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FRONT COVER: Resident Lindley Wall hones her arthroscopic surgery skills in the lab with guidance from Jay Keener, Leesa Galatz and Ken Yamaguchi, members of the shoulder and elbow service.

BACK COVER: Devyani Hunt of the physical medicine and rehabilitation service draws up contrast in preparation for a fluoroscopically guided injection.

The goal of A Different View is to provide a unique description of the challenges that confront members of the Department of Orthopaedic Surgery at Washington University and the measures that have been taken to address them. In this issue we focus on the choices that three young faculty members made as they began their academic careers, on the difficulties the foot and ankle service encountered as it set out to expand its mission, and on the enormous self-imposed challenge that one spine surgeon faced in attempting to gain first-time National Institutes of Health (NIH) funding in the middle of his career. Also, we describe a recent departmental retreat that considered the changes coming to American health care including new approaches to improve outcomes and contain costs. Consistent with that effort, we describe the development of a new center devoted to providing quick and cost-effective diagnosis and treatment for patients with acute back pain. The center will carefully track outcomes to help us learn more about what works and what doesn’t.

My hope is that the stories related in A Different View will help others who undertake similar tasks, and I invite your questions or comments.

Richard H. Gelberman
Fred C. Reynolds Professor and Chair
Common wisdom holds that the most difficult and challenging period in any physician’s career is his or her residency, full of 80-hour work weeks defined by enormous on-the-job pressure and a steep learning curve. Three young faculty members in Washington University’s Department of Orthopaedic Surgery offer up a different candidate for the distinction: the early years of an academic medicine faculty appointment.

Assistant professor Ryan Nunley, who joined the faculty in 2008, says it was an honor to be asked to join a group as well-established as the joint preservation, resurfacing and replacement service. “But that 80-hour cap on a resident’s work week, looking back, is a luxury.” For Jacob Buchowski, who became the fourth member of the spine surgery service in 2006, joining an internationally renowned group in which he was 10 years younger than the next-youngest member was “a daunting transition from fellowship.” He is working to define a niche in which he can distinguish himself. And shoulder surgeon Jay Keener made the difficult choice to leave a faculty position at the University of North Carolina and return to his fellowship institution, essentially starting over in a demanding environment.

“As a young faculty member and attending physician, you may look a little green to your patients and their families,” Nunley says. “They ask about...
success rates and procedure numbers, and you have to be honest and prepared. You must be visible to them at all stages of care, making rounds frequently. The time commitment in building a practice and creating relationships with referring physicians is extreme.”

Because his interests align with those of the more established members of the service, Nunley also sees fewer of the cases he prefers. “The junior member often gets the more complex patients, but at the university we take an oath to care for the community’s members, no matter how challenging. We leave fellowship with a finely honed skill set, and it may be a while until we get to use it regularly,” Nunley says. He stays sharp by following the literature closely, participating in courses and cadaver labs and attending meetings.

“As a young faculty member and attending physician, you may look a little green to your patients and their families. They ask about success rates and procedure numbers, and you have to be honest and prepared.”

— Ryan Nunley

The time required to start a research program means he sees fewer patients than he otherwise might, “but I’ve had some advantages,” Nunley says. His senior partners’ patient registries provide him with data that support his research projects. He contributes to a multicenter study of total hip replacement outcomes, assessing post-surgical levels of activity, restrictions, sexual function, freedom from limping and other issues. “We’ve learned that as many as 94 percent of hip replacement patients go back to work, and fewer than 1 percent worry about dislocation,” he reports.

Nunley also has assumed the role of the department’s patient safety officer — an avenue to further establish himself as a contributing member of the faculty.

Buchowski agrees that the first years of a faculty appointment are more demanding than residency or fellowship. “When you’re the attending physician, all of the complications are yours; each patient belongs to you,” he says. Keeping up academic productivity, generating income as a clinician and meeting expectations is “extremely stressful,” he says.

Support from mentors helps, says Buchowski, who has relied upon all three of his service colleagues for clinical expertise and professional development advice. Further, by brainstorming with department chairman Richard Gelberman, Buchowski has pursued the question of how to distinguish himself and his practice. With Gelberman’s support, he has created the Center for Spinal Tumors.

“The center developed as a culmination of several factors, including my desire for a niche and to be known for something, since I could never outcompete my well-established colleagues. My interest in the field developed as I saw more cancer patients. The need for a service to steer those with a serious problem to the best care became apparent,” he says.
Establishing relationships with oncologists and neurosurgeons, Buchowski continues to grow the center. “The number of patients is steadily increasing, and the way ahead is clear,” he says, adding that he plans to maintain spinal cases in other areas and serve as a mentor for a newly hired attending spine surgeon to ease the stresses and complications for him.

Already immersed in the academic physician’s life as a faculty member at the University of North Carolina when he was recruited to the shoulder and elbow faculty, Keener says his early concern was whether the grass was sufficiently greener to warrant the change. He has been busy clinically from the start, especially because, as the junior member, he often gets cases that require the most intense management. However, “dealing with the complex cases builds skill and confidence,” he says.

“I do as many surgical cases as a private practice physician, so pursuing research interests means sacrificing personal time, working at home or on nights and weekends,” Keener says. The unwritten expectation that faculty members will conduct productive research is part of the environment, he adds, and comes with the honor of teaching, another time-consuming responsibility.

His good fortune has been to partner with one of his mentors, Ken Yamaguchi, as a co-principal investigator on a National Institutes of Health (NIH) RO1 grant investigating the natural history of rotator cuff disease. “It’s a big opportunity to explore the frequency of asymptomatic tears and the factors that cause pain. It would not have been possible elsewhere,” Keener says.

Keener will serve as a traveling European fellow in September 2011 for the American Society of Shoulder and Elbow Surgeons, teaching and learning at European medical centers. It’s another opportunity that Keener says may not have materialized had he not chosen to join an eminent department with its connections, research excellence and leadership.

Independently, all three young faculty members credit departmental support for their survival and success. “Here, there’s no attempt to constrain you and make you something you’re not,” says Keener. “We have remarkable freedom to make our practices what we want them to be.”

“Here, there’s no attempt to constrain you and make you something you’re not. We have remarkable freedom to make our practices what we want them to be.” — Jay Keener

Buchowski points to departmental start-up funds for research as instrumental in establishing a solid footing. Perhaps most important for him and the others have been the quarterly meetings that the chairman schedules with each new member of the faculty to make certain that young faculty members maintain appropriate focus and have the resources they require to succeed.

Nunley says that Gelberman “fosters us in ways we may never see, protecting junior faculty members and helping us to avoid frustration as we pursue the art of building a practice.”
How to elevate the profile of foot and ankle surgery:
refine treatment decisions regarding

**total ankle replacement,**
encourage additional training of residents and
publish clinical research.
CLEARING HURDLES
Unique Challenges in Foot and Ankle Surgery

One of orthopaedic surgery’s next frontiers is the development and advancement of the total ankle replacement (TAR). Patients’ interests would be better served if TAR became as effective and common as total hip and knee replacements.

If total ankle replacement becomes the signature procedure for foot and ankle surgeons, it might provide the leverage necessary to elevate the subspecialty, according to the three surgeons of Washington University’s foot and ankle service, who view their subspecialty as underappreciated in the field. “In fact, we do some of the most interesting, most challenging work,” says Jeffrey Johnson, associate professor and chief of foot and ankle surgery.

Introduced in the late ’60s and early ’70s contemporaneously with hip and knee replacements, the total ankle procedure soon fell out of popularity when unacceptable cementation failure rates hurt its reputation. But with the advent of new techniques and more successful implants, the total ankle replacement is generating interest among an informed patient population. Moreover, surgeons are changing the way they think about treating the joint, Johnson says.

He explains that early ankle replacements were performed freehand. “The ankle is a very challenging joint, with greater forces on smaller surfaces than other joints and a small soft tissue envelope in which complications can sabotage the surgeon’s work,” he says. Sophisticated external guides now steer the surgeon’s instruments to produce perfect alignment of the implants’ metal-to-plastic interface, and newer devices do not employ cement that can fail.

Hurdles remain, however, and fusion is still the gold standard when treating badly degenerated ankle joints. Long-term follow-up data on replacements are not yet available, says Sandra Klein, assistant professor of orthopaedic surgery. Some short- to mid-range studies show the rate of arthritis in the
other joints of the foot is reduced following replacement versus fusion, and gait studies give only a slight edge to the replacement procedure.

For now, the ideal replacement candidate is 60 or older, with a well-aligned ankle. “We predict 10 to 15 years of use” in such patients, Johnson says, but he adds that revision can be extremely complicated, so younger patients must be considered carefully. “Given the large number of hip and knee replacements performed, orthopedic surgeons have had many years of experience dealing with complications and implant failures. The techniques and tools for managing most of these problems have been developed. For total ankle replacements, that’s not the case.” Johnson recently performed a replacement for a 39-year-old patient and predicts that the age limit will come down as data accumulate. Ankle surgeons also select from a range of implants, widely different in design, indicating that the procedure may not yet be mature, says Jeremy McCormick, assistant professor of orthopaedic surgery. “We want to do replacements for the right patient with the right indication at the right time. We’re learning more, but we don’t have all of the answers yet.”

The foot and ankle practice is not superspecialized according to procedure. Instead, it’s defined by anatomic region. This approach has the advantage of providing each surgeon with a variety of challenging cases, keeping problem-solving strategies fresh. It does, however, require an encyclopedic understanding of the biomechanics of the foot and ankle, so it can’t be done well part-time.

Also, data for research are harder to acquire, and experience with a particular condition can be limited. “Hip or knee surgeons perform a number of joint replacements in a day. It’s rare that I perform any single procedure twice in a month,” says Klein.

At some academic medical centers there still are no fellowship-trained foot and ankle specialists; many others employ just one. Only 58 fellowship training positions exist in the country. And the total of 1,500 members in the American Orthopaedic Foot and Ankle Society compares unfavorably to the more than 6,100 in the North American Spine Society, for example.

So the members of the Washington University group strive to improve the field’s visibility and attractiveness, beginning with advocating for more exposure for residents. “We work to provide a rich operative experience, but our technically demanding cases make it hard for residents to get fully immersed when we see them for just two months as third-years. We would like to have them back as senior residents, following the model of pediatrics, sports or hand specialties,” Johnson says.

With the aim of achieving national prominence, group members also publish results of their research endeavors. They pursue clinical investigations into the surgical management of complications from diabetes, particularly Charcot neuroarthropathy, following patients in collaboration with physical therapy colleagues. They also are studying the outcomes of flatfoot deformity correction, tendon transfers for foot drop, vascular anatomy of the foot and the results of two different approaches for tibiotalocalcaneal fusion. Participation in professional organizations raises the group’s profile.

In establishing priorities, the group always focuses first on providing the best possible care for the region’s patients. “We want to become known not just as the last stop for complicated issues of the foot and ankle, but as the first stop for any patient with a bunion or hammertoe,” says Klein.
preserving a hip requires the right patient and the right procedure. Ideally, training in the discipline is broad, ongoing and comes from a multidisciplinary team.
ELIMINATING GRAY AREAS
Refining the Approach to Hip Preservation

Over the past decade, hip preservation surgical techniques have advanced, but challenges in accurate diagnosis, most effective treatments and understanding of the underlying science remain, says John Clohisy, the Daniel C. and Betty B. Viehmann Distinguished Professor of Orthopaedic Surgery and co-chief of adult reconstructive surgery at Barnes-Jewish Hospital.

Indiana resident Jennifer Neff was treated elsewhere in 2006 for persistent hip pain, undergoing an arthroscopic procedure to repair her torn acetabular labrum. But failure to diagnose and treat the underlying, causal acetabular dysplasia meant that relief was short-lived. When Clohisy saw Neff, who was 29 at the time, they determined that the appropriate treatment was a repeat hip arthroscopy to again repair the labrum but with the added component of an open periacetabular osteotomy (PAO) to correct the underlying deformity. Pain-free since recovery, Neff says her movement and exercise are no longer limited. She now considers the possibility of never needing a hip replacement, and almost certainly not until her 50s.

While some patients are undertreated, the opposite scenario also occurs. Clohisy recalls another patient who underwent surgery elsewhere for an impingement deformity. When the socket was cut down too aggressively, the result was an unstable hip. Revising the first procedure, Clohisy had to reposition the patient’s hip socket with a PAO to stabilize the joint.
These two cases highlight some of the challenges of contemporary hip preservation surgery including diagnosis, treatment decision-making and surgical technique. “We have diagnoses of dysplasia, impingement and a combination of the two, with overlap,” Clohisy says. “And we have developed the techniques of arthroscopy, limited open procedures and open procedures such as surgical dislocation of the hip and osteotomy. But the sticking point is determining the exact diagnoses and the best surgical technique for each patient. Is it better to use an arthroscopic approach or an open surgical technique? There are definite gray areas, and we continue to refine our treatment algorithms for these patients. At our center, we have a busy hip arthroscopy practice, yet we often prefer to treat more severe cases with open procedures so that we can fully correct the underlying deformity. That can’t be done arthroscopically for more complex disease patterns.”

A second principal, Perry Schoenecker, professor of orthopaedic surgery and chief of pediatric orthopaedic surgery at St. Louis Children’s Hospital and Shriners Hospital for Children — St. Louis has partnered with Clohisy on many of the more complex joint-preserving surgeries. “We have a very synergistic relationship,” Schoenecker says. “When things get difficult, the combination sees us through.”

Clinical impressions have begun to offer some strong clues for choosing wisely among the options to determine candidates for hip preservation surgery. “We know that at 40 or 50 years of age, hip replacement gives excellent pain relief, and the longevity of replacements is better than it was in the past,” Clohisy says. So hip replacement has to be considered as an option for many of the patients seeking joint preservation surgery.

“In patients ages 35 and older, we have to be very careful with joint preservation,” Clohisy adds. Beyond that age, often there is more pathology than is apparent, even on X-ray or magnetic resonance arthrogram. “If we see any joint-space narrowing, there may be too much arthritis for the hip to respond well to preservation techniques,” he says.

Relatively healthy hip cartilage appears to be a prerequisite for the success of these procedures. It also seems that in cases of mild to moderate arthritis, hip impingement disease produces more aggressive arthritis than dysplasia, with less predictable results for preservation surgery. Gender also plays a role. Males, especially those with impingement disorders, can suffer more advanced arthritis than imaging reveals. Females with dysplasia problems respond best to preservation surgery, Clohisy says.

But more scientific information is needed, “including basic research to understand the cellular and molecular events that mediate osteoarthritis, translational research to bring that science to the clinic and a higher level of evidence in our clinical research,” Clohisy says. The chance to address those questions and advance the emerging field prompted Clohisy to found Washington University’s Center for Adolescent and Young Adult Hip Disorders.

From the center, Clohisy administers the nine-center Academic Network of Conservational Hip Outcomes Research (ANCHOR) study group. To date, the group has enrolled more than 1,200 patients undergoing hip preservation procedures. Specific patient cohorts will be followed over time to determine predictors of treatment success and failure and to delineate which conditions respond well to arthroscopic techniques and which require open surgery. Schoenecker notes that Clohisy’s vision for the study and advancement of surgical care of hip deformity has been instrumental in the early success of ANCHOR.
Center member Linda Sandell, PhD, the Mildred B. Simon Research Professor of Orthopaedic Surgery and professor of cell biology and physiology, studies the mechanisms that mediate joint deterioration. Her goal: to see if, in addition to correcting a joint’s mechanics, medical science can rectify the fundamental biology of the joint when it has gone awry.

Another problem the field confronts is educating established surgeons who, in the past, received no formal training in preservation techniques. Clohisy and Schoenecker address the issue by inviting colleagues to visit and to observe clinics and surgical procedures. They also recommend that guests visit other surgeons with active hip preservation practices to gain a broad perspective on hip preservation surgery. Nevertheless, obtaining skills in this evolving field is quite challenging, and both surgeons emphasize that competence in this area is only achieved with a very significant effort including self-education, cadaver work and surgeon visits.

“By combining our skills and efforts we can provide state-of-the-art hip surgery for all age patients.” — Perry Schoenecker

As for educating trainees, Clohisy notes, “At Washington University we work to expose residents and fellows to all of the applicable techniques, the full spectrum of indications and the evaluation of a broad range of patients.” For current fellow Jeffrey Krempec, the experience has convinced him to make hip preservation part of his practice. “This is not something a surgeon can dabble in. Mastery requires training, and I would not have had the background and tools required if I had not chosen this opportunity to see an enormous volume of a variety of problems.”

Krempec says another advantage of his training is that it comes from a team. In fact, Clohisy and Schoenecker have been careful to build a diverse and comprehensive team. “Pre-arthritic hip disease might be seen by pediatric orthopaedic surgeons, sports medicine physicians, adult reconstructive specialists, trauma surgeons or physiatry colleagues,” Clohisy points out. “And the treatment group has to include imaging experts and physical therapists, because these components of patient care are so important.”

According to Heidi Prather, associate professor of orthopaedic surgery, when Clohisy invited participation of multiple disciplines in the center, it was not just lip service. Prather, a non-operative physiatrist, sees all patients, even those referred directly to one of the surgeons and those with undiagnosed hip pain. “There’s a lot of back and forth in the clinic we share once a month. We take great care to be specific about a patient’s history and physical exam, being sure that what we’re seeing on an image is really the problem.”

Together, the team addresses current challenges in hip preservation surgery, refining diagnostic skills and disease staging tools to make appropriate treatment decisions and advance techniques, all with the goal of prolonging the natural life of the hip whenever possible. “We’ve learned that there are huge advantages to preserving the joint,” Clohisy says. “Now we have to address these more practical questions of patient selection for surgery, surgical treatment algorithms and surgical education.”
Details are scrutinized at this collaborative spine center, including novel triaging, patient education, physical space and analysis of treatment data.
By the time Michael Waters, 15, presented at the Washington University Orthopedic Spine Center, he had become one of the 76 percent of Americans who suffer from acute back pain at some time during their lives. By seeking care at the center, Waters joined a smaller subgroup of patients being diagnosed and treated in new ways, using a model in which accuracy, prompt initial treatment and economy are priorities.

“Acute back pain is a huge problem, and we need to help those with everyday problems, not just the ‘horrendiomas’ that require tertiary care expertise,” says Heidi Prather, associate professor of orthopaedic surgery, chief of physical medicine and rehabilitation and the center’s director. Waters, a racquetball and baseball athlete, developed immobilizing back pain during the racquetball season.

“We don’t want patients with acute or subacute symptoms to wait long for help,” says Prather. The focus of the center is to see patients early in the development of their symptoms to provide a specific diagnosis and treatment plan. Patients with spine symptoms for less than three months are evaluated by a spine specialist within 48 hours of calling the center. To meet this goal, a simple triage system was created by the spine center staff and has been implemented by the department’s scheduling center.

When Waters arrived at the center, his first interaction involved filling out three standardized questionnaires about his pain, function and quality of life. Next, a spine specialist evaluated him and made a diagnosis based on the history and physical examination. To refine the general classification of “acute back pain” and make it instructive, patients at
the center are assigned to one of 12 subgroups that become the “patient treatment pathway” created by the center’s spine specialists and physical therapists from the Sports Therapy and Rehabilitation (STAR) program at the Orthopedic Center. This classification system allows patients to be subgrouped into types of disorders and directs the patient care pathway initiated at the first patient visit. Patients are given verbal and written educational information based on the pathway. With this comes information regarding activities to do and avoid and three therapeutic exercises used as a starting point to facilitate recovery. By individualizing treatment and learning which patients do best with which approach, Prather and her colleagues aim to develop protocols that will guide practitioners and satisfy insurance companies.

“Knowing up front what’s wrong, getting to patients before other treatments have been applied and eliminating patients being bounced between health-care providers should help keep costs down.” — Heidi Prather

Prather prescribed a brace to immobilize Waters’ lower back for six weeks and physical therapy specific to his injury and sport provided by sports experts at STAR, located in the same medical building at the Orthopedic Center. Patients may receive their initial physical therapy evaluation on the same day as their initial physician evaluation at the center.

With bracing and customized physical therapy, Waters’ condition, which typically takes three to six months to resolve, improved quickly. “I wore the brace for six weeks, then started working out to see how I felt,” he says. “I was a little stiff but didn’t have any pain. I’m still doing physical therapy, learning to use my muscles differently and practicing to return to shortstop for the Kirkwood High Pioneers’ spring season. I’m already swinging as hard as I can. Without this treatment, I would have fractured my vertebrae,” he says.

Prather is one of five physiatrists who see new patients at the center. Physiatrists are the appropriate first contact for acute spine pain because they consistently evaluate the links within the entire musculoskeletal system, Prather says. She adds that with physiatrists’ broad-based training and experience, they often recognize co-existing problems such as a shoulder complaint that coincides with neck pain or hip involvement in patients with low back pain. The physiatrists work closely with two orthopaedic spine surgeons at Barnes-Jewish Hospital, Jacob Buchowski and Lukas Zebala.

Collaboration among spine specialists includes viewing films and sharing an open space designed to foster collaboration, the free flow of information and ease of scheduling when surgery is necessary. “We can’t practice in silos and be effective,” Prather says. Creating the center meant defining a physical space conducive to the work and welcoming to patients. She credits department administrators for their willingness to take the financial risk involved.

Every patient receives educational information first from the physician, but this is reinforced by the clinical nurse coordinator, Mindy Brinkhorst, RN, who reviews the information with every patient at
the end of his or her initial visit. Patients are re-evaluated within a month of the initial visit by the spine center’s nurse practitioner, Corri Payton, ANP-BC, who reinforces the team’s messages. “Studies show that patients remember about 30 percent of what the doctor tells them,” Prather says, “so we deliver our information again, hoping that reinforcement will allow patients to walk away feeling educated and satisfied with the plan of care.”

Brinkhorst, who guides patients through the processes at the center and collects data, says that as American medical care changes, the group hopes to stay in front of anticipated pressure to validate all treatment. “We’ll be expected to show that what we’re doing is appropriate and cost-effective,” she says, and the center is dedicated to improving its practices as it goes.

Physiatrists are the appropriate first contact for acute spine pain because they consistently evaluate the links within the entire musculo-skeletal system.

The center has treated 120 patients in its first few months, and already, data collection and tracking have proven to be more time-consuming and demanding than anticipated. “Independent physician practices place all acuity demands on a single physician which, over time, reduces a patient’s access to care,” Prather says. “The goal of the spine center is to develop basic parameters and standardization of simple diagnostic subgroups so that patients can be evaluated and receive the best care in the acute and subacute setting and not wait for the availability of one practitioner. Tracking data that is available to the health-care provider at each visit will allow us to improve our decision making and treatment recommendations.” Fine-tuning the data collection process to ensure that all information being tracked is meaningful is a challenge, especially since outcomes are just now becoming available.

Triaging appropriate patients to the practice is another obstacle the group faces. “Our service is not something a referring physician would naturally connect to Washington University,” Brinkhorst says.

By working collaboratively to overcome the hurdles, Prather believes that the center will grow to become a new model of data-driven approaches to care. The center aims to provide increased efficiency, improved cost-effectiveness and more intelligent use of resources, all while keeping a tight focus on restoring function and limiting pain for patients.
“The choice struck me: I could do what I’d been doing or take more time and effort to advance the state of spinal deformity research and care through a purely prospective study with a randomized component.”
Spine surgeon Keith Bridwell has spent the better part of 30 years honing the techniques and building the experience necessary to help patients like Carol Perez. In an eight-hour surgery performed in 2008 at Barnes-Jewish Hospital, Bridwell corrected Perez’s increasing spinal deformities — scoliosis and kyphosis — with fusion and instrumentation from her upper thoracic spine to her sacrum. The complex procedure resolved the back pain that the 66-year-old Perez had lived with every day for more than 50 years and also restored four inches of her height. Now pain free, Perez has hand-built a deck for her Illinois home since recovering and can again sit comfortably at her quilting frame.

Bridwell, the J. Albert Key Distinguished Professor of Orthopaedic Surgery, used to spend four days a week in the operating room applying his clinical skills. The author of more than 200 articles and editor of a leading textbook for surgical treatment of spinal deformity, he serves as the Department of Orthopaedic Surgery’s chief of spine surgery and oversees the spine fellowship. In 2001, he co-founded the Spinal Deformity Study Group (SDSG), a multicenter consortium of spinal deformity centers in North America, Europe and Asia, dedicated to improving treatment of scoliosis, kyphosis and spondylolisthesis in patients of all ages. In 2003 he was president of the Scoliosis Research...
Society (SRS). He could be expected to finish his career comfortably at the top of the game.

Instead, he made a late course change and, at age 53, began to pursue an RO1 grant from the National Institutes of Health (NIH) to fund rigorous research that he believes the field was lacking. The choice bucked the unwritten rule of thumb that governs winning an NIH grant: “If not by 40, then never.” More than once, colleagues have asked why he chose to “make life hard on himself.”

“I have published many large institutional and multicenter retrospective comparisons of spine surgery, how it helps and how it doesn’t,” Bridwell says. “The SDSG was a big step, but even with discretion over its funding, we didn’t have enough support for various centers to enter complete data and then follow up. The funding was not adequate to answer the most important questions, and there was only limited oversight of the database.

“So the choice struck me: I could do what I’d been doing or take more time and effort to advance the state of spinal deformity research and care through a purely prospective study with a randomized component. It was a desire to raise the level — to provide more useful data to surgeons and, ultimately, to help promote higher quality care. To be taken seriously as an investigator at the highest level, it became clear that the study could have no relationship whatsoever with industry,” Bridwell says.

Early conversations with NIH insiders revealed that the agency was unlikely to fund another study of idiopathic scoliosis among young people. But nothing was being done to study adult spinal deformity. “Both interest me, but I felt that the adult study was compelling, and I could contribute more to our understanding,” Bridwell says.

The bar was high: NIH data show that only about 10 percent of applications ever receive funding, and clinical studies don’t fare as well as basic science proposals. A first grant application, inspired by a successful application by Ken Yamaguchi, to study rotator cuff disease, was written in collaboration with colleagues at other centers. The NIH review panel commented that Bridwell posed an important question and that his group was qualified to do the study, but they wanted to see preliminary data.

The second application, from the Washington University lead group, along with Emory University, the University of Louisville, New York University and the University of Virginia, included data collected by the SDSG, which NIH reviewers welcomed. But the second review made a request for statisticians experienced in clinical trials. Bridwell added colleagues Jon Lurie, MD, PhD, and Kevin Spratt, PhD, methodologists from the Spine Patient Outcomes Research Trial (SPORT) based at Dartmouth Medical School.

Three years after beginning the campaign, the third submission of “A Multi-Centered Prospective Study of Quality of Life in Adult Scoliosis” won $2,526,530 over five years. The protocol calls for 300 lumbar scoliosis patients, ages 40 to 80, who have not had prior surgical treatment for their scoliosis to be enrolled over three years, with half treated surgically and half treated nonsurgically. The study will evaluate the relative effectiveness of the two approaches by comparing outcomes. This is the first NIH grant for the Spine Section of the Department of Orthopaedic Surgery and only the third NIH-funded clinical spine study nationwide. The other two study adult low back pain and bracing for teenage scoliosis.

“You need persistence and a tough skin” to successfully pursue an NIH grant, Bridwell says. “The firm belief that you will learn something important is crucial.” He also credits the assistance of Tonia Thompson, research administrator in the Department of Orthopaedic Surgery at Washington University, for
her expertise with NIH budgets. Two other individuals vital to the effort were Christine Baldus, RN, MHS, who has worked with Bridwell and his patients for 20-plus years and is the study’s project manager, and Diana Owyoung of the Department of Cell Biology and Physiology, an experienced grant writer.

“You need persistence and a tough skin. The firm belief that you will learn something important is crucial.”
— Keith Bridwell

Any celebration of winning the grant was cut short when the team’s data storage partner showed signs of financial instability. “We weren’t certain they could survive for the five years of our research,” Bridwell says. So the team quickly had to develop an on-site storage capability, format a data program and write an operations manual.

To meet the demands of managing the study and solving minor concerns before they become major problems, Bridwell has had to rearrange his time, cutting back to three days per week in the operating room, with all of the repercussions that entails for his practice. “I’m amazed at all of the things that come up,” he says, “but this kind of attention is what’s required to ensure good science for a study of this magnitude.”

The value of the study is determined in part by the ability to consistently standardize the nonoperative treatment at the seven participating centers. Enrolling the 90 patients to be randomized between the two approaches is proving to be the biggest hurdle. “Patients come for treatment, not to be part of a study and, frequently, they already have a strong view about surgery or they want us to tell them what’s best,” Bridwell says. “They are often not comfortable letting a computer decide their treatment, which is how the randomization works.”

Bridwell is the third clinician to receive an NIH grant in the Department of Orthopaedic Surgery at Washington University and the second to receive a clinical NIH grant. There are now six clinicians in the department with active R01 grants; four of them are clinical.

Another big factor has been NIH scrutiny in the form of half-day conference calls every three months. If a complication has been reported at any of the centers, Bridwell reviews the complete history and determines whether the complication is in any way a result of study participation. Any delays in collecting data are not tolerated. “The conference calls with the Data Safety Monitoring Board are like taking a final examination,” he says. “They ask us many difficult questions and, appropriately, expect us to know the answers.”

The study began enrolling patients nine months ago and will continue until 2013. In addition to Bridwell, Jacob Buchowski, assistant professor of orthopaedic surgery, and Lawrence Lenke, Jerome J. Gilden M.D. Professor of Orthopaedic Surgery are also enrolling patients in this study. The observational and outcomes-measurement components follow for two years, so it’s too early to report even preliminary data, but Bridwell is confident of reproducible, meaningful results. He says, “The pinnacle of any researcher’s career is to obtain and complete an NIH grant. We set out with the idea of having the best possible prospective data with no holes or inaccuracies, an a priori hypothesis and a rigorous attempt at randomization. That’s what you need for a good study; that’s our goal.”
DIVISION CHIEFS of WASHINGTON UNIVERSITY ORTHOPEDICS

1. Matthew Matava, MD  
   Co-Chief, Sports Medicine
2. Jeffrey Johnson, MD  
   Chief, Foot and Ankle
3. Keith Bridwell, MD  
   Chief, Adult/Pediatric Orthopaedic Spine Surgery
4. John Clohisy, MD  
   Co-Chief, Adult Reconstruction
5. Charles Goldfarb, MD  
   Chief, Outpatient Orthopedic Center
6. Rick Wright, MD  
   Co-Chief, Sports Medicine
7. Perry Schoenecker, MD  
   Chief, Pediatric Orthoordinates, Shriners Hospital for Children — St. Louis
8. Douglas McDonald, MD, MS  
   Chief, Orthopaedic Oncology
9. Ken Yamaguchi, MD  
   Chief, Shoulder and Elbow
10. Robert Barrack, MD  
    Co-Chief, Adult Reconstruction
11. Lawrence Lenke, MD  
    Chief, Spinal Surgery, Shriners Hospital for Children — St. Louis
12. Heidi Prather, DO  
    Chief, Physical Medicine and Rehabilitation

Not pictured:
- Martin Boyer, MD, FRCS(C), Chief, Hand and Wrist
- William Ricci, MD  
  Chief, Orthopaedic Trauma Surgery
- J. Eric Gordon, MD  
  Chief, St. Louis Children’s Hospital
With health-care reform imminent and an aging population seeking more orthopaedic services, it’s “a bad time to hit a bump in the road,” says Richard Gelberman, chairman of Washington University’s Department of Orthopaedic Surgery.

At a recent department retreat, Gelberman told approximately 100 of his colleagues — physicians, clinical staff and administrators — that patient satisfaction scores had recently fallen slightly and positive answers to the crucial question of whether a patient would recommend the group had plateaued. “We’ve grown substantially in visits and procedures, and part of our problem is our success,” Gelberman says. “Even considering all the responsibilities we have as academic orthopaedic surgeons, this is a critical time to maintain our patient-centric focus.” He called for recommitment to the department’s most basic tenets: the provision of outstanding care, careful attention to detail and consummate professionalism.

Any clinical department’s overriding concern — patient satisfaction — becomes particularly important to the bottom line in light of health-care reform. Among other things, the change will insure the 16 percent of Americans who were previously uninsured. Also of major impact: Beginning in 2012, Medicare will implement value-based purchasing, transforming itself from paying for volume to paying for performance, according to Richard Liekweg, president of Barnes-Jewish Hospital, one of Washington University School of Medicine’s hospital partners.

In its current form, the Patient Protection and Affordable Care Act dictates that, beginning in 2013, 30 percent of a provider’s total performance rating will be determined by patient satisfaction measures. The following year, outcomes metrics join patient experience as part of every provider’s score. Included are other elements of patient-centered care such as nosocomial infection rates and readmission numbers. Those scores will be in the public domain and, as written, the law does not include social determinants such as poverty in the formula that reduces payment for underperformance, Liekweg says. In urban centers, those factors complicate care and increase
costs. “But the bigger issue is reputational,” he says, since patients will be able to compare scores before choosing a provider.

To consider these issues, retreat participants collaborated on ways to improve patient care and satisfaction and increase efficiencies. Among the concerns addressed was the problem of medication reconciliation. Complicated by the inaccuracy of memory, trade-versus-generic drug issues and the need to restart pre-surgery medications, the problem has not been resolved by computer applications.

Proposals included dispatching nurses to each patient’s home within five days of discharge to interpret prescription orders, staffing a post-hospital clinic for complicated patients and scheduling a patient’s visit to his or her primary care physician at the time of discharge. A possible solution with broader benefits: Expand the hospitalist model by pre-operatively assigning an internist to each patient to anticipate problems. The generalist would oversee the patient until 30 days post-discharge.

A majority of patients select a specialist based on the recommendation of their primary care physician; retreat participants considering practice-growth strategies recognized the need to meet the expectations of referrers by providing timely appointments, making surgeons available for consultations and quickly issuing follow-up reports.

One stumbling block to improving relationships with referring physicians has been finding an efficient way to route physician callers. As a result of the discussion, clinical faculty will be polled about their preferred means of contact, with an eye to standardizing communications. Faculty members also agreed to survey referring physicians about their interest in expanding continuing medical education offerings.

Discussions of improving the patient experience and its significance in shaping patient loyalty focused on the four points of contact with patients: pre-visit, arrival, physician visit and post-visit. The need for efficient communication recurred as a thread.

The department’s schedulers handle 130,000 appointments annually, and about one-third of those require rescheduling. Though completely eliminating this rework effort is not possible, accurate scheduling criteria and communication of physician availability provide clear benefits.

Physicians agreed to review schedule criteria at least annually and to keep their master schedules customized to help avoid scheduling conflicts.

Department principals determined to undertake a pilot program with Barnes-Jewish to employ patient care improvement initiatives along with process improvements and cost-saving measures, then track results. The patients selected for this pilot are total-knee and total-hip arthroplasty patients. Outcomes will be published as a guide designed to help establish best practices. “Only by enhancing service, satisfying patients, improving outcomes and conserving expenses will we stay one step ahead of the changing game,” Liekweg says.
The Department of Orthopaedic Surgery at Washington University School of Medicine received $5.1 million in funding from the National Institutes of Health (NIH) in 2010, ranking first among all orthopaedic surgery departments in the United States for the second consecutive year, according to Blue Ridge Institute for Medical Research (BRIMR). Ranked second to fifth are: University of Rochester, University of Iowa, Johns Hopkins University and University of Pennsylvania.

HONORS/AWARDS

Ryan Nunley, MD, was the recipient of the James A. Rand, MD, Young Investigator Award given by the American Association of Hip and Knee Surgeons for Best Arthroplasty Paper of 2010 for “Do Patients Return to Work Following Hip Arthroplasty Surgery?” Other Washington University authors of the paper are John Clohisy, MD, and Robert Barrack, MD. Nunley also received the Orthopedic Research Society’s Marshall R. Urist, MD, Award for his manuscript, “When to Release Patients to High Impact Activities Following Hip Resurfacing.” Nunley was the recipient of the Spring 2011 OREF/Current Concepts in Joint Replacement Clinical Practice Award for his work as principal investigator on a retrospective study that examined the capacity of patients to return to work after hip replacement surgery.

Robert Brophy, MD, Matthew Smith, MD, and Rick Wright, MD, received the Charles S. Neer II, MD, Award from the American Shoulder and Elbow Surgeons for their paper, “Effectiveness of Physical Therapy in Treating Atraumatic Full Thickness Rotator Cuff Tears. A Multi-Center Prospective Cohort Study.”

GRANTS

Stavros Thomopoulos, PhD, and Leesa Galatz, MD, received a five-year, $1.4 million R01 grant for research titled, “Rotator Cuff Degeneration and Repair.”

Roberta Faccio, PhD, received three grants: a two-year, $200,000 Arthritis Foundation grant for research titled, “Role of PLCgamma2 in juvenile arthritis,” a five-year, $1.9 million NIH competitive renewal grant for research titled “Regulatory Pathways in Osteoclasts and Immune Cells during Inflammatory Arthritis” and a four-year, $920,000 Shriners Hospitals for Children grant for research titled “Role of PKCo in inflammatory arthritis and focal osteolysis.”

Ken Yamaguchi, MD, Jay Keener, MD, and Sharlene Teefey, MD, (Department of Radiology) received a five-year, $2.3 million NIH competitive renewal grant for research titled, “Asymptomatic Cuff Tears: A Model for Pain Development.”

Audrey McAlinden, PhD, received a two-year, $285,209 Children’s Discovery Institute grant for research titled, “Identification of Novel and Differentially-expressed Non-coding RNAs During Human Limb Development.”

Lawrence Lenke, MD, received a five-year, $1 million John and Marcella Fox gift in support of a sponsored project titled, “Fox Pediatric Spinal Deformity Study.”

Matthew Silva, PhD, received a five-year, $2 million NIH competitive renewal grant for research titled, “Response of the Osteoporotic Skeleton to in Vivo Loading.”

ADDITIONS TO RESIDENCY PROGRAM

We welcome new orthopaedic surgery residents who will train at Barnes-Jewish Hospital and St. Louis Children’s Hospital. Pictured, from left: Steven Cherney, MD, Case Western Reserve University School of Medicine, Marcus Rothermich, MD, University of Virginia School of Medicine, Jeffrey Stambough, MD, University of Pennsylvania School of Medicine, Nathan Skelley, MD, Johns Hopkins University School of Medicine, R. Bruce Canham, MD, Washington University School of Medicine, and Sami Mardam-Bey, MD, Duke University School of Medicine.
OF NOTE continued

APPOINTMENTS/ELECTIONS

K. Daniel Riew, MD, was selected to be in the presidential line of the Cervical Spine Research Society. This year, he serves as vice president, in 2012 he will be the president-elect and in 2013 he will serve as president.

Robert Barrack, MD, was appointed as a member-at-large of the board of The Hip Society. Barrack was also appointed to the board of The Knee Society this year and will serve as treasurer.

Linda Sandell, PhD, was installed as president of the Osteoarthritis Research Society International at the 2010 meeting in Brussels.

NEW ADDITION TO FACULTY

Michael Kelly, MD, (residency at University of California, San Francisco, spine fellowship at Washington University School of Medicine) as assistant professor of orthopaedic surgery on the Spine Service.

PROMOTIONS

Yousef Abu-Amer, PhD, to professor, July 1, 2010
Rick Wright, MD, to professor, July 1, 2010

PAUL R. MANSKE, MD
1938–2011

Paul Manske, MD, was a remarkably talented and compassionate hand surgeon. A Washington University School of Medicine graduate, he completed his orthopaedic residency training at Barnes Hospital/Washington University in 1972.

He completed a fellowship in hand surgery at the University of Louisville.

Manske had a passion for medicine. He was a pioneer in pediatric upper extremity surgery, being the first such subspecialist in the Shriners Hospitals for Children system. At Shriners Hospital for Children — St. Louis and at Washington University, he was appreciated as a great physician and a superb surgeon. He never left the clinic without thanking his nurse and the entire team that worked with him that day.

Manske was a member of numerous national and international professional organizations related to hand surgery. He authored more than 200 original articles and book chapters related to hand and upper extremity surgery and was the editor of the Journal of Hand Surgery from 1996–2010. He served as the director of hand surgery at Shriners Hospital for Children — St. Louis.

In 1983, Manske was appointed the first Fred C. Reynolds Professor and Chairman of Orthopaedic Surgery. In his publication “A Century of Orthopaedic Surgery at Washington University,” Manske wrote, “The orthopaedic department at Washington University moves into the new millennium with a continuing commitment to the clinical care, teaching and research of the past 100 years.” Manske was committed to these three tenets, and as a result, was the recipient of many awards and honors.

“Dr. Manske was the definition of the gentleman surgeon,” said Jakub Langer, MD, an orthopaedic surgery resident in the Class of 2010. “Every day I worked with him was a true pleasure. He was everything you want to strive to be as a person and physician.”

Manske is survived by his wife, Sam, and by his children, Ethan, Claire and Louisa.
Washington University School of Medicine's 2,100 employed and volunteer faculty physicians are the medical staff of Barnes-Jewish and St. Louis Children's hospitals.
For more information about the Department of Orthopaedic Surgery, please visit:

ortho.wustl.edu