



---

## ICU Volume 6 - Issue 1 - Spring 2006 - Cover Story: Safety in Care

### A Novel Collaborative Model to Improve ICU Care in Michigan

---

#### Authors

**Peter J. Pronovost, MD, PhD**

*Dept. of Anaesthesiology & Critical Care Medicine*

*Johns Hopkins University Baltimore, USA*

[ppronovo@jhmi.edu](mailto:ppronovo@jhmi.edu)

**Christine A. Goeschel, RN, MPA, MPS**

*Keystone Centre for Patient Safety and Quality Michigan Health and*

*Hospital Association Lansing, USA*

[www.mhakeystonecenter.org](http://www.mhakeystonecenter.org)

[www.safetyresearch.org](http://www.safetyresearch.org)

#### Acknowledgement

Funding provided by the Agency for Healthcare Research and Quality (AHRQ), grant no. 1UC1HS14246

A novel collaborative model to improve ICU care was implemented in 127 ICUs in the state of Michigan. Interventions were used to improve culture of the working environment, and eliminate blood stream infections in >80% of ICUs.

The need for dramatic improvements in healthcare quality and patient safety is widely recognized. Global healthcare stakeholders including academic researchers, regulators, purchasers, payers, hospitals, health systems and consumers have taken the message posed by the Institute of Medicine reports *To Err is Human* (1999) and *Crossing the Quality Chasm* (Institute of Medicine 2001) seriously. This message made the 98,000 lives lost annually in US hospitals from preventable errors a public issue. A new challenge has risen in the wake of these reports: how can we assess whether, using valid measures, our efforts are actually improving quality and safety? (Pronovost et al. 2006)

Quality and safety researchers at the Johns Hopkins University, the MHA-Keystone Centre for Patient Safety and Quality and 127 Michigan intensive care units have taken on this challenge and made wide-scale improvements using a novel collaborative model (Pronovost, Goeschel 2005). In this project, participants were given interventions to improve safety and a safety scorecard to track their progress. Participating ICUs can now state that they are safer than they were when the project started two years ago. To state with confidence that they are safer now, teams worked to answer the following questions:

M How often do we harm patients?

M How often do we do what we should?

M How often do we learn from our defects?

M How well do we improve culture?

Answering these questions created a safety scorecard that addresses two related components: (1) generic measures that are not rates (qualitative), apply throughout a health system, and focus on learning from mistakes and improving culture (Pronovost et al. 2005a); and (2) discipline specific measures that are rate based (quantitative) and focus on ensuring we do what we should do and eliminate harm (Pronovost et al. 2006).

#### Process Outcomes

To support teams we provided evidence-based measures, standardized data collection tools and performance reports, dedicated project web

© For personal and private use only. Reproduction must be permitted by the copyright holder. Email to [copyright@mindbyte.eu](mailto:copyright@mindbyte.eu).

space, weekly recorded conference calls, consistent encouragement and individual coaching upon request.

Beyond long distance sharing, biannual workshops allowed teams and Hopkins faculty to work side-by-side as colleagues. As project leaders, we periodically sent letters to hospital CEOs providing them with progress reports and asking for specific executive assistance. Ninety percent of teams routinely participated in conference calls. Nearly 100% of the 127 teams attended the biannual workshops and participant evaluations averaged 4.5 on a 5.0 scale. Teams are increasingly cognizant of their power to change the way care is delivered, to improve patient outcomes, and to enhance unit culture. Administrative leaders have started speaking firsthand about infection rates, safety issues, and the renewed sense of satisfaction that is permeating their ICUs. Variation in achievement spans the demographic mix of participants, and sharing what works and does not work is universally valued.

### **Clinical Outcomes**

During the first nine months of data collection, the entire state moved from the 50th percentile in the country in catheter related blood stream infections (CR-BSI) and ventilator associated pneumonia (VAP) to the 10th. Indeed, over 80% of participating teams eliminated CRBSI; VAP data is still being analyzed. In addition, culture improved throughout Michigan ICUs.

### **Lessons Learnt and Next Steps**

The clinical and cultural improvements achieved by Michigan teams are important and we believe replicable. Importantly, this study provides significant new insights regarding how to measure and improve patient safety and how to run a large scale improvement collaborative. However, the resources needed, and clinical, measurement and management expertise required for this collaborative exceed the capacity of any single organization.

We learned several lessons; first, package educational materials as specific interventions or behaviours. For example, we converted the 100-page guideline for preventing CR-BSI into 5 interventions; wash hands, use barrier precautions, clean skin with chlorhexidine, unnecessary lines and avoid femoral site (Berenholtz et al. 2004). Second, efforts to improve culture should accompany efforts to improve specific outcomes (Pronovost et al. 2005b). Third, valid measures and data management, like any clinical research project, are imperative. Such measures are uncommon in quality improvement projects. Beyond the immediate results, this project has been important in creating a virtual learning community across participating ICUs, the hospital association and the research team. The partnership in Michigan continues and lessons learnt have been applied to implement an improved program in New Jersey and Rhode Island.

Published on : Thu, 15 Aug 2013