2007

Annual Report

Patient Safety & Quality

February 2008

committed to

excellence

BARNES-JEWISH Hospital
BJC HealthCare

Table of **Contents**

Letter from the **President**

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" ... we have made rigorous and continuous performance improvement a visible priority."

February 1, 2008

Dear Barnes-Jewish Hospital Board Members and Leadership:

I am pleased to share with you the accomplishments of the many people and programs dedicated to protecting our patients from harm and delivering the highest quality health care. As one of the nation's top 10 hospitals, we have made rigorous and continuous performance improvement a visible priority. Each year, we commit the time, expertise and resources required to study, measure, design and deliver exceptional clinical outcomes. As a result, each year since 2004, we have improved our Best-in-Class Clinical Quality scores and our performance on many other publicly reported measures. We've also increased the willingness of staff to report and openly discuss human and medical errors while decreasing the number of patient safety events.

Clinical quality performance across the nation's health care organizations continues to rise, as well as improve, and even achieving 98 percent compliance is often no longer good enough. For that reason, our goal as members of the University HealthSystem Consortium is to continue to benchmark against and work collaboratively with the best teaching institutions to perfect patient care. Alignment of strategic priorities with our partners BJC HealthCare hospitals and Washington University School of Medicine around safety and quality has never been better, positioning us for an even more impressive 2008.

I'd like to thank the committed board members, clinical and administrative leaders, and front-line staff who devoted countless hours this past year helping to improve the systems and processes that allow us to achieve our mission and provide exceptional care. Your commitment makes Barnes-Jewish Hospital what it is today.

Best regards,

Andy Ziskind, MD
President, Barnes-Jewish Hospital

Letter from the **Vice President, Safety & Quality**

" ... Never has there been a more important time to continue our efforts to provide the highest level of patient safety and quality care."

February 1, 2008

Dear Members of the Patient Care Quality & Safety Committee:

The efforts of many people go into ensuring the highest quality and safest care at Barnes-Jewish Hospital. The members of the Patient Care Quality and Safety Committee of the Barnes-Jewish Hospital Board of Directors play a vital role in advising and steering our efforts in this area. Comprised of physicians, clinicians, staff and community members, the committee has charged us with telling our patient safety story, rather than just reporting data. In addition, they encouraged us to provide time for community members' response and questions.

We have worked diligently over the past year to create new reports to better summarize and translate data into information the committee, as well as the community at large, can use to gauge Barnes-Jewish Hospital's performance against national, BJC HealthCare and peer academic hospital comparisons. Jonathan Gottlieb, MD, chief medical officer at Barnes-Jewish Hospital, introduced a new framework for reporting and prioritizing the work of safety and quality programs, based on the Institute of Medicine's *Crossing the Quality Chasm* report. This new framework mandates that care be safe, timely, effective, efficient, equitable and patient-centered (STEEP).

A new educational video was launched last year, *Disclosing Medical Errors: Building a Safer Barnes-Jewish Hospital.* The video features Jonet and David Jaggers, who lost their son to a medical error, and Peter Westervelt, MD, the physician who disclosed the reasons for this preventable death and remained an advocate throughout the family's experience. This emotional appeal is being used for employees of Barnes-Jewish Hospital and Washington University School of Medicine to promote a culture of compassion and transparency about medical errors. As a result, disclosure of patient safety events improved by almost 30 percent.

Never has there been a more important time to continue our efforts to provide the highest level of patient safety and quality care. Thanks for the support and advocacy of the Patient Care Quality and Safety Committee and the dedicated physicians, staff and members of the community who help support our mission of taking exceptional care of people.

Sincerely,

Denise M. Murphy

Denise M. Murphy
Vice President, Safety and Quality

Patient Safety

Unlikely Couple Helps Barnes-Jewish Improve

A medical error leading to death is one of the gravest outcomes for both patients and their caregivers. David and Jonet Jaggers of St. Peters, Missouri, know firsthand that grief and blame are a powerful combination. But they chose to do something about their loss to ensure mistakes like the one responsible for their son's death didn't happened again.

Their son, Michael, died at Barnes-Jewish Hospital as the result of an unfortunate medication error that caused an overdose of morphine leading to Michael's cardiac arrest.

In 2000, Michael Jaggers was hospitalized after a diagnosis of Hodgkin's Lymphoma. Labor Day weekend, Michael was experiencing a great deal of pain and it was decided to increase the amount of morphine given to him. David and Jonet were awakened at 5:00 a.m. on Labor Day morning to learn Michael had gone into cardiac arrest. Despite being resuscitated by Barnes-Jewish Hospital staff, he went into a coma he would not recover from.

Michael's physician Peter Westervelt, MD, recalls disclosing the medical error to David and Jonet. "There was a stunned silence in the room broken by an anguished cry from Jonet saying, "But we brought him here because you were supposed to be the best."

In other words, how could this have happened at one of the nation's elite medical centers with the most advanced technology and staffed by nurses and physicians world-renowned for excellence in patient care? How can they make a medical mistake that took a young man's life?

"People didn't get into this profession to do harm," says David. "But people are human. We want to make something good out of a tragic situation. We lost our son and want to make as much good of that as possible."

It's estimated there are over 100,000 deaths annually from adverse events and medical errors. These events include hospital-acquired infections, falls, wrong test results, delayed tests or treatment and medication errors.

"Errors happen not because of malicious intent, but because of poorly designed processes and problems in the system that need to be fixed," says Denise Murphy, RN, vice president of patient safety and quality at Barnes-Jewish Hospital.

To help examine why medical errors occur like the one that took Michael's life, and how to handle an error once it happens, the

Denise Murphy, Barnes-Jewish Hospital vice-president of patient safety and quality, discusses patient safety measures with David and Jonet Jaggers.

Jaggers were approached to participate in a video that would become core education for Barnes-Jewish employees and their physician partners. *"Disclosing Medical Errors: Building a Safer Barnes-Jewish Hospital"* features the Jaggers telling Michael's story from their perspective. In the process they put a human face on how devastating medical errors can be and how the Barnes-Jewish staff handled the error, which made all the difference in the world.

What impressed the Jaggers was the open way in which the staff disclosed the mistake as their fault and expressed a sincere apology. In particular, they cited Westervelt, now director of bone marrow and stem cell transplant at the Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. "We were stunned not only by the news, but that the doctor would actually tell us about the mistake," David says in the video. "We're not taught to think that people are honest and forthright when they've done something wrong, but he did just that."

"Continued improvement in patient safety is attainable only through establishing a culture of trust, honesty, integrity and open communications," says Murphy. "Everyone is accountable for protecting patients."

That accountability is why the Jaggers are helping Murphy and Barnes-Jewish in their efforts to improve patient safety. The Jaggers are members of the hospital's Patient Safety & Quality Committee. They actively engage in reviewing safety and quality measures and process improvement programs.

"We realize mistakes happen everywhere," says David. "But if by sharing our story we can save one life, it's worth it."

National Patient **Safety Goals**

Maximum Target Threshold Minimum Below Minimum

INDICATOR	2007 GOAL	YTD 12/06 - 11/07	YTD VS GOAL
Medication Safety			
Medication Errors that resulted in harm (per pt day)	0.31	.28	
Medications reconciled at *admission*	90%	93%	
Medication reconciled at *transfer*	90%	86%	
Medication reconciled at *discharge*	90%	91%	
Medication Labeling	90%	97%	
Fall Prevention – Reduce the Risk of Patient Harm Resulting from Falls			
Falls with injuries (per 1000 patient days)	0.67	1.06	
ED falls with injuries (per 1000 visits)	0.21	0.22	
Suicide Risk Assessment - Overall			
Completed risk assessment	95%	100%	
On suicide precautions	95%	100%	
Patient information given to patient & family	95%	58%[1]	
Patient Involvement in Patient Safety Program			
Patient Safety Commitment Campaign - survey annually	COMPLETE		
Patient Safety Behaviors implemented	COMPLETE		
Excellence card revised	COMPLETE		
Improve the Effectiveness of Communication Among Caregivers			
Use **two patient identifiers** when taking blood, administering medications or blood products PCS	95%	100%	
"Read back" of telephone or verbal orders or critical test results – Nursing	95%	94%	
"Read back" of reported critical test and procedure results and 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%	89%	
Critical test/procedure results reported by radiologist to ordering physician at time of determination/interpretation of test	95%	98%	
Designated "critical test" turn around time ("timed" tests from draw time to results obtained) within expected timeframes			
ED Stroke Alert Labs: CBC, PT/INR, FSBG (<45 minutes)	90%	91%	
ED Head CT for suspected stroke (<25 minutes)	90%	87%	
ED EKG for suspected AMI (<10 minutes)	90%	81%	
Standardize abbreviations, acronyms and symbols, including list of abbreviations, acronyms and symbols not to use			
U	95%	97%	
IU	95%	100%	
QD	95%	99%	
Q.O.D.	95%	100%	
HS	95%	98%	
Lack of leading zero	95%	100%	
Trailing zero	95%	100%	
MS, MSO, MgSO	95%	100%	

1 Only 7 months of data.

2 Only 10 months of data.

National Patient **Safety Goals**

Maximum Target Threshold Minimum Below Minimum

INDICATOR	2007 GOAL	YTD 12/06 - 11/07	YTD VS GOAL
Universal Protocol: Eliminate Wrong Site, Wrong Patient and Wrong Procedure Surgery			
Preoperative verification process completed			
Operating room	95%	99%	
Procedure areas: Checklist and/or area-specific elements documented	95%	94%	
Surgical or procedure site marking completed prior to procedure			
Operating room	95%	100%	
Procedure areas	95%	97%	
Bedside procedures	95%	89%[2]	
Improve the Safety of Using High-Alert Medications			
Remove concentrated electrolytes from patient care units	95%	99%	
Standardize and limit the number of drug concentrations available	95%	99%	
Improve the Safety of Using Infusion Pumps			
Ensure free-flow protection on all infusion pumps	95%	100%	
Improve the Effectiveness of Clinical Alarm Systems			
Implement regular preventive maintenance and testing of alarm systems	95%	99%	
Alarms are activated with appropriate settings and are audible	95%	100%	

1 Only 7 months of data.

2 Only 10 months of data.

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

Barnes-Jewish Hospital achieved its goal of an overall Best-in-Class score of 1.28 in 2007. A score of 1.0-1.5 indicates we are in the top quartile compared to other hospitals in the U.S. 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 healthcare worker behaviors, make recommendations for improvement and share information on best practices.

INDICATOR	2007 GOAL	YTD 12/06 - 11/07	YTD VS GOAL
Surgical Infection Prevention (SIP)			
Surgical patients receiving prophylactic antibiotic within standard (timing)	90%	94%	
Selection of antibiotic for surgical site infection prophylaxis	96%	98%	
Duration of surgical infection prophylaxis	89%	90%	
Infection Control			
Standardized infection ratio (SIR) for VAP	0.63	0.15	
Standardized infection ratio (SIR) for catheter-related BSI	0.63	0.53	
Standardized infection ratio for coronary artery bypass graft surgical site infection	0.63	0.43*	
Standardized infection ratio for hip arthroplasty surgical site infection	0.63	0.57*	
Standardized infection ratio for hysterectomy surgical site infection	0.63	0.82*	
Acute Myocardial Infarction (AMI)			
Percutaneous coronary intervention within 120 minutes of hospital arrival	84%	100%	
Thrombolytic within 30 minutes of hospital arrival	73%	n<5	n<5**
Aspirin within 24 hours of hospital arrival	97%	97%	
Cholesterol testing within 24 hours of hospital arrival	91%	97%	
Aspirin prescribed at discharge	97%	99%	
ACE-I/ARB prescribed at discharge	95%	91%	
Beta-blockers prescribed at discharge	97%	96%	
Lipid-lowering agents prescribed at discharge	97%	90%	
Smoking cessation advice/counseling	96%	95%	
Coronary Artery Bypass Graph (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	95%	95%	
Left ventricular function assessment	95%	97%	
Antithrombotics prescribed at discharge for patients with AFib	97%	99%	
Discharge instructions	86%	82%	
Smoking cessation advice/counseling	94%	99%	
Community Acquired Pneumonia (CAP)			
Antibiotic administration within four hours of hospital arrival	91%	67%	
Blood cultures before antibiotics (ED)	96%	76%	
Initial selection of antibiotic	92%	88%	
Oxygenation	97%	100%	
Pneumococcal vaccine screening and/or vaccination	87%	70%	
Smoking cessation advice/counseling	93%	96%	

*Due to the 30-day surveillance requirement, the data period for this indicator is through 10/31/07.
**Due to small case volume, rolling rate for indicator is average for the 6 months ending 11/30/07.

Medication **Errors**

Error Prevention

Error prevention is a top priority at Barnes-Jewish Hospital. Multiple processes and interventions are in place to decrease the likelihood of error.

Patient Safety and Quality works with pharmacists, nurses and physicians to investigate, scrutinize and prevent medication errors. All errors that cause harm are investigated to identify the root cause so that the appropriate intervention can occur, hospital-wide if necessary, to avoid repeat incidents. The information regarding every harm-producing medication error is communicated to top leadership at the hospital. All error data is trended with an eye to intervention and prevention. Medication issues that occur across the country are reviewed throughout the year to ensure that the safest practices are in place at Barnes-Jewish Hospital.

. . .

information regarding every harm-producing medication error is communicated to top leadership

. . .

Streamlining the drug entry and delivery system allows the maximum use of staff's time and energy on patient care. The process of drug delivery from prescription to administration is constantly under review to look for areas of improvement and ensure standardization across the facility. Rapid Improvement Teams have been formed and used in many areas of the hospital to improve the accuracy and efficiency of drug delivery to the point of care.

Electronic processes are also in place to prevent errors from occurring. The Pharmacy Expert System alerts practitioners when dosing adjustments are indicated, assists in monitoring the medication to ensure a continued safe use, and alerts for drug-drug, drug-food or drug-laboratory interactions. Medication reconciliation is in full force. The reconciliation of medications ensures that patients' medications are reviewed and tracked upon arrival to the hospital, during the hospital stay and at discharge. At each point, all medications are reviewed, verified and reconciled to avoid duplicative or unnecessary therapy and ensure consistency.

Smart-pump technology is used to assist the nursing staff in the safe administration of intravenous medication. The pump alerts the nurse to ensure that dosing and administration guidelines are followed. Electronic prompts in the computer systems used by the physicians, pharmacists and nurses alert them to sound-alike medications, warn of potential adverse effects of high-risk medications and further ensure the safe use of medication.

Education of staff is ongoing regarding medications, errors and safe practices.

American Society of Health-System Pharmacists®

award for *excellence*

A team of Barnes-Jewish Hospital physicians, nurses and pharmacists have received the 2007 American Society of Health-System Pharmacists Award for Excellence in Medication-Use Safety. The award recognizes on a national level pharmacy professionals who have assumed a leadership role in promoting safety in the medication-use process.

Sepsis is a serious condition in which infection has spread into the bloodstream. When bacteria or other infectious organisms spread throughout the body and overwhelm the immune system, the infection can be life threatening. Patients with sepsis need immediate medical attention.

The Barnes-Jewish Hospital team won for its initiative that instituted and standardized interventions related to the rapid diagnosis and treatment of severe sepsis in patients in the Barnes-Jewish Hospital emergency department. The team demonstrated that standardizing sepsis care translated into significantly improved patient outcomes. About 1,200 patients diagnosed with severe sepsis are seen at Barnes-Jewish each year.

Just **Culture**

To be fully committed to patient safety and quality, requires an environment of openness about patient safety events so that we learn from them and improve patient safety as a result. Barnes-Jewish Hospital participates in the Missouri Just Culture Collaborative, an effort led by the Missouri Center for Patient Safety to establish an understanding of why medical errors happen and a common understanding of aspects of culture to improve methods for preventing them.

*F*acts: finding out what happened, not who to blame

*A*ccountability for my own actions

*I*mprovement through teamwork

*R*eporting hazards (risk) as soon as possible

We support an environment that advances "just culture" in which care providers are not afraid to report medical errors and can discuss "near misses" that are caught before patients are harmed. In this patient safety environment, everyone learns from mistakes.

In 2007, the hospital's Patient Safety and Behaviors Team established the just culture initiative that supports a F.A.I.R. environment.

Additional Safety **Initiatives**

- All hospital staff will complete the culture of safety module.
- Events will be shared hospital-wide.
- The patient safety commitment poster is visible in all patient areas.
- The **Gold Patient Safety Excellence Card** that patients are given upon admission will be revised to include a section where patients and families can document patient safety concerns, which will then be forwarded to clinical nurse managers and ultimately to Patient Safety & Quality.

Executive Patient **Safety Rounds**

Barnes-Jewish Hospital is committed to enhancing our culture of safety through all levels of the organization. In the summer of 2007, executive patient safety rounds were implemented to engage hospital executives in patient safety improvements. During the rounds, a hospital executive and a patient safety specialist visit staff to learn about challenges to patient safety. Executives will often ask "What keeps you up at night?" to encourage discussion.

Recently several executives heard from staff that the on-line incident reporting system was not always easy to navigate. As a result, Barnes-Jewish Hospital and Washington University collaborated on the development of the SAFE line. The SAFE line is a telephone extension that any member of the hospital community can call to communicate a patient safety event.

As the rounds progress, the process continues to evolve. Three to four executives participate each month, each visiting one to two departments. Recently, the rounds were expanded to cover ancillary care areas such as food and nutrition services and outpatient clinics. Enhancements in 2008 include earlier notice to staff so they can conduct a more thorough evaluation of patient safety challenges to present to executives.

Sharon O'Keefe, Barnes-Jewish Hospital chief operating officer (far left) discusses patient safety issues with nursing staff.

Hospital Epidemiology and **Infection Prevention**

Not all infections can be eliminated, particularly in extremely susceptible patients. However, many of the bloodstream infections that develop when tubes/catheters are used to deliver medications or fluids can be prevented through good medical and nursing care.

Several years ago, Barnes-Jewish Hospital set an aggressive goal to have zero preventable infections, with a specific focus on ventilator associated pneumonia (VAP) and catheter-associated bloodstream infections. Since then, infection rates have dropped dramatically.

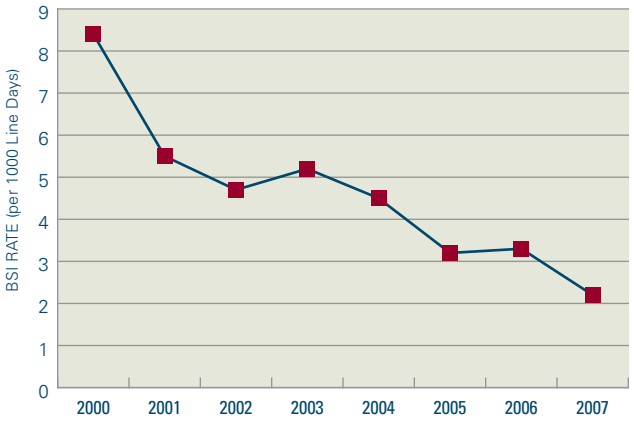
- In 2007, infection prevention specialists, physicians and nurses worked together to determine if bloodstream infections were hospital-acquired, and discussed prevention methods. Standardized central venous catheter training was implemented for all incoming residents, including the completion of two on-line competency modules and simulation training using anatomical models.
- For ventilator-acquired pneumonia, multidisciplinary teams applied evidence-based recommendations in each ICU including:
  - ~ Standardized orders for providing oral care for patients on ventilators
  - ~ Standardized attempts to wean patients from ventilators
  - ~ Required education of all ICU staff regarding prevention measures

Oncology patients are at high risk for infection due to poor immune systems following chemotherapy and radiation. Most oncology patients have a central venous catheter placed for intravenous therapy. These catheters increase a patient's risk of infection. The cap, or hub, of these catheters is the primary source of infection in these lines. With the implementation of a prevention campaign called "Scrub the Hub," bloodstream infections decreased by up to 43 percent on four out of five units.

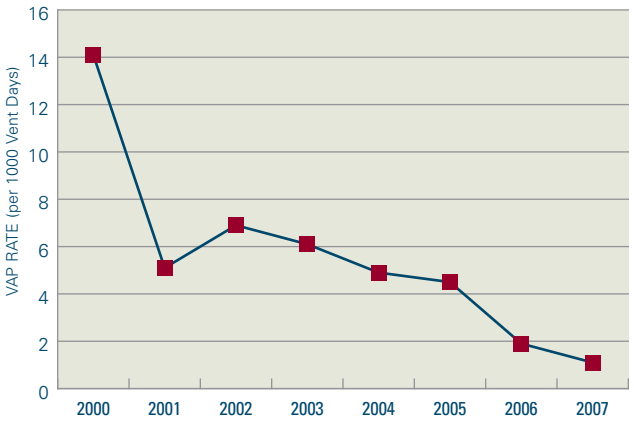
The hospital has also made significant improvements with surgical site infections among C-section patients. In 2003, infections for C-section patients averaged 8 percent. Today, the average is 2.6 percent, well below the national benchmark of 4.3 percent.

Denise Murphy, Barnes-Jewish Hospital vice president of patient safety and quality, served as 2007 president of the Association for Professionals in Infection Control & Epidemiology, Inc. She spoke world-wide about infection control initiatives including the National Press Club in Washington, D.C. in October to promote Infection Prevention Week.

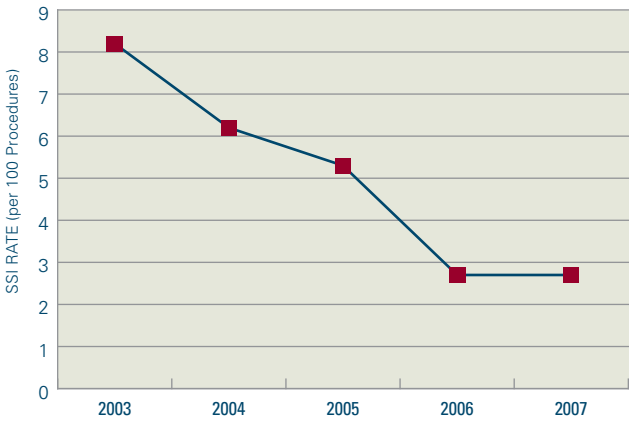
Catheter-Associated Bloodstream Infection Rates 2000-2007



Ventilator-Associated Pneumonia Rates 2000-2007



C-Section Surgical Site Infection Rates 2003-2007



Stroke and Epilepsy **Certification**

Epilepsy Disease-Specific Certification

Recognizing Barnes-Jewish Hospital's efforts to care for patients with seizures, the Joint Commission certified Barnes-Jewish Hospital with a disease-specific certification in epilepsy. The hospital is one of only three epilepsy centers in the nation to receive Joint Commission certification.

The Joint Commission is an independent, not-for-profit organization and is the nation's predominant standards setting and accrediting body in health care. Overall, they evaluate more than 15,000 organizations and programs in the United States.

The Joint Commission certification program for disease-specific care provides a comprehensive evaluation of disease or condition-specific services. The Commission's certification is based on an assessment of compliance with relevant standards and criteria, the effective use of clinical guidelines and outcomes measurement. While accreditation ensures an organization's overall commitment to quality, certification demonstrates excellence in fostering better outcomes by the integration and coordination of care. The Joint Commission's quality review programs for accreditation and certification represent the industry's gold standard in health care.

Primary Stroke Center

Every 45 seconds, someone in America has a stroke; every three minutes, someone dies of one. For stroke victims, receiving immediate, but specialized, treatment may mean the difference between life and death. If the victim does survive, the type and timeliness of care will likely make a huge difference in the person's quality of life.

In 2005, The Joint Commission certified Barnes-Jewish Hospital as a Primary Stroke Center – the first hospital in the St. Louis area to receive the recognition. In July 2007, the hospital was reviewed and recertified by the Joint Commission. Also in 2007, *U.S. News and World Report* ranked our Neurology and Neurosurgery services as the best in Missouri and in the top seven in the country.

Next *steps*

- In 2008, quarterly harmonized stroke data submission will be required by The Joint Commission.
- The hospital will be reporting stroke data to the American Heart Association's Get with the Guidelines database for national benchmarking.
- Jo-Ann Burns, APRN, BC, CNRN, clinical nurse specialist, will be presenting at the national conference of the American Association of Neuroscience Nurses on the process of preparing to become certified by The Joint Commission.
- Daniel Sweeney, EEG tech, will be part of the American Society of EEG Technology national phone conference about preparing for The Joint Commission disease-specific care review.
- The dysphasia screening tool for use by nurses in neurosciences is being rolled out to the nursing staff on medicine units.

U.S.News & World Report America's Best Hospitals 2007

Honor Roll 2007

Barnes-Jewish Hospital has been listed for 15 consecutive years on the *U.S. News & World Report* "honor roll" of America's Best Hospitals.

Heart Attack **Outcomes**

Thirty-eight percent of Americans who suffer a heart attack die within a year according to data from the American Heart Association. For patients, knowing which hospitals have the best outcomes could be lifesaving.

For the first time, the Centers for Medicare and Medicaid Services (CMS) is giving the public access to information comparing hospital outcomes for heart attack and heart failure. The information is available on CMS' "Hospital Compare" web site at www.hospitalcompare.hhs.gov.

According to CMS, only 17 of 4,477 hospitals in the United States had heart attack outcomes better than the national average. Barnes-Jewish Hospital is one of those 17 hospitals and the only one in Missouri.

CMS analyzed 30-day mortality rates for Medicare patients hospitalized with a discharge diagnosis of acute myocardial infarction (heart attack) and congestive heart failure. To make it comparable among hospitals, data was then standardized by adjusting for differences in 27 risk factors for heart attack and 24 for heart failure, looking for specific characteristics such as a patient's age, gender and history of stroke, diabetes and hypertension.

Allowing information previously kept private by CMS is part of a new era of transparency in medicine to offer patients information on health care quality. Other performance data have been available for over a year on Hospital Compare and also on www.barnesjewish.org.

Alvin J. Siteman Cancer Center on the campus of Barnes-Jewish Hospital and Washington University School of Medicine in St. Louis

Oncology

The Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine is an international leader in cancer treatment, research, prevention, education and community outreach. It is the only cancer center in Missouri and within a 240-mile radius of St. Louis to hold the prestigious Comprehensive Cancer Center designation from the National Cancer Institute and membership in the National Comprehensive Cancer Network.

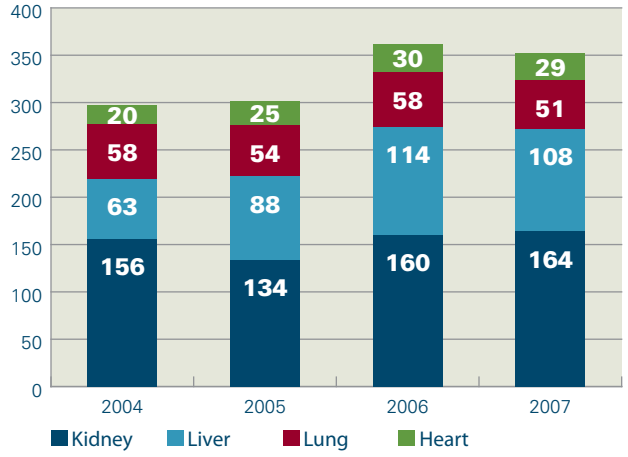
Highlights for 2007

- Completion of 311 bone marrow transplants. Barnes-Jewish Hospital remains the 4th largest BMT program in the world.
- Over 6,000 patients were newly diagnosed with cancer and received their initial treatment here. Barnes-Jewish Hospital has the largest cancer program among academic medical centers in the country and is third only to MD Anderson Cancer Center and Memorial Sloan-Kettering Cancer Center in the number of newly diagnosed cancer patients seen at a single program.
- Development planning was completed for a new outpatient clinic which will provide for rapid symptom management and treatment 24 hours a day/7 days a week for oncology patients. The center will open in the summer of 2008.
- The new Gyn/Oncology Treatment Center opened in July in the Center for Advanced Medicine at Barnes-Jewish Hospital and Washington University School of Medicine. This center allows women with gynecological cancers to see their physicians and receive chemotherapy in the same location.

Transplant **Center**

Barnes-Jewish Hospital's Transplant Center has been a leader in the field of organ and tissue transplantation since 1963. As a comprehensive transplant center with high volumes and physicians on the faculty of Washington University School of Medicine, Barnes-Jewish provides exceptional pre- and post-transplant care resulting in exceptional long-term outcomes. In addition, patients facing medical problems related or unrelated to transplantation have access to the expertise of nationally recognized specialists working at Barnes-Jewish Hospital's centers of clinical excellence.

Solid Organ Transplant at Barnes-Jewish Hospital, 2004-2007*



Kidney and liver numbers include adult and pediatric patients

*Annualized 2007

transplant *milestones*

Liver

- Started in 1985, Barnes-Jewish was the 16th hospital in the world with a dedicated liver transplant program
- National leader in treatment and transplant for primary liver cancers
- Among the lowest rejection rates in the U.S.
- More than 1,000 adult and pediatric liver transplants performed by the Washington University liver transplant surgeons

Lung

- More than 900 lung transplants since the program began in 1988
- Regarded as one of the premier lung transplant programs in the world
- Developed bilateral, sequential lung transplant – considered gold-standard technique in the field
- Developed lung volume reduction surgery
- Comprehensive pre- and post-transplant care results in outstanding long-term outcomes

Kidney, Kidney/Pancreas

- Established in 1963
- More than 2,000 transplants
- Among the lowest rejection rates in the world
- Offers minimally invasive mini-nephrectomy and laparoscopic nephrectomy living donor procedures
- Offers paired exchange, ABO incompatible and HLA incompatible living donor transplants
- Waiting list time lower than national average
- First kidney/pancreas transplant performed in 1990

Heart

- Established in 1985
- More than 450 transplants
- Fully integrated with comprehensive program treating large volume of advanced heart failure patients
- Extensive use and experience with assist devices, including HeartMate II, VentrAssist, Tandem Heart and CardioWest total artificial heart

Research

A wide range of transplant-related research is performed at Barnes-Jewish Hospital with its physician partners at Washington University School of Medicine. Some of this research includes:

- NIH-funded studies on clinical applications of image-guided liver surgery
- The effect of exercise training on the ventricular function of heart failure patients
- The effect of a combination of folic acid, vitamin B6 and vitamin B12 on arteriosclerotic cardiovascular disease outcomes in renal transplant recipients
- Clinical human islet transplantation studies
- Lung preservation for transplant and research into prevention of rejection

Lean **Six-Sigma**

A Way to Work Better, Faster and Safer

Over the past year, Barnes-Jewish Hospital has worked to combine the power of Six Sigma and Lean principles and tools to reduce defects and process variability, and improve the efficiency and quality of key care delivery and support processes. The combination of these tools, first used in the manufacturing industry, is now being applied to health care and the effects are being felt throughout the organization.

In 2007, Barnes-Jewish Hospital conducted more than 60 "events" in key areas. These events have included Value Stream Analyses (VSAs) where multidisciplinary teams examine current processes, define an ideal state, and identify performance improvement opportunities.

After a VSA, the team identifies Rapid Improvement Events (RIEs), 4-to 5-day team events where a multidisciplinary team designs, tests and implements the desired changes, including mechanisms to ensure that improvements are sustained.

Inpatient Medical Care Value Stream

Physician, nursing, ancillary services staff and administration have joined to improve the process of admitting, treating and discharging medical patients who enter the hospital from the emergency department (ED). This is referred to as the "inpatient medical care value stream." Goals include decreasing hand-offs and improving patient safety and flow through the hospital, as well as eliminating rework and reducing physician frustration.

The power of Lean Sigma can best be illustrated by some of the following RIEs conducted for the inpatient medical care value stream.

Emergency Department

The goal was to improve the handoff process between the emergency department and medicine admitting service. A summary report format was programmed into HMED (the patient data system used by the ED) that selected key elements identified by physicians that are needed to admit a patient. The new summary resulted in a 34 percent reduction in the number of pages. This more concise report resulted in a 54 percent reduction in time spent finding information when a physician completes admission orders.

Patient Discharge Process

The goal was to improve the discharge process, which routinely affects patient satisfaction. Fifty percent of the discharges on the 13 medicine floors occur after 4 p.m. The RIE team established a discharge time of 1 p.m. Physicians were asked to write orders that said "anticipate discharge tomorrow" and "discharge home today." Ancillary services also were included in communication so tests and procedures can be performed before day of discharge. A discharge board was developed to track every patient. The board identifies all activities that must be performed for the patient and the status of each activity (for example when physical therapy has been ordered it is red, when completed, the sticker is changed to green). If a patient is not discharged by 1 p.m. then the reason is noted and Pareto charts are analyzed to take action.

Peer Review and **Credentialing**

Summary

- 204 physicians were appointed and 699 physicians were reappointed to the Barnes-Jewish Hospital medical staff in 2007.
- 127 physicians resigned from staff because of relocation, retirement or completed fellowships.
- A core set of peer review criteria were developed for each Barnes-Jewish Hospital division in collaboration with Washington University School of Medicine departments. These criteria included:
  - a. Medication events with high harm score
  - b. Selected procedural complications (accidental puncture or laceration)
  - c. Deaths in low risk populations
  - d. Re-admissions within 7 days of discharge
  - e. Risk management referrals
  - f. Referrals from other department peer review committees
- Priority areas for Barnes-Jewish Hospital Medical Staff Performance Committee in 2007 included evaluation of appropriateness of peer review criteria, quality indicators and review process.
- Individual physician performance issues are addressed by peers within specific Washington University School of Medicine departments; system issues are addressed by Washington University School of Medicine and Barnes-Jewish Hospital.
- Performance issues are documented in the physician and Allied Health Professional profiles and evaluated at time of reappointment (every two years).

The 2007 Patient Care Quality & Safety Commitee of the Barnes-Jewish Hospital (BJH) Board included *(from left:)* Coreen Vlodarchyk, BJH vice president of patient care services and chief nurse executive; Renee Rosen, Parkview Auxiliary co-president; Leslie Small, a business community representative with St. Louis Trust Co.; Jim Crane, MD, chief executive officer for Washington University School of Medicine Faculty Practice Plan; Sharon O'Keefe, BJH chief operating officer; David Holtzman, MD, chair of the Washington University School of Medicine Department of Neurology; John Beatty, BJH vice president of human resources; Charles Burson, 2007 chair of the BJH Patient Care Quality & Safety Commitee; Jonathan Gottlieb, MD, BJH chief medical officer; Diane Sullivan, business community representative with Brown Shoe Co.; Myra Glazer, past president of the Parkview Auxiliary; Peggy Elias, Plaza Auxiliary president; and Denise Murphy, BJH vice president, safety and quality.

2008 Patient **Safety & Quality Initiative**

Establish a just culture of safety and zero tolerance for adverse events.

- Educate the organization on the definition of Just Culture and Zero Tolerance for preventable adverse events
- Collaborate with Human Resources to implement a Patient Safety Behaviors program for employees and physicians
- Facilitate the development and implementation of effective programs, systems and processes that will reduce risk and improve patient outcomes
- Monitor processes that increase risk of infection and implement interventions to decrease hospital-acquired infections

Collaborate with patient care leadership to ensure the presence of a surveillance system that captures the 9CMS conditions not present on admission.

Eliminate repeat sentinel events.

Eliminate unexpected death in populations at low risk for mortality.

Achieve top decile performance on all clinical performance indicators.

- Achieve universal compliance with influenza vaccine program
- Eliminate catheter-associated bloodstream infections
- Participate with patient care leadership and CMO in the University HealthSystem Consortium (UHC) collaborative to eliminate HA-pressure ulcers and VTE

Ensure perpetual readiness for accreditation/regulatory compliance.

- Develop correction and risk reduction plan for the top five percent of most frequently cited standards
- Maintain ongoing compliance through readiness rounds, Accreditation Manager Plus software and departmental audit processes
- Provide oversight and leadership programs, systems and processes that ensure regulatory compliance and protect the organization from risk

Improve collaboration with our physician partners.

- Roll out comparative data from UHC aggregated by patient groups, physician groups and individual physicians
- Cultivate physician leadership in UHC benchmarking activities

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

Nurses, pharmacists and other staff administered almost 25,000 free community flu shots during a week long event in November. Coreen Vlodarchyk, vice president of patient care services and chief nurse executive, was one of the first hospital employees to be vaccinated.

Why Joint Commission Evaluates **Staffing Effectiveness**

Health care staffing shortages are widely publicized and the public is acutely aware of the demands on hospitals struggling with this issue. The problem involves not just the number of staff, but the skill mix and competency of staff available to work. Several studies have shown a link between staffing, positive patient outcomes and improved quality and safety of care. The Joint Commission supports a broad approach to the issue of staffing adequacy, but does not prescribe specific ratios. There are several initiatives under way at Barnes-Jewish Hospital to ensure effective staffing.

In response to the increasing demands and complexity of the patient care environment, the span of control of the nurse manager at Barnes-Jewish Hospital has been reduced as positions are vacated and refilled. The staffing skill mix (RN to patient care tech ratio) has been altered from 60/40 to the current 70/30 and will continue until the target of 80/20 is attained.

The role of the lead charge nurse continues to develop at Barnes-Jewish Hospital. The lead charge nurse does not have patients assigned to his or her care, and the role was created to promote patient satisfaction, facilitate patient placement, enhance patient throughput by increased coordination of care and discharge planning, and provide a resource for the nursing staff and physicians. Nurses in this role develop skills, attitudes and behaviors that facilitate their transition into higher-level management positions if desired. Feedback from physicians concerning the role and visibility of the lead charge nurse leadership has been very positive.

There are many contributing factors to recruitment, attrition and vacancy rates. A combination of clinical experiences and human resource issues such as management, work hours and a sense of camaraderie among staff influence job satisfaction and affect retention. At Barnes-Jewish Hospital, the nursing attrition rate is steadily improving, with a 25.5 percent rate in 2007, an improvement from the 2006 rate of 27.5 percent. Nationally, attrition rates in health care average 37.5 percent.

Barnes-Jewish Hospital selected the following nurse-sensitive indicators because studies have shown that when evaluated together they assist in determining appropriate RN staffing levels and staffing mix as well as identifying training and educational opportunities. Using National Database of Nursing Quality Indicators (NDNQI), we are able to benchmark against NDNQI targets.

seal of *approval*

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

Barnes-Jewish Hospital **Indicators for 2007**

Patient Population Groupings	Human Resource Indicators	Clinical Outcomes Indicators
All patient care units will be monitored, with special areas of focus including the surgical/trauma ICU (84 ICU) and 10200 (medicine).	RN hours per patient day (NHPPD) Total caregiver hours per patient day – RN, LPN, PCT (HPPD)	Pressure ulcers Pain management Falls (with and without injury) Blood stream infections Ventilator-associated pneumonia Time restraints or seclusion

Emergency **Preparedness**

Program

- The hospital has a partnership with the St. Louis Area Regional Response Systems (STARRS).
- The hospital participated in five emergency preparedness drills in 2007:
  - ~ Three regional drills including an earthquake and blast/ trauma scenario involving hazardous materials and decontamination
  - ~ A federal drill known as *TopOff* with the Radiation Injury Trauma Network
  - ~ A drill exercising mass medical distribution and a mobile clinic set up by the hospital pharmacy and information systems group
- In conjunction with the St. Louis Emergency Preparedness Council, the hospital conducts ongoing research on the effectiveness of decontamination.

Barnes-Jewish Hospital among the *top five*

- Barnes-Jewish Hospital is one of the **"Top Five Highly Prepared Trauma Centers in the Country"** as designated by the National Foundation for Trauma Care.

Recycling **Initiative**

Challenge

To increase recycling throughout the hospital.

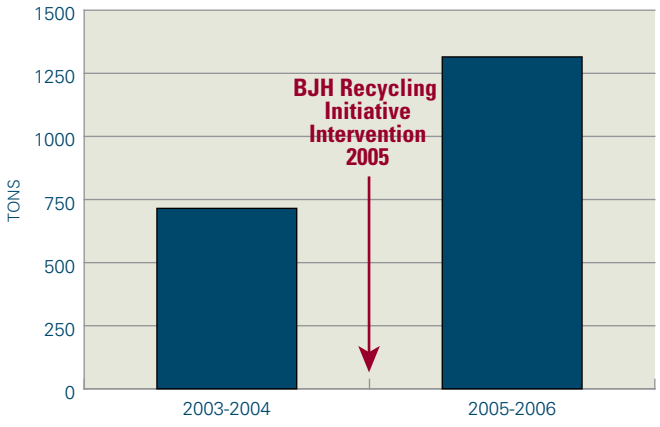
Intervention

Not all hospital waste material qualifies for recycling. The hospital focused efforts on recycling cardboard, paper, batteries, fluorescent bulbs, plastics, aluminum and steel, organic solvents, surgical supplies and packaging. Opportunities for recycling were also made more accessible to employees.

Results

Recent interventions have increased amounts by 500 tons. This reresents 12 percent of recyclable waste at a cost savings of $16,000. The goal for 2008 attempts to increase to 15 percent.

Barnes-Jewish Hospital Recycling Initiative
Yearly Average of all Recycled Materials



Customized Work Screen **Evaluation**

A need was identified to develop a screening tool for newly hired patient transport employees. Past data indicated an increase in lifting, pushing, and pulling-related muscular skeletal injuries.

A multidisciplinary group of hospital departments developed and implemented a process to evaluate potential new hires by a physical therapist. The person is asked to move a 100-pound mannequin in ways that mimic the movement of a patient during transport and assists.

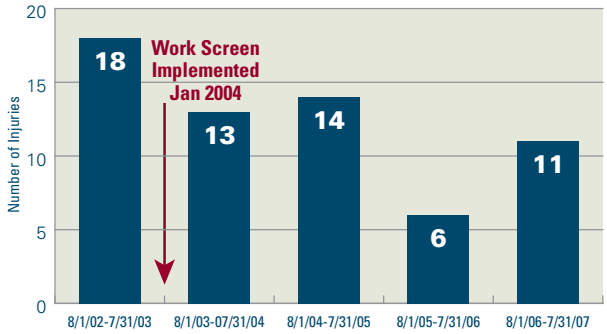
The program has been a success and has resulted in a reduction in the number of injuries, associated days away from work and worker compensation dollars.

Source: BJC HealthCare Workers Compensation Administration

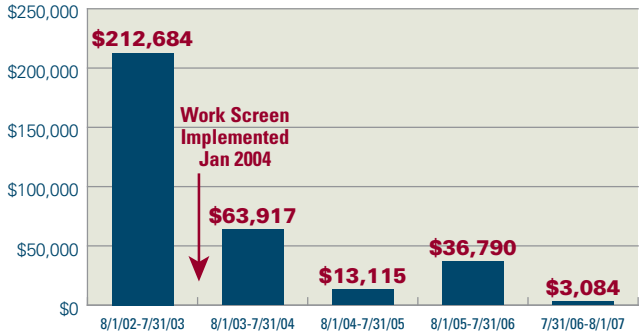
BLS-Bureau of Labor Statistics Incidence Rates of Non-Fatal Occupational Injuries and Illness by Industry Cases

Barnes-Jewish Hospital OSHA 300 Log

OSHA Recordable Lifting/Pulling/Pushing/Strain Injuries



Worker's Compensation Savings



Additional Performance **Benchmarks**

Worker Compensation Cost Reductions

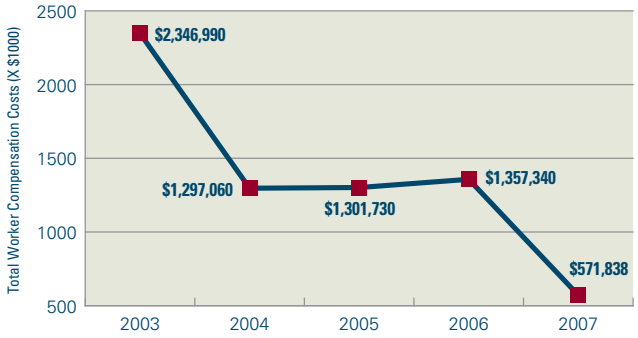
The reduction in claims is the result of a combination of interventions by Barnes-Jewish Hospital and BJC HealthCare. These include a robust slip, trip and fall prevention program, increased accountability on case management, customized work screen evaluation, and administrative changes by BJC HealthCare in self-administering the worker's compensation program.

Source: BJC HealthCare Workers Compensation Administration (WCA) as of 12/31/2007

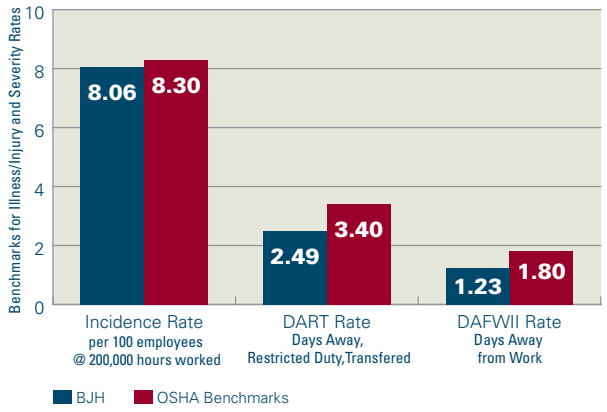
OSHA Benchmark ~ Days Away, Restricted Work or Transferred (DART)

Barnes-Jewish Hospital continues to be below OSHA Benchmark for the hospital industry.

Workers Compensation Cost Reduction



Barnes-Jewish Hospital Employee Injury/Illness Profile 2007



Barnes-Jewish Hospital is recognized with the following distinctions:

- The Joint Commission Gold Seal of Approval
- The Joint Commission Primary Stroke Center
- The Joint Commission Certified Program in Epilepsy
- The Joint Commission Certified Program in Lung Volume Reduction
- The American Nurses Credentialing Center recognition as a Magnet Hospital
- The American Society for Bariatric Surgery Bariatric Center of Excellence
- The National Foundation for Trauma Care designated the Charles F. Knight Emergency & Trauma Center at Barnes-Jewish Hospital one of the five most "highly prepared" trauma centers in the country
- Barnes-Jewish Hospital has been listed for fifteen consecutive years on the *U.S. News & World Report* "honor roll" of America's Best Hospitals

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
- Designation by the National Cancer Institute as a Comprehensive Cancer Center

BARNES-JEWISH® Hospital
BJC HealthCare