# Using Root Cause Analysis (RCA) Framework to Assess and Improve Bundle Compliance

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## Background

A root cause analysis (RCA) aims to identify any breakdowns in processes and systems that contributed to an adverse event. Healthcare-associated infections (HAIs) are a significant source of morbidity/mortality in the United States. A bundle is a set of evidenced based practices that when performed collectively and reliably improve patient outcomes. We introduced a process called SWARM at our facility in February 2019. SWARMS are mini RCAs. Using data gathered via this new process, we seek to determine if we are achieving adequate bundle compliance in our facility.

## Methods

SWARMS are a targeted fact finding practice used by Infection Prevention for mitigating infection prevention risks. IP identifies a HAI and to obtain timely information the SWARM occurs within 5 days of notification. Presence of leadership and bedside staff is facilitated. At the SWARM we focus on the identified HAI and the circumstances surrounding it. One of the components we examine is bundle compliance. For each HAI SWARM, data regarding bundle compliance is compiled for each bundle element. After the SWARM, education occurs regarding any teaching points and opportunities that were identified. If systemic issues are identified they are escalated. In order to determine bundle compliance we compiled our SWARM data and compared our quarterly rates per bundle element.

Please see attached regarding a **CLABSI/CAUTI** for **Patient Name**, a patient who had been in our care on **UNIT**.

- IP identifies a CLABSI, CAUTI, or PLABSI and sends an HAI notification email to the Nurse Manager and the normal email distribution list
- The NM will receive an electronic notification related to the HAI
- The NM will complete all required fields within 3 days of receiving the electronic notification and assign additional participants as appropriate
- The NM or designee will follow the escalation/ notification process for unit:
  - The NM or designee will schedule the SWARM and include pertinent staff (between the hours of 0700 and 1630)
- SWARM should take place within 5 business days of receiving the initial HAI notification
  - Preferred attendees for the HAI SWARM include:
    - ➢ Frontline nursing staff
    - ➢ Attending physician
    - ➢ Ordering physician
- The NPDS or NM for the unit sends out the teaching points around the CLABSI, PLABSI, or CAUTI bundle to the entire unit staff and during quality and safety shift huddles
- The NPDS, NM, or ANM rounds on the unit for one week discussing the CLABSI, PLABSI, or CAUTI with staff, reviews the bundle elements, and asks if there are any barriers or concerns around the care of the patient

*Above: Initial prompt received via email from Infection Prevention to the attributable unit*

Thank you for taking the time to meet with us today. I am _____ with the Infection Prevention Dept. We are here today to do a SWARM, which is a mini root cause analysis, on a CLABSI/CAUTI that occurred on PATIENT NAME on DATE. The purpose of the SWARM is to get your input into possible causes for the CLABSI/CAUTI. We want to hear from you what actually occurs at the bedside. What are your processes, frustrations, work-arounds, issues with products, etc. ? We want to improve patient care and make your job easier and we feel that the best way to do that is to hear it directly from you.

CAUTI Talking Points:
- How do you collect urine samples
- How do you perform peri-care and how often
- How do you perform catheter care and how often
- Any barriers to initiating the Nurse driven foley removal protocol
- Staffing... Do you have adequate staffing?
- Do you use a buddy system for insertion
- Bladder scanner
- Are you discussing with the physician "when the foley can be removed"
- Documentation of peri-care (once a day with baths and as needed) and catheter care (every shift)
- Swab cap on sampling port

CLABSI Talking Points
- Staffing...Do you have adequate staffing
- Buddy system for blood culture collection
- Blood culture checklist used
- How do you mix the CHG for bathing
- How do you collect T2
- Bundle Labs
- How often are you changing the caps
- Tubing changes
- Is tubing dated
- Is there any residual blood left in caps
- For moist sites (groin) repeated back and forth strokes of the applicator for 2 minutes. Allow the area to dry for 1 minute. Do not blot or wipe away.
- VAMB elements : Line wipe
- What does the dressing look like
- Is dressing dated
- Does staff access trialysis catheter
- Scrubbing the hub
- Swab cap being used
- Are bath liner being used
- Is CHG bathing performed daily as a treatment

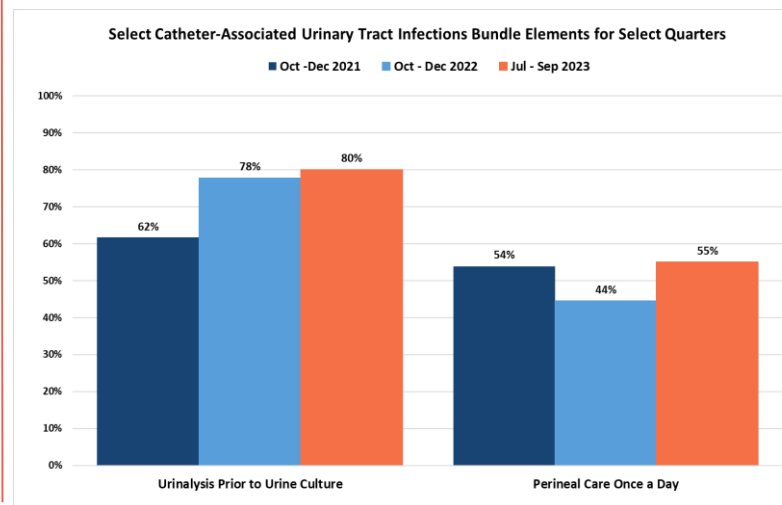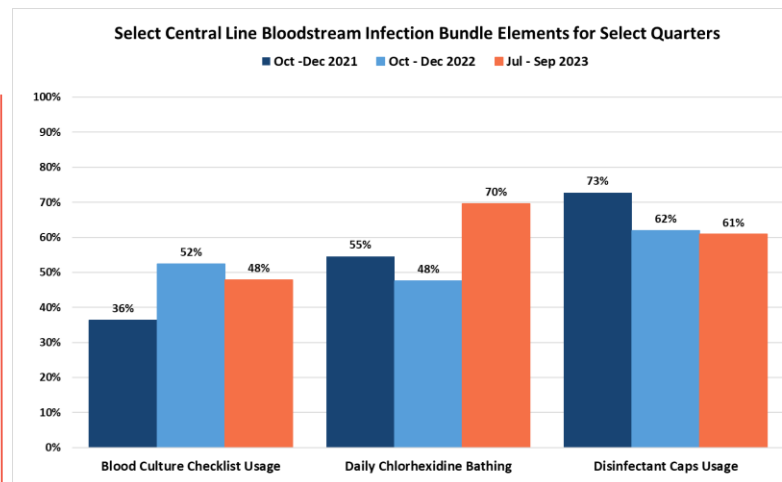*Above: Scripting used by Infection Prevention facilitating the Swarm process*

## Results

There were 163 central line bloodstream infection (CLABSI) and 174 catheter-associated urinary tract infections (CAUTI) Swarms conducted from October 2021 through September 2023. Over this time period, CLABSI Swarms results increased by 33% for blood culture checklist usage, 27% for daily chlorhexidine bathing, and 29% for daily bed linens change while decreased by 16% for disinfectant caps usage. CAUTI Swarms results increased by 29% for urinalysis could be done prior to urine culture while there was no significant change for perineal care 1 times a day.



Select Central Line Bloodstream Infection Bundle Elements for Select Quarters
(Oct -Dec 2021, Oct - Dec 2022, Jul - Sep 2023)

| Blood Culture Checklist Usage | 36%, 52%, 48% |
| Daily Chlorhexidine Bathing | 55%, 48%, 70% |
| Disinfectant Caps Usage | 73%, 62%, 61% |



Select Catheter-Associated Urinary Tract Infections Bundle Elements for Select Quarters
(Oct -Dec 2021, Oct - Dec 2022, Jul - Sep 2023)

| Urinalysis Prior to Urine Culture | 62%, 78%, 80% |
| Perineal Care Once a Day | 54%, 44%, 55% |

## Conclusion

During our review of the SWARM data, we identified considerable variability in bundle compliance levels. This analysis underscores the pressing need to strengthen adherence to infection prevention protocols and enhance staff education on these critical procedures. We'll leverage the data insights from our SWARM analysis to pinpoint areas where bundle compliance fluctuates. This will guide our efforts to improve staff adherence to infection prevention protocols through tailored educational initiatives and interventions. Leveraging the structured approach of our SWARM framework, we are committed to systematically addressing these challenges. Our overarching objective is to achieve and sustain optimal compliance standards moving forward, ensuring the highest level of patient safety and care.

**Authors have no financial or nonfinancial conflict of interest to declare.**