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)

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.
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 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
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.