2009

Barnes-Jewish Hospital Patient Safety & Quality

Report to the Board of Directors

BARNES-JEWISH Hospital
BJC HealthCare

Letter from **Richard Liekweg and John Lynch, MD**

"We are dedicated to transparency in disclosing medical errors – it is the right thing to do for our patients and it makes care safer for everyone."

Dear Barnes-Jewish Hospital Board Members and Leadership,

At Barnes-Jewish Hospital, our commitment to patient safety and quality is demonstrated every day by our dedicated team of nurses, physicians and allied health staff that work diligently to practice the highest standards of patient care. But the care we provide goes far beyond the hands that bring direct care to our patients. Our board members, leadership and the people behind the scenes who make safe patient care possible are an integral part of the team.

In this report, we outline the steps we are taking to make patient safety and quality a priority throughout our organization. We are dedicated to transparency in disclosing medical errors – it is the right thing to do for our patients and it makes care safer for everyone. We also are focusing on the most efficient ways to deliver health care, working to ensure that our systems, even those behind-the-scenes, are the most timely and effective for our patients and their families.

We are learning every day that improvement is a continuous process and, along with our physician partners at Washington University School of Medicine, we are demonstrating that we are national leaders in medicine. Thank you for being our partner in patient safety and quality.

Sincerely,

Richard J. Liekweg
President

John Lynch, MD
Vice President and Chief Medical Officer

National Patient **Safety Goals**

Maximum Target Threshold Minimum Below Minimum

INDICATOR	2008 GOAL	YTD 12/07 - 11/08	YTD VS GOAL
Medication Safety			
Medication Errors that resulted in harm (per pt day)	0.31	0.48	
Medications reconciled at *admission*	90%	97%*	
Medications reconciled at *transfer*	90%	94%*	
Medications reconciled at *discharge*	90%	94%*	
Medication labeling	90%	96%	
Fall Prevention – Reduce the Risk of Patient Harm Resulting from Falls			
Falls with injuries (per 1000 patient days)	0.84	.86	
ED falls with injuries (per 1000 visits)	0.21	0.20	
Suicide Risk Assessment - Overall			
Percentage on suicide precautions - mental health units	95%	100%**	
Percentage given mental health resources - mental health units only	95%	89%**	
Patient Involvement in Patient Safety Program	COMPLETE		
Improve the Effectiveness of Communication Among Caregivers			
Use **two patient identifiers** when taking specimens, administering medications, treatments or blood and blood products	95%	99%	
Performing "read back" for received telephone/verbal orders or critical test results - nursing	95%	94%	
Obtaining "read back" for reported critical test results & values - lab	95%	100%	
Critical results/values reported by lab within 30 minutes of availability of results	95%	99%	
Critical results/values reported to licensed person who can act, within 60 minutes of notification of results	95%	96%	
Critical test/procedure results reported by radiologist to ordering physician at time of determination/interpretation of test	95%	95%	
Standardize abbreviations, acronyms and symbols, including list of abbreviations, acronyms and symbols not to use			
U	95%	96%	
IU	95%	100%	
QD	95%	98%	
Q.O.D.	95%	99%	
HS	95%	99%	
Lack of leading zero	95%	100%	
Trailing zero	95%	100%	
MS, MSO, MgSO	95%	100%	
Universal Protocol: Eliminate Wrong Site, Wrong Patient and Wrong Procedure Surgery			
Preoperative verification process completed			
Operating room	95%	100%*	
Procedure areas: checklist and/or area-specific elements documented	95%	98%	
Surgical or procedure-site marking completed prior to procedure:			
Operating room	95%	100%	
Procedure areas	95%	95%	
Time out (final verification process) conducted prior to the start of procedures:			
Operating room	95%	100%	
Procedure areas	95%	99%	
Bedside procedures	95%	97%	

* Data thru March 2009
** Data thru September 2009

Best-In-Class **Clinical Quality Scorecard**

Barnes-Jewish Hospital achieved an overall Best-In-Class score of 1.23 in 2009. A score of 1.0-1.5 indicates we are in the top quartile compared to other hospitals in the United States. The Clinical Quality Performance Scorecard outlines performance in patient care or treatment delivery. Performance improvement teams are assigned to each quality indicator to evaluate processes, systems, clinical practice and health care worker behaviors, make recommendations for improvement and share information on best practices.

Maximum Target Threshold Minimum Below Minimum

INDICATOR	2009 TARGET	YTD 12/08 - 11/09	YTD vs GOAL
Surgical Infection Prevention (SIP)			
Surgical patients receiving prophylactic antibiotic within standard (timing)	95%	96%	
Selection of antibiotic for surgical site infection prophylaxis	97%	98%	
Duration of surgical infection prophylaxis	94%	94%	
Infection Control			
Standardized infection ratio (SIR) for VAP	0.38	0.38	
Standardized infection ratio (SIR) for catheter-related BSI	0.38	0.98	
Standardized infection ratio for coronary artery bypass graft surgical site infection	0.38	0.86	
Standardized infection ratio for hip arthroplasty surgical site infection	0.38	0.77	
Standardized infection ratio for hysterectomy surgical site infection	0.38	0.73	
Hand hygiene	80%	83%	
Influenza vaccination of health care workers	97%	100%	
Contact isolation compliance	85%	88%	
Medication Safety			
Continue all Best-in-Class Medication Safety rule sets from 2008	90%	98%	
Adverse Drug Event (ADE) monitoring system deployment	COMPLETED		
High hazard medication best practice implementation			
Compliance with use of Alaris guardrails with infusion of heparin or insulin	90%	99%	
Implementation of BJC core protocol for use of U-500 insulin	COMPLETED		
Adoption of maximum dosing rule set for meperidine	90%	100%	
Adoption of rule sets for use of hypnotics, sedatives and narcotics in the elderly or renal impaired	90%	96%	
Adoption of maximum dosing rule set for hypnotic and sedatives	90%	99%	
Venous Thromboembolism (VTE)			
Surgery patients who received appropriate VTE prophylaxis within 24 hours prior to surgery to 24 hours after surgery	92%	94%	
Risk assessment performed (SCIP VTE patients)	90%	89%	
Acute Myocardial Infarction (AMI)			
Percutaneous coronary intervention within 90 minutes of hospital arrival	87%	98%	
Aspirin within 24 hours of hospital arrival	97%	99%	
Cholesterol testing within 24 hours of hospital arrival	91%	96%	
Aspirin prescribed at discharge	97%	99%	
ACE-I/ARB prescribed at discharge	97%	95%	
Beta-blockers prescribed at discharge	97%	99%	
Lipid-lowering agents prescribed at discharge	97%	97%	
Smoking cessation advice/counseling	97%	100%	
Coronary Artery Bypass Graft (CABG)			
ASA/Antiplatelet prescribed at discharge	97%	100%	
Lipid-lowering agents prescribed at discharge	97%	100%	

Percutaneous Coronary Intervention (PCI)			
ASA/Antiplatelet prescribed at discharge	97%	100%	
Congestive Heart Failure (CHF)			
ACE-I/ARB prescribed at discharge	96%	96%	
Left ventricular function assessment	96%	98%	
Antithrombotics prescribed at discharge for patients with AFib	97%	99%	
Discharge instructions	91%	90%	
Smoking cessation advice/counseling	97%	100%	
Pneumonia			
Blood cultures before antibiotics (ED)	97%	92%	
Initial selection of antibiotic	95%	93%	
Pneumococcal vaccine screening and/or vaccination	93%	89%	
Smoking cessation advice/counseling	96%	99%	

2010 **Patient Safety Goals**

Improve the Accuracy of Patient Identification

- Use of two patient identifiers.
- Eliminate transfusion errors related to patient identification.

Improve Communication Among Caregivers

- Report critical results (alert values) immediately (within 60 minutes) to a provider who can act on the results.

Improve Safety of Using Medication

- Ensure correct medication labeling.
- Reduce the likelihood of patient harm associated with the use of anticoagulation.

Reduce Health Care-Acquired Infections

- Meet hand-hygiene guidelines.
- Implement evidence-based practices to prevent health care-associated infections.

Medication Reconciliation

- Communicate complete list of meds to next provider or service and to the patient or family upon discharge.

Identify Patient Safety Risk

- Provide information on community resources (e.g., crisis hotline) to the patient and family.

Universal Protocol

- Preventing wrong site, wrong procedure and wrong person surgery.

Goldfarb Patient Safety and Quality **Fellowship Program**

Barnes-Jewish Hospital and Washington University School of Medicine train physicians in patient safety, health services research, health care outcomes and performance improvement through a generous donation to the Barnes-Jewish Hospital Foundation from the late Alvin Goldfarb and Alvin Goldfarb Foundation. The Goldfarb Patient Safety and Quality Fellowship, a joint program administered by Barnes-Jewish Hospital and Washington University School of Medicine, provides didactic and mentored clinical research training for physicians to help increase the pool of physician leaders in the area of patient safety and health care quality. This two-year fellowship provides training and experience in clinical areas that can be applied to practical situations. Didactic coursework leading to a master of science degree in clinical investigation or a master of science in public health degree is available to fellows, although applicants can pursue individualized coursework as well.

Fellows have the opportunity to:

- *Link with the St. Louis business community by incorporating courses in change management, marketing and organizational development aimed at developing administrative skills with a focus on performance improvement.*
- *Get hands-on training in health services research, administration and actual patient safety operations.*
- *Be assigned to process improvement projects within Barnes-Jewish Hospital, which will impart skills in project management, Lean methodology, rapid improvement events and other activities that have been traditionally used in industries outside the scope of medical education.*
- *Participate in the BJH Patient Safety and Quality Committee, which supervises reporting and monitoring of sentinel and other patient safety events and progress of performance improvement teams.*

Goldfarb Fellows ~ **Practical Health Care**

Goldfarb Fellows Address a Variety of Practical Health Care Issues

Chris Carpenter, MD, assistant professor in the department of emergency medicine, is studying the development of new screening instruments for geriatric patients in the emergency department to identify patients at risk of falling, delirium or frequent short-term readmission. His research project titled "Geriatric Syndrome Screening During Emergency Department Evaluations," uses geriatric technicians including pre-medical and medical students trained to administer brief screening instruments to detect dementia, delirium, frailty and impaired functional status. Between 2007 and 2009, he recruited more than 500 patients in six trials. One observational trial demonstrated the lack of validity of two commonly used dementia screening instruments. He demonstrated the validity of three appropriate (quick, no equipment required) instruments that detect dementia with a greater than 95 percent sensitivity in the elderly in the emergency department setting. A retrospective chart review of subjects with cognitive dysfunction demonstrated that emergency physicians and nurses failed to identify the majority of these patients (greater than 70 percent), and inpatient physicians also missed 60 percent of such patients. A feasibility survey of emergency physicians and nurses suggested that the

Goldfarb Fellow Chris Carpenter, MD, oversees Jonathan Shirshekan, a geriatric technician, as he screens a patient in the emergency department. *(photo courtesy of Robert J. Boston)*

geriatric technician role would improve detection of geriatric health issues and patient safety for older adults without impeding emergency department function. These studies indicate that most nurses and physicians are not currently routinely screening elderly patients for any geriatric syndromes. Dedicated geriatric health screening tools are perceived by nurses and physicians as beneficial to patients and can improve patient safety and clinical outcomes when implemented in clinical settings. In January 2010, Dr. Carpenter submitted a grant to the National Institute of Aging to continue this research.

Goldfarb Fellow Doug Schuerer, MD, studies patient records in the ICU. *(photo courtesy of Robert J. Boston)*

Michael Lane, MD, a fellow in the infectious diseases division, is studying the frequency of and risk factors for bleeding events due to warfarin interactions with commonly used antibiotics. Warfarin is a widely used oral anticoagulant (blood thinner) with proven efficacy in preventing thromboembolic events in patients with atrial fibrillation, venous thromboembolisms and mechanical heart valves. However, warfarin has a narrow therapeutic index, requiring frequent monitoring to prevent potentially life-threatening bleeding events due to over-anticoagulation. Warfarin dosing is complicated by multiple drug interactions, including several antimicrobials. Preliminary studies have shown that 28 percent of patients on warfarin are prescribed an antimicrobial known to interact with warfarin, putting them at risk for serious bleeding events. The study will test and implement strategies to reduce the risk of bleeding in this population.

Doug Schuerer, MD, assistant professor of surgery, is focusing on improving physician communication regarding critically ill patients where timing can make all the difference in preventing adverse outcomes. Schuerer's goal is to eliminate potential harm caused by delayed communication between specialty physicians of critically ill patients for whom coordination of care is essential. The study will:

- Identify which subset of patients requires urgent involvement of attending physicians
- Determine which specialty consults require urgent attending physician involvement and develop a plan for communication
- Create methods to ensure rapid attending physician involvement for seriously ill patients
- Track the outcome of these new changes in physician practice

Based on the outcome of these new guidelines in pilot studies, they will be replicated and implemented by Barnes-Jewish Hospital, St. Louis Children's Hospital and Washington University leaders to ensure standard protocols are utilized across the medical campus.

Goldfarb Fellow Michael Lane, MD, discusses treatment options with patient Laverne Harris.

Beacon **Award**

In 2009, Barnes-Jewish Hospital's cardiothoracic intensive care unit (56ICU) received the prestigious Beacon Award from the American Association of Critical-Care Nurses. The unit is the first in Missouri to be honored with the award. Only 188 critical care units out of 6,000 in the United States have received the award.

The award recognizes critical care excellence, the commitment to high-quality critical care standards, and dedication to the exceptional care of patients and their families.

As a Beacon Award recipient, 56ICU succeeded in the following areas, as measured against evidence-based national criteria: recruitment and retention; education, training and mentoring; research and evidence-based practice; patient outcomes; leadership and organizational ethics; and a healing environment.

Units are required to demonstrate each criterion with detailed evidence. Some of the specifics of the submittal included:

56ICU team members celebrated their Beacon Award recognition with hospital administrators. From left: Cynthia Copeland, BSN, CCRN; Geralyn Eichelberger, chief retention officer; Dawn Krimminger, MSN, CCRN; Ann Petlin, RN, CCRN, CCNS, clinical nurse specialist; Elaine Thomas-Horton, MSN, RN, CCRN, clinical nurse manager; Holly Wilke, RN, BSN; Alice Imhoff, RN, MSN, CCRN; and Coreen Vlodarchyk, chief nurse executive and vice president of patient care services.

Recruitment and retention

- The unit implemented an active "employee of the month" program in which staff nominate their peers for providing outstanding service.
- Nurses who already work on 56ICU recruited 80 percent of recent hires.

Education, training and mentoring

- Education on the unit begins with orientation and continues with advanced cardiothoracic topics such as the evolving field of implantable ventricular assist devices. The unit also is growing the number of staff nurses recognized for certification in critical care nursing.

Evidence-based practice

- An increasing number of nurses on the unit have learned the methods of evidence-based practice, and are applying these methods to bathing with chlorhexidine gluconate to reduce skin bacteria, assessing for ICU-related delirium, and a new study to address sleep hygiene in the ICU.

Patient outcomes

- 56ICU participates in the national database sponsored by the Society of Critical Care Medicine. The unit meets or exceeds the desired standards for the outcome measures of unplanned extubations from mechanical ventilation, catheter-related urinary tract infections, central-line related blood stream infections, ventilator-associated pneumonia and pressure ulcers.

Healing environment

- The interdisciplinary team contributes to the healing environment by drawing upon the talents of its diverse professional staff. The unit also has the luxury of being the newest ICU at the hospital. Staff nurses were involved in the design of the unit. Large patient rooms with abundant daylight with room for patients' families helps to promote a healing environment.

Leadership and organizational ethics

- More than 90 percent of the unit's leadership staff were selected by the staff on the unit. The unit-based chaplain and social worker help to ensure that the unit considers all aspect of each patient's care.

critical care *excellence*

The Beacon Award from the American Association of Critical-Care Nurses recognizes critical care excellence, the commitment to high-quality critical care standards, and dedication to the exceptional care of patients and their families.

Hospital Epidemiology and **Infection Prevention**

The goal of infection prevention is to minimize infection risk to our patients by educating patients, staff and family. Infection prevention specialists work closely with physicians and nurses on the front line to implement practices which have been shown to prevent infections. Examples of some of the recent activities of Barnes-Jewish Hospital (BJH) epidemiology and infection prevention include:

Scrub-the-Hub Campaign

Patients with blood cancers are at high risk of bloodstream infections due to weakened immune systems, the need for prolonged IV access and the effects of chemotherapy on the skin and GI tract. In 2009, the Bone Marrow Transplant Center (unit 5900) implemented a scrub-the-hub campaign to decrease bloodstream infection (BSI) rates. In February, staff started scrubbing the needle-less access device or port for 15 seconds every time the central venous catheter was accessed. In the 13 months before the scrub-the-hub campaign, there were 90 BSI, with a rate of 9.0 BSI per 1,000 patient days. In the 11 months since the campaign started, there were 55 BSI, with a rate of 6.5 BSI per 1,000 patient days – a decrease of 28 percent. In December 2009, there was a single BSI on 5900, the first time there has been only one BSI since surveillance was instituted in 1998.

Implementation of the scrub-the-hub campaign began in the leukemia/ lymphoma unit in January 2010, and will be rolled out to medical oncology in the first quarter of 2010.

MRSA Active Surveillance

MRSA stands for methicillin-resistant Staphylococcus aureus, a strain of staph that is resistant to many of the antibiotics commonly used to treat staph infections. MRSA can result in severe infections that can be fatal. MRSA can be silently carried by patients, who then serve as a source of the bacteria for other patients.

In 2002, Barnes-Jewish Hospital began an active surveillance program in the surgical intensive care unit. This innovative program is a continuing effort to decrease the risk of transmission of MRSA in ICU patients. In 2008, this program was expanded to include two more intensive care units, and has continued through 2009. Quick recognition of these colonized patients resulting in early isolation helps minimize the pool of hospitalized patients colonized with MRSA. These colonized patients are 15 times more likely to transmit MRSA if not placed in special precautions which include all health care personnel using disposable gowns and gloves. The positive impact of this program is shown in the graph below.

Hand Hygiene

Studies show that hand hygiene, using either an alcohol-based foam or soap and water, before and after patient care, can reduce the number of multiple drug resistant organisms in hospitals. Studies also show a reduction in the transmission of multi-drug resistant organisms, such as MRSA, with appropriate performance of hand hygiene.

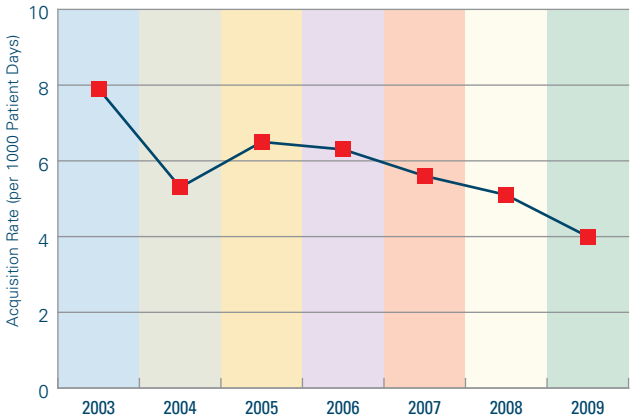
The BJH epidemiology and infection prevention team works closely with all clinical areas of the hospital to monitor hand hygiene compliance of staff. This information is routinely reported to clinical managers, medical directors and staff. The hospital has promoted good hand hygiene practices with educational posters, and by increasing the availability of alcohol-based hand rub throughout the campus.

H1N1 Influenza

With the influenza season of 2009-2010 projected as one of the worst in recent history, the hospital's infection prevention, occupational health, and environmental health and safety departments worked together, with Washington University School of Medicine (WUSM) infectious diseases physicians to develop a plan to protect employees and patients. This included ensuring availability of infection control supplies, working closely with St. Louis City and County Health Departments to secure vaccine for staff and patients, and developing a triage system to treat a large number of patients over an extended period of time. Educational material for staff and patients was developed to support a safe environment for all at Barnes-Jewish. The hospital worked with WUSM to coordinate policy across patient care areas and outpatient facilities. Messaging for patients and families included wearing masks if ill, and utilizing available hand-hygiene products.

MRSA Incidence Rate

Active Surveillance Units (56ICU, 83ICU, 84ICU) 2003 - 2009



Source: Barnes Jewish Hospital Epidemiology and Infection Prevention Department

Just **Culture**

In 2000, Lucian Leape, MD, a physician and professor at Harvard School of Public Health, reported to Congress that an estimated one million people are injured by medical error every year in the United States, with approximately 100,000 deaths resulting from those errors. Leape suggests, the single greatest impediment to error prevention is that "we punish people for making mistakes."

The just culture paradigm provides a set of practical tools that reconcile the old, punitive culture of blame with personal and professional accountability. Overall, just culture states that system safety is best supported by a culture that is neither "blame free" nor overly punitive.

In 2008, Barnes-Jewish Hospital began working to roll out the "just culture" philosophy to hospital staff. Hospital executives and directors received just culture training during the fourth quarter of 2008. In the first quarter of 2009, more than 300 hospital managers and supervisors participated in a one-day training session which taught them to:

- *Identify ways to encourage staff to report safety concerns and learn from errors.*
- *Identify the principles of a just culture to reduce errors and adverse events.*
- *Conduct investigations in a way that identifies causes and reveals areas for improvement.*
- *Identify ways to design and implement reliable systems to support employees.*
- *Identify ways to support direct reports by managing behaviors in a way that is fair and supports a culture of learning.*

Stop The Line empowers staff to speak up when they observe a situation where a patient may be at risk for harm.

The hospital's human resources and patient safety and quality departments serve as additional resources for managers should they have questions or concerns.

One way the hospital is encouraging a just culture is through its efforts with "Stop The Line." Stop The Line empowers staff to speak up when they observe a situation where a patient may be at risk for harm, or speak up and request that the people involved stop what they are doing and take a safety pause. During a safety pause, the work will stop immediately so that staff can reassess the safety of the situation.

In 2009, Barnes-Jewish Hospital, Washington University School of Medicine and St. Louis Children's Hospital developed a Stop The Line policy. The policy and education of staff is rolling out in early 2010.

"Great Catch" **Awards**

"Good Catch" awards occur throughout the year. "Great Catch" awards are evaluated and recognized annually. The 2009 "Great Catch" award winners are:

- Courageous Catch - Christy Eggers, RN, post anesthesia care unit, south
- Critical Catch - Kelly Nash, patient care technician, unit 6500
- Best Catch - Sakiba Topalovic, patient care technician, unit 2100

2009 Great Catch Award winners Christy Eggers, RN, and Sakiba Topalovic, PCT, are congratulated by Barnes-Jewish Hospital President Richard Liekweg at the annual awards presentation.

The "Great Catch" program rewards staff who identify risk and prevent harm, or who take extraordinary measures to promote a culture of safety at the hospital. All employees are eligible and are evaluated based on the open, timely disclosure of a "near miss" incident that prevented new or further harm to a patient. Criteria considered include impact of prevention effort (on a patient, or on our culture of safety), timeliness, methods for diverting harm and communication during and after the event.

Sakiba Topalovic, a patient care technician on cardiology unit 2100, received the Best Catch award in 2009. Topalovic was caring for a patient who had just returned from the catheterization lab. Topalovic came to check on the patient and heard a strange noise. Noticing blood on the patient's sheet, she pulled back the covers to see blood spouting from a femoral artery. Thinking quickly, she grabbed a towel, held pressure on the site and called for help. The patient had lost a lot of blood and her quick thinking and actions may well have saved the patient's life.

Similarly, the Stop the Line program allows any employee or physician to halt a process when they see a potential patient safety concern. **Christy Eggers, RN,** a nurse in the post anesthesia care unit (PACU), was honored with the Courageous Catch award for her actions as she was caring for a patient who was about to be transferred to the ICU. Although the patient initially had normal vital signs and labs in the PACU, Eggers felt he didn't look right and kept him a little longer for observation. She also requested an arterial blood gas, which came back with abnormal results. She immediately reported this to the physicians caring for the patient who took him back into the operating room a short time later. Eggers' intuition and willingness to stop the line allowed the patient's changing condition to be addressed in a timely manner.

Kelly Nash, a patient care technician on unit 6500, was honored as the Courageous Catch award recipient. While making hourly rounds on her patients, Nash noticed that a patient's interventional radiology drain was draining bright red blood instead of the normal brown color. Nash immediately notified the nurse who was able to take immediate action. Her catch allowed for a rapid intervention that prevented a poor patient outcome.

Kelly Nash, PCT, won the Critical Catch award in 2009.

5S Spreads Throughout Barnes-Jewish

The operational excellence department at Barnes-Jewish Hospital is charged with improving processes throughout the hospital using Lean principles. Focusing on the Lean principles of 5S and standard work, the team looks at procedures in the hospital from a patient perspective and makes changes to improve the patient experience.

Sort –

Separate needed items from unneeded and remove unneeded from workplace

Straighten –

Arrange equipment and supplies for ease of use and visibility at-a-glance

Shine –

Clean, fix and inspect

Standardize –

Establish the system needed to maintain the high-performance workplace

Sustain –

Make 5S a daily habit

Working throughout the hospital, various departments are improving their efficiency, as well as staff and patient safety through 5S. For example, by organizing the trauma critical care patient rooms with equipment and supplies in standard locations throughout the emergency department, patients are treated with more efficient staff, and trauma rooms are set up to care for two patients at a time. By placing the more critical patient in the same location in each room, the staff will be able to efficiently access equipment needed for these critical patients.

Calvin Dantzler, inventory systems coordinator, collects case carts in the newly reorganized perioperative services supply room.

Case Carts Improve Operating Room Turnaround Time

The perioperative services south campus supply room services 38 operating rooms, which collectively perform approximately 85 to 100 surgeries per day. The 27,000-square-foot supply room houses the central sterile and processing department and processes 500 trays and builds 85 to 100 case carts per day, and processes more than 500,000 instruments per month.

The original layout of the supply room was not ergonomically correct and staff had to walk more than 800 feet to build a single case cart. The extensive walking and poor ergonomics within the environment caused on-the-job injuries and additional stress to the staff. Lean principles were identified as the best opportunity to help deal with these issues and provide a more visual, manageable, cost effective and efficient storeroom.

Operating room delays were occurring due to incorrect supplies and/or instruments. With so many supplies available, it was difficult to ensure the right product was ordered every day. A daunting task of having to count 2,300 line items, or $2.1 million of inventory, each day caused supply stock-outs for critical supplies and overstocking of supplies that were not used frequently.

Because of the implementation of a visual ordering system and using Lean principles to improve workflows, the supply reorder process has been reduced from 6 hours to 30 minutes, and manual counting was completely eliminated. The yield percentage increased from 67 percent to 97 percent. The distance it took to build a single case cart was reduced from 864 feet to less than 200 feet, and the time reduced from eight minutes to less than four minutes. To address the ergonomic situation, the NIOSH Lift Index was used to help determine how ergonomically friendly the environment was. The Lift Index decreased (the lower the number the less strain on the body) from a score of 1.66 (from wire rack) and 1.75 (to case cart) to 1.53 (from wire rack) and 1.41 (to case cart), improving employee safety and efficiency.

The materials management team in perioperative services uses a Lean tool to visually map out issues and solutions.

The team looked at procedures in the hospital from a patient perspective & made changes to improve the patient experience.

Emergency Department Works to Reduce Wait Times for Less Critical Patients

The emergency department (ED) at Barnes-Jewish Hospital has approximately 84,000 visits annually. Because of the high volume of patients, a triage process is used to determine the priority of patients needing to be seen first. This process tends to be one of the bottlenecks in the patient flow experience, so ED management decided to implement Lean principles to improve the flow of patients through the triage process. After analyzing which patient populations visit the ED and do not need a bed, a second patient flow plan was implemented. Patients that do not need a bed go through a different triage process to help alleviate overcrowding the waiting room. With the new triage process, vital signs are taken immediately, which helps increase patient safety. With this plan, the lower acuity patients follow a different path through the ED, with a goal of being treated and leaving in 90 minutes. This improvement also allows ED patients to have their vital signs recorded within two minutes compared to up to 75 minutes prior to the Lean work.

Because some patients who visit the emergency department are not critical, the staff at Barnes-Jewish Hospital developed a two-track system. The normal track is for critical patients who require a bed . A fast track is for patients who do not require a bed. Shown here is a patient being treated in the fast track.

Environmental **Safety**

- Barnes-Jewish Hospital was a member of the National Clinical Laboratory Standards Committee to update the National Consensus Document on "Waste Management in Clinical Labs."
- The hospital's recycling efforts from all waste streams totaled approximately 10 million pounds, which included 7 million pounds of demolition debris from the Ettrick Building and 4949 Forest Park construction project. All debris was either recycled or reused, avoiding any distribution to landfills.

Employee Safety/Workers Compensation

- For a third consecutive year, the hospital's occupational health services/workers compensation received a credit from BJC Workers Compensation of $770,000 for successfully sustaining costs, and improving case management and injury prevention programs. Also, between 2008 and 2009, the hospital had a decrease of claims by 16 percent and a decrease in cost by 19 percent.
- Barnes-Jewish Hospital and BJC HealthCare were the recipients of the 2009 "Roosevelt Award." The award is the premier accolade of the risk and insurance industry, which recognizes companies who have successfully reduced slips, trips, falls and other work-related injuries.

- BJH occupational health services led multidisciplinary teams to administer H1N1 vaccine to all employees, residents, volunteers, students, contracted service workers, BJH board of directors and auxiliary members.
- Barnes-Jewish Hospital and BJC HealthCare collaborated on a Lean project to standardize usage of N-95 respirators prompted by international shortages from the H1N1 pandemic.

Community Emergency Preparedness

- Barnes-Jewish partnered with BJC HealthCare and the St. Louis City Department of Health to establish a modified incident command structure to respond to H1N1 influenza outbreak. Actions and mitigation steps included:

  1. Increased communication between the hospital's emergency department and Missouri Hospital Association/Department of Health and Senior Services requesting key emergency department and hospital resource levels.
  2. Established surge and overflow locations.
  3. Sufficient quantities of personal protective equipment, supplies, vaccines and antivirals.
  4. Implementation of staff and patient vaccinations.

- At the National Emergency Management Summit in Washington, D.C., Barnes-Jewish staff presented a study in collaboration with the City of St. Louis titled the "Quality of the Hospital Hazardous Materials Decontamination Team in Removing Exogenous Materials."

Service Excellence

- BJC Healthcare clinical engineering and certain departments at Barnes-Jewish Hospital have partnered to implement a risk management process that centralizes equipment hazard alerts and recalls, and facilitates corrective actions to be undertaken.
- This same team implemented a database to improve technology tracking of corrective maintenance and data for forecasting replacement of capital.

Achievements and **Distinctions**

Barnes-Jewish Hospital accreditations and certifications include:

- The Joint Commission Accreditation Gold Seal of Approval
- The Joint Commission Accredited Programs
  - Hospital
  - Long-Term Care
  - Behavioral Health Care
- The Joint Commission Advanced Certification
  - Lung Volume Reduction Surgery
  - Stroke (Primary Stroke Center)
  - Ventricular Assist Device
- The Joint Commission Certification
  - Epilepsy

Additional quality awards and honors include:

- The American Nurses Credentialing Center recognition as a Magnet® hospital, redesignated in 2008
- The American Heart Association's "Get with the Guidelines – Gold Performance Achievement Award"
- The Department of Health and Human Services Medal of Honor for Organ Donation
- The American Society for Bariatric Surgery – Bariatric Center of Excellence
- Barnes-Jewish Hospital has been listed for 17 consecutive years on the *U.S. News & World Report* Honor Roll of America's Best Hospitals.
- Barnes-Jewish Hospital was recognized as one of the best places to work by its nurses, according to a survey conducted by *Nursing Professionals,* a national magazine that helps organizations recruit nursing graduates. Barnes-Jewish was one of 100 hospitals across the United States included in the list of "2009 Top 100 Hospitals to Work For."

The Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine is recognized with the following distinctions:

- A member of the National Comprehensive Cancer Network
- Designated by the National Cancer Institute as a Comprehensive Cancer Center
- The highest recognition from the American College of Surgeons Commission on Cancer

seal of *approval*

Barnes-Jewish Hospital has received the gold seal of approval from The Joint Commission.

a magnet for *nursing*

Barnes-Jewish Hospital is a Magnet® hospital, the highest national recognition for excellent nursing practice in hospitals.

honor roll *2009*

Barnes-Jewish Hospital has been listed among the top hospitals in the nation for 17 consecutive years on the *U.S. News & World Report* Honor Roll of America's Best Hospitals.

Patient Care Quality & Safety **Committee of the Board of Directors 2009 Membership**

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Washington University School of Medicine

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Charles Zorumski, MD
Samuel B. Guze Professor of Psychiatry, Department of Psychiatry
Washington University School of Medicine

Barnes-Jewish Hospital **Facts and Figures 2009**

Employees	9,438
Physicians	1,845
Residents / Fellows	803
Inpatient Admissions	54,733
Inpatient Surgeries	18,351
Outpatient Surgeries	19,160
Emergency Department Visits	83,997
Licensed Beds	1,228
Staffed Beds	1,111

Barnes-Jewish Hospital **Board of Directors 2009**

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Site Oil Company

* *deceased April 2009*
** *current chair of Barnes-Jewish Hospital Board of Directors*
*** *past chair of Barnes-Jewish Hospital Board of Directors*

Barnes-Jewish Hospital **Executive Staff 2009**

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Surgical Services

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Patient Care Services,
Chief Nurse Executive

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Vice President,
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Vice President and
Chief Medical Officer

Julia Ruvelson
Vice President,
Barnes-Jewish
Hospital Foundation

Brenda Battle
Director,
Center for Diversity &
Cultural Competence


committed to
excellence
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Hospital
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for more information, visit us at

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