QUALITY and PATIENT SAFETY
IN THE HOSPITAL AND COMMUNITY
Neil deGrasse Tyson, Ph.D., is an American astrophysicist, lecturer, author and TV host of Star Talk and Cosmos: A Spacetime Odyssey on FOX and National Geographic. He is the director of the Hayden Planetarium in New York City, a part of the American Museum of Natural History. As a great science communicator, he frequently shares his perspectives on life, civilization and the universe.

An underlying theme in his writing and lectures, and one reason he is so persuasive, is his adherence to facts and the scientific method. The scientific method eschews opinion, and focuses upon objectivity. Tyson summarizes it as: Do whatever it takes to avoid fooling yourself into thinking something is true that is not, or that something is not true that is. He likes to differentiate a hypothesis from theory. A hypothesis is an idea or explanation that is then tested through study and experimentation to determine if it is true. A theory is a model that covers a substantial group of occurrences in nature and has been confirmed by many experiments and observations.

Health-based outcomes can be measured from both the patient (patient-reported outcome measures – PROMs) and provider (clinical outcome measures – COMs) perspectives. Historically, objectivity was sought by documentation of COMs; however, excepting the patient’s feedback on satisfaction or experience prevented valuable information from being reported. PROMs can be difficult to interpret in terms of reliability, validity and reproducibility due to their complexity. Patient satisfaction may be dependent on many variables: delivery of care, expectations, symptoms, function, preoperative counseling, surgical indications, disability, family support, individual accountability and psychiatric distress – to name a few. Many studies have reliably reported the validity of PROMs for symptoms and function but the other variables create uncertainty in some outcome measures. It may be that giving patients what they want may not be giving them what they need.

Would Tyson believe it a hypothesis or theory, that current COMs and PROMs are metrics that produce better health care outcomes? What would he say about policy-makers’ ideas about linking certain PROMs and satisfaction with effectiveness or quality of surgical care?

This winter edition of Orthopaedia will focus on Value-Based Care. While we recognize the limitations of COMs and PROMs, we do not deny their significance in evolving health care toward better outcomes. Only by testing and refining our measures for outcome can we test our hypotheses of how to positively impact our practice of orthopaedics. And so, we present again our holistic attempts to improve the care of our patients by reporting our results in measuring patient safety, quality and outcomes in a meaningful way.

Thank you for reviewing our publication and please accept our best wishes in the New Year.

Sincerely,

Herbert S. Schwartz, M.D.
Professor and Chairman
Vanderbilt Orthopaedics
The Vanderbilt Department of Orthopaedics (VDO) works continuously on quality improvements that support optimal patient outcomes. Our quality improvement efforts are focused in five key clinical areas, as well as patient satisfaction and ambulatory care.

Mary Duvanich, MSN, RN, MMHC, associate nursing officer for orthopaedics, says VDO leadership is increasing its emphasis on quality improvement in ambulatory settings while maintaining its commitment to quality improvement in the hospital.

“Most of our quality initiatives, except hand hygiene and patient experience, are geared towards hospital settings, not ambulatory settings, and we’re really trying to change that,” she said.

Currently, the five clinical areas of focus for quality improvement are acquired infections, acquired conditions, observed versus expected mortality, readmissions for hip and knee procedures, and hand hygiene. With partners in Adult Performance Management and Improvement in Quality, Safety and Risk Prevention, VDO has managed several initiatives across these focus areas and more.

Of particular relevance to orthopaedic patients are acquired conditions related to falls. “Many of our patients are fall risks because of the nature of their injury or treatment, but they might also be confused after surgery,” she said. “We’ve done a lot of work on the two inpatient units to prevent falls.”

One strategy is fall risk assessments, called “safety circles,” with high-risk patients to ensure that all appropriate prevention measures are in place, including yellow no-slip socks, appropriate signage on doors, proper bed positions, accessible call lights, and targeted toileting. Efforts have centered on engaging patients in the “safety circles.” For example, Duvanich’s team is currently piloting the use of ceiling tiles and walls signs that say “Call, don’t fall” in an effort to remind patients that they should request assistance when getting up.

“We’re doing everything we can to make sure all these things are in place so they don’t fall, while reiterating to patients that they’re fall risks,” she said.

Patient education is also critical to reducing readmission rates. Clinical teams are working to better emphasize to patients that they should come to the clinic, not the emergency department, if they have any minor issues after surgery. They explain risks and warning signs that indicate the need to see a healthcare provider and ensure that patients know how to contact the clinic.

“We’re really focusing on patient education pre-operatively,” said Duvanich.

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PHI Acquired Infections

Surgical site infection (SSI) rates for patients undergoing hip and knee replacement surgery continue to decrease. In Quarter 3 of 2015, there were 0 surgical site infection rates for all hip and knee replacement surgeries performed. The SSI standardized infection ratio (SIR) calculated by the CDC provides an expected number of SSI events based on the risk makeup of the hip and knee population. In Quarter 3 of 2015 the SSI SIR was 0 for both knee and hip replacement patient populations, below that of the CDC benchmark of 1.
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Patient experience, as measured by HCAHP scores, is another priority area for quality improvement. This includes measuring everything from quietness at night to how well patients understand their medications and pain management. Two current quality improvement initiatives specifically target the patient experience regarding pain management while in the hospital and targeted counseling on the side effects of certain types of medications.

“We’re really focusing on patient education pre-operatively,” Mary Duvanich explained.

“On the ambulatory side, more and more, functional outcomes are very important, and we’re building up an entire department to make sure we’re doing everything we can around functional outcomes,” said Duvanich.

Recently, a project focusing on right side radiation and films has made progress in the clinic setting. They began collecting baseline data in early 2015, conducted trainings on a new protocol, and implemented it at the end of March.

“This means making sure that we have the right order, and repeating the order so there’s appropriate communication with colleagues in radiology to make sure that everyone is on the same page,” said Duvanich. Even the waiting room is under scrutiny for quality improvement, with efforts under way to improve the experience of patients who are waiting for appointments.

“We’re now able to get into granular data with wait times,” Duvanich said. “How do we manage our patients while they’re in the waiting room? How do we manage the environment? Are we communicating with them on how much longer it’s going to be?”

Duvanich explains that the increased focus on quality improvement in ambulatory settings is a natural outgrowth on emphasizing systems of care.

“We decided we needed to start focusing on quality initiatives across the continuum,” she said. “Could we also do something specific to our population in the clinic? More and more, we’ll be looking to expand that.”

To improve communication of side effects, VDO is working with the College of Pharmacy to create cards that are placed at nursing stations with reminders to explain side effects.

“We’re working very closely with our colleagues in pharmacy to develop a card that can be used by nurses, so that when a routine medication in ortho is prescribed, like a narcotic or blood thinner, the nurse has a reminder about what to tell the patients,” said Duvanich.

Functional outcomes are also a priority in the outpatient setting.

(“On the ambulatory side, more and more, functional outcomes are very important, and we’re building up an entire department to make sure we’re doing everything we can around functional outcomes,” said Duvanich.)

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When Kevin Liudahl, M.D., began working as an orthopaedic surgeon in Sioux City, Iowa more than 30 years ago, it was immediately clear that his training had prepared him well. He earned his medical degree and completed an orthopaedic surgery residency at Vanderbilt, experiences he describes as “second to none.”

“I was very happy with my time and training at Vandy. It was very vigorous, very onerous, but it has to be. There’s no way around it. And they had me prepared for anything and everything,” he said.

He found Vanderbilt’s attentive faculty, high volume of patients, emphasis on trauma care, and mix of hospitals to be particularly helpful in preparing him for practice.

Liudahl and his wife moved to Sioux City to be closer to her family after he finished his medical training. He worked for a private practice and contracted with a local hospital for several years before co-founding Tri-State Specialties, LLP, in 2005. The multidisciplinary practice, comprised of 15 clinicians, cares for patients with musculoskeletal, joint and pain problems through state-of-the-art medical treatment, surgery, rehabilitation, and diagnostic services. The clinic is located on the campus of UnityPoint Health – St. Luke’s and serves patients living in Iowa, South Dakota and Nebraska.

“I’ve been very busy and very gratified by my current practice,” he said.

These days, his work involves an increasing number of joint replacements as his patient population ages. Many patients are referred from the hospital across the street, which doesn’t have an orthopaedic division.

While his medical training provided excellent preparation for patient care, he says it taught him almost nothing about establishing and running his own practice.

“There’s not much training in that because there’s no time [in medical school]. So you’re learning that on your own. It’s tough, but it’s doable,” he said.

Teaming up with good partners has been key.

“It’s extremely important that you have good partners,” he said. “That’s the most valuable thing other than your training because they’re covering your backside when you’re not available. I’ve been really fortunate to have good partners.”

For about ten years he also organized an annual orthopaedic pheasant hunt meeting in South Dakota. At its peak, about 65 surgeons attended. The last gathering occurred in 2002.

“It was a serious meeting. We had serious talks. Of course, we also had serious pheasant hunting,” he said.

Six years ago, Liudahl was nominated to serve as an oral board examiner for the American Board of Orthopaedic Surgeons, a role that he describes as “extremely gratifying”. Through the organization, he’s enjoyed meeting people who are carrying on the high-quality traditions of orthopaedics that he was trained in.

“You get to give back to orthopaedics, and we’re doing a service for the field that’s just hard to match,” he said. “Someone’s got to do this --and do it right-- to make sure the certification means something.”

He sees the changing health care landscape putting pressure on all specialties to do more with less.

“But there’s still value in caring for patients,” he said. “And I still enjoy orthopaedics. I really do. I enjoy fixing problems for people, and getting them back to the things they want to do. Or have to do. Or both.”

Outside of work, Liudahl stays busy with outdoor activities, including hunting, fishing, and running a small farm with his wife, Camille. Their son, Adam, completed his undergraduate degree in chemistry at Vanderbilt University and is now a neuroradiology resident at University of Iowa. Their daughter, Nicole, is finishing her Ph.D. in counseling at North Texas Women’s University, specializing in child play therapy.
Second Biennial Youth Sports Safety Conference and Gala Held; Youth Sports Safety Advocate of the Year Awarded.

The 2015 Youth Sports Safety Conference and Gala was held July 16-17 at the Gaylord Springs Clubhouse. The events were presented by the Vanderbilt Program for Injury Prevention in Youth Sports (PIPYS), which is led by Alex Diamond, D.O., M.P.H., F.A.A.P., assistant professor of Orthopaedic Surgery and Rehabilitation and national advocate for youth sports safety. An estimated 3.5 million children and 2 million high school students receive treatment for sports-related injuries each year, and PIPYS works to reduce those numbers.

The conference focused on developing, evaluating, and promoting strategies to prevent youth sports-related injuries and protect the health of the pediatric athlete. The meeting included health care professionals, educators, administrators, coaches, and parents from across the country.

Keynote speaker Jim Thorton, M.S., A.T.C., C.E.S., president of the National Athletic Trainers Association and athletic trainer at Clarion University, discussed the national action plan for sports safety and the role of certified athletic trainers. Carolyn Emery, P.T., Ph.D., professor of Pediatrics, physical therapist, and epidemiologist at the University of Calgary, also delivered two keynote addresses, one on injury prevention in youth ice hockey and the other on progress and challenges in injury prevention in youth sports. Conference sessions and panel discussions focused on an array of topics including concussions, the overhead athlete, supplements and performance enhancers, the running and jumping athlete, cardiac arrest, environment concerns, first responders, and psychological concerns.

The gala was hosted by sports announcer Charlie Mattos, with Lieutenant General Richard P. Mills as the keynote speaker and Larry Stewart as musical guest. During the gala, the Youth Sports Safety Advocate of the Year Award was presented to Sam Elkins, an 18-year-old recent graduate of St. George’s Independent School in Collierville, Tenn., where he was a defensive starter on the lacrosse team. Elkins has a rare congenital heart condition and had his first open-heart surgery at Vanderbilt when he was only 26 hours old. In the spring of 2014, his interest in sports and his personal experience as a heart patient came together when he saw a story on The Today Show about “Simon’s Fund”, which provides free community heart screenings at Vanderbilt for the local youth. The fund was started by Phyllis and Darren Sudman, who sadly lost their son, Simon, to an unknown heart condition, and who were responsible for the passing of the Sudden Cardiac Arrest Prevention Act in their home state of Pennsylvania.

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The story inspired Elkins to do whatever he could to get a similar act passed in Tennessee. He contacted Simon’s Fund for guidance, and in November 2014, Elkins met with Tennessee Senate Majority Leader Mark Norris, who enthusiastically agreed to sponsor the bill, which he called “common sense legislation.”

Diamond and Frank Fish, M.D., Elkin’s own doctor and professor of Pediatrics at Vanderbilt Children’s Hospital, testified before both the House and Senate Health Committees, explaining that sudden cardiac arrest is the No.1 killer of student athletes, and that increased education could make the difference between life and death for a young person.

The legislation passed both houses, and on June 10, 2015, Governor Bill Haslam signed the Sudden Cardiac Arrest Prevention Act, making Tennessee the ninth state to enact the law.

**Andrew Gregory, M.D. Quoted in Story about Football Players and Head Trauma Concerns**

In March, Vanderbilt University quarterback Patton Robinette announced that he was quitting the team to go to medical school, but he also said that his history of concussions was a factor in his decision. The same week, Chris Borland of the San Francisco 49ers also left his team due to concerns about traumatic brain injuries. WSMV quoted Gregory, associate professor of Orthopaedics and Rehabilitation and Pediatrics in their coverage of the story.

"In general, we see more concussions," said Gregory. "Primarily because we have rules now in place that if you have a concussion or if there is anybody who is suspicious that you have had a concussion, you have to see a doctor to get clearance to go back and play."

He said that while many patients didn’t report concussions in the past, these days he gets more and more questions from his patients about risks of returning to sports and the consequences of multiple concussions. He said we still need better data about concussions.

Gregory also said that while most colleges and USA football limit the amount of contact in practice, there are currently no such limits for high school football. A medical board is currently drafting recommendations to be included in rulebooks in Tennessee.
Sethi Leads Healthy Tennessee Organization
Manish Sethi, M.D., assistant professor of Orthopaedics and Rehabilitation, founded Healthy Tennessee with his wife, Maya Sethi, J.D. Healthy Tennessee is a non-profit organization dedicated to promoting preventive health care and making Tennessee a healthier place to live. The group provides health education, training opportunities, and community health fairs to improve the well-being of Tennesseans.

Healthy Tennessee has hosted several events this year. On October 28, Healthy Tennessee partnered with Belmont’s Massey College of Business to host a free, four-hour symposium on why health care should matter to the business community. Health care and education leaders joined government officials and executives from locally-based corporations to discuss the impact of healthcare and citizens’ health on the state’s entrepreneurial climate, and how all of these entities can best work together to improve health.

“There is no issue more important to the future of Tennessee and the development of a thriving business community than the health of our citizens,” said Sethi. “Companies seek environments in which employees are not only educated, but also healthy. Currently, Tennessee ranks 45th nationally in terms of health care with rates of diabetes, heart disease and obesity at all-time highs. Unhealthy employees cost companies billions in health care dollars on an annual basis and discourage major corporations from moving to our state. That cannot continue.”

The symposium featured Randy Boyd, Commissioner of Economic and Community Development for the State of Tennessee, and Ralph Schulz, Nashville Chamber of Commerce President and CEO. Other highlights included presenters from Healthy Tennessee, Nissan, Volkswagen, Dollar General, Asurion, Aspire, United Healthcare and Blue Cross, among others.

Healthy Tennessee has also hosted five community health fairs across the state this year.

Sethi Pushes for Conflict Resolution Program in Schools
Alarmed by the number of young patients presenting with assault-related injuries and gunshot wounds, Sethi has been working for three years to introduce an evidence-based violence prevention program in Tennessee schools. The program is based on a model called “Aggressors, Victims, and Bystanders: Thinking and Acting To Prevent Violence (AVB),” developed by a Harvard developmental psychologist in 1994. AVB is designed to prevent violence and inappropriate aggression among middle school youth, particularly those living in environments with high rates of exposure to violence. Sethi and his team developed a web-based model and provide training for school staff, supported by grants and Sethi’s Healthy Tennessee organization.

The program is currently used at schools in Nashville and Memphis. At Kirby Middle School in Memphis, the program made a “strong difference,” according to Jeremy McKinnie, who oversees the school’s Project Prevent programs. The school saw a 75 percent reduction in suspensions when it implemented AVB along with several other projects, including a summer camp for students with discipline issues. Post-tests of students who participated in AVB at Kirby Middle indicated a change in attitudes about violence, including a decreased likelihood in encouraging other students to fight.
Magnetic "Growing Rods" Ease Treatment for Scoliosis Patients

The Vanderbilt Pediatric Orthopaedic division is employing a new technology that uses magnetically controlled growing rods to correct scoliosis in young children, reducing the need for frequent surgeries and anesthesia. Magnetic Expansion Control (MAGEC) involves inserting two adjustable magnetic rods into the back during a minimally invasive surgery. Traditional growing rods require surgery every six months to make adjustments, but with MAGEC, the rods can be lengthened in the clinic with an external device--and without anesthesia. An external remote controller is placed on the back and uses magnets to lengthen the rods. Radiographs or ultrasound then confirm that the rods have lengthened successfully.

As of mid-December, 14 young patients at Vanderbilt have been implanted with the rods, which are ideal for children who still have a lot of skeletal growth to do. The rods help control the scoliosis while allowing the spine and chest time to grow until surgeons perform a spinal fusion to stop the spine’s growth through the deformed segment.

“This is really exciting technology involving magnetically controlled growing rods approved by the FDA,” said Jeffrey Martus, M.D., assistant professor of Orthopaedics and Rehabilitation and Pediatrics.

Gregory Mencio, M.D., professor of Orthopaedics and Rehabilitation and division director of pediatric orthopedics at Vanderbilt’s Monroe Carell Jr. Children’s Hospital, sees clear benefits to this new treatment option. “It’s an office visit every four months as opposed to an operative procedure every six to nine months. Pretty good trade off,” he said.

Patient Satisfaction Awards

Vanderbilt Orthopaedics received extensive recognition in this year’s Patient Satisfaction Awards, with four individuals, one clinic, and three groups receiving 5-Star Awards. Eligibility for these awards is limited to individuals and groups with 50 or more survey responses over the previous year, while Top Performer Awards are limited to individuals with at least 50 survey responses and groups with at least 100 responses.

Individual 5-Star Award Winners:

- Jennifer Halpern, M.D., assistant professor of Orthopaedics and Rehabilitation
- John “Jed” Kuhn, M.D., Kenneth D. Schermerhorn Professor of Orthopaedics and Rehabilitation
- Jonathan Schoenecker, M.D., Ph.D., assistant professor of Orthopaedics, Pediatrics, Pharmacology, and Pathology, Microbiology, and Immunology
- Kirby “Hudson” Deeter, D.P.M, associate in Orthopaedics and Rehabilitation

Clinic and Group 5-Star Awards:

- Pediatric Orthopaedic Clinic
- Orthopaedic Trauma (10 South)
- Vanderbilt Bone and Joint Surgery Center
- Orthopaedic Occupational and Physical Therapy
Study Shows Decline in Opioid Use among Preoperative Patients

According to a study by Andrew Shinar, M.D., associate professor of Orthopaedics and Rehabilitation, patients coming to the Vanderbilt Joint Replacement Center who said they took opioids for pain declined 38 percent from 2011-2012 to 2013-2014.

The decline reflects efforts by the state of Tennessee to restrict access to opioids, including the implementation of the Tennessee Prescription Safety Act of 2012, which required more stringent reporting and monitoring. At the same time, however, incidence of overdose death has increased in each of the last three years, from 16.9 deaths per 100,000 people in 2012 to 19.3 in 2014.

Shinar says that using narcotics to treat pain before a surgery can increase post-operative pain and chances of complications.

“The amount of pain that people have after the surgery is a lot higher if they are on narcotics before the surgery,” he said. “When you get over-sedated, you stop breathing. That’s the real scary part of it all. When someone is on narcotics preoperatively, the window between giving so much that they stop breathing and enough to keep them from getting pain is very narrow.”

The study also revealed that the use of opioids to treat pain decreased from 34 percent to 21 percent, and this decrease was statistically significant. Shinar presented the findings from his study at the 2015 annual meetings of the Southern Orthopaedic Association and Tennessee Orthopaedic Society.
Vanderbilt Orthopaedics in U.S. News and World Report Rankings

Vanderbilt Orthopaedics made another good showing in the most recent U.S. News and World Report rankings. The pediatric orthopedic program at Monroe Carell Jr. Children’s Hospital was ranked 12th in the nation, and the general orthopaedic program at Vanderbilt University Medical Center (VUMC) was ranked as a high-performing specialty program.

For the fourth year in a row, VUMC ranked as the No. 1 hospital in both Metro Nashville and the state. VUMC had 12 out of a possible 16 specialties either nationally ranked or designated as nationally high performing.

The Best Hospital rankings are based on evaluation of 4,716 hospitals across the country, only 2,265 (48 percent) of which performed well enough to have even a single specialty program ranked as being among the best in the nation. To be eligible for the rankings, hospitals must either be a teaching hospital, be affiliated with a medical school, and have at least 200 beds or at least 100 beds plus certain medical technologies.

The Best Children's Hospital rankings are calculated using clinical and operational data, including best practices, patient outcomes and staffing, as well as results from a reputational survey of board-certified pediatric specialists. Eighty-three hospitals, out of the 184 surveyed, ranked in one or more specialties. Children’s Hospital has ranked all nine years since the report’s inception in 2007.


Publications

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Kelly PD, Parker SL, Mendenhall SK, Bible JE, Sivasubramaniam P, Shau DN, McGirt MJ, Devin CJ. Cost-effec- (Continues page 14)


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Sathiyakumar V, Avilucea FR, Whiting PS, Jahangir AA, Mir HR, Obremskey WT, Sethi MK. Risk factors for adverse cardiac events in hip fracture patients: an analysis of NSQIP data. (continues page 16)
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Yoshii T, Nyman JS, Yuasa M, Esparza JM, Okawa A, Gutierrez GE. Local application of a proteasome inhibitor enhances fracture healing in rats.
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