

CLABSI Reduction Initiatives and Campaigns

Scope of the initiative:
National (Canada)

Developed by:
Canadian Patient
Safety Institute

Time frame:
Initiative designed with

▲ São Paulo, Brazil

CLABSI Reduction Initiatives and Campaigns (***continued***)

CLABSI Reduction Initiatives and Campaigns (*continued*)

<p>Scope of the initiative: State of Michigan (US)</p> <p>103 ICUs</p> <p>Developed by: Researchers at Johns Hopkins, the Michigan Health and Hospital Association, and Agency for Healthcare Research and Quality (AHRQ)</p> <p>Time frame: September 2003 to September 2005</p>	<p>Pronovost P, Needham D, Berenholtz S, Sinopoli D, Chu H, Cosgrove S, Sexton B, Hyzy R, Welsh R, Roth G, Bander J, Kepros J, Goeschel C. An intervention to decrease catheter-related bloodstream infections in the ICU. <i>N Engl J Med</i>. 2006 Dec 28;355(26):2725–2732. Erratum in: <i>N Engl J Med</i>. 2007 Jun 21;356(25):2660.</p> <p>Pronovost PJ, Berenholtz SM, Goeschel CA, Needham DM, Sexton JB, Thompson DA, Lubomski LH, Martsteller JA, Makary MA, Hunt E. Creating high reliability in health care organizations. <i>Health Serv Res</i>. 2006 Aug;41(4 Pt 2):1599–1617.</p> <p>Pronovost PJ, Berenholtz SM, Goeschel C, Thom I, Watson SR, Holzmueller CG, Lyon JS, Lubomski LH, Thompson DA, Needham D, Hyzy R, Welsh R, Roth G, Bander J, Morlock L, Sexton JB. Improving patient safety in intensive care units in Michigan. <i>J Crit Care</i>. 2008 Jun;23(2):207–221.</p>	<p>From September 2003 to September 2005 the Johns Hopkins team partnered with the Michigan Health and Hospital Association in a large-scale initiative involving 103 ICUs in Michigan, funded by the Agency for Healthcare Research and Quality (AHRQ).⁵ The initiative included employing the Comprehensive Unit-Based Safety Program (CUSP) techniques, along with the following strategy to translate evidence into practice and measurement and feedback of infection rates:</p> <ul style="list-style-type: none"> ■ At each hospital, teams were formed that included, at a minimum, a senior executive, the ICU director and nurse manager, an ICU nurse and physician, and a department administrator; each team committed to implement the evidence-based interventions, collect and submit required data, participate in monthly conference calls, and attend biannual conferences.⁶ ■ Before the interventions, each participating ICU measured the culture of safety using the Safety Attitudes Questionnaire; this survey was repeated annually to reassess the culture.⁶ This was an important step, as understanding the culture within ICUs was believed to be necessary before teams could redesign care.⁷ ■ CUSP is a process that targets senior leaders, ICU directors, and health care personnel to improve patient safety through enhanced communication and teamwork. CUSP provides just enough structure to allow health care organizations to develop a broad improvement strategy that is flexible, permitting staff to adapt the strategy to meet their own needs. The teams also implement tools, such as conducting morning briefings and setting daily goals. <p>The goal of CUSP is to move toward focusing on a few hazards and redesigning the system in which work is performed to mitigate the hazards rather than just reporting and superficially reviewing multiple hazards.⁶</p> <ul style="list-style-type: none"> ■ Five interventions that were supported by strong evidence were chosen, with the intent to convert them into behaviors.⁶ This intervention “bundle” consisted of the following: <ol style="list-style-type: none"> 1. Hand hygiene 2. Use of full barrier precautions 3. Chlorhexidine skin preparation 4. Avoiding insertion of lines into the femoral vein 5. Prompt removal of CVCs ■ Monthly throughout the study, data on the number of CLABSIs and central line–days were collected by the hospital infection preventionists, using the US CDC’s National Nosocomial Infections Surveillance (NNIS) system methods and definitions (now the National Healthcare Safety Network). To help ensure standardization in data collection, staff received education on the definitions used for the outcome measures and the data collection process;
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CLABSI Reduction Initiatives and Campaigns **(continued)**

	<p>Pronovost PJ, Goeschel CA, Colantuoni E, Watson S, Lubomski LH, Berenholtz SM, Thompson DA, Sinopoli DJ, Cosgrove S, Sexton JB, Marsteller JA, Hyzy RC, Welsh R, Posa P, Schumacher K, Needham D. Sustaining reductions in catheter related blood-stream infections in Michigan intensive care units: Observational study. <i>BMJ</i>. 2010 Feb 4;340:c309. doi: 10.1136/bmj.c309.</p> <p>Tool: Keystone_Goeschel Watsonslides.ppt</p>	<p>standardized data collection forms were used; and quarterly infection rates were calculated, expressed as the number of infections per 1,000 central line–days.⁶</p> <ul style="list-style-type: none"> ■ To ensure that patients received the interventions, and to facilitate the execution of the interventions, a checklist was created. Nurses assisting with CVC placement were empowered to ensure physician adherence to all five interventions in the bundle. In addition, a CVC cart was created to bring all needed supplies to one location. The teams also evaluated each CLABSI that did occur, to determine whether it could have been prevented.⁶ <p>This initiative resulted in a dramatic decrease in CLABSI rates across the 103 participating ICUs. The mean and median CLABSI rates decreased as follows:</p> <ul style="list-style-type: none"> ■ At baseline: mean rate 7.7 (median 2.7) ■ At 16–18 months: mean rate 1.3 (median zero) <p>Taking the study a step further, the researchers also conducted a study to determine the extent to which the ICUs sustained the CLABSI reductions. They found that the reduced rates of infection in the initial 18-month implementation period were sustained for an additional 18 months; at 34–36 months the mean CLABSI rate was 1.1, and the median remained zero.⁸</p>
<p>Scope of the initiative: Multi-institutional across the United States</p> <p>29 PICUs across the United States</p> <p>Developed by: NACHRI</p> <p>Time frame: October 2006– September 2007</p>	<p>Miller MR, Griswold M, Harris JM 2nd, Yenokyan G, Huskins WC, Moss M, Rice TB, Ridling D, Campbell D, Margolis P, Muething S, Brill R. Decreasing PICU catheter-associated bloodstream infections: NACHRI's quality transformation efforts. <i>Pediatrics</i>. 2010 Feb;125(2): 206–213.</p>	<p>Twenty-seven NACHRI member hospitals worked collaboratively to reduce catheter-associated bloodstream infection (CA-BSI) rates among their 29 pediatric intensive care units (PICUs). Baseline data were obtained retrospectively for the period 2004–2006. PICU teams included a senior PICU leader/physician champion, quality improvement leaders, infectious disease physicians, PICU nursing leaders, and/or infection preventionists. From October 2006 through September 2007, the teams implemented insertion and maintenance bundles. Mean CA-BSI rates were reduced by 43% across the 29 PICUs (5.4 vs. 3.1 CA-BSIs per 1,000 central line–days) over the course of the study. By the end of the first year, sustained insertion bundle adherence was 84% and maintenance bundle compliance was 82%.</p> <p>This is believed to be the first study regarding the impact of insertion-related practices versus maintenance-related practices on bloodstream infection rates in either adult or pediatric populations.</p>

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CLABSI Reduction Initiatives and Campaigns (*continued*)

Scope of the initiative:
Regional multi-
institutional

All 18 regional referral
NICUs in New York
State

Developed by: New
York State Regional
Perinatal Care Centers

Time frame: 2007
(baseline)

January–December

By late 2008 each of the 18 regional NICUs had adopted the use of checklists to monitor adherence to the newly implemented central line insertion and maintenance bundles, in an effort to standardize central line care. The teams used repetitive, structured social interactions such as conference calls, e-mails, and workshops to share stories about checklist and bundle successes and barriers, and to receive updated information on performance data. Each NICU reported CLABSI and central line utilization data and insertion and maintenance checklist use. CLABSI rates decreased 40% across all NICUs, from 3.5 to 2.1 CLABSIs per 1,000 central line–days, although no NICU achieved an overall CLABSI rate of zero. Maintenance bundle use varied between 10% and 100% across the NICUs; study design did not enable the researchers to evaluate adherence to the insertion bundle.

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CLABSI Reduction Initiatives and Campaigns *(continued)*

	<p>Sep 2011. Accessed Mar 18, 2012. http://www.ahrq.gov/qual/clabsiupdate/.</p> <p>US Centers for Disease Control and Prevention. Vital signs: Central line–associated blood stream infections—United States, 2001, 2008, and 2009. <i>MMWR Morb Mortal Wkly Rep</i>. 2011 Mar 4;60(8):243–248.</p> <p>Website: http://www.onthecuspstophai.org/on-the-cuspstop-bsi/toolkits-and-resources/#clabsi</p> <p>Fact Sheet: http://www.ahrq.gov/qual/haicusp.htm</p> <p>Toolkit: http://www.psnet.ahrq.gov/resource.aspx?resourceID=25037.</p> <p>Video: http://www.ahrq.gov/about/annualconf12/video/clabsicusp/</p>	<p>infections per 1,000 central line–days to 1.25 infections per 1,000 central line–days.</p> <ul style="list-style-type: none"> ■ Even at baseline, many ICUs had CLABSI rates below the national mean and were still able to reduce their rates. ■ The percentage of units with no quarterly CLABSIs increased from 27.3 at baseline to 69.5. ■ The project demonstrates that further improvement is achievable, even among hospitals that already have low CLABSI rates.¹⁰ <p>The US CDC recently reported a decrease in ICU CLABSI rates, from 3.64 per 1,000 central line–days in 2001 to 1.65 in 2009.¹¹ The initial progress in the On the CUSP: Stop BSI project is well aligned with the 2011 CDC findings. The national team continues to closely monitor the progress of the project, to see which units are realizing declining CLABSI rates and which are not and attempting to better understand what changes need to be made to maximize the impact for each participating hospital.¹⁰</p> <p>The On the CUSP: Stop BSI project is now being implemented throughout Europe and England and is being pilot tested in several Peruvian hospitals.⁹</p>

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CLABSI Reduction Initiatives and Campaigns (*continued*)

In 2001 PRHI invited the US CDC to provide technical assistance for an intervention to prevent CLABSIs in ICU patients in southwestern Pennsylvania. This voluntary intervention was designed collaboratively, led by infection preventionists and medical staff from the participating hospitals. The components of the intervention were the following:

- Use of an evidence-based insertion bundle
- An educational module on CLABSIs and their prevention
- Use of a checklist to record adherence to insertion practices
- Use of a standardized list of contents for catheter insertion supplies
- Measurement and feedback of CLABSI rates

CLABSI rates decreased by 68% over the four-year study period, from

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CLABSI Reduction Initiatives and Campaigns (*continued*)

		– Zurich, Switzerland
<p>Scope of the initiative: Single organization</p> <p>5 adult ICUs</p> <p>Developed by: Researchers from the University of Geneva</p>	<p>Zingg W, Imhof A, Maggiorini M, Stocker R, Keller E, Ruef C. Impact of a prevention strategy targeting hand hygiene and catheter care on the incidence of catheter-related bloodstream infections. <i>Crit Care Med.</i> 2009 Jul;37(7):2167–2173.</p>	<p>The University of Zurich Hospital is a 960-bed tertiary care referral center. The researchers studied the impact of a multimodal intervention that included educational programs stressing hand hygiene, proper catheter care, and aseptic intravenous drug preparation on CVC–related bloodstream infections. At baseline they identified differences in health care personnel performance of catheter maintenance care; education focused, therefore, on current evidence-based practices. Additionally, while the overall adherence to proper hand hygiene did not improve significantly between the two periods (59.1% at baseline versus 65% in the intervention period), the rate of hand hygiene that was <i>correctly performed</i> did improve significantly (22.5% versus 42.6%). The overall infection rate at baseline of 3.9 per 1,000 catheter-days improved significantly to 1.0 per 1,000 catheter-days in the intervention period. This study is important in that it demonstrates the impact of proper postinsertion catheter care on the rates of CVC–related bloodstream infections.</p>

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CLABSI Reduction Initiatives and Campaigns (*continued*)

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CLABSI Reduction Initiatives and Campaigns (*continued*)

	<p>Render ML, Hasselbeck R, Freyberg RW, Hofer TP, Sales AE, Almenoff PL; VA ICU Clinical Advisory Group. Reduction of central line infections in Veterans Administration intensive care units: An observational cohort using a central infrastructure to support learning and improvement. <i>BMJ Qual Saf.</i> 2011 Aug;20(8):725–32. Epub 2011 Apr 2.</p>	<p>The VHA of the VA is the largest US health care system, with 174 ICUs in 123 hospitals across the country. This was an observational quality improvement project in which adherence to the IHI's CLABSI bundle elements was monitored, as part of the VA's participation in the Saving 100,000 Lives Campaign in 2006. CLABSI rates were also tracked monthly across all ICUs in the VA. This national project began with a two-hour Web-based conference call for the participating ICU teams, led by senior VA leadership, during which the importance of the initiative was stressed and experts reviewed the evidence for prevention of CLABSIs. The key components of the project were:</p> <ul style="list-style-type: none"> ■ Employing a physician champion ■ Use of a central line insertion cart ■ Use of an insertion checklist ■ Use of a daily ICU goal sheet, to remind physicians to evaluate the need for continuation of the central line ■ Feedback to frontline staff on CLABSI rates and bundle adherence <p>Adherence to the bundle practice improved from 85% in 2006 to 98% in 2009; CLABSI rates improved from 3.85 per 1,000 central line–days in 2006 to 1.8 per 1,000 central line–days in 2009.</p>

References

1. Canadian Patient Safety Institute. Safer Healthcare Now! Central