

Maryland Health Quality and Cost Council

The State of Maryland is a demonstrated national leader in the **implementation of innovative, effective cost containment strategies and the attainment of health and high quality health care**. The State's efforts are guided by a commitment to ensure that care is safe, effective, patient-centered, timely, efficient, equitable, integrated and affordable.

The Maryland Health Quality and Cost Council's focus is to implement **statewide evidence-based practices** (i.e., "low-hanging fruit" workgroup) and **quality improvement initiatives with known results**. **The goal of these initiatives is primarily to reduce costs**. This group will focus on achieving consensus on validated evidence-based quality improvements standards that can be instituted around the state.

Clinical Quality

1. Hand Hygiene

Description: The HAI problem is complicated by the rising prevalence of colonization and infection with multidrug resistant organisms (MDROs). Up to 70% of all reported HAIs to CDC are caused by organisms that are resistant to at least one antibiotic. Medical experts, CDC, and the World Health Organization all agree that hand hygiene (HH) remains our cornerstone intervention for preventing HAIs and transmission of pathogenic organisms in the healthcare setting. The most common mode of transmission of pathogens in this setting is believed to be via healthcare workers hands. Other reported modes of transmission include contaminated medical devices or equipment, and contaminated environments. Indeed, improved hand hygiene and increased use of alcohol based rubs have been associated with reductions in HAIs & MDRO transmissions. Pittet et al, reported decreased nosocomial infection rates from 16.9% to 9.9% over a 4 yr period, and reduced MRSA acquisition and infection rates with improved hand hygiene & alcohol based hand rubs use². Doebbeling et al. reported reduced HAIs by 28% with improved hand hygiene³. Guidelines for hand hygiene have been published by the CDC, and WHO and targets for HH compliance have been set by The Joint Commission for hospital accreditation. Unfortunately, adherence to hand hygiene guidelines continues to be poor among healthcare workers and have been reported to be lower among physicians than nurses. Reported barriers to HH are multiple and include lack of time, work stressors, skepticism about impact of HH on HAI rates, lack of knowledge, lack of role models, effects of hand cleaning agents on skin, lack of leadership emphasis on problem, etc⁴.

How to Implement Statewide: Numerous interventions aimed at changing culture have resulted in a 300% improvement in hand hygiene at Johns Hopkins Hospital. Implemented statewide, such programs, which consist of a multi-level approach embodying social and psychological factors aimed at changing culture, could have a tremendous effect on hygiene statewide, leading to a corresponding decrease in healthcare associated infections.

Goal: Achieve the immense life and cost-saving potential represented by a significant reduction in the number of healthcare acquired infections.

2. Hospital-acquired infections

Description: Healthcare associated infections (HAIs) are one of the top ten leading causes of death in the United States¹. According to the Centers for Disease Control and Prevention (CDC), in 2002 alone, at least 1.7 mi patients in the US suffered from a HAI and 99,000 of those patients died. There has been much progress in our understanding of how to best fight these deadly and costly infections over the past several years, and many of the interventions required are reliant not on expensive new technologies but rather on simple, consistent, and well -implemented processes and practices for care delivery.

How to Implement Statewide: Systematic implementation of “Checklists” or “Bundles” targeted at any or all of four highly problematic hospital acquired infections: catheter-related bloodstream infections (CRBSIs), Ventilator-Associated Pneumonia (VAP), Surgical Site Infections (SSIs), and Methicillin-resistant Staphylococcus aureus (MRSA). Using the checklist, in 18 months the average I.C.U. at a diverse group of hospitals reduced their catheter-related infection rate to zero, from 4 percent. All told, the checklist saved more than 1,500 lives and nearly \$200 million. The program itself cost only \$500,000 and is easily replicable. Other interventions can compliment such bundles, such as hand hygiene initiatives, surveillance programs to detect and isolate infections, communication between facilities, antibiotic management, and others.

Goal: Achieve the life and cost-saving potential represented by a significant reduction in the number of CRBSIs, VAPs, SSIs, and MRSA infections.

1 Patient with a Bloodstream Infection:

\$35-56k USD additional cost per case

+10-24 days additional LOS

+15-35% attributable mortality

1 Patient with a Ventilator-Associated Pneumonia:

\$40k USD additional cost per case

+10-25 days additional LOS

+20-30% attributable mortality

1 Patient with a Surgical Site Infection:

\$34k USD additional cost per case

+7-20 days additional LOS

+9% attributable mortality

1 Patient with a Surgical Site Infection:

\$32k USD additional cost per case

3. Door-to-Balloon (“D2B”) Time:

Description: Initiative to reduce the time from when STEMI patients arrive at the providing facility (“door”) to the time in which they receive the proper emergency cardiac care intervention (“balloon”). Magnitude of the problem in the state... This has become a JCAHO core measure, as nationwide it is known that fewer than half of STEMI patients receive reperfusion with primary percutaneous coronary intervention within the guideline-recommended timeframe of 90 minutes.

Although incorporating a prehospital 12 lead ECG into critical pathways for STEMI patients is listed as an optional strategy by the D2B Alliance, the fastest median door-to-balloon times have been achieved by hospitals with paramedics who perform 12 lead ECGs in the field.[18] EMS can play a key role in reducing the first-medical-contact-to-balloon time, sometimes referred to as EMS-to-balloon (E2B) time,[19] by performing a 12 lead ECG in the field and using this information to triage the patient to the most appropriate medical facility.[20][21][22][23]

Depending on how the prehospital 12 lead ECG program is structured, the 12 lead ECG can be transmitted to the receiving hospital for physician interpretation, interpreted on-site by appropriately trained paramedics, or interpreted on-site by paramedics with the help of computerized interpretive algorithms.[24] Some EMS systems utilize a combination of all three methods.[19] Prior notification of an in-bound STEMI patient enables time saving decisions to be made prior to the patient's arrival. This may include a "cardiac alert" or "STEMI alert" that calls in off duty personnel in areas where the cardiac cath lab is not staffed 24 hours a day.[19]

How to Implement Statewide: Key components include uniform statewide protocols and triage guidelines for EMS providers, a statewide communications system, and data collection. All EMS providers must have a 12-lead ECG reader with a transmitting system; similarly, all receiving centers must have the ability to receive ECG readings for early communication to prepare for arrival of STEMI patient and have systems in place to respond rapidly to these time-critical alerts. Model such systems from hospitals that have achieved the JCAHO core measure objective already.

Goal: Achieve the core measure Door-to-Balloon time of 90 minutes for all patients by implementation of pre-hospital ECGs and systematic alert response programs, which literature has shown to be associated with faster reperfusion therapy times and suggested trend for a lower risk of mortality.

4. Stroke Network

Description: This would involve putting into action an already-designed Statewide stroke network consisting of two or more “hubs” (Johns Hopkins Hospital and University of Maryland

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Medical), supporting several “spokes” (rural hospitals, community hospitals, etc.) in an external telemedicine model. Stroke patients at spoke hospitals would be able to receive consultations with stroke experts at large city hospitals instantaneously, which would increase the safety and quality of care in these time-critical scenarios.

How to Implement Statewide: Dr. Eric Aldrich at Johns Hopkins Hospital has been collaborating with numerous doctors around Maryland to research and devise a plan aiming to quickly and cost-effectively launch a statewide stroke network. The team has three different proposed “levels” at which this launch could be achieved, with prospective costs ranging from \$400,000 to \$1.2 million depending on which components are included.

Goal: Reduce mortality and morbidity from stroke across the state. The costs of this are expected to be easily recouped. Improve access and equity of care to achieve IOM aims.

Efficiency

5. HIPAA Standard Transaction Sets

Description: The overall goal of the implementation of HIPAA Standard Transaction Sets is to reduce the costs of administrative activities and processes.

How to Implement Statewide: Implementing a retail-based transaction model and measuring cost reduction efforts. We have already seen, with the implementation of the Standard Transaction Sets 270 and 271 (eligibility and verification), a reduction in human touch points, a reduction in time for each step as well as an increase in accuracy of information collected.

Goal: In addition to the benefits seen with the 270 & 271 being scaled up to a state-wide level, with the implementation of the 278, we anticipate a reduction in denials and an increase in clean claims.

6. Blood Wastage (Application of Lean Sigma)

Description: This Lean Sigma initiative designed by the Center for Innovation in Quality Patient Care at Johns Hopkins resulted in sustained reductions in blood waste. In two years, over 3,700 units of blood were saved, corresponding to a \$714,000 savings to the hospital.

How to Implement Statewide: Modeling the Center for Innovation's strategies and applying Lean Sigma methodology, the variation in the way blood is used, stored, and saved can be reduced – and this can be done inexpensively and relatively easily.

Goal: Develop statewide standards for the usage and storage of blood. This cost savings accrues directly to hospitals/care providers and in proportion to the effectiveness with which they roll out this type of program.

7. Red Bag Trash (Application of Lean Sigma)

Description: This Lean Sigma initiative designed by the Center for Innovation in Quality Patient Care at Johns Hopkins improved the process for disposal of hazardous materials. So called “red bags” are more expensive to appropriately dispose of than ordinary “trash bags,” and a hospital-wide program to ensure the proper waste materials ended up in the correct bags had a significant impact: red bag waste was reduced by 1,000 pounds, saving the hospital \$250,000.

How to Implement Statewide: Modeling the Center for Innovation's strategies and applying Lean Sigma methodology, the variation in the usage of “red bags” can be reduced – and this can be done inexpensively and relatively easily.

Goal: Reduce improper disposal of hazardous materials. This cost savings accrues directly to hospitals/care providers and in proportion to the effectiveness with which they roll out this type of program.

Sources: Attached in PDF format

Clinical Quality

1. **Hand Hygiene** - Internal Johns Hopkins study documentation, available as needed.
2. **Hospital Acquired Infections:**
 - a. Blood Stream Infections
 - b. Surgical Site Infections
 - c. VAP

The Business Case for Preventing Ventilator-Associated Pneumonia in Pediatric Intensive Care Unit Patients. Brill, J. et al. *Joint Commission Journal on Quality and Patient Safety*, Vol. 34, No. 11. (November 2008), pp. 629-638.

- d. MRSA

*“Faster laboratory detection of MRSA translates to cost savings for hospital.” By Murillo, Jeremias, Tsang, Patricia Publication: Medical Laboratory Observer

3. Door-to-Balloon

wikipedia.com: http://en.wikipedia.org/wiki/Door_to_balloon

“Utilization and impact of pre-hospital electrocardiograms for patients with acute ST-segment elevation myocardial infarction: data from the NCDR (National Cardiovascular Data Registry) ACTION (Acute Coronary Treatment and Intervention Outcomes Network) Registry.” [J Am Coll Cardiol](#). 2009 Jan 13;53(2):161-6.

“Pre-Hospital 12-Lead Electrocardiography Programs” *J Am Coll Cardiol*, 2006; 47:485-491, doi:10.1016/j.jacc.2005.08.072 .

4. **Maryland Stroke Network** - Internal Johns Hopkins study documentation, available as needed.

Efficiency

5. Blood Wastage – Internal Johns Hopkins study documentation, available as needed.
6. Red Bag Trash - Internal Johns Hopkins study documentation, available as needed.