# How do we get there? Variances in daily bathing practices for CLABSI prevention bundles

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## Background

APIC[1] and CDC[2] both agree daily chlorohexidine gluconate (CHG) bathing is an integral part of central line maintenance, but the "how" of CHG bathing, i.e. variety in products and nursing practices has led many facilities to question which method of CHG bathing is best. There is also an issue of continued basin bathing with non-disposable washcloths at most facilities (63%) in the United States[4] despite numerous studies finding basins to be a reservoir for pathogens[5-7]. It is theorized that variances occur for several reasons such as ease of nursing workflow and material costs outweighing healthcare associated infection (HAI) cost.

Central line bathing practices and CLABSI standard infection ratios (SIRs) at 2 facilities were evaluated when using a no-rinse, disposable washcloth (NRDW) and compared to National Healthcare Safety Network (NHSN) 'National Baseline' threshold requirements of 0.994[8]. Estimated CLABSI prevention savings to respective facilities were also assessed.

## Methods

SIR rates from CMS reported data (10/1/2017 – 9/30/2018) and current self-reported data (10/1/2018 to June 2019) were analyzed for two facilities, referred to as 'Hospital A' and 'Hospital B' and compared to national baseline thresholds ***Graph 1***. Additionally, CDC's most current progress report[9] for CLABSI descriptive statistics was utilized to gauge overall performance percentiles ***Table 1*** Cost savings from preventing CLABSIs were estimated using APIC's 'Cost of HAIs' Model[10] and compared to cost of bathing ***Figure 1***.

## Results

- Hospital A had a SIR of 0.731 (8 observed cases and 10.944 NHSN predicted cases) during the last CMS reported period, and a current SIR of 0.183 (2 observed cases) during self reported period.
- Hospital B had a SIR of 0.873 (25 observed cases and 28.627 NHSN predicted cases) during the last CMS reported period, and a current SIR of 0.560 (16 observed cases) during self reported period.
- Hospital A is on track to be in the top 25th percentile and "performing better than the National Benchmark" and Hospital B is in the top 50th percentile of performers or "no different than National Benchmark" per CDC's progress report table 2a[8].
- Both Hospital A and B use 4% CHG with a NRDW daily, have designated teams responsible for all dressing changes and to monitor compliance.
- Both facilities do a daily review for the need of central lines and noted strong support from the C-suite for CLABSI practices. Prior to changes in bathing practice, these protocols were in place and both hospitals had slight variations (self-reported) in SIRs, suggesting that bathing process and how a product is used can contribute to CLABSI prevention.
- Hospital A was the only hospital in their IDN that did not have a CMS penalty for CLABSI in 2019, however this cost analysis did not consider specific monetary awards from CMS value-based purchasing reimbursement that facilities are awarded for being below the National Baseline SIR threshold which could be considered for return on investment (ROI) analyses."

## Conclusion

In both Hospitals, CLABSI rates were below the NHSN threshold, with one facility on track to be in the top performing percentile for the upcoming reporting year. Both facilities noted that bathing product selection and, most importantly, proper training and easy to follow protocols were key components of lowering and maintaining CLABSI rates. Facilities should not only consider cost of materials but how materials will be used and the translation to cost savings when HAIs are prevented.

### *Figure 2: Hospital A: Bathing Protocol*

*480-bed teaching facility that had 12,597 central line days (10/1/17 – 9/30/18) with 3 ICUs and 7 inpatient units included in their NHSN CLABSI surveillance.*

PINK BASINS are frequently contaminated with bacteria and should NOT BE USED FOR BATHING

Disposable Bath can be used for:

- General Daily Baths *(add warm/hot water into package to fill line)*
- Daily CHG Treatment *(4% CHG is added directly to 1st package – no water – use a second pack (with water only) to gently wipe off CHG)*
- Urinary Catheter Care *(Change gloves prior to cleaning catheter tubing)*
- Shampooing *(Squeeze suds/water onto hair, massage, and comb through)*
- Quick Clean Ups *(Use as needed for hands, face, incontinence, etc.)*

It is OK to use individual dry cloths as needed – remove from package and wet under faucet. Remaining dry cloths in package can be used later

THROW OUT UNUSED WET CLOTHS – DO NOT SAVE WET PRODUCT

- DO NOT FLUSH – dispose of cloths in trash
- Product is NO RINSE – but please do PAT SKIN DRY with towel
- Keep patients warm by using bath blanket to cover exposed skin
- DO NOT ADD TOO MUCH WATER – control suds by squeezing cloth
- Use one cloth per area of body (head/face, trunk, arms, legs, back, peri-area) – may use additional packs or individual cloths as needed.
- DOCUMENT BATH IN EMR under 'ADLs' - 'hygiene'

### *Figure 3: Hospital B: Bathing Protocol*

*586-bed, level 1 trauma and neurosurgery major teaching center with 25,185 central line days reported (10/1/17 – 9/30/18).*

**Chlorohexidine Gluconate Bathing Protocol**

Indications:

- Adult Critical Care Patients
- All Adult Patients with Central Venous Catheters (CVC)
- All Pre-operative Patients

Contraindications

Avoid use of CHG on the following:

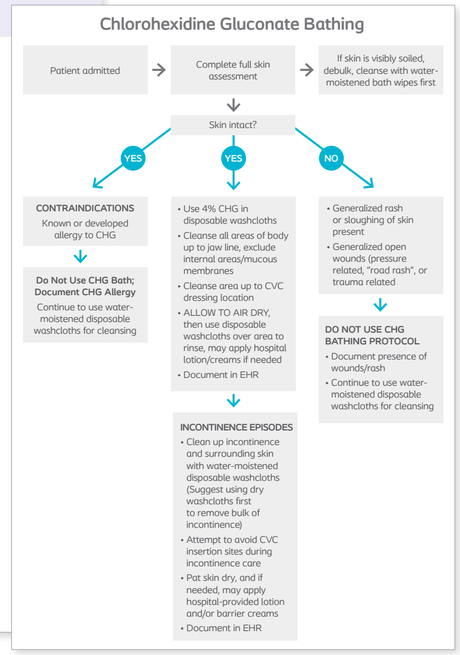
- Persons with documented allergy to CHG
- Mucous membranes/ interior areas of genitalia
- Interior surfaces of wounds
- Generalized sloughing or rash present on skin
- Areas above neckline

Expectations:

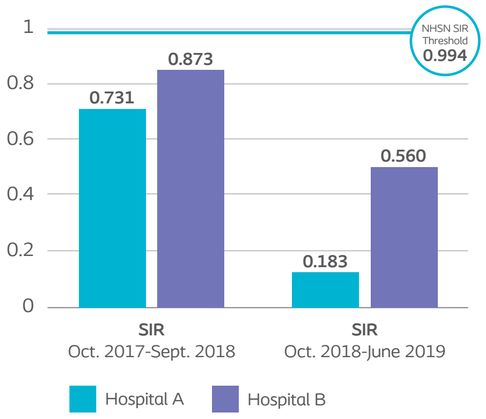
Bathing will be completed daily and documented in EHR

Usage Guidelines:

- Only use CHG on areas below the neckline to avoid skin irritation; if irritation develops, discontinue CHG bathing and notify physician
- Only use creams and lotions that are CHG compatible
- DO NOT FLUSH WIPES DOWN TOILET




### *Graph 1: CLABSI SIR Rate by Hospital*




### *Figure 1: CLABSI Cost Analysis 2019*

| | Hospital A | Hospital B |
|---|---|---|
| CMS Reported Central Line Days | 12,597 | 25,185 |
| **Previous** | | |
| Cost of previous CHG Bathing 2% Wipe (approximate) | $70,291.26 | $140,532.30 |
| Cost of CLABSIs (previously prevented: Hospital A n=2; Hospital B n=10)* | $67,236 | $336,179 |
| **Previous ROI ($)** | **-$3,055.26** | **$195,646.70** |
| **Previous ROI (%)** | **-4.35%** | **139.22%** |
| **Current** | | |
| Cost of 2019 CHG Bathing NRDW w/4% CHG (approximate) | $50,388 | $100,740 |
| Cost of 2019 CLABSI's (prevented: Hospital A n=8; Hospital B n=12)* | $268,943 | $403,415 |
| **Current (2019) ROI ($)** | **$218,555** | **$302,675** |
| **Current (2019) ROI (%)** | **433.74%** | **300.45%** |

* Cost if CLABSIs (prevented) was based off CMS denominator data[11] for respective facilities minus numerator data for 2019 and APIC's cost of HAIs calculator[10]

### *Table 1: National standardized infection ratios (SIRs) and facility-specific summary SIRs using HAI data reported to NHSN during 2017 by facility type, HAI and patient population: Central line-associated bloodstream infections (CLABSIs)*

| | Percentile Distribution of Facility-specific SIRs[3] | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HAI and Patient Population** | **5%** | **10%** | **15%** | **20%** | **25%** | **30%** | **35%** | **40%** | **45%** | **Median 50%** | **55%** | **60%** | **65%** | **70%** | **75%** | **80%** | **85%** | **90%** | **95%** |
| CLABSI, all[4] | 0.000 | 0.000 | **0.172** | **0.278** | 0.353 | 0.436 | **0.510** | **0.570** | 0.632 | 0.700 | 0.767 | 0.832 | 0.906 | 0.997 | 1.103 | 1.235 | 1.395 | 1.640 | 1.985 |
| ICUs[5] | 0.000 | 0.000 | 0.000 | 0.127 | 0.289 | 0.380 | 0.482 | 0.572 | 0.641 | 0.715 | 0.792 | 0.874 | 0.955 | 1.048 | 1.186 | 1.339 | 1.502 | 1.741 | 2.142 |
| Wards[6] | 0.000 | 0.000 | 0.000 | 0.192 | 0.322 | 0.383 | 0.454 | 0.522 | 0.588 | 0.654 | 0.733 | 0.806 | 0.877 | 0.969 | 1.079 | 1.229 | 1.433 | 1.672 | 2.133 |
| NICUs[7] | 0.000 | 0.000 | 0.000 | 0.000 | 0.214 | 0.302 | 0.418 | 0.483 | 0.576 | 0.636 | 0.699 | 0.782 | 0.842 | 0.938 | 1.048 | 1.173 | 1.389 | 1.691 | 1.988 |

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