



Background

- According to the Centers for Disease Control and Prevention, central line-associated bloodstream infections (CLABSIs) occur at a rate of 250,000 cases per year, costing the healthcare system between \$296 million and \$2.3 billion.
- The adult medical, surgical and neuroscience intensive care units (ICUs) at MedStar Georgetown University Hospital have previously implemented numerous CLABSI prevention strategies with marked early success:
 - Implemented guidelines to ensure aseptic line insertion (full body draping, chlorhexadine (CHG) skin preparation, hand hygiene, maximum sterile barrier precautions, optimal site selection)
 - Created a catheter insertion kit
 - Provided education on central line maintenance
 - Product review
 - Use of alcohol-impregnated disinfection caps
 - Decreased the # of blood draws from a central line
 - Use of antibiotic-impregnated catheters
 - Implemented an “**Insertion Checklist**” to ensure adherence to evidence-based guidelines with each line insertion
 - Empowered nurses to stop catheter insertions if sterility is compromised
 - Implemented the process of asking the “**Daily Question**” – Assessing whether catheters can be removed on a daily basis
 - Designated front-line nurses to be unit champions
 - Shared data in a timely fashion to encourage improvement
 - Provided comprehensive education
 - Recognition and celebration of achievements
 - Intensive, formal review of all CLABSIs
 - Daily CHG bath bathing

Identification of Problem

- While the implementation of evidence-based practices did aide in decreasing the CLABSI rate in our ICU patient population, sustaining this momentum has proven to be challenging.
- As CLABSI rates began to rise, a team of nurses from each adult ICU met to brainstorm and develop new and innovative strategies to address this persistent patient care problem.
- Using these new strategies, a targeted **ICU CLABSI Prevention Plan** was created and piloted in all three adult ICUs to provide a uniform, organized, comprehensive and revived approach towards CLABSI prevention.

Implementation

- The **ICU CLABSI Prevention Plan** was implemented in three-month phases and supported by executive leadership.

- Phase 1**
- Two nurse central line dressing change
 - Two nurse line access for continuous renal replacement therapy (CRRT) and change of needleless connector on dialysis lines
 - Mandatory central line competency using unit validators (focusing on dressing changes, cap changes and accessing central lines)
 - Resource Nurse and Stroke Responder central line rounds performed daily to increase accountability and collaboration**
 - Implemented use of daily rounding log to track problems and ensure compliance
 - Intensivist approval to draw blood off the central line
 - Development of clear guidelines to address difficult dressings
 - Extensive education (Figure 2)
 - CLABSI Prevention Top Ten education flier for physicians
 - Monthly CLABSI Talk educational flier
 - Unit-based classes
 - Huddles

- Phase 2**
- Implemented the use of antibiotic-coated dialysis lines without third access port
 - Intensivist approval required for use of third access port if Power-Trialsys® dialysis catheter in use
 - Renewal of compliance with the Daily Question
 - Second morning CHG wash to the neck and groin regions in patients with central lines.
 - Scheduled dialysis line changes for chronic ICU patients receiving CRRT
 - Elimination of bath basins

- Phase 3**
- Unit cleaning initiative
 - Developed a process for routine ultraviolet disinfection of patient rooms after discharge and/or during road trips
 - De-clutter
 - Implementation of male alcohol-impregnated disinfection cap
 - Multidisciplinary Kaizen workshop with Joint Commission Resources consultation
 - Examined CLABSI rates in relation to multiple factors, including staffing, turnover and acuity

Results

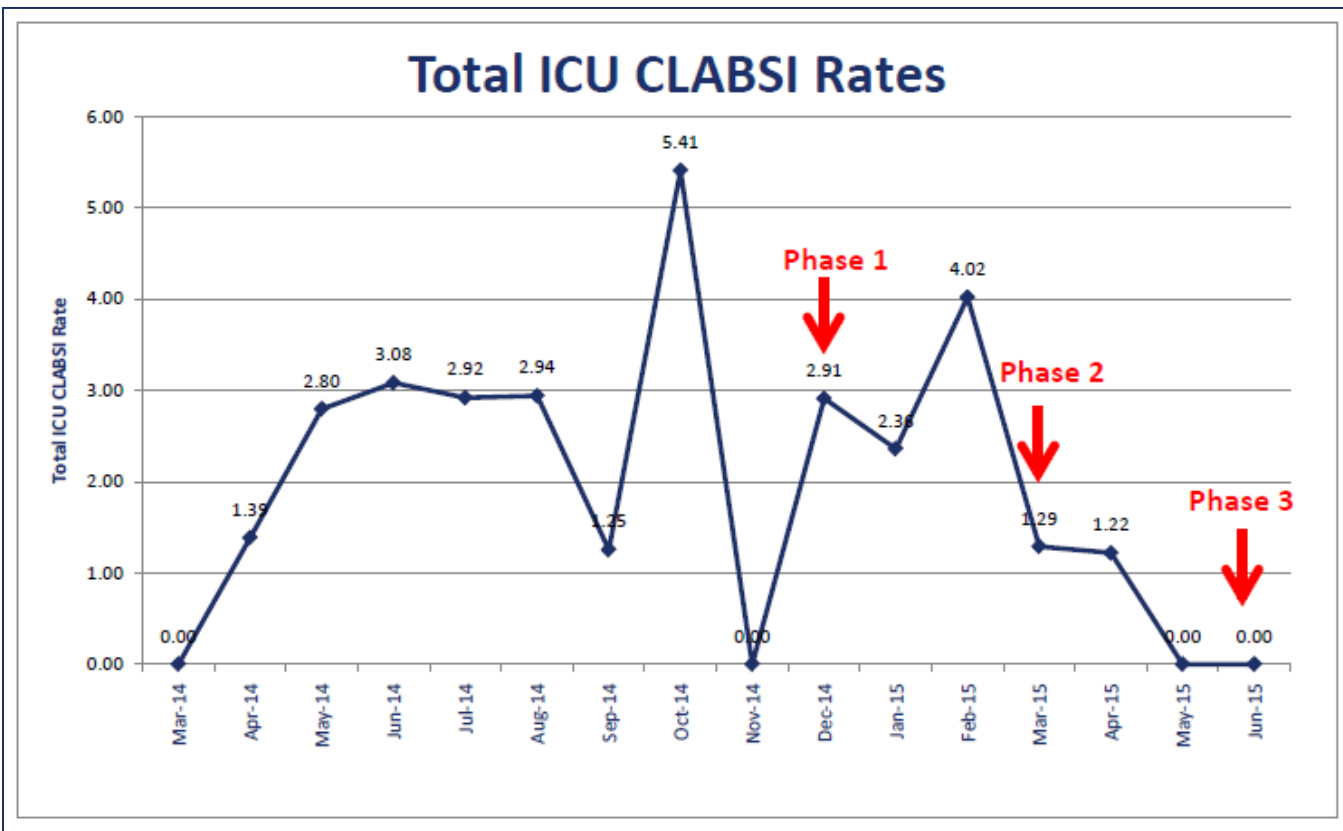


Figure 1: Total combined CLABSI rates for all three adult ICUs

- An overall CLABSI rate reduction was achieved in all three adult intensive care units (Figure 1)
- Increased multidisciplinary collaboration between physicians and nurses about line care, usage and discontinuation

Discussion

- Preventing CLABSIs in the ICU setting is an ongoing process that needs periodic rejuvenation and re-invention.
- Innovative solutions, such as personal encounters, increasing accountability and developing ownership of front-line staff, are integral to sustaining success.
- Staff become easily discouraged without recognition of their efforts. Acknowledging even small victories is important to maintain enthusiasm and consistency.
- By collaborating with different disciplines, the CLABSI initiative became a global effort. Line problems were addressed in a more timely manner as physicians also put CLABSI prevention at the top of the priority list.
- Key strengths of this initiative include a focus on building multi-disciplinary collaborative relationships and peer accountability.

Next Steps

Areas of interest to review for future consideration include the following:

- Continue to provide mentorship and valuable insight to other units throughout the hospital
- Review central line usage in patient’s receiving comfort care
- Continue to review new product options
- Periodic evaluation and review of protocols

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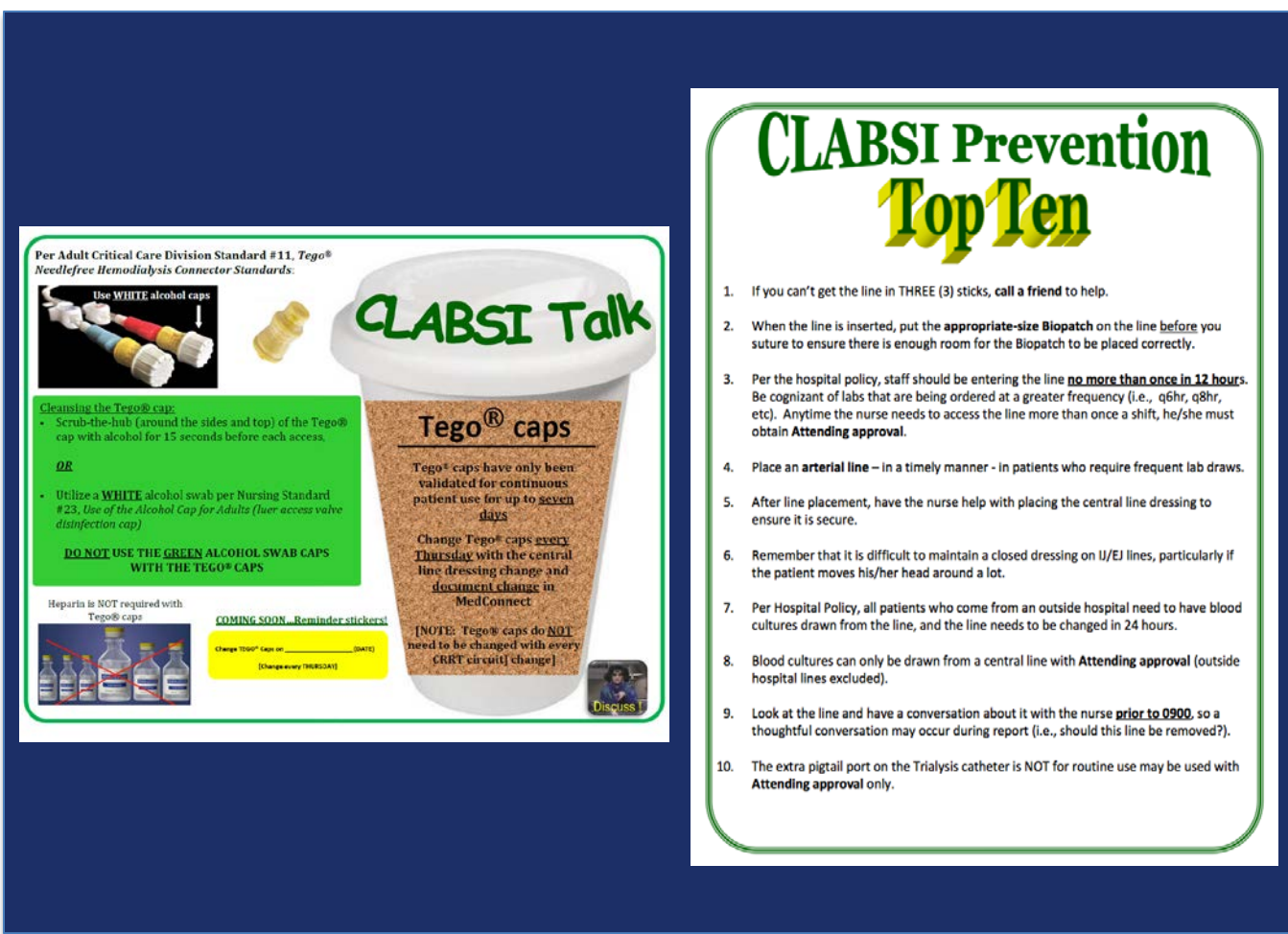


Figure 2: Examples of education provided to nursing and physician staff