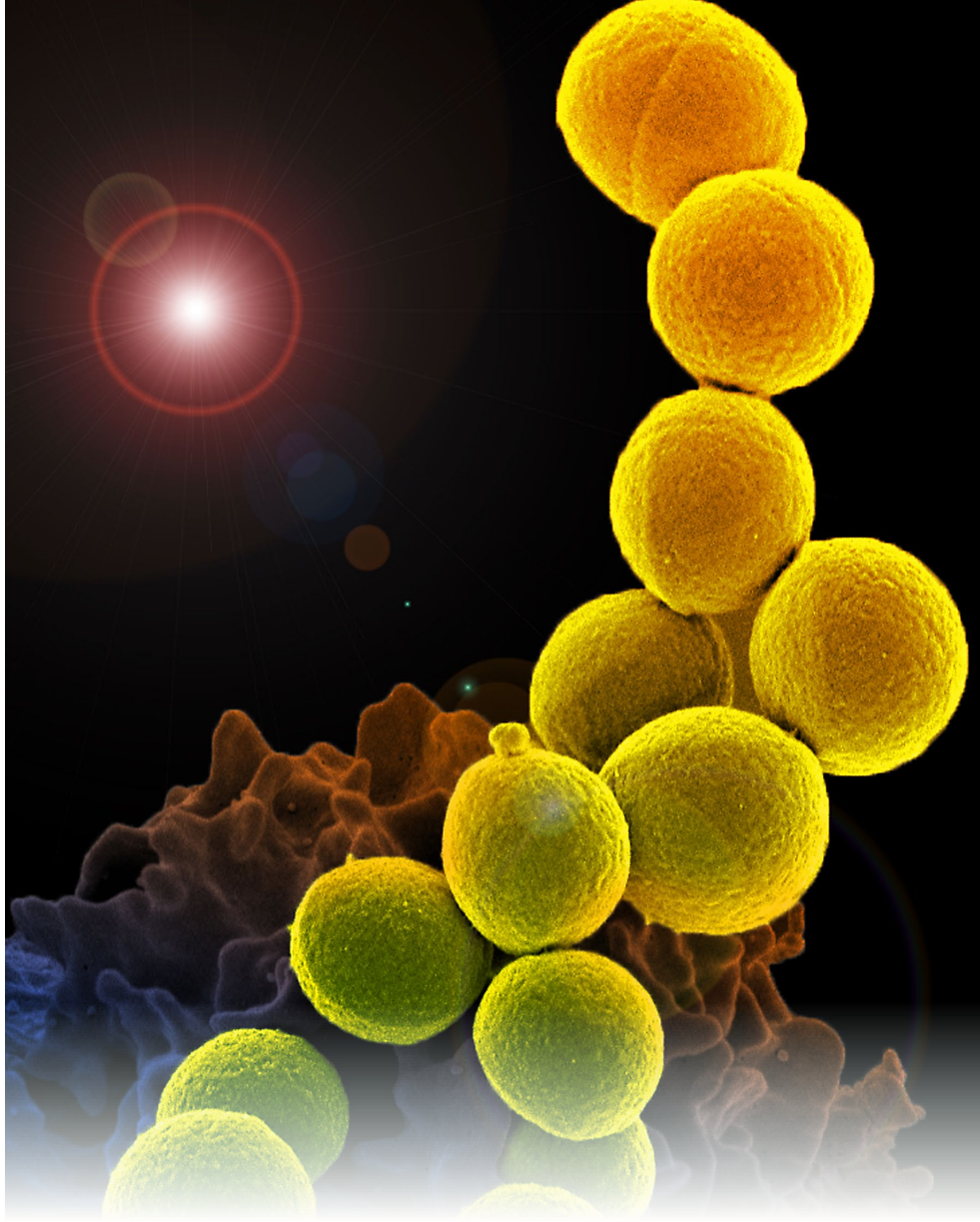
Central Line-associated Bloodstream Infections

SHEA 2022 Strategies Update



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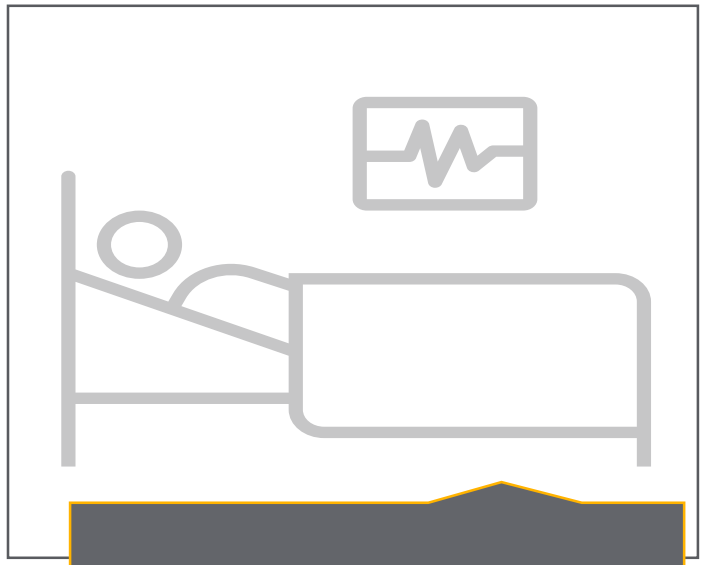
Objectives

- Discuss the Quality of Evidence metrics from SHEA
- Understand essential practices for CLABSI prevention
- Recognize additional approaches for CLABSI prevention
- Review unresolved issues related to CLABSI prevention

Society for Healthcare Epidemiology (SHEA)

- Provide guidelines for HAI prevention
- Work with groups such as IDSA and APIC
- Released an update to the 2014 CLABSI guidance in 2022
- Classify recommendations as
  - Essential Practices
    - Should be adopted by all acute care hospitals
  - Additional Approaches
    - Can be considered for use in location and/or populations within hospitals when CLABSIs are not controlled after implementation of essential practices
- Provide Quality of Evidence guidance

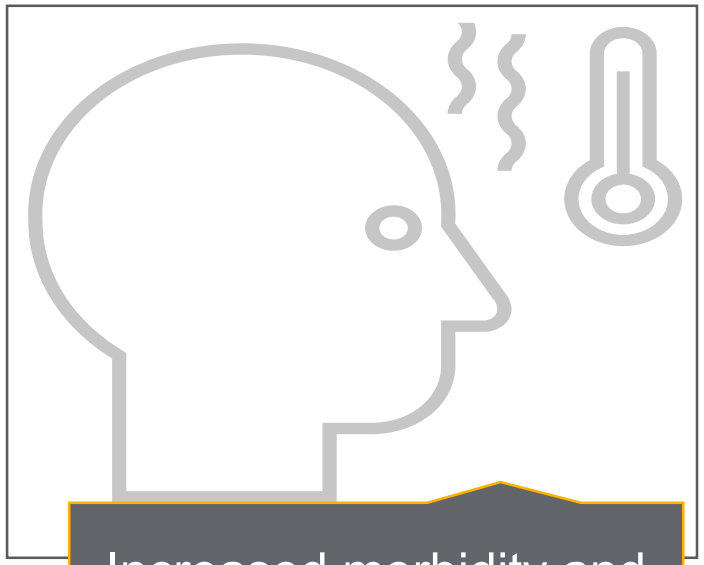
Burden of Outcomes Associated with CLABSI



Increased length of stay

Increased cost

- Costs were $32,000 higher than those without CLABSI



Increased morbidity and mortality

Summary of Major Changes Since 2014: Essential Practices (previously basic practices)

Subclavian is the preferred site for CVC insertion in the ICU

- Previous recommendation was to avoid femoral vein access

Ultrasound guidance for insertion now has better evidence

- Caveat is that the use of ultrasound guidance may inhibit strict observation of sterile technique

Chlorhexidine-containing dressings are now considered an essential practice

- Previously this was listed under a special approach if CLABSI rates remained high despite implementation of basic practices

Routine replacement of administration sets not used for blood, blood products, or lipid formulations can be performed at intervals of up to 7 days

- Previously this recommendation was no longer than 4 days

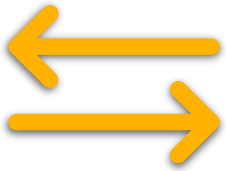
Summary of Major Changes since 2014: Additional Approaches (previously Special Approaches)

Antimicrobial ointment for the catheter site moved to additional practices	Antiseptic-containing caps remain an additional practice, even though they are supported by high-level evidence	Importance of infusion teams has been highlighted by listing it under additional practices	Sutureless securement of catheters was not discussed in the previous version
• This is because the recommendation is for a specific population – hemodialysis patients	• This is because they are not considered superior to manual disinfection (scrubbing the hub), which is an essential practice	• This was previously considered unresolved	

Quality of Evidence

High

Highly confident that the true effect lies close to that of the estimated size and direction of the effect. Evidence is rated as high quality when there are a wide range of studies with no major limitations, there is little variation between studies, and the summary estimate ahs a narrow confidence interval.



Moderate

The true effect is likely to be close to the estimated size and direction of the effect, but there is a possibility that it is substantially different. Evidence is rated as moderate quality when there are only a few studies and some have limitations but not major flaws, there is some variation between studies, and/or the confidence interval of the summary estimate is wide.

Low

The true effect may be substantially different from the estimated size and direction of the effect. Evidence is rated as low quality when supporting studies have major flaws, there is important variation between studies, the confidence interval of the summary estimate is very wide, and/or there are no rigorous studies.

Essential Practices

- Include recommendations in which the potential to affect CLABSI risk clearly outweighs the potential for undesirable effects
- Broken down into 3 subcategories:
  - Before insertion
  - At insertion
  - After insertion

Essential Practices: Before Insertion

Provide easy access to an evidence-based list of indications for CVC use to minimize unnecessary CVC placement (LOW)

Require educations and competency assessment of HCP involved in insertion, care, and maintenance of CVCs about CLABSI prevention (MODERATE)

Bathe ICU patients aged >2 months with a chlorhexidine preparation on a daily basis (HIGH)

Essential Practices: At Insertion

- In ICU and non-ICU settings, a facility should have a process in place, such as a checklist, to ensure adherence to infection prevention practice at the time of CVC insertion (MODERATE)
- Perform hand hygiene prior to catheter insertion or manipulation (MODERATE)
- The subclavian site is preferred to reduce infectious complications when the catheter is placed in the ICU setting (HIGH)
- Use an all-inclusive catheter cart or kit (MODERATE)
- Use ultrasound guidance for catheter insertion (HIGH)
- Use maximum sterile barrier precautions during CVC insertion (MODERATE)
- Use an alcoholic chlorhexidine antiseptic for skin preparation (HIGH)

More on the Subclavian Site Preference

The subclavian site is preferred to reduce infectious complications when the catheter is placed in the ICU setting (HIGH)

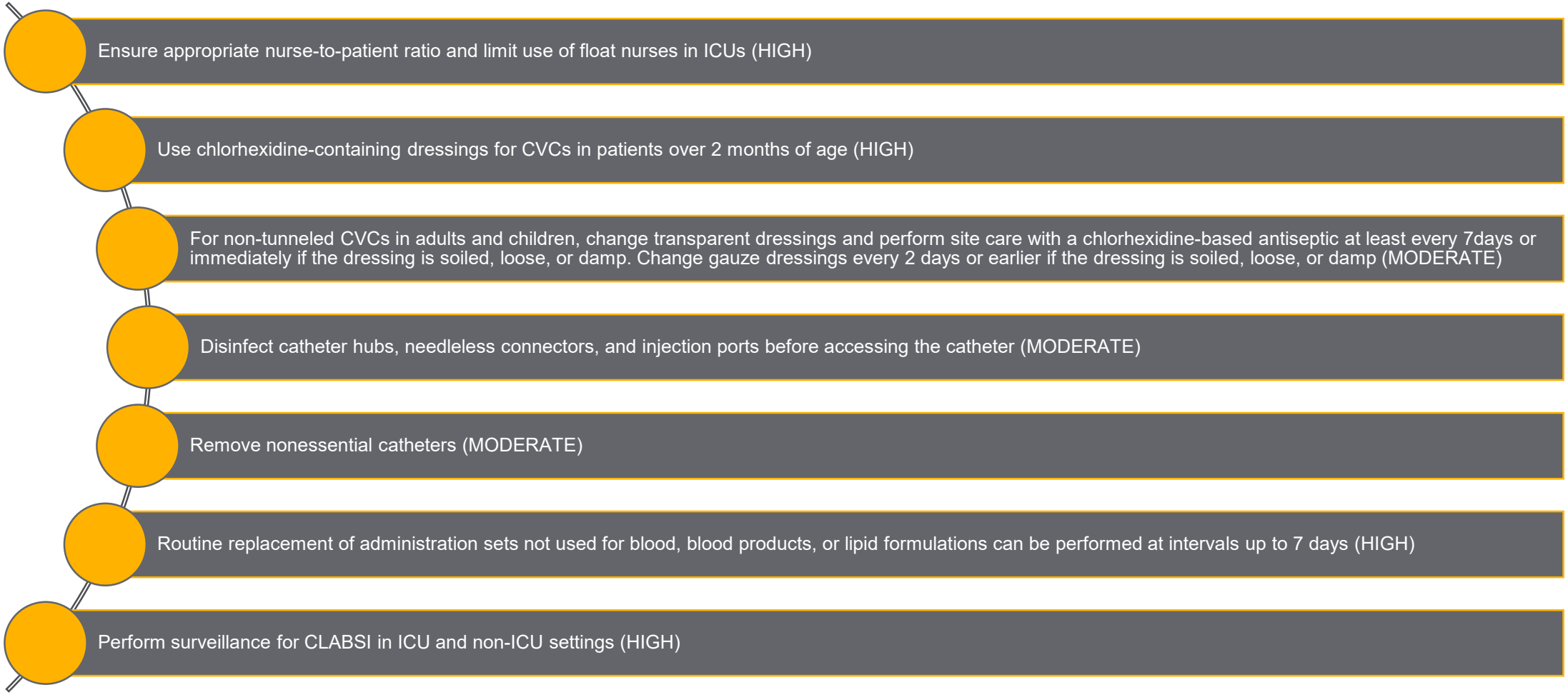
In the non-ICU setting, the risk of infection between the different sites remains unclear. Importantly, in emergent settings, ensuring life-saving vascular access in the fastest possible way may determine the choice of access site.

The risk and benefit of different insertion sites must be considered on an individual basis with regard to infectious and noninfectious complications.

- Among others, this applies to patients currently receiving or likely to require hemodialysis in whom the subclavian site is avoided due to risk of stenosis. (Note that this takes out a big proportion of our ICU population at high risk for CLABSI)

Midline catheters are increasingly being used as an alternative to CVCs for short-term vascular access, with some observational studies suggesting lower bloodstream infection risk associated with midline catheters versus PICCs and versus CVCs

Essential Practices: After Insertion



Additional Approaches

- Include recommendations in which:
  - The intervention is likely to reduce CLABSI risk but there is concern about the risk for undesirable outcomes
  - The quality of evidence is low
  - Cost-to-benefit ratio may be high
  - Evidence supports the impact of the intervention in select settings (during outbreaks) or for select patient populations

Additional Approaches

Use antiseptic- or antimicrobial-impregnated CVCs (HIGH in adult, MODERATE in pediatric patients)

Use antimicrobial lock therapy for long-term CVCs (HIGH)

Use recombinant tissue plasminogen activating factor (rt-PA) once weekly after hemodialysis in patients undergoing hemodialysis through a CVC (HIGH)

Utilize infusion or vascular access teams for reducing CLABSI rates (LOW)

Use antimicrobial ointments for hemodialysis catheter insertion sites (HIGH)

Use an antiseptic-containing hub/connector cap/port protector to cover connectors (MODERATE)

Approaches that Should Not Be Considered a Routine Part of CLABSI Prevention

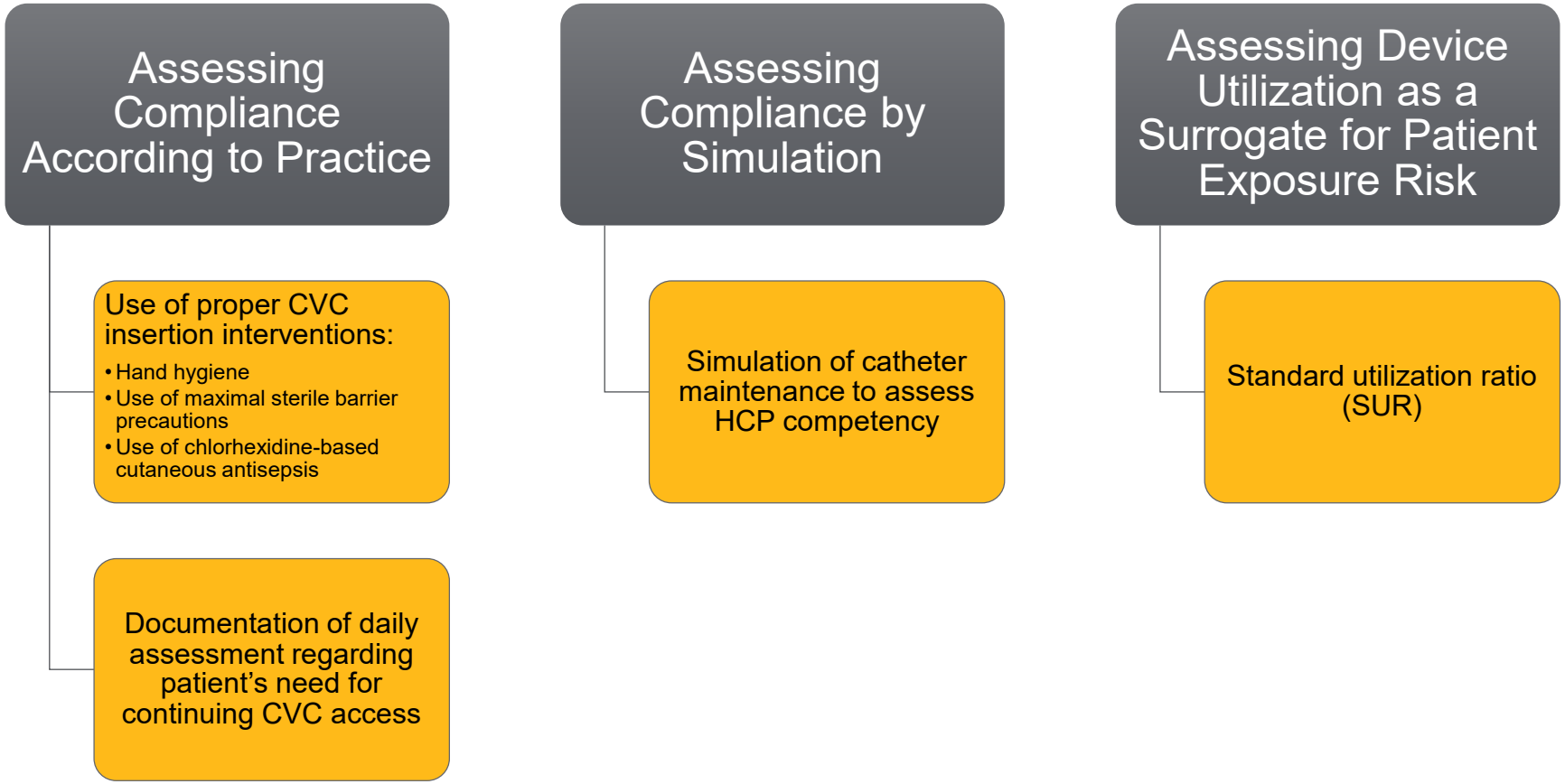
Do not use antimicrobial prophylaxis for short-term or tunneled catheter insertion or while catheters are in situ (HIGH)

Do not routinely replace CVCs or arterial catheters (HIGH)

Unresolved Issues

- Routine use of needleless connectors as a CLABSI prevention strategy before an assessment of risks, benefits, and education regarding proper use
- Surveillance of other types of catheters (eg, peripheral arterial or peripheral venous catheters)
- Standard, nonantimicrobial transparent dressings and CLABSI risk.
- The impact of using chlorhexidine-based products on bacterial resistance to chlorhexidine
- Sutureless securement
- Impact of silver zeolite-impregnated umbilical catheters in preterm infants (applicable in countries where it is approved for use in children)
- Necessity of mechanical disinfection of a catheter hub, needleless connector, and injection port before accessing the catheter when antiseptic-containing caps are being used

CLABSI Prevention Process Measures



CLABSI Prevention Outcome Measures

Assessing CLABSI Rate	Using NHSN definitions
Risk Adjustment (Report comparisons based on historic data and NHSN data, if available.)	By type of patient-care unit
	By the patient population level to reflect the care of the device, and interventions to reduce utilization

Central Line Care and Maintenance Video

Questions?

Reference

- Buetti, N., Marschall, J., Drees, M., Fakih, M. G., Hadaway, L., Maragakis, L. L., … Mermel, L. A. (2022). Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update. *Infection Control & Hospital Epidemiology*, *43*(5), 553–569. doi:10.1017/ice.2022.87