



Expert Care for Every Case

Table of Contents

Letter from the Chair	1
Locations	2
Services List	4
High-Quality Patient Care	5
Outcomes	6
New Physicians	7
Leadership	8
Outreach	9
Cutting-Edge Research and Informatic Highlights	10
Academic Highlights	14
DIVISION REPORTS	
Adult Reconstruction (Joint Replacement)	16
Spine	18
Sports Medicine	20
Hand and Upper Extremity	24
Foot and Ankle	26
Trauma	28
Podiatry	30
Pediatric Orthopaedics	32
SELECT LISTS	
Select Current Research	34
Select Department of Orthopaedic Surgery Publications	36
Select Physician Awards and Honors	42
Select Speaking Engagements	44
In the News	47



It is with great pleasure that I introduce the NorthShore University HealthSystem (NorthShore) Orthopaedic Institute 2017–2018 Annual Report. The summary we present here provides a glimpse of the world-class work our specialists perform at the NorthShore Orthopaedic Institute, from the development of cutting-edge techniques to some of the best quality and outcome results in the nation.

We care for the most complex cases—including revision hip and knee surgery, pediatric ACL reconstruction, revision spine surgery, and trochlear dysplasia—using the most advanced techniques that include 3-D printing and robotic surgery. We are pioneering the use of minimally invasive procedures and regenerative medicine that can, in many cases, non-operatively address musculoskeletal injuries with biologic treatments. Our impressive quality and outcomes are the culmination of a tremendous team effort by our physicians, affiliated healthcare providers and administrative staff.

We have enjoyed tremendous growth over the past few years, becoming a leader in orthopaedic care. We have added numerous expert physicians in every subspecialty to treat the increasing number of patients who seek treatment here. We are a leading nationwide provider of joint and total joint replacement, and we offer a full complement of comprehensive, multidisciplinary programs that center around our patients—from children to geriatric patients coming with sports injuries, arthritis, spinal problems or anything in between.

Our quality, as ranked by the Centers for Medicare & Medicaid Services, puts us in the top 1.3 percent in the nation in readmissions, and our postoperative infection rates are less than half of the national average, which was too good to qualify for a new infection-preventing vaccine research study. We have been a leader in the implementation of departmental quality dashboards, and we are pioneering the use of predictive modeling to assist in the care of our most high-risk patients.

Care goes beyond the operating suite, and we work tirelessly to reduce patient recovery times, improve pain control and improve the specificity of our diagnostic technologies. The dedicated hospital staff, modern private inpatient rooms and compassionate care create an experience that is ranked in the top decile of orthopaedic hospital care by Hospital Consumer Assessment of Healthcare Providers and Systems scores, and contributes to the rapid recovery and restoration of function that are hallmarks of our care.

Another aspect of our mission is advancement of orthopaedics through research and education. We invest in groundbreaking research to develop cutting-edge technologies, diagnostics and devices that help our patients achieve remarkable results. As you peruse this report, you will see our pioneering work in regenerative medicine, tissue engineering, 3-D printing, robotic surgery and total joint replacement. We also educate dozens of students and physicians, in part through our close relationship as the primary academic partner of the University of Chicago, and have an international reputation as a leader in surgical skills training and simulation.

Thank you for taking the time to get to know us. Our dedicated team of clinicians and our caring staff welcome you to look inside and learn more about how we continue to lead in restoring patients to an active and pain-free life. We have been able to accomplish so much, and we look forward to building on our successes in the future.

Jason L. Koh, MD, MBA
Board of Directors Endowed Chair of Orthopaedic Surgery
Director, the NorthShore Orthopaedic Institute
NorthShore University HealthSystem
Academic Appointment at University of Chicago Pritzker School of Medicine



As patient needs (such as the desire to have care closer to home) change, we adapt the way we deliver care. In fiscal year 2017, approximately 10,000 orthopaedic and podiatric surgical cases were performed across NorthShore's four hospitals, with approximately 2,500 additional cases performed in three affiliated surgicenters. Nearly a quarter of our surgical patients come from outside our 51 ZIP code service area.

By external measures, our excellent quality of surgical care continues to improve consistently as the NorthShore Orthopaedic Institute Divisions expanded subspecialty care in the NorthShore system. The hospital and surgical practices are supported by six Medical Group practice locations and more than five Illinois Bone & Joint Institute (IBJI) locations. All of our locations offer same-day appointments, radiologic services, physical therapy and durable medical equipment. In addition, some offices have access to sports performance programs and concussion evaluation and management.

Our Hospital Locations

Evanston Hospital

2650 Ridge Avenue
Evanston, IL 60201

Glenbrook Hospital

2100 Pfingsten Road
Glenview, IL 60026

Highland Park Hospital

777 Park Avenue West
Highland Park, IL 60035

Skokie Hospital

9600 Gross Point Road
Skokie, IL 60076



Our Hospitals



Our Orthopaedic Offices

Office Locations

Medical Group Locations

Chicago

680 N. Lake Shore Drive, Ste. 924
Chicago, IL 60611

Glenview

2180 Pfingsten Road, Ste. 3100
Glenview, IL 60026

Gurnee

7900 Rollins Road
Gurnee, IL 60031

Highland Park

777 Park Ave. West, Ste. 1241
Highland Park, IL 60035

Lincolnshire

920 Milwaukee Ave., Ste. 1000
Lincolnshire, IL 60069

Skokie

9650 Gross Point Road, Ste. 2900
Skokie, IL 60076

Medical Group Walk-In Clinics

Chicago

680 N. Lake Shore Drive, Ste. 924
Chicago, IL 60611

Glenbrook Ambulatory Care Center

2180 Pfingsten Road, Ste. 3100
Glenview, IL 60026

Lincolnshire Medical Group

920 Milwaukee Ave., Ste. 1000
Lincolnshire, IL 60069

Skokie Hospital Ambulatory Care Center

9650 Gross Point Road, Ste. 2900
Skokie, IL 60076

Illinois Bone & Joint Institute (IBJI) Locations

Arlington Heights

1300 E. Central Road
Arlington Heights, IL 60005

Bannockburn

2101 Waukegan Road, Ste. 110
Bannockburn, IL 60015

Glenview

2401 Ravine Way, Ste. 103
Glenview, IL 60025

Morton Grove

9000 Waukegan Road, Ste. 200
Morton Grove, IL 60053

Wilmette

521 Green Bay Road
Wilmette, IL 60093

IBJI OrthoAccess Immediate Care

Glenview

2401 Ravine Way, Ste. 103
Glenview, IL 60025

Gurnee

350 S. Greenleaf, Ste. 450
Gurnee, IL 60031

Lake Barrington

28156 W. Northpoint Pkwy, Ste. 224
Lake Barrington, IL 60010

Libertyville

720 Florsheim Drive
Libertyville, IL 60048

Affiliated Surgicenters

Ravine Way Surgery Center

2350 Ravine Way, Ste. 600
Glenview, IL 60025

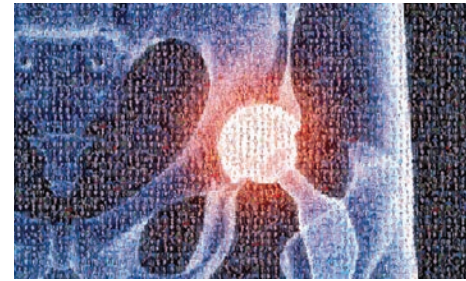
Orthopaedic Specialists of the North Shore

4433 W. Touhy Ave, Ste. 301
Lincolnwood, IL 60712

Sameday Surgery Network River North

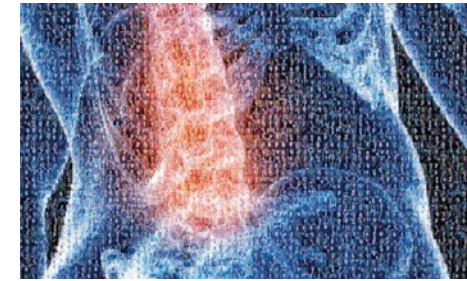
One East Erie, Ste. 300
Chicago, IL 60611

Services List



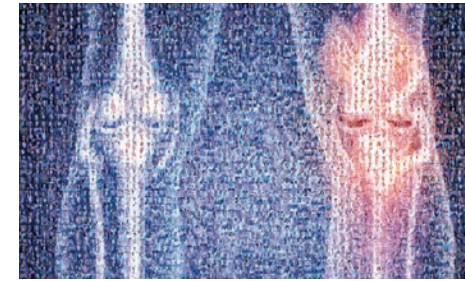
Adult Reconstruction (Joint Replacement)

- Complex and Revision Cases
- Robotic- and Computer-Assisted Surgery
- Rapid Recovery Pathways



Spine

- Spine Center of Excellence
- Motion-Preserving Technologies
- Regenerative Medicine Research



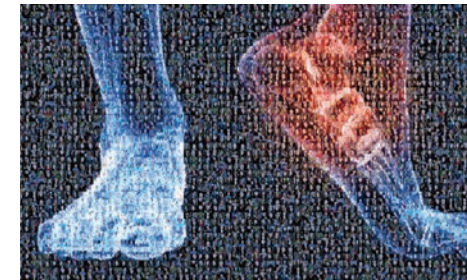
Sports Medicine

- Professional Team Expertise
- Regenerative Scaffolds and Growth Factors
- Pediatric and Revision ACL Surgery and Research



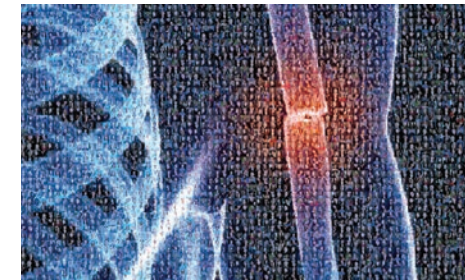
Hand and Upper Extremity

- Minimally Invasive New Techniques
- Innovative Implant Design
- Fellowship Training the Surgeons of the Future



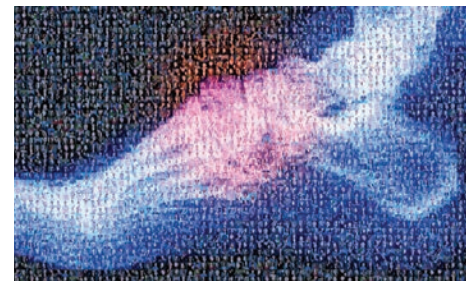
Foot and Ankle

- Complex Ankle Replacement
- Hydrogel Implants for Arthritis
- Arthroscopic Ankle Surgery and Biologics



Trauma

- Team Approach to Geriatric Fractures
- Orthopaedic Trauma Rapid Care
- State-of-the-Art Skills Training



Podiatry

- Stem Cells and Plasma Injection
- Synthetic Cartilage
- Multidisciplinary Foot Care



Pediatric Orthopaedics

- Deformity Correction with 3-D Printed Models
- Nonoperative Infantile Scoliosis Treatment
- Magnetic Growing Rod Implants

High-Quality Patient Care

NorthShore Orthopaedic Institute is nationally recognized for delivering the highest quality care to patients. Outstanding surgeons combined with an ongoing partnership and team approach for more than 30 years has resulted in a culture dedicated to the best possible care. The result is truly “best-in-class” outcomes, with the lowest statewide total joint readmission rates, ranked in the top 1.3 percent of hospitals in the nation.

Overall complication and readmission rates are half the national average and continue to improve, while more than 10,000 cases per year are performed by our surgeons. Our outstanding nursing staff has been recognized by our Nursing Magnet designation. Our total joint and spine programs earned the highest **Blue Cross Blue Shield Blue Distinction** rating, and we have been selected as the sole Chicago area **United Health Care/Optum Center of Excellence for Orthopaedics and Spine** for bundled care, recognizing our quality and value.

The expert surgeons of the NorthShore Orthopaedic Institute work together with nursing and administrative staff using technology advancements and sophisticated data analytics to continuously improve patient care. Dedicated care pathways and standardization have helped reduce variability, and virtual dashboards are provided to the team to continuously monitor patient outcomes. We continue to invest in informatics, and now predictive modeling, to help use a data-driven approach to enhance our personalized patient care.

The Quality Committee, led by **Arnold Cohn, MD**, a member of the NorthShore Orthopaedic Institute affiliate practice, the Illinois Bone & Joint Institute (IBJI), is charged with reviewing quality issues, implementing quality initiatives, and monitoring indications and complications of orthopaedic and podiatric surgery.

In the Spine Division, we achieved significant milestones in our efforts to decrease readmissions and surgical site infections based on the Center of Excellence benchmarks. Even as surgical volumes increase to nearly 1,000 cases per year, patient outcomes continue to improve, with only one return-to-surgery within 24 hours in 2016, and zero returns in 24 hours in 2017.

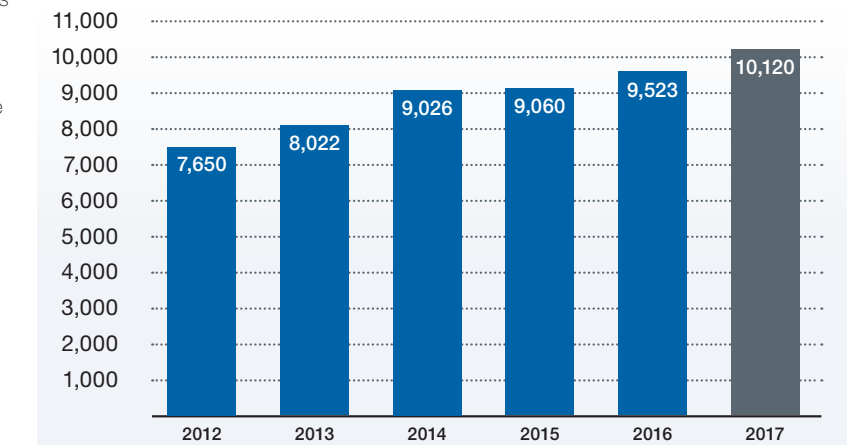
We continue to use data analytics to improve the monitoring and quality of our care, creating new dashboards for our physicians and care team. New predictive models for patient outcomes are being developed to help identify which patients would benefit from additional intervention based on individual factors. We are also expanding our collection of National Surgical Quality Improvement data to all four campuses, which provides risk-adjusted data for both inpatient and outpatient cases, as well as national benchmarking.



Dr. Arnold Cohn
Chair of the Orthopaedic Quality Committee



Orthopaedic and Podiatric Surgical Cases



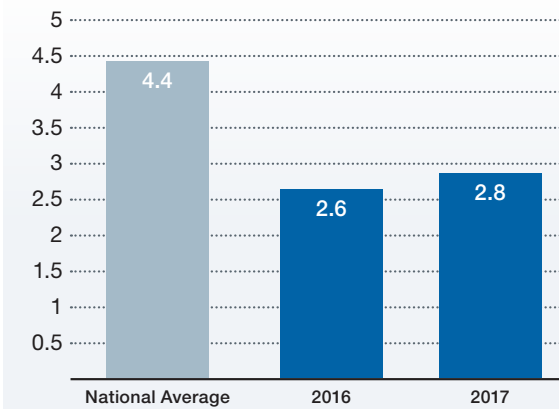
Surgical volume grew by nearly 10 percent to more than 10,000 cases in 2017.

Outcomes

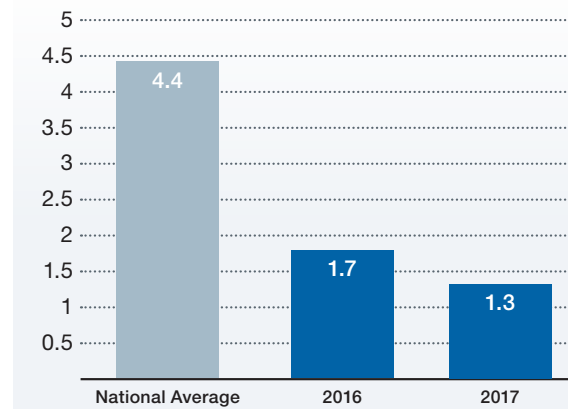
Low Hospital Readmissions

Compared against Centers for Medicare and Medicaid Services national averages, patients who undergo total knee and hip replacements at NorthShore Hospital Campuses, experience far lower readmissions than other hospitals across the country. Our low readmission rates earned us top designations in the nation and state.

Total Hip Replacement 30-Day Readmission Rate



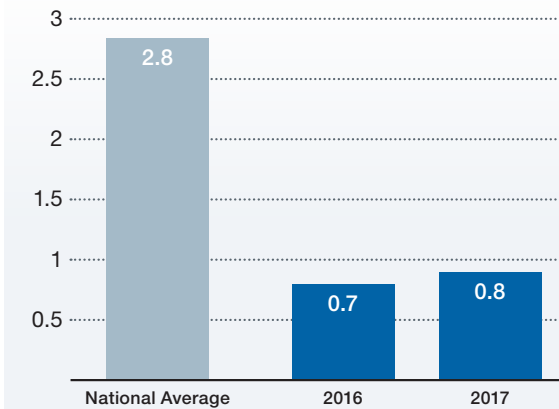
Total Knee Replacement 30-Day Readmission Rate



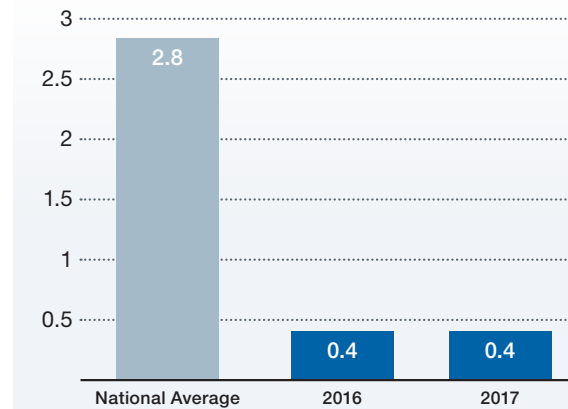
Low Infection Rates

Cases of post-operative infection after total knee and hip replacement at NorthShore are less than half of the Centers for Medicare and Medicaid Services national averages.

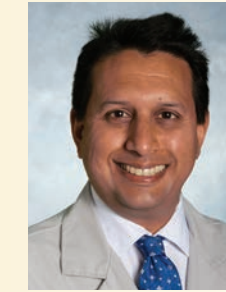
Total Hip Replacement Surgical Site Infection



Total Knee Replacement Surgical Site Infection



New Physicians



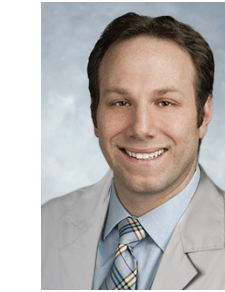
Jamal Ahmad, MD
Foot & Ankle



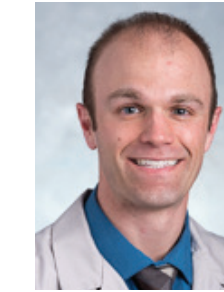
Trevor Bullock, DO
Family Medicine Sports Medicine



Matthew Cavallero, MD
Trauma



Jordan Goldstein, MD
Sports Medicine



Ward McCracken, DO
Family Medicine Sports Medicine



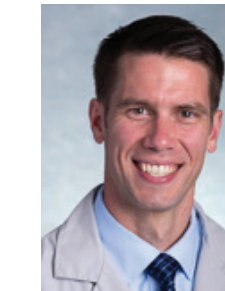
Thomas Moran, MD
Family Medicine Sports Medicine



Verena Schreiber, MD
Pediatric Orthopaedics



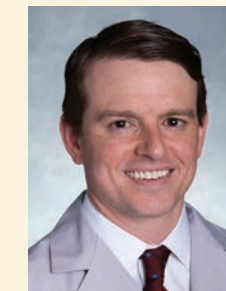
Christian Skjong, MD (IBJI)
Hand & Upper Extremity



Alexander Tauchen, MD
Adult Reconstruction



Diego Villacis, MD
Sports Medicine



Brian Weatherford, MD (IBJI)
Trauma



Stephen Wielgus, MD
Primary Care Sports Medicine



Anne Marie Zeller, DO
Primary Care Sports Medicine

Leadership

NorthShore Orthopaedic Institute Committees and Members

Executive Committee

Jason Koh, MD, MBA (<i>Committee Chair</i>)	James Kudrna, MD	Lalit Puri, MD, MBA
David Beigler, MD (IBJI)	Seth Levitz, MD	David Rahija, <i>Senior Vice President</i>
Leon Benson, MD (IBJI)	Kristen Murtos, <i>President, Skokie Hospital</i>	David Roberts, MD
Mark Bowen, MD	Mark Nolden, MD	Gary Shapiro, MD (IBJI)
Arnold Cohn, MD (IBJI)	Michael O'Rourke, MD (IBJI)	Jennifer Shea, <i>Assistant Vice President</i>
Raju Ghate, MD	Amy Jo Ptaszek, MD (IBJI)	Howard Sweeney, MD

Education Committee

Leon Benson, MD (<i>Committee Chair</i>) (IBJI)	James Kudrna, MD, PhD	Lalit Puri, MD, MBA
Ravi Bashyal, MD	Leslie McClellan, <i>Education Coordinator</i>	Dave Rahija
David Beigler, MD (IBJI)	Mark Nolden, MD	Jennifer Shea
Mark Bowen, MD	Craig Phillips, MD (IBJI)	Christian Skjong, MD (IBJI)
Jason Koh, MD, MBA	Amy Jo Ptaszek, MD (IBJI)	Howard Sweeney, MD

Research Committee

Richard Wixson, MD (<i>Committee Chair</i>)	Robert Gray, MD	Craig Phillips, MD (IBJI)
David Beigler, MD (IBJI)	Carrie Jaworski, MD	Amy Jo Ptaszek, MD (IBJI)
Leon Benson, MD (IBJI)	Erin Klein, DPM	Lalit Puri, MD, MBA
Patrick Birmingham, MD	Jason Koh, MD, MBA	David Roberts, MD
Mark Bowen, MD	James Kudrna, MD, PhD	Lowell Weil Sr., DPM
Nancy Goodman, <i>Research Manager</i>	Steven Levin, MD	Michael Weisman, DPM
	Mark Mikhael, MD (IBJI)	

Quality Committee

Arnold Cohn, MD (<i>Committee Chair</i>) (IBJI)	Eric Chehab, MD (IBJI)	Mark Mikhael, MD (IBJI)
Zemen Abebe, Dir. Periop Services SK	Erin Duval, Quality Improvement	Cheryl Neislowski, Risk Management
Sandy Alexander, RN	Marc Falleroni, MD	Michael O'Rourke, MD (IBJI)
David Beigler, MD (IBJI)	Carol Heunisch, PharmD	Lalit Puri, MD, MBA
Beverly Beine, VP Periop Services	James Kudrna, MD, PhD	Travis Raebel, PA
Rose Boushek, Dir. Periop Services GB	Robert McMillan, MD (IBJI)	Gary Shapiro, MD (IBJI)

Committee Chairs



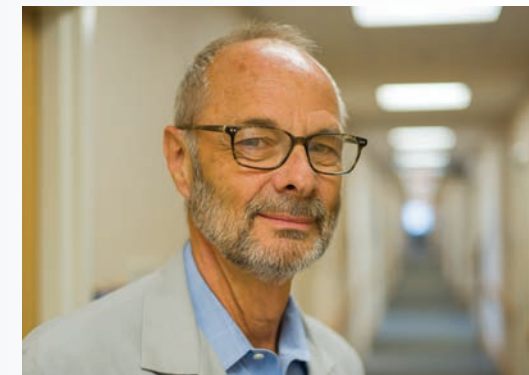
Dr. Jason L. Koh
Director, NorthShore Orthopaedic Institute
Board of Directors Endowed Chair of Orthopaedic Surgery



Dr. Leon Benson
Vice Chair of Academic and Affiliate Affairs



Dr. Lalit Puri
Vice Chair of Clinical Excellence



Dr. Richard Wixson
Vice Chair of Research and Informatics

Outreach



Dr. Victoria Brander (right) is presented with the Unsung Heroes of Compassion Award by the Dalai Lama.

International Orthopaedic Missions

In 2005, Drs. Victoria Brander and David Stulberg (both members of NOI) helped found Operation Walk Chicago, which sends volunteer clinicians to such countries as Vietnam, Nepal, and Brazil to provide hip and knee replacements at no cost to indigent patients, while training local orthopaedic surgeons and building lasting partnerships. Recently, Drs. Brander and Stulberg led a team of more than 50 physicians, nurses, and volunteers to Recife, Brazil on a two-week mission where they performed dozens of hip and knee replacement operations. Her work has been recognized by the Unsung Heros of Compassion Award, presented by the Dalai Lama.

In addition, NorthShore Orthopaedic Institute physicians travelled to Katmandu, Nepal, to aid in disaster relief after the devastating earthquake. Their continued efforts have helped

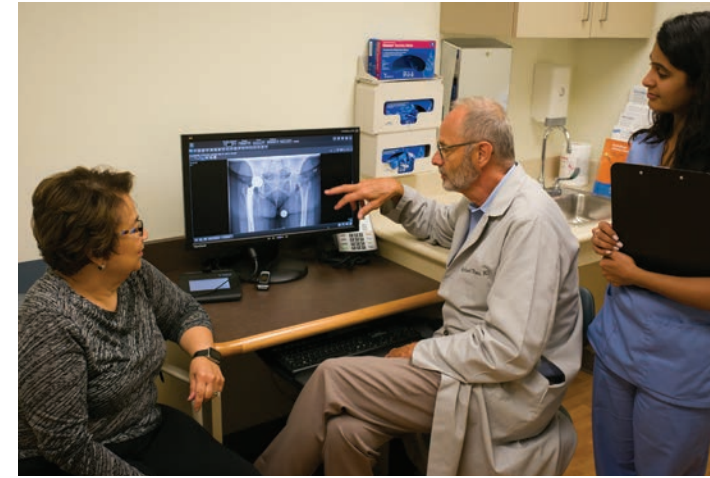
establish one of the few orthopaedic centers in the entire country to provide ongoing assistance to the community. Future projects include returning to Recife and Katmandu, as well as the Philippines.

Amy Jo Ptaszek, MD, leads, with CRNA support from NorthShore anesthesiology, orthopaedic medical missions affiliated with Nuestros Pequeños Hermanos and Holy Family Surgical Center in Honduras. Underserved Hondurans with neglected, chronic pathology and post-traumatic deformity undergo surgery and follow up in the clinic.

Cutting-Edge Research and Informatic Highlights



Dr. Jason Koh teaches visiting European surgeons from the prestigious ESSKA-AOSSM traveling fellowship program.



Dr. Richard Wixson consults with a patient.

From developing new surgical techniques in regenerative medicine to the use of “big data” to track and predict patient outcomes, the researchers at the NorthShore Orthopaedic Institute continue to identify new ways to help transform patient care and treat the most complex cases. Over 90 scientific articles (see Publications, beginning on page 36) were published by our physicians during the past year in peer-reviewed literature, including award-winning papers and cover articles. Collaborative partners include NorthShore Research Institute, Illinois Bone & Joint Institute, University of Chicago, Rehabilitation Institute of Chicago, Northwestern University McCormick School of Engineering and Cleveland Clinic. Multicenter trials were also established with Mayo Clinic, the Hospital for Special Surgery, Cincinnati Children’s Hospital and other nationally recognized organizations.

A strong research team provides comprehensive assistance to investigators and physicians in the following areas: literature reviews, protocol revision, regulatory submission and annual reviews, patient screening, patient recruitment and enrollment, data collection, and study closure. In addition, the Orthopaedic Biomechanics Lab allows investigators to develop and test innovative new techniques for the treatment of musculoskeletal disorders.

Partnering to Assess New Techniques for Knee Regeneration and Reconstruction

NorthShore researchers work closely with industry partners to develop and test new techniques to aid in the treatment of complex injuries and to make surgery more precise. Dr. Jason Koh helped develop the pivotal FDA trial to assess the ability of a scaffold-based autologous chondrocyte transplantation system (Novocart 3D™, Aesculap Biologics) to regrow cartilage to treat chondral defects of the knee.



Dr. Mark Mikhael
Director of Orthopaedic Spine Research

Researching Mesenchymal Cell Allogeneic Grafts for Spine Surgery

In a constant pursuit to find treatments that improve fusion rates and patient outcomes, Mark Mikhael, MD, is conducting an independent study about the mesenchymal allogeneic graft (ViviGen®), which uses donor stem cells. Expanding on work done in the lumbar spine, Dr. Mikhael is exploring the use of this novel graft to treat patients who have degenerative discs in necks with nerve compression causing arm and neck pain or even paralysis. The disc material or bony spurs that are compressing spinal cord or nerve roots are first removed; then the spine is stabilized using implants along with the donor graft, which contains stem cells and proteins that send signals to the body to heal. Patients are evaluated at different points of their recovery through outcome surveys, X-rays and CT scans to assess healing. Dr. Mikhael said of the study thus far, “While it’s early in the research process, results to date are very promising. Every patient is experiencing very good outcomes and fusion is occurring. It’s exciting to see that this research may improve the way we treat these cases moving forward.”



Dr. Richard Wixson
Vice Chair for Research and Informatics

Informatics

Physicians at the NorthShore Orthopaedic Institute identified the need for the organized collection of clinical data on patients, as well as patient-reported outcomes, for both quality and research endeavors. Under the leadership of Richard Wixson, MD, Vice Chair for Research and Informatics, new structured clinical documentation forms were built into the Electronic Medical Record (EMR), allowing for the efficient, accurate and complete collection of patient information. Using existing data, NorthShore Orthopaedic Institute built one of the most robust predictive models for readmission and complications in joint replacement patients, which has astonishing accuracy. This allows our care team to provide targeted interventions to the patients who need it the most.

Grant-Supported Studies Explore Regenerative Medicine Treatments for Knee Arthritis

The Department of Orthopaedic Surgery received the NorthShore University HealthSystem Auxiliary Fund Award for 2016 to 2018 (initial award \$325,000), which provides the opportunity to advance research in the area of intra-articular platelet-rich plasma injections (PRP) in the treatment of knee osteoarthritis. This study, represented by Dr. Koh and Trevor Builock, DO, explores using a patient’s own bioactive factors which play a fundamental role in tissue healing. During a single visit, growth factors, are retrieved from a simple blood draw and injected into the patient’s knee. The effects on the knee are assessed by patient-reported outcomes as well as by using advanced qualitative MRI imaging techniques to assess cartilage.

Orthopaedics Biomechanics Laboratory

In 2014, the NorthShore Orthopaedic Institute established an Orthopaedics Biomechanics Laboratory to examine the mechanics of joint injury and develop and test new techniques to improve our physicians' ability to help patients. The lab has the capability to perform single and multi-axis biomechanical testing; finite element analysis; contact pressure; and area, strain and motion analysis. Current research efforts focus on cartilage repair and regeneration techniques, as well as shoulder repair techniques. In this facility, advanced custom devices under robotic control apply precise loads to specimens under dynamic conditions to evaluate the ability of new procedures to restore normal joint biomechanics. The work of the lab in such areas as meniscus damage and repair has been featured in the leading orthopaedic journals and has helped establish fundamental knowledge.

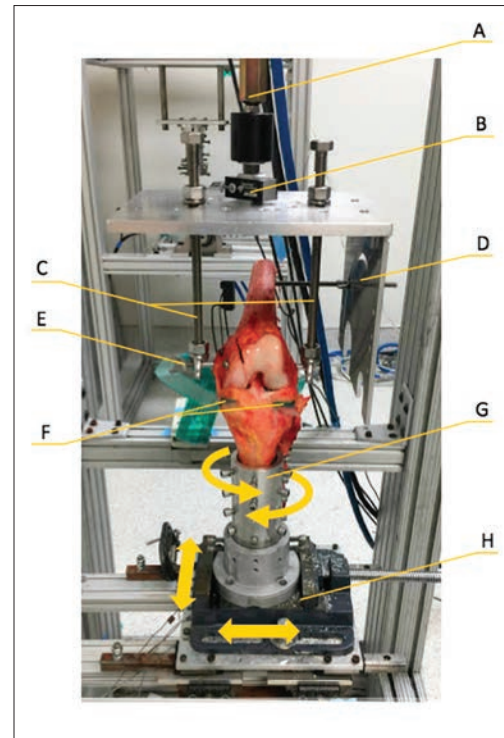


Figure A

Justifying Patellar Instability Treatment by Early Results (JUPITER)

Patella instability and dislocation can be devastating to young patients, causing pain and loss of function, and can lead to arthritis. To determine the best possible treatment for these injuries, Dr. Koh and researchers from the Hospital for Special Surgery and Cincinnati Children's Hospital initiated "JUPITER", a hypothesis-driven, multi-center, prospective cohort study. Its specific aims are to compare the results of non-operative and various surgical treatments, such as medial patellofemoral reconstruction (MPFL) for patients under the age of 30. Outcomes are assessed at 6,12, 24, and 60 months, including assessment of function, activity, and quality of life. Joining Dr. Koh in participating are Drs. David Roberts and Verena Schreiber. Investigators from Harvard, the Mayo Clinic, and Shriners' Hospital system have also joined this trial.

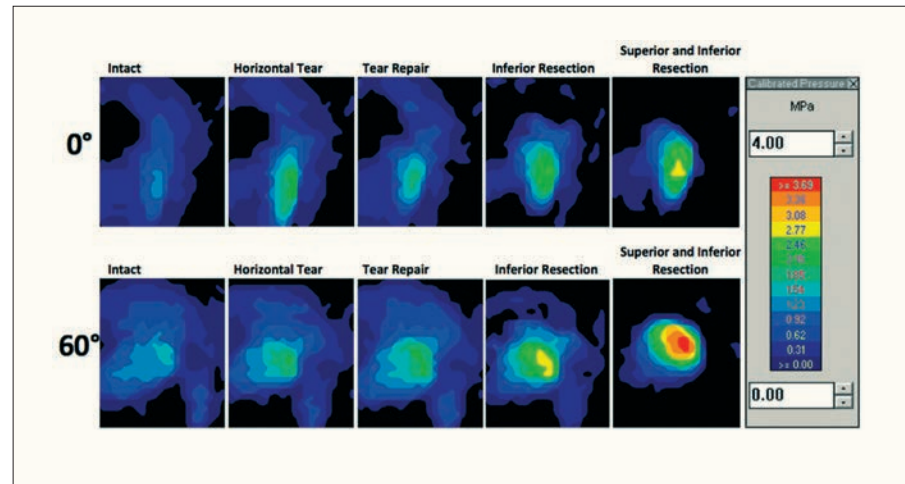


Figure B

- (A) Computer-controlled knee testing robot
- (B) Contact pressure map showing increased pressure with meniscus injury (Koh et al., JBJS 2016)

Advancing Ankle Replacement Surgery

In the mid-2000s, it was identified that first-generation ankle replacements were prone to early failure. It was at this point that Steve Haddad, MD, became involved in the design and implementation of three ankle replacement systems (INBONE II™, INFINITY™ and INVISION™, Wright Medical Technology).

Dr. Haddad and the team first worked to create an implant that anatomically matches the three major bones of the ankle. He then worked to develop a second prosthesis (INFINITY) that removes less of the patient's bone than prior implants. By preserving the patient's natural bone, any future revision ankle replacement surgery becomes technically feasible. Finally, with the recently launched INVISION ankle replacement, surgeons can revise implants that have failed, even those that have failed with significant bone loss.

Most recently, Dr. Haddad received a \$100,000 grant from the Orthopaedic Research and Education Foundation to study wear patterns among ankle replacements and improve durability. This is a critical element to making sustainable ankle replacements for the future, something Dr. Haddad considers to be the most important contribution to the next generation of surgeons.

Evaluation of Zimmer® CAS PSI X-Ray Knee in Total Knee Arthroplasty: Technical Outcomes

Raju Ghate, MD, is working closely with Zimmer to investigate how custom patient-specific 3-D printed guides can enhance total knee replacement.

The purpose of this clinical study is to assess the positioning of customized guides of Zimmer CAS PSI X-Ray Knee using optical navigation in patients with osteoarthritis requiring primary total knee arthroplasty (TKA).

The proposed study is a single-center, prospective, case series, and non-controlled clinical trial. Patients will get a total of seven to nine radiographs depending on the anatomy of the leg to generate the CAS PSI X-Ray Knee guides. Primary TKAs will be performed where the position of the CAS PSI knee guides will be generated from X-ray and their position determined using Sesamoid™ Navigation System. The surgeon will determine to either move on with the CAS PSI Knee guides generated from X-ray based on the Sesamoid Navigation system readings or use currently approved instrumentation such as MRI patient-specific guides or conventional instruments.



Dr. Steven Haddad
Senior Attending Physician

Academic Highlights

Partnerships with the University of Chicago

NorthShore's academic program grew exponentially over the past several years. We strengthened our relationship of eight years with the University of Chicago Medicine Department of Orthopaedic Surgery and Rehabilitative Medicine. Leon Benson, MD, serves as Vice Chair of Academic and Affiliate Affairs.

"Orthopaedic residents at the University of Chicago like their NorthShore rotation primarily because the attendings are committed," said Dr. Benson. "That means we're providing a good educational experience and adding an element of fun. We believe if you have a collegial relationship with your mentors, everything's better." Through our partnership with the University of Chicago, we train 15 residents annually.

Partnership with Rush Medical Center

Our podiatrists partner with Rush Medical Center to train podiatric residents under the supervision of NorthShore's Michael Weisman, DPM, Division Head for Podiatry, and Podiatric Physician Leader Jeffrey Alexander, DPM. There are nine residents: three residents per podiatry training year with a total of three training years.

NorthShore Orthopaedic Institute Fellowships

The NorthShore Orthopaedic Institute expanded partnerships to offer hand and upper extremity, sports medicine, primary care sports medicine, foot and ankle, and adult reconstruction fellowships.

• Sports Medicine

Our shared Sports Medicine Fellowship with the University of Chicago includes two sports medicine fellows who alternate and rotate every three months between NorthShore and the University of Chicago. Physician involvement is strong, and the sports fellows gain vast exposure to sports-related injuries by assisting with the Chicago Bears training room and the Evanston Township High School training room.

• Primary Care Sports Medicine

The Department of Family Medicine supports a Primary Care Sports Medicine Fellowship under the leadership of Carrie Jaworski, MD, Division Head of Primary Care Sports Medicine. The one-year, one-person fellowship focuses on acute musculoskeletal management. This fellowship also exposes family medicine physicians to primary care sports medicine physicians and orthopaedic surgeons, in addition to sports neurology, cardiology and nutrition.

• Hand and Upper Extremity

We share a hand and upper extremity program with the University of Chicago that includes two hand fellows who alternate and rotate every three months between NorthShore and the University of Chicago. NorthShore's involvement strengthened the University of Chicago's hand fellowship program co-directed by Craig Phillips, MD, and as a result, the program attained even greater national prominence and attracts elite candidates from all over the world.

• Joint Care

In 2016, we welcomed our first NorthShore-based hip and knee fellow, under the leadership of Lalit Puri, MD, Division Head of Adult Reconstruction. Our fellow participates in more than 400 surgical cases per year, travels on our annual Operation Walk Chicago mission trip, and helps generate peer-reviewed clinically relevant research.

• Foot and Ankle

In 2017, three Illinois Bone & Joint Institute orthopaedic surgeons introduced a new Orthopaedic Foot and Ankle Fellowship. This fellowship was created to cover the gamut of foot and ankle pathology by faculty with special expertise in certain elements of this subspecialty. This balanced fellowship will provide a comprehensive experience in training the next generation of orthopaedic foot and ankle specialists.

Education and Motor Skills

The NorthShore Orthopaedic Motor Skills Lab, under the leadership of its director, Howard Sweeney, MD, is a critical educational tool that allows our surgeons to teach and reinforce motor skills. Most importantly, it creates a space for the residents and physicians to improve skills before going to the operating room. The lab includes an arthroscopic simulator specifically designed to train our students, residents and fellows in arthroscopic surgery.

NorthShore's Physician Assistants and Interns

In addition to our fellowship programs, the NorthShore Orthopaedic Institute organizes and onboards more than 25 physician assistant (PA) students completing orthopaedic electives from PA programs across the United States. These students complete one-month rotations with orthopaedic PAs.

In 2014, we introduced our summer internship program for college students. The interns work alongside our surgeons performing data-review, clinic-based and/or biomechanics-based research. Over the course of the program, 14 interns completed the program and several enrolled in medical school.



Grainger Center for Simulation and Innovation Surgical Skills Lab

Annual Trauma Course

The annual trauma course for the resident cadaveric skills training takes place at the Grainger Center for Simulation and Innovation, a state-of-the-art 14-station simulation operating and training center. The program continues to grow under the leadership of David Beigler, MD, Division Head for Trauma. The course was funded and sponsored by DePuy Synthes.

Community Health Center

The Orthopaedic Department increased its dedication to supporting NorthShore's charitable mission through the Community Health Center. We hold two weekly orthopaedic clinics led by our residents. Ravi Bashyal, MD, is currently serving as director for the orthopaedic service and Anand Srinivasan, MD, and Christian Skjong, MD, serve as associate directors.

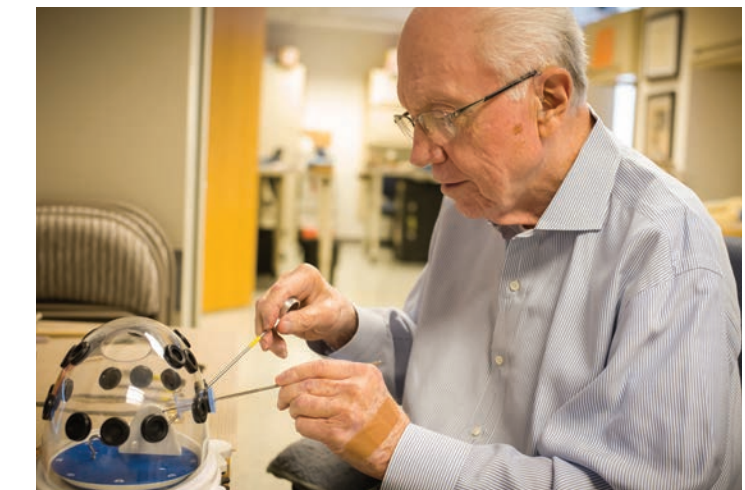
Global Arthroscopy Foundation (GAF)

The NorthShore Orthopaedic Institute also partners with GAF, a foundation established by Howard Sweeney, MD. The NorthShore Orthopaedic Institute welcomes approximately four surgeons from lesser-developed nations for a two-week arthroscopy program that trains international surgeons via one-on-one cadaveric training, operating room observation and hands-on motor skills training. The goal of the program is to impart new skills, where each surgeon is prepared to educate his or her colleagues back home.

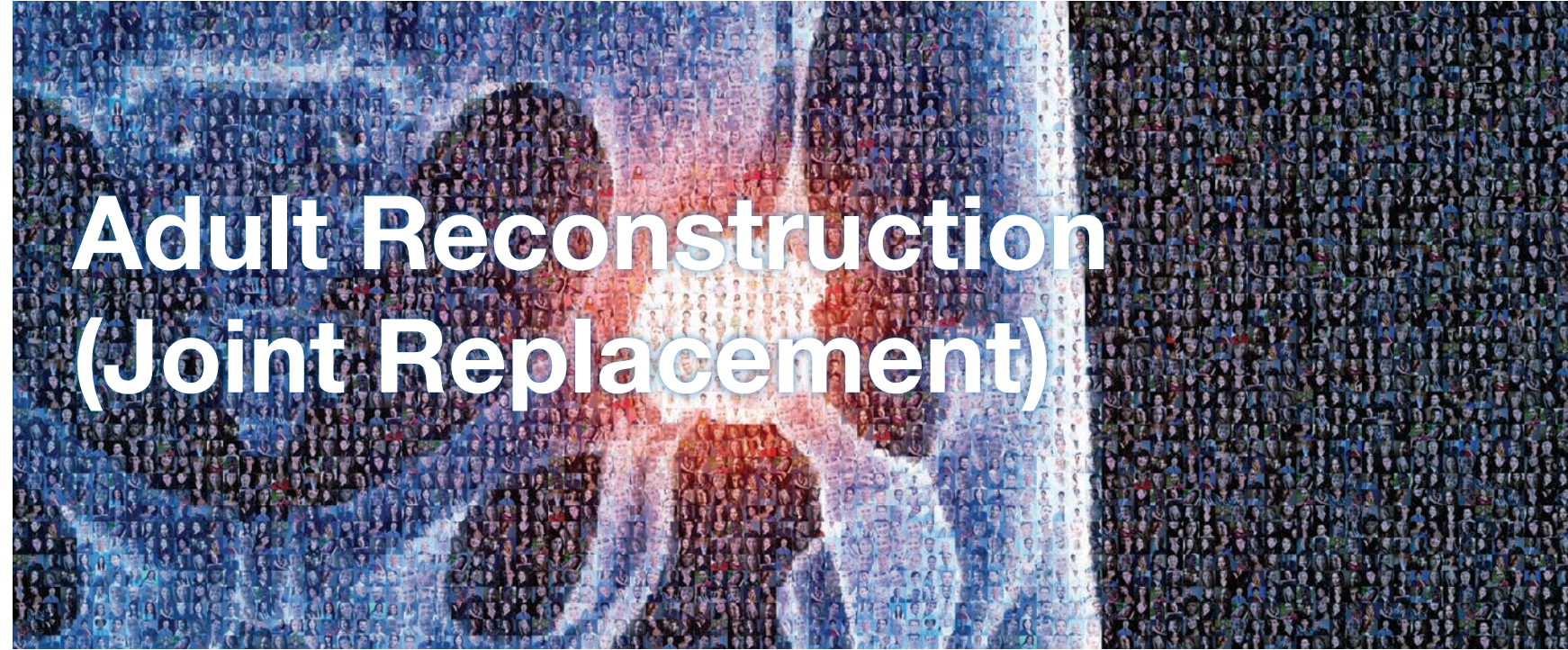
Tying Together a 60-Year Legacy

Dr. Howard Sweeney's career in general orthopaedics started in 1957 at NorthShore Evanston Hospital. Even though he formally retired 15 years ago, he still teaches residents at the NorthShore Orthopaedic Institute every day. "I teach them how to tie four different knots," said Dr. Sweeney. "There are hundreds in the world, but they really only need to know four. And, those four become essential to the surgery working correctly. It is critical to me that when my residents test on knots that they are perfect every time."

What Dr. Sweeney remembers most about his six-decade career is the 30 years he spent caring for the Northwestern University football team. "There was no such thing as sports medicine when I started, but I hope it will be part of my legacy. It's the specialty I enjoy the most."



Dr. Howard Sweeney
Associate Professor Emeritus



Adult Reconstruction (Joint Replacement)

The NorthShore Orthopaedic Institute Division of Adult Reconstruction (Joint Replacement) continues to grow and thrive. Our surgeons performed more than 2,900 joint arthroplasty procedures in fiscal year 2017. The program focuses on taking care of the most complex cases and has become a referral site for the region. Our patient-focused approach and integrated care delivery ensure a seamless transition for patients.

Lalit Puri, MD, MBA, Division Head, attributes the program's success to its robust preoperative education program for patients, best practice pre- and postoperative care pathways, and nursing care with Magnet designation throughout the system.

"Modern-day joint replacement surgery really requires, more so than ever, a multidisciplinary team effort," explained Dr. Puri. "One of the real values we demonstrate is the pride and compassion in the patient care we deliver—from physical to emotional to social."

The NorthShore Orthopaedic Institute's total joint clinical outcomes continue to be among the best in the country. According to the Centers for Medicare

& Medicaid Services, NorthShore's readmission and surgical site infection rates are far lower than other hospitals across the country for both hip and knee replacement.

Precision Reconstruction with Computer-Assisted and Robotic Surgery

Technologies such as computer navigation and patient-specific instrumentation continue to help drive accuracy, outcomes and operating room efficiencies. The Northshore Orthopaedic Institute has expanded its robotically assisted and precision implant joint arthroplasty program, adding a second robot at the Skokie campus and adding robotically assisted total hip arthroplasty and total and partial knee arthroplasty to our services.

"Robotics in orthopaedic surgery has the potential to improve patient outcomes, speed recovery and improve the longevity of the implants," Dr. Puri says. Dr. Raju Ghate explains that he uses 3-D printed custom guides, because they, "provide precision fit tailored to each patient's anatomy, which may lead to improved recovery times."

Total Joint Replacement Center

The Total Joint Replacement Center (TJRC) is a BCBS Blue Distinction Center. This national recognition is based on treatment expertise, number of procedures performed annually and patient outcomes. It is also recognized as United Health Care's Chicago-Area Center of Excellence, and is ranked as "high-performing" in hip and knee replacements by *U.S. News & World Report*.

With an over-30-year history, the TJRC offers care coordination, including "Joint Camp," preoperative education, standardized care pathways and rehabilitation. Rapid-recovery joint replacement incorporates minimally invasive techniques, comprehensive patient education, individualized pain management and focused physical therapy, which allow patients to start walking the same day as surgery. Patients can even be released from the hospital the same day.

Arthritis Center

The comprehensive, multidisciplinary Arthritis Center is a combined effort between physicians from orthopaedic surgery, rheumatology, and physical medicine and rehabilitation. The program is designed to use team-based approaches to provide the appropriate level of care necessary for each patient. This coordinated care center offers expert diagnostic and treatment options for the arthritic patient based on individualized treatment plans that include state-of-the-art research trial opportunities, and both surgical and nonsurgical options.



Dr. Lalit Puri
Division Head of Adult Reconstruction (Joint Replacement)
Vice Chair of Clinical Excellence

Leaving Orthopaedics in Good Hands





When James Kudrna, MD, PhD, arrived at NorthShore in the 1980s, joint replacement was still relatively new, and patients were spending 21 days in the hospital after a hip replacement. Dr. Kudrna and a small committee created a then-revolutionary plan for a five-day stay after joint replacement. Over the years, this plan has been refined, and care pathways modeled on this effort were implemented across NorthShore, resulting in improved outcomes and experience.

In addition to this work, Dr. Kudrna is most proud of recruiting and training the orthopaedic surgeons at the NorthShore Orthopaedic Institute and the surrounding area. He is extremely confident that he is "leaving the shop in good hands." Though Dr. Kudrna is nearing retirement, he plans to stay on as a mentor and continue teaching and performing research.



Dr. James Kudrna
Clinical Associate Professor

Physician Specialists

Lalit Puri, MD, MBA (Division Head) 	Alexander Gordon, MD 	Nasin Rana, MD 	Alexander Tauchen, MD 
Ravi Bashyal, MD 	James Kudrna, MD, PhD 	William Robb, MD 	Richard Wixson, MD 
Arnold Cohn, MD 	Charles Lettvin, MD 	Anand Srinivasan, MD 	 NorthShore Medical Group Physicians
Raju Ghate, MD 	Robert McMillan, MD 	Van Stamos, MD 	 Illinois Bone & Joint Institute Physicians
Jeffrey Goldstein, MD 	Michael O'Rourke, MD 	S. David Stulberg, MD 	



Given the depth and breadth of expertise on our team, we are able to address all spinal pathology including degenerative conditions, tumor, trauma, and adult and pediatric deformity. We continue to enhance patient access and recently expanded our presence in Lake County with the opening of our new Lincolnshire outpatient facility. In 2017, we grew by 13 percent, performing more than 900 surgical cases.

The NorthShore Spine Center

In collaboration with the Departments of Neurosurgery and Physical Medicine and Rehabilitation, we successfully launched the NorthShore Spine Center for the treatment of all spinal disorders, both surgical and nonsurgical. We see new consults within seven days of referral and urgent consults the same day.

Through leadership in both orthopaedic and neurological surgery, the spine surgery service at NorthShore is recognized as a Center of Excellence and a preferred provider with several insurers and third-party payors. Our focus on spine standardization allowed us to achieve this recognition. Standardization

efforts involved developing and implementing quality-of-care initiatives, inpatient care protocols and pathways, cost containment strategies on implants and biologics, and strategies aimed at reducing patients' length of stay in our hospitals. We continue to exceed benchmark goals in reducing perioperative complications resulting in readmission and are continuously striving to improve patient care. Our physicians and nurses work together to hold regular presurgical patient educational classes, and we recently composed a comprehensive educational booklet to help our team fully prepare patients for surgery, their inpatient stay and recovery.

To meet the increasing patient volume, we also worked diligently to create two fully equipped—and more importantly, well-staffed—spine surgery services at both the NorthShore Evanston and NorthShore Skokie Hospital campuses. New technologies in the realm of computer-assisted navigation and minimally invasive spine surgery keep us on the forefront of care.

Motion-Preserving Technologies

The Spine Division is partnering with neurosurgery and industry to develop new motion-preserving technology, such as cervical arthroplasty. Instead of removing the cervical disc and completing a fusion, doctors use prosthetic implants to preserve motion and avoid fusion. "Especially in younger patients, this technology can improve the range of motion of the neck instead of limiting it with a fusion," Dr. Nolden noted. "It's an extremely promising method."

Academics and Research in Regenerative Medicine

Division members work closely with residents from the University of Chicago, teaching future surgeons the latest techniques and standards of spine inpatient and clinical care. Collaborative outcomes-based and new device research projects are ongoing with our colleagues in neurosurgery; our goal this next year is to increase our research efforts and accomplishments. Our attending surgeons regularly hold outreach programs to educate residents and healthcare providers in our community on the options available for comprehensive spine care.



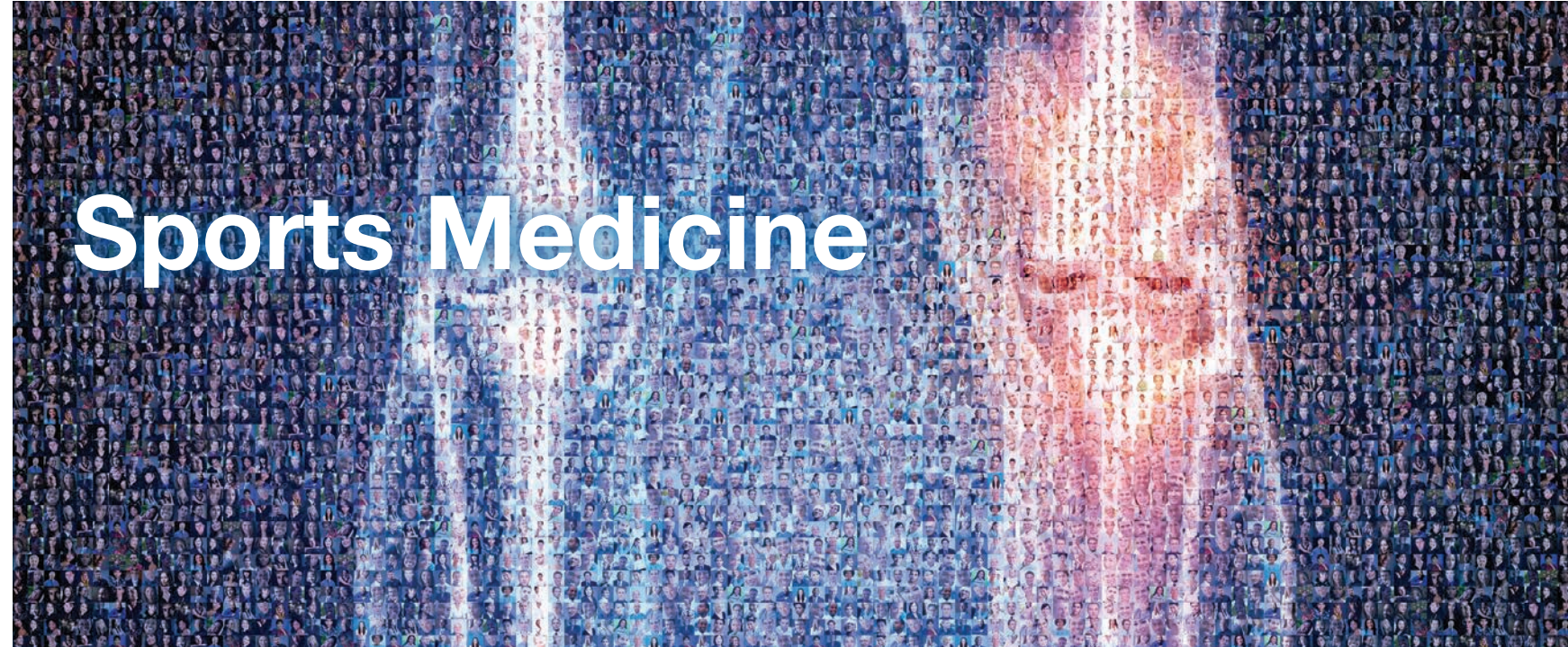
Dr. Mark Nolden
Division Head of Spine

Physician Specialists

- Mark Nolden, MD (*Division Head*)
- Jonathan Erulkar, MD
- Purnendu Gupta, MD
- Eldin Karaikovic, MD, PhD

- Mark Mikhael, MD
- Srdjan Mirkovic, MD
- Gary Shapiro, MD

- NorthShore Medical Group Physicians
- Illinois Bone & Joint Institute Physicians



Sports Medicine

The Division of Sports Medicine includes fellowship-trained orthopaedic surgeons and primary care specialists who treat sports injuries for professional and amateur athletes of all ages. Orthopaedic surgeons in the Sports Medicine Division provide the latest arthroscopic and minimally invasive care for many common sports injuries and conditions, including complex hip, patellofemoral and pediatric issues. Members of the Division also perform complex shoulder reconstruction and replacement. The addition of primary care sports medicine specialists allows for improved efficiency and greater access for patients via convenient walk-in clinics.

"We have a tremendous amount of experience with sports medicine, and our physicians offer the highest level of orthopaedic care across all subspecialties," said Mark Bowen, MD, Division Head of Sports Medicine. "We also take care of some of the finest athletes in Chicago, as well as athletes at beginner levels." Dr. Bowen has served as Head Team Physician for the Chicago Bears for over 25 years.

The NorthShore Orthopaedic Institute offers a unique, comprehensive sports medicine program focused on keeping serious competitors and weekend warriors active both in life and in the game. Our highly skilled physicians have cared for professional athletes on teams that include the Chicago Bears, Chicago Blackhawks, Chicago Cubs, Chicago Fire, USA Hockey, USA Rugby and USA Soccer, as well as Chicago Marathon competitors. Our physicians are also actively involved in research and teaching, and train three University of Chicago sports medicine fellows a year (two in orthopaedics, one in primary care sports).

A Minimally Invasive Alternative to Traditional Anterior Cruciate Ligament (ACL) Repair

Mark Bowen, MD, is involved in the development of a new ACL repair technique that uses a patient's own hamstring tendon to create a graft ligament. "There are many ways to reconstruct an anterior cruciate ligament, and traditional methods involved using grafts that require significant trauma to the knee," stated Bowen.

Though some trauma to the knee is unavoidable, this new method can help avoid some unnecessary pain and a longer recovery. "Using a single hamstring is less traumatic," noted Dr. Bowen. "We take less bone, we place the graft in from the inside, and we accomplish the surgical technique while traumatizing the knee as little as possible. Postsurgical recovery is also easier, and the results have been very good."

Regenerative Medicine

The NorthShore Orthopaedic Institute recently added Trevor Bullock, DO, to its primary care sports medicine team. He is working with Jason Koh, MD, MBA, and Adam Bennett, MD, on research related to regenerative medicine. Dr. Bullock is one of NorthShore's experts on the use of this nonsurgical treatment in orthopaedics. With the addition of Dr. Bullock, NorthShore now offers its patients access to an innovative technology that enables patients' own adult stem cells to repair injured tissues, reduce inflammation and help reduce pain. "We have a very active research and a biomechanics laboratory that collaborates with many members of the Division," Dr. Bowen explained, "and it's extremely promising work."



Dr. Mark Bowen
Division Head of Sports Medicine

Physician Specialists

- Mark Bowen, MD (Division Head)
- Patrick Birmingham, MD
- Marc Breslow, MD
- Eric Chehab, MD
- Bradley Dunlap, MD
- Jason Koh, MD, MBA
- Steven Levin, MD
- Gregory Portland, MD
- Richard Sherman, MD
- Howard Sweeney, MD, Emeritus
- Diego Villacis, MD

Primary Care Sports Medicine

- Carrie Jaworski, MD (Division Head)
- Adam Bennett, MD
- Trevor Bullock, DO
- Eric Hooper, MD
- Hallie Labrador, MD
- Ward McCracken, DO
- Thomas Moran, MD
- Stephen Wiegus, MD
- Anne Marie Zeller, DO

NorthShore Medical Group Physicians
 Illinois Bone & Joint Institute Physicians

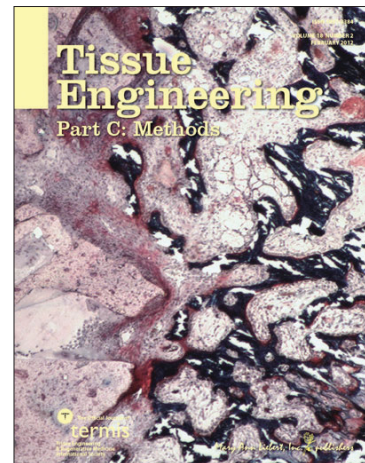
Hip Arthroscopy

Drs. Beigler, Birmingham, and Koh have a combined 40 years of experience in hip arthroscopy and are experts at treating athletic injuries of the hip, including labral tears and loose bodies. Techniques used are at the cutting edge of arthroscopic management of joint injuries, including labral repair and reconstruction, use of 3-D imaging to guide impingement surgery, and new techniques for the arthroscopic repair of the gluteus medius tendon and hip abductors.

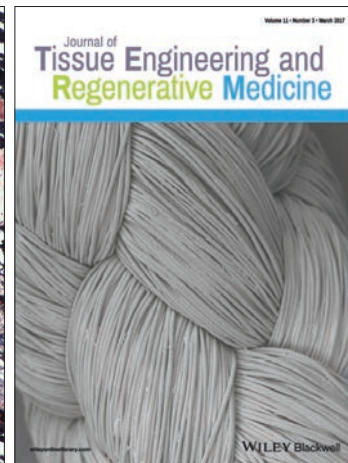
An Artificial ACL

In collaboration with researchers from the McCormick School of Engineering at Northwestern, Dr. Jason Koh has been working on biocompatible scaffolds to replace damaged tissue. The citric-acid-derived scaffold developed for bone and cartilage regeneration was featured as a cover article in *Tissue Engineering*.

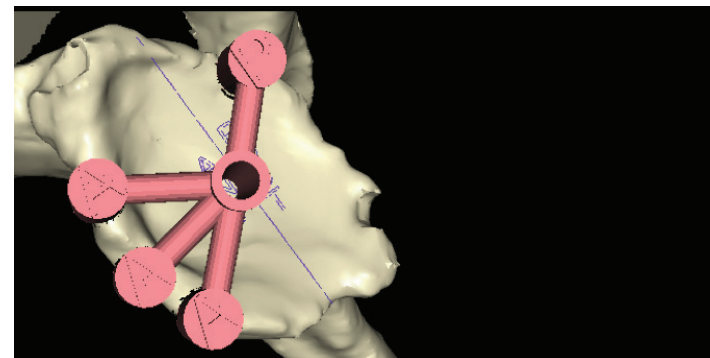
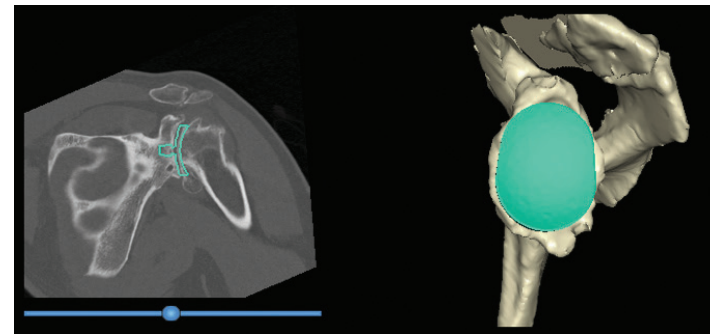
More recently, they developed and tested an artificial ACL made completely of biocompatible materials that can serve as a scaffold for bone and soft tissue regeneration. This artificial ACL was recently the cover article for the *Journal of Tissue Engineering and Regenerative Medicine* and also was featured on such popular media outlets as Fox News.



Citric-acid-derived scaffold featured as a cover article in *Tissue Engineering*



Artificial Anterior Cruciate Ligament (ACL) featured on May 2017 cover of *Journal of Tissue Engineering and Regenerative Medicine*



Computer-Guided Surgery, 3-D Printing and Rapid Recovery After Shoulder Replacement

In shoulder replacement surgery, doctors replace or resurface the ends of the damaged humerus and the glenoid socket with artificial surfaces lined with metal or plastic. Reverse shoulder replacement is a variation for those patients with painful arthritis and severe damage to the rotator cuff muscles. These procedures are able to restore pain-free function. To enhance the precision of these surgeries, NorthShore surgeons use advanced imaging techniques to analyze the anatomy of the joint, and even use virtual reality computer simulations to test various implants prior to the actual procedure. In challenging cases, 3-D printing is used to replicate the joint and create custom guides tailored to match the patient, to ensure that the implants are an exact fit. Articles about NorthShore's 3-D printing experience were recently featured in *U.S. News & World Report*. Patients typically go home the day after surgery and are able to use their hand, wrist and elbow immediately. Recently, researchers in the Division published one of the largest studies ever on shoulder replacement showing that the rate of serious complications was 0.1 to 0.2 percent, or less than one in 500.



School Sports Physicals

At the NorthShore Medical Group Physicians, we want to make sure the kids in our communities are staying safe, which is why we work closely with local high school, junior high and grade school kids to provide sports physicals.

High School Sports Medicine

The NorthShore Orthopaedic Medical Group Physicians and the Illinois Bone & Joint Institute (IBJI) partner with local high schools to work with their football teams. Our partnerships are unique due to the comprehensive services we provide. For example, we include on-site physician coverage for football games and staffing school training rooms weekly, because we understand that students do not have time for doctor visits between classes. The following high schools are covered by our physicians:

- New Trier
- Evanston
- Loyola
- Notre Dame
- Taft
- Niles West
- Maine East
- Glenbrook South
- Glenbrook North
- Deerfield

Sports Concussion Treatment and Diagnosis

The NorthShore Orthopaedic Institute partners with the NorthShore Neurological Institute to provide comprehensive concussion management. The concussion program features nationally recognized experts in the area of brain injury and sports medicine who are experienced in assessing and treating athletes at all levels. Our neurologists, sports medicine physicians, neuropsychologists and

physiatrists have worked with elite athletes from several Chicago professional teams. They work closely with a team's athletic training and medical staff to determine when athletes are safely able to return to their sports for practice and/or competitive play after a concussion.

Dr. Bailes' work with Dr. Bennett Omalu in the diagnosis and care of professional football players with chronic traumatic encephalopathy (CTE) was featured in the movie "Concussion" and has been the subject of multiple articles. He continues to do ground-breaking research in the area of CTE, including the first known diagnosis of this disease in a living patient.

Our sports concussion program is led by the following brain injury experts:



Dr. Julian Bailes
Director
Sports Concussion Program



Dr. Nicole Reams
Associate Director
Sports Concussion Program



Dr. Elizabeth Pieroth
Associate Director
Sports Concussion Program



Dr. Carrie Jaworski
Division Head
Primary Care Sports Medicine



Hand and Upper Extremity

The Hand and Upper Extremity Division cares for both complex and routine hand and upper extremity injuries and diseases. The Division offers a broad range of interventions, from complex microsurgery to the latest, innovative, minimally invasive treatments. Our physicians provide care for arthritis, congenital conditions, acquired pathology, hand and shoulder injuries, and all types of trauma. The overall size and scope of the Division of Hand and Upper Extremity at NorthShore continues to expand steadily. The growth in patient volume allows for an increase in the number of upper extremity specialists, the use of new technology, and the depth and reputation of the teaching program.

"I think it's the commitment of the doctors in our Division that makes us good caregivers," said Leon Benson, MD, Division Head of Hand and Upper Extremity. "I think that when you look at it, this business is mentally and physically tough unless you love doing it. And our physicians love providing top-notch care to patients with hand and upper extremity injuries."

Focus on Advancement

The development of innovative implant designs for the treatment of various hand and upper extremity fractures allows the use of smaller, stronger and biologically more compatible hardware. Less invasive methods of managing Dupuytren's contracture and various upper extremity tendinopathies, including tennis and golfer's elbow, greatly reduced the need for open surgical treatment.

First-Rate Fellowship and Residency Programs

The academic involvement of the Division continues to expand due to the addition of a Hand and Upper Extremity Fellowship. The previous "apprenticeship" style fellowship, which existed at the University of Chicago until 2010, changed into a broad-based academic program due to expanding the program to two fellows per year. A fellowship candidate is at the NorthShore Orthopaedic Institute campus full-time, and many of the Division attending surgeons are key mentors.









Over the last six years, our residency rotations have received consistently high evaluation marks because we offer aspects of orthopaedics most residents do not encounter anywhere else. Because of our many locations, and the higher volume of everyday orthopaedic injuries we see as a result, NorthShore trainees are exposed to more common practice surgeries than they might on another service.

"Orthopaedic residents at the University of Chicago like their rotation with us primarily because the attendings are committed," said Dr. Benson. "And committed usually means a couple of things in my experience as an educator—it's not only being able to provide them a good educational experience, but there's an element of fun. It's got to be fun."



Dr. Leon Benson
 Division Head of Hand and Upper Extremity
 Vice Chair of Academics and Affiliate Affairs

Physician Specialists

Leon Benson, MD (Division Head) 	Seth Levitz, MD 	 NorthShore Medical Group Physicians
Charles Carroll, IV, MD 	Craig Phillips, MD 	 Illinois Bone & Joint Institute Physicians
Robert Gray, MD 	Christian Skjong, MD 	



The Foot and Ankle Division consists of fellowship-trained surgeons who care for the most complex cases. In addition, the Division of Foot and Ankle works collaboratively with members of the Division of Podiatry. Our specialized foot and ankle surgeons are known locally, regionally and nationally for innovative and state-of-the-art techniques, including the most complex procedures, such as primary and revision total ankle replacement and complex hind foot reconstruction. In addition, new techniques and care pathways advance outpatient surgeries, streamlining therapies and expediting rehabilitation to move patients back to their prior level of function as quickly and as easily as possible.

Complex Total Ankle Replacement

Surgeons at NorthShore perform some of the most challenging cases in foot and ankle surgery: revision ankle replacement. Steven Haddad, MD, a past president of the American Orthopaedic Foot & Ankle Society and member of the Division, helped develop new instrumentation and implants to assist in

treating those patients suffering from a failed ankle replacement. NorthShore has become a destination for the treatment of these complex problems and is a leading center in performing ankle replacement surgery.

Smaller Incisions, Faster and Easier Recoveries

The Foot and Ankle Division is focused on performing more arthroscopic procedures due to the various benefits patients experience, including smaller incision sizes, less pain and shorter recovery times. "We're using more biologics, bone morphogenic proteins, ultrasound bone stimulators and thoughtful use of platelet-rich proteins, all of which hasten the healing process," said Amy Jo Ptaszek, MD, Division Head of Foot and Ankle.

The surgeons also work closely with orthotists, who create precise custom or semicustom orthotics, allowing patients to avoid having to live with bulky and restrictive casts and splints.

Hydrogel Implants for Great Toe Arthritis

Foot problems can cause debilitating pain and can interfere with the capacity to live a normal life. "There's no age restriction; it can affect anyone." The need for treatment can stem from trauma, arthritis, heredity or even an improper gait," noted Dr. Ptaszek. "We monitored the literature very closely for several years to examine the outcomes and durability of the Cartiva® implant. The gold standard in treating the great toe has long been fusion, but now we can provide an alternative that retains the patient's motion safely while reducing pain." Remarkably, patients can bear weight on their affected foot immediately and even walk the same day as surgery.

Little Feet, Big Pain

Even little feet can experience foot problems. When a child has flat feet, sometimes his or her bones and joints can handle the alternative alignment easily. Other children are not as lucky. The invention of an implant, the subtalar arthrodesis screw, provides great relief to our pediatric patients. The screw is implanted through a minimally invasive procedure that is designed to correct the alignment of severe, painful flat feet as the child grows.

"As the foot develops over time, the tendons around the implant will strengthen in the appropriate places to prevent the severe issues that can arise from a flat foot," Dr. Ptaszek explained. The treatment can prevent the need for a painful, difficult surgery in the future and can stop pain and malformation of the foot over time.

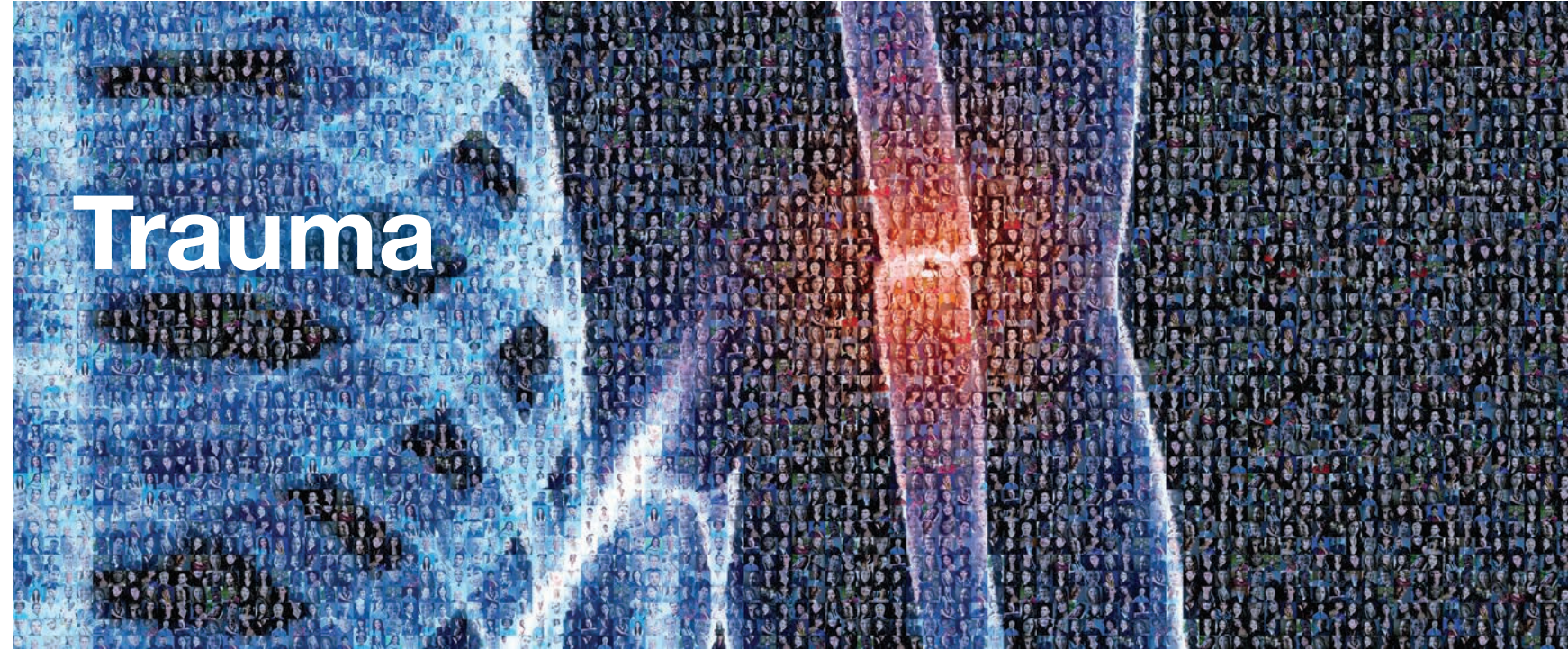


Dr. Amy Jo Ptaszek
Division Head of Foot and Ankle

Physician Specialists

- Amy Jo Ptaszek, MD (Division Head)
- Jamal Ahmad, MD
- Lan Chen, MD
- Steven Haddad, MD
- Armen Kelikian, MD
- Steven Kodros, MD
- Alan League, MD
- Bryan Waxman, MD

NorthShore Medical Group Physicians
 Illinois Bone & Joint Institute Physicians



At the NorthShore Orthopaedic Institute, the Division of Trauma provides unparalleled quality and timely service to all patients who present to NorthShore University HealthSystem facilities with traumatic orthopaedic issues. Led by Division Head, David Beigler, MD—along with doctors Brian Weatherford, MD, and Matthew Cavallero, MD—the trauma program provides state-of-the-art care for many complex injuries.

Over the past few years, Dr. Beigler and his team have seen a high percentage of trauma issues related to the age of area residents. “In the North Shore, we have a lot of patients who have had the good fortune to live long lives,” said Dr. Beigler. “With long lives come age-related issues, such as osteoporosis, and low-energy trauma.” In response to this pattern, Dr. Beigler and the Division Heads of the NorthShore Orthopaedic Institute are developing programs and practices that expand the care provided to trauma patients.

Holistic Approach to Care and Outstanding Outcomes

In an effort to provide orthopaedic patients a holistic approach to their care and to combat the risks of morbidity and mortality associated with geriatric

fractures, the Trauma Division established partnerships with other divisions within the NorthShore Orthopaedic Institute.

For the past five years, the Division applied a dedicated co-management program to approach the treatment of geriatric issues at both the surgical and osteoporotic levels. Through ongoing coordination with David Lovinger, MD, and the hospitalist team, orthopaedic patients receive critical, coordinated care related to their rehabilitation and overall well-being.

This program, coupled with a full armamentarium of state-of-the-art equipment and specially trained staff, provides patients a 360-degree approach to their care and has resulted in excellent outcomes, including a 0 percent risk-adjusted mortality rate for the past five years.

Orthopaedic Trauma Rapid Care

Beginning mid-2017, a multidisciplinary dedicated orthopaedic trauma rapid care pathway was implemented to ensure surgical treatment of patients within 24 hours of admission. Coordinated care protocols supported by the Emergency Department, hospitalists, anesthesia and nursing allow for streamlined evaluation and triage. Led by Drs. Beigler, Weatherford and Cavallero—all fellowship-trained orthopaedic surgeons—the dedicated trauma rooms at NorthShore Glenbrook Hospital allow the Trauma Division to expedite care for patients presenting at any of the four hospitals. Supported by the Level 1 Trauma Center designation at Evanston Hospital and Level II designation at NorthShore Glenbrook, Highland Park and Skokie Hospitals, the trauma program provides advanced care for many complex injuries.

As time is a critical factor in the morbidity and mortality of trauma, especially with hip fracture patients, a dedicated trauma operating room provides treatment to patients within 24 hours of injury. While the Division already has outstanding quality, this new approach expedites care for these patients. The rapid care pathway reduces time patients spend in bed; decreases post-surgery issues, such as pneumonia; and lessens patient need for narcotics.

Hands-On Skills Education

To ensure that all staff maintain a high standard of excellence in patient care, the Division of Trauma conducts ongoing in-service education sessions. These in-service sessions cover the various operating room tables, address commonly used internal and external fixation systems, and offer hands-on educational experiences for operating room personnel.

For the orthopaedic residents, regular workshops in the Orthopaedic Simulation Lab play a critical role in gaining the motor skills to quickly and





accurately reduce and stabilize fractures. Building on these experiences, the Division also hosts an annual resident cadaver course at the Grainger Center for Simulation and Innovation, led by the expert faculty of the Division, which offers a unique opportunity to provide residents instruction in surgical approaches for orthopaedic trauma. To date, subjects such as the pelvis, acetabulum, and upper and lower extremities have been covered.



The Trauma Division is truly a center of excellence for geriatric orthopaedic care. By building on its record of success through continued cooperation with colleagues in other departments and ongoing efforts of staff from the Division Head down, the Division will continue to define and exceed the standards for patient care in the field.

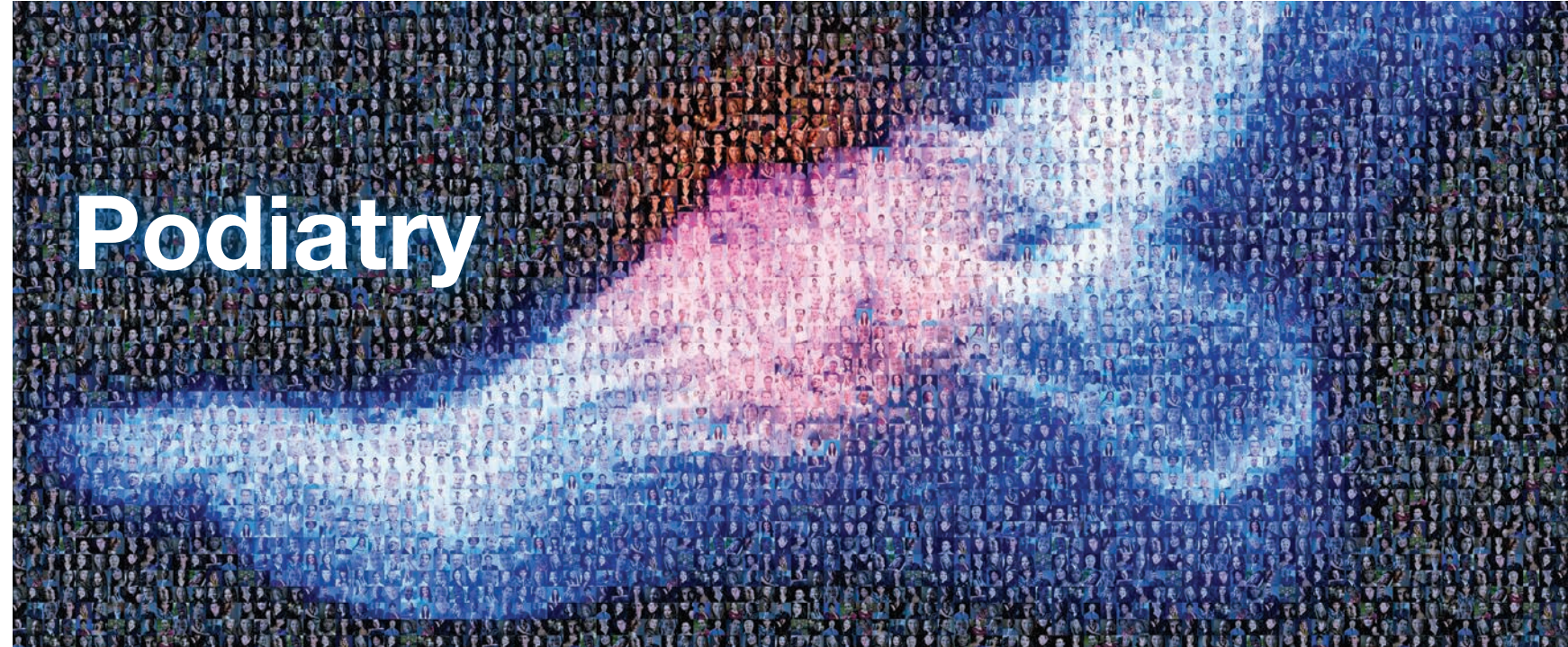


Dr. David Beigler
Division Head of Trauma

Physician Specialists

David Beigler, MD (Division Head)  Rajeev Garapati, MD 
 Matthew Cavallero, MD  Brian Weatherford, MD 
 Scott Cordes, MD 

 NorthShore Medical Group Physicians
 Illinois Bone & Joint Institute Physicians



The Division of Podiatry offers a range of comprehensive services from expert wound care and bunion removal to treating sports injuries and saving limbs. Collaboration with podiatrists allows treatment of nonsurgical foot and ankle conditions through modalities such as medication injections and orthotic footwear to decrease pain and improve function.

While there is some overlap between the foot and ankle team and the podiatry specialists, the podiatrists offer a number of additional services. Michael Weisman, DPM, Division Head of Podiatry, describes podiatrists as “a little bit of dermatologist, neurologist, orthopaedist and palliative care provider. We treat all systems located in the foot.”

Dr. Weisman, who has been the Division Head of Podiatry for 17 years, has more than 30 years of podiatric experience. While podiatry runs in his family—his father was and his brother is a podiatrist—he will tell you the real reason he practices is because it is a great source of “satisfaction to know that I can help relieve someone’s pain and provide comfort.”

New Techniques to Improve Patient Outcomes
The Podiatry Division is constantly investigating ways to improve the work it has been doing for years, such as exploring new ways to correct bunions or repair hammertoes. Many of our podiatrists are active in foot and ankle research.

One area of research is to evolve the use of stem cells to treat plantar fasciitis and Achilles tendon issues. Today, to treat plantar fasciitis, we draw a patient’s blood and mix it with platelet-rich plasma and inject the mix into the plantar fascia. This technique allows us to take a chronic, nonhealing injury and push it to physical repair, leaving a patient pain-free and back on his or her feet.

The team is also exploring options in the treatment of hammertoes. Typically, metallic bone plates and angled fixation devices are used to hold bones in their natural position. Recently, we started using Cartiva, a synthetic cartilage implant. Cartiva is implanted in the first metatarsophalangeal joint, and is designed to repair hammertoes and treat degenerative or post-traumatic arthritis. This treatment option helps reduce pain for patients and allows patients to maintain or improve their range of motion.

Another area of interest is ankle stabilization. Many patients who come to the NorthShore Orthopaedic Institute have a history of rolling their ankles and benefit from ankle stabilization. Paul Goodman, DPM, is taking the lead on implementing a new ankle stabilization surgical procedure that allows patients to wear shoes within two to three weeks rather than the typical six weeks. Dr. Goodman and his team—including Raymond Montoya, DPM, and Bruce Noxon, DPM—have already completed 50 successful procedures.

Comprehensive Multidisciplinary Care for Rare Conditions
One example of the outstanding care provided at the NorthShore Orthopaedic Institute involved a young man in his late 20s who sought out Division Head Michael Weisman, DPM, for treatment of the pain and swelling in his foot. He had been suffering more than a year despite treatment by other doctors. A careful review of radiographs demonstrated an unusual bone tumor as the source of the pain. Dr. Weisman successfully removed the tumor and grafted the site with osteogenic cells to stimulate new bone growth. Further testing revealed that the young man had extrapulmonary tuberculosis myotitis, a rare infection of tuberculosis in the bone. His care was coordinated with NorthShore infectious disease specialists, who were able to eradicate his systemic tuberculosis.

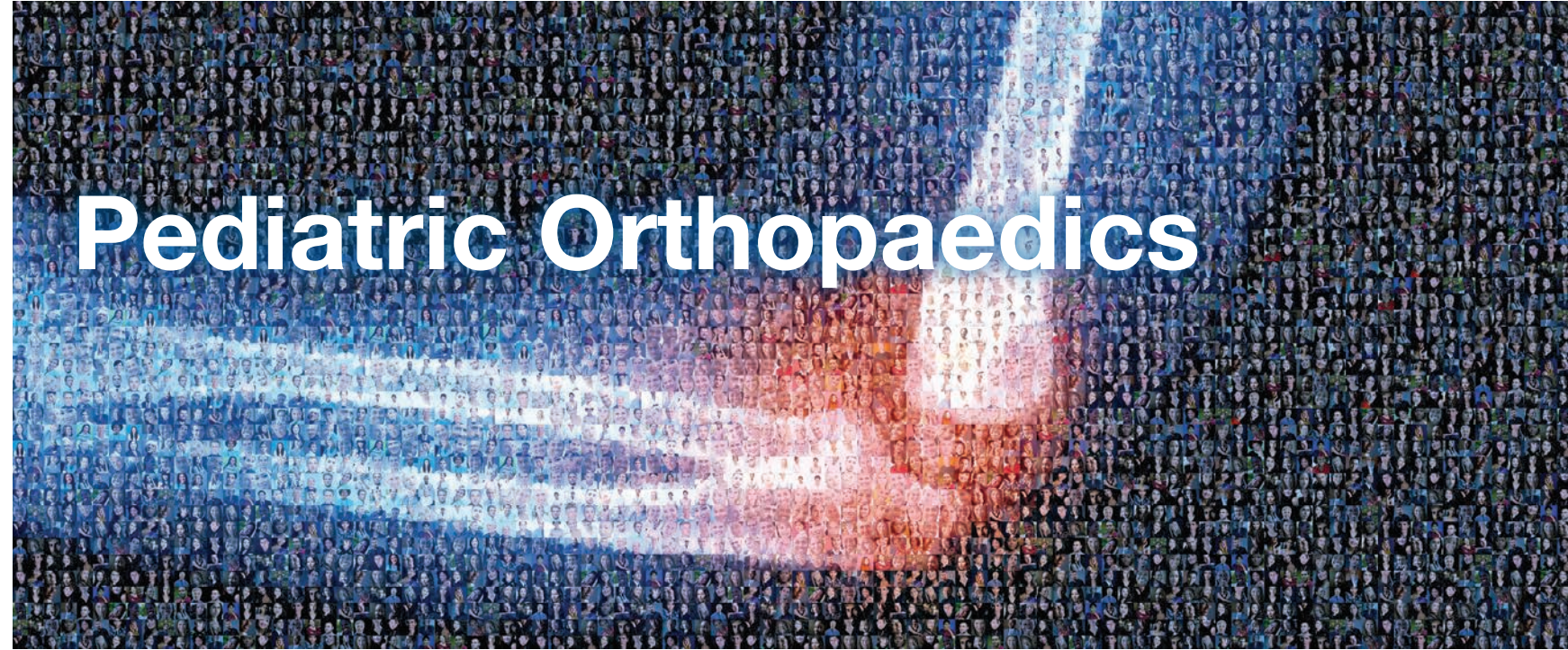


Dr. Michael Weisman
Division Head of Podiatry

Physician Specialists

- | | |
|-----------------------------------------------|----------------------|
| Michael Weisman, DPM (<i>Division Head</i>) | Raymond Montoya, DPM |
| Loren Adelman, DPM | Bruce Noxon, DPM |
| Summer Bochat, DPM | Jeffrey Rager, DPM |
| Timothy Casey, DPM | Gary Rogers, DPM |
| Gary Friend, DPM | Douglas Solway, DPM |
| Carla Gamez, DPM | Howard Stone, DPM |
| Paul Goodman, DPM | Larry Weisman, DPM |
| Michael Hollander, DPM | Robert Zombolo, DPM |

- NorthShore Medical Group Physicians
- Illinois Bone & Joint Institute Physicians



Pediatric Orthopaedics

The NorthShore Orthopaedic Institute offers comprehensive care for patients of all ages, including those from childhood to adolescence. Our fellowship-trained pediatric orthopaedic surgeons use leading-edge nonsurgical and surgical treatments to care for a wide array of pediatric orthopaedic conditions. Our specialists work as a team and use best practices to develop a care plan that best meets the needs for each individual patient.

Pediatric orthopaedic services continue to grow. In 2017, our volume grew by 5 percent over last year. With Verena Schreiber, MD, recently joining the Division, we expect our volume to continue to grow, especially given our efforts to expand access to Glenbrook and Lincolnshire.

3-D Printing for Precise Planning

This technology allows surgeons to use a CT scan or MRI to print out an exact 3-D model for any part of the body. This ability allows the surgeon to obtain better understanding of the anatomy of congenital anomalies, scoliosis or other

bone deformities than cannot be obtained with images alone. These insights enable surgeons to simulate surgery before going to the operating room, making the actual surgery more precise, efficient and safe.

David Roberts, MD, treated a 14-year-old boy who broke his elbow when he was age 6. Before he came to the NorthShore Orthopaedic Institute, a previous failed surgery left him with a significantly deformed and angled arm. His pain and deformity limited his ability to play sports and made him severely self-conscious about his appearance.

At the NorthShore Orthopaedic Institute, Dr. Roberts used advanced imagery and printing techniques to create a 3-D model of the boy's elbow to precisely plan the surgical correction. Of this method, Dr. Roberts said, "There's an old saying in carpentry—measure twice, cut once. With 3-D printing, we can plan on the model so we can get it just right in the operating room with the patient." A year after a successful surgery, the boy is completely healed with no pain, and has returned to full sports and wearing short sleeves.

Mehta Casts for the Littlest Patients

For early-onset scoliosis, which affects children under age 2, Dr. Roberts is one of only a few Chicago-area surgeons specially trained in a nonsurgical treatment called Mehta casting. This corrective casting method can cure infantile scoliosis in most cases without surgery.

One 2-year-old girl affected by severe infantile scoliosis had a sharp curvature of the spine that measured about 60 degrees. After corrective casting, the curvature was corrected, and she is now a normal 5-year-old girl who did not have to undergo major surgery. More impressively, she did not allow the treatment to interfere with ballet dancing—in a glittery purple cast.

Magnetic Growing Rods Are MAGEC

Alexandra Cintron was born with scoliosis. When she was 9 and it was time for the curvature to be corrected, a friend of the family suggested that Alexandra see Dr. Roberts to learn about advanced treatment options. Dr. Roberts proposed a newly approved approach: MAGEC growing rods. These magnetic rods change length, which allows the child to avoid repeated operations.

"We were thrilled that Dr. Roberts considered Alexandra a good candidate for the MAGEC rods," said Alexandra's mom, Aracelis Cintron. "We really wanted to avoid multiple surgeries for her."

In the fall of 2016, Alexandra had successful surgery to implant MAGEC rods. Since then, she comes in every few weeks for a magnetic treatment to lengthen the rod. If you ask her how much she has grown, her eyes sparkle as she says proudly, "Almost two inches!"

For her mom and dad, that is the real magic. They get to see their daughter standing proudly, growing strong and maintaining that smile. "We're grateful that Dr. Roberts is by our side. He treats Alexandra like she's his own and truly cares for our whole family."



Dr. David Roberts

Physician Specialists

- David Roberts, MD
- Verena Schreiber, MD

- NorthShore Medical Group Physicians
- Illinois Bone & Joint Institute Physicians

Select Current Research

Active Orthopaedic Clinical Trials May 2017

Principal Investigator	Trial
R. Bashyal; S. Shah	How do Orthopaedic Surgeons Determine Post-Op Complication Risk in Elective Knee Arthroplasty Surgery—A Think Out Loud Study
R. Ghate; R. Bashyal – EH 15-261	Evaluation of Zimmer® CAS OSU X-Ray Knee in Total Knee Arthroplasty; Technical Outcomes
S. Haddad+ – EH 15-362	Clinical and Radiographic Outcomes of Revision Total Ankle Arthroplasty Using an Intramedullary—Referencing Implant
S. Haddad+ – EH 08-325	Assessing Fusion Using OP-1 in Complex Foot and Ankle Reconstruction
E. Karaikovic – EH 12-415	Kinesiology of the Thoracolumbar Spine Motion in the Physiologic and Certain Pathologic Conditions
E. Karaikovic – EH 16-300	Success Rate of One and Two Level Posterior Spinal Fusion of the Lumbar Spine in Obesity
J. Koh – EH 16-010	Biceps Tenotomy or Tenodesis in Treating Long Head of the Biceps Pathology: A Prospective Randomized Controlled Trial
J. Koh – EH 14-120	Phase 3 Prospective, Randomized, Partially Blinded Multi-Center Study to Measure the Safety and Efficacy of NOVOCART 3D Study
J. Koh – EH 14-326	Hip Injuries and Labral Tears in the NCAA
J. Koh – EH 16-285	Justifying Patellar Instability Treatment by Early Results (JUPITER)
J. Koh – EH 15-315	Sternoclavicular Joint Injuries in the National Football League
J. Koh – EH 17-199	Does Intra-Articular Platelet-Rich Plasma Injection Provide Superior Outcomes Compared with Viscosupplementation in the Treatment of Knee Osteoarthritis PRP vs. HA
J. Koh – EH 17-172	A Prospective, Single-Blinded, Multi-Center, Randomized, Controlled, Pivotal Study to Assess the Safety and Effectiveness of the InSpace™ Device for Treatment of Full Thickness Massive Rotator Cuff Tears
J. Kudrna – EH 13-219	Clinical Follow-Up of ASR Patients Post Recall
J. Kudrna – EH 13-246	Cross-Sectional, Multi-Center Evaluation of 6-Year Metal Ion Trends for ASR XL Total Hip Replacement System (11012) with DePuy Orthopaedics, Inc.
J. Kudrna – EH 16-159	Historical Outcomes of the ASR Hip System in Total Hip Arthroplasty and Total Hip Resurfacing: A Retrospective Chart Review
J. Kudrna – EH 17-098 A. Harbin (Fellow)	Evaluation of Gender Differences, Time to Revision, and Metal Ion Levels in DePuy ASR THAs
M. Mikhael+ – EH 16-196	ViviGen® Cellular Bone Matrix Anterior Cervical Disectomy and Fusion Outcomes Study
L. Puri – P. Leung (Fellow)	The Effects to Total Knee and Hip Arthroplasty on HgA1C in Diabetic Patients
D. Villacis	MRI vs. 3-D CT Scan for Assessment of Glenoid Bone Loss
D. Villacis	Epidemiology of Shoulder Dislocation in National Collegiate Athletic Association Sports: 2009–2010 to 2014–2015 Academic Years
L. Puri – EH 14-181	Evaluation of the Results of Hip and Knee Replacement
J. Koh – EH 16-010	Biceps Tenotomy or Tenodesis in Treating Long Head of the Biceps Pathology: A Prospective Randomized Controlled Trial
M. O'Rourke+ – EH 17- 193	Compassionate Use with an Investigational Device-Modified Genesis II
R. Ghate – EH 15-279	Anatomic Characteristics of the Arthritic Knee
A. Gordon – EH 15-400	Prospective Clinical Study Evaluating Tibiofemoral Rotational Alignment Using Intraoperative Sensing During Total Knee Arthroplasty
P. Birmingham – EH 16-270	Pre-Existing Hip Pathology as a Predictor of Outcomes in National Football League Athletes

Principal Investigator

D. Villacis – EH 17-067

D. Villacis EH 17-068

J. Koh EH 14-264

J. Koh – EH 17-120

J. Koh – EH 16-310

S. Levin – EH 17-022

S. Levin – EH 15-218

A. Srinivasan, J.Koh, L. Puri – EH 17-050

Trial

Epidemiology of Shoulder Dislocations in National Collegiate Athletic Association Sports: 2009–2010 to 2014–2015 Academic Years

MRI vs 3-D CT Scan for Assessment of Glenoid Bone Loss

Purchased Service Agreement—Rehabilitation Institute of Chicago (RIC)

Research Agreement—Cleveland Clinic: Influence of Tibial Tuberosity Distalization on Patellofemoral Tracking and Contact Pressures: A Dynamic Computational Simulation Study

Agreement for Research—Rehabtek Corp (Li-Qun Zhang)

Stabilizing Effect of Labral Augmentation: A Cadaveric Model

Stabilizing Effect of Labral Augmentation: A Cadaveric Model

Use of Dual Energy CT Scans to Evaluate Accuracy of Robotic Total Knee Arthroplasty Component Placement

+ Member of Illinois Bone & Joint Institute

Select Department of Orthopaedic Surgery Publications

2017

Shah RR⁺, Goldstein JM⁺, Gordon AC⁺, Jimenez ML⁺, Goldstein WM⁺. Alarming High Rate of Implant Fractures in One Modular Femoral Stem Design: A Comparison of Two Implants. *J Arthroplasty.* October 3, 2017. 3157-3162.

Weatherford BM⁺, Anderson JG, Bohay DR. Management of Tarsometatarsal Joint Injuries. *J Am Acad Orthop Surg.* July 2017. 25(7): 469-479. PubMed PMID: 28574939.

Divi SN, Mikhael MM⁺. Use of Allogenic Mesenchymal Cellular Bone Matrix in Anterior and Posterior Cervical Spinal Fusion: A Case Series of 21 Patients. *Asian Spine J.* June 2017. (3):454-462. doi: 10.4184/asj.2017.11.3.454. Epub 2017 Jun 15. PubMed PMID: 28670414; PubMed Central PMCID: PMC5481601.

Sanchis-Alfonso V, Koh J. Joint-Preserving Osteotomies for Isolated Patellofemoral Osteoarthritis: Alternatives to Arthroplasty. *Am J Orthop* (Belle Mead NJ). May/June 2017. 46(3):139-145. PubMed PMID: 28666037.

Koh JL, Zwahlen BA, Altchek DW, Zimmerman TA. Arthroscopic Treatment Successfully Treats Posterior Elbow Impingement in an Athletic Population. *Knee Surg Sports Traumatol Arthrosc.* May 22, 2017. doi: 10.1007/s00167-017-4563-1. [Epub ahead of print] PubMed PMID: 28534159.

Schipper ON, Haddad SL⁺, Pytel P, Zhou Y. Histological Analysis of Early Osteolysis in Total Ankle Arthroplasty. *Foot Ankle Int.* April 2017. 38(4): 351-359. doi: 10.1177/1071100716682333. Epub 2016 Dec 1. PMID: 2836790.

Schipper ON, Pytel P, Zhou Y, Haddad SL⁺. Early Onset Osteolysis in Total Ankle Arthroplasty: A Histological Analysis. *Foot Ankle Int.* April 2017. 38(4): 351-359. PMID 2836790.

Savin D, Piponov H, Goldstein JM⁺, Youderian A. Humeral Head Sizing Using Extra-Articular Landmarks on Conventional Radiographs. *Surg Radiol Anat.* March 2, 2017.

Weatherford BM⁺, Bohay DR, Anderson JG. Open Reduction and Internal Fixation vs. Primary Arthrodesis for Lisfranc Injuries. *Foot Ankle Clin.* March 2017. 22(1): 1-14. Review. PMID: 28167055.

Mikhael M⁺, Brooks JT, Akpolat YT, Cheng WK. Rotation Effect and Anatomic Landmark Accuracy for Midline Placement of Lumbar Artificial Disc under Fluoroscopy. *Eur Spine J.* March 2017. 26(3):794-798. doi: 10.1007/s00586-015-3990-2. Epub 2015 May 14. PubMed PMID: 25971356.

Chung EJ, Sugimoto MJ, Koh J, Ameer GA. A Biodegradable Tri-Component Graft for Anterior Cruciate Ligament Reconstruction. *J Tissue Eng Regen Med.* March 2017. 11(3):704-712. doi: 10.1002/term.1966. Epub 2014 Nov 21. PubMed PMID: 25414080.

Edelstein AI, Weiner JA, Cook RW, Chun DS, Monroe E, Mitchell SM, Kannan A, Hsu WK, Stulberg SD, Hsu EL. Intra-Articular Vancomycin Powder Eliminates Methicillin-Resistant *S. Aureus* in a Rat Model of a Contaminated Intra-Articular Implant. *J Bone Joint Surg Am.* February 1, 2017. 99(3):232-238. doi: 10.2106/JBJS.16.00127. PubMed PMID: 28145954.

Koh JL, Gupta K. Evaluation of Repair of the Hip Labrum under Simulated Full Weight-Bearing. *Hip Int.* February 21, 2017. 27(1):104-109. doi: 10.5301/hipint.5000472. Epub 2017 Jan 24. PubMed PMID: 28127741.

Ahmad J, Ahmad S, Jones K. Treatment of Plantar Fasciitis with Botulinum Toxin: A Randomized, Placebo-Controlled, Double-Blinded, Prospective Study. *Foot Ankle Int.* 38 (1): pages in press, 2017. PMID 27630253.

Zeller AM. Choosing Wisely: Deep Vein Thrombosis. Informational publication for patients, coaches and families. SportsMedToday.com. Spring 2017.

2016

Zhang Q, Shi LL, Ravella KC, Koh J, Wang S, Liu C, Li G, Wang J. Distinct Proximal Humeral Geometry in Chinese Population and Clinical Relevance. *J Bone Joint Surg Am.* December 21, 2016. 98(24):2071-2081. doi: 10.2106/JBJS.15.01232. PubMed PMID: 28002370.

Omid R, Kidd C, Yi A, Villacis D, White E. Measurement of Clavicle Fracture Shortening Using Computed Tomography and Chest Radiography. *Clin Orthop Surg.* December 2016. 8(4):367-372. Epub 2016 Nov 4. PubMed PMID: 27904717; PubMed Central PMCID: PMC5114247.

Koh J, Logli AL. Retropatellar Accessory Portals for Improved Access to the Patella: Anatomic Description and Evaluation of Safety. *Orthop J Sports Med.* November 23, 2016. 4(11):2325967116672445. eCollection 2016 Nov. PubMed PMID: 27900340; PubMed Central PMCID: PMC5122835.

Koh J, Yi SJ, Ren Y, Zimmerman TA, Zhang LQ. Tibiofemoral Contact Mechanics with Horizontal Cleavage Tear and Resection of the Medial Meniscus in the Human Knee. *J Bone Joint Surg Am.* November 2, 2016. 98(21):1829-1836. PubMed PMID: 27807116.

Leung P, Kudrna JC. Growth of an Intrapelvic Pseudotumor Associated with a Metal-on-Metal Total Hip Arthroplasty after Revision Arthroplasty Causing a Femoral Nerve Neuropathy. *Arthroplast Today.* August 21, 2016. 2(3):105-109. doi:10.1016/j.artd.2016.07.001. eCollection 2016 Sep. PubMed PMID: 28326410; PubMed Central PMCID: PMC5045470.

Gjolaj JP, Carrino JA, Mikhael MM⁺, Bederman SS, Sciubba DM, Khanna AJ. Contemporary Radiation Reduction Strategies for Spine Surgery and Interventional Spine Procedures. *Spine Line.* July/August 2016. 12-14.

Goldstein JM⁺, Fehring TK, Fehring K. Adverse Local Tissue Reactions in Asymptomatic Modular Metal-on-Metal Total Hips May Decrease Over Time. *J Arthroplasty.* July 2016. 31 (7):1589-94.

LaPrade RF, Dragoo JL, Koh J, Murray IR, Geeslin AG, Chu CR. AAOS Research Symposium Updates and Consensus: Biologic Treatment of Orthopaedic Injuries. *J Am Acad Orthop Surg.* July 2016. 24(7):e62-78. doi: 10.5435/JAAOS-D-16-00086. PubMed PMID: 27227987.

Roberts DW, Saglam Y, De La Rocha A, Frasquillo BN, Tulchin-Francis K, Kim HK. Long-Term Outcomes of Operative and Nonoperative Treatment of Congenital Coxa Vara. *J Pediatr Orthop.* June 2, 2016. [Epub ahead of print] PubMed PMID: 27261966.

Sisko ZW, Lu M, Puri L. The 72-Hour Medicare Mandate After Total Joint Arthroplasty: Is This Medically Necessary? *J Arthroplasty.* May 2016. 31(5):947-51. doi: 10.1016/j.arth.2015.11.001. Epub 2015 Nov 10. PubMed PMID: 26723859.

Morrell NT, Harris AP, Skjong C⁺, Akelman E. Erratum: Carpal Tunnel Release: Do We Understand the Biomechanical Consequences? *J Wrist Surg.* May 2016. 5(2):167. doi: 10.1055/s-0036-1580088. Epub 2016 March 4. PubMed PMID: 27104086; PubMed Central PMCID: PMC4838461.

Gil JA, Skjong C⁺, Katarincic JA, Got C. Flexor Tendon Repair with Looped Suture: 1 vs. 2 Knots. *J Hand Surg Am.* March 2016. 41(3):422-6. doi: 10.1016/j.jhsa.2015.12.011. Epub 2016 Jan 16. PubMed PMID: 26787411.

Guelich DR, Xu D, Koh J, Nuber GW, Zhang LQ. Different Roles of the Medial and Lateral Hamstrings in Unloading the Anterior Cruciate Ligament. *Knee.* January 2016. 23(1):97-101. doi: 10.1016/j.knee.2015.07.007. PubMed PMID: 26256427

Waljee JF, Ladd A, MacDermid JC, Rozental TD, Wolfe SW, Benson LS⁺, Calfee RP, Dennison DG, Hanel DP, Herzberg G, Hotchkiss R, Jupiter JB, Kaufmann RA, Lee SK, Ozer KO, Ring DC, Ross M, Stern PJ. A Unified Approach to Outcomes Assessment for Distal Radius Fractures. *J Hand Surg.* 2016. 41:4, 565-573. <http://dx.doi.org/10.1016/j.jhsa.2016.02.001>.

Ahmad J, Jones K. Comparison of Osteochondral Autografts and Allografts for Treatment of Recurrent or Large Talar Osteochondral Lesions. *Foot Ankle Int.* 37 (1): 40-50, 2016. PMID: 26333683.

Ahmad J, Karim A, Daniel J. Classification and Relationship of Plantar Heel Spurs in Patients with Plantar Fasciitis. *Foot Ankle Int.* 37 (9): 994-1000, 2016. PMID 27177888.

Ahmad J, Jones K, Raikin S. Treatment of Chronic Achilles Ruptures with Large Defects. *Foot Ankle Spec.* 9 (5): 400-408, 2016. PMID 27000133.

Ahmad J, Jones K. A Randomized, Prospective Comparison of Bioabsorbable and Steel Screw Fixation of Lisfranc Injuries. *J Orthop Trauma.* 30 (12): 676-681, 2016. PMID 27496717.

Zeller AM. Ask 5 Questions: Concussion. Informational publication for patients, coaches and families. SportsMedToday.com. Summer 2016.

Zeller AM. Choosing Wisely: Advanced Cardiac Imaging in Asymptomatic Adults. Informational publication for patients, coaches and families. SportsMedToday.com. Spring 2016.

2015

Dhand S, Stulberg SD, Puri L, Karp J, Ryu RK, Lewandowski RJ. The Role of Potentially Retrievable Inferior Vena Cava Filters in High-Risk Patients Undergoing Joint Arthroplasty. *J Clin Diagn Res.* December 2015. 9(12):TC01-3. doi: 10.7860/JCDDR/2015/11397.6890. Epub 2015 Dec 1. PubMed PMID: 26816965; PubMed Central PMCID: PMC4717762.

Wanke TR, McDevitt JL, Jung MJ, Meyer M, Puri L, Gonzalez CM, Saucedo JM. Integrating Business Education in Medical Schools: A Multicenter Survey. *Physician Leadersh J.* November-December 2015. 2(6):54-9. PubMed PMID: 26685462.

Angele P, Fritz J, Albrecht D, Koh J, Zellner J. Defect Type, Localization and Marker Gene Expression Determines Early Adverse Events of Matrix-Associated Autologous Chondrocyte Implantation. *Injury.* October 2015. 46 Suppl 4:S2-9. doi: 10.1016/S0020-1383(15)30012-7. PubMed PMID: 26542862.

Zeller AM, Briskin S, Sizemore M. Case Study: Athlete with Supraventricular Tachycardia. American Academy of Pediatrics—Council on Sports Medicine and Fitness. Epublished October 2015.

Stulberg SD, Goyal N. Which Tibial Tray Design Achieves Maximum Coverage and Ideal Rotation: Anatomic, Symmetric or Asymmetric? An MRI-Based Study. *J Arthroplasty.* October 2015. 30(10):1839-41. doi: 10.1016/j.arth.2015.04.033. Epub 2015 May 5. PubMed PMID: 2597659

Patel AR, Sweeney P, Ochenjele G, Wixson R, Stulberg SD, Puri LM. Radiographically Silent Loosening of the Acetabular Component in Hip Arthroplasty. *Am J Orthop* (Belle Mead NJ). September 2015. 44(9):406-10. PubMed PMID: 26372749.

Goyal N, Patel AR, Yaffe MA, Luo MY, Stulberg SD. Does Implant Design Influence the Accuracy of Patient-Specific Instrumentation in Total Knee Arthroplasty? *J Arthroplasty.* September 2015. 30(9):1526-30. doi: 10.1016/j.arth.2015.03.019. Epub 2015 Mar 31. PubMed PMID: 25861920.

Reddy D, Mikhael MM⁺, Shapiro GS, Farrell T. Extensive Deep Venous Thrombosis Resulting from Anterior Lumbar Spine Surgery in a Patient with Iliac Vein Compression Syndrome: A Case Report and Literature Review. *Global Spine J.* August 2015. 5(4):e22-7. doi: 10.1055/s-0034-1396431. Epub 2014 Dec 22. PubMed PMID: 26225289; PubMed Central PMCID: PMC4516724.

Actis L, Srinivasan A, Lopez-Ribot JL, Ramasubramanian AK, Ong JL. Effect of Silver Nanoparticle Geometry on Methicillin Susceptible and Resistant *Staphylococcus Aureus* and Osteoblast Viability. *J Mater Sci Mater Med.* July 2015. 26(7):215. doi: 10.1007/s10856-015-5538-8. Epub 2015 Jul 21. PubMed PMID: 26194976.

Goyal N, Stulberg SD. Evaluating the Precision of Preoperative Planning in Patient-Specific Instrumentation: Can a Single MRI Yield Different Preoperative Plans? *J Arthroplasty.* July 2015. 30(7):1250-3. doi: 10.1016/j.arth.2015.02.021. Epub 2015 Feb 26. PubMed PMID: 25762454.

continued

+ Member of Illinois Bone & Joint Institute

Select Department of Orthopaedic Surgery Publications

Smyth MP, Koh J. A Review of Surgical and Nonsurgical Outcomes of Medial Knee Injuries. *Sports Med Arthrosc.* June 2015. 23(2):e15-22. doi:10.1097/JSA.0000000000000063. Review. PubMed PMID: 25932882.

Eleswarapu A, Salib CC, Mikhael MM+. Radiographic Lucency around Pedicle Screws with Cobalt Chromium Rod Constructs in the Setting of Lumbar Fusion. *MOJ Orthop Rheumatol.* April 2015. 2(4).

Jiang JJ, Schipper ON, Whyte N, Koh J, Toolan BC. Comparison of Perioperative Complications and Hospitalization Outcomes after Ankle Arthrodesis vs. Total Ankle Arthroplasty from 2002 to 2011. *Foot Ankle Int.* April 2015. 36(4):360-8. doi: 10.1177/1071100714558511. Epub 2014 Oct 30. PubMed PMID: 25358807.

Chow I, Patel RM, Stulberg SD. Short Stem Metaphyseal-Engaging Femoral Implants: A Case-Controlled Radiographic and Clinical Evaluation with Eight-Year Follow-Up. *J Arthroplasty.* April 2015. 30(4):600-6. doi: 10.1016/j.arth.2014.01.003. Epub 2014 Jan 10. PubMed PMID: 25680446.

Schipper ON, Jiang JJ, Chen L, Koh J, Toolan BC. Effect of Diabetes Mellitus on Perioperative Complications and Hospital Outcomes after Ankle Arthrodesis and Total Ankle Arthroplasty. *Foot Ankle Int.* March 2015. 36(3):258-67. doi: 10.1177/1071100714555569. Epub 2014 Nov 20. PubMed PMID: 25413307.

Nunley RM, Nam D, Bashyal RK, Della Valle CJ, Hamilton WG, Berend ME, Parvizi J, Clohisy JC, Barrack RL. The Impact of Total Joint Arthroplasty on Sexual Function in Young, Active Patients. *J Arthroplasty.* February 2015. 30(2):335-40. doi:10.1016/j.arth.2014.09.029. Epub 2014 Oct 2. PubMed PMID: 25449592.

Koh J, Stewart C. Patellar Instability. *Orthop Clin North Am.* January 2015. 46(1):147-57. doi: 10.1016/j.ocl.2014.09.011. Review. PubMed PMID: 25435044.

Zeller AM, Drummond E. Labyrinthitis. In **Domino FJ** (Ed.), *The 5-Minute Clinical Consult* 2015, Philadelphia: Lippincott Williams and Wilkins.

2014

Koh J, Marcus MS. Computer-Assisted Anterior Cruciate Ligament (ACL) Reconstruction: The US Perspective. *Sports Med Arthrosc.* December 2014. 22(4):206-14. doi: 0.1097/JSA.0000000000000051. Review. PubMed PMID: 25370875.

Jiang JJ, Phillips CS+, Levitz SP, Benson LS+. Risk Factors for Complications following Open Reduction Internal Fixation of Distal Radius Fractures. *J Hand Surg Am.* December 2014. 39(12):2365-72. doi: 10.1016/j.jhsa.2014.09.016. Epub 2014 Oct 29. PubMed PMID: 25447002.

Jiang JJ, Toor AS, Shi LL, Koh J. Analysis of Perioperative Complications in Patients after Total Shoulder Arthroplasty and Reverse Total Shoulder Arthroplasty. *J Shoulder Elbow Surg.* December 2014. 23(12):1852-9. doi: 10.1016/j.jse.2014.04.008. Epub 2014 Aug 23. PubMed PMID: 25156959.

Ramo BA, Roberts DW, Tuason D, McClung A, Paraison LE, Moore HG IV, Sucato DJ. Surgical Site Infections after Posterior Spinal Fusion for Neuromuscular Scoliosis: A 30-Year Experience at a Single Institution. *J Bone Joint Surg Am.* December 17, 2014. 96(24):2038-48. doi: 10.2106/JBJS.N.00277. PubMed PMID: 25520337.

Eleswarapu A, Mikhael MM+, Koh J. Number of Recent Inpatient Admissions as a Risk Factor for Increased Complications, Length of Stay, and Cost in Patients Undergoing Posterior Lumbar Fusion. *Spine (Phila Pa 1976).* December 15, 2014. 39(26):2148-56. doi: 10.1097/BRS.0000000000000639. PubMed PMID: 25271515.

Cannon WD, Garrett WE Jr, Hunter RE, Sweeney HJ, Eckhoff DG, Nicandri GT, Hutchinson MR, Johnson DD, Bisson LJ, Bedi A, Hill JA, Koh J, Reinig KD. Improving Residency Training in Arthroscopic Knee Surgery with Use of a Virtual-Reality Simulator: A Randomized Blinded Study. *J Bone Joint Surg Am.* November 5, 2014. 96(21):1798-806. doi: 10.2106/JBJS.N.00058. PubMed PMID: 25378507.

Toor AS, Jiang JJ, Shi LL, Koh JL. Comparison of Perioperative Complications after Total Elbow Arthroplasty in Patients with and without Diabetes. *J Shoulder Elbow Surg.* November 2014. 23(11):1599-606. doi: 10.1016/j.jse.2014.06.045. Epub 2014 Sep 9. PubMed PMID: 25213826.

Yaffe M, Luo M, Goyal N, Chan P, Patel A, Cayo M, Stulberg SD. Clinical, Functional, and Radiographic Outcomes Following Total Knee Arthroplasty with Patient-specific Instrumentation, Computer-assisted Surgery, and Manual Instrumentation: A Short-term Follow-up Study. *Int J Comput Assist Radiol Surg.* September 2014. 9(5):837-44. doi: 10.1007/s11548-013-0968-6. Epub 2013 Dec 13. PubMed PMID: 24337791.

Patel AR, Talati RK, Yaffe MA, McCoy BW, Stulberg SD. Femoral Component Rotation in Total Knee Arthroplasty: An MRI-based Evaluation of our Options. *J Arthroplasty.* August 2014. 29(8):1666-70. doi: 10.1016/j.arth.2014.02.033. Epub 2014 Mar 5. PubMed PMID: 24746490.

Koh J, Stewart C. Patellar Instability. *Clin Sports Med.* July 2014. 33(3):461-76. doi: 10.1016/j.csm.2014.03.011. Epub 2014 May 29. Review. PubMed PMID: 24993410.

Drakos M, Birmingham P, Delos D, Barnes R, Murphy C, Weiss L, Warren R. Corticosteroid and Anesthetic Injections for Muscle Strains and Ligament Sprains in the NFL. *HSS J.* July 2014. 10(2):136-42. doi: 10.1007/s11420-014-9395-7. Epub 2014 May 21. PubMed PMID: 25050097; PubMed Central PMCID: PMC4071464.

Saucedo JM, Marecek GS, Wanke TR, Lee J, Stulberg SD, Puri L. Understanding Readmission after Primary Total Hip and Knee Arthroplasty: Who's at Risk? *J Arthroplasty.* February 2014. 29(2):256-60. doi: 10.1016/j.arth.2013.06.003. Epub 2013 Aug 17. PubMed PMID: 23958236.

Patel RM, Stulberg SD. The Rationale for Short Uncemented Stems in Total Hip Arthroplasty. *Orthop Clin North Am.* January 2014. 45(1):19-31. doi: 10.1016/j.ocl.2013.08.007. Epub 2013 Oct 10. Review. PubMed PMID: 24267204.

Cassard X, Cavaignac E, Maubisson L, Bowen M. Anterior Cruciate Ligament Reconstruction in Children with a Quadrupled Semitendinosus Graft: Preliminary Results with Minimum Two Years of Follow-Up. *J Pediatr Orthop.* January 2014. 34(1):70-7. doi: 10.1097/BPO.0b013e3182a008b6. PubMed PMID: 23872797.

2013

Lynch TS, Saltzman MD, Ghodasra JH, Bilimoria KY, Bowen MK, Nuber GW. Acromioclavicular Joint Injuries in the National Football League: Epidemiology and Management. *Am J Sports Med.* December 2013. 41(12):2904-8. doi: 10.1177/0363546513504284. Epub 2013 Sep 20. PubMed PMID: 24057030.

Lim S, Edelstein AI, Jain U, Puri L, Kim JY. Impact of Preoperative Myocardial Infarction on Surgical Outcomes in Inpatient Orthopaedic Surgery. *Int Orthop.* December 2013. 37(12):2483-9. doi: 10.1007/s00264-013-2001-7. Epub 2013 Jul 17. PubMed PMID: 23860790; PubMed Central PMCID: PMC3843205.

Nader A, Kendall MC, De Oliveira GS Jr, Puri L, Tureanu L, Brodskiaia A, Asher Y, Parimi V, McCarthy RJ. A Dose-Ranging Study of 0.5% Bupivacaine or Ropivacaine on the Success and Duration of the Ultrasound-Guided, Nerve-Stimulator-Assisted Sciatic Nerve Block: A Double-Blind, Randomized Clinical Trial. *Reg Anesth Pain Med.* November-December 2013. 38(6):492-502. doi: 10.1097/AAP.0b013e3182a4bddf. PubMed PMID: 24108248.

Stulberg SD, Patel RM. The Short Stem: Promises and Pitfalls. *Bone Joint J.* November 2013. 95-B (11 Suppl A):57-62. doi: 10.1302/0301-620X.95B11.32936. PubMed PMID: 24187354.

Dunlap BJ, Ferkel RD, Applegate GR. The "LIFT" Lesion: Lateral Inverted Osteochondral Fracture of the Talus. *Arthroscopy.* November 2013. 29(11):1826-33. doi: 10.1016/j.arthro.2013.08.012. PubMed PMID: 24209680.

Robert HE, Bouguennec N, Vogeli D, Berton E, Bowen M. Coverage of the Anterior Cruciate Ligament Femoral Footprint Using Three Different Approaches in Single-Bundle Reconstruction: A Cadaveric Study Analyzed by 3-Dimensional Computed Tomography. *Am J Sports Med.* October 2013. 41(10):2375-83. doi: 10.1177/0363546513498989. Epub 2013 Aug 12. PubMed PMID: 23940205.

Koh J, Levin SD, Chehab EL+, Murphy GS. Neer Award 2012: Cerebral Oxygenation in the Beach Chair Position: A Prospective Study on the Effect of General Anesthesia Compared with Regional Anesthesia and Sedation. *J Shoulder Elbow Surg.* October 2013. 22(10):1325-31. doi: 10.1016/j.jse.2013.01.035. Epub 2013 Apr 6. PubMed PMID: 23571083.

Levin SD, Wellman DS, Liu C, Li Y, Ren Y, Shah NA, Zhang LQ. Biomechanical Strain Characteristics of Soft Tissue Biceps Tenodesis and Bony Tenodesis. *J Orthop Sci.* September 2013. 18(5):699-704. doi: 10.1007/s00776-013-0429-7. Epub 2013 Jul 27. PubMed PMID: 23892426.

Mikhael MM+, Chioffe MA, Shapiro GS+. Calcium Pyrophosphate Dihydrate Crystal Deposition Disease (Pseudogout) of Lumbar Spine Mimicking Osteomyelitis-discitis with Epidural Phlegmon. *Am J Orthop (Belle Mead NJ).* August 2013. 42(8):E64-7. Review. PubMed PMID: 24078961.

Saucedo J, Marecek GS, Lee J, Huminiak L, Stulberg SD, Puri L. How Accurately Are We Coding Readmission Diagnoses after Total Joint Arthroplasty? *J Arthroplasty.* August 2013. 28(7):1076-9. doi: 10.1016/j.arth.2013.05.006. Epub 2013 Jun 12. PubMed PMID: 23768916.

Mani SB, Brown HC, Nair P, Chen L, Do HT, Lyman S, Deland JT, Ellis SJ. Validation of the Foot and Ankle Outcome Score in Adult Acquired Flatfoot Deformity. *Foot Ankle Int.* August 2013. 34(8):1140-6. doi: 10.1177/1071100713483117. Epub 2013 Mar 19. PubMed PMID: 23513031.

Mont MA, Johnson AJ, Issa K, Pivec R, Blasser KE, McQueen D, Puri L, Dethmers DA, Miller DW, Ireland PH, Shurman JR, Bonutti P. Single-Use Instrumentation, Cutting Blocks, and Trials Decrease Contamination During Total Knee Arthroplasty: A Prospective Comparison of Navigated and Nonnavigated Cases. *J Knee Surg.* August 2013. 26(4):285-90. doi: 10.1055/s-0033-1333664. Epub 2013 Jan 28. PubMed PMID: 23359398.

Hsu PA, Hsu AR, Sutter EG, Levitz SP, Rose DM, Segalman KA, Lee SK. Effect of Anterior vs. Posterior in Situ Decompression on Ulnar Nerve Subluxation. *Am J Orthop (Belle Mead NJ).* June 2013. 42(6):262-6. PubMed PMID: 23805419.

Wetzel RJ, Shah RR+, Puri L. Demonstration of Saw Blade Accuracy and Excursion: A Cadaveric Comparison Study of Blade Types Used in Total Knee Arthroplasty. *J Arthroplasty.* June 2013. 28(6):985-7. doi: 10.1016/j.arth.2013.02.006. Epub 2013 Mar 20. PubMed PMID: 23523505.

Yaffe M, Chan P, Goyal N, Luo M, Cayo M, Stulberg SD. Computer-Assisted vs. Manual TKA: No Difference in Clinical or Functional Outcomes at Five-Year Follow-Up. *Orthopedics.* May 2013. 36(5):e627-32. doi: 10.3928/01477447-20130426-26. PubMed PMID: 23672916.

Cooper HJ, Urban RM, Wixson RL, Meneghini RM, Jacobs JJ. Adverse Local Tissue Reaction Arising from Corrosion at the Femoral Neck-Body Junction in a Dual-Taper Stem with a Cobalt-Chromium Modular Neck. *J Bone Joint Surg Am.* May 15, 2013. 95(10):865-72. doi: 10.2106/JBJS.L.01042. PubMed PMID: 23677352; PubMed Central PMCID: PMC3748981.

Patel RM, Lo WM, Cayo MA, Doan MM, Stulberg SD. Stable, Dependable Fixation of Short-Stem Femoral Implants at Five Years. *Orthopedics.* March 2013. 36(3):e301-7. doi: 10.3928/01477447-20130222-18. PubMed PMID: 23464949.

continued

Select Department of Orthopaedic Surgery Publications

Bozic KJ, Bashyal RK, Anthony SG, Chiu V, Shulman B, Rubash HE. Is Administratively Coded Comorbidity and Complication Data in Total Joint Arthroplasty Valid? *Clin Orthop Relat Res.* January 2013. 471(1):201-5. doi: 10.1007/s11999-012-2352-1. PubMed PMID: 22528384; PubMed Central PMCID: PMC3528892.

Shah RR, Patel RM, Puri L. Computer-Assisted Total Knee Arthroplasty for Significant Tibial Deformities. *J Arthroplasty.* January 2013. 28(1):28-32. doi: 10.1016/j.arth.2012.02.015. Epub 2012 Apr 11. PubMed PMID: 22503336.

2012

Cassard X, Bowen M, Collette M, Lanternier H, de Polignac T, Robert H. Comments on: "Aseptic Arthritis after ACL Reconstruction by Tape Locking Screw (TLS): Report of Two Cases" by F. Colin, F. Lintz, K. Bargoin, C. Guillard, G. Venet, A. Tesson, F. Gouin. *Orthop Traumatol Surg Res.* 2012. 98(3):363-5. *Orthop Traumatol Surg Res.* 2012 Nov; 98(7):854; author reply 855. doi: 10.1016/j.otsr.2012.09.002. Epub 2012 Oct 18. PubMed PMID: 23083805.

Chen L, Lyman S, Do H, Karlsson J, Adam SP, Young E, Deland JT, Ellis SJ. Validation of Foot and Ankle Outcome Score for Hallux Valgus. *Foot Ankle Int.* December 2012. 33(12):1145-55. doi: 10.3113/FAI.2012.1145. PubMed PMID: 23199868.

Dunlap BJ, Koh J. Arthroscopic Treatment of Hip Pain. *Dis Mon.* September 2012. 58(9):543-9. doi: 10.1016/j.disamonth.2012.06.005. PubMed PMID: 22898379.

Griffin WL, Fehring TK, Kudrna JC, Schmidt RH, Christie MJ, Odum SM, Dennes AC. Are Metal Ion Levels a Useful Trigger for Surgical Intervention? *J Arthroplasty.* September 2012. 27(8 Suppl):32-6. doi: 10.1016/j.arth.2012.03.020. Epub 2012 May 17. PubMed PMID: 22608683.

Koh J. Anatomic Muscular Deficits Persist in the Medial Hamstrings Nine to 11 Years Following Harvest, but the Clinical Consequences Remain Unclear: Commentary on an Article by Brian J. Snow, MD, et al.: "Evaluation of Muscle Size and Fatty Infiltration with MRI Nine to 11 Years Following Hamstring Harvest for ACL Reconstruction." *J Bone Joint Surg Am.* July 18, 2012. 94(14):e108. doi: 10.2106/JBJS.L.00504. PubMed PMID: 22810414.

Nader A, Kendall MC, Wixson RL, Chung B, Polakow LM, McCarthy RJ. A Randomized Trial of Epidural Analgesia Followed by Continuous Femoral Analgesia Compared with Oral Opioid Analgesia on Short- and Long-Term Functional Recovery after Total Knee Replacement. *Pain Med.* July 2012. 13(7):937-47. doi: 10.1111/j.1526-4637.2012.01409.x. Epub 2012 Jun 8. PubMed PMID: 22680916.

Mikhael MM+, Shapiro GS+, Wang JC. High-Grade Adult Isthmic L5-S1 Spondylolisthesis: A Report of Intraoperative Slip Progression Treated with Surgical Reduction and Posterior Instrumented Fusion. *Global Spine J.* June 2012. 2(2):119-24. doi: 10.1055/s-0032-1307257. PubMed PMID: 24353957; PubMed Central PMCID: PMC3864463.

Patel RM, Cayo M, Patel A, Albarillo M, Puri L. Wound Complications in Joint Arthroplasty: Comparing Traditional and Modern Methods of Skin Closure. *Orthopedics.* May 2012. 35(5):e641-6. doi: 10.3928/01477447-20120426-16. PubMed PMID: 22588404.

Birmingham PM, Kelly BT, Jacobs R, McGrady L, Wang M. The Effect of Dynamic Femoroacetabular Impingement on Pubic Symphysis Motion: A Cadaveric Study. *Am J Sports Med.* May 2012. 40(5):1113-8. doi: 10.1177/0363546512437723. Epub 2012 Mar 5. PubMed PMID: 22392561.

Deimel JF+, Dunlap BJ. The Female Athlete Triad. *Clin Sports Med.* April 2012. 31(2):247-54. doi: 10.1016/j.csm.2011.09.007. Review. PubMed PMID: 22341014.

Srinivasan A, Jung E, Levine BR. Modularity of the Femoral Component in Total Hip Arthroplasty. *J Am Acad Orthop Surg.* April 2012. 20(4):214-22. doi: 10.5435/JAAOS-20-04-214. Review. PubMed PMID: 22474091

Yaffe MA, Patel A, Mc Coy BW, Luo M, Cayo M, Ghate R, Stulberg SD. Component Sizing in Total Knee Arthroplasty: Patient-Specific Guides vs. Computer-Assisted Navigation. *Biomed Tech (Berl).* April 10, 2012. 57(4):277-82. doi: 10.1515/bmt-2011-0093. PubMed PMID: 22868780.

Mikhael MM+, Celestre PC, Wolf CF, Mroz TE, Wang JC. Minimally Invasive Cervical Spine for Aminotomy and Lateral Mass Screw Placement. *Spine (Phila Pa 1976).* March 1, 2012. 37(5):E318-22. doi: 10.1097/BRS.0b013e31823a43f9. Review. PubMed PMID: 22024895.

Patel RM, Smith MC, Woodward CC, Stulberg SD. Stable Fixation of Short-Stem Femoral Implants in Patients 70 Years and Older. *Clin Orthop Relat Res.* February 2012. 470(2):442-9. doi: 10.1007/s11999-011-2063-z. PubMed PMID: 21927967; PubMed Central PMCID: PMC3254743.

McKeon KE, O'Donnell JC, Bashyal R, Hou CC, Luhmann SJ, Dobbs MB, Gordon JE. Immobilization after Pinning of Supracondylar Distal Humerus Fractures in Children: Use of the A-Frame Cast. *J Pediatr Orthop.* January-February 2012. 32(1):e1-5. doi: 10.1097/BPO.0b013e31823db1b4. PubMed PMID: 22173398.

Mikhael MM+, Wolf CF, Wang JC. Cervical Spine Surgery: Cervical Laminoplasty. *Instr Course Lect.* 2012. 61:461-8. PubMed PMID: 22301254.

Select Physician Awards and Honors

Leadership Positions

Jamal Ahmad, MD

Chair of the American Academy of Orthopaedic Surgeons Foot and Ankle Program Committee, 2015–2017

Adam Bennett, MD

Chicago Bears NFL Football Team Consulting Physician

Leon Benson, MD+

Journal of Bone and Joint Surgery, Elite Reviewer, 2016–present
Castle Connolly Top Doctor

Mark Birmingham, MD

Chicago Bears NFL Football Team Consulting Surgeon

Mark Bowen, MD

Chicago Bears NFL Football Head Team Surgeon

Charles Carroll, MD

Castle Connolly Top Doctor
Editor, *The Journal of Bone & Joint Surgery*

Arnold Cohn, MD+

Castle Connolly Top Doctor

Jeffrey Goldstein, MD+

Castle Connolly Top Doctor

Wayne Goldstein, MD+

Castle Connolly Top Doctor

John Grayhack, MD

Castle Connolly Top Doctor

Purnendu Gupta, MD

Castle Connolly Top Doctor

Steven L. Haddad, MD+

Orthopaedic Learning Center, Vice President of the Board of Directors, 2017–2018
American Academy of Orthopaedic Surgeons, Chairman, Foot and Ankle Content Committee, 2017

Carrie Jaworski, MD

Medical Director for Chicago performances of *Hamilton*
American College of Sports Medicine (ACSM)—Vice President, 2013–2015
ACSM Liaison for the Sports Medicine Advisory Committee of the National Federation of State High School Associations, 2016–present



Dr. Jason Koh



Dr. Leon Benson and his therapy dog Cooper

Jason Koh, MD, MBA

American Academy of Orthopaedic Surgeons
Communications Cabinet, 2017
Board of Councilors, 2011–2017
Leadership Fellows Program, Mentor, 2016–2017
Arthroscopy Association of North America, International Committee, 2017–2019
Illinois Association of Orthopaedic Surgeons, Board, Past President, 2009–present
American Orthopaedic Society for Sports Medicine
Council of Delegates, 2012–2015
Corporate Relations Committee, 2014
International Patellofemoral Study Group, Treasurer
International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine
Patellofemoral Scoring Task Force Chair, 2013–2017
Scientific Committee, Deputy Chair, 2015–2019
Program Committee, 2015–2017
Patellofemoral Foundation, Secretary
Adjunct Professor, McCormick School of Engineering, Northwestern University, 2017
American Shoulder and Elbow Surgeons
Membership Committee, 2015–2018
Value Committee, 2017–2020
Tissue Engineering and Regenerative Medicine Cover Article, 2017
Northwestern University Kellogg School of Management Cohort Ambassador, 2015–2016
Castle Connolly Top Doctor

Select Physician Awards and Honors



Dr. Steven Haddad



Dr. Mark Mikhael



Dr. S. David Stulberg



James Kudrna, MD, PhD

Operation Walk Chicago 2017 Honoree

Steven Levin, MD

United States National Rugby Team, Team Surgeon, 2002–present

Seth Levitz, MD

Chicago Bears NFL Football Team Consulting Surgeon

Mark Mikhael, MD+

North American Spine Society (NASS)

Section on Radiology, 2012–present

Section on Radiology, Co-Chair, 2017–present

Section on Allied Health, 2015–present

Evidence-Based Guidelines Committee, 2013–present

Srdjan Mirkovic, MD

Editorial Board Member—*Spine*

Editorial Board Member—*International Journal of Spine Surgery*

Chicago Bears NFL Football Team Consulting Surgeon

Gregory Palutis, MD+

Castle Connolly Top Doctor

Pardi B., Schwartz B., Savin D.S., Rodriguez J., Shah R.R., Goldstein

J.M., Goldstein W.M., Ritesh Shah, MD, Jeffrey Goldstein, MD+,

Wayne Goldstein, MD+

American Academy of Orthopaedic Surgeons

Best Poster in the Practice Management classification, 2016 AAOS

Annual Meeting

Craig Phillips, MD+

Castle Connolly Top Doctor

Amy Jo Ptaszek, MD+

Castle Connolly Top Doctor

William J. Robb III, MD+

American Academy of Orthopaedic Surgeons

2017 William W. Tipton Jr., MD, Leadership Award

National Surgical Patient Safety Summit, Co-Chair, 2016

Castle Connolly Top Doctor

American Academy of Orthopaedic Surgeons, Tipton Award, 2017

Richard Sherman, MD+

Castle Connolly Top Doctor

S. David Stulberg, MD

International Society for Technology in Arthroplasty,

Executive Director, 2017

Operation Walk Chicago, Chairman, November 2015 and 2016,

Kathmandu, Nepal

Operation Walk Chicago, Chairman, March 2015 and 2016,

Hanoi, Vietnam

Operation Walk Chicago, Chairman, 2017, Recife, Brazil

Castle Connolly Top Doctor

Diego Villacis, MD

American Shoulder Elbow Surgeon (ASES) Society

Nominated for the 2017 Charles S. Neer Award

Brian Weatherford, MD+

American Orthopaedic Foot & Ankle Society, Education Committee, 2017

American Academy of Orthopaedic Surgeons OrthoInfo, Section Editor,

Foot and Ankle, 2017

Anne Marie Zeller, DO; Michael P. Rowan DO; Chris Tangen, DO

Cleveland Academy of Osteopathic Medicine

Honorable Mention at the 49th Annual January Seminar in 2014

Leadership in the Orthopaedic Community:

William J. Robb III MD receives Tipton Award

William J. Robb III, MD, former Chairman of Orthopaedics, who for three decades has made exemplary professional contributions to the advancement of orthopaedic surgery, received the 2017 William W. Tipton Jr., MD Leadership Award. The Tipton Leadership Award recognizes physicians who have demonstrated outstanding leadership qualities that benefit the orthopaedic community, patients and/or the American public. The award honors and celebrates the life, accomplishments and qualities of the late William W. Tipton Jr., MD, an orthopaedic surgeon, educator and former American Academy of Orthopaedic Surgeons (AAOS) chief executive officer.

At the NorthShore Orthopaedic Institute and the Illinois Bone & Joint Institute, Dr. Robb's practice is focused on reconstructive knee surgery. He served the profession in a number of roles, including nine years as a Board Member and secretary of AAOS, chair of the AAOS Board of Councilors and chair of the Board of Specialty Societies. He also served as president of the American Association of Hip and Knee Surgeons and the Illinois Association of Orthopaedic Surgeons.

Over the past 10 years, Dr. Robb has spearheaded an effort to establish a new culture of safety in orthopaedics and the broader national surgical community, and helped organize the Orthopaedic Surgical Safety Summit in 2012 and the first National Surgical Patient Safety Summit. The catalyst for his involvement in patient safety issues, he said, was "recognition about 10 years ago that there was significant progress in terms of surgical technique and various implants and devices for specific diseases, but it was unclear whether this impacted outcomes for patients harmed by adverse events."

Leon S. Benson, MD, who practices with Dr. Robb at the Illinois Bone & Joint Institute, said his colleague influenced and inspired him by demonstrating "the highest standards of ethics and commitment." He added that Dr. Robb "is always leading, always thinking of ways to improve things, always focusing on orthopaedic surgery as a conduit to improving the human condition. Leadership, volunteerism and work ethic are three things Bill lives by, and he's constantly giving to education, research, his colleagues, and most of all, his patients."

Dr. Robb is a fifth-generation physician whose father was also an orthopaedic surgeon and leader as Iowa's representative to the AAOS Board of Councilors in the 1970s.



Dr. William J. Robb III (right) receives the 2017 William W. Tipton Jr., MD, Leadership Award from outgoing AAOS President Gerald R. Williams Jr., MD.

+ Member of Illinois Bone & Joint Institute

Select Speaking Engagements

Speaking Engagements 2017

Beigler D.+ Management of Geriatric Fractures. Annual Meeting of the Orthopaedic Trauma Association, Vancouver, British Columbia. October 12, 2017.

Benson L.+ The Difficult Workers' Compensation Patient. American Society for Surgery of the Hand Annual Meeting, San Francisco, CA. September 2017.

Benson L.+ Fixed and Variable Angle Volar Plate Fixation of Distal Radius Fractures: Principles and Pearls. Trimmed Upper Extremity Seminar, Half Moon Bay, CA. January 2017.

Benson L.+ A History of Clavicle Fractures: The Pendulum Keeps Swinging. Trimmed Upper Extremity Seminar, Half Moon Bay, CA. January 2017.

Benson L.+ Mallet Finger, Soft Tissue: How Long to Splint, How to Get Full Extension. AAOS Annual Meeting, American Society for Surgery of the Hand Specialty Day, San Diego, CA. March 2017.

Edgington J, Curtis D, Boyajian H, Ek E, Koh J, Steinmann S, Shi L. Fracture-Dislocation about the Elbow: An Updated Review on Classification, Treatment, Outcomes and Complications. AAOS Annual Meeting, San Diego, CA. March 14-18, 2017.

Goldstein JM.+ Surgical Implant Selection in Total Knee Arthroplasty. DePuy Synthes Future Leaders Workshop: Introduction to Hip & Knee Arthroplasty for the Junior Resident, Nashville, TN. September 2017.

Goldstein JM.+ Biomechanics of the Hip. DePuy Synthes Future Leaders Workshop: Introduction to Hip & Knee Arthroplasty for the Junior Resident, Nashville, TN. September 2017.

Karam JA, Livshetz I, Shah RR+, Goldstein JM+, Goldstein WM.+ Simultaneous vs. Sequential Bilateral Total Hip Arthroplasty: Which One Restores Proper Hip Biomechanics? AOA 2017 Annual Meeting (Poster), Charlotte, NC.

Karam JA, Pardi BM, Shah RR+, Goldstein JM+, Goldstein WM.+ The Disappearing Calf Clot: The Rate and Fate of Infra-Popliteal DVT after Total Joint Arthroplasty. AAOS 2017 Annual Meeting Poster Presentation, San Diego, CA. MAOS 2017 Annual Meeting, Amelia Island, FL. AOA 2017 Annual Meeting (Poster), Charlotte, NC.

Koh J. PCL Reconstruction: Step-by-Step Technique and Result. 36th Annual Cherry Blossom Seminar, Tyson, VA. April 6-9, 2017.

Koh J. Current Concepts and Techniques for Fixation and Repair of OCD Lesions. 36th Annual Cherry Blossom Seminar, Tyson, VA. April 6-9, 2017.

Koh J. Points of Convergence: Supporting Episodic Payment Models. Chilmark Convergence Conference, Boston, MA. October 4-6, 2017.

Koh J. Meniscus Horizontal Cleavage Tears—What Happens to Knee Contact Pressure When We Operate? Herodicus Annual Meeting, Pebble Beach, CA. May 18-21, 2017.

Koh J, Zimmerman, T. Pin the Tail on the MPFL – Identification by Palpation—Results. AAOSM Annual Meeting, Toronto, Canada. July 20-23, 2017.

Koh J, Zimmerman T, Patel S, Ren Y, Son J, Zhang L. Tibiofemoral Contact Mechanics with Horizontal Cleavage Tears and Resection of the Lateral Meniscus in the Human Knee. AAOSM Annual Meeting, Toronto, Canada. July 20-23, 2017.

Mikhael MM.+ Move Back...Spinal Emergencies and Spinal Stenosis. Annual Advanced Practitioner and Physician (APP) Bootcamp. April 30, 2017.

Weatherford B.+ Screw Design and Function. AO North America Basic Principles, Dallas, TX. March 2017.

Weatherford B.+ Trauma Rounds: Interactive Hindfoot Case Presentations. American Orthopaedic Foot and Ankle Society Summer Meeting, Seattle, WA. July 2017.

Wixson RL, Chesis R, Livschiz K. Obtaining Patient-Reported Outcomes in a High-Volume Clinic. Epic XGM 2017, Verona, WI. May 3, 2017.

Zeller AM, Briskin S. 17-Year-Old Male Cross-Country Athlete with Anterior Knee Pain...Not What He Bargained For. American Medical Society for Sports Medicine Annual Meeting, San Diego, CA. May 2017.

Zeller AM, Solomon M. 12-Year-Old Female Soccer Player with an Acute Left Knee Mass—Unique Case Presentation. American Osteopathic Association of Sport Medicine Annual Meeting, Las Vegas, NV. May 2017.

Speaking Engagements 2016

Birmingham P. Pre-existing Hip Pathology as a Predictor of Outcomes in National Football League Athletes. AOA Annual Meeting. June 2016.

Birmingham P. Hip Imaging: Optimizing Your View through Plain Films, Ultrasound, CT, MRI, dGEMRIC. International Society for Hip Arthroscopy Annual Meeting, San Francisco, CA. 2016.

Borque K, Pipinov H, Olumuyiwa I, Koh J, Shi, L. The Majority of Shoulder MRIs Ordered by Non-Orthopaedic Providers Do Not Meet National Guidelines. AAOS Annual Meeting, Orlando, FL. March 1-5, 2016.

Karam JA, Shah RR, Goldstein JM+, Gordon AC+, Jimenez ML,+ Goldstein WM.+ An Oldie but Goodie: Midterm Results of a Dual Offset Tapered Femoral Stem for Total Hip Arthroplasty. AAHKS 2016 Annual Meeting Poster Presentation (Poster No. 112), Dallas, TX.

Koh J. Moderator PCL and Multiligament. Orthopaedic Summit 2016 Evolving Techniques, Las Vegas, NV. December 8, 2016.

Koh J. First Time Patellar Dislocation: Which Ones Need Surgery, Why and How! Orthopaedic Summit 2016 Evolving Techniques, Las Vegas, NV. December 8, 2016.

Koh J. Patellofemoral Instability in Athletes: Perfecting the Distal Patellar Realignment with Outcomes! Orthopaedic Summit 2016 Evolving Techniques, Las Vegas, NV. December 8, 2016.

Koh J, Logli A. Novel Arthroscopic Portals for Improved Access to the Patella: Anatomic Description & Evaluation of Safety. AANA Annual Meeting, Boston, MA. April 13-16, 2016.

Kramer A+, Woon C, Speers D. Functional Bracing for Treatment of Pediatric Diaphyseal Femur Fractures: An Alternative to Spica Casting. Annual Meeting of the Orthopaedic Trauma Association, National Harbor, MD. September 8, 2016.

Mikhael MM.+ Imaging and Ancillary Testing in Patients with Neck and Shoulder Girdle Pathology. North American Spine Society (NASS) Annual Meeting. October 28, 2016.

Mikhael MM.+ Update on Current Strategies for Decreasing Radiation Exposure During Spine Surgery and Interventional Procedures, Free-Hand Technique in Spine Surgery: Radiation Reduction at its Best. North American Spine Society (NASS) Annual Meeting. October 27, 2016.

Mikhael MM.+ Spinal Imaging Pearls for Staying out of Trouble and Detecting Problems When They Occur: Post-operative Evaluation. North American Spine Society (NASS) Annual Meeting. October 27, 2016.

Pardi B, Schwartz B, Savin DS, Rodriguez J, Shah RR+, Goldstein JM+, Goldstein WM.+ Is Aspirin Enough? Rates of Asymptomatic and Symptomatic Venous Thromboembolic Events after Total Joint Arthroplasty. AAOS 2016 Annual Meeting Poster Presentation (Poster No. P272), Orlando, FL.

Robb W+, Shah RR+, Goldstein JM+, Blom A+, Fletcher M+, Branson J+. Moving the Needle: Less Cost, Improved Care from a Gainsharing Supported Integrated Rehab Network. AAHKS 2016 Annual Meeting Poster Presentation (Poster No. 170), Dallas, TX.

Schwartz B, Woon C, Shah RR+, Goldstein JM.+ Distal Femoral Morphology: Does Ethnicity, Gender or Body Size Play a Role? AAOS 2016 Annual Meeting Poster Presentation (Poster No. P139), Orlando, FL.

Shah RR+, Goldstein JM,+ Gordon AC+, Jimenez ML+, Goldstein WM.+ Alarming High Rate of Implant Fractures in One Modular Femoral Stem Design: A Comparison of Two Implants. AAOS 2016 Annual Meeting Poster Presentation (Poster No. P040), Orlando, FL.

Zeller AM, Cupp SA. 22-Year-Old Male Runner with Hip Pain—Rare Diagnosis. American Medical Society for Sports Medicine Annual Meeting, Houston, TX. April 2016.

Speaking Engagements 2015

Anne Marie Zeller, Michael P. Rowane, Chris Tangen. Complications Following Anterior Lumbar Interbody Fusion. American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, NV. March 2015.

Dini A, Meisel AF, Driscoll MD, Dunlap BJ, Ferkel RD. SE 37. Lateral Inverted Osteochondral Fracture of the Talus – Diagnosis, Surgical Technique and Results. American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, NV. March 2015.

Jiang JJ, Patel P, Koh, JL, Dirschl, D, Shi, L. The Impact of BMI on Short-Term Complications Following Total Shoulder Arthroplasty. American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, NV. March 2015.

Jiang JJ, Schipper ON, Chen L, Koh JL, Toolan BC. Effect of Diabetes Mellitus on Perioperative Complications and Hospitalization Outcomes after Ankle Arthrodesis and [NOTE: Insert missing information.]

Jiang JJ, Schipper ON, Chen L, Koh JL, Toolan BC. Comparison of Ankle Arthroplasty Perioperative Complications and Hospitalization Outcomes for Patients with Osteoarthritis vs. Rheumatoid Arthritis. American Academy of Orthopaedic Surgeons Annual Meeting.

Jiang JJ, Toor A, Shi L, Koh JL. Reverse Total Shoulder Arthroplasty Patients with a Proximal Humerus Fracture Have Significantly Worse Perioperative Outcomes Than Other Indications: An Analysis of 5,644 Cases. American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, NV. March 2015.

Koh J. Clinician Perspective: Implications of Federal Regulations and Our Ability to Advance Biologic Science. AAOS/ORS Biologic Treatments for Orthopaedic Injuries Research Symposium, Chicago, IL. November 2015.

+ Member of Illinois Bone & Joint Institute

Selected Speaking Engagements

Koh J. Medial Reconstruction Presentation. 10th Biennial ISAKOS Congress, Lyon, France. June 2015.

Koh J. Novel Access to the Patellofemoral Joint: An Anatomic Study of New Arthroscopic Portals. 2015 Warthog Society Meeting, Barcelona, Spain. April 2015.

Koh J, Angele P, Fritz J, Mollenhauer J, Gaissmaier C. Prospective Longitudinal Evaluation of 182 Patients with Autologous Chondrocyte Implantation on a Novel Biphasic Collagen Scaffold. ICRS 12th World Congress, Chicago, IL. May 8-11, 2015.

Koh J, Ren Y, Yi SJ, Zhang LQ. In Vitro Evaluation of Tibiofemoral Contact Mechanics with Horizontal Cleavage Tears and Resection of the Medial Meniscus in the Human Knee. ICRS 12th World Congress, Chicago, IL. May 8-11, 2015.

Stulberg SD. Short-Stem THA. Korean Orthopaedic Association Annual Fall Congress, Seoul, Korea. October 13-16, 2015.

Stulberg SD. Patient-Specific TKA. Korean Orthopaedic Association Annual Fall Congress, Seoul, Korea. October 13-16, 2015.

Stulberg SD. Does Intra-Wound Vancomycin Powder Reduce Infection in Total Joint Arthroplasty? The 2015 Meeting of the Knee Society, San Francisco, CA. September 24-26, 2015.

Stulberg SD. Medical Management of the Arthritic Patient: When is Enough, Enough? Current Concepts in Joint Replacement, Las Vegas, NV. May 17-20, 2015.

Stulberg SD. The Short Femoral Stem: When Less is More. Current Concepts in Joint Replacement, Las Vegas, NV. May 17-20, 2015.

Stulberg SD, Goyal N. Which Tibial Tray Design Achieves Maximum Coverage and Ideal Rotation: Anatomic, Symmetric, or Asymmetric? An MRI-Based Study. The Mid-America Orthopaedic Association 2015 Annual Meeting, Hilton Head, SC. April 22-26, 2015.

Stulberg SD, Goyal N. How Accurate is Patient-Specific Instrumentation? A Comparison of Preoperative Planning in Different PSI Software Programs Given Identical MRI. The Mid-America Orthopaedic Association 2015 Annual Meeting, Hilton Head, SC. April 22-26, 2015.

Speaking Engagements 2014

Jiang JJ, Toor AS, Shi LL, Koh J. Patients Undergoing Total Elbow Fracture Have Higher Perioperative Complications: A Nationwide Analysis of 3,797 Cases. American Shoulder and Elbow Surgery 2014 Closed Meeting, Nashville, TN. October 2014.

Koh J. The Patella and Its Defects in a 35-Year-Old Electrician. Orthopaedic Summit 2014, Evolving Techniques Sports Medicine & Arthroscopic Surgery, Las Vegas, NV. December 2014.

Koh J. Osteochondral Allograft is the Only Answer. Orthopaedic Summit 2014, Evolving Techniques Sports Medicine & Arthroscopic Surgery, Las Vegas, NV. December 2014.

Koh J. BTB ACL Reconstruction in Contact Athlete. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. Live Surgery—MPFL Reconstruction. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. Patella Instability and MPFL Repair. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. Live Surgery Shoulder—SLAP. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. SLAP and Bicep Pathology—Where We Are in 2014. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. Subscapularis Repair. 1st International Meeting of Arthroscopy Academy—Current Concepts in Arthroscopy, Mumbai, India. August 2014.

Koh J. Advances in the Understanding and Management of Rotator Cuff Tendinopathy. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Pearls in PCL Reconstruction. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Modern Round Table: Failure in ACL Reconstruction. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Arthroscopic Management of Hip Impingement. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Anteromedial Anatomic ACL Reconstruction. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. ACL Crossfire: Anteromedial vs. Transtibial. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Meniscal Transplant: Technique and Results. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Arthrofibrosis after ACL: How to Deal with It? VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Conservative Management of Patellofemoral Arthritis. VI Congreso Artroscofia 2014, Lima, Peru. July 2014.

Koh J. Patellofemoral Pain and Instability—State of the Art in 2014. ANNA Annual Meeting, Hollywood, FL. May 2014.

Koh J. Tendon Transfer Options about the Shoulder; Scientific Exhibit. 2014 AAOS Annual Meeting, New Orleans, LA. March 2014.

Koh J. A Comparison of Perioperative Outcomes Following Total Elbow Arthroplasty in Patients with and Without Diabetes. 2014 ASES Specialty Day, New Orleans, LA. March 2014.

Stulberg SD. Primary Hip Replacement: What Works & for Whom? The Short Stem: Emergen Solution for Primary Hip Problems. 31st Annual Current Concepts in Joint Replacement Winter Meeting, Orlando, FL. December 10-13, 2014.

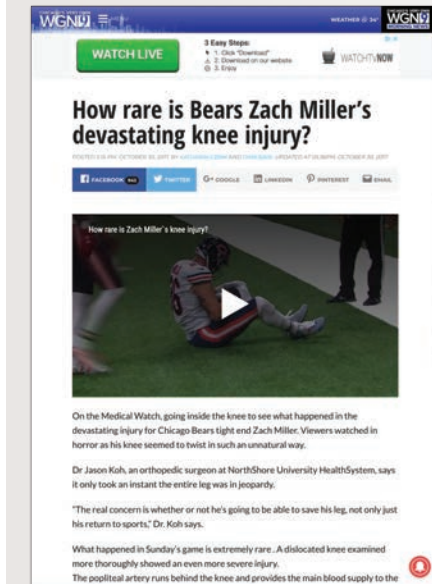
Stulberg SD. Primary Hip Replacement: Compartmental Knee Disease: Solution Options. Conservative Management: TKA is only a 10% Solution. 31st Annual Current Concepts in Joint Replacement Winter Meeting, Orlando, FL. December 10-13, 2014.

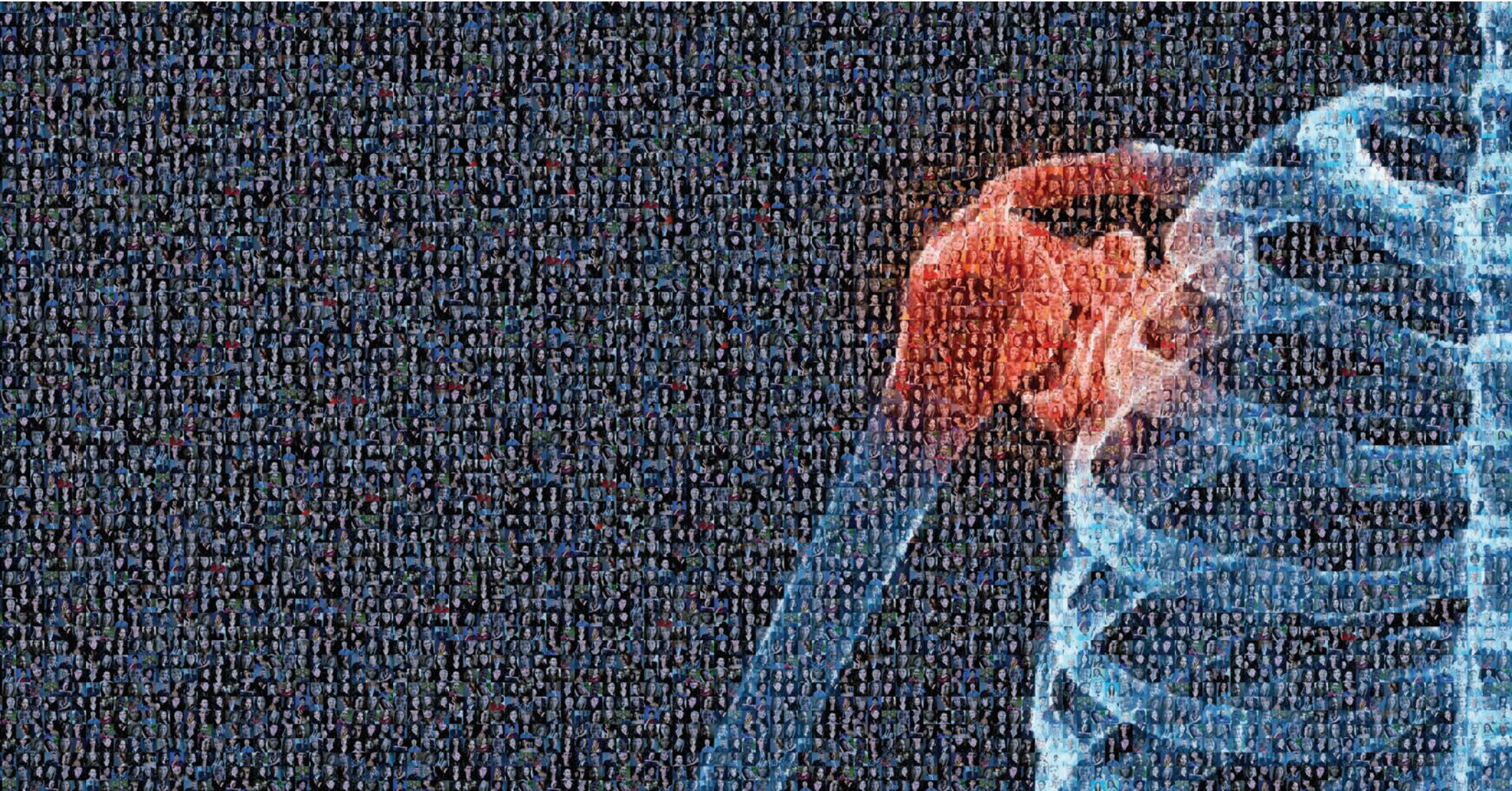
Stulberg SD. How Accurate is Patient-Specific Instrumentation? A Comparison of Preoperative Planning in Different PSI Software Programs Given Identical MRI. 27th Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan. September 24-27, 2014.

Stulberg SD. A Protocol to Assess for Adverse Local Tissue Reaction in Patients with Dual-Taper Femoral Stems. 2014 Summer Meeting of the Hip Society, Durham, NC. September 11-13, 2014.

In the News

Our physicians are highly sought after for their opinions and expertise on regional and national orthopaedic issues, and have appeared on such national outlets as the *Today Show*, *Good Morning America* and *U.S. News & World Report*. This is a sample of our staff's media appearances; for a complete list, visit northshore.org/ortho.





 **NorthShore**
University Health System

Orthopaedic Institute

9650 Gross Point Rd., Ste. 2900
Skokie, IL 60076