The quality and safety choir – singing in harmony

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In recent years, quality professionals, including myself, have complained about both the rising number of quality and safety measures and the differences in measurement prescribed by the multiple entities that generate them. We have lobbied for a single set of priorities and goals that everyone could agree upon. Well sometimes you have to be careful what you wish for.

In 2008, the National Quality Forum brought together a group of 28 national multi-stakeholder organizations to form the National Priorities Partnership. The group includes consumers, purchasers, quality alliances, health professionals/providers, public sector entities, accreditation/certification groups and insurers. The group is co-chaired by Dr Donald Berwick from the Institute for Healthcare Improvement and Margaret O’Kane from the National Committee for Quality Assurance. Members identified a set of seven national priorities for reform of the US health-care system including:

• patient and family engagement;
• population health;
• safety;
• palliative care;
• care coordination;
• patient focused care;
• overuse.

They have established a set of ambitious and very specific goals in each area to be achieved over the next five years. Examples include:

• By 2014, all providers will drive all preventable health care-associated infections (HAI) to zero.
• By 2014, all providers will drive the incidence of preventable NQF Serious Reportable Events (SRE) to zero.
• By 2014, all hospitals will reduce preventable and premature mortality rates to best-in-class.
• By 2014, all hospitals and their community partners will reduce 30-day mortality rates following hospitalization for select conditions to best-in-class.
• By 2014, all providers will accurately and completely reconcile medications across the continuum of care (in admission, transfer within and between care providers, discharge and outpatient appointments) and ensure communication with the next provider of services.

As you read through these goals, several things are very apparent. First, there is no mention of evidenced-based medicine compliance. That for all intents and purposes is now assumed to be a given. We are focused on outcomes. Second, there is no tolerance left for the failure to eliminate preventable hospital complications like infections. In the words of Dr Donald Berwick, “Some is not a number, soon is not a time.” Third, hospitals and health-care systems are increasingly going to be held accountable from a regulatory and financial standpoint for both coordination of care and outcomes across the continuum of care. Success in this new order will require not only significant culture change and infrastructure investment, but also much greater integration of our compartmentalized health-care system. We may feel these goals are very ambitious but it is hard to dispute their accuracy in addressing the shortcomings of our current system.

Given the stature and control of accreditation and resources that this group possesses, the likelihood of these proposals becoming mandates is very high. These changes will undoubtedly spawn a new generation of institutional leaders in health care. Some will have familiar names and some will not. All will possess a visionary, passionate and engaged leadership not afraid to take risks. There is much to be done but the potential rewards of a much better, safer and more effective system are worth the effort. We owe it to the next generation of caregivers.
First do no harm: Protecting patients and health-care providers from infection

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Abstract

The recent threats of new diseases such as Severe Acute Respiratory Syndrome (SARS), Avian Influenza and re-emerging ones such as Multidrug-resistant Tuberculosis (MDR-TB) have heightened the importance of infection control. Similarly the increase in infections that are resistant to antibiotics such as Methicillin-resistant Staphylococcus aureaus (MRSA), Clostridium difficile and MDR-TB have highlighted the need for efficient infection control programmes in health-care settings.

Health-care associated infection (HAI), also referred to as hospital-acquired or nosocomial infection, is an indicator of the quality of care. Hospital stay can be longer as a result of nosocomial infections such as MRSA with clear implications for cost and quality of care. HAI has multifactorial causes, which can be attributed to systems and processes of care provision, as well as to behavioural practices of health professionals and patients. Infections that are acquired by persons who have neither been recently hospitalized (within the past year) nor have had a procedure such as dialysis, surgery or catheter insertion, are known as community-associated infections (CAI). Prevention of infections is a major concern of health policy-makers, health professionals, managers and patients and it is important that appropriate measures are taken to improve infection control capability.

The magnitude of the problem

The burden of HAI points to the need for consistent and systematic action to ensure patient safety. As shown in Table 1, HAI represents a high magnitude and cost for health care. For example, between 5% and 10% of patients admitted to modern hospitals in the developed world acquire one or more infections. In developing countries, the rate can exceed 25%. The treatment and care of many patients worldwide is complicated by infections acquired during their encounter with health facilities. As a result, some patients become more seriously ill, some have prolonged stays in hospital, some experience long-term disability and others die. As well as the human cost in terms of needless suffering, disability and death, health-care systems face additional financial burden to deal with preventable infections.

Though every patient is potentially at risk, those with open wounds, invasive devices and weakened immune systems are at greater risk for infection. Hospital staff who do not follow proper infection control measures may transfer bacteria from patient to patient or infect patients directly.

Table 1: Magnitude and cost of HAI

<table>
<thead>
<tr>
<th>Country</th>
<th>Cases</th>
<th>Deaths</th>
<th>Cost (in USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>100,000</td>
<td>5,000</td>
<td>1 billion</td>
</tr>
<tr>
<td>United States</td>
<td>500,000</td>
<td>25,000</td>
<td>5 billion</td>
</tr>
<tr>
<td>Mexico</td>
<td>450,000</td>
<td>32,000</td>
<td>1.5 billion</td>
</tr>
<tr>
<td>France</td>
<td>250,000</td>
<td>12,500</td>
<td>1 billion</td>
</tr>
<tr>
<td>Germany</td>
<td>300,000</td>
<td>15,000</td>
<td>2 billion</td>
</tr>
<tr>
<td>Italy</td>
<td>200,000</td>
<td>10,000</td>
<td>1.5 billion</td>
</tr>
<tr>
<td>Japan</td>
<td>150,000</td>
<td>7,500</td>
<td>1.2 billion</td>
</tr>
<tr>
<td>Spain</td>
<td>120,000</td>
<td>6,000</td>
<td>1.1 billion</td>
</tr>
</tbody>
</table>

Table 1: Magnitude and cost of HAI

- At any time, over 1.4 million people worldwide are suffering from infections acquired in hospital.
- Between 5% and 10% of patients admitted to modern hospitals in the developed world acquire one or more infections.
- The risk of HAI in developing countries is two to 20 times higher than in developed countries. In some developing countries, the proportion of patients affected by a HAI can exceed 25%.
- In the United States, one out of every 136 hospital patients becomes seriously ill as a result of acquiring an infection in hospital; this is equivalent to 2 million cases and about 80,000 deaths a year.
- In England, more than 100,000 cases of HAI lead to over 5000 deaths directly attributed to infection each year.
- In Mexico, an estimated 490,000 cases of HAI cause 32 deaths per 100,000 inhabitants each year.
- HAIs in England are estimated to cost £1 billion a year. In the United States, the estimate is between US$ 4.5 billion and US$ 5.7 billion per year. In Mexico, the annual cost approaches US$ 1.5 billion.
In order to address the global challenge of HAI a number of organisations representing the International Council of Nurses (ICN), the International Hospital Federation (IHF), the World Medical Association (WMA) and the International Federation of Red Cross and Red Crescent Societies (IFRC) implemented a workshop that aims to help reduce HAI. Though the focus of this approach was on TB/MDR-TB infection control, it can be scaled-up to infection control in general.

The interprofessional workshop on infection control and health-care worker safety was the theme of a joint workshop held by Lilly partners. This two-day workshop took place in Cape Town, South Africa, November 2007. The aim was to bring together physicians, nurses, hospital managers and community health workers to examine and address infection control issues within the health-care and community settings.

Specific objectives were:
- to identify current strengths and weaknesses of infection control policies and practices;
- to address current barriers to health worker safety; and
- to identify opportunities for interprofessional collaboration in infection control.

The workshop, the first of its kind to bring together different professionals, provided an opportunity for cross-fertilization of knowledge, ideas and experiences to create a win-win situation in infection control issues and set a trend for similar future interprofessional learning opportunities in infection control.

Though well received by participants, the challenge of such initiative is to follow up on infection control issues raised during the workshop as well as sustaining the interprofessional approach and spirit so that they do not become complacent and fall into their professional silos. One way to avoid this is to review the organisation and system of infection control practices and their implementation in the workplace. For example nurses often point out that lack of protective equipment puts them and their patients at risk of infection, while hospital managers indicate that resources are often wasted or not used properly.

Organization of an infection control programme

The increasing numbers of HAI require that a hospital have an organisational structure for infection control. The ultimate responsibility for prevention and control of infection rests with the health administrator. The hospital administrator should:
- establish an infection control committee which will in turn appoint an infection control team; and
- provide adequate resources for effective functioning of the infection control programme.

An infection control committee provides a forum for multidisciplinary input and cooperation and information sharing. This committee should include wide representation from relevant departments: e.g. management, nurses, physicians, other health-care workers, clinical microbiology, pharmacy, sterilizing service, maintenance, housekeeping and training services.

Promotion of a safety culture is a cornerstone of infection control in health care. Standard precautions should be the minimum level of precautions used when providing care for all patients. Risk assessment is critical and all health-care activities must be assessed to determine the personal protection that is indicated. The use of personal protective equipment such as gloves, masks and gowns should be guided by risk assessment and the extent of contact anticipated with blood and body fluids, or pathogens.

Often the role of visitors and family members of patients is overlooked. In order to be effective health-care workers, patients and visitors should adhere to infection control practices in health-care settings. For example, to avoid droplet infections such as TB/MDR-TB or SARS, cough etiquette – covering mouth and nose when coughing or sneezing – developed during the SARS outbreak is considered part of standard precautions.

Hand hygiene is one of the effective means of infection control. Yet too often this basic practice is often neglected or even ignored by health professionals and others.

Elements of the infection control programme

Infection control comprises a set of activities that reinforce each other. The important components of infection control programmes are:
- basic measures for infection control such as standard precautions;
- education and training of health-care workers;
- protection of health-care workers, e.g. immunization;
- identification of hazards and minimizing risks;
- routine practices essential to infection control such as aseptic techniques, use of single use devices, reprocessing of instruments and equipment;
- antibiotic use, management of blood/body fluid exposure, handling; and
- sound management of medical waste.

Hand hygiene is a major component of standard precautions and one of the most effective methods to prevent transmission of pathogens associated with health care. Health-care managers should ensure availability of hand hygiene products such as clean water, soap, single use clean towels and alcohol-based hand rub.
Current settings in some countries lack basic Positive Practice Environment (PPE) to allow adequate practice of infection control measures. These conditions can create unsafe and unsupportive environments for patients and for health-care providers. A PPE should be based on the level of risk. For example, if there is a high risk of blood or body fluid splash to the face a mask, eye protection or a face shield should be used.

Prevention of HAI
The prevention of nosocomial infections such as MRSA involves routine cleaning as well as terminal cleaning of rooms after patients’ discharge from health-care facilities. These include “standard precautions” which require that health-care workers assume that the blood and body substances of all patients are potential sources of infection, regardless of the diagnosis, or presumed infectious status. The best way to prevent the spread of pathogens is to wash hands frequently, to properly disinfect hospital surfaces and to take other precautions such as wearing a mask when working with people with weakened immune systems.

Adherence of health-care workers to recommended hand hygiene procedures tends to be poor, with mean baseline rates ranging from 5% to 83%, with an overall average of about 40%. It is important to introduce measures that promote hand hygiene practices. The World Health Organization has, for example, introduced a global patient safety campaign of “Clean Care is Safer.”

In the hospital, people who are infected or colonized with bacteria are placed in isolation to prevent their spread to other patients and health-care workers. Visitors and health-care workers caring for isolated patients may be required to wear protective garments and must follow strict hand washing procedures. As bacteria can survive on surfaces and fabrics including curtains or garments worn by health-care workers, complete cleaning is necessary to eliminate bacteria from areas where patients are recovering from invasive procedures.

Prevention of spread of infection includes:
- Implement standard precautions;
- Minimize ward transfers of staff and patients;
- Ensure early detection of cases, especially those admitted from another hospital;
- Isolate infected or colonized patients in a single room, isolation unit or grouping in a larger ward;
- Apply airborne precautions for patients with MRSA pneumonia;
- Ensure hand washing and alcohol hand rub after contact with infected or colonized patients;
- Wear gloves when caring for patients or when handling MRSA contaminated materials;
- Wear a gown or apron when caring for patients or when handling contaminated materials;
- Develop protocols or guidelines for management of patients and staff during an outbreak.

A constant vigilance and adherence to infection control measures is the foundation of patient safety and protection of health workers.

Protection of health-care workers
In order to recruit and retain health workers and address the current workforce shortages globally, there is need to create positive practice environments. Lack of a positive practice environment has a serious negative impact on the recruitment and retention of health professionals, the productivity and performance of health facilities and ultimately on patient outcomes. That is why the ECN, IFP, International Pharmaceutical Federation (FIP), World Confederation for Physical Therapy (WCPT), World Dental Federation (FDI), and WMA, under the umbrella of the Global Health Workforce Alliance (GHWA), are collectively undertaking a five year campaign to improve work environments and aid in staff recruitment and retention through the development of positive practice environments.

Positive practice environments are settings that ensure the health, safety and personal wellbeing of staff, support the provision of quality patient care and improve the motivation, productivity and performance of individuals and organisations. Health-care workers are at risk of acquiring infection through occupational exposure. For example, about 10% of people who spend a lot of time with someone who has infectious TB disease become infected with M. tuberculosis. Hospital employees can also transmit infections to patients and other employees. Thus, an employees health programme must be in place to prevent and manage infections in hospital staff.

Health-care workers should be reviewed at recruitment, including immunization history and previous exposures to communicable diseases (e.g. tuberculosis) and immune status. Immunization recommended for staff includes: hepatitis A and B, influenza, measles, mumps, rubella, tetanus and diphtheria. Specific post-exposure policies must be developed and compliance ensured for a number of infectious diseases for example: HIV, viral hepatitis, SARS and tuberculosis. Health-care workers with infections should report their illnesses and other incidents to staff clinics for further evaluation and management.

Conclusion
Infection control is a foundation of patient safety which involves a multidisciplinary approach comprising health professionals, hospital managers and others working in tandem. With appropriate attention to policies and infection control practices, the growing rates of HAI can be prevented and quality of care improved. Health-care facilities are a place of caring and healing and they should not tolerate transmission of infections to patients or to health workers. The growing rates of antimicrobial resistance compromise the ability of the health system to treat infections and sap confidence of the community in health systems and health professionals. Yet with proper control measures and adherence to policies and procedures, health care associated infections can be virtually eliminated or much reduced. The benefits of infection control to patients and the savings to the health facilities.
care are tremendous and provide a win-win situation for all.

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References
3. WHO (2004), Practical Guidelines for Infection Control, SEARO Regional Publication No.4, WHO.
Becoming a top quality and safety hospital

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Abstract

As quality and safety issues become more transparent and universal the top hospitals should increasingly follow strategies and measures determined by quality. This article sets out four steps to achieving quality and safety in health care.

A multitude of factors have led to not only the unprecedented rise in the hospital quality and safety transparency but also its interjection into the reimbursement system. One of the leading authorities in health care safety, Dr. Charles Denham, describes a quality and safety “tsunami.” This is being driven by a loosely aligned group of partners that includes CMS, Payors, the media, consumer groups, political leaders, Leapfrog, IHI, NQF and others. The concern is not only its speed and power but also the fact that no single entity is driving. In other words, this is not organized policy and little thought is being given to unintended consequences.

Dr Denham believes that there will be three types of organizations – surfers, swimmers and sinkers. Surfers will race ahead leveraging the power of the wave. Swimmers will respond cautiously and survive but be damaged. Sinkers will drown and wonder what happened.

The Top Hospitals

In the words of Dr. Jack Thomas of Winston-Salem, NC, “When you’ve got a great reputation, you sure hate to mess that up with data.” Traditionally, the top hospitals have built those reputations on having high profile, well trained medical staffs and cutting edge technology and research. The new order will be based largely on a broad set of process and outcome measures that largely get at the very basics of care. The new leaders will embrace both these measures and a strategy that moves patients and their personal health information safely and efficiently across the continuum of care. The top hospitals in this new order will ascend four steps. Each will be harder, touch a larger portion of the population, and require more leadership, commitment and patience.

The Four Steps to Quality and Safety

1. Evidenced-based practice – All hospitals aspiring to be at the top will have to be excellent at delivering evidenced based process of care measures to key populations. This will not be accomplished by retroactive measurement and simple accountability. In the short term, it will require real time concurrent review; immediate feedback and assistance to support clinicians doing the right thing at the bedside. To be sustainable over time, it will require systematic process improvement. Examples in this category include core measures, stroke care, cardiac surgery care, oncology care and sepsis.

2. Potentially preventable hospital complications – These conditions cross diagnostic categories but have predictable risk factors. Support systems must be geared toward prevention and early recognition and treatment. Examples include hospital acquired infections, aspiration pneumonia, deep venous thrombosis/pulmonary embolus and delirium.

3. Building a safety culture – This is possibly the most difficult of the steps and touches all patients and staff. It involves patient safety, staff safety and environmental safety. The leading organizations will create safe practice “norms” of behaviour and then go directly to the frontline caregivers and other employees to understand how to implement them. They will ultimately create a sustainable model through process improvement and infrastructure development. Examples include medication safety, handoff communication and hand washing.

4. Care across the continuum – Increasingly, health-
care systems will be judged on how they move and care for patients and their personal health information, efficiently and with high quality across the continuum of care. The top hospitals will find ways to connect ambulatory and inpatient care and assure this movement, especially for high-risk populations. Examples include medication reconciliation and congestive heart failure disease management.

**Structure**

Ultimately, success is not be achieved in a vacuum and will be dependent on collaboration with other departments including nursing, infection control, pharmacy, risk management, case management, coding, information technology and others. The major components and costs of a quality department can be divided into staffing, IT system support and licensing fees. One successful model of staffing would include:

- **Data team** – This group is responsible for data abstraction, input analysis, formatting and reporting.
- **Clinical Quality Coordinators** – This group is responsible for project management of all major quality initiatives, committee support and multidisciplinary task force coordination.
- **Clinical Nurse Leaders** – This group of expert nurses are charged with implementation of quality projects and support of clinical staff at the bedside.
- **Safety/Performance Improvement staff** – This group is responsible for driving safety initiatives, a safety culture and facilitating process improvement projects at the unit and department level.
- **Leadership/Management**

**Quality and Safety Plan/Goals**

Ideally, the plan would be to move through the four steps previously outlined in a sequential manner. Unfortunately, the pressure from the external environment necessitates that we start in all four areas simultaneously. The overriding key is multidisciplinary teamwork and coordination. The goal will be to expand the role of quality and safety staff from measurement and reporting to real-time facilitator and active participant.

**Quality and Safety ROI**

Quality and safety have not traditionally been thought of as having a positive impact on revenue. However, this is changing rapidly. At present, hospitals are paid a 2% "bonus" of their IPPS income as part of the Hospital Quality Data for Annual Payment Update (RRQDAPU) initiative for accurately reporting core measures. A pending proposal before the US Congress known as Value Based Purchasing would change that to a 5% “withhold” which would be paid in a graded fashion based on core measure performance. The new MS-DRG payment system including the “stop-pay” list, significantly rewards hospitals that accurately document and reduce key hospital-acquired complications and punishes those who do not.

Many of the areas we focus on in quality have a financial upside in the form of loss avoidance. Analysis of cost/reimbursement data reveals potential significant opportunity for better financial performance by improving care in key conditions and diagnoses. Examples include sepsis, CHF and pressure ulcers.

**From ROI to SIB (Stay in Business)**

While MS-DRGs were intended to change reimbursement, they also were designed to better capture quality and safety data from coded data. Already, national commercial insurers are using their extensive claims databases to define high “quality and efficiency” networks of providers and structuring benefit packages to actively steer patients to them. The most easily measured and “steered” are the elective tertiary and ultra-tertiary procedures that have some excess capacity such as CABG and Total Joint Replacement. Institutions that wish to remain competitive and viable in these areas must demonstrate high quality and efficiency.

**Summary**

In the end, the success of any hospital quality and safety programme is dependent on the caregivers at the bedside. Hospitals are arguably the most complex organizations on the planet with multiple high-risk processes usually requiring many human steps. The potential for error is astronomical. The key in most cases is delivering consistently excellent “basic” care with high reliability. It is ultimately the role of leadership to provide a system that for front-line caregivers makes doing the right thing the easiest and most likely thing.

**References**

- CIGNA Care Network© and CIGNA Physician Quality and Cost Efficiency Profile
- CDPH Patient Safety Behaviors, 2006
- Thomas Knight MD, is the Chief Quality Officer at Methodist Hospital in Houston, Texas. He has extensive experience in disease management and quality improvement and has served as a vice president, medical director and consultant in these areas for the past 20 years. Full biography on page 2.
Disinfection with chlorhexidine mouthwash, “Safer Systems Saving Lives” and regular mouth care can reduce ventilator associated pneumonia

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Abstract

At Lyell McEwin Hospital in South Australia, the Safer Systems Saving Lives Project implemented new outcome based care “bundles” and incorporated a regular chlorhexidine mouth-care regime for ventilated patients for the prevention of ventilator associated pneumonia. In one year, this inexpensive and sustainable initiative achieved a reduction in ventilator associated pneumonia by more than 18%, projected savings in excess of AU$500,000 for the same period, reduced overall length of stay and created an excellent model for nursing care for ventilated patients.

Following national expert consultancy, the Australian Commission on Safety and Quality in Health Care (ACSQHC) partnered with all national health departments and piloted a new quality initiative, adapted for the Australian health-care system. Derived from the American “Saving 100,000 Lives” campaign, it was renamed “Safer Systems Saving Lives” (SSSL). The project involved the introduction of new safety initiatives or “bundles” and it was undertaken at Lyell McEwin Hospital (LMH) in South Australia, from 2005–2007, one of 37 hospitals participating nationally.

Ventilator Associated Pneumonia (VAP) has both humanitarian and financial implications. Through their audit conducted on the Preventing Ventilator Associated Complications (PVAC) bundle, the SSSL exposed costs and demonstrated significant savings potential in Intensive Care Unit (ICU) for the implementation of the PVAC bundle. Application of bundle principals realised major clinical improvements in ICU when compliance to bundle principles was upheld.

Background

In preparation for the introduction of an evidenced-based mouth care policy, a literature review was undertaken via electronic databases including CINAHL, MEDLINE, Cochrane Library, RII and EBM reviews, and utilised optimal search terms which included mucosal desiccation, saliva, oral hygiene and teeth brushing, pooling secretions, oral disinfection, nosocomial infection, ventilation and pneumonia. The IHI.org was also accessed for referencing and core methodology.

Research confirmed that VAP develops quickly and easily in intubated patients. Any ventilated patient is at risk – the risk amplifies with increased length of time intubated. Incidence reportedly occurs in up to 25% of ventilated patients. Bacteria that cause VAP occur naturally in the oral cavity and reside on the teeth and throat. Dental plaque and bacteria normally resident in the

The pooling of subglottal secretions and saliva, formed within the oral cavity, and associated endotracheal or nasotracheal intubation, increases risk of bacteria entering the lungs by up to twenty fold.

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Daily sedation "vacation"): To prevent inadvertent over-sedation a sequenced halving of sedation continued until the patient showed signs of reawakening. This was documented daily.

- Elevate the head of the bed at a minimum 30° during their stay.
- Peptic ulcer protection. Routine use of intravenous Omeprazole 40mg daily.
- Deep Vein Thrombosis protection. The routine use of low molecular weight heparin such as Enoxaparin 40mg or subcutaneous daily Heparin 5000 IU and the use of anti-embolic stockings on both lower limbs were mandatorily implemented.

In 2006, the bundle toolkit was further expanded to become eight components. The power within its re-designed framework was that all eight components had to be delivered every time, unless clinically contraindicated. For mandatory application, it became known as the "Preventing Ventilator Associated Complications (PVAC)") bundle. The enhanced toolkit aimed at reducing complications or missing components of care that could contribute to patients having longer mechanical ventilation, potentially exposing them to a greater chance of developing nosocomial ventilated pneumonia. It steered a collaborative team effort incorporating daily bedside consultation with documented review of individual patient needs.

The added essential new components of care included:
- Analgesia plan: The concept introduced by the SSSL was to separate preparations of intravenous analgesics and sedation. This required education of attending doctors for clinical practice change and sedation policy development. Patients were reviewed individually, patient needs were discussed and documented following a team consultation.
- Nutritional plan: Requirements and dietitians consultation daily with early naso-gastric feeding.
- Bowel management plan: Prevention of constipation: rectal examination if constipation/ control of diarrhoea.
- Skin integrity plan: Specific to LMH.

The project nurses further expanded the PVAC bundle toolkit to include innovative mouth care policy. Particular notice was paid to describing the oral integrity including moisture or dryness, colour and glossiness of the tongue, mucosa and buccal cavity, for the development of, and reporting of any oral candidal infection. A thorough documented inspection of the oral cavity and mandatory application of the mouth care regimen were crucial. The oral cavity requires specific care to minimise harm and risk to the mechanically ventilated patient. The skin integrity plan included a total skin integrity inspection and the application of kinetic air mattress within 24 hours of admission. Repositioning the patient frequently was also important.

The evidence for VAP from the 2005 audit was used to effect practice change in ICU. Mapping of patient data began with the initial five month period in 2005 and continued for 22 months and concluded in March 2007.

Process
The SSSL team included project nurses to drive the
project and to steer solutions. During the project life, education sessions for nursing and medical staff were undertaken to promote awareness of the new system design. Patient care nurses were responsible for implementation of all bundle components and maintenance of the mouth care package. Following education, doctors understood bundle requirements and routinely adopted the SSL guidelines.

Nurses in ICU collected daily data on patients within the audit criteria, and the project involved all ICU staff to add ownership for the VAP problem. Collated data was reported to the clinical management team.

The systematic re-development of mouth and oral care principles undertaken along with the PVAC bundle toolkit formed the framework for the clinical governance and development of sustainable minimum standards for all ventilated patients in ICU. The comprehensive mouth care and oral hygiene package for ventilated patients included a chlorhexidine mouth-care policy. It was introduced in January 2006 following intensive evidence-based research and referenced best practice. Focusing on dependent patient groups – paediatric, chemotherapy patients or palliative care – it included a cost effective, sustainable, specialised mouth care for use on every mechanically ventilated patient in ICU. All ventilated patients were treated as being at risk for the development of VAP.5, 7, 8, 10, 17

The mouth care protocol included oral assessment, inspection, frequent tooth brushing, maintenance of mucosal integrity and introduction of chlorhexidine mouth wash solution and regular oral and tracheal suctioning.5, 6, 7

Intra-oral moisturisation8 was routinely maintained following mouth care application to prevent the tongue from becoming dry or coated, as this condition was a precursor to the development of oral fungal infection leading to development of VAP.3, 7, 8, 10, 17

The mouth-care package was comprised of a rotary head toothbrush, toothpaste, chlorhexidine mouthwash, artificial saliva and paraffin ointment for the lips. Strict oral hygiene and the removal of dental plaque was performed four hourly. Intra oral moisturisation and lubrication of mucosa and lips were incorporated with the mouth care. Chlorhexidine was chosen for its long term, cumulative antibacterial effects and reduction of plaque build up on the teeth.9, 10, 11, 12  It is a cutaneous antiseptic belonging to the biguanides group. It is active and safe antiseptic for daily clinical practice less abrasive on the oral mucosa and there was bleeding oscillates more efficiently than a manual brush. It also is four hours. The electronic rotary brush’s small head is cutaneous antiseptic.
The mouth care package was simple and inexpensive to introduce. VAP in ICU. Costing AU$18.91 per patient, the mouth care package was an excellent model of nursing care. Delivered to “every patient, every time,” the specialised mouth care for ventilated clients and teamwork reduced the incidence of VAP in ICU. Of that group, seven patients developed VAP. The average length of stay increased by 42.67% for patients with VAP increased from 60.18 hours to 217.16 hours/patient. The average ventilation hours in seven cases, with a VAP occurrence of 5.3% of patients ventilated hours/day were also recorded. There were four cases of VAP in June, which was the highest concentration of VAP for the year and correlated to winter seasonal activity. See Figure 2.

In 2007, 182 patients were audited. Nine patients developed VAP and the VAP rate was 5%. Increased length of stay for ventilated patients was calculated. The average length of stay for June 2006 was 92.68 hours (Figure 3).

The average VAP Length of Stay increased by 42.67% to 217.16 hours/patient. The average ventilation hours for patients with VAP increased from 60.18 hours to 217.16 hours, with increased ventilation time of 26.59% (Figure 3).

Conclusion
The mouth care application mitigated risk in mechanically ventilated patients and every ventilated patient received an excellent model of nursing care. Delivered to “every patient, every time,” the specialised mouth care for ventilated clients and teamwork reduced the incidence of VAP in ICU. Costing AU$18.91 per patient, the mouth care package was simple and inexpensive to introduce. Incorporating policy development, the evidence-based and referenced best practice created risk reduction and sustainability.

Oral hygiene initiatives coupled to the benefit of improved patient comfort and quality of care contributed to a significant reduction in VAP incidence in the ICUs. A combination of nurse education, evidence-based practice and the implementation of the PVAC bundle contributed to this outcome. The importance of mouth care was incorporated into clinical rounds, education sessions, and the audit tool.

Data was submitted to PIN protected national website – no patient identity was recorded. Progress was recorded and graphed and displayed in ICU. Benchmarking compliance to PVAC bundle and process measures was calculated from data sent to the national database, which graphed the median results of LHMI to other SSAN sites.

Stringent clinical audit of compliance on all eight bundle components including compulsory mouth care was incorporated into the specially designed audit tool modified from the PVAC toolkit. Instructions regarding audit requirements were located in every patient’s folder. Flow charts, audit tools and the newly developed protocols were implemented. The compliance process was audited by the oncoming shift, which created an ownership by nursing staff. Total compliance of all components of the PVAC bundle was mandated and recorded in this way:

- Data was submitted to PIN protected national website – no patient identity was recorded. Progress was recorded and graphed and displayed in ICU. Benchmarking compliance to PVAC bundle and process measures was calculated from data sent to the national database, which graphed the median results of LHMI to other SSAN sites.
- In-line tracheal sampling was obtained as close as possible to intubation time, where possible prior to the administration of intravenous antibiotics. As soon as practicable after intubation, mouth care commenced. It was documented each shift in the clinical record.
- Tracheal aspirates were obtained as soon as practicable after intubation.
- Stringent screening of all ventilated patients began as soon as possible to intubation time and continued twice weekly on Mondays and Thursdays, whilst patients remained intubated. A mid-stream catheter urine was also obtained on these days to check that if any new signs of infection occurred, such as elevated white cell count, was not attributable to urinary infection.
- Chest X-rays were performed daily to look for pulmonary infiltrates or other new changes.
- Laboratory results obtained through the Open Architecture Clinical Information System (OACIS – a data network to access patient records across the metropolitan public health system) were reviewed daily on clinical rounds.

Random quality control testing of chlorhexidine mouthwash solution in each patient’s bay was undertaken to determine any contamination risk to the patient or of all bundle components and maintenance of the mouth care package. Following education, doctors understood bundle requirements and routinely adopted the SSSL guidelines.

**Table:**

<table>
<thead>
<tr>
<th>Total ventilated patients ventilated</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>148 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmed VAP cases</td>
<td>58</td>
<td>132</td>
</tr>
<tr>
<td>VAP incidence</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Mouth care package costs per annum</td>
<td>nil</td>
<td>AU$2,496.12</td>
</tr>
<tr>
<td>Monthly additional expenditure to ICU</td>
<td>AU$122,227</td>
<td>AU$122,227</td>
</tr>
<tr>
<td>VAP costs to LHMI</td>
<td>AU$500,000</td>
<td>AU$108,308</td>
</tr>
</tbody>
</table>

**Figure 4:** The cost of ventilator associated pneumonia (VAP) and its mitigation through the PVAC bundle.

**Figure 2:**

<table>
<thead>
<tr>
<th>Pre mouth care plus extended length of stay</th>
<th>Post mouth care plus extended length of stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>2006</td>
</tr>
<tr>
<td>VAP Length of Stay increased by 42.67%</td>
<td></td>
</tr>
</tbody>
</table>
| Average VAP Length of Stay increased by 42.67% to 217.16 hours/patient. The average ventilation hours for patients with VAP increased from 60.18 hours to 217.16 hours, with increased ventilation time of 26.59% (Figure 2).

**Conclusion**

The mouth care application mitigated risk in mechanically ventilated patients and every ventilated patient received an excellent model of nursing care. Delivered to “every patient, every time,” the specialised mouth care for ventilated clients and teamwork reduced the incidence of VAP in ICU. Costing AU$18.91 per patient, the mouth care package was simple and inexpensive to introduce. Incorporating policy development, the evidence-based and referenced best practice created risk reduction and sustainability.

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- Laboratory results obtained through the Open Architecture Clinical Information System (OACIS – a data network to access patient records across the metropolitan public health system) were reviewed daily on clinical rounds.

Random quality control testing of chlorhexidine mouthwash solution in each patient’s bay was undertaken to determine any contamination risk to the patient or
to cost containment by achieving a reduction in length of stay and increased surveillance for ventilated clients. It introduced awareness for infection control practice interventions and collegial allied health team interactions.

The continued savings had an additional benefit of directing health care dollars for other resources.

Next steps: with standardised medical and nursing interventions and mouth care to prevent VAP we must endeavour to control variance in the equipment used. Improved endotracheal choices such as flexible polyurethane cuffs, enhanced antibiotics for early prevention of VAP and recommendations to include oral disinfection with chlorhexidine for all elective intubation are a starting point for tighter control on opportunistic VAP.

References

1. Roms M, Deley M, Loffe, RC. Brescous S. "Effects of daily oral care with 0.12% chlorhexidine gluconate and a standard oral care protocol on the development of nosocomial pneumonia in intubated patients: a pilot study." Journal of Dental Hygiene. 89(3)3, 2005
2. Campbell IS, and Eckland MM. "Development of research-based oral care procedures for patients with critical airways." JIU News a publication of AAGP’s teaching institute. 7 May 2002.
15. "Reduces the Incidence of Ventilator-associated pneumonia American Journal of Respiratory and Critical Care Medicine. 2006 June 1; 173, 12, Health & Medical Complete pg. 3148

Wendy Butvila is a registered Nurse for 28 years; specialising in ICU. 2007: Winner of South Australian and National Nursing Excellence Awards for patient safety improvement work in ICU through Safer Systems Saving Lives applications.

Martin Reilly has 25 years experience in ICU – public, private sector, nationally and overseas who developed the ICU mouth care protocol of ventilated patients as part of his study for Masters Degree in Nursing. National centre Health&cose Learning and Development facilitator.

Genevieve Stavroulis a registered Nurse for 28 years; specialising in Paediatric nursing and education leading to developing and utilising expert skills and knowledge to enhance Patient Safety and Quality through clinical governance.
Introduction

The IOM report To Err is Human (1999) established that poorly designed systems/processes, not necessarily people, contribute to medical errors and harm to patients. Additionally, IHI and the National Patient Safety Foundation have documented that a culture of patient safety is essential to prevent errors and deliver quality patient care. The national patient safety goals have identified basic problem areas that all health-care institutions need to focus on. Process redesigns are the strongest actions for eliminating unsafe situations at the front line.

The TRIM methodology brings a simple and effective concept to the fundamental level of the organization – the people doing the work. The term TRIM was coined to identify a unique approach to problem solving, easily recognized by front line staff for their use in solving problems that they encounter in the course of their daily work. This was a differentiation from other forms of change management, such as PDSA or FMEA, which historically was initiated by performance improvement or risk management.

At Baptist Health, patient safety is fostered by a transparent culture and ability for all employees to speak up for patient safety. Starting in 2004, our innovative involvement of the Patient Safety Champions established a grassroots approach to patient safety communication. The goal to enhance the culture of patient safety through staff engagement requires all to imagine a world without medical errors, believe in changes and achieve goals through collaboration.

Specific aims

Our goal is to solidify our process of shared governance and staff engagement in continuous improvement and change management on the unit level throughout the organization. Leadership support by the Board on Quality and Patient Safety and the Quality and Patient Safety Steering Council provide a strong foundation for our efforts to harmonize with Baptist Health strategic initiatives.

Objectives

- Engage staff to be accountable for identifying and solving problems at the unit level.
- Standardize processes and best practices across BHSF.
- Engrain a patient/family centered focus for all care delivered.

Methods

The TRIM process was introduced to executive leadership and to the Board on Quality and Patient Safety by the Chief Quality Officer for endorsement in the spring of 2008. Training was initiated with 200 patient safety champions from across Baptist Health. Additional trainings were given by a core team of Baptist Health performance improvement staff over the next six months, with the goal of training over 1000 staff by May 2009.

Education/Training – Training was designed to include development of the TRIM philosophy, background of Lean design and methodology, observation and identification of problems, and tools – such as value stream mapping and A3 problem solving.

Training began with our patient safety champions, a programme in place at Baptist Health which designates and specially educates front-line employees to promote all to speaking up for patient safety. Additional unit level and management training were then also conducted.

The TRIM process was introduced to executive leadership and to the Board on Quality and Patient Safety by the Chief Quality Officer for endorsement in the spring of 2008.
Champions as well as key performance improvement leadership. Additional front-line staff training is three hours in length and includes time for practice of these techniques and sharing of value stream maps, A3s and ideas. These courses are offered monthly through our Baptist Health course catalogue.

To ensure front line staff have the support of their leadership, manager TRIM training was designed to expose managers to basic techniques, as well as emphasize the key role leadership provides in supporting their staff’s TRIM projects and improvements.

Following training, consultation time is available with the training team to help develop a plan and execute the value stream maps and A3s.

Value stream maps and A3s are collected and posted in an on-line shared library for access throughout the system. This electronic library allows all staff to access solutions to common problems, increasing standardization across BHSF, reducing duplicate efforts and promoting the spread of sustainable results.

Both value stream mapping and A3 problem solving techniques were adopted from Lean. (See Figures 1 and 2).

The Patient Safety Champions meet on a quarterly basis and will have the opportunity to present their TRIM projects, including photographs and results.

By design, the A3 process includes an ROI (return on investment) component, adding to the benefit of this methodology. Process improvements and learnings will become part of the BHSF shared learning programme in place through the Board of Quality and Patient Safety to the Patient Safety Champion quarterly meetings.

Evaluation is conducted on individual projects, and the most promising projects are submitted for ward consideration.

On an entity level, quarterly awards are given for creativity, design and sustainable impact of the problem solution. These rewards highlight the staff and unit that have identified and solved the issue. These quarterly winners are showcased at the system level biannually with recognition across BHSF, publication of their TRIM project and a monetary award to each participant.

**Impact**

Our intention is to improve patient safety and workplace engagement, eliminate medical errors and adverse events and increase patient satisfaction and quality care. On a front line level, TRIM strengthens the resolve to make lasting differences in accountability for processes, outcomes and patient safety.

Anecdotally, following the initial training, the enthusiasm and positive impact on the patient safety champions was immeasurable. Many projects were initiated on the unit level with leadership support. Front-line managers requested TRIM training sessions for their departments to increase the awareness and participation in patient safety and workplace engagement. Executive leadership and medical staff have participated at the

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**Figure 1: Current value stream map delivery of physical therapy treatments at Baptist Hospital June 2008**

<table>
<thead>
<tr>
<th>Process Time</th>
<th>Delay Time</th>
<th>Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 min</td>
<td>702 min</td>
<td>822 min</td>
</tr>
</tbody>
</table>

**Value Quotient**

120 min / 822 min = 15%
entities in training sessions demonstrating the highest level of support. Numerous projects have been initiated across the system. Results are being captured in order to quantify. The goal is to demonstrate the impact and sustainability of each project, and utilize large-scale change and spread techniques to maximize the potential for standardization across the organization.

The ROI will impact the organization at a unit, hospital and system level. By utilizing the organization’s greatest asset, its employees, the TRIM project will add value by streamlining work, eliminating waste and increasing both productivity and employee engagement.

Thinh H Tran MDis Chief Quality Officer, Baptist Hospital, South Florida, where he is responsible for clinical quality improvement, patient safety, accreditation, clinical research and grants. He was formerly Vice President and Chief Quality and Patient Safety Officer at The Methodist Hospital Houston Texas.

Dr Tran received his BS degree in genetics and cell biology and his MD degree at the University of Minnesota.

Geri Schimmelis Patient Safety Consultant, Center for Performance Excellence.

Emily Sullivan is Director, Center for Performance Excellence.

Figure 2: Problem analysis in the Mother Baby Unit of the Baptist Hospital

Table: Problem Analysis in the Mother Baby Unit

<table>
<thead>
<tr>
<th>Issue</th>
<th>Background</th>
<th>Current Condition</th>
<th>Problem Analysis</th>
<th>Target Condition</th>
<th>Countermeasures</th>
<th>Implementation Plan</th>
<th>Cost</th>
<th>Cost Benefit/Waste Reduction</th>
</tr>
</thead>
</table>
| Infant phototherapy is delayed waiting for nurses to find necessary supplies | Skilled personnel are not trained in phototherapy | Once an infant phototherapy order is received, the nurse needs to collect the bili-lite, bili-lite meter, and bili-mask that are located in many different storage areas | Bili-lite Storage | Designate 2 storage areas for phototherapy lights: one for Central and West Lake and another for West and East Main. | 1. Place bili-masks in OMNICELL of each pod. 2. Provide one bili-lite meter for each pod, at minimum have 3, and place them in the med room of each pod. | 1. Store room #1 2. Store room #2 3. Med Room | Reduce infant inpatient time/days | $1995

Length of time spent locating equipment

<table>
<thead>
<tr>
<th>High</th>
<th>Avg</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 min</td>
<td>69 min</td>
<td>35 min</td>
</tr>
</tbody>
</table>

Length of time spent locating equipment Budget approved, equipment ordered and awaiting delivery. Specific locations were identified for storage and boxes will be installed to house the phototherapy equipment as soon as it arrives.
Improving quality in an emergency department through employee empowerment

JOHN SCHOOLEY
DIRECTOR OF EMERGENCY SERVICES, PRESBYTERIAN HOSPITAL, CHARLOTTE, NORTH CAROLINA, UNITED STATES

Abstract

An overcrowded emergency department at Presbyterian Hospital in Charlotte, North Carolina, United States, led leaders to begin a process of employee empowerment that resulted not only in improvements to patient care, but also a culture change in the workplace. Emergency Department staff began to use data to make more decisions and to believe that they could make a difference.

The stress and frustration caused by working in an overcrowded emergency department was taking its toll on employees at Presbyterian Hospital in Charlotte, North Carolina. Nurses and physicians often felt the wrath of patients irritated because of long delays. Too many people who came seeking medical attention grew weary of waiting and left the hospital without being seen by a clinician. With morale plummeting, the staff had become stagnant in 2006, and many employees felt the situation would never get better in their workplace.

Changes were needed to improve both the quality of care for patients and the quality of work life for the staff. So the department’s leadership embarked on a plan to change the work culture by empowering employees to make their workplace better. The leaders began to systematically provide the staff with the training, resources and responsibility to make it happen.

Keys to a successful culture change would be to get the employees to understand a common purpose and work toward it, to break down barriers between work units and to unleash the employees’ abilities to make improvements to their workplace.

Presbyterian’s 43-bed emergency department (ED), located in one of the fastest-growing regions of the United States, experienced a 34% increase in patient volume over a four-year period, expanding to an annual census of more than 80,000 adults and children during 2008. The department includes 35 beds for adult patients and eight beds for children in a separate section. Both sections are part of Emergency Services at Presbyterian, which also includes a chest pain evaluation unit, a clinical decision unit and trauma, forensic and emergency management programmes.

Each part of the emergency service line traditionally had functioned in a silo, and getting the units and programmes to work together as a team rather than individually was vital for positive change to occur. Everybody had to learn to work for the same purpose: to improve patient care.

Soon after the arrival of a new department director in May 2006, managers began attending regular off-site retreats to identify issues and barriers to providing excellent patient care and making the hospital a great place to work. Leaders who attended these retreats included charge nurses, managers, educators, physicians and the regional chief nursing officer.

At the retreats, the leaders created action plans and used process improvement tools to develop a systematic approach to begin improving all areas in Emergency Services. But perhaps the most important outcome came from the first retreat – a shared vision specifically developed for the service line.

Previously, the department did not have a stated vision, which caused decision-making challenges for the managers. The lack of a shared vision allowed leaders to march to the beat of their own drum without a firm understanding of the big picture of Emergency Services. After the initial retreat, the leaders began to understand that their new vision was a statement of what they wanted to achieve, not where they were at the time – and it likely would take years to achieve.

Although action plans generated during the retreats resulted in several random efforts to make the department better, success was limited because the staff was not engaged and data needed to make improvements were not readily available.

In late 2006, the hospital embedded Gina Marie Gabriel, an operational improvement and Lean Six Sigma adviser in the department, to help the ED leaders facilitate the improvement work and the needed culture change. With Gabriel dedicating three-fourths of her time to the ED, many staff members thought she would try to make changes immediately. Instead, Gabriel and the department...
leadership decided she should spend her initial time obtaining the necessary data to guide process improvement efforts before engaging the staff.

Patient throughput issues had become more apparent with the ED's volume steadily rising over the years and no additional rooms in sight. The ED leaders and Gabriel looked for trends and patterns in the data from previous months and years. Baseline data, as well as value stream maps, were established to determine where to focus efforts to improve patient flow and reduce length of stay – two things that would help the overcrowded ED and the frustrated staff.

Everyone knew that when the patient volume increased, the rate of patients who left without being seen (LWBS) by a clinician tended to rise, too. No one was pleased with the department's high LWBS rate, which at the time was...
about 7%, but what—besides volume—pushed the rate higher on certain days?

A series of correlation studies was produced in early 2007 to determine what was driving the high LWBS rate. After considering many correlations—some that made sense, others that didn’t—the ED leaders realized that the number of patients sitting in the waiting room at 3 p.m. every day actually had the greatest correlation to the LWBS rate.

As intuitive as it might sound, that correlation was important because it allowed the team to focus on being more productive during the first shift so the flow of the second and third shifts would improve. Typically, traffic in the ED increased during the evening hours, and if the third-shift staff started with a backup, it never dug itself out of the hole. So, the first improvement projects focused on getting patients out of the waiting room and into a treatment room, while tracking the arrival-to-room time as a key performance indicator.

To this point, most of the analysis had been done without direct staff involvement. Slowly, Gabriel and the ED leadership began to engage staff members by asking them what they felt caused delays each day. Answers included the inability to handle the incoming volumes, radiology department turnaround times and insufficient staffing.

“I asked, ‘What causes you the biggest pain every day to moving your patients in and out quickly? What are your barriers to flow?’ They would tell me, and I collected all that data and created Pareto charts. And that’s how we got them involved in addressing some of their own issues,” Gabriel said. Pareto charts allowed daily challenges to be analyzed and prioritized.

However, the resistance to change ran deep in the ED units. Although there was some early success getting staff involved, some employees simply opposed any attempts at improvement.

By March 2007, the initial projects had not progressed, and it was apparent that the current leadership team was not able to make the necessary adjustments. As a result, personnel and leadership structure changes were made. The new leaders were expected to be flexible, patient focused and accountable to themselves and the team.

With this new energy on board, staff members began to get involved and propose ideas and solutions. They were ready to help implement the changes, too. ED employees started looking at the patient flow
process in segments— from door to room, room to doctor, doctor to disposition, and disposition to discharge. Improvement teams systematically reviewed a list of projects, taking one at a time that would make the biggest impact, then watching for sustainable results. The teams used the plan-do-study-act cycle to analyze their efforts. If there were no sustainable results, they readdressed the project until they found the right solution. Specific focus and measurements for success were established before any pilot project began. Follow-up meetings were held to determine whether to continue the project beyond the pilot stage and how best to sustain results and make additional improvements. During the remaining months of 2007, 10 major projects and other smaller improvement efforts were undertaken. No one improvement fixed everything, but small...
incremental changes began occurring until a major change in the ED admission process caused improvements to multiply.

Not surprisingly, a project suggested by nurse staff members provided the breakthrough that greatly impacted the ED’s ongoing culture change. The idea was to create virtual capacity during high-volume periods in the ED. There were two ways to create virtual capacity: decrease the length of stay for patients or find new ways to treat patients so they would not necessarily occupy rooms.

Nursing staff, physicians, nurse leaders and Gabriel worked together on a team to increase the ED’s virtual capacity. An express care area was opened during high-volume times where people could be treated by a mid-level clinician while sitting in a chair, thereby freeing rooms for patients who needed them the most.

The process change had immediate benefits. Express care patients were happy because they were seen by clinicians more quickly, and treatment for patients with more acute problems was also expedited. Nurses felt their workload was more manageable, and doctors were able to see more patients without adding staff.

With the newly created virtual capacity, everyone’s talents and skills were used more effectively, and no additional staff was needed. The number of people who left without treatment dropped, the length of stay for patients fell and patient satisfaction scores improved.

“With positive results starting to happen, it was almost like a weight was taken off the shoulders of the nursing staff,” Gabriel said. “I think they saw a process from beginning to end that was about them and by them, and it worked wonderfully. They realized they could do it again and again.”

The staff’s new willingness to accept process changes was essential to the department’s evolving culture change. Staff members also began to understand the value of data to help guide change. They watched it, monitored it and got excited when it moved in the right direction. They began to set their own outcome goals for what they wanted the data to become.

To keep the data before the staff, large boards were placed at key locations with color-coded charts that showed how many patients left each day without being seen. Staff pride increased as fewer and fewer patients were leaving before being seen by a clinician. The success was celebrated with food for each shift when preset goals were accomplished.

The ED’s new leaders worked throughout the entire culture change process to instill the attributes of flexibility, customer service and accountability in their staff. This shift in expectations initially resulted in a turnover rate of almost 40% in 2006. However, the turnover decreased during 2007 and fell to 19% in 2008. As a result, employee satisfaction increased.

As the ED staff felt more empowered to make changes in the workplace, many nurses began their own improvement projects, which are reviewed by a nurse manager. Other staff members also became more involved in shared governance which allowed them to take control and have input into changes in the department.

The success was multiplied.

Newfound emphasis on education also has improved employee morale.

The ED staff has become increasingly more comfortable and competent using data to make decisions about improvement. Emergency Services “town forums” conducted by the ED’s leaders to increase communications regularly begin with a 10-minute review of data from all service line areas for the previous quarter and year.

In addition, data in the form of control charts, Pareto diagrams and mind maps, are posted in break rooms and hallways in the Emergency Services area, along with patient satisfaction scores and other charts and graphs. The ED is now a visual department.

The ED’s physicians were naturally attracted by the use of data to drive decisions. The Mid-Atlantic Emergency Medical Associates, a physician-owned medical group, has staffed Presbyterian’s ED for almost two decades, and many of its doctors joined improvement projects. They, too, had been frustrated with the overcrowded conditions, which at times led to adversarial relationships between some doctors and nurses. The evolving culture helped these groups begin to work together more efficiently.

As the workplace culture in Emergency Services has changed and improved, so has the level of care that patients receive. The average patient wait time was cut by almost half, from 7% to 4.1% during the last six months of 2008. Patient satisfaction scores also jumped, and the ED staff’s goal is to exceed the 90th percentile when patients rate their satisfaction with the department.

While the efforts have yielded many positive results, the Emergency Services leadership team realizes that culture change is ongoing. Yesterday’s success is only part of the preparation for tomorrow’s challenges. The department’s work culture continues to change. Its leaders are changing, too, with constant training, planning sessions and focus on continuous improvement.

The number of patients who seek emergency care at Presbyterian Hospital is expected to continue increasing. Construction is underway on a 31-bed addition to the hospital’s ED, and the existing rooms (holding 43 beds) are being renovated. The multi-year building projects will create even more opportunities for change. But with the shared vision for guidance and an improving workplace culture,

Emergency Services New Vision Statement
+ Ours will be a place where...
+ Highly qualified professionals will work as a team to provide the highest quality of care.
+ Motivated and highly competent staff will choose to work and will choose to stay.
+ Our care will be timely with a human connection that is compassionate and friendly.
+ We will be ever-mindful that providing care here is an honor and that Emergency Services is where many relationships begin with patients and families.
leaders and staff members in Emergency Services are better prepared to deal with these and other future challenges.

John Schooley is the Director of Emergency Services at Presbyterian Hospital, a 531-bed regional medical center in Charlotte, NC. He has a master’s degree in health administration/business administration from Pfeiffer University in Charlotte, NC. Presbyterian Hospital is part of Novant Health, a not-for-profit, integrated health-care system based in North Carolina that serves more than 4 million people from southern Virginia to northern South Carolina.