHG CLOTHS BELOW THE NECK



1. NECK, SHOULDERS & CHEST
2. BOTH ARMS & HANDS
3. ABDOMEN, GROIN & PERINEUM
4. RIGHT LEG & FOOT
5. LEFT LEG & FOOT
6. BACK & BUTTOCKS

FRONT

BACK

*Popovich et al. ICAAC 2007 (abstract), K-1065, p344

Reducing LTACH CLABSI Episodes

Holy Family Medical Center
"Bath-By-Numbers"

Resurrection Health Care®

Holy Family Medical Center Des Plaines, IL.

Holy Family Medical Center (HFMC) – Who we are

- 188 bed, freestanding not for profit hospital operating 105 LTACH beds
- Located in Des Plaines, IL – northwest suburb of Chicago
- Part of Resurrection Health Care- largest Catholic health system in Chicagoland area with 8 hospitals, 7 long-term care facilities, ambulatory and outpatient network.
- Also provide comprehensive array of outpatient services - ex: Comprehensive Imaging center (MRI, CT), SurgiCenter, Sleep Lab, Immediate Care and Occ Health center,Substance Abuse treatment center, etc)

2010 NALTH Annual Meeting

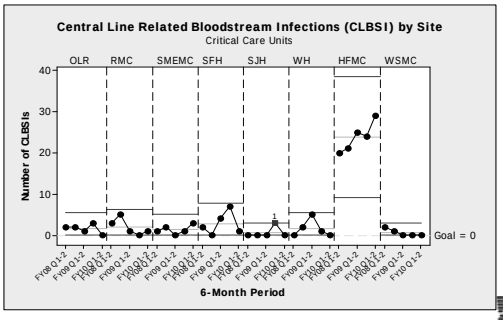
HFMC - Stats

- Top 5% of LTACHs in patient acuity (based on CMI – source: Thomson Reuters)
- 17,000 Central Line Days per Year
- 35.6 LTACH ALOS
- 33,406 LTACH patient days (2009)
- LTACH includes ICU and eICU capabilities

Background

- High Acuity: 75% patients arrive with Central Line
- Patients pre-colonized with multi-drug resistant organisms (MDRO).
- Infection control surveillance identified:
  - CLABSI rate of 2.8 episodes per 1000 Central Line Days
  - Above National Healthcare Safety Network (NHSN) benchmark for medical ICUs of 2.4
- Cost per episode valued at $10,000 per case in additional pharmacy costs and related medical interventions.
- Invited Baxter to review central line management process
- Erratic CLABSI episodes continued to persist, despite implementing Baxter recommendations

An Opportunity to Improve



2010 NALTH Annual Meeting

Approach

- Formed a multidisciplinary Improvement Team
  - Analyze the central line management processes
  - Identify all possible causes of CLABSI episodes
  - Drill down to the root cause
- Team Goals:
  - Meet or exceed NHSN Standard of 2.4 episodes/1000 Line Days
  - Balance clinical and financial outcomes

What We Discovered

Process Vulnerability:

- Central Line Catheter Hub and Tubing is susceptible to infection

Traditional Solution:

- (Clean the Hub)

Root Cause Drill Down:

- Why 1: Properly cleaned catheter hub and tubing does not entirely prevent acquiring an infection
- Why 2: Patient's skin is an agent that can cause infection
- Why 3: Patient's skin is not thoroughly sanitized with traditional Cloth/Soap/Water method
- Why 4: Cloth/Soap/Water bathing efficacy varies

Root Cause Solution:

- Use a different patient bathing technique which will sanitize the patient's skin long enough between central line hub cleaning.

Evidence:

STACH findings: Use 2% Chorhexidine Gluconate bathing products

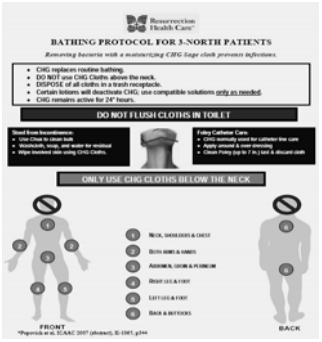
Our Solution "Bath-By Numbers"

- Found a 2% Chorhexidine Bath Wipe evidenced in Short Term Acute Care national studies
- Conducted a 3 Month Pilot Study on one floor
- Measured
  - Unit and Facility CLABSI rate and count
  - Patient Compliance with product
  - Employee Satisfaction with product
  - Time per bath
  - Number baths per day

2010 NALTH Annual Meeting

"Bath-By-Numbers"

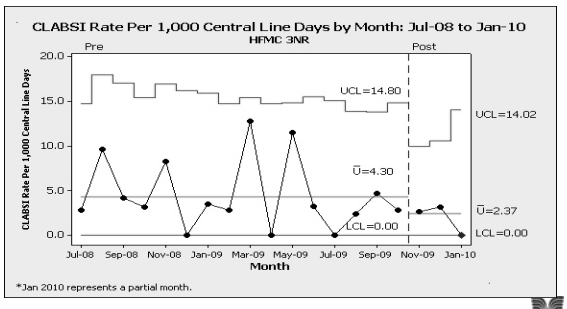
2% Chorhexidine Gluconate Bath Wipes



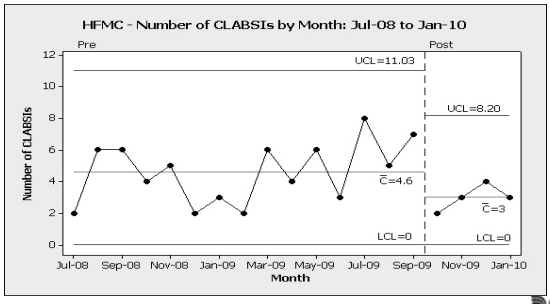
What We Achieved

- 47% Reduction in Pilot Unit CLABSI rate
- 35% Reduction in Holy Family CLABSI Episodes
- 10 Minute per bath time savings over previous cloth/soap/water method
- 95% Patient Acceptance of new bathing method
- Produced a video of the "Bath-By-Numbers" bathing method for online training

3 North Results: 47% Rate Reduction



HFMC Results: 35% Reduction



Financial benefit:

- Annual labor time savings = $83,000
- Annual Medication and clinical intervention costs savings from the 35% episode reduction level = $171,000
- Total annual cost savings = $254,000
- Annual supply expense increase in bathing materials from Chlorhexidine bath wipes = $155,000
- Net Annual cost savings: $254,000 - $155,000 = $99,000

What This Means to the Patient

HFMC takes every precaution in reducing Hospital Acquired CLABSI

Results:

- Reduced pain and suffering
- Decreased mortality rate
- Our patients have peace of mind, during their healing

What this Means to Us

- Courage to Continue
- Continuously Innovate and Improve

Thank You For

Selecting Holy Family Medical Center as the 2010 NALTH Goldberg Innovation Award Recipient

Resurrection Health Care®

For All of You, All of Your Life