The Department of Orthopaedic Surgery at NYU Langone Medical Center

The Department of Orthopaedic Surgery at NYU Langone Medical Center is recognized both nationally and internationally as a leader and a center of excellence in orthopaedic clinical care, education, research and quality. We are among the largest orthopaedic departments in the nation, training more than 12 residents per year. This year, our Department is ranked #5 in the U.S. News & World Report annual survey of “Best Hospitals” in America.

Under the leadership of Joseph D. Zuckerman, MD, the Walter A.L. Thompson Professor and Chair of the Department of Orthopaedic Surgery, our world-class faculty provides care in all orthopaedic subspecialty areas, including: adult reconstructive surgery, orthopaedic trauma, surgery of the spine, sports medicine, hand surgery, musculoskeletal oncology, shoulder and elbow surgery, pediatric orthopaedics, primary care sports medicine, and foot and ankle surgery. Our growing faculty (presently more than 190 members) is dedicated to the pursuit of excellence in all facets of our work, including continual improvements in the quality of care we provide.

Through the development and implementation of quality initiatives reported in this, our third Quality and Outcomes Report, we continue to provide leadership in the quality and patient safety movement. We understand the absolute necessity of continually monitoring and improving the quality and cost-effectiveness of care as our contribution to the long-term health and financial well-being of our country. The patients who entrust their care to our physicians depend on us to ensure that they are provided the best opportunity to lead healthy and productive lives. We proudly present this report of our ongoing efforts in the area of orthopaedic quality care and patient safety.
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Introduction to Our Quality Initiatives
From the Chair and Vice Chair of Clinical Affairs

The pursuit of quality and excellence has been and always will be the driving force behind all we do. In the Department of Orthopaedic Surgery at NYU Langone Medical Center, we take seriously our obligation to provide the finest quality care to our patients and to remain leaders and innovators in the field of quality and patient safety. With this, our third biennial quality report, we reaffirm our commitment to patient safety, satisfaction and quality outcomes.

Quality, while difficult to measure, can be quantified through activities such as rigorous effectiveness research, patient satisfaction surveys and publicly reported outcome measures. Given the substantial impact of healthcare cost and safety issues on both the individual and the national economy, it is imperative that we make decisions based on high-quality analyses. With this report, we present the results of multi-year efforts to take the measure of our value as a leader in orthopaedic surgery.

These efforts are part of a robust Medical Center–wide focus on quality initiatives reinforced by NYU Langone leadership, including our Dean and CEO Robert I. Grossman, MD; Chief Medical Officer and Patient Safety Officer Robert Press, MD, PhD; and Chief Quality Officer Martha Radford, MD, MA. Their partnership combined with our efforts and those of our peers in the illustrious clinical departments that comprise the Medical Center, have resulted in NYU Langone being ranked number one for overall patient safety and quality among leading academic medical centers (AMCs) across the nation that participated in the University HealthSystem Consortium (UHC) 2013 Quality and Accountability Study. In addition, NYU Langone received the UHC Quality Leadership Award for demonstrated excellence in the delivery of high-quality care. While we are proud of the national recognition and accolades, we are equally proud that so many of our patients report that they are happy with the care they receive and that they would and do recommend us to their friends and family.

Maintaining that level of excellence requires constant vigilance and continuous improvement. We take seriously the threat to patients posed by infections acquired while receiving treatment in the hospital or outpatient setting. The issue of hospital-acquired infections has emerged as a major challenge to providing quality patient care in the 21st century. Due to rapidly changing patterns of microbial infection and antibiotic resistance, we must be prepared to shift surgical practices to counter the threat of infection. In this report, we provide examples of the proactive steps we have taken to reduce the risk of infection through awareness and prevention measures. These include weight-based antibiotic dosing and shifting antibiotic administration designed to prevent the emergence of resistant strains of organisms.

Likewise, we are cognizant of the rapid shift in healthcare toward an expectation of cost-effective healthcare delivery and the attendant value-based reimbursement. In preparation for the Centers for Medicare & Medicaid Services implementation of value-based reimbursement incentives, we are aligning our quality and patient safety measures to quality metrics that are a national priority. This report provides results of several programs that we hope will provide useful models. In addition, each of our nine subspecialty divisions provides examples of research designed to improve patient outcomes and improve quality of care.
Within the Department of Orthopaedic Surgery, including the Hospital for Joint Diseases, our commitment to quality patient care extends throughout our dedicated faculty and staff. As leaders of one of the nation’s most distinguished orthopaedic surgery departments, we are proud to be part of an institution that provides excellent quality healthcare to so many people. In the spirit of collegiality and openness, we invite you to examine our efforts to improve the patient experience and to provide a yardstick of quality for years to come.

Joseph D. Zuckerman, MD
Chair of the Department of Orthopaedic Surgery,
The Walter A.L. Thompson Professor
of Orthopaedic Surgery

Joseph A. Bosco, MD
Vice Chair for Clinical Affairs

Joseph A. Bosco, MD
Outcomes and Patient Safety: Applying Quality Principles

Principles of Antibiotic Stewardship

Bacterial resistance to antibiotic therapy has emerged as one of the leading healthcare challenges of the 21st century. In a hospital setting, shifting antibiotic resistance patterns make selecting the optimal antibiotic and treatment regimen even more difficult. According to the Centers for Disease Control and Prevention report *Antibiotic Resistance Threats in the United States, 2013*, two million people acquire serious bacterial infections that are resistant to at least one antibiotic each year and 23,000 people die as a result of an antibiotic-resistant infection. Many more die from other conditions complicated by an infection. To reduce the burden of difficult-to-treat bacterial infections, implementation of proper antibiotic stewardship has become a priority program at NYU Langone.

Antimicrobial stewardship programs (ASPs) have been proven to reduce antibiotic resistance and, importantly, to improve patient safety and outcomes. The principles of antibiotic stewardship include:

- Determining the appropriate indications for antibiotic administration
- Choosing the correct antibiotic based on known or expected pathogens
- Calculating the correct dosage and time course of antibiotic administration

A multidisciplinary team comprising orthopaedic surgeons, infectious disease physicians, infectious disease clinical pharmacists, and infection control and prevention practitioners developed and implemented our ASP. It provides general dosing and antibiotic choice recommendations, performs active surveillance of antimicrobial use and pre-authorizes restricted antimicrobials. Antibiotic stewardship provides an invaluable service to clinicians and to hospital systems. The emergence of resistant bacteria and the geographical diversity of infecting pathogens will change the way we use antibiotics. It will require that we customize our prophylactic regimen to reflect the prevalent pathogens in our area. ASPs will help orthopaedic surgeons optimize clinical outcomes while minimizing the unintended consequences of the use of antimicrobials.

For example, recent research and changes in the genome of infecting organisms have forced us to re-evaluate how we use antibiotics in the practice of orthopaedic surgery. National measures require that antibiotics be given within one hour of incision or tourniquet inflation and that they be given for only 24 hours after surgery. Traditionally, second-generation cephalosporins were the antibiotic of choice for prophylaxis. However, the indications for addition of vancomycin have expanded as the prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) infections has increased. Additionally, the prevalence of gram-negative pathogens is increasing, especially in certain geographic areas. This has led some investigators to recommend that gentamycin be added to the prophylactic regimen. The concept of adjusting prophylactic antibiotics to reflect the unique genomic characteristics of pathogens infecting your patients is now considered best practice.

Customizing Prophylactic Antibiotics to the Genome of the Prevalent Infecting Organism

The effectiveness of antimicrobial prophylaxis depends on the susceptibility of those bacteria most likely to be encountered during the operation. There is increasing evidence that types and virulence of infecting organisms vary given time and geographic location. Therefore, we recommend that each institution determine the genome of the infecting organisms and adjust its prophylactic antibiotic recommendations accordingly.
Analysis of Specific Infecting Organisms at Our Institution

<table>
<thead>
<tr>
<th>Site</th>
<th>Cefazolin-Resistant/Total isolates</th>
<th>Superficial</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip</td>
<td>6/18 (25%)</td>
<td>2/6 (33%)</td>
<td>4/12 (33%)</td>
</tr>
<tr>
<td>Knee</td>
<td>6/9 (67%)</td>
<td>2/4 (50%)</td>
<td>4/5 (80%)</td>
</tr>
<tr>
<td>Total</td>
<td>12/27 (44%)</td>
<td>4/10 (40%)</td>
<td>8/17 (47%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site</th>
<th>Gentamicin-Resistant/Total isolates</th>
<th>Superficial</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip</td>
<td>1/18 (5.6%)</td>
<td>0/6 (0%)</td>
<td>1/12 (8%)</td>
</tr>
<tr>
<td>Knee</td>
<td>1/9 (11%)</td>
<td>1/4 (25%)</td>
<td>0/5 (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>2/27 (7%)</td>
<td>1/10 (10%)</td>
<td>1/17 (6%)</td>
</tr>
</tbody>
</table>

Gentamicin-resistant organisms reflect two multidrug-resistant (MDR) Acinetobacter spp.

<table>
<thead>
<tr>
<th>Site</th>
<th>Cefazolin-Resistant/Total isolates</th>
<th>Superficial</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>1/2 (50%)</td>
<td>0/1 (0%)</td>
<td>1/1 (100%)</td>
</tr>
<tr>
<td>Dorsal</td>
<td>8/11 (73%)</td>
<td>2/4 (50%)</td>
<td>6/7 (86%)</td>
</tr>
<tr>
<td>Lumbar</td>
<td>3/8 (38%)</td>
<td>0/3 (0%)</td>
<td>3/5 (60%)</td>
</tr>
<tr>
<td>Total</td>
<td>12/21 (57%)</td>
<td>2/8 (25%)</td>
<td>10/13 (79%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site</th>
<th>Gentamicin-Resistant/Total isolates</th>
<th>Superficial</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>0/2 (0%)</td>
<td>0/1 (0%)</td>
<td>0/1 (0%)</td>
</tr>
<tr>
<td>Dorsal</td>
<td>1/11 (9%)</td>
<td>0/4 (0%)</td>
<td>1/7 (14%)</td>
</tr>
<tr>
<td>Lumbar</td>
<td>1/8 (13%)</td>
<td>0/3 (0%)</td>
<td>1/5 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>2/21 (10%)</td>
<td>0/8 (0%)</td>
<td>2/13 (15%)</td>
</tr>
</tbody>
</table>

Our data suggest that perioperative cefazolin may be an inadequate prophylaxis for the prevention of orthopaedic surgical site infections (SSIs), given the high rates of methicillin-resistant staphylococcal isolates (48%) and cefazolin-resistant Gram-negative isolates (50%) cultured from SSIs at our institution.

In the setting of these bacterial resistance trends, perioperative gentamicin and vancomycin may provide enhanced prophylaxis for high-risk patients.

The Standard 1 Gram Dose of Vancomycin Is Not Adequate Prophylaxis for MRSA

In 2012 we began using weight-based dosing of vancomycin. The increasing prevalence of obesity in our patient population coupled with increasing resistance of MRSA to vancomycin has resulted in 75 - 80% of our patients being underdosed at the standard dose of 1 g q 12 hours, leading to recent recommendations for weight-based dosing of vancomycin at 15 mg/kg. We retroactively analyzed all patients who had a MRSA-positive nasal screen and underwent surgery between Feb. 2008 and Jan. 2012. All patients were given 1 gram of vancomycin within an hour prior to surgical incision as prophylaxis. Using the revised dosing protocol of 15 mg/kg of body weight for vancomycin, proper dosage was retrospectively calculated for each patient. These values were then compared to the 1-gram dose given to patients at the time of surgery. Patients...
were assessed as either underdosed (a calculated weight-based dose <1 gram) or overdosed (a calculated weight-based dose >1 gram).

More than 80% of patients receiving perioperative vancomycin prophylaxis were underdosed based on their body weight. To avoid incorrect dosing of vancomycin, healthcare providers must use weight-based dosing.

**Patient Checklist and Safety Metrics**

Surgical outcomes and patient satisfaction measures provide important indicators of the quality and safety of care provided by a hospital. The data show that more experienced surgeons and hospitals have better outcomes for patients.

Therefore, it is important that patients and physicians feel comfortable discussing statistical outcome questions in an honest and open manner. To assist patients in choosing a surgeon and hospital, we have developed a patient checklist containing a list of questions to guide discussion between patients and their healthcare providers, particularly prior to a surgical procedure.

*We organize the questions using the acronym **SCOPE**:*

**Safety**
- Do you review the case with your surgical team before the surgery?
  
  *Case review ensures proper communication among surgical staff in order to prevent errors and improve efficiency.*
- How do you confirm that you are operating on the correct part of the body?
  
  *NYU Langone utilizes a formal “Time Out” procedure to verify the correct surgical site prior to incision.*

**Cases-volume**
- How many surgeries a year occur at your hospital?
  
  *Numerous studies have found that physicians and hospitals that perform a high volume of surgery for a specific procedure have lower mortality and complication rates than those performing procedures less frequently.*

**Outcomes**
- Do many patients acquire an infection after having this procedure?
- What are my chances of getting a blood clot during hospitalization?
- How long should I expect to stay in the hospital?
- How many patients get readmitted to the hospital within one month of surgery?
- What resources are available to ensure a smooth and safe transition home?

**Patient Experience**
- Are other patients satisfied with the care they receive here?
- How do you measure patient satisfaction?
**Patient Experience**

The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey is the first national, standardized, publicly reported survey of patients' perspectives on hospital care. We are proud of the fact that we fall above the national average rankings on the following important quality metrics: patients recommending the hospital, responsiveness of our hospital staff to patient needs, and patients receiving adequate discharge information.
Quality Reporting and Value-Based Purchasing: Valuing the Patient Experience

In the context of healthcare delivery, value-based purchasing (VBP) allows payers to hold providers of healthcare accountable for controlling costs and quality of care. Through a system of financial incentives and penalties, VBP leverages patient outcomes and patient experience data to improve the quality of care and reduce inappropriate care. The Centers for Medicare & Medicaid Services (CMS) measures the quality of patient care based upon 25 dimensions of performance grading. Seventy percent of these measures focus on the process of care, such as Surgical Care Improvement Project (SCIP) measures, but 30% are based on patient experience metrics. The patient experience is graded by Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores. CMS then calculates a total performance score by combining weighted scores on each measure, which beginning in 2015 will be translated into a value-based incentive payment. Providing excellent customer service and patient satisfaction will become critical to achieving a good performance score.

Performance incentives are derived from changes in CMS reimbursement. Through October 2012, there has been a 2% reduction in base operating diagnosis-related grouping (DRG) payments to hospitals for each discharge. This will increase to 6% by 2016. The government will redistribute this savings to hospitals that provide the best patient care or show the most improvement in the quality of patient care. Thus, poor performers will not receive any payment, while the best performers will receive up to 6% of the redistributed Medicare payments.

The value-based modifier (VBM) will be implemented in phases, beginning in 2015, with physicians in groups of 100 or more eligible professionals who submit Medicare claims under a single tax identification number. There is a two-year time lag between the performance year and the payment adjustment. Thus, adjusted payments starting in January 2015 will be based on performance data from 2013. The value-based payment modifier will expand to apply to all physicians by January 2017.

Medical providers can increase value by improving costs through consistent use of evidence-based medicine and clinical practice guidelines, minimizing complications and eliminating the disparity of care. The overriding goal is to improve quality and reduce costs by offering physicians meaningful incentives for achieving standard, recognized, and attainable measures. Now is the time to begin measuring baseline performance against established external and internal quality benchmarks in preparation for VBM implementation.

Statutory Timeline for VBM Implementation

<table>
<thead>
<tr>
<th>Reporting Period</th>
<th>Value-Modified Payment Adjustment</th>
<th>Eligible Professionals Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>2015 payments</td>
<td>Group ≥100</td>
</tr>
<tr>
<td>2014</td>
<td>2016 payments</td>
<td>To be determined</td>
</tr>
<tr>
<td>2015</td>
<td>2017 payments</td>
<td>ALL ELIGIBLE PROFESSIONALS</td>
</tr>
</tbody>
</table>
Physician Quality Reporting System (PQRS) group reporting methods include:

- Web-interface group practice reporting option (GPRO)
- CMS-qualified registry
- Request that CMS calculate the group’s performance on quality measures from PQRS administrative claims. (Groups that have physicians who want to report PQRS claims individually will need to choose the administrative claims reporting option to avoid the payment adjustment.)

### Interaction Between PQRS and VBM

Groups of physicians with ≥ 100 eligible professionals on October 15, 2013 can choose to participate in quality tiering. CMS will divide the quality and cost composite scores into three tiers—better than, the same as, or worse than the national mean. Quality tiering will result in a performance-based increase or decrease in the 2015 payment. High quality, low cost groups will have the greatest positive adjustment. CMS will also have an additional upward adjustment for groups serving high-risk patients.

### Quality-Tiering Option

Under the VBM, groups can choose to participate in quality tiering. CMS will divide the quality and cost composite scores into three tiers—better than, the same as, or worse than the national mean. Quality tiering will result in a performance-based increase or decrease in the 2015 payment. High quality, low cost groups will have the greatest positive adjustment. CMS will also have an additional upward adjustment for groups serving high-risk patients.

### Value-Based Modifier Amounts for the Quality-Tiering Approach

<table>
<thead>
<tr>
<th>Quality/cost</th>
<th>Low Cost</th>
<th>Average Cost</th>
<th>High Cost</th>
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<tbody>
<tr>
<td>High Quality</td>
<td>+2.0x*</td>
<td>+1.0x*</td>
<td>+0.0%</td>
</tr>
<tr>
<td>Average Quality</td>
<td>+1.0x*</td>
<td>+0.0%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Low Quality</td>
<td>+0.0%</td>
<td>-0.5%</td>
<td>-1.0%</td>
</tr>
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</table>

* Eligible for an additional +1.0x if 1) reporting quality measures via the web-interface or CMS-qualified registry, and 2) average beneficiary risk score is in top 25 percent of all risk scores.
The quality composite score will be calculated based on PQRS measures. Measures will be weighted equally within each domain and domains will be weighted equally to form a composite. When a group does not report measures in a particular domain, the remaining domains will be weighted equally.

Composite outcome measures will be calculated for the care coordination domain:

**Acute Prevention Quality Indicators (PQIs) Composite:**

1) Bacterial Pneumonia: # of admissions/100,000 population
2) UTI: # discharges for UTI/100,000 population
3) Dehydration: # admissions for dehydration/100,000 population

**Chronic Prevention Quality Indicators (PQIs) Composite:**

1) Diabetes Composite: uncontrolled diabetes, short-term diabetes complications, long-term complications, and lower extremity amputations (# discharges/100,000 population)
2) COPD: # admissions/100,000 population
3) Heart Failure: % population with admissions for CHF
4) All Cause Readmissions: rate of provider visits within 30 days of discharge per 1,000 discharges for eligible beneficiaries assigned
Implementing and tracking appropriate quality metrics and outcomes in ambulatory surgical centers (ASCs) is paramount in driving improvements in quality, efficiency, and patient safety. Outcome data are difficult to collect, as most events occur after a patient has left an ASC. There is no infrastructure in place to track discharges and detect adverse events. Patients often do not report to ASCs for post-op care or complications. Due to these limitations, current ASC quality metrics focus on process-of-care measures. There are five ambulatory surgery measures adopted by the National Quality Forum and finalized by the Centers for Medicare & Medicaid Services (CMS) in 2014:

- ASC-1-Patient Burn
- ASC-2-Patient Fall
- ASC-3-Wrong site, wrong side, wrong patient, wrong procedure, wrong implant
- ASC-4-Hospital transfer/admission
- ASC-5-Prophylactic intravenous (IV) antibiotic timing

Additional metrics to be added:

- In 2015: ASC-6-Safe surgery checklist use
- In 2015: ASC-7-Facility volume on selected ASC procedures
- In 2016: ASC-8-Influenza vaccination coverage among healthcare personnel

ASCs not meeting reporting requirements and/or withholding from the public domain may face a 2% deduction in Medicare payments annually.

Additional steps must be taken to improve and expand current metrics for ASCs to provide the same level of quality and patient safety as inpatient surgical centers. Protocols for inpatient surgery must be adapted for use in ASCs. Many hospital inpatient metrics are not applicable to ambulatory surgery, including many of the Surgical Care Improvement Project (SCIP) measures. Additional relevant and reportable metrics to develop for ASCs include: surgical site infection and hospital acquired infection rates, number of reoperations, DVT risk screening, processes to reduce wrong side surgery, near miss reporting for incorrectly booked procedures, and employee sharps injuries. Meaningful use criteria for electronic medical record (EMR) utilization should also be incorporated.

Looking forward, meaningful surveillance and reporting procedures must be implemented, including improved inspection frequency and methodology. The ability to share electronic data between outpatient and inpatient settings is a priority. Currently, there is no statewide or national standardized reporting of many relevant quality and compliance measures for ASCs. It will be necessary to create a nationwide database of standardized quality data for ASCs that can serve as a benchmark against which future quality data outcomes can be compared. Evidence-based and clinically validated standards and protocols must be put into effect to improve outcomes, patient safety, and patients’ experience of care.

**21st Century Outcomes Reporting**

The Department of Orthopaedic Surgery has developed and implemented a new system to record self-reported patient outcomes data using an iPad interface. Patients seen at our outpatient Center for Musculoskeletal Care (CMC) complete a ‘condition assessment’ questionnaire prior to seeing their physician. Each patient is given one questionnaire that is specific to their problem (e.g., hip or knee disease) and a second preference-based quality of life measure that applies across all diseases. The system has been used during approximately 50,000 patient visits.
Outcomes and Patient Safety: Measuring Our Results

*Research in Quality, Cost-Effectiveness, and Patient Safety*

Research and education on quality and patient safety are fundamental to our department’s mission. We strive to provide leadership on quality and patient safety both within our institution and on a national scale through research and dissemination of information. It is our hope that by publishing and disseminating the work put forth by our Quality Division, other clinicians and ultimately patients will benefit from the programs and knowledge that we have developed. The following abstracts summarize the results of several quality initiatives we have published and/or presented. A more complete list of presentations given at national and international meetings can be found in the final section of this report.

**Prevention of *Staphylococcus aureus* Surgical Site Infections: A Randomized, Non-inferiority Trial Comparing Nasal Povidone-Iodine with Nasal Mupirocin**

We compared a one-time nasal application of povidone-iodine (PVP-I) with nasal mupirocin ointment twice daily for five days prior to surgery in an open-label trial. Of the 1,874 arthroplasty and spine fusion surgery patients enrolled in the study, 1,697 were three months post-surgery and included in this preliminary intent-to-treat analysis. At three months after surgery, four deep *Staphylococcus aureus* (SA) SSIs occurred in the mupirocin arm (rate of 0.6 SA SSIs/100 surgeries) and two deep SA SSIs occurred in the PVP-I arm (rate of 0.3 SA SSIs/100 surgeries), difference not significant. No superficial SA SSIs was seen in either group. Eight non-SA SSIs occurred in the mupirocin arm (rate of 1.1 non-SA SSIs/100 surgeries) and five deep non-SA SSIs occurred in the PVP-I arm (rate of 0.7 non-SA SSIs/100 surgeries), difference not significant. The preliminary modified Intention to Treat (MITT) analysis of this randomized open-label, non-inferiority trial revealed nasal mupirocin and nasal PVP-I, both coupled with topical chlorhexidine gluconate (CHG), were equivalent in preventing SA SSIs after arthroplasty or spinal fusion surgery.
Using Near-Miss Analysis to Prevent Wrong-Site Surgery

In 2004, The Joint Commission published comprehensive guidelines to prevent wrong-site surgery. Nine years have passed, and the incidence nationally has not declined. “Near misses” are events that could have harmed a patient, but did not due to chance or mitigation. Improperly performed time-out procedures and inaccurate surgical bookings are considered near misses and could ultimately lead to never events. Thus, proper education of surgeons and staff is highly effective in reducing the number of near misses. From August 2010 to May 2011, near misses were identified and stored in Patient Safety Net (PSN), an electronic database. We tracked these cases and educated each offending attending physician and staff about the importance of accurate surgical bookings. Additionally, we began an observational program to carefully review pre-surgical time-out procedures as they occurred. We tracked the percentage of these improperly performed time outs and counseled offenders regarding the deficiencies that caused the time out to be ineffective. The number of near misses that occurred before and after the interventions was recorded and analyzed.

A dedicated program of near-miss analysis, combined with an ongoing educational initiative, can help to significantly reduce the number of near-miss events and, in turn, potentially decrease the occurrence of never events. While our data represent a tertiary specialty hospital, they nonetheless offer a basic protocol of near-miss analysis and education that can be applied to other, larger, more diverse institutions. Larger scale, multi-center trials or larger, government-based initiatives may prove fruitful in evaluating the large-scale efficacy of this type of quality initiative to eliminate unnecessary, devastating complications.

Near Misses: Pre/Post Education

Hospital-Acquired Conditions after Orthopaedic Surgery Are Not Associated with Decreased Patient Satisfaction Scores

Performance on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys is an area that demands hospital attention both to provide patient-centered care and to maximize revenue. The purpose of this study was to determine whether development of a hospital acquired condition (HAC) affected
responses to HCAHPS. We randomly distributed the HCAHPS survey, a validated, standardized measure of patient satisfaction, to 6,056 patients discharged from our institution for any orthopaedic admission over a two-year period. All patients who develop HACs are logged by our hospital quality assurance monitoring system. We reviewed the HCAHPS database, identified completed surveys associated with patients who had developed an HAC, and compared satisfaction scores between patients with HACs and patients without HACs.

Patients in the HAC group are more likely to be female and significantly older, with a mean age of 66.84, versus 58.65 ($p<0.001$). There was no difference in satisfaction scores in patients’ mean rating of communication by nurses ($p=0.81$), communication by doctors ($p=0.31$), communication about medications ($p=0.69$), pain control ($p=0.66$), the cleanliness of the hospital environment ($p=0.54$), and the quietness of the hospital ($p=0.589$). The mean normalized score for overall satisfaction was 93.99 (out of 100) for controls and 94.84 for HAC cases ($p=0.61$). The mean normalized score for overall willingness to recommend the hospital to others was 90.22 for controls and 90.65 for HAC cases ($p=0.77$). Development of a HAC was not associated with decreased satisfaction scores in a population of orthopaedic surgery patients at a private, university-affiliated specialty center. The lack of any statistically significant difference in patient satisfaction may be attributable to patient satisfaction with care in response to complications.

The Effect of Discharge Disposition on Readmission Rates Following Total Joint Arthroplasty: An Analysis of 3,533 Patients

Previous studies have demonstrated no significant difference in overall functional outcomes of patients discharged to a sub-acute setting versus home with health services after total joint replacement. These findings coupled with pressure to reduce healthcare costs and the implementation of a prospective payment system under Medicare have supported the use of home rehabilitation services and the trend toward earlier discharge after hospitalization. While the overall functional outcome of patients discharged to various settings has been studied, there is a relative dearth of investigation comparing postoperative complications and readmission rates between various discharge dispositions.

A total of 3,533 patients were grouped according to the type of surgery (THA vs. TKA). Additionally, all discharges were grouped into one of three scenarios: 1) home with health services, 2) inpatient acute rehabilitation facility (IRF), 3) skilled nursing facility (SNF). The average cost for a patient discharged home with services was $4,000 versus the $11,000 for discharge to an acute or sub-acute inpatient facility. The average cost of a readmission was computed using the average cost of a readmission for primary total knee and total hip replacement, and was estimated at $22,000 for this analysis.
Our study demonstrated that patients discharged home with health services had a significantly lower 30-day readmission rate compared to those discharged to inpatient rehab facilities. This difference, however, is not seen after controlling for age, gender, and comorbidity. Patients discharged to rehab facilities have a higher incidence of comorbidity, and this association could be responsible for their higher rate of readmission.

**Cost Effectiveness Studies**

The increasing cost of medical care has generated much concern both locally and nationally. Cost effectiveness analysis has been posited to reduce this burden on society and to rein in spending. The Department of Orthopaedic Surgery has developed a robust cost effectiveness program, including two successful initiatives reported here.

**Decreasing Total Joint Implant Costs and Physician-Specific Cost Variation Through Negotiation**

In 2011, we began a program to decrease and standardize the pricing of total joint implants. Using market analysis, we established price points for the total cost of all implants used in 1) routine total hip replacements, 2) high-demand hip replacements, 3) routine knee replacements, and 4) high-demand knee replacements. We then challenged our vendors to match these four price points. Any implant construct that did not meet our price point was prohibited from use. This strategy focused solely on pricing and not on demand matching. In the first year of the intervention, we performed 1,090 and 1,022 unilateral total knee and total hip replacements, respectively. The average total implant cost per knee replacement and hip replacement decreased by $1,042 and $876, respectively. This represents a cost savings of 25.94% for knee replacements and 22.28% for hip replacements. The inter-physician standard deviation for knee implant costs decreased from $1,267.93 to $637.48 (49.72%) and the inter-physician standard deviation for hip replacements decreased from $1,207.95 to $418.22 (65.38%). Based on our volume and pricing data, our institution saved slightly over $2 million during the first year of this intervention.

**Implant Cost Reduction Initiative in Spine Surgery**

Demand for spinal surgery and its cost have risen over the past decade while the Medicare reimbursement rates have decreased significantly. In 2011 our institution implemented a cost-containment program for our spinal implants. This program was designed to decrease the price of spinal implants and to decrease the inter-physician variation in implant costs. During the first year of this initiative, the institution was able to reduce implant spending by $2.35 million. Our quarterly reductions in spending when compared with historical spending rates were: Q1) 12.34%, Q2) 21.96%, Q3) 25.76% and Q4) 24.91%. The average implant cost savings was 21.14%. The standard deviation of implant cost per anterior cervical decompression and fusion (ACDF) among surgeons decreased from $1,123 to $499. Our initiative resulted in a successful cost-containment program. Despite the high complexity of spinal surgery and the initial reluctance among vendors to reduce prices, with strong hospital and physician alignment, these obstacles were overcome with significant savings to the Medical Center.
Excellence in clinical outcomes is closely associated with surgical volume. In 2012, the Department of Orthopaedic Surgery performed more than 21,000 orthopaedic procedures. Our procedural volume has grown by 51% since 2007, as shown in the accompanying table. The 3- and 4-year volume data on commonly performed orthopaedic procedures can be found in each subspecialty section of this report.

### Hospital-Acquired Conditions

Beginning in October 2008, the Centers for Medicare and Medicaid Services (CMS) changed how it reimburses hospitals for complications acquired by Medicare beneficiaries during hospital treatment. CMS published a list of 10 events that it considers to be “reasonably preventable” during a hospital stay. If it is determined that complication was the result of hospital error, the cost of care related to the complication will not be reimbursed. Reducing the incidence of these conditions, listed below, improves the quality and safety of patient care and ensures institutional compliance with CMS guidelines.

<table>
<thead>
<tr>
<th>Hospital-Acquired Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>→ Object inadvertently left in after surgery</td>
</tr>
<tr>
<td>→ Blood incompatibility</td>
</tr>
<tr>
<td>→ Pressure ulcer</td>
</tr>
<tr>
<td>→ Surgical site infection</td>
</tr>
<tr>
<td>→ Venous thromboembolism after hip and knee replacement</td>
</tr>
<tr>
<td>→ Air embolism</td>
</tr>
<tr>
<td>→ Catheter-associated urinary tract infection</td>
</tr>
<tr>
<td>→ Vascular catheter-associated infection</td>
</tr>
<tr>
<td>→ Certain types of falls and traumas</td>
</tr>
<tr>
<td>→ Poor glycemic control</td>
</tr>
</tbody>
</table>

We developed and implemented the following institution-wide initiatives to reduce HACs.
**Surgical Site Infections (SSIs)**

Recently CMS elevated prevention of SSIs to a national priority status. SSIs are considered “Never Events.” Tolerance for Never Events in healthcare settings is 0%.

The Department of Orthopaedic Surgery proactively seeks out new measures to prevent SSIs and reduce them to never events. The data presented here show progress toward that goal.

### Surgical Site Infections for Primary Knee Procedures

<table>
<thead>
<tr>
<th>Quarter</th>
<th>SSI Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>09Q1</td>
<td>0.42%</td>
</tr>
<tr>
<td>09Q2</td>
<td>2.36%</td>
</tr>
<tr>
<td>09Q3</td>
<td>2.10%</td>
</tr>
<tr>
<td>09Q4</td>
<td>0.33%</td>
</tr>
<tr>
<td>10Q1</td>
<td>0.97%</td>
</tr>
<tr>
<td>10Q2</td>
<td>1.13%</td>
</tr>
<tr>
<td>10Q3</td>
<td>1.08%</td>
</tr>
<tr>
<td>10Q4</td>
<td>0.00%</td>
</tr>
<tr>
<td>11Q1</td>
<td>0.60%</td>
</tr>
<tr>
<td>11Q2</td>
<td>1.79%</td>
</tr>
<tr>
<td>11Q3</td>
<td>1.08%</td>
</tr>
<tr>
<td>11Q4</td>
<td>1.16%</td>
</tr>
<tr>
<td>12Q1</td>
<td>1.33%</td>
</tr>
<tr>
<td>12Q2</td>
<td>1.84%</td>
</tr>
</tbody>
</table>

### Surgical Site Infections for Primary Hip Procedures

<table>
<thead>
<tr>
<th>Quarter</th>
<th>SSI Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>09Q1</td>
<td>1.24%</td>
</tr>
<tr>
<td>09Q2</td>
<td>1.69%</td>
</tr>
<tr>
<td>09Q3</td>
<td>3.20%</td>
</tr>
<tr>
<td>09Q4</td>
<td>2.17%</td>
</tr>
<tr>
<td>10Q1</td>
<td>0.36%</td>
</tr>
<tr>
<td>10Q2</td>
<td>0.00%</td>
</tr>
<tr>
<td>10Q3</td>
<td>0.39%</td>
</tr>
<tr>
<td>10Q4</td>
<td>0.00%</td>
</tr>
<tr>
<td>11Q1</td>
<td>0.40%</td>
</tr>
<tr>
<td>11Q2</td>
<td>1.12%</td>
</tr>
<tr>
<td>11Q3</td>
<td>0.74%</td>
</tr>
<tr>
<td>11Q4</td>
<td>1.44%</td>
</tr>
<tr>
<td>12Q1</td>
<td>0.40%</td>
</tr>
<tr>
<td>12Q2</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Surgical Site Infections for Spine Procedures

<table>
<thead>
<tr>
<th>Quarter</th>
<th>SSI Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>09Q1</td>
<td>1.12%</td>
</tr>
<tr>
<td>09Q2</td>
<td>3.50%</td>
</tr>
<tr>
<td>09Q3</td>
<td>2.85%</td>
</tr>
<tr>
<td>09Q4</td>
<td>2.49%</td>
</tr>
<tr>
<td>10Q1</td>
<td>1.63%</td>
</tr>
<tr>
<td>10Q2</td>
<td>3.18%</td>
</tr>
<tr>
<td>10Q3</td>
<td>4.23%</td>
</tr>
<tr>
<td>10Q4</td>
<td>1.98%</td>
</tr>
<tr>
<td>11Q1</td>
<td>1.57%</td>
</tr>
<tr>
<td>11Q2</td>
<td>2.40%</td>
</tr>
<tr>
<td>11Q3</td>
<td>3.89%</td>
</tr>
<tr>
<td>11Q4</td>
<td>0.30%</td>
</tr>
<tr>
<td>12Q1</td>
<td>0.27%</td>
</tr>
<tr>
<td>12Q2</td>
<td>1.02%</td>
</tr>
<tr>
<td>12Q3</td>
<td>0.90%</td>
</tr>
</tbody>
</table>
Surgical Care Improvement Project Measures

The Surgical Care Improvement Project (SCIP) is a national quality partnership of 10 steering organizations (including The Joint Commission and the Centers for Medicare and Medicaid Services) dedicated to improving surgical care through the reduction of complications. It is estimated that SCIP protocols will save many lives nationally by reducing the incidence of surgical complications. Two important SCIP protocols of interest in orthopaedics, the prevention/reduction of Venous Thromboembolism (VTE) and prevention/reduction of Surgical Site Infections, have been a major focus of our quality initiatives.

Venous Thromboembolism (VTE): A Unique Challenge in Orthopaedic Surgery

VTE is the collective term for Deep-Vein Thrombosis (DVT) and Pulmonary embolism (PE). At the Hospital for Joint Diseases, surgical care and patient outcomes are the highest priority. Long before SCIP was instituted, VTE prophylaxis process and outcomes were essential components of the care we provided. We remain dedicated to making certain every patient receives the appropriate VTE prophylaxis in a timely manner.

VTE Prophylaxis Guideline Adherence

Surgical Site Infections for Shoulder Arthroplasty, Including Reverse Shoulder
Antibiotic Start and Stop: Prevention of Surgical Infections

After being carefully evaluated, patients should receive antibiotics just before the start of their scheduled surgical procedure. Equally important, antibiotic administration should be discontinued 24 hours after surgery to avoid the development of resistant strains of bacteria.

Antibiotic Start Guideline Adherence (Hip & Knee)

Length of Stay Reduction

The Department of Orthopaedic Surgery has committed significant resources to ensure that patients are discharged as expediently and safely as possible. Reducing length of stay helps patients recover faster, decreases the likelihood of many HACs, including infections, and may help reduce healthcare costs. Most important, patients prefer recovering in the comfort of their own home as opposed to the hospital setting.

In order to facilitate a shorter, safer length of stay we developed two innovative programs: Guided Patient Services (GPS) and Rapid Rehab.

The GPS program is a result of collaboration with our Department of Social Services. Designed to accommodate discharge planning in those patients undergoing total joint replacements, this innovative program educates and sets patient expectations regarding the hospital experience and discharge plans before they are hospitalized. When the decision for surgery is made, a social worker meets with the patient in the physician's office. Any issues regarding discharge planning are addressed prior to hospital admission, leading to a smoother, more efficient discharge process.
The Rapid Rehab program provides hip or knee replacement patients the opportunity to begin their rehabilitation immediately after the surgery while they are in the postoperative recovery room. We have observed a one-day decrease in length of stay for patients receiving rapid rehab, as well as increased patient satisfaction.

As seen below, average length of stay for primary hip and knee procedures since 2008 has declined from five days to less than four days.

**Overall Length of Stay for Primary Hip and Knee Procedures**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>ALOS Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>08Q1</td>
<td>4.65</td>
</tr>
<tr>
<td>08Q2</td>
<td>4.8</td>
</tr>
<tr>
<td>08Q3</td>
<td>5.12</td>
</tr>
<tr>
<td>08Q4</td>
<td>4.81</td>
</tr>
<tr>
<td>09Q1</td>
<td>4.6</td>
</tr>
<tr>
<td>09Q2</td>
<td>4.76</td>
</tr>
<tr>
<td>09Q3</td>
<td>4.46</td>
</tr>
<tr>
<td>09Q4</td>
<td>4.43</td>
</tr>
<tr>
<td>10Q1</td>
<td>4.26</td>
</tr>
<tr>
<td>10Q2</td>
<td>3.93</td>
</tr>
<tr>
<td>10Q3</td>
<td>4.02</td>
</tr>
<tr>
<td>10Q4</td>
<td>3.96</td>
</tr>
<tr>
<td>11Q1</td>
<td>3.93</td>
</tr>
<tr>
<td>11Q2</td>
<td>4.02</td>
</tr>
<tr>
<td>11Q3</td>
<td>4.16</td>
</tr>
<tr>
<td>11Q4</td>
<td>4.31</td>
</tr>
<tr>
<td>12Q1</td>
<td>3.93</td>
</tr>
<tr>
<td>12Q2</td>
<td>4.02</td>
</tr>
<tr>
<td>12Q3</td>
<td>4.20</td>
</tr>
<tr>
<td>12Q4</td>
<td>4.43</td>
</tr>
<tr>
<td>13Q1</td>
<td>3.93</td>
</tr>
<tr>
<td>13Q2</td>
<td>4.20</td>
</tr>
<tr>
<td>13Q3</td>
<td>4.31</td>
</tr>
</tbody>
</table>

ALOS = average length of stay.
Quality and Outcomes Data by Subspecialty

Division of Trauma and Fracture Surgery

The Division of Trauma and Fracture Surgery treats a spectrum of cases ranging from patients with a single fracture to those suffering from multiple life- and limb-threatening musculoskeletal injuries. Under the leadership of Dr. Kenneth Egol, the division has developed multiple databases that allow the division to track clinical outcomes. Every patient treated by Division faculty is enrolled in at least one clinical outcomes database.

Does Malnutrition in Patients Presenting with Fractures Predict Lower Quality Measures?

We have observed that malnourished patients treated for fractures were nearly twice as likely to acquire some combination of infection, DVT or PE as are patients with normal nutritional status. A nutrition score above zero indicated some degree of malnourishment. Each additional point in a patient’s nutrition score corresponded to a 71% increase in the odds of developing a complication. Our data suggest fracture patients’ nutritional status should be considered a factor in evaluating complication risks related to fracture care. These data have important implications for hospitals whose fiscal reimbursement is dependent upon maintenance of defined quality measures.

Comparison of individual complication counts

<table>
<thead>
<tr>
<th>Group</th>
<th>Infection</th>
<th>DVT/PE</th>
<th>Readmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Nutrition Score = 0 (n=477)</td>
<td>11</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>B: Nutrition Score &gt; 0 (n=309)</td>
<td>20</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>p-value</td>
<td>0.004*</td>
<td>&lt;0.001*</td>
<td>0.541</td>
</tr>
</tbody>
</table>

* Statistically significant, p<0.05

Evidence-Based Treatment Algorithm for Intertrochanteric Hip Fractures - Maintaining Quality at a Reduced Cost

In March 2012, an evidence-based, classification-directed treatment algorithm for intertrochanteric hip fractures (OTA 31-A) was implemented across our academic department. It included specific implant usage for specific fracture types: sliding hip screw for OTA 31-A1.1, short cephalomedullary nail for OTA 31-A2.1 and 31-A2.2, and long cephalomedullary nail for OTA 31-A2.3 and OTA 31-A3. One hundred nine consecutive patients presenting with intertrochanteric hip fractures were followed prospectively (post-algorithm group). Another 117 consecutive patients who had been treated immediately prior to the implementation of the algorithm were identified retrospectively as a control group (pre-algorithm group). Comparisons were made between the two groups. The algorithm was retrospectively applied to the pre-algorithm group to determine the potential savings that would have resulted if the protocol had been followed with these cases.

The implementation of an evidence-based intertrochanteric fracture classification-implant selection algorithm effectively reduced costs in our institution while maintaining quality of care, including a lower rate of complications and readmission. These cost savings are independent of any special pricing arrangements or institutional discounts that can also be arranged. This strategy has potential implications for physician “gain-sharing” programs.
Necessity of Locked Plates for Split Decompression Tibial Plateau Fracture (OTA type 41B)

Seventy-five consecutive patients treated operatively for Schatzker type II or OTA type 41-B2 tibial plateau fractures were prospectively seen over a five-year period. Thirty-one patients were treated using a locked plate and screw construct and 44 patients were treated with an unlocked plate and screw construct. Pre- and postoperative care, device size and shape, and demographic factors were similar in both groups. Clinical outcomes of the two groups were assessed using Short Musculoskeletal Function Assessment (SMFA) scores, pain levels, range-of-motion measurements, and radiographic assessments. Implant costs for the two types of constructs were calculated from hospital purchasing records.

Based upon the clinical outcomes and cost per implant, we can find no evidence to support the routine use of locked plating for simple split depression fractures of the lateral tibial plateau. The use of standard non-locked, pre-contoured implants provides adequate fixation for these fracture patterns.

### Mean Results for Patients Treated with Locked and Unlocked Plates

<table>
<thead>
<tr>
<th></th>
<th>Locked</th>
<th>Unlocked</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Stay in days</td>
<td>4.4</td>
<td>3.3</td>
<td>0.50</td>
</tr>
<tr>
<td>Time To Fracture Union in months</td>
<td>3.33</td>
<td>3.71</td>
<td>0.40</td>
</tr>
<tr>
<td>Residual Depression (millimeters)</td>
<td>1.27</td>
<td>0.85</td>
<td>0.48</td>
</tr>
<tr>
<td>Degree of Mechanical Alignment (degrees)</td>
<td>87.3°</td>
<td>87.5°</td>
<td>0.84</td>
</tr>
<tr>
<td>ROM Extension (degrees)</td>
<td>0.6</td>
<td>0.8</td>
<td>0.80</td>
</tr>
<tr>
<td>ROM Flexion (degrees)</td>
<td>123.6</td>
<td>126.0</td>
<td>0.59</td>
</tr>
<tr>
<td>Pain (0-10)</td>
<td>3.17</td>
<td>2.96</td>
<td>0.75</td>
</tr>
<tr>
<td>SMFA Function Index</td>
<td>35.66</td>
<td>22.56</td>
<td>0.04</td>
</tr>
<tr>
<td>SMFA Total</td>
<td>26.52</td>
<td>19.52</td>
<td>0.14</td>
</tr>
</tbody>
</table>

ROM = range of motion.

**Division of Shoulder and Elbow Surgery**

The Division of Shoulder and Elbow Surgery provides operative and nonoperative treatment that spans the entire spectrum of conditions pertaining to the upper extremity, including athletic, traumatic, congenital, and degenerative problems. The Shoulder and Elbow Research Group conducts clinical, basic science, and translational studies as a means to better understand disease processes and to advance the treatments for shoulder and elbow ailments.

**Shoulder and Elbow Database**

This database tracks the progress of surgical and non-surgical patients using a validated patient outcome scoring system. Combined with demographic information, the database provides a crucial resource for the analysis and the assessment of current treatment methods.
Accuracy of Acromioclavicular Joint Injections

Injection into the acromioclavicular (AC) joint can be both diagnostic and therapeutic. Recent cadaveric studies have demonstrated that there is variable accuracy of in vivo AC joint injections.

We followed 30 patients with localized AC joint pain who underwent injection with 1 mL of 1% Lidocaine and 0.5 mL of radiographic contrast material (Isovue). Injections were performed without the aid of ultrasound guidance by two orthopaedic surgeons fellowship-trained in sports medicine. Of the 30 injections performed, 13 (43.3%) were found to be intra-articular, seven (23.3%) were partially intra-articular, and 10 (33.3%) were extra-articular. This study demonstrated that despite the relatively superficial location of the AC joint, the accuracy of AC joint injections remains relatively low.

Readmission Following Shoulder Arthroplasty

Readmission rates following inpatient orthopaedic surgery have gained recent attention due to an increased emphasis on quality indicators. We evaluated the incidence and pattern of readmission after following inpatient shoulder arthroplasty procedures.

For 680 consecutive shoulder arthroplasty procedures performed, the overall readmission rate was 5.9%. For hemiarthroplasty (HA), total shoulder arthroplasty (TSA), and reverse total shoulder arthroplasty (RTSA), the admission rates were 8.8%, 4.5%, and 6.6% respectively. Readmission rates were more common for HA and RTSA within 30 days of index procedure when compared to readmission rates more than 30 days after index procedure. Our study demonstrated that readmissions were more likely following HA and were more likely to occur within the first 30 days for both HA and RTSA.

<table>
<thead>
<tr>
<th>Arthroplasty Procedure</th>
<th>Total Cases</th>
<th>Total Readmission</th>
<th>Readmission &lt; 30 Days</th>
<th>Readmission 31-60 Days</th>
<th>Readmission 61-90 Days</th>
<th>Incidence of “Never Events”</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA</td>
<td>124</td>
<td>8.8% (11)</td>
<td>6.5% (8)</td>
<td>0.0% (0)</td>
<td>2.3% (3)</td>
<td>1.2% (2)</td>
</tr>
<tr>
<td>TSA</td>
<td>376</td>
<td>4.5% (17)</td>
<td>1.8% (7)</td>
<td>1.6% (6)</td>
<td>1.1% (4)</td>
<td>0.8% (3)</td>
</tr>
<tr>
<td>RTSA</td>
<td>180</td>
<td>6.6% (12)</td>
<td>4.4% (8)</td>
<td>2.2% (4)</td>
<td>0.0% (0)</td>
<td>1.1% (2)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>680</td>
<td>5.9% (40)</td>
<td>3.4% (23)</td>
<td>1.5% (10)</td>
<td>1.0% (7)</td>
<td>1.0% (7)</td>
</tr>
</tbody>
</table>

Early Outcomes after Reverse Total Shoulder Arthroplasty through Subscapularis Sparing Approach

The goal of this study was to examine early outcomes following reverse total shoulder arthroplasty (RTSA), using a novel surgical approach that spares the subscapularis humeral attachment.

A retrospective chart review was performed for all RTSAs performed utilizing a subscapularis-sparing approach during the years 2007-2012. Twenty-four patients met our inclusion criteria, with an average follow up of 19 months. Mean preoperative American Shoulder and Elbow Surgeons (ASES) function, constant, and active forward elevation scores were 24.1, 26.0, and 75.8, respectively. Postoperative ASES function, constant,
and active forward elevation scores were 67.80, 57.0, and 132.8, respectively. Of the patients studied, two suffered complications: one intraoperative tuberosity fracture and one possible surgically related brachial plexopathy. No dislocations or infections occurred during the study period.

This study demonstrates the potential utility of a subscapularis sparing approach in reverse total shoulder arthroplasty.

Division of Sports Medicine

The Division of Sports Medicine incorporates the clinical, educational, and investigational aspects of athletic injuries in order to provide the highest quality care for athletes competing at the high school, college, and professional levels, as well as recreational athletes in every age group. More than 3,000 procedures are performed annually by the Division, including arthroscopic procedures of the knee, shoulder, elbow, and ankle.

Utility of Plain X-Rays in the Initial Evaluation of Knee Pain among Sports Medicine Patients

In the current setting of cost-effective medicine, the utility of x-rays has come into question, especially for the younger patient population with a suspected soft-tissue injury. A questionnaire was completed by the attending orthopaedic surgeon following the initial office visit for 500 consecutive patients presenting to the Sports Medicine Center with a chief complaint of knee pain. Questionnaire data were assessed and the continuous variables were analyzed. Data from the current study support our hypothesis that for the younger patient population, routine radiographic imaging as a screening tool may be of little clinical benefit, with these images changing management approximately 3% of the time.
Outcomes of Anterior Cruciate Ligament Reconstruction in Patients Older than 50 Years of Age

A total of 47 patients underwent anterior cruciate ligament reconstruction (ACLR) during the study period, with 32 (16 males and 16 females) available at a mean follow-up of five years (range, 2.2-9.0 years). The mean age at the time of operation was 58.4 years (range, 51-65 years). At the time of final follow-up, the mean side-to-side difference measured by KT-2000 was 1.2 ± 1.3 mm (range, 0-4.5 mm). Mean postoperative subjective IKDC score was 80.1 (range, 33-100) and Lysholm score was 86.7 (range, 45-95). There was no change in Tegner score from pre-injury (range, 0-3) to postoperative (range, 0-3). Twelve patients (38%) underwent subsequent knee surgery. All patients were satisfied with the final outcome of their ACLR surgery. ACLR provides symptomatic relief and restoration of function for patients greater than 50 years of age. ACLR should be considered in active older patients with subjective functional instability.

Division of Primary Care Sports Medicine

The Primary Care Sports Medicine Division was established in 2012 to address the non-surgical orthopaedic care of athletes of all ages and at all levels of participation. This care includes the treatment and prevention of injuries that affect athletes and their performance. Division physicians collaborate closely with musculoskeletal radiologists, physical therapists, exercise physiologists, nutritionists, and psychologists to provide the ultimate in team care.

In March 2013, Division physicians further helped establish the Concussion Center, which provides comprehensive care for this complex injury. The Center is composed of a multidisciplinary team of experts; in addition to Division physicians, the Center includes adult and pediatric neurologists, physical medicine and rehabilitation physicians, neurosurgeons, emergency medicine physicians, nurses, neuropsychologists, physical and occupational therapists, and neuroradiologists.

One of the primary goals of the Concussion Center is to advance scientific knowledge and establish a standardized approach to treating pediatric and adult patients with head injuries that is firmly grounded in evidence-based research. The multidisciplinary nature of the Center creates an environment that is highly conducive to collaborative research, of which there are multiple studies in progress.

Division of Adult Reconstructive Surgery

The Division of Adult Reconstructive Surgery is comprised of 29 surgeons with wide-ranging interests and areas of expertise. The size of the division allows us to address the entire spectrum of adult reconstructive problems and offer innovative solutions to complex issues. Our surgeons performed over 3,500 joint replacement procedures in 2013, including primary hip and knee replacements, as well as complex revisions and reconstructions.
Adult Primary Hip Arthroplasty Infection: Preventable vs. Non-Preventable Surgical Site Infections

We obtained data from a consecutive series of 3,672 primary hip arthroplasty surgeries performed at our institution. Forty-seven deep surgical site infections (SSIs) were identified after 3,672 hip arthroplasty surgeries (1.3%). Infection developed in 20 of 363 cases among non-same-day procedures and in 27 of 3,309 patients among the same-day procedures (OR 0.23, [95% CI: 0.08, 0.66], p=0.006). Univariate analysis revealed ASA score >2 (p=0.0001); BMI ≥40 (p=0.00006); operating time >115 minutes (p=0.002); surgery >24 hours after admission (p<0.0001); case load <103 (p=0.02); revision surgery (p<0.0001); diabetes complications (p=0.0003); positive S. Aureus screen (p<0.0001); and hemiarthroplasty (p=0.008) as significant risk factors for deep SSI.

Non-same-day hip arthroplasty surgeries have a significantly higher infection rate than same-day surgeries. The potentially modifiable risk factors in our patient population include S. aureus colonization, elevated BMI and smoking. A preoperative program including shared decision making and behavior modification designed to educate patients about risks and assist them in addressing risk factors may potentially decrease SSI rates.

Discharge Disposition for Primary Joint Replacements

The federal government will soon begin paying for joint replacements based on the episode-of-care concept. An episode of care is defined as all care rendered 72 hours prior to admission, the care during admission, and all care provided within 30 days of discharge. A significant portion of the cost occurs during the 30 days after discharge and is highly dependent upon discharge location. Discharge to an acute rehab facility is significantly more costly than discharge home with outpatient physical therapy. The following chart shows our discharge disposition trends for primary joint replacement.
Division of Orthopaedic Oncology

With more than 100,000 patient visits per year, the Laura and Isaac Perlmutter Cancer Center provides care for a broad spectrum of neoplastic processes. Through its close collaboration with the Perlmutter Cancer Center, the Division of Orthopaedic Oncology provides treatment for cancers involving the musculoskeletal system. Benign and malignant tumors of the bone and soft tissue are evaluated in a multidisciplinary setting. Utilizing the expertise of our orthopaedic surgeons and our colleagues in medical oncology, pediatric oncology, radiation oncology, pathology, and radiology, patients with complex disease states are diagnosed and cared for using the best available treatments. Since 2008, the volume of surgical cases has more than doubled from 176 to 415 in 2012. With the addition of new faculty members in the Departments of Pediatric and Medical Oncology, we have further developed our ability to conduct multidisciplinary care in an expeditious and integrated manner.

Risk Factors for Acute Surgical Site Infections in Orthopaedic Oncology Patients

Acute surgical site infections (SSI) are well recognized postoperative complications ranging from superficial wound infections to deep peri-prosthetic infections. Our department was the first to measure the rates of and risk factors for SSIs using the Centers for Disease Control’s National Healthcare Safety Network (CDC/NHSN) standard diagnostic guidelines for SSIs. Our overall rate of acute SSIs was 10.3%. Infection rates were significantly related to higher ASA grades ($p=0.009$). The malignant tumor patient population had an infection rate of 28.6%, compared to 5.4% for patients with benign tumors ($p<0.001$). Length of surgery and number of red blood cell transfusions were also statistically significant risk factors for infection ($p<0.02$). Finally, the infection rate was higher in patients receiving an amputation, 57.1% compared to our non-amputated patients, 9.22% ($p=0.014$). By identifying these significant risk factors, we can begin to take steps to decrease acute SSIs in this patient population.

Division of Pediatric Orthopaedic Surgery

The Division of Pediatric Orthopaedic Surgery treats children with a variety of diagnoses, including but not limited to hip dysplasia, limb deformity and shortening, clubfoot, scoliosis, and cerebral palsy. We are now utilizing iPad technology to collect patient/parent reported outcomes to determine what affect interventions are having on patients’ quality of life. The Center for Children at the Hospital for Joint Diseases provides for the outpatient care of children with musculoskeletal conditions by offering a multidisciplinary approach to the most complex cases. Over the last four years, the patient volume has nearly tripled. Additionally, surgical volume continues to grow as we add new faculty.
Wound Closure in Non-idiopathic Scoliosis: Does Closure Matter?

We compared the rate of wound complications after posterior spinal fusion for non-idiopathic scoliosis between a plastic surgeon performing a standardized closure technique and rotational flap coverage versus an orthopaedic surgical team performing a non-standardized wound closure. We reviewed the charts of 76 patients with a primary diagnosis of scoliosis associated with a syndrome or neuromuscular disease and who underwent a posterior spinal fusion. Incisions were closed using the standardized technique in 34 patients versus 42 receiving the non-standardized technique. The wound complication rate in the non-standardized closure group was 19% (8/42) compared to 0% (0/34) in the standardized closure group (p = 0.007). The rate of unanticipated return to the operating room was 11.9% (5/42) for the non-standardized closure patients versus 0% (0/34) for the standardized closure patients (p = 0.061). We concluded the method of wound closure plays a major role in wound complications.

<table>
<thead>
<tr>
<th></th>
<th>Non-standardized (n=42)</th>
<th>Standardized (n=34)</th>
<th>x² Analysis p-value</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound Complication</td>
<td>19.0% (8/42)</td>
<td>0% (0/34)</td>
<td>0.007</td>
<td>10.2</td>
</tr>
<tr>
<td>Return to OR</td>
<td>11.9% (5/42)</td>
<td>0% (0/34)</td>
<td>0.061</td>
<td>6.2</td>
</tr>
</tbody>
</table>

**Division of Foot and Ankle Surgery**

The Division of Foot and Ankle Surgery, one of the oldest in the United States, offers a complete spectrum of operative and nonoperative treatments ranging from the simple to the most complex surgical procedures. The physicians have a special interest in sports-related injuries and serve as consultants to several professional sports teams. The Division has an active research program focusing on ankle replacement as well as complications related to diabetes.

The Center for Ankle Arthritis provides cutting-edge treatment for patients afflicted with debilitating ankle arthritis. Treatment options include bracing, injections, and reconstruction. Surgical alternatives include minimally invasive arthroscopic debridement, distraction, fusion procedures, and ankle replacement.

The Diabetes Foot and Ankle Center is a tertiary referral center specializing in limb salvage. The center’s mission is to prevent amputations in patients with diabetes. Orthopaedic surgeons, podiatrists, plastic surgeons, physiatrists, vascular surgeons, and prosthetic/orthotic specialists manage complications such as ulcers, infections, and Charcot deformities. An endocrinologist and nurse practitioner provide overall diabetes management.
Particulated Juvenile Allograft Cartilage Implantation for Treatment of Osteochondral Defects (OCDs) of the Talus

We evaluated the outcomes of patients treated with particulated juvenile allograft cartilage implantation for osteochondral defects of the talus. A total of 14 patients who either had osteochondral lesions of the talus measuring at least 1 cm² (average, 1.5 cm²) or who failed previous microfracture underwent arthroscopic-assisted implantation of a particulated juvenile cartilage allograft. Patients were evaluated using physical examination, patient interviews, and pre- and postoperative VAS, SF-36, FAAM, and AOFAS scores. Patients had a minimum follow-up of 15 months and a mean of 23.3 months (range 15-31 months). The average preoperative pain score was 7.0 with reduction to 1.6 postoperatively. SF-36 physical component summary scores improved from a mean of 30.8 preoperatively to 47.1 postoperatively, while mental component scores remained the same (53.3 preoperatively and postoperatively). FAAM ADL and sports scores improved from 46.4 to 80.6, and 13.4 to 61.3, respectively. The mean preoperative AOFAS score was 56.3 with an improvement to 87.0 postoperatively (score of approximately 50 representing average health status). All but one patient had a categorically good to excellent outcome according to postoperative AOFAS scores.

Patient Characteristics

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Sex Ratio (male:female)</th>
<th>BMI (SD)</th>
<th>Previous Surgery (n)</th>
<th>Concomitant Procedure (n)</th>
<th>Lesion Size (cm²) mean, SD</th>
<th>Follow-Up (months) mean, SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>48.4 (range 38-61)</td>
<td>4.3</td>
<td>28.2 (4.1)</td>
<td>Microfracture (4)</td>
<td><strong>Exostectomy (4)</strong></td>
<td>1.5 (0.9-2.6)</td>
<td>24.7 (16-32)</td>
</tr>
</tbody>
</table>

Comparison of Preoperative and Latest Follow-Up Functional Outcome Scores*

<table>
<thead>
<tr>
<th></th>
<th>VAS (mean, SD)</th>
<th>SF-36 PCS (mean, SD)</th>
<th>SF-36 MCS (mean, SD)</th>
<th>FAAM ADL (mean, SD)</th>
<th>FAAM Sports (mean, SD)</th>
<th>AOFAS (mean, SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>7.0 (2.1)</td>
<td>30.8 (5.1)</td>
<td>53.3 (11.6)</td>
<td>46.4 (17.3)</td>
<td>13.4 (11.3)</td>
<td>56.3 (14.2)</td>
</tr>
<tr>
<td>Latest Follow-Up</td>
<td>1.6 (1.1)</td>
<td>47.1 (11.6)</td>
<td>53.3 (12.4)</td>
<td>80.6 (13.9)</td>
<td>61.3 (20.7)</td>
<td>87.0 (10.1)</td>
</tr>
</tbody>
</table>

* All results were statistically significant (p<0.001)

VAS, visual analogue scale; SF-36, Short Form 36 Health Survey, PCS, physical composite score; MCS, mental composite score; FAAM, Foot and Ankle Ability Measure; ADL, activities of daily living; AOFAS, American Orthopaedic Foot & Ankle Society.

Division of Spine Surgery

The Division of Spine Surgery provides comprehensive treatment of adult and pediatric spine disorders. The Division treats the full spectrum of adult and pediatric spinal problems, including degenerative conditions, complex spinal growth disorders, neuromuscular disorders, traumatic and revision surgeries. Physicians in the spine program utilize the most up-to-date techniques to treat spinal conditions.
The Division of Spine Surgery is committed to an evidence-based patient-centered approach to the management of spinal disorders. The research program is focused on optimizing patient care by utilizing the most cutting edge techniques in the analysis of clinical outcomes. The use of large administrative databases provides a promising new approach to high-volume analysis of risk factors for adverse events.

Postoperative Venous thromboembolic events (VTEs) are responsible for approximately 50,000 to 70,000 annual deaths in the United States. Using the large volume of empirical evidence available in the Nationwide Inpatient Sample database, we created a complex statistical model of VTEs in spinal fusion patients. This analysis was used to create a novel VTE Risk Scoring Index.

| Risk for VTE by Age, Gender, Surgery, Primary Diagnosis, Race/Ethnicity, and Comorbidities |
|-----------------------------------------------|------------------|------------------|------------------|------------------|------------------|
| Age                                          | Gender           | 18-34 | 35-49 | 50-64 | 65-80 |
| Baseline                                     | Female           |       |       |       |       |
|                                               |                  | -3    | 0     | 2     | 5     |
| Total A:                                     |                  |       |       |       |       |

| Approach & Surgery                           |                  | -6    | -5    | -5    | -5    |
|                                              |                  | -1    | -2    | -2    | -2    |
|                                              |                  | -2    | -1    | 0     | 1     |
|                                              |                  | -3    | -3    | -2    | -2    |
|                                              |                  | 0     | 0     | 1     | 2     |
|                                              |                  | -1    | 0     | 1     | 2     |
|                                              |                  | 4     | 3     | 3     | 3     |
|                                              |                  | -8    | -6    | -4    | -2    |
| Total C:                                     |                  |       |       |       |       |

| Primary Diagnosis                            |                  | -11   | -9    | -7    | -5    |
|                                              |                  | -6    | -6    | -5    | -5    |
|                                              |                  | -6    | -7    | -7    | -8    |
|                                              |                  | 11    | 9     | 8     | 7     |
| Total E:                                     |                  |       |       |       |       |

| Race/Ethnicity                               |                  | 3     |       |       |       |
|                                              |                  | 1     |       |       |       |
| Total G:                                     |                  |       |       |       |       |

| Comorbidities                                |                  | 5     |       |       |       |
|                                              |                  | 1     |       |       |       |
|                                              |                  | 3     |       |       |       |
|                                              |                  | 7     |       |       |       |
|                                              |                  | 17    |       |       |       |
|                                              |                  | 9     |       |       |       |
|                                              |                  | 2     |       |       |       |
|                                              |                  | -1    |       |       |       |
|                                              |                  | 3     |       |       |       |
| Total H:                                     |                  |       |       |       |       |

Total Score (A+B+C+D+E+F+G+H):
Comparative Analysis of Surgical Approaches and Osteotomies for the Correction of Sagittal Plane Spinal Deformity in Adults

Adult spinal deformity is a complex, multifaceted clinical entity. This study compared posterior-only approaches using larger osteotomies versus sequential or staged anteroposterior (AP) approaches. The two approaches were equally efficacious in terms of surgical correction and postoperative complications, however the posterior-only approach was associated with significantly shorter operative time.

Surgical Correction Comparison

<table>
<thead>
<tr>
<th></th>
<th>POSTERIOR ONLY</th>
<th>COMBINED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delta</td>
<td>% Change</td>
</tr>
<tr>
<td>SVA (mm)</td>
<td>118.1˚</td>
<td>63.3</td>
</tr>
<tr>
<td>PT</td>
<td>6.6˚</td>
<td>19.3</td>
</tr>
<tr>
<td>PI</td>
<td>0.2˚</td>
<td>NA</td>
</tr>
<tr>
<td>SS</td>
<td>6.7˚</td>
<td>23.7</td>
</tr>
<tr>
<td>LL</td>
<td>26.3˚</td>
<td>118.5</td>
</tr>
<tr>
<td>TK</td>
<td>5.7˚</td>
<td>15.6</td>
</tr>
<tr>
<td>TLK</td>
<td>1.3˚</td>
<td>14.8</td>
</tr>
</tbody>
</table>

Delta represents the change in measurement after surgery.

LL: indicates lumbar lordosis; PI, pelvic incidence; PT, pelvic tilt; SS, sacral slope; SVA, sagittal vertical axis; TK, thoracic kyphosis; TLK, thoracolumbar kyphosis.

Summary of Perioperative Data

<table>
<thead>
<tr>
<th></th>
<th>POSTERIOR ONLY</th>
<th>COMBINED</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR time (min)</td>
<td>333 (100.4)</td>
<td>535 (205.2)</td>
<td>0.00*</td>
</tr>
<tr>
<td>EBL (mL)</td>
<td>2,359</td>
<td>2,668 (1,555)</td>
<td>0.5</td>
</tr>
<tr>
<td>Complications (n)</td>
<td>8</td>
<td>7</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Values in parentheses are SD. *Statistically significant

EBL, estimated blood loss; OR, operating room.
Division of Hand Surgery

The Division of Hand Surgery is one of the largest academic and clinical divisions of its type in the nation, with a rich history beginning with its founder Dr. Emanuel B. Kaplan. The faculty comprises more than 20 board-certified and fellowship-trained hand surgeons who provide comprehensive evaluation and treatment for the many and varied problems that affect the upper extremity. For the past 30 years, the division has been led by Dr. Martin Posner. Recognized as a leader in the hand surgery field, Dr. Posner has trained over 90 fellows during his time as Division Chief.

Patients’ Perceptions of Physician Reimbursement for Performing a Carpal Tunnel Release

We conducted a 13-question anonymous survey of 225 patients, asking specific questions about physician reimbursements for performing an open carpal tunnel release. Respondents believed hand surgeons should be reimbursed at greater than 12 times ($5,030) the Medicare reimbursement rate ($412). There was drastic disparity between respondents’ perceptions ($2,685) and the actual ($412) physician reimbursement by Medicare for carpal tunnel release, a difference of 6.5 fold.

Efficient Evaluation of Cubital Tunnel Syndrome

All patients presenting to a tertiary facility with a chief complaint of hand numbness and nerve conduction studies (NCSs) within 30 days were included in this study. Prior to evaluation of previous notes or electro-diagnostic studies, a B/L UE neuro-compression exam was completed in a standardized fashion. A total of 60 extremities in 36 patients (mean age, 52) underwent clinical evaluation, including Elbow Flexion Nerve Compression Test (EFN Test) for Cubital Tunnel Syndrome (CubTS) within a month of an NCS. Clinical impression was positive for CubTS in 29 extremities and negative in 31. Compared to the overall clinical impression, the EFN maneuver showed 90% sensitivity and 87% specificity, the NCS showed 79% sensitivity and 33% specificity. Our study showed the EFN maneuver provides an efficient evaluation of CubTS with high sensitivity and specificity, while the NCS without correlation to PE has decent sensitivity and poor specificity.
Quality Collaboration: Learning and Leadership

Creating a “Culture of Safety”:
Integrating Quality Throughout the Medical Center

Organizations must involve all stakeholders in order to effectively enhance patient safety. It is essential for academic medical centers to involve the residents and medical students in the process to teach the importance of patient safety to a new generation of physicians at an early stage in their education. Any effective culture of safety relies on each member feeling comfortable reporting safety issues without the fear of retribution. Since residents and medical students are traditionally in subordinate positions, they have been reluctant to participate in the process. We have designed a program to educate our residents and medical students on the obligations they have in enhancing patient safety.

The Quality and Patient Safety Concentration provides students with insight into mechanisms of measurement, strategy function, and implementation of quality and patient safety initiatives.

The components of the concentration are organized in the following categories:

- Patient Safety
- Patient Satisfaction (HCAHPS)
- Quality Indicators
- Public Policy Initiatives
- Strategies for Improvement

Upon completion of the concentration, students have an understanding of the impact of musculoskeletal diseases on society as well as insight on quality and patient safety issues associated with patient care, with a focus on musculoskeletal care. Successful completion of the concentration requires a submitted research abstract.

Graduate Medical Education (GME)

In an effort to address the need to improve the teaching of patient safety and quality, Steven B. Abramson, MD, Senior Vice President and Vice Dean for Education at NYU Langone, in collaboration with the Department of Orthopaedic Surgery, has established a hospital-wide committee to serve as the Task Force on GME Patient Safety and Quality Curriculum. This committee is responsible for recommending strategies to ensure there is a core curriculum across GME programs as well as an approach for department-specific needs.

Over the past few years, the Department of Orthopaedic Surgery has had resident involvement in more than 15 patient safety and quality-related research projects.
Nursing Quality and Safety Projects

Recognized as a Magnet hospital in 2012, Hospital for Joint Diseases nursing staff actively partner with us to offer the highest quality and safest care for our patients. The following is a list of our cooperative efforts.

### Quality Improvement
- Total Joint Research Pathway
- “No Pass Zone” Call Bells
- Body Temperature Total Joint Replacement
- The Effects of Paddle Pagers on Patient Throughput
- Tray Evaluation and Inventory Supply
- Nurse Leader Rounding

### Evidence Based Practice (EBP)
- Early Mobilization and CO₂ Monitoring
- OR Instrument Initiative
- UHC Falls Collaborative
- Image of Nursing

### Partnerships for Quality (P4Q)
- Pain Length-of-Stay Falls

### Patient Satisfaction
- Communication About Medications
- Music Therapy
Quality- and Patient-Safety-Focused Presentations and Publications

*Podium and Poster Presentations*


- Patients’ Perception of Care Correlates with Quality of Hospital Care: A Survey of 4605 Hospitals
- Readmission Burden of 30-day Readmissions Following Total Joint Replacement Among Medicare Beneficiaries
- Risk Factors for Staphylococcus aureus Nasal Colonization in Spinal Fusion or Joint Arthroplasty Patients
- A Comparison of 30-day Readmissions Following Orthopaedic Procedures and Medical Admission
- The Effect of Discharge Disposition on Readmission Rates Following Total Joint Arthroplasty
- Does Malnutrition in Patients Presenting with Fractures Predict Lower Quality Measures?
- Demonstrating Quality in Orthopaedic Surgery, Value Based Purchasing: Past, Present, Future
- Use of E-Mail to Facilitate Routine Collection of Patient-Reported Outcomes in a HIPAA Environment
- Early Results of CMS Bundled Payment Initiative for a 30-day Total Joint Replacement Episode of Care
- Risk Factors for Infection After Hip Arthroplasty: Preventable vs. Non-preventable Infection
- A Randomized Control Trial of Two Distinct Shared Decision Making Aids for Hip and Knee Osteoarthritis
- Impact of Metabolic Syndrome on Perioperative Complication Rates After Total Joint Replacement

**Eastern Orthopaedic Association 44th Annual Meeting. Miami Beach, FL. October 30, 2013**

- Risk Factors for Nasal Colonization by Staphylococcus aureus in Patients Undergoing Spinal Fusion or Joint Arthroplasty
- Patient Satisfaction Associated with Either Mupirocin or Povidone-Iodine Nasal Decolonization, Results of a Randomized Controlled Trial

**National Association for Healthcare Quality, 38th Annual Education Conference. Louisville, KY. October 6, 2013**

- Risk Factors for Readmission Following Inpatient Orthopaedic Surgery: A Review of 13,663 Cases
- Hospital Acquired Conditions Following Orthopaedic Surgery Do Not Effect Patient Satisfaction Scores


- The Effect of Discharge Disposition on Readmission Rates Following Total Joint Arthroplasty: An Analysis of 3,570 Patients
- Physician-Specific Correlation Between Discharge Disposition, Cost, Readmission and Length of Stay Following Total Hip and Knee Replacement: An Analysis of 1,777 Cases
- Risk Factors for Readmission Following Inpatient Orthopaedic Surgery: A Review of 13,663 Cases
- Incorporating Quality and Patient Safety Curriculum in Graduate Medical Education

**American Academy of Orthopaedic Surgeons Annual Meeting. Chicago, IL. March 20, 2013**

- The Standard One-Gram Dose of Vancomycin Is Not Adequate Prophylaxis for MRSA
- Hospital-Acquired Conditions After Orthopaedic Surgery Do Not Affect Patient Satisfaction Scores
- Prevention of Surgical Site Infections: Effectiveness of Nasal Povidone-Iodine and Nasal Mupirocin
- Measuring Quality and Outcomes in an Academic Setting
- Decreasing Total Joint Implant Costs and Physician Specific Cost Variation Through Negotiation
- Cost Effectiveness of Tranexamic Acid after Total Joint Arthroplasty
- Factors Affecting Patient Willingness to Pay for New Implant Technology
- Antibiotic Stewardship in Orthopaedic Surgery: The Hospital for Joint Diseases Experience

**Fourth National Comparative Effectiveness Summit. Washington, DC. November 6, 2012**

- MRSA Screening and Decolonization Cost Effectiveness Study
- UHC Annual Conference. Orlando, FL. September 12, 2012
- Value Analysis Program: Reducing Total Joint Implant Costs
- Discharge Patterns Following Joint Replacement: Cost and Quality Implications


- Incidence and Risk Factors for Clostridium difficile Infections in Orthopaedic Surgery
- Cost-Benefit Analysis of Pregnancy Testing in Elective Orthopaedic Surgery


- Using Near-Miss Analysis to Decrease the Likelihood of Wrong-Site Surgery
- The Effect of Discharge Disposition on Readmission Rates Following Total Joint Arthroplasty

**Arthroscopy Association of North America Annual Meeting. Orlando, FL. May 17, 2012**

- The Incidence of Postoperative Venous Thromboembolism Following Hip Arthroscopy

**National Orthopaedic Leadership Conference. Washington, DC. April 27, 2012**

- Changing Reimbursement Based on Quality of Care: The Government’s Plan

**American Society of PeriAnesthesia Nurses Annual Meeting. Orlando, FL. April 16, 2012**

- The Impact of the Use of Paddle Pagers on Family Member Anxiety During the Intraoperative Period

The Timing of Readmission for Surgical Site Infections
A Hospital-Wide Initiative to Decrease Flash Sterilization
Ninety-eight Cases of Venous Thromboembolism (VTE): Analysis of Adherence to Accepted Methods of Prophylaxis
Analysis of 149 Surgical Site Infections: Implications for Adjusting Prophylactic Antibiotic Choice
Scientific Exhibit: Staphylococcus aureus Screening and Eradication Program: Our Institutional Experience

Peer-Reviewed Publications


For further information or for questions regarding our quality and outcomes studies, please contact Lorraine Hutzler, our Quality Project Manager, 212-598-6048.
Key Locations

The Hospital for Joint Diseases
Located at 301 East 17th Street, the Hospital for Joint Diseases is the premier inpatient facility of the Department of Orthopaedic Surgery and the cornerstone of its patient safety and quality initiatives. This 190-bed hospital provides primary, secondary, and tertiary levels of service in the treatment and prevention of musculoskeletal diseases and injuries.

The Center for Musculoskeletal Care
The Center for Musculoskeletal Care (CMC), located at 333 East 38th Street, is NYU Langone's premier facility for outpatient musculoskeletal care, encompassing orthopaedics, rheumatology, rehabilitation, musculoskeletal radiology, and pain management. With 110,000 square feet of state-of-the-art space, the CMC offers clinical care and biomedical research resources for bone and joint patients at a single point of service.

Tisch Hospital
Tisch Hospital, located at 550 First Avenue, is the Medical Center’s 705-bed, flagship acute care hospital. The Department provides inpatient and outpatient orthopaedic care at Tisch, including joint replacement, orthopaedic oncology, spine, sports medicine, and general adult and pediatric orthopaedic services, and emergency orthopaedic services in collaboration with the Department of Emergency Medicine.

Outpatient Surgery Center
NYU Langone’s 22,000-square-foot Outpatient Surgery Center at 339 East 38th Street focuses on ambulatory orthopaedic procedures, including shoulder, elbow, wrist, and hand surgeries, knee and ankle arthroscopies, ACL reconstruction, rotator cuff repair, and fracture fixation, among others. The surgical center is a cutting-edge facility: each of the four operating rooms is equipped with the latest in arthroscopic technology and designed to optimize surgical space and provide enhanced functionality.
Satellite Locations

Located in White Plains, NY, Orthopaedics at Westchester was established in 2008 to provide world-class subspecialty care in adult reconstruction, joint replacement, spine surgery, sports medicine, minimally invasive/arthroscopic surgery, shoulder and elbow surgery, and general and pediatric orthopaedics to residents of Westchester and surrounding regions.

In 2009, the Department partnered with the New York Spine Institute to open Orthopaedic Specialists at Westbury, a 13,000-square-foot office on Long Island, staffed by our faculty, who provide services in sports medicine, knee and hip replacement, pediatric orthopaedics, scoliosis and spinal deformities, hand surgery, shoulder and elbow surgery, and foot and ankle surgery. The Department also offers services at NYU Langone at Columbus Medical in Rego Park, Queens, one of the Medical Center’s many ambulatory sites in the New York Metro area.

New Practices & Partnerships in Queens, Long Island, and New Jersey

The Department continues to extend its reach through partnerships with community hospitals and physician practices in the Tri-State Area. In partnership with Jamaica Hospital Medical Center in Queens, our faculty help staff a multi-use outpatient office at the medical center, providing trauma, hand surgery, and general adult orthopaedic services. At Jersey City Medical Center, a dedicated orthopaedic suite offers services in hand surgery, trauma surgery, and sports medicine. Department members have also established physician practices in Manhasset and Hicksville, NY, and Hackensack and Millburn, NJ.

Affiliated Facilities

Bellevue Hospital Center is the flagship hospital of New York City’s Health and Hospitals Corporation, a system of public hospitals in the metropolitan area. Just south of NYU Langone’s main campus, this 828-bed facility has had a long-standing affiliation with the Department of Orthopaedic Surgery: Our faculty members are responsible for all orthopaedic inpatient and outpatient care and conduct weekly clinics in hand surgery, adult reconstructive surgery, trauma, pediatric orthopaedics, sports medicine, and spine care.

The Veterans Affairs Medical Center, part of the New York Harbor Healthcare System and located on 23rd Street and First Avenue, provides care for those who have served our country. Our faculty members are honored to provide orthopaedic care for our country’s veterans. The VA is also a key teaching and research facility for the Department.

Jamaica Hospital Medical Center is a 384-bed medical facility and Level 1 trauma center located in Queens, NY. Staffed by our faculty, residents, and fellows, it is the busiest trauma center in Queens and the second busiest in the New York metropolitan area. Our faculty provide general orthopaedic and trauma care as well as specialty care in adult reconstructive surgery, sports medicine, hand and upper extremity surgery, and pediatric orthopaedics.

Woodhull Medical Center is a member of the New York City Health and Hospitals Corporation, providing primary, specialty, and acute-care services to residents of North Brooklyn. Department faculty offer hip and knee services at Woodhull, as well as general orthopaedic care.
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The Department of Orthopaedic Surgery at NYU Langone Medical Center

The Department of Orthopaedic Surgery at NYU Langone Medical Center is recognized both nationally and internationally as a leader and a center of excellence in orthopaedic clinical care, education, research and quality. We are among the largest orthopaedic departments in the nation, training more than 12 residents per year. This year, our Department is ranked #5 in the *U.S. News & World Report* annual survey of “Best Hospitals” in America.

Under the leadership of Joseph D. Zuckerman, MD, the Walter A.L. Thompson Professor and Chair of the Department of Orthopaedic Surgery, our world-class faculty provides care in all orthopaedic subspecialty areas, including: adult reconstructive surgery, orthopaedic trauma, surgery of the spine, sports medicine, hand surgery, musculoskeletal oncology, shoulder and elbow surgery, pediatric orthopaedics, primary care sports medicine, and foot and ankle surgery. Our growing faculty (presently more than 190 members) is dedicated to the pursuit of excellence in all facets of our work, including continual improvements in the quality of care we provide.

Through the development and implementation of quality initiatives reported in this, our third Quality and Outcomes Report, we continue to provide leadership in the quality and patient safety movement. We understand the absolute necessity of continually monitoring and improving the quality and cost-effectiveness of care as our contribution to the long-term health and financial well-being of our country. The patients who entrust their care to our physicians depend on us to ensure that they are provided the best opportunity to lead healthy and productive lives. We proudly present this report of our ongoing efforts in the area of orthopaedic quality care and patient safety.