NYU Langone
MEDICAL CENTER

ORTHOPAEDIC SURGERY

2014 YEAR IN REVIEW

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MESSAGE FROM THE CHAIR

Dear Colleagues and Friends,

I am pleased and honored to share this annual update on NYU Langone Medical Center's Department of Orthopaedic Surgery.

As you'll see in the following pages, our department's achievements over the past year have been many.

In the clinical realm, our faculty performed more than 16,000 surgical procedures in 2014. This high volume means that our surgeons are among the most experienced in the field in their respective disciplines, and that our residents and fellows receive exceptional clinical training in every orthopaedic subspecialty.

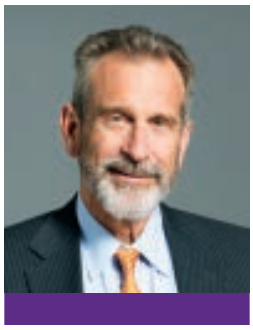
However, these numbers are only part of the story. Because our physicians routinely handle the most complex orthopaedic cases, they have extensive expertise in state-of-the-art surgical procedures. From minimally invasive, rotator cuff-sparing shoulder replacement surgery to the pioneering use of customized, pre-shaped spinal rods to the use of advanced frameless techniques for lengthening the leg bones of children with congenital disorders, our orthopaedic surgeons are firmly at the forefront of this rapidly advancing field.

At the same time, our faculty members are deeply committed to providing patient-centered and personalized care. Through NYU Langone's Joint Preservation and Arthritis Center, we are spearheading the use of biomarkers to determine the optimal approach for each individual with the goal of avoiding the need for joint replacement—or at least delaying it as long as possible. We are also pursuing new technologies like the OrthoSensor™ knee implant, which wirelessly monitors forces in the knee during joint replacement surgery, and our unique upper-extremity gait lab, which studies how pediatric upper-limb conditions affect children's walking.

Our familiarity with these cutting-edge approaches is made possible by our faculty's exceptional dedication to clinical and translational research. Leveraging our orthopaedic patient database, which now contains information on nearly 40,000 patients, we are gaining new insights into the effectiveness of various interventions and protocols. At the same time, we are collaborating with NYU Langone's other outstanding programs—including cell biology, radiology, rehabilitation medicine, population health, and engineering—to investigate novel diagnostic and therapeutic approaches, many of which are outlined in this report.

In education, we continue to lead the way in training the next generation of orthopaedic specialists. Our orthopaedic residency program is one of the largest and most innovative in the nation. Twenty fellows in various subspecialties are drawn from an outstanding nationwide pool of applicants, and physicians from across the tri-state area and beyond attend our CME courses.

In short, our program has much to be proud of. At the same time, our medical knowledge is always expanding—which is why we continue to press forward with new, innovative approaches to healing bones, joints, and connective tissue, as we work to keep our patients active and healthy throughout their lives.



JOSEPH D. ZUCKERMAN, MD

Walter A.L. Thompson Professor of Orthopaedic Surgery

Chair, Department of Orthopaedic Surgery

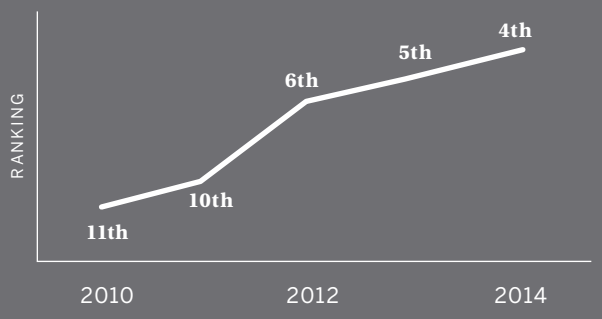
NYU Langone Medical Center

FACTS & FIGURES*

Orthopaedic Surgery

#4 in the country

for Orthopaedics in *U.S. News & World Report's* "Best Hospitals"



patient volume

top 3 procedures:

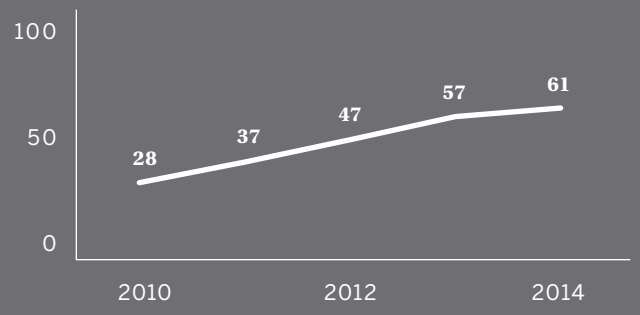
1,460	1,235	1,126
total hip replacements	total knee replacements	spine procedures
*PRIMARY AND REVISION	*PRIMARY AND REVISION	

by division:

4,520	576	2,428
Adult Reconstructive	Foot and Ankle	Hand
717	561	2,001
Pediatrics	Shoulder and Elbow	Spine
3,836	993	122
Sports	Trauma	Tumor

200+ department members

including 61 fulltime faculty



#10 research ranking

in the FY14 Blue Ridge Institute for Medical Research list of National Institutes of Health (NIH)-funded research programs with adjusted ranking of #2 per research faculty

$2,000,000

in research funding for 2014

175+

articles published in academic journals

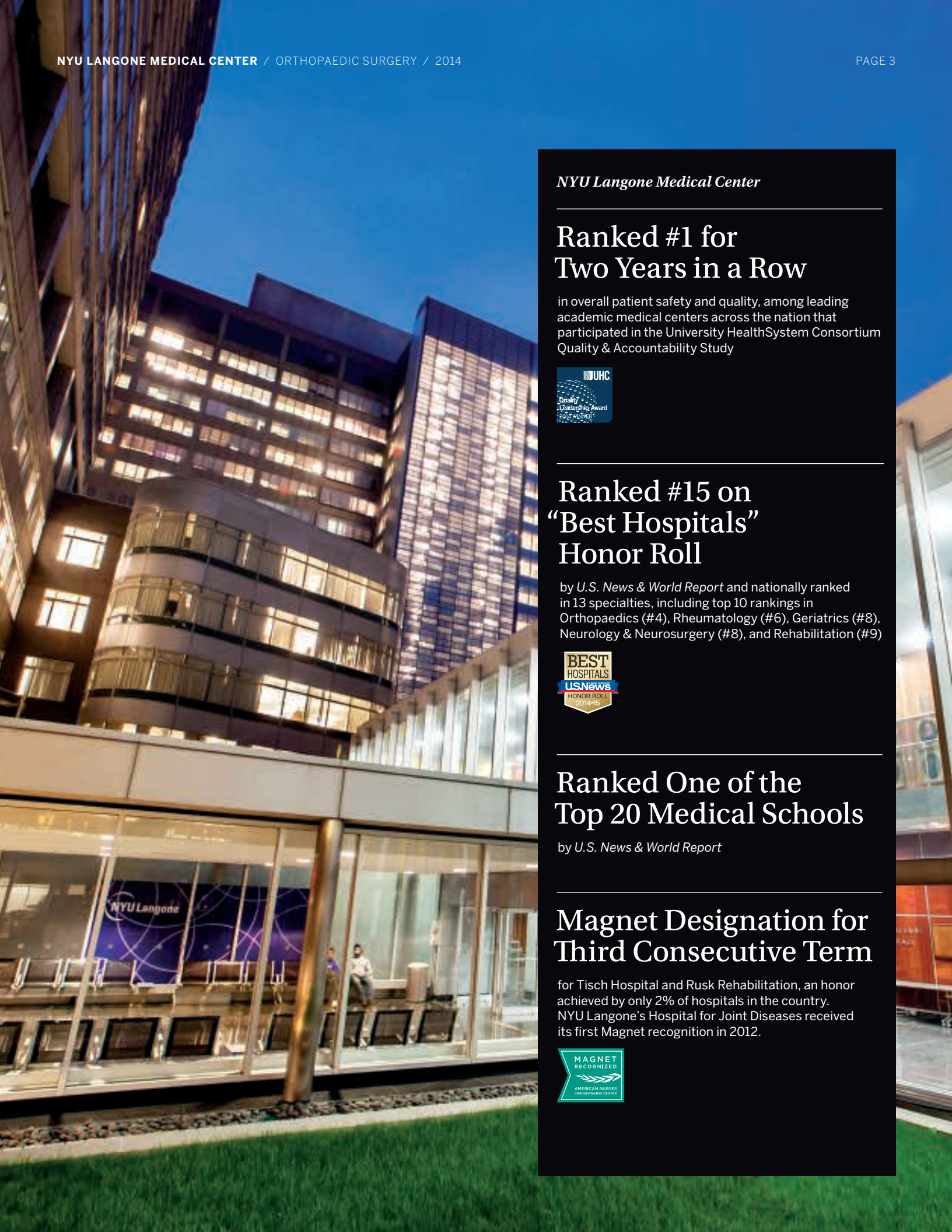
6 Adult Reconstructive Fellows

after the Insall Scott Kelly Institute joined NYU Langone

40,000+ patients

enrolled in Patient-Reported Outcomes program

*Numbers represent FY14 (Sept 2013–Aug 2014) unless otherwise noted



NYU Langone Medical Center

Ranked #1 for Two Years in a Row

in overall patient safety and quality, among leading academic medical centers across the nation that participated in the University HealthSystem Consortium Quality & Accountability Study

UHC Quality Leadership Award

Ranked #15 on "Best Hospitals" Honor Roll

by *U.S. News & World Report* and nationally ranked in 13 specialties, including top 10 rankings in Orthopaedics (#4), Rheumatology (#6), Geriatrics (#8), Neurology & Neurosurgery (#8), and Rehabilitation (#9)

BEST HOSPITALS U.S.News HONOR ROLL 2014-15

Ranked One of the Top 20 Medical Schools

by *U.S. News & World Report*

Magnet Designation for Third Consecutive Term

for Tisch Hospital and Rusk Rehabilitation, an honor achieved by only 2% of hospitals in the country. NYU Langone's Hospital for Joint Diseases received its first Magnet recognition in 2012.

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

NEW & NOTEWORTHY

Transformation Through Growth and Innovation

First U.S. Implant of Customized Spinal Rod

In November 2014, Frank Schwab, MD, became the first U.S. physician to implant a UNiD™ customized osteosynthesis rod in a patient with severe scoliosis. The new technology uses dedicated software to analyze images of a patient's spine and determine the ideal correction needed to properly realign it. The rod implant is then configured and manufactured preoperatively—eliminating the need for the surgeon to shape it by hand in the operating room.

Insall Scott Kelly Institute Joins NYU Langone

In addition to its five highly skilled surgeons, the Insall Scott Kelly (ISK) Institute brings to NYU Langone its robust adult reconstructive fellowship program. With the merger, the division now has six fellowship slots—one of the largest such fellowships in the country.

Patient-Reported Outcomes Initiative Expanding

The department's patient-reported outcomes initiative, which began in 2012, made significant strides in the past year as the number of outcomes measures in the database increased to 70,000. The number of measures tracked in 2014 grew by 70 percent compared to the prior year.

A change was also noted in how patients were completing the questionnaire, which can be done ahead of time online, via an email survey, or on an iPad during their appointment. Patients increasingly completed their surveys prior to their appointments, with approximately half of all surveys currently being completed ahead of time.

Major Gifts Help Fund New Equipment, Renovations

A second EOS® machine specifically for pediatric patients was made possible thanks to the generosity of KiDS of NYU Langone, Alice Tisch, and Gary Cohn, the Chair of the Musculoskeletal Advisory Board, and his wife, Lisa Pevaroff-Cohn. Gifts from the Harkness Foundation and Aronson Foundation enabled major renovations to departmental administrative offices at the Hospital for Joint Diseases.

NYU Langone Hosts New York Arthritis Foundation Osteoarthritis Symposium

In October 2014, the department partnered with NYU Langone's Division of Rheumatology and the Arthritis Foundation to host the 14th Annual Charles L. Christian Osteoarthritis Symposium. More than 130 participants attended the half-day event, which covered topics such as musculoskeletal ultrasound, joint replacement, and nonoperative pain management.

Hand Transplant Program Established

The Division of Hand Surgery is making preparations for the Medical Center's first hand transplant, working closely with the Department of Plastic Surgery. To prepare, the team is training extensively on the procedure's surgical techniques. At the same time, the division has assembled an interdisciplinary support team of plastic surgeons, psychiatrists and social workers, hand therapists, rehabilitation physicians, and transplant medicine specialists.

Concussion Center Reaches 1,000 Patient Mark

Co-directed by Dennis Cardone, DO, Chief of Primary Care Sports Medicine, NYU Langone's Concussion Center has treated more than 1,000 patients since its 2013 launch. Dr. Cardone co-leads the multidisciplinary group with Laura J. Balcer, MD, professor and vice chair of the Department of Neurology, and Steven R. Flanagan, MD, the Howard A. Rusk Professor of Rehabilitation Medicine, chair of the Department of Rehabilitation Medicine, and medical director of Rusk Rehabilitation.

Synovial Fluid Biomarker Research

The Adult Reconstructive Division is creating an in-house joint preservation registry that will analyze synovial fluid from damaged joints, with the aim of identifying biomarkers of disease progression and treatment effectiveness. The goal is to develop predictive algorithms regarding the optimal use of different interventions.

Formal Establishment of Cerebral Palsy Clinic

This year marked the formal institution of a Cerebral Palsy Clinic, which supplements the existing Spasticity and Intrathecal Baclofen Clinic. The new clinic approaches the condition with a multidisciplinary approach, using antispasmodics and antispasticity drugs, baclofen pumps, rehabilitation equipment like the Lokomat®, and orthopaedic surgery.

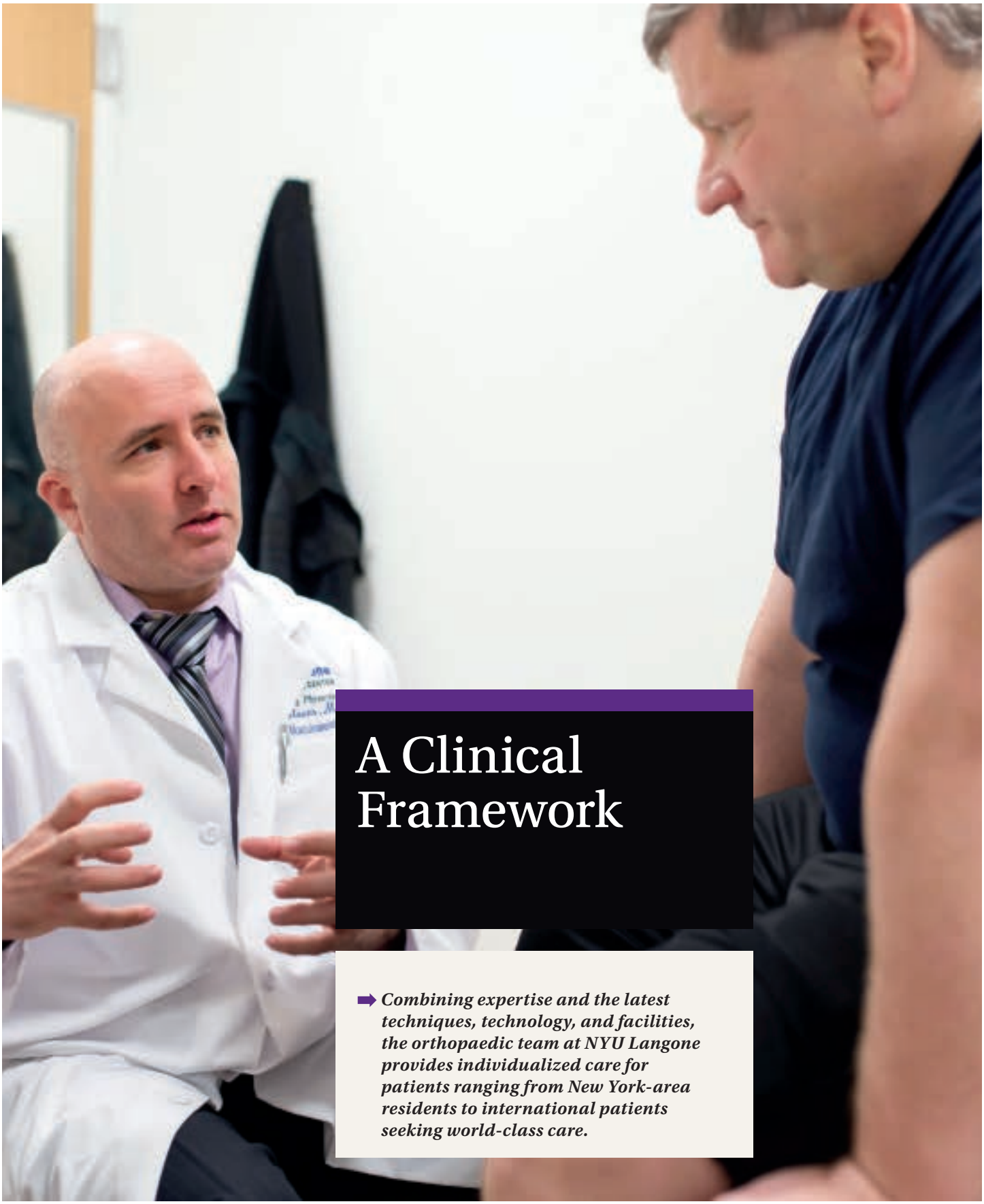
Tenex Procedures Offered in Office Setting

In 2014, the division of Primary Care Sports Medicine began providing in-office Tenex tendon repair, a novel tenotomy procedure previously offered only in a surgical setting.

Trial Site for Experimental Staph Vaccine

The department's Spine Division has been selected to participate in an FDA multi-site clinical trial of a new staph vaccine developed by Pfizer. The study, which begins in 2015, will administer the vaccine preoperatively as a means of preventing postsurgical infection.

CLINICAL CARE



A Clinical Framework

Combining expertise and the latest techniques, technology, and facilities, the orthopaedic team at NYU Langone provides individualized care for patients ranging from New York-area residents to international patients seeking world-class care.

High Volume and Cutting-Edge Techniques Produce Outstanding Outcomes

JOINT REPLACEMENT/ADULT RECONSTRUCTIVE DIVISION

With over 30 surgeons, NYU Langone's Adult Reconstructive Surgery division is one of America's most active in terms of patient volume, performing more than 3,500 joint replacements in 2014—an increase of 10 percent over the past two years—and over 1,000 other inpatient and outpatient procedures. At the same time, the division is reducing patients' length of stay and improving long-term outcomes for these procedures.

"We're using advanced pain management involving long-lasting anesthetics and multi-modal pain pathways to get our joint replacement patients moving earlier than ever following surgery," notes division chief Richard Iorio, MD. "Many Medicare patients are now ready for discharge after one or two days, while some younger patients are going home the day of surgery."

2014 Highlights

- The nationally recognized Insall Scott Kelly Institute orthopaedic surgery group joined NYU Langone.
- Established a program analyzing synovial fluid biomarkers as a tool for determining appropriate interventions.
- Launched clinical trials on psychological interventions for high-anxiety patients and the postoperative use of Exparel®, a long-acting local analgesic.

As a participant in the Centers for Medicare & Medicaid Services (CMS) Bundled Payments for Care Improvement pilot, the division has also implemented a program to modify risk factors for postoperative complications prior to surgery and now discharges the majority of its patients to home care, which yields lower complication rates than subacute facilities. These steps have helped to halve the division's already low readmission rates.

Other clinical initiatives recently launched by the division include:

- An NIH-funded research project that provides counseling and other support to patients who report anxiety about upcoming surgery.
- A clinical trial of Exparel®, a long-lasting analgesic that appears to accelerate post-surgical recovery.
- Ongoing refinement of state-of-the-art MRI scans that map cartilage damage in unprecedented detail.

Participates in the
CMS Bundled Payments for Care Improvement
initiative and the American Joint Replacement Registry

Performed more than
3,500 knee and hip replacement procedures

50 percent reduction in readmissions
for surgical patients over the past three years

CLINICAL CARE

The division also continues to investigate new approaches to joint reconstruction, such as its pioneering work with the OrthoSensor™ Verasense™, Knee System a technology that measures and wirelessly transmits joint forces during knee replacement surgery, allowing surgeons to precisely align and balance the joint. "When the knee is perfectly balanced, it has a more natural feel and better stability, and the knee implant will last longer," explains Dr. Iorio. Information gathered through the device will also be added to the American Joint Replacement Registry outcomes database.

The division is developing innovative joint preservation strategies as well, including analysis of synovial fluid from damaged joints to identify biomarkers of disease progression and treatment effectiveness. The ultimate goal is to combine this information, which will be compiled as part of an in-house joint preservation registry, with patient-reported outcomes data gathered from patients via iPads to develop predictive algorithms regarding the optimal use of different interventions. "In the future, this personalized approach will allow truly individualized orthopaedic care for each patient," notes Dr. Iorio.

The division's clinical and educational programs were further enhanced in 2014 when the Insall Scott Kelly (ISK) Institute joined NYU Langone. In addition to its five highly skilled surgeons, ISK brings its robust adult reconstructive fellowship program to NYU Langone. With the merger, the division now has six fellowship slots—one of the largest fellowships in the country. Adult reconstructive surgery also comprises the largest component of the Medical Center's orthopaedic surgery residency training, with trainees completing rotations during the second, third, fourth, and fifth years of their residency.

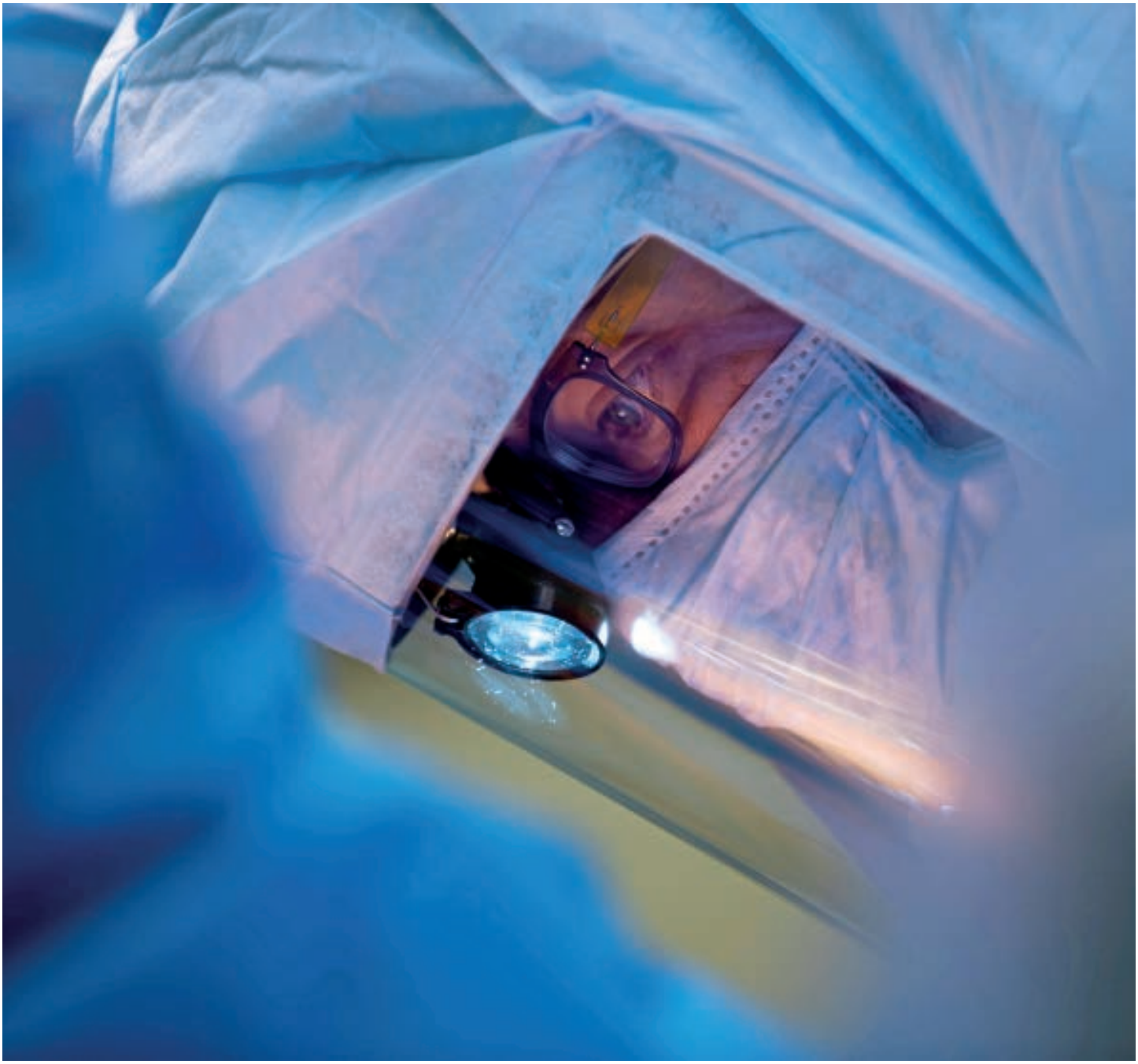
2014 Highlight

Established a patient-reported outcomes (PRO) data collection for each patient visit as the sixth vital sign of standard patient care. The use of PRO data for each patient allows orthopaedic surgeons to objectively evaluate the effectiveness of interventions, and monitor disease state quantitatively from visit to visit.

A TRIBUTE TO FREDERICK F. JAFFE, MD

Fredrick F. Jaffe, MD, an honored member of the department for 44 years and former Chief of the Division of Adult Reconstructive Surgery, passed away in April 2014.

He was an outstanding clinician, gifted surgeon and dedicated educator. Thousands of patients have benefited from the hip and knee replacement surgeries he performed, restoring productive and pain free lives.



National leader in developing and implementing novel joint reconstruction techniques and arthritis treatments, including OrthoSensor's

force transduction knee implant technology

CLINICAL CARE

Specialized Care for a Developing Frame

PEDIATRIC ORTHOPAEDIC SURGERY DIVISION

NYU Langone's Division of Pediatric Orthopaedic Surgery is expert in treating the full range of childhood orthopaedic conditions, from developmental disorders such as hip dysplasia and clubfoot to scoliosis, cerebral palsy, and other neuromuscular diseases. The division's surgeons are committed to staying at the forefront of treatment advances in the field. Cutting-edge surgical approaches employed by the division in 2014 included:

- Periacetabular osteotomy for hip dysplasia, and femoral head reduction for the treatment of avascular necrosis and Legg-Calvé-Perthes disease; both procedures allow hip function to be preserved, and are performed by only a handful of centers in the United States.
- Expanded use of the Precice® nail limb-lengthening technology—a magnet-operated intramedullary rod that is extended by about one millimeter a day, allowing lengthening to be accomplished without a spatial frame or other external device; NYU Langone's pediatric program was the first to adopt this approach on a wide scale.
- Successful use of the new Fassier-Duval nail technology, a self-lengthening intramedullary rod that grows with the patient, for leg-lengthening related to congenital pseudarthrosis of the tibia, a condition that in the past often required amputation.

PIONEERING NEW TECHNIQUES AND TECHNOLOGIES

In conjunction with these treatments, the division is pioneering the use of recently developed biologic bone-healing agents, including alendronate and BMP-2 to induce new bone growth to treat a wide range of clinical scenarios. Advanced limb-lengthening techniques and biologic treatments are key elements in the division's 2014 expansion of its osteogenesis imperfecta treatment program, as well. The division is also employing state-of-the-art imaging to determine when intervention is warranted, such as perfusion MRIs to evaluate blood flow to the femoral head in Legg-Calvé-Perthes disease.

Division faculty are working closely with NYU Langone's Rusk Rehabilitation and other disciplines to implement nonsurgical treatments for various conditions, including noninvasive "fusionless surgery" for scoliosis, using the Schroth method and other techniques; the Ponseti manual technique for treating clubfoot, flat feet, and foot deformities; and utilization of its unique upper-extremity gait lab to identify and correct orthopaedic-related impairment of arm and hand movements.

2014 Highlights

- Pursued innovative orthopaedic treatments, including periacetabular osteotomy and femoral head reduction procedures to preserve hip function; the magnet-operated Precice® nail system for leg lengthening; and use of the Ponseti method to treat recurrent clubfoot.
- Expanded nonoperative management of scoliosis using physical therapy, exercise, and bracing (the Schroth method).
- Collaborated with Rusk Rehabilitation on nonoperative and postoperative treatments for upper-extremity dysfunction.
- Conducted research into the mechanism and etiology of chronic brachial plexus birth palsy.
- Expanded the osteogenesis imperfecta treatment program.

The past year also saw the formal establishment of the division's interdisciplinary Cerebral Palsy Clinic, designed to produce the best possible patient outcomes by combining orthopaedic surgery with medical treatments such as antispasmodic and antispasticity medications and baclofen pumps. The clinic also involves collaboration with Rusk Rehabilitation to employ approaches like the Lokomat®, a robot-assisted device used in walking therapy.

These clinical approaches reflect the division's active involvement in cutting-edge clinical research, including membership in a number of international pediatric study groups. "We've reached a point where we're actually orchestrating bone growth," notes David Feldman, MD, chief of pediatric orthopaedic surgery. "We're employing new techniques for preserving joints and lengthening bones, new biologics, new fixation techniques, and new imaging—and achieving outstanding results with all of them."

Patient volume has
nearly tripled
in the past five years

Employs
cutting-edge surgical approaches
for treating pediatric bone and joint disorders as well as state-of-the-art biologic agents to enhance bone healing and strengthen brittle bone

Pioneering the use of
noninvasive surgical treatments
for scoliosis

CLINICAL CARE

Meeting the Challenge of Complexity with Collaboration

SPINE DIVISION

In November 2014, the Spine Division's Frank Schwab, MD, became the first U.S. physician to implant a UNiD™ customized osteosynthesis rod in a patient with severe scoliosis. The new technology uses dedicated software to analyze images of a patient's spine and determine the ideal correction needed to properly realign it. The rod implant is then configured and manufactured preoperatively—eliminating the need for the surgeon to shape it by hand in the operating room.

2014 Highlights

- First U.S. spine center to implant the UNiD™ customized osteosynthesis rod.
- Selected by Pfizer to participate in a clinical trial of an experimental staph vaccine.
- Published 50 academic papers and presented 25 scientific posters.
- Expanded fellowship program from four to five positions.

Themistocles Protopsaltis, MD, was featured in *Becker's Spine Review* as a "Spine Surgeon Under 40 to Know," and was also awarded the Cervical Spine Research Society traveling fellowship.

"Besides providing a smooth, precise bend, the pre-shaped rod has no potentially irritating sharp edges from cutting and is less prone to breakage," notes Thomas Errico, MD, chief of the Spine Division. "And by saving the surgeon time, the technology also shortens the procedure, which further benefits the patient."

ROBUST DATABASES DRAWN FROM HIGH VOLUME

As a national leader in implementing cutting-edge surgical approaches, NYU Langone's orthopaedic spine surgeons perform over 2,000 spine operations annually, routinely using the most advanced techniques to treat complex cases of spinal deformity, degenerative conditions such as herniated discs and spinal stenosis, trauma, tumors, and infections. The division collaborates closely with the Medical Center's neurosurgical spine specialists, and is a key contributor to the International Spine Study Group (ISSG) database, which is being used to develop optimal parameters for spinal fusions and other spine procedures.

The division also maintains its own internal database, which combines comprehensive patient-reported outcomes and state-of-the-art imaging. In 2014, its faculty drew on this and other databases, most importantly that of the ISSG, to publish 50 articles in peer-reviewed medical journals, including a groundbreaking publication showing that having two experienced surgeons in the operating room for complex cases shortens procedure times and lowers complication rates.

1 of 12
U.S. centers
contributing to the International Spine Study Group database

Performs
2,000+ procedures
annually, treating the entire spectrum of spinal disorders in children and adults

Other recent pioneering efforts by NYU Langone's Spine Division include:

- Creation of a novel scoring index to assess the risk of post-surgical blood clots.
- Research demonstrating the effectiveness of a posterior-only surgical approach through a single incision in the back.
- Enlisting plastic surgery teams to manage a patient's soft tissues during spine operations, an approach that has significantly reduced postsurgical infection rates for complex procedures.
- A newly launched study of spinal stenosis patients that is using a computerized wrist monitor to correlate physical activity levels before and after surgery with patient outcomes.
- A research collaboration with the NYU Steinhardt Department of Physical Therapy studying whether post-surgical functional and psychological tests can help predict the success of complex spine operations.
- Participation in an FDA clinical trial of a new staph vaccine. This study, which begins in 2015, will administer the vaccine preoperatively as a means of preventing postsurgical infection.

"We're continuing to refine other complex procedures as well," adds Dr. Errico. "Many of our procedures are now performed using minimally invasive techniques, and we're also paying much more attention to cervical spine deformity, which has been a relatively overlooked area."

EXPANDED FELLOWSHIP PROGRAM

In another notable step, the division's fellowship program expanded from four to five slots in 2014. "Our fellows spend a year focusing exclusively on spine procedures and have recently begun scrubbing in with our neurosurgeon colleagues," Dr. Errico says. "For a surgeon interested in spine surgery, including spinal deformity, this is one of the top training programs in the nation." Division faculty also work closely with orthopaedic surgery residents; participate in NYU Langone's ongoing medical student lecture series, Grand Rounds, and teaching conferences; and sponsor a range of CME events.

MEDIA SPOTLIGHT

In July 2014, WCBS-TV's medical correspondent Dr. Max Gomez underwent surgery at NYU Langone to relieve pain and weakness in his neck and arms. The minimally invasive procedure to remove excess bone in his cervical spine was performed by faculty member Ronald Moskovich, MD, and recorded on camera. A week later, Dr. Gomez appeared on the CBS New York nightly news to share the videotape of his operation. While his neck was still a bit stiff from the surgery itself, he reported, his arm pain was gone and the weakness was getting better. "I can start exercising this weekend," he added, "and in three or four weeks, I'll need some strokes on the golf course."

CLINICAL CARE

Innovative Procedures and Therapies Show Promise in Joint Preservation

SPORTS MEDICINE DIVISION

A major focus of NYU Langone's Sports Medicine Division involves helping patients delay or even avoid the need for total joint replacement surgery whenever possible. In 2014, the division's faculty continued to refine and expand their use of the latest joint preservation approaches, including viscosupplementation to relieve pain and enhance function; injections of platelet-rich plasma (PRP) to regenerate healthy tissue and spur the healing of injured tendons; and innovative surgical techniques designed to preserve joint function, including:

- Cartilage transplants for knee joints in which existing cartilage has been damaged due to trauma or arthritis, including novel meniscus transplant procedures. Transplants are performed using either the patient's own cartilage cells, which are grown in the lab and then reinserted into the joint, or allograft cartilage tissue. The division maintains one of the most active cartilage transplant programs in the tri-state area.
- Osteotomies to realign the bones of the knee and relieve pressure affecting painful or damaged areas.
- Osteotomies of the hip joint to relieve pain and preserve cartilage by debriding bone that is inhibiting full range of motion.

2014 Highlights

- Developed clinical research on stem-cell therapy for joint preservation.
- Initiated a multidisciplinary study correlating synovial fluid biomarkers to patient outcome data.
- Laid the groundwork for studies of ultra-minimally invasive surgical techniques, including single-portal arthroscopy procedures and all-inside ACL reconstruction.

The division tracks all surgical outcomes through NYU Langone's joint preservation registry, a database created to evaluate the benefits of different treatment approaches on long-term joint health. "These interventions are all yielding promising results in terms of pain relief and improved function," says Laith Jazrawi, MD, division chief of Sports Medicine. "What remains to be seen is whether they delay the need for future joint replacement. Early data suggests this is definitely possible, but we'll need more long-term data before we can know for sure."

The division is also collaborating with the Primary Care Sports Medicine team on studies of regenerative treatments using stem cells, as well as a research project (which also includes the Adult Reconstructive Surgery Division) that is correlating patient outcomes with biomarkers in synovial fluid from affected joints. This project's ultimate goal is to determine whether cytokines can be used as biomarkers to determine which patients will benefit most from specific interventions.

In addition, the division continued to pioneer advanced joint reconstruction techniques, including anatomic all-inside anterior cruciate ligament (ACL) reconstruction—an approach that produces more natural knee movement and that allows reconstructions to be done on pediatric patients who formerly weren't candidates for ACL reconstruction. In 2014, the division also prepared the way for future studies that investigate ways to further minimize arthroscopic joint surgery, including single-portal techniques, in which the entire arthroscopic procedure is performed through a single incision.

3,700+ outpatient surgical procedures

performed by division faculty

Case volume has

more than doubled

over the past four years

one of the largest programs

for cartilage transplants and joint realignment procedures in the New York metropolitan area

A leader in the use of

injectable joint preservation therapies

including viscosupplementation, platelet-rich plasma, and stem-cell therapy

CLINICAL CARE

Caring for Sports-Related Conditions from Head-to-Toe

PRIMARY CARE SPORTS MEDICINE DIVISION

As one of the leaders in the development of NYU Langone's Concussion Center, the Primary Care Sports Medicine Division was instrumental in one of the Medical Center's most successful program launches in memory. Through the end of 2014, the center's first full year of operation, well over 1,000 patients had been treated for mild brain injuries due to head trauma. "It has exceeded all of our expectations," reports Dennis Cardone, DO, division chief of Primary Care Sports Medicine and one of the center's three co-directors.

2014 Highlights

- The NYU Langone Concussion Center has treated nearly 500 patients with sports-related concussion since its March 2013 launch.
- Expanded clinical use of platelet-rich plasma injections for tendon and joint conditions.
- Made preparations for upcoming research on stem-cell based injection therapies to heal soft tissue injuries.

The division is now providing in-office Tenex tendon repair, a novel tenotomy procedure previously offered only in a surgical setting.

Working in collaboration with the Departments of Neurology and Rehabilitation Medicine, Dr. Cardone's division treats all sports-related concussions that come into the Concussion Center, providing an initial evaluation, overseeing needed rehabilitation therapies, and ensuring that patients don't return to athletic activity until they are fully recovered. This clinical care is supported by state-of-the-art diagnostics.

For musculoskeletal conditions, the division widely employs advanced high-resolution ultrasound to diagnose soft-tissue injuries and guide joint and soft-tissue injections. In addition, the past year saw the division's expanded use of platelet-rich plasma (PRP) injections for chronic tendon conditions, as well as the administration of regenerative stem-cell therapies for select cases—the first steps in a planned clinical research study. In another important development, the division is now providing in-office Tenex tendon repair, a novel tenotomy procedure previously offered only in a surgical setting.

In all of these clinical activities, the division continues to benefit from its location in NYU Langone's Center for Musculoskeletal Care (CMC), where it shares comprehensive facilities with the Medical Center's sports medicine physical therapy practice, radiology services, the surgical sports medicine program and the Division of Rheumatology, allowing for seamless referrals and consultations. "There are few programs that bring all the musculoskeletal-related specialties together in one place like this," notes Dr. Cardone.

Division Chief Dennis Cardone, DO, was appointed chief medical officer for the New York City Public Schools Athletic League.

The division also expanded the activities of its newly established Center for Young Athletes, dedicated to the sports-related orthopaedic care of children and adolescents. In addition, Dr. Cardone was appointed chief medical officer for the Public Schools Athletic League, encompassing all high school athletes in the New York City public school system.

"While our primary focus is on orthopaedic conditions, our responsibilities include treating all the medical needs of these athletes," he explains. "At the same time, our sports team affiliations play a very important role in our training program for orthopaedic surgery residents and fellows."

Treats the

full range

of sports-related injuries utilizing state-of-the-art imaging, biologic agents, and other nonoperative therapies

Provides

team physicians

for many New York-area high school, collegiate, and professional athletic programs

CLINICAL CARE

A Clearer Picture of Shoulder Stabilization

SHOULDER AND ELBOW DIVISION

As a tertiary care practice, NYU Langone's Shoulder and Elbow Division faculty performed nearly 1,300 operations in 2014, many of them complex joint repair or replacement surgeries. "With such a large clinical volume, our surgeons are highly experienced at performing the full spectrum of shoulder and elbow surgical procedures—from minimally invasive arthroscopic techniques to complex open reconstructions," explains Andrew Rokito, MD, division chief.

2014 Highlights

- Continued to refine bone augmentation procedures to prevent recurrent shoulder dislocation.
- Completed several research studies, including a study utilizing specialized MRI scans to predict the incidence of engaging Hill-Sachs lesions prior to shoulder stabilization surgery.
- National leader in the development of rotator cuff-sparing total shoulder replacement procedure.
- Expanded the use of platelet-rich plasma and stem-cell therapies for tendon repair and cartilage regeneration.

Key areas of focus in the past year included refining and expanding the division's use of cutting-edge approaches to stabilizing shoulders that repeatedly dislocate. "We're collaborating with our radiology colleagues to employ new, high-definition MRI and CT scans that precisely quantify bone loss in the shoulder, including bipolar bone loss involving both the humeral head (ball) and glenoid (socket)," notes Dr. Rokito. "This gives us a much clearer idea of why a patient's shoulder is dislocating, enabling us to apply stabilization techniques more effectively."

These stabilization procedures include the Latarjet procedure, widely used in Europe and now being performed more frequently here in the United States. While this procedure is typically performed open, NYU Langone's Robert Meislin, MD, is one of the few surgeons to perform the procedure entirely arthroscopically. The division also submitted for publication a study using specialized MRI techniques to preoperatively identify patients with large, engaging Hill-Sachs lesions of the humeral head who are at high risk for recurrent shoulder dislocation—information that helps guide the choice of surgical approach.

Volume of surgical cases has

more than doubled

since 2012, with the number of outpatient procedures nearly tripling

Utilizes

advanced imaging

including high-definition MRI and CT scans to identify and quantify joint bone loss, and specialized shoulder ultrasonography to diagnose soft tissue damage and guide therapeutic injections

Maintains outcomes database of

5,000+ surgical

and

4,000+ nonsurgical

patients

In addition, the division has continued to refine elbow and shoulder replacement procedures such as reverse total shoulder replacement surgery—a shoulder arthroplasty technique that can compensate for loss of rotator cuff muscles; less-invasive rotator cuff-sparing shoulder replacement, which can result in a faster recovery; and advanced surgical procedures for torn rotator cuffs, which include utilizing state-of-the-art arthroscopic implants and addressing concomitant biceps tendon lesions. The division's faculty is also working closely with physical therapists from Rusk Rehabilitation on research evaluating outcomes of specific rehabilitation protocols following rotator cuff surgery. This collaboration is facilitated by physical proximity: the Shoulder and Elbow Division and Rusk's sports and musculoskeletal rehabilitation program are both based out of NYU Langone's Center for Musculoskeletal Care.

During the past year, the division also partnered with colleagues in the Musculoskeletal Research Center on translational science investigations of stem cells and platelet-rich plasma and their effect on tendon-healing cartilage regeneration—research that included offering these therapies experimentally to a limited number of patients. These and other research efforts are aided by research staff who maintain the division's robust patient outcomes database that contains information on more than 5,000 patients who have undergone shoulder or elbow surgery at the Medical Center.

The division's educational program includes training rotations for orthopaedic surgery residents as well as a highly sought-after one-year Shoulder and Elbow fellowship that has been offered since 1994. In 2014, more than 40 applicants from around the nation applied for the single fellowship position. The division also offered a well-attended postgraduate course on shoulder instability treatments last year, and hosts a highly regarded annual CME course on shoulder arthroplasty.

CLINICAL CARE

Breaking New Ground in Acute Fracture Care

ORTHOPAEDIC TRAUMA DIVISION

The past year saw a number of significant milestones for the Orthopaedic Trauma division. In 2014, NYU Langone integrated orthopaedic trauma services at its Tisch Hospital and Hospital for Joint Diseases (HJD) locations. As a result, most trauma patients in need of surgical procedures are now treated at a consolidated trauma surgery unit at HJD. This reorganization offers the benefit of centralized care, with the division's surgical team operating in facilities specially structured and equipped for orthopaedic procedures. The division also intensified efforts of the Bone Healing Center—a collaborative effort between Orthopaedic Surgery and metabolic bone specialists—to aggressively identify and treat patients with problem fractures.

2014 Highlights

- Integrated all Medical Center trauma surgery services within NYU Langone's Hospital for Joint Diseases.
- Pursued clinical research projects on how nutrition and diabetes impact bone healing, and the use of cost-effective implants for specific fracture patterns.
- Conducted basic research on metabolic biomarkers for fracture-related complications.
- Recruited a clinician-scientist specializing in the cellular aspects of bone healing.

provides acute care

for fracture patients across NYU Langone Medical Center, the Manhattan VA Hospital, and Bellevue Hospital Center and Jamaica Hospital Medical Center

Division's Bone Healing Center uses an

integrated team approach

to evaluate and treat complex fractures and problem fractures

Kenneth Egol, MD, chief of the Trauma division, was named to the Orthopaedic Trauma Association's (OTA) board of directors in 2014.

In addition, the division leveraged its large databases of patients with fractures and fragility fractures to pursue clinical research projects on:

- Cost containment, by developing algorithms for when specific fracture patterns can be successfully treated with specific implants (faculty members have already published treatment algorithms for hip and elbow fractures).
- How malnutrition increases the risk of post-traumatic complications in fracture patients, including a simple nutritional scoring tool to identify at-risk patients.
- The effect of diabetes on bone healing; using a New York State database, researchers found that patients with diabetes had higher medical costs following ankle fractures, while diabetic complications significantly increased the risk of complications from orthopaedic conditions in general.

The division is also using animal models to investigate metabolic biomarkers that might enable early diagnosis of trauma-related complications before cellular damage has occurred. Moving forward, this and other bench research efforts will be aided by the division's recruitment in 2014 of Philipp Leucht, MD, PhD. Dr. Leucht, who holds joint appointments in Orthopaedic Surgery and Cell Biology, conducts translational research on bone healing at the cellular level, including the use of therapeutic agents to enhance the body's natural ability to heal fractures.

With clinical responsibilities for the acute management of bone fractures at Tisch Hospital and HJD as well as Bellevue Hospital Center and Jamaica Hospital Medical Center—the two most active Level 1 Trauma Centers in New York City—the division continues to provide an ideal training ground for orthopaedic surgery residents. Its 2014 educational offerings also included one of the leading CME courses in trauma care, the 37th Annual Howard Rosen Memorial Tri-State Trauma Symposium.

Managing the Full Range of Bone and Soft Tissue Tumors

Volume of surgical cases has more than
doubled
since 2008

ORTHOPAEDIC ONCOLOGY DIVISION

NYU Langone's Orthopaedic Oncology division epitomizes the interdisciplinary strengths of NYU Langone. In treating the full range of benign and malignant bone and soft-tissue tumors, Division Chief Timothy Rapp, MD, works closely with medical and surgical oncologists at the Laura and Isaac Perlmutter Cancer Center as well as with plastic surgeons, pathologists, radiologists, radiation therapists, pain management specialists, physiatrists, and social workers. With well over 400 cases, the division's steady upward trend in surgical volume in recent years was extended in 2014. At the same time, it maintained its very active program at Bellevue Hospital Center, New York City's largest public hospital, and consulted regularly with other area hospitals on difficult orthopaedic oncology cases.

Conducts
biweekly
CME-accredited sarcoma tumor board

2014 Highlights

- Completed research study on cost-effectiveness of prophylactic surgery for metastatic bone cancer.
- Pursued ongoing NIH-funded research of cellular controls for osteosarcoma .
- Collaborated with the Laura and Isaac Perlmutter Cancer Center on clinical trials of experimental chemotherapy agents.

The division also continued to pursue a number of clinical and translational research projects. It submitted for publication a study demonstrating that it is more cost-effective to perform prophylactic bone surgery for osteosarcoma—rather than waiting to treat the affected bone after it fractures, while an NIH-funded grant for basic science research on cellular transcriptional and translational factors controls for osteosarcoma continues. In addition, a number of the division's patients participated in clinical trials of novel chemotherapy protocols being conducted by the Medical Center's adult and pediatric oncologists.

In education, the division's multidisciplinary sarcoma tumor board increased its meeting frequency, reflecting the recent growth in case volume. The division also trains all levels of orthopaedic residents, including a dedicated rotation in their fourth year and clinical experience at Bellevue's Orthopaedic Oncology Center. The division offers an annual review course for orthopaedic residents preparing to take their written board exams as well, which is always well attended by orthopaedic residents in the tri-state area.

Close partnership and collaboration with experts at NYU Langone's
Laura and Isaac Perlmutter Cancer Center

CLINICAL CARE

Enhancing Outcomes Through Patient-Centered Care

FOOT AND ANKLE DIVISION

NYU Langone Medical Center's Foot and Ankle division was one of the first programs of its kind to be established in the United States, and it continues to be a leader in treating the full range of foot and ankle conditions. The division provides therapies ranging from nonoperative interventions to highly complex minimally invasive and open surgical procedures.

2014 Highlights

- Over 3,000 patient visits to the Diabetic Foot and Ankle Center.
- The division performed more than 600 surgical procedures.
- New preadmission interventions and a post-discharge protocol have reduced the average hospital length of stay by 50 percent for patients undergoing diabetic foot ulcer surgery.
- Instituted a new stress management program for diabetic patients with chronic wounds.
- Participated in ongoing multi-center study of Scandinavian Total Ankle Replacement (STAR™) ankle implant.
- Expanded studies related to Charcot Neuroarthropathy.

As part of their role in NYU Langone's multidisciplinary Diabetes Foot and Ankle Center, a major area of focus for the division in 2014 involved innovative patient-centered care for patients with chronic issues related to their condition. In one initiative, the division implemented a preadmission intervention in which the caregiver team, including a nurse practitioner and a social worker, reviews post-discharge plans with patients scheduled to undergo surgical treatment for a diabetic wound and addresses any issues in the home environment that might pose a problem. The division also collaborated with post-discharge care providers to establish a new postoperative protocol for these patients. Instead of requiring them to remain in the hospital until their final culture report, patients are now being discharged earlier on a broad-spectrum antibiotic, then switched to a more targeted antibiotic at home or in a subacute rehabilitation setting once lab results become available. These approaches have decreased average inpatient length of stay for diabetic wound patients from 5.6 days to 2 days, while at the same time yielding substantially higher patient satisfaction rates.

In another important 2014 initiative, the division implemented a novel stress management program for diabetic patients. "Many patients with diabetes develop foot and ankle complications that can become chronic, such as infected ulcers," notes Division Chief Kenneth Mroczek, MD. "When this stress is added to all of their other diabetes-related issues, they often experience depression that can impact their outcome." To help reduce depression and anxiety, patients attend four group sessions in which they're taught a series of self-coping techniques. "Preliminary data shows that patients are utilizing these techniques consistently at stressful moments, and finding them helpful," says Dr. Mroczek.

The past year saw the continuation of numerous research projects as well, including the division's participation in a post-approval multicenter study of the Scandinavian Total Ankle Replacement (STAR™) implant, and multiple studies of reconstructive surgery and other treatment approaches to Charcot neuroarthropathy. The division also completed and submitted for publication a collaborative study with the NYU Steinhardt Department of Physical Therapy that evaluated proprioception, balance, and neuromuscular control in individuals with chronic lateral ankle instability who underwent surgical reconstruction of the lateral ankle ligaments.

Restoring Function with Cutting-Edge Approaches to Acquired and Congenital Abnormalities

HAND SURGERY DIVISION

One of the most innovative clinical initiatives undertaken by NYU Langone's Division of Hand Surgery in 2014 involved preparing for an event that hasn't taken place yet: the Medical Center's first hand transplant. In collaboration with the Department of Plastic Surgery, the hand transplant team is training extensively on the procedure's surgical techniques. At the same time, the division has assembled an interdisciplinary support team of plastic surgeons, psychiatrists and social workers, hand therapists, rehabilitation physicians, and transplant medicine specialists. "We're now looking for the right surgical candidate," explains Nader Paksima, DO, MPH, assistant chief of hand surgery. "This type of effort requires extensive resources and a deep bench of medical professionals—it can only happen at a large academic medical center like NYU Langone, along with the leadership and expertise of our plastic surgery colleagues."

The hand transplant initiative brings a new capability to a program known for treating the most complex adult and pediatric upper-extremity conditions, including traumatic injuries (the division staffs Bellevue Hospital Center and Jamaica Hospital Medical Center, the two busiest Level 1 Trauma Centers in New York City), post-traumatic and arthritic deformities, congenital deformities, neuromuscular disorders, and acquired problems such as nerve compressions and tumors. Its surgical and nonoperative treatments are supported by in-office fluoroscopy and EOS® technology (which provides full-body diagnostic x-rays with one-tenth the radiation of traditional x-rays), as well as state-of-the-art MRI imaging. In-house certified hand therapists participate in all pre- and postsurgical evaluations and provide onsite splinting and rehabilitation services as needed. The division also maintains an outstanding educational program that includes three clinical fellows, two research fellows, and two residents at all times completing a two-month rotation.

In other 2014 developments, the division augmented its congenital neuromuscular program with the recruitment of S. Steven Yang, MD, MPH, an expert in treating congenital hand abnormalities in children, and made preparations to launch a new interdisciplinary program for patients with upper-extremity amputations that will use state-of-the-art computerized prostheses. The division also conducted research on treatment of distal radius, metacarpal, and phalangeal fractures as well as nerve repair, and continued building its online patient database—a recently established clinical research tool that tracks functional outcomes and quality-of-life assessments for all hand surgery patients.

2014 Highlights

- Performed more than 2,400 procedures.
- Established a hand transplant program with the Plastic Surgery Department.
- Recruited an expert on congenital abnormalities of the hand.
- Launched a new program for the treatment of upper-limb amputees.
- S. Steven Yang, MD, named American Society for Surgery of the Hand traveling international fellow.

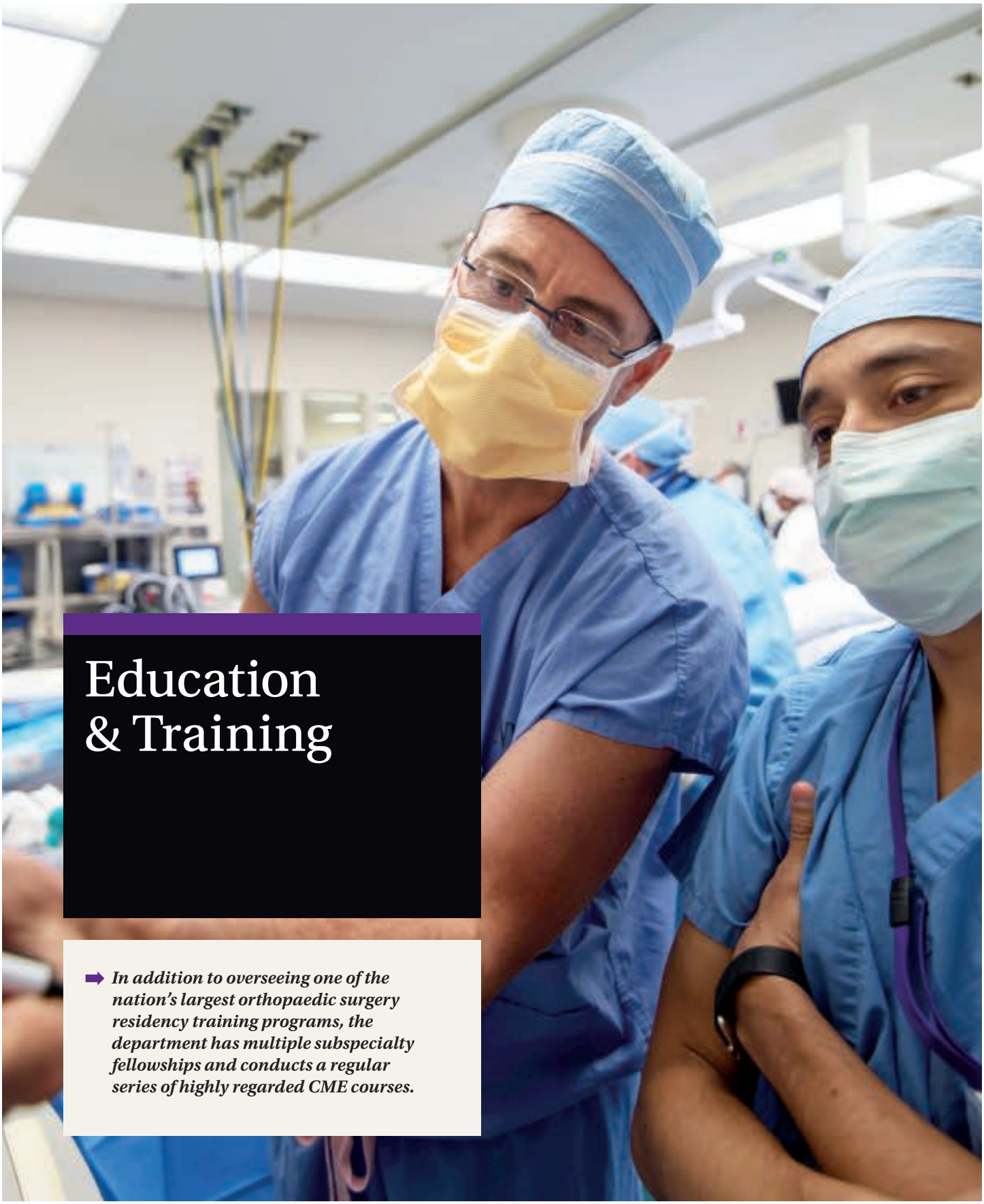
The Emanuel Kaplan Fellowship

includes three clinical hand surgery fellows and two research fellows

HAND SURGERY BY THE NUMBERS

Led for over 42 years by its chief, Martin Posner, MD, NYU Langone's Division of Hand Surgery is one of the largest in the nation. In 2014, its 15 faculty members performed 2,428 procedures—up 14 percent from the year before.

EDUCATION & TRAINING



Education & Training

➡ ***In addition to overseeing one of the nation's largest orthopaedic surgery residency training programs, the department has multiple subspecialty fellowships and conducts a regular series of highly regarded CME courses.***

Residency Training

2014 Highlights

- Instituted a direct observation program to assess residents' clinical skills, including the ability to communicate, physical exam proficiency, and professionalism in the clinic.
- Introduced a new ethics program as part of the professionalism curriculum for residents.
- Expanded the number of adult reconstructive fellowship positions from two to six.
- Received approval for a new primary care sports medicine fellowship.
- Added fifth spine fellow.

Has one of the largest orthopaedic surgery residency programs in the United States, with

62 residents

in training

Residency program includes an innovative

monthlong "boot camp"

at the start of the PGY-1 year

NYU Langone's five-year orthopaedic surgery residency program admits 12 residents per year, matched from America's top medical schools, and maintains two additional slots for residents pursuing a research year at the department's Musculoskeletal Research Center. Residents do clinical rotations in all major subspecialty areas under close faculty supervision, complemented by comprehensive didactic and basic science curricula. All residents must also complete three writing projects, including at least one original basic science or clinical research project. Recent program graduates have a 100 percent pass rate on both parts of the American Board of Orthopaedic Surgery (ABOS) certifying exam.

The department's residency program has been further enhanced by recent additions to its curriculum:

- An innovative, monthlong "boot camp" at the start of the first residency year gives incoming residents an intensive introduction to each subspecialty area of orthopaedic surgery, including physical exam techniques and anatomy instruction using cadavers. The principles of casting, note writing, research, interpreting x-rays and MRI scans, and other key areas are also taught, and first year residents also participate in a communications skills workshop. At the boot camp's conclusion, residents are given an Objective Structured Clinical Examination (OSCE) in which milestone-specific cases are used to assess their communication, knowledge, and physical exam skills.
- A professionalism curriculum, consisting of eight yearly lectures attended by all residents, covers topics such as difficult conversations, cultural competence, stress and burnout, and professional behavior. A new ethics component was added, in which residents complete a series of 14 online ethics modules developed by the American Academy of Orthopaedic Surgery.
- Another significant addition in 2014 was the introduction of a direct observation training component. In this program, which is unique to NYU Langone, faculty periodically observe residents during actual clinic encounters. Following the patient visit, residents are given immediate feedback regarding their history taking, physical exam competency, clinical reasoning, and professionalism. Effective skills are reinforced and areas of improvement are discussed. The program is currently being implemented for outpatient visits across all subspecialties, and will expand to include inpatient care in 2015.
- In another program unique to NYU Langone, orthopaedic surgery residents regularly encounter unannounced standardized patients (USPs) in the clinic. Presenting themselves as "real" patients, these USPs observe and report back on residents' communication and physical exam skills, while also providing feedback on the overall quality and safety of the clinic environment.

EDUCATION & TRAINING

Fellowships

The department offers some of the most advanced specialized fellowship training in its field, including the Emanuel Kaplan Hand fellowship, a decades-old program in which three hand surgery clinical fellows are trained annually. The one-year shoulder and elbow fellowship was established in 1994. The department also maintains a pediatric orthopaedic surgery fellowship and three sports medicine fellowships, including one that is dedicated to shoulder and elbow surgery. The department also received approval to add a primary care sports medicine fellow in the upcoming year.

Important developments in 2014 included expansion of the Adult Reconstructive Surgery Division's fellowship program from two to six slots—an increase made possible by the department's merger with the Insall Scott Kelly (ISK) Institute and the widely recognized ISK fellowship program. In addition, the Spine Division expanded from four to five fellowship slots last year—a shift that further reflects the growth of the Spine Division.

18 clinical fellows

and 2 research fellows across six divisions

Departmental responsibilities at both private and public hospitals provide

unique educational experiences

for residents and fellows

Other Physician-Training Opportunities

The Department of Orthopaedic Surgery offered six well-attended CME courses in 2014: a one-day Concussion in Sport symposium in February, co-hosted with the Departments of Neurology and Rehabilitation Medicine; a daylong course on treating the multisport and endurance athlete in March; the two-day Alumni Scientific program and Sir Robert Jones lecture in May, sponsored by the department's alumni association and featuring presentations on a wide range of cutting-edge orthopaedic topics; a pair of daylong courses in October, one on pediatric orthopaedics and sports medicine and the other on orthopaedic trauma; and a one-day symposium on shoulder instability in November. The department also hosted observorships for many international orthopaedic surgeons through its Visiting International Physician (VIP) program.

Participates in NYU Langone's ground-breaking

Three-Year MD Pathway

Three-Year Medical School Program

As a participating department in NYU Langone's innovative Three-Year MD Pathway, the Department of Orthopaedic Surgery offers automatic admission into its residency program for one to two incoming NYU School of Medicine students each year. Participating students complete their medical studies in three years, then start their first year in NYU Langone's orthopaedic surgery residency program in what would ordinarily be their fourth year of medical school

Training For Non-Physician Staff

In the past year, the department also helped train operating room staff at HJD by providing a video library of procedures that the staff can view prior to participating in cases. Department faculty also provide lectures to the nursing staff at their Wednesday-morning conferences.

International Medical Mission

Members of our department participated in four missions to Haiti in 2014. On these trips, they not only provided much-needed patient care to the people of Haiti, but also engaged in teaching and training at Haiti's only orthopaedic residency training program, centered at Hôpital de l'Université d'Etat d'Haiti (HUEH). The department has been involved in this well-received program for the past three years, reaffirming their commitment to this initiative while other organizations' efforts in Haiti have ended.

UPCOMING CME EVENTS

- **Second Annual 'Concussion in Sport': The Latest in Diagnosis and Management**
  February 27, 2015
- **The Medicine of Sports**
  April 10, 2015
- **Pediatric Orthopaedic Essentials**
  April 18, 2015
- **Sixth Annual Articular Cartilage Repair Course**
  May 16, 2015

For more information, go to **nyulmc.org/cme**

RESEARCH

New Discoveries

➡ ***As musculoskeletal research evolves, it is increasingly a highly collaborative science, requiring partnership between biologists, engineers, clinician-scientists, clinical outcomes researchers, and clinicians to develop novel therapeutic strategies and tackle the many unresolved questions in musculoskeletal care.***

RESEARCH

As part of NYU Langone Medical Center and the New York University system, the Department's Musculoskeletal Research Center (MRC) is uniquely positioned for these kinds of fruitful partnerships, fostering close relationships with NYU Langone's Department of Population Health, Department of Radiology, and Division of Rheumatology, as well as NYU College of Dentistry and NYU Polytechnic School of Engineering.

Research in the MRC includes efforts in bone healing, cartilage repair, inflammatory arthritis, osteoarthritis and posttraumatic osteoarthritis, and novel implant design. Clinical faculty members are exploring novel treatments for orthopaedic conditions, expanding on a robust joint preservation program, and developing novel strategies to improve the outcome of treatments of orthopaedic conditions.

#10 in the country

for NIH funding

4

full-time scientists

1

clinician-scientist

2

scientists with joint appointments

An Expanding Multidisciplinary Research Team

The department is continuing on an upward trajectory in its efforts to build a multidisciplinary research team that addresses complex problems in musculoskeletal diseases and repair. Members of the Center for Clinical Research are also developing a patient-reported outcomes (PRO) instrument, which will facilitate comparative effectiveness research aimed at identifying the most effective interventions and treatments for musculoskeletal diseases.

Full-time basic and clinician-scientists and clinical outcomes researchers include:

Thorsten Kirsch, PhD, professor of orthopaedic surgery and cell biology, vice chair for research, and director of the MRC, is investigating chondrocyte and osteoblast biology and differentiation, molecular mechanisms regulating physiological and pathological mineralization, and the cellular mechanisms leading to diseases of the skeletal system, including osteoarthritis and osteoporosis. Dr. Kirsch's lab is currently testing the hypothesis that interfering with the function of annexins—proteins that are expressed in osteoarthritic cartilage and modulate catabolic signaling pathways in articular cartilage—will prevent or slow the progression of osteoarthritis.

Alesha Castillo, PhD, assistant professor of orthopaedic surgery and assistant professor of mechanical and aerospace engineering at NYU Polytechnic School of Engineering, focuses on interactions between mechanobiological cues and musculoskeletal systems, with consideration given at the tissue, cellular, and molecular levels. The lab's goal is to identify physical and biochemical regulatory mechanisms in musculoskeletal adaptation, regeneration, and aging. The lab is also studying the role of stem cell recruitment factors in load-induced osteogenesis and bone regeneration.

Heather Gold, PhD, associate professor of population health and orthopaedic surgery and director of the orthopaedic population health research program, conducts rigorous and innovative cross-disciplinary health services research to improve the continuum of orthopaedic care, from diagnosis and treatment through follow-up. The program focuses on investigations of cost, quality, effectiveness, and efficiency in the healthcare system related to orthopaedic surgery and musculoskeletal disease.

$2 million
in NIH funding

Chuanju Liu, PhD, is ranked
#3 in the country
for NIH funding among orthopaedic and musculoskeletal researchers

Philipp Leucht, MD, PhD, assistant professor of orthopaedic surgery and cell biology, focuses on three key areas: determining the underlying cell and molecular regulatory mechanisms involved in skeletal development and fracture repair; investigating the role of the mechanical environment during fracture repair; and stem cell-based tissue engineering strategies to enhance bone regeneration.

Chuanju Liu, PhD, professor of orthopaedic surgery and cell biology and director of the Laboratory for Translational Orthopaedic Research, conducts research focused on the roles of ADAMTS-7 and ADAMTS-12 as two metalloproteinases associated with cartilage degradation in osteoarthritis, as well as on progranulin, an autocrine growth factor with multiple functions and a naturally occurring inhibitor of ADAMTS. Dr. Liu's team also investigates the roles of progranulin and its derivatives as a binding partner of TNF receptors in the pathogenesis of arthritis and other inflammatory diseases, with the goal of developing new interventions for various degenerative and inflammatory diseases by utilizing progranulin and/or its derivatives.

Oran Kennedy, PhD, assistant professor of orthopaedic surgery and assistant professor of mechanical and aerospace engineering at NYU Polytechnic School of Engineering, has a long-standing interest in studying the biomechanical and mechanobiological properties of musculoskeletal tissue, in particular bone and cartilage. Dr. Kennedy's lab focuses on the role of microdamage in subchondral bone after anterior cruciate ligament injuries in the development of posttraumatic osteoarthritis (PTOA).

Peter Walker, PhD, professor of orthopaedic surgery and professor of mechanical and aerospace engineering at NYU Polytechnic School of Engineering, investigates the biomechanical factors causing osteoarthritis of the knee and the development of treatments, particularly for the early stages. Specific projects include the use of imaging and special purpose knee testing machines, development and evaluation of an early intervention knee system, design of guided motion knees for the restoration of normal function, the enhancement of surgical technique by the use of electronic sensors, and outcome evaluation using innovative stability measurement devices.

Patient-Reported Outcomes (PRO) and Other Databases

The integration of PRO data collection into routine clinical practice is essential in the current movement of individualized patient care, and PRO measures for orthopaedic patients have already been rigorously developed and validated.

The department has developed a largely automated platform to collect and score validated PRO measures electronically and in real-time, with patients completing PRO questionnaires either at home prior to their office visit (accessed via email) or using a tablet device while in the office waiting room. The database currently houses over 70,000 PRO measures from more than 40,000 unique patients. This data is multipurpose: It will help guide providers and patients through the course of treatment; aid clinicians in monitoring interventions for quality improvement; facilitate retrospective and prospective clinical research; and demonstrate value to payers.

Additionally, the department maintains condition-specific databases, including a Total Joint Registry, a Sports/Shoulder Registry, and registries for tracking wrist and elbow fractures, and also contributes to national databases, including the International Spine Study Group (ISSG) database and the American Joint Replacement Registry (AJRR).

Center for Quality and Patient Safety

The Orthopaedic Surgery Department's Center for Quality and Patient Safety is nationally recognized and spearheads numerous research projects focused on understanding and improving patient care. Key areas of focus in 2014 included:

An antibiotic stewardship program. This initiative, a collaboration among Medical Center orthopaedic surgeons, hospital epidemiologists, pharmacists, and anesthesiologists, resulted in the development of a new standardized antibiotic protocol for surgical patients. Research results were recently published in the *Journal of the American Academy of Orthopaedic Surgeons.*

Cost-effectiveness research. The center has been reviewing every departmental program and procedure to ensure that any increased costs are associated with improved outcomes. This research has led to publications in multiple orthopaedic and non-orthopaedic journals.

Hospital readmissions. In the past year, the center published several articles reporting the causes of hospital readmission and approaches to minimize this costly aspect of healthcare.

Prevention of surgical site infection. The center collaborated with NYU Langone's infection control team on a recently published study involving the implementation of preoperative nasal screening and treatment for staph colonization—a protocol that has further lowered surgical site infection rates.

Population health and access to care. As the center's newest area of research, this collaborative project with NYU Langone's Department of Population Health is studying such issues as how the trend toward regional centers of excellence for joint replacements and other complex procedures is affecting access to care among various populations.

HISTORY

A Department Rich with History

➡ ***With a history of excellence dating back to the 19th century, the department continues to be a national leader in researching, developing and implementing new clinical treatments for the full range of orthopaedic conditions.***

1853

Dr. Lewis Albert Sayre becomes America's first orthopaedic faculty member when he is appointed Professor of Orthopaedic Surgery, Fractures, and Dislocations at Bellevue Hospital Medical College.

1898

Bellevue Hospital Medical College joins with University Medical College of New York University to become the NYU School of Medicine.

1905

Brothers, Henry and Herman Frauenthal, found the Jewish Hospital for Deformities and Joint Diseases.

1920s

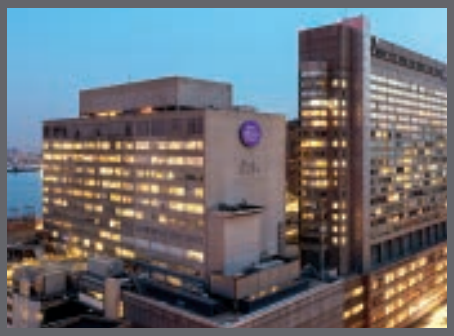
Pioneering research in arthroscopic techniques is undertaken.

NYU Langone Medical Center's Department of Orthopaedic Surgery is one of the largest orthopaedic programs in the country, with za national and international reputation for outstanding orthopaedic care, education, and research. The department treats hundreds of thousands of patients each year, from the youngest pediatric patients born with rare congenital conditions to adults suffering from fractures, soft-tissue injuries, or degenerative spine or joint conditions. The faculty includes leading surgeons in every subspecialty, who are skilled in the most complex surgical procedures and other treatments for trauma; hip and knee replacement; spine conditions; sports-related injuries; disorders of the hand, foot and ankle, and shoulder and elbow; musculoskeletal oncology; pediatric orthopaedic surgery; and primary care orthopaedics.

The department's origins trace back to Lewis Albert Sayre, MD, who became America's first academic orthopaedic surgeon when he was appointed professor of orthopaedic surgery, fractures, and dislocations at Bellevue Hospital Medical College in 1853. He was later appointed professor of clinical surgery as well, and continued to hold both positions until 1898, when the college joined with University Medical College of New York University to become the NYU School of Medicine, at which time he became professor emeritus of the merged entity.

NYU Langone's Hospital for Joint Diseases (HJD) was established in 1905 when two brothers, Henry and Herman Frauenthal, founded the Jewish Hospital for Deformities and Joint Diseases. The hospital became known for its excellence in musculoskeletal care, with achievements that included pioneering research in arthroscopic techniques in the 1920s, development of groundbreaking orthopaedic procedures for polio and congenital deformities in children in the 1940s, and establishment of the nation's first biomechanics laboratory in the 1960s, to name just a few advances.

The Departments of Orthopaedic Surgery at NYU Medical Center and HJD merged in 1997, paving the way for the merger of the two parent institutions in 2006. With 240 years of combined experience in orthopaedic surgery, the department continues to be a national leader in researching, developing, and implementing new clinical treatments for the full range of orthopaedic conditions. Today, NYU Langone Medical Center's orthopaedic services include a specialty inpatient hospital at HJD, recently opened outpatient offices at the comprehensive Center for Musculoskeletal Care (CMC), and an ambulatory surgery facility in the same building as the CMC. The department also collaborates closely with NYU Langone's other disciplines, including its renowned Departments of Radiology and Rehabilitation Medicine, and the Division of Rheumatology.



1940s

Groundbreaking orthopaedic procedures for polio and congenital deformities in children are developed.

1960s

The nation's first biomechanics laboratory is established.

1997

The Departments of Orthopaedic Surgery at NYU Medical Center and HJD merge.

2006

The merging of the Departments of Orthopaedic Surgery at NYU Medical Center and HJD in 1997 paves the way for the merger of the two parent institutions.

PROFESSIONAL ACTIVITIES AND HONORS

SELECTED PUBLICATIONS

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PROFESSIONAL ACTIVITIES AND HONORS

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS (AAOS) ANNUAL MEETING 2014

PODIUM PRESENTATIONS, INSTRUCTIONAL COURSE LECTURES, AND SYMPOSIA

Distal biceps MRI: Acute vs. Chronic—Nimrod Snir, Mathew Hamula, Theodore Wolfson, Soterious Gyftopoulos, Robert Meislin, Eric Strauss, Laith Jazrawi.

Intermedullary Nail and Plate Combinations for Complex Tibial Fractures: Use Beyond the Proximal Tibia—Richard S. Yoon, Jesse E. Bible, Matthew S. Marcus, Justin C. Siebler, Derek J. Donegan, Karl Bergmann, MD, Hassan R. Mir, Frank A. Liporace.

Dynamizations and Exchange Nailing: Success Rates and Indications—Jody Litrenta, Paul Tornetta, Cory Collinge, Heather Vallier, Clifford Jones, Christine Kruppa, Reza Firoozabadhi, Kenneth Egol, et al.

Are Locked Plates Needed for Split Depression Tibial Plateau Fractures (OTA type 41B)?—Michelle Abghari, Alejandro Marcano, Roy Davidovitch, Sanjit Konda, Kenneth Egol.

Management of the Isolated Medial Tibial Plateau Fracture—Steffen Haider, Roy Davidovitch, Kenneth Egol.

Antifibrinolytics in Adult Spinal Deformity Surgery: A Prospective Randomized Controlled Trial—Thomas Cheriyan, Kseniya Slobodyanyuk, Austin Peters, Kushagra Verma, Frank Schwab, Baron Lonner, Thomas Errico.

Satisfaction after Adult Spinal Deformity Surgery is Not Driven by HRQOL Scores or Curve Correction—Jayme Hiratzka, Christopher Shaffrey, Shay Bess, Christopher Ames, Gregory Mundis, Virginie Lafage, Robert Hart.

Adult Spinal Deformity Patients Treated with rhBMP-2—Shay Bess, Breton Line, Eric Klineberg, Virginie Lafage, Frank Schwab, Christopher Ames, Robert Hart, Christopher Shaffrey.

Surgical Treatment of Pathological Loss of Lumbar Lordosis (Flatback) in the Setting of Normal SVA—Justin Smith, Eric Klineberg, Christopher Shaffrey, Virginie Lafage, Frank Schwab, Themistocles Protopsaltis, Vedat Deviren, Robert Bess, Christopher Ames.

Anterior Column Realignment (ACR) Has Similar Results to PSO in Adult Spinal Deformity—Gregory Mundis, Behrooz Akbarnia, Nima Kabirian, Jeff Pawelek, Robert Eastlack, Chris Shaffrey, Eric Klineberg, Shay Bess, Chris Ames, Vedat Deviren, Virginie Lafage.

rh-BMP-2 Use in Adult Spinal Deformity Does Not Increase Major Infections, or Neurological Complications at One Year—Shay Bess, Breton Line, Christopher Shaffrey, Eric Klineberg, Virginie Lafage, Frank Schwab, Douglas Burton, Robert Hart.

Soft Tissue Coverage Every Orthopod Should Know—Nader Paksima, Susan Craig-Scott, Jeff Greenberg, Kevin Knox.

Difficult Conversations in Orthopaedics—Andrew M. Wong, MD; David A. Halsey, MD; Michael Marks, MD, MBA; Donna P. Phillips, MD.

Fractures in the Osteoperotic and Elderly: Technical Tips and Tricks—Frank Liporace, Kenneth Egol, Anthony Rhorer, Derek Donegan.

Hand and Wrist Review Course—Martin Posner, Steven Green, John Capo.

Efficacy of Antifibrinolytics on Surgical Bleeding in Orthopaedic Surgery: A Meta-Analysis—Thomas Cheriyan, Kseniya Slobodyanyuk, Kristina Bianco, Stephen Maier, Frank Schwab, Barron Lonner, Thomas Errico.

Early Results of CMS Bundled Payment Initiative for a 90-Day Total Joint Replacement Episode of Care—Richard Iorio, James Slover, Andrew Clair, Joseph Zuckerman.

The Effect of Discharge Disposition on Readmission Rates Following Total Joint Arthroplasty—Nicholas Ramos, Raj Karia, Lorraine Hutzler, Aaron Brandt, James Slover, Joseph Bosco.

Patients' Perception of Care Correlates with Quality of Hospital Care: A Survey of 4,605 Hospitals—Michael Day, Lorraine Hutzler, Raj Karia, Spencer Stein, Joseph Bosco.

Readmission Burden of 30-Day Readmissions Following Total Joint Replacement Among Medicare Beneficiaries—Alexa Karkenny, Joseph Bosco, Richard Iorio, Lorraine Hutzler.

The Cost-Effectiveness of Prophylactic Intramedullary Nailing for Bisphosphonate Associated Femoral Fractures—Kenneth Egol, James Lee, Michelle Abghari, Zehava Rosenberg, Nirmal Tejwani.

Symptomatic Atypical Femoral Fractures Are Related to Underlying Hip Geometry—David Taormina, Valerie Peck, Kenneth Egol, Nirmal Tejwani.

Impact of Surrounding Canal Size on Time to Union Following Femoral Intramedullary Nailing: Does Size Really Matter?—Daniel Seigerman, Richard S. Yoon, Mark Gage, Philip Lim, John Koerner, Neeraj M. Patel, Derek J. Donegan, Frank A. Liporace.

Locked Plating vs. Retrograde Nailing for Distal Femur Fractures: A Multicenter Randomized Trial—Paul Tornetta, Kenneth Egol, Clifford Jones, Janos Ertl, et al.

Risk Factors for Infection after Hip Arthroplasty: Preventable vs. Non-preventable Infection—Michael Phillips, Joseph Bosco, James Slover, Guy Maoz, Richard Iorio.

Ulnar Styloid Fracture in Association with Distal Radius Fracture Portends Poorer Outcome—Omri Ayalon, Alejandro Marcano, Nader Paksima, Kenneth Egol.

Does the Degree of Distal Radius Fracture Malunion Predict Functional Outcomes?—Alejandro Marcano, Matthew Cantlon, James Lee, Kenneth Egol.

Does Syndesmotic Injury Have a Negative Effect on Functional Outcomes? A Multicenter Prospective Evaluation—Jody Litrenta, Paul Tornetta, Laura Pfeiffer, Clifford Jones, Janos Ertl, Brian Mullis, Kenneth Egol.

Hand and Wrist Problems General Orthopaedists Treat (or should treat): Diagnostic and Operative Tips—Nader Paksima, Anthony Sapienza, Jeff Greenberg, Fraser Leversadge.

Driving Performance after TSA—Garret Garofolo, Mathew Hamula, Young Kwon, Joseph Zuckerman.

A Comparison of 30-day Readmissions Following Orthopaedic Procedures and Medical Admissions—Jed Maslow, Joseph Bosco, Lorraine Hutzler.

Gait Improvement After Fusion for AIS is Influenced by Measures in Coronal and Sagittal Planes—Justin Paul, Ashish Patel, Ellen Godwin, Kristina Bianco, Charles Spero, Nicholas Post, Thomas Errico, Virginie Lafage, Carl Paulino.

2014 AAOS ICL Technical Skills Course: Shoulder Instability—Patrick J. McMahon; Hussein A. Elkousy, Mark Lazarus, MD; Andrew S. Rokito, Jon K. Sekiya.

Principles and Practices of Antibiotic Stewardship in Orthopaedic Surgery—Joseph Bosco, Brett Levine, Michael Phillips, James Slover.

Fractures of the Proximal Femur: A Case-Based Approach—Kenneth Egol, Roy Davidovitch, Mark Varhas, Madhav Karunakar.

Does Malnutrition in Patients Presenting with Fractures Predict Lower Quality Measures?—Kenneth Egol, James Lee, Lorraine Hutzler, Brandon Shulman, Raj Karia.

Can an Evidence-Based Treatment Algorithm for Intertrochanteric Hip Fractures Maintain Quality at a Reduced Cost?—Kenneth Egol, Alejandro Marcano, Lambert Lewis, Nirmal Tejwani, Toni McLaurin, Roy Davidovitch.

Sleep Disturbance Following Fracture Is Related to Emotional Well Being Rather than Functional Result—Brandon Shulman, Frank Liporace, Roy Davidovitch, Raj Karia, Kenneth Egol.

The Art of Teaching Orthopaedic Surgery—Joseph D. Zuckerman, MD; Kenneth A. Egol, MD; Samir Mehta, MD; Donna P. Phillips, MD.

Pes Planovalgus: From Adolescent to Adulthood—Jenny Frances, MD; David S. Feldman, MD; Vincent S. Mosca, MD; Lew Schon, MD.

Optimizing Patient Health Perioperatively and Preventing Readmission; ICL: Preventing Hospital Readmissions and Limiting the Complications Associated with THA—Richard Iorio.

Hip Society: Symposium III: Preventing Hospital Readmissions and Managing Complications, The Role of Your Internist—Vincent Pellegrini, Richard Iorio.

Non-Operative and Non-Arthroplasty Options for Management of Knee OA Bracing and Shoe Wear: What's the Evidence It Helps?—Richard Iorio.

POSTERS/VIDEO/ MULTIMEDIA PRESENTATIONS

ACL Reconstruction in the Skeletally Immature Athlete—Deepan Patel, Mathew Hamula, Dylan Lowe, Theodore Wolfson, Eric Strauss, David Feldman, Laith Jazrawi.

Distal Femoral Osteotomy and Subchondroplasty: Case Presentation and Surgical Technique—Laith Jazrawi, Dylan Lowe, Mathew Hamula.

Unicondylar Osteoarticular Allograft with HTO: New Surgical Technique—Guillem Gonzalez-Lomas, Dylan Lowe, Alan McGee, Theodore Wolfson, Eric Strauss, Laith Jazrawi.

Distal Radius Fractures ORIF: Case Presentation and Surgical Technique—Kenneth Egol, Carlos Uquillas, Dylan Lowe, Mathew Hamula, Siddharth Mahure.

Distal Humerus Fractures ORIF: Case Presentation and Surgical Technique—Kenneth Egol, Carlos Uquillas, Mathew Hamula, Dylan Lowe.

Closed-Loop Double Endobutton Technique for Complete AC Joint Dislocation: A Technique Review and Demonstration—Catherine Laible, Dylan Lowe, Theodore Wolfson, Mathew Hamula, Steven Struhl.

Modified Interpositional Arthroplasty for Advance Hallux Rigidus: An Improved Technique—Jonathan Oren, Theodore Wolfson, Dylan Lowe, Mathew Hamula.

Anterior Approach Total Hip Arthroplasty: Tips and Tricks to Avoid Complications and Maximize Outcomes—Roy Davidovitch, Kenneth Egol.

Cost-Effective Trauma Implant Selection—Kenneth Egol, Roy Davidovitch, Sanjit Konda, Nirmal Tejwani, Frank Liporace, Joseph Zuckerman.

Bisphosphonates: How They Work and Their Role in Atypical Femur Fractures—Nirmal Tejwani, Roy Davidovitch, Sanjit Konda, Nirmal Tejwani, Frank Liporace, Kenneth Egol.

Treatment of Femoral Neck Fractures in the Nonelderly Fit Adult—Kenneth Egol, Roy Davidovitch.

Traumatic Extensor Mechanism Injuries of the Knee: Diagnosis, Treatment, and Outcomes—Sanjit Konda, Nirmal Tejwani, Roy Davidovitch, Frank Liporace, Kenneth Egol.

Pediatric Patellofemoral Instability: A Multimedia Comprehensive Review and Novel Treatment Algorithm—Rachel Shakked, Theodore S. Wolfson, Matthew Hamula, Garret Garofolo, Guillem Gonzalez-Lomas, Eric J. Strauss, Laith M. Jazrawi, David S. Feldman.

Proximal Humerus Fractures 2014: Rehabilitate, Repair, Replace, or Reverse?—Kenneth Egol, Brandon Shulman, Sanjit Konda, Nirmal Tejwani, Frank Liporace, Roy Davidovitch, Joseph Zuckerman.

Suprascapular Nerve Releases: Indications & Techniques—Andrew Rokito, Eric Strauss, Laith Jazrawi, et al.

Everything Achilles: Knowledge Update and Current Concepts in Management—Carlos Uquillas, Mathew Hamula, Theodore Wolfson, Garret Garofolo, Nimrod Snir, Orrin Sherman, Eric Strauss, Laith Jazrawi.

Demonstrating Quality in Orthopaedic Surgery, Value-Based Purchasing: Past, Present, Future—Rebecca Boas, Lorraine Hutzler, Michael Day, Richard Iorio, James Slover, Joseph Bosco.

Meniscal Allograft Transplantation Made Simple: A How-To Guide—Guillem Gonzalez-Lomas, Laith Jazrawi, Eric Strauss, David Ding, Mathew Hamula, Theodore Wolfson, Garret Garofolo.

Surgical Management of Acromioclavicular Joint Injuries: Where We Are in 2014—Theodore Wolfson, William Rossy, Mathew Hamula, Garret Garofolo, Steven Struhl, Eric Strauss, Laith Jazrawi.

Tibial Plateau Fracture Evaluation Management and Outcomes: A Case-Based Learning Platform—Richard Yoon, Roy Davidovitch, Nirmal Tejwani, Frank Liporace, Kenneth Egol.

Soft Tissue Principles for Orthopaedic Surgeons—Richard Yoon, Frank Liporace, Mark Gage, Kenneth Egol, Roy Davidovitch, Nirmal Tejwani, Sanjit Konda, John Capo.

Impact of Metabolic Syndrome on Peri-Operative Complication Rates after Total Joint Replacement Surgery—Mark Gage, Ran Schwarzkopf, James Slover.

Risk Factors for Staphylococcus Aureus Nasal Colonization in Spinal Fusion or Joint Arthroplasty Patients—Kirk Campbell, Colleen Cunningham, Saqib Hasan, Lorraine Hutzler, Joseph Bosco.

A Randomized Control Trial of Two Distinct Shared Decision Making (SDM) Aids for Hip and Knee Osteoarthritis (OA)—Jennifer Shue, Raj Karia, Dennis Cardone, Mehul Shah, James Slover.

RAGE and Foot Function in Diabetic Foot Disease—Thorsten Kirsch, Smita Rao.

Combined Email and In-Office Technology Improves Patient-Reported Outcomes Collection in Standard Orthopaedic Care—Xiang Zhou, Raj Karia, Phillip Band, Richard Iorio, Joseph Zuckerman, James Slover.

The Effects of Amicar and TXA on Lumbar Spine Fusion in an Animal Model—Jason Cuellar.

Proximal Junction Failure in Deformity Patients Increases Revisions but Doesn't Affect Outcome—Robert Hart, Jayme Kiratzka, D. Kojo Hamilton, Praveen Mummaneni, Virginie Lafage, Ian McCarthy, Richard Hostin, Douglas Burton.

Dysphagia Following Anterior Cervical Discectomy and Fusion: National Incidence and Risk Factors—Kristina Bianco, Stephen Maier, Peter Passias, Michael Gerling.

Prevalence and Type of Cervical Deformity Among 470 Adults with Thoracolumbar (TL) Deformity—Justin Smith, Eric Klineberg, Christopher Shaffrey, Virigine Lafage, Frank Schwab, Themistocles Protopsaltis, Vedat Deviren, Robert Bess, Christopher Ames.

Effectiveness of Postoperative Wound Drains in One- and Two-Level Cervical Spine Fusion—Caroline Poorman, Peter Passias, Kristina Bianco, Michael Gerling.

Cervical Sagittal Deformity Develops After PJK in Adult Thoracolumbar Deformity Correction—Themistocles Protopsaltis, Nicholas Bronsard, Jaimie Terran, Justin Smith, Gregory Mundis, Han Jo Kim, Richard Hostin, Christopher Ames, Virginie Lafage.

The Inter and Intra Observer Reliability of the Sanders Classification versus the Risser Stage—Qasim Husain, Carolyn Poorman, Richard Yoon, Christopher Looze, Peter Passias, Baron Lonner.

Identification of Synovial Fluid Biomarkers for Cartilage Injuries and Associated Outcomes—Vanessa Cuellar, Jason Cuellar, Thorsten Kirsch, Priya Mukhopadhyay, Laith Jazrawi, Eric Strauss.

Chronic Distal Biceps Reconstruction—Nimrod Snir, Mathew Hamula, Theodore Wolfson, Robert Meislin, Eric Strauss, Laith Jazrawi.

Outcomes of the Patients with Cultured Pathogens at the Time of Nonunion Surgery—David Taormina, James Lee, Alejandro Marcano, Raj Karia, Kenneth Egol.

Can All Tibial Shaft Fractures Weight Bear Following Intramedullary Nailing? A Randomized Clinical Trial—Steven Gross, David Taormina, Kenneth Egol, Nirmal Tejwani, David Galos.

Risk Factors for Acute Surgical Site Infections in Orthopaedic Oncology Patients—Daniel Lerman, Alan Blank, Timothy Rapp.

PROFESSIONAL ACTIVITIES AND HONORS

AWARDS AND RECOGNITION

EDWARD ADLER, MD
- "New York Metro Area's Top Doctors," *Castle Connolly*

JOHN BENDO, MD
- "New York Metro Area's Top Doctors," *Castle Connolly*

JOSEPH BOSCO, MD
- Otto Aufranc Award—Best Research Paper, Hip Society
- Member at Large, Board of Directors, American Academy of Orthopaedic Surgeons (AAOS)
- Board of Directors AAOS Orthopaedic Learning Center
- "New York Metro Area's Top Doctors," *Castle Connolly*

JOHN CAPO, MD
- Member, International Relations Committee, American Society for Surgery of the Hand
- Traveling Fellow, American Society for Surgery of the Hand

DENNIS CARDONE, DO
- Chief Medical Officer, Public School Athletic League

CARY CHAPMAN, MD
- Member, Foot and Ankle Evaluation Subcommittee, American Academy of Orthopaedic Surgeons (AAOS)

GAIL CHORNEY, MD
- Member, Practice Management Committee, AAOS
- Co-chair, Resident Practice Management Symposium at Annual Meeting of AAOS

ROY DAVIDOVITCH, MD
- Best Adult Reconstructive Poster, AAOS

ALAN DAYAN, MD
- Honorary Medical Officer, New York City Fire Department

KENNETH EGOL, MD
- Member, Board of Directors, Orthopaedic Trauma Association (OTA)
- "New York Metro Area's Top Doctors," *Castle Connolly*
- Best Poster, OTA Annual Meeting

THOMAS ERRICO, MD
- Best Poster, Cervical Spine Research Society (cSRS), for, "Full Body Eos Analysis of the Maintenance of Functional CBVA and Horizontal Gaze among Hypo-lordotic verses Hyper-lordotic Patients"
- Member, Board of Directors, Harms Study Group
- Founding member and president, International Advocates for Spine Patients
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

DAVID FELDMAN, MD
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

JEFFREY GOLDSTEIN, MD
- Member, board of directors, International Society for the Advancement of Spine Surgery
- Member, editorial board, *Spine, Spine Journal, Global Spine Journal, International Journal of Spine Surgery, Bulletin of the Hospital for Joint Diseases*
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

RICHARD IORIO, MD
- "Best of AAOS" Award for symposium, "Implementing Bundled Payment Initiatives for Total Joint Replacement: Decreasing Cost and Increasing Quality"
- The Hip Society's Otto Aufranc Award for "Modifiable vs. Non-Modifiable Risk 1 Factors for Infection after Hip Arthroplasty"
- AAOS "Game Changer" Presentation Award for "Early Results of CMS Bundled Payment Initiative for a 90-day Total Joint Replacement Episode of Care"
- "America's Top Orthopaedists," *Consumer Research Council of America*
- "New York Metro Area's Top Doctors," *Castle Connolly*

FREDRICK JAFFE, MD
(Awarded Posthumously)
- Department of Orthopaedic Surgery Teacher of the Year

WILLIAM JAFFE, MD
- Founders Lifetime Achievement Award, The New York Arthritis Foundation

LAITH JAZRAWI, MD
- Member, Arthoscopy Association of North America Fellowship Committee
- Member, Arthoscopy Association of North America Education Committee
- "New York Metro Area's Top Doctors," Castle Connolly

CLAUDETTE LAJAM, MD
- Treasurer, Ruth Jackson Orthopaedic Society

TONI McLAURIN, MD
- Alvin H. Crawford Mentoring Award, the J. Robert Gladden Orthopaedic Society

ROBERT J. MEISLIN, MD
- "New York Metro Area's Top Doctors," *Castle Connolly*

PATRICK MEERE, MD
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

RONALD MOSKOVICH, MD
- "New York Metro Area's Top Doctors," *Castle Connolly*

NORMAN OTSUKA, MD
- Chair, American Academy of Pediatrics' Section on Orthopaedics
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

NADER PAKSIMA, DO

- Secretary of the Hand Section, American Osteopathic Academy of Orthopedics (AOAO)
- Chair, CAQ questions writing committee, AOAO
- Member, American Society Surgery of the Hand's Commercial Support Committee
- Member Diversity Committee, and Member International Relations Committee

DONNA PHILLIPS, MD

- Member, Diversity Advisory Board, AAOS
- Member, Patient Safety Committee, AAOS

ANDREW PRICE, MD

- "New York Metro Area's Top Doctors," *Castle Connolly*
- Vice President, Pediatric Orthopedic Club of New York

THEMISTOCLES PROTOPSALTIS, MD

- Best Podium Presentation, International Society for the Advancement of Spine Surgery
- "Spine Surgeon Under 40 to Know," *Becker's Spine Review*
- Traveling Fellowship, Cervical Spine Research Society

AFSHIN RAZI, MD

- AAOS Leadership Fellow Program participant
- President, Brooklyn Orthopaedic Society
- Member, Communication Cabinet Committee, AAOS

DONALD ROSE, MD

- "New York Metro Area's Top Doctors," *Castle Connolly*

FRANK SCHWAB, MD

- Best Poster Award, cSRS, for "Full Body Eos Analysis of the Maintenance of Functional CBVA and Horizontal Gaze among Hypo-lordotic verses Hyper-lordotic Patients"
- Best Podium Presentation Award, International Society for the Advancement of Spine Surgery (ISASS) "Complications and Inter-center Variability of Three Column Osteotomies for Spinal Deformity Surgery: A Retrospective Review of 423 Patients"
- Best Poster Award, ISASS, for "Impact of Major and Minor Complications on Health Related Quality of Life Following"
- Goldstein Clinical Science Award winner for "Magnitude, Location and Factors Related to Regional and Global Correction Loss in Long Adult Deformity Constructs: Report of 183 Patients with Two-Year Follow Up"
- Member, Editorial Board, *Spine Deformity Journal*
- Member, CME Committee & Education and Program Committee, Scoliosis Research Society
- Member, Executive Committee, International Spine Study Group
- Research Council Chair, Scoliosis Research Society
- Vice President, International Spine Study Group
- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

MEHUL SHAH, MD

- Member, Sports Evaluations Committee, AAOS

ORRIN SHERMAN, MD

- Reviewer, *American Journal of Sports Medicine* and *Arthroscopy Journal*

JAMES SLOVER, MD

- Otto Aufranc Award for Best Research Paper, The Hip Society

JEFFREY SPIVAK, MD

- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

ERIC STRAUSS, MD

- Teacher of the Year, Department of Orthopaedic Surgery

STEVEN STUCHIN, MD

- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*

NIRMAL TEJWANI, MD

- Editorial board member, Journal of Ortho Trauma, *American Journal of Orthopaedics*
- Member, Classification and Outcomes Committee, OTA
- Treasurer, Foundation of Orthopaedic Trauma (FOT)
- Member, Trauma Evaluation Committee, AAOS

DAVID WEISS, MD

- Deputy Editor, *Journal of Dance Medicine & Science*
- Member, Program Committee, International Association for Dance Medicine & Science

S. STEVEN YANG, MD

- International Traveling Fellow, American Society for Surgery of the Hand

THOMAS YOUM, MD

- "New York Metro Area's Top Doctors," *Castle Connolly*

JOSEPH ZUCKERMAN, MD

- "America's Top Doctors," *Castle Connolly*
- "New York Metro Area's Top Doctors," *Castle Connolly*
- Best Poster, Orthopaedic Trauma Association Annual Meeting
- Shannon Stauffer Visiting Professor, Southern Illinois University School of Medicine
- E. Burke Evans Visiting Professor, University of Texas Galveston School of Medicine
- Morton Lecturer, University of British Columbia School of Medicine
- J. Paul Harvey Visiting Professor, University of Southern California Keck School of Medicine

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(as of December 2014)

KEY NYU LANGONE LOCATIONS

1 Hospital for Joint Diseases (HJD)
301 East 17th Street
New York, NY

Ambulatory Care Clinic
324 East 23rd Street

Rutherford Place
303 Second Avenue

2 Center for Musculoskeletal Care
333 East 38th Street
New York, NY

3 NYU Langone Medical Center
550 First Avenue
New York, NY

4 Outpatient Surgery Center
339 East 38th Street
New York, NY 10016

5 Joan H. Tisch Center for Women's Health
207 East 84th Street
New York, NY

6 Preston Robert Tisch Center for Men's Health
555 Madison Avenue
New York, NY

7 NYU Langone at Trinity Center
111 Broadway
New York, NY

8 Occupational and Industrial Orthopaedic Center
63 Downing Street
New York, NY

9 NYU Langone at Columbus Medical
97-85 Queens Boulevard
Queens, NY

AFFILIATED FACILITIES

10 Bellevue Hospital Center
462 First Avenue
New York, NY

11 Manhattan Campus of the VA NY Harbor Healthcare System
423 East 23rd Street
New York, NY

12 Jamaica Hospital Medical Center
89-06 135th Street
Queens, NY

13 Woodhull Medical Center
760 Broadway
Brooklyn, NY

COMMUNITY PRACTICES

14 NYU Langone Madison Avenue Orthopaedics
145 East 32nd Street
New York, NY

15 NYU Langone Orthopaedics at Westchester
311 North Street
White Plains, NY

16 Orthopaedic Specialists at Westbury
761 Merrick Avenue
Westbury, NY

17 Orthopaedic Surgery Associates

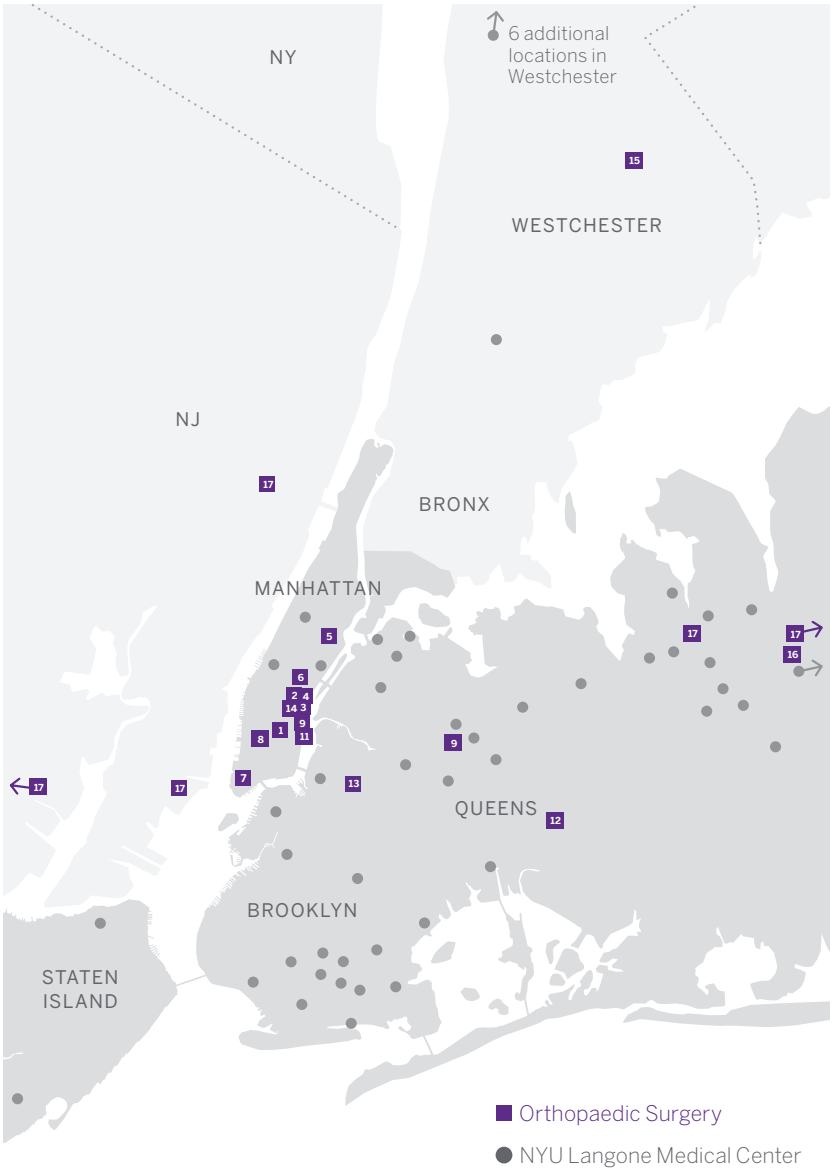
333 East Shore Road
Manhasset, NY

433 Hackensack Avenue
Hackensack, NJ

377 Jersey Avenue
Jersey City, NJ

111 West Old Country Road
Hicksville, NY

194 Main Street
Millburn, NJ



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FACULTY & LEADERSHIP

JOSEPH D. ZUCKERMAN, MD
Walter A.L. Thompson Professor of Orthopaedic Surgery; Chair of the Department of Orthopaedic Surgery

phone: (212) 598-6674
email: Joseph.Zuckerman@nyumc.org

JOSEPH A. BOSCO, MD
Vice Chair of Clinical Affairs

phone: (646) 501-7042
email: Joseph.Bosco@nyumc.org

KENNETH A. EGOL, MD
Vice Chair of Education and Chief of the Division of Trauma & Fracture

phone: 212-598-3889
email: Kenneth.Egol@nyumc.org

WILLIAM L. JAFFE, MD
Vice Chair

phone: (212) 598-6796
email: William.Jaffe@nyumc.org

THORSTEN KIRSCH, PhD
Vice Chair of Research

phone: 212-598-6589
email: Thorsten.Kirsch@nyumc.org

DENNIS A. CARDONE, DO
Chief, Primary Care Sports Medicine Division

GAIL CHORNEY, MD
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Chief

FOOT AND ANKLE

KENNETH MROCZEK
Chief

CARY CHAPMAN
CRAIG S. RADNAY
STEVEN SHESKIER

Podiatric Section

NABIL M. FAHIM
Chief

LEILA OSTOVAR-KERMANI
SIMON NZUZI

HAND

MARTIN POSNER
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STEVEN GREEN
Assoc. Chief

NADER PAKSIMA
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S. STEVEN YANG

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SMITA RAO
ALI SHEIKHZADEH
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SHIRA WEINER
SHERRI WEISER-HORWITZ
XIANG ZHOU

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MARC APPEL
DAN ATAR
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EMERITUS

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Communications and Marketing

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VICKI MATCH SUNA, AIA
Senior Vice President and Vice Dean
for Real Estate Development and Facilities

NADER MHERABI
Senior Vice President and Vice Dean,
Chief Information Officer

NANCY SANCHEZ
Senior Vice President and Vice Dean
for Human Resources and Organizational
Development and Learning

NYU LANGONE MEDICAL CENTER
by the numbers*

1,069
Total Number of Beds

77
Operating Rooms

35,666
Patient Admissions

1,061,552
Hospital-Based Outpatient Visits

5,422
Births

2,000,000
Faculty Group Practice
Office Visits

1,408
Full-Time Faculty

1,047
Part-Time Faculty

2,500+
Voluntary Faculty

120
Endowed Professorships

2,515
Physicians

2,953
Registered and Advanced
Practice Nurses

550+
Allied Health Professionals

4,000+
Publications

550,000
Square Feet of Research Space

$245MM
NIH Funding

$285MM
Total Grant Funding

2,053
Inventions

936
US Patents Issued

475
US Patents Licensed

650
MD Candidates

70
MD/PhD Candidates

252
PhD Candidates

415
Postdoctoral Fellows

1,155
Residents and Fellows

*Numbers represent FY14 (Sept 2013–Aug 2014); inventions/patents are cumulative through Aug 31, 2014

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Produced by: Office of Communications and Marketing, NYU Langone Medical Center

NYU Langone
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