

CUSP Resource Guide

To Reduce Central Line-Associated Bloodstream Infections (CLABSIs)



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INTRODUCTION

It is estimated that central venous catheters may cause an estimated 80,000 central line-associated bloodstream infections (CLABSI) each year in the United States. Dr. Peter Pronovost, an attending intensivist who worked in two ICUs at Johns Hopkins Hospital was a national leader in bringing awareness to the CLABSI problem in 2001. By 2002, it was estimated that as many as 28,000 deaths among intensive care unit (ICU) patients may be attributable to CLABSIs. According to the Center for Disease Control (CDC), the median rate of central line-associated bloodstream infections in ICUs rates were from 1.8 to 5.2 infections per 1000 catheter days during 2002. At that time, the average cost of care for patients getting this type of infection is \$2.3 billion each year¹.

ICUs were chosen at Johns Hopkins because these units are high-risk areas that are prone to errors that can result in significant consequences when patients are harmed. Successful interventions resulted in a reduction in ICU length of stay (LOS), from 2 days to 1 day on one unit, and from 3 days to 2.3 days on the other unit. The intervention, a safety culture program, was designed to educate and improve awareness about patient safety and quality of care, empower staff to take charge of safety in their workplace, create partnerships between units and hospital executives to improve organizational culture and provide tools to investigate and learn from defects. The safety program born from the work at John Hopkins Hospital was the Comprehensive Unit-Based Safety Program (CUSP). It is a unit-based team approach that uses structured processes of a strategic plan, while deferring to the wisdom of frontline staff.

By 2003, the success of Johns Hopkins Hospital team had spread. The Agency for Healthcare Research Quality (AHRQ) started working with the Johns Hopkins team to replicate the success in another setting. The Michigan Health and Hospital Association (MHA) conducted a collaborative study directed by the Agency for Healthcare Research Quality (AHRQ) to implement the Johns Hopkins Hospital work with CUSP in over 70 hospitals across Michigan. It is referred to as the MHA Keystone Project. From March 2004 to March 2010, MHA Keystone reported great success with CUSP with more than 1,830 lives saved, 140,700 hospital days avoided, and \$300 million in health care dollars saved².

Although 25,000 fewer infections were reported in 2009 with a rate decrease to 1.65 per 1000 catheter days in ICUs, it was apparent that important reductions in morbidity and health care costs could be achieved if CUSP could be introduced nationwide³. Therefore, AHRQ expanded their work and they rolled out CUSP as a national program called, "On the CUSP: Stop BSI" with hospitals in at least 45 states adopting the program to improve care and lower costs.

¹ <http://www.nejm.org/doi/full/10.1056/NEJMoa061115>

² <http://www.innovations.ahrq.gov/content.aspx?id=1769>

³ http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6008a4.htm?s_cid=mm6008a4_w

ABOUT THE CUSP RESOURCE GUIDE

This resource guide provides an overview of some of the processes and strategies used in CUSP to reduce CLABSIs. CUSP is an intervention requiring development, dedication, and continued engagement of a devoted team.

While there are recommended procedures and strategies, dysfunctional communication often causes education and practice to be disrupted. This often leads to errors and puts patient safety in jeopardy. Many sentinel events in health care stem from failures in communication, which is a pertinent element of culture⁴. It is crucial to have health care executives on teams with frontline workers. Executives consistently rate the safety climate and level of teamwork in their organizations much higher than the frontline workers do. Therefore, they are not always aware of additional resources that are needed to improve safety⁵.

This guide contains a brief discussion of these processes and strategies, along with steps to take to develop the right team to begin work. The list of additional resources contains many helpful links to expanded background information, education modules, literature, timelines, videos, and many helpful tools.

This guide contains:

- CLABSI Definitions
- Recommended Procedures
- Recommended Strategies
- On the CUSP: Stop BSI
 - Pre-work for CUSP
 - “The Five-Step Program”
- Additional Resources

⁴ Pronovost PJ, et al. *Jt Comm J Qual Patient Saf.* 2006 Mar;32(3):119-29

⁵ http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS_0_1371_37107_0_0_18/Bryan%20Sexton.ppt

DEFINITION OF CLABSI

NHSN definition of CLABSI⁶

Definitions: As for all infections reported to NHSN, infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection, are not considered healthcare associated. Therefore, infections that become apparent within the first few days of admission must be carefully reviewed to determine whether they should be considered healthcare associated.

Primary bloodstream infections (BSI) are laboratory-confirmed bloodstream infections (LCBI) that are not secondary to an HAI meeting CDC/NHSN criteria at another body site (see criteria in Chapter 17 for a community-associated infection.) Report BSIs that are central line associated (i.e., a central line or umbilical catheter was in place at the time of, or within 48 hours before, onset of the event).

More specific education and information on CLABSI measurement and reporting is available at:

Care counts user tutorials

<http://www.onthecuspstophai.org/stop-bsi/manuals-and-toolkits/#care>

National Healthcare Safety Network (NHSN)

http://cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf

NOTE: There is no minimum period of time that the central line must be in place in order for the BSI to be considered central line associated.

⁶ http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf

RECOMMENDED PROCEDURES AND STRATEGIES

The MHA Keystone Project targeted clinician's use of five evidence-based procedures recommended by the CDC and identified as having the greatest effect on the rate of CLABSI and lowest barriers to implementation.

Recommended Procedures

- Hand washing
- Full-barrier precautions during central line insertion
- Cleaning the skin with chlorhexidine
- Avoiding the femoral site if possible
- Removing unnecessary catheters

Strategies for Achieving Adherence to Recommendations

- Clinician education
- A central-line cart with necessary supplies
- Initiation of a checklist to ensure adherence to infection-control practices
- Stop providers in the presence of non compliance
- Central line removal discussed at daily rounds
- Constant feedback regarding infection statistics
- Utilize central-line checklist: Central line insertion checklist:
http://www.hopkinsmedicine.org/bin/y/j/IFC035_APP_C.pdf

ON THE CUSP: STOP BSI

The Comprehensive Unit-Based Safety Program (CUSP) was designed to improve safety culture and learn from mistakes by integrating safety practices into the daily work of a unit or clinical area. Any or every unit in a system can form a CUSP team. It provides a structured strategic framework for safety improvement that can be implemented on any unit but is flexible enough to use staff wisdom and encourage them to fix hazards that pose the greatest risks.

Pre-CUSP Work

Assemble a Safety Team

- Every unit must have a safety team
- Each team should have:
 1. A unit champion or project leader
 2. A nurse manager
 3. A physician champion
 4. Anyone who is an integral part of the unit (pharmacist, hospitalist, etc.)
- Consider group dynamics:
 1. Multidisciplinary team should include different levels of experience or training and allow, as well as encourage, members to join
- The team leader should meet with those implementing hospital quality improvement and patient safety efforts, to include, but not limited to:
 1. Risk Management
 2. Quality Improvement
 3. Infection Control
- List and post contact information for team members in a visible location for staff
- Encourage staff to join the team for a meeting, include all disciplines

Partner with a Senior Executive

- The team should contact hospital management and meet with a senior executive to introduce CUSP and secure commitment
- When choosing a senior executive, chose one at a VP level or higher, available to round for one hour per month, and is approachable for discussing sensitive matters
- Consult the CUSP Manual for specific CUSP team member roles and responsibilities as well as other tools at: <http://www.safercare.net/OTCSBSI/Resources.html>

Measure Your Safety Culture (Baseline Assessment)

- Baseline assessment should be completed before implementing any of the steps below and then every 12-18 months for periodic culture reassessments
- Same survey should be used each time. Make certain staff knows you want to tap into their wisdom, opinions, and perceptions

Gather Unit Information for Senior Executive

1. Results from the baseline assessment
2. List of Safety issues from the staff safety assessment
3. Pertinent information about the unit like number of beds, staff turnover rate, incident reports, sentinel events and CLABSI rates

THE FIVE STEP PROGRAM

Five Steps of CUSP

1. Educate Staff on the Science of Safety Training
 - a. Safety is a property of the system
 - b. Basic principles of safe design
 - c. Safe design applies to technical as well as team work
 - d. Diverse and independent input equals wise decisions
2. Identify Defects
 - a. From incident reports, liability claims, sentinel events and staff
 - b. From a staff survey
3. Executive Partnership
 - a. Teaming a senior hospital executive with a unit can open lines of communication and improve frontline attitudes about leadership
4. Begin Learning from Defects (at least one a month)
 - a. What happened?
 - b. Why did it happen?
 - c. What did you do to reduce the risk?
 - d. How do you know it worked?
5. Implement Teamwork Tools
 - a. Provide tools to improve teamwork, communication and other systems of work

ADDITIONAL REFERENCES

Pronovost PJ, et al. N Engl J Med 2006;355:2725-32.

https://safecare.s3.amazonaws.com/support_media/docs/clabsi/Appendix_A_Michigan.pdf

Johns Hopkins Stop BSI CME course

<http://www.hopkinscme.edu/CourseDetail.aspx/80025297>

Central Line Insertion Care Team Checklist

<http://www.ahrq.gov/qual/clchklist.htm>

Ending Healthcare-Associated Infections – FAQ with CUSP overview

<http://www.ahrq.gov/qual/haicusp.htm>

Eliminating CLABSI, A National Patient Safety Imperative: A Progress Report on the National on the CUSP: Stop BSI Project – an interim report on the first two years of On the CUSP: Stop BSI

<http://www.ahrq.gov/qual/ontheCUSPrpt/>

On the CUSP: Stop HAI – education modules, FAQs, numerous other links

<http://ontheCUSPstophai.org>

CUSP Manuals and Toolkits

<http://www.ontheCUSPstophai.org/stop-bsi/manuals-and-toolkits/>