

CACCN Dynamics 2008: Success of a National Pediatric Critical Care Collaborative in Reducing Central Line Blood Stream Infections: An Update on Our Progress

What is a collaborative?

- The collaborative approach brings together groups that share a commitment to making significant & rapid changes that produce breakthrough results.
- The method relies on spread and adaptation of existing knowledge to multiple settings to accomplish a predetermined goal.

Improvement Methodology

<http://www.jh.org/HR/Topics/Improvement/ImprovementMethods/HowToImprove/>

Background

- In October 2004, members from 8 Canadian pediatric intensive care units participated in the ICU Collaborative Learning Session
- Attrition rate of 33% before one year goal
- 1 team joined in June of 2005
- Completing teams:

Aim and Goals/Objectives

- **Aim:**
To reduce the incidence of catheter related blood stream infections (CRBSI) within Canadian PICUs
- **Goals/Objectives:**
To reduce the incidence of CRBSIs by 20% to 50% within 12 months (October 2005)

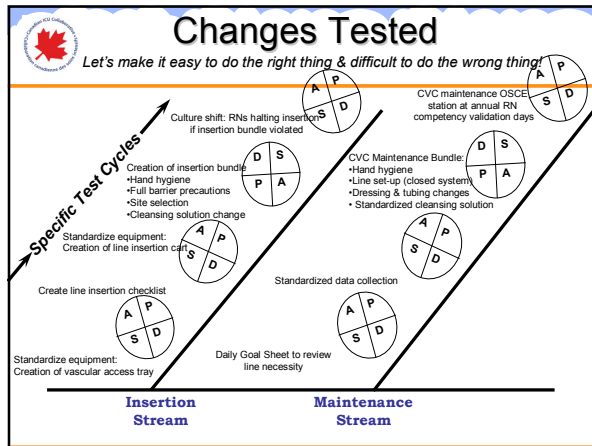
CRBSI Improvement Bundles

<h3>Insertion Bundle</h3> <ul style="list-style-type: none"> • Hand Hygiene • Maximum Barrier Precautions (Inserter & Patient) • Chlorhexidine for Skin Prep • Site selection 	<h3>Maintenance Bundle</h3> <ul style="list-style-type: none"> • Hand Hygiene • Standardized Hub Antisepsis • Standardized Accessing of Line <ul style="list-style-type: none"> - Line set-up - Accessing hubs - Dressing & tubing changes • Daily Reviewing of Line Necessity
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Changes Tested

Creating controversy through transparency! Moving to a culture of safety

Baseline Stream **Education Stream**



Lessons Learned

- Culture shifting → *"Finding Religion"*
 - Believe in your message
 - Get everyone on board early - this is OUR patient and we are a TEAM
 - It is OUR problem so assist staff in being part of the solution... not just feeling they are a part of the problem
 - ALL users need to be educated
 - Egos need to be minimized/collaboration needs to be encouraged
 - Education regarding "Patient Safety"... it is NOT the *flavour of the month*
 - Set time aside to *communicate* with entire team... NEVER underestimate the power of 1:1 dialogue

Lessons Learned

- Adapting to improvement process is difficult:
 - Orientate team on improvement process... *Research vs Improvement Process*
 - Find out what team know... evidence base practice is not always believed
 - Learn from others which equals... "Sharing & Stealing"
 - Believe in your message
 - Adopting change is an ongoing process
 - Measurement and evaluation are important (and ongoing)... ongoing vigilance by everyone
 - Constraining practice decreases variability in practice

Lessons Learned

- Maintaining the momentum is challenging due to time limitations, fiscal constraints & fatigue
 - Set realistic goals
 - Strategically chose your collaborative team
 - Hold regular meetings
 - Enter into project with administrative support both from a fiscal and manpower perspective
 - "Adopt an executive" to increase buy-in
 - Repetition, repetition in communication and cycles will result in change
 - Laugh & remember "Patience is a virtue!"
 - Celebrate the successes

Evidence to support practice changes:

- Berenholtz SM, Pronovost PJ, Lipset PA, et al. Eliminating catheter-related bloodstream infection in the intensive care unit. *Critical Care Medicine*. 2004;32:2014-2020.
- Centers for Disease Control and Prevention Guidelines for the prevention of Intravascular Catheter- Related Infections MMWR 2002; 51 No. RR-10
- Chaiyakunapruk Nathorn.; Veenstra David L.; Lipsky Benjamin A.; and Sant Sanjay. Chlorhexidine compared with povidone-iodine solution for vascular catheter-site care: A meta-analysis. *Ann Intern Med*. 2002;136:792-801.
- Cook D, Randolph A, Kernerman P et al. Central venous catheter replacement strategies: a systematic review of the literature. *Crit Care Med* 1997;25:1417-24.
- Eggimann, Philippe, Harbarth, Stephan, Constantin, Marie-Noëlle, Touveneau, Sylvie, Chevrelet Jean-Claude, Pittet Didier. Impact of a prevention strategy targeted at vascular-access care on incidence of infections acquired in intensive care THE LANCET, Vol 355, May 27, 2000

Evidence to support practice changes:

- Maki DG, Ringer M, Alvarado CJ. Prospective randomised trial of povidone-iodine, alcohol, and chlorhexidine for prevention of infection associated with central venous and arterial catheters. *Lancet*. 1991;338(8763):339-343
- Mermel LA, McCormick RD, Springman SR, Maki DG. The pathogenesis and epidemiology of catheter-related infection with pulmonary artery Swan-Ganz catheters: a prospective study utilizing molecular subtyping. *Am J Med*. 1991;91(3B):197S-205S.
- Michie, S., et al. (2005). Making psychological theory useful for implementing evidence based practice: a consensus approach. *Quality & Safety in Health Care*, 14, 26-33.
- Raad, II, Hohn DC, Gilbreath BJ, et al. Prevention of central venous catheter-related infections by using maximal sterile barrier precautions during insertion. *Infect Control Hosp Epidemiol*. 1994;15(4 Pt 1):231-238.
- Snyderman DR, Murray SA, Kornfeld SJ, Majka JA, Ellis CA. Total parental nutrition-related infections: prospective epidemiologic study using semi-quantitative methods. *Am J Med* 1982;73:695-9