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Dome

A publication for the Johns Hopkins Medicine family.

Volume 64 • Number 3 • March 2013



Drawing on the legacy of William Osler, Johns Hopkins Hospital's first head of medicine, John Flynn, Maura McGuire and Steve Kravet are among the leaders of an effort to bring primary care to the fore.

Back to the Future

System-wide efforts aim to reinvigorate primary care.

"...TO KNOW FULLY MANY OF THE MOST IMPORTANT DISEASES, A [DOCTOR] MUST BE FAMILIAR WITH THEIR MANIFESTATIONS IN MANY ORGANS."

—WILLIAM OSLER

If William Osler could return to Johns Hopkins today, he'd likely be astonished to find so many specialists. Indeed, Johns Hopkins Hospital's revered first physician-in-chief preached a "generalist" approach that combined empathy for patients with the best that medical science had to offer. His 1892 textbook *The Principles and Practice of Medicine* urged doctors to "care more particularly for the individual patient than for the special features of the disease."

Osler's insights laid the groundwork for the field of medicine that would become known as primary care, the health care given by a physician who acts as the central point of contact for patients and guides them through myriad options and referrals. Granted, most doctors during Osler's time were considered generalists. But as specialties have come into their own, primary care across the nation has grappled with challenges. These include lower pay and longer hours compared with other disciplines, low Medicare reimbursements and more elderly, complex patients.

Although the Affordable Care Act will ensure universal care for all Americans by next January, predictions abound of a deficit of about 29,000 primary care doctors by 2015. Yet most U.S. medical students—even those who match in internal medicine and pediatrics—still opt for specialty training.

It's the perfect storm, and not a day goes by that John Flynn doesn't think about these

thorny issues. Fortunately, says The Johns Hopkins Hospital director of clinical practice improvement within the Clinical Practice Association and former clinical director of general internal medicine, much has already been done to raise the profile of primary care at the institution. The establishment of the Osler Center for Clinical Excellence in 2002, which uses philanthropy to support research and education in internal medicine, is but one example.

Even so, during a past dean's retreat, Flynn noted that primary care issues dominated the agenda: urban health, chronic disease management and reaching out to community physicians. With the dean's blessing, a series of meetings was launched with several clinical leaders throughout Johns Hopkins Medicine, including colleagues at the schools of nursing and public health. All agreed that a more concerted effort was needed to bring people together to bolster the role of primary care both at Johns Hopkins and on the national stage, much as the Armstrong Institute for Patient Safety and Quality is doing within and well beyond Johns Hopkins' walls.

The result of their conversations is the newly formed Johns Hopkins Consortium for the Advancement of Primary Care, which held its first open-to-all event on Feb. 21 at The Johns Hopkins Hospital. Aiming to nurture the development, value and growth of primary care research, education, national

(continued on page 2)

Forging New Paths

Paul B. Rothman
Dean of the Medical Faculty
CEO, Johns Hopkins Medicine

Last month, leaders from across Johns Hopkins gathered to discuss a serious topic: how to strengthen the nation's system of primary care—when the pool of physicians continues to shrink—and the number of patients continues to grow.

Here at the Johns Hopkins University School of Medicine, faculty members are already exploring ways to address such 21st-century health care challenges. They are also strengthening residency and fellowship training and taking advantage of new opportunities to educate physicians and life scientists by using the latest scientific and technical developments.

Advancing education, training and research are major goals guiding a new strategic plan for the future of Johns Hopkins Medicine. For more than a year, faculty, staff, administrators and leaders from across the JHM enterprise have



worked together to craft a blueprint for change to ensure that our institution will remain an international model of excellence in research, education and patient care.

In addition to our pledge to lead the world in the education and training of physicians and biomedical scientists, we are also committed to:

- **Attracting, engaging, developing and retaining** the world's best people. Not only will we mentor and advance staff members at all levels, but we will also create and maintain the kind of diverse, inclusive and civil culture that nurtures professional development.
- **Becoming the exemplar for biomedical research** by advancing and integrating discovery, innovation, translation and dissemination. We will invest in core resources and institutional collaborations in order to work better with “big data”—groups of data sets so large and complex that they go beyond the ability of conventional data management systems.
- **Leading the nation** in safety, science, teaching and the provision of patient- and family-centered care. We will become the safest health care organization by transforming how we deliver care across the clinical continuum.
- **Becoming the model** for an academically based, integrated health care delivery and financing system.
- **Creating financial success** that is sustainable and implementing ways to continuously improve performance. We will identify new sources of revenue and expand those that exist while ensuring that all remain consistent with our tripartite mission.

These are big goals, ones that you will hear more about as we determine the timetables and action plans for achieving success.

Meanwhile, we will continue to provide the highest levels of patient care and safety.

We will strengthen support for funding basic scientific discovery as well as clinical and implementation research.

And we will continue to stretch the boundaries of medicine with state-of-the-art treatments, such as the double arm transplant recently performed here.

Back to the Future (continued from page 1)

policy and clinical medicine for pediatric and adult patients within all entities of Johns Hopkins Medicine, the consortium is building on an already strong base. Johns Hopkins Community Physicians, for example, is the largest primary care group in Maryland. The network of community-based practices serves more than 280,000 patients annually at more than 35 locations throughout the state.

“Our primary care is incredibly robust,” says JHCP President Steve Kravet. “Collectively, we’ve made great strides in delivering care that averts crises and keeps patients home longer.”

Nurse practitioners and physician assistants help, he says, along with patient education and wellness programs that teach patients ways to prevent chronic illnesses from spiraling out of control. Still, Kravet worries about the impact of the looming shortage of primary care physicians.

Addressing that challenge, consortium leaders agree, must begin with exposing students early on to primary care. One example that’s been in place at the school of medicine since 2007 is the Longitudinal Ambulatory Clerkship. Directed by Maura McGuire as part of the Genes to Society curriculum, the clerkship gives medical students firsthand experience in community doctors’

offices. “You can talk about patients’ struggles with insurance, landing an appointment, transportation and family dynamics, but you won’t get it till you go out in the world,” says McGuire, who is also director of education for JHCP and assistant dean for part-time faculty.

Feedback has been overwhelmingly positive. “I learned something that I could never learn in the hospital,” wrote one student. “We are privileged to have the opportunity to become a part of the lives of our patients; to watch children grow, to be there for our patients at some of the scariest and happiest moments, and even to help them cope with the end of life.”

In that spirit, says McGuire, the new Consortium for the Advancement of Primary Care will continue to collect “wonderful ideas to expand the visibility of primary care across the institution.” That includes enhancing research in the field and inspiring more students to join its ranks.

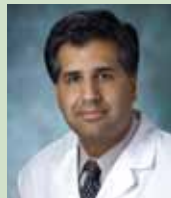
If William Osler were alive today, he would no doubt champion these efforts.

—Judy F. Minkove

To view the agenda and outcomes of the recent conference, visit hopkinsmedicine.org/primary_care_consortium.

Fired Up About Primary Care

About 250 people from across Johns Hopkins and the community attended the inaugural Primary Care Consortium at Turner Auditorium and Concourse on Feb. 21. The program opened with remarks from University President Ron Daniels; the deans of the schools of medicine, nursing and public health; leaders in primary care; students and primary care residents. Below is a sampling of observations from that day:



“Johns Hopkins has been providing primary care for decades, but it’s under-recognized. We need to continue to train outstanding specialists, but we must get the message across to all trainees that primary care is not a four-letter word. That said, I don’t push medical students and residents to go into the field; it takes a special person to become a patient’s quarterback—a veritable jack-of-all-trades who is committed to the doctor-patient relationship.”

—Bimal Ashar
Clinical Director of
General Internal
Medicine, The Johns
Hopkins Hospital



“The breadth of stakeholders—from trainees to policymakers—was so helpful in building momentum. The next step is to clarify our needs for patient care, research, policy and education.”

—Scott Wright
Director of General
Internal Medicine,
Johns Hopkins Bayview
Medical Center



“There’s going to have to be a sea change in how we develop models of practice and care in teams to meet the overwhelming needs of the population. We acknowledge that scope and turf tensions exist; however, it’s time to put those tensions behind us and continue to move forward because patients are at the center of all this—and it is too much for any one discipline.”

—Kathleen Becker
Assistant Professor of
Nursing and Adult Nurse
Practitioner Program
Coordinator, Johns
Hopkins University
School of Nursing



“We need more longitudinal research in primary care over the life course—and more communication with experts in the community. What was so exciting to me about today was representation from many different groups. We shared a lot of information about resources and priorities.”

—Tina Cheng
Director of General
Pediatrics and
Adolescent Medicine,
Johns Hopkins
Children’s Center



“I had the great fortune of working with outstanding mentors early in my training who showed me that knowing the patient—both medically and personally—and seeing them through life’s ups and downs and knowing the context and the meaning of illness in their life is the essence of primary care and one of the fundamental principles of being a health care provider.”

—Lauren Graham
Third-Year Resident, Johns
Hopkins Bayview Medical Center

Charting a Mindful Approach

Clinician courtesy and sound design are the keys to patient-centered electronic medical records.

As Johns Hopkins Medicine prepares to launch the first phase of an enterprise-wide electronic medical record system, wary providers are asking: Won't the computer itself become a barrier to quality patient care?

It's a legitimate concern, says Scott Wright, a professor of medicine at Johns Hopkins Bayview Medical Center, where he also directs the Miller-Coulson Academy of Clinical Excellence. Wright, too, recognizes the challenge of "being fully present in caring for patients" while entering a multitude of data in the patients' electronic charts. "One could easily look at a screen instead of the patient, and you need to think about it every time with every patient."

To guard against poor electronic charting manners, academy members developed a checklist of "do's and don'ts" for all medical staff who will be using a computer while caring for patients. A video presentation produced by the academy also showcases the do's and don'ts and will be screened for providers during Epic training sessions, Wright says.

Although using a computer may at first fluster clinical staff accustomed to computer-free conversations with patients, the new software system will ultimately improve the quality of care, says Bryan Barshick, a nurse who is helping



their Johns Hopkins providers, no matter where they receive care. The software system also enhances safety across the range of care, alerting providers, for example, to a patient's risk factors, such as an allergy to a certain medicine. Back in the paper age, that alert could have easily fallen through the cracks.

—Stephanie Shapiro

to lead the transition to Epic in outpatient settings. They'll be able to engage patients in their own care, Barshick says. For example, a provider will be able to "turn the screen to a patient and say, 'I'm seeing a trend. You're on the verge of having to use insulin. What can we do to change this?'"

The patient-centered advantages of an integrated electronic medical record system far outweigh a computer's potential to hinder personalized care, say Barshick and others supervising the Epic transition. A PowerPoint presentation (available at <http://www.hopkinsmedicine.org/epic/resources/>) developed by Stephanie Poe, chief nursing information officer at The Johns Hopkins Hospital, showcases Epic's ability to incorporate patients' values, preferences and goals into their charts and make this information available to



EPIC: Do's & Don'ts

First, knock before entering the room, wash your hands, shake the patient's hand, introduce yourself, sit down, smile and ask the patient how he's doing.

DO's for every encounter:

Acknowledge the computer in the room and explain Epic's role in patient care.

Before you begin charting in Epic and at the visit's end, give undivided attention to patient.

Collaborate with the patient when using Epic; make sure the visit is patient-centered rather than computer-centered.

Direct the position of the computer screen so that both you and the patient can view the information.

Maintain eye contact with the patient as much as possible.

DON'Ts for any encounter:

Distract yourself with incoming pages and phone calls during the patient encounter.

Object to using Epic in front of the patient.

Neglect psychosocial issues or ignore the patient's emotions.

Turn your back to the patient, if at all possible.

Sacrifice humanism and compassion for the patient by focusing on Epic data collection.

PATIENT COMMUNICATION

A Virtual Improvement

New online service expedites sign language and foreign language interpretation.

Early one morning last January, a family arrived promptly at The Johns Hopkins Hospital at 7 a.m., brimming with hope. Their daughter was about to undergo a cochlear implant—she'd be the only member of her family to ultimately enjoy the benefit of hearing. But first, her parents needed to provide consent. Trouble was, the American Sign Language interpreter was stuck in traffic, and the operation couldn't proceed without an explanation of the procedure.

A quick phone call to Patient Relations led to a solution: NexTalk, a foreign language, ASL and video remote interpreting service. The program provides 24/7 live access to an interpreter via the Internet. Within seconds of the call, audiologist Steve Bowditch rushed to the OR, wheeling a cart with a laptop. Minutes later, a NexTalk HIPAA-compliant interpreter introduced himself to the child's parents and described in ASL what to expect (the consent form was faxed to NexTalk). The surgery proceeded on time and proved successful.

NexTalk is being piloted in the pediatric and adult emergency departments, in the Otology Clinic, and in cases like these, when a human interpreter is running late, or if a deaf or foreign patient arrives unexpectedly and has trouble being understood. "Nothing's more frustrating than not being able to communicate," says Bowditch. "And we don't want to take the risk of being misunderstood."



Steve Bowditch, right, explains to a patient how the "conversation" with an online sign language interpreter works.

Managed jointly by Patient Relations and Johns Hopkins Medicine International, the virtual program is an extension of a trend across major hospital centers to incorporate more technology for patient care. (Johns Hopkins Bayview Medical Center and Howard County General Hospital already have similar virtual interpretation programs in place.)

The goal is to improve the delivery of care to patients—and response time, says Johns Hopkins Hospital's Senior Director of Service Excellence Becky Zuccarelli, who spearheaded the effort. In-person encounters are often delayed, she explains, because a previous patient requires more time. But remote interpretation is almost instantaneous. "It's easy to use, and patients like the immediacy," says Zuccarelli.

There's no ignoring the financial advantage either, notes Zuccarelli. If the system were used for inpatients and ED patients alone, she says, "We could save at least \$100,000 to \$200,000 per year in fees for deaf interpretation."

Still, if patients prefer an in-person translator, says Jeff Nguyen, the perioperative services administrator who helped launch the project, that service will remain available. Indeed, there are times when caregivers insist on in-person translation, especially, says Pediatric ED Nurse Manager Jane Virden, when child abuse is suspected, or if a physician needs to deliver bad news. "We try to be sensitive to each situation," she says.

In most instances, however, says Nguyen, remote interpretation provides quick access and peace of mind that patients will have seamless communication—and enough comfort with the interpreter to express concerns. So far, he adds, every patient interaction with the remote service has been positive.

—Judith F. Minkove

'Too Numerous to Count'

Planning and support for the historic double arm transplant came from all



PHOTO: KATE KNOTT

A TRIUMPH OF TEAMWORK: Surgeons who participated in the double arm transplant gather in the operating room shortly after the historic surgery. W.P. Andrew Lee, center, director of the team, is flanked by surgeons from Johns Hopkins, the Curtis National Hand Center at MedStar Union Memorial Hospital, and Walter Reed National Military Medical Center. The flag behind them flew over the U.S. military base in Kandahar, Afghanistan, on Sept. 11, 2012.

Last December, Brendan Marrocco became the first combat veteran to receive a double arm transplant, the most extensive surgery of its kind ever performed in the United States. Also the first to be conducted at The Johns Hopkins Hospital, the 13-hour operation required meticulous planning and rehearsal to accomplish the complex task of connecting bones, blood vessels, muscles, tendons, nerves and skin from donor to recipient.

A team of 16 plastic, orthopedic and microvascular surgeons led by W.P. Andrew Lee, director of the Department of Plastic and Reconstructive Surgery, performed the transplant. Marrocco also received an infusion of the deceased donor's bone marrow cells to help prevent rejection of the new limbs.

In January, Marrocco and members of the surgical team explained the surgery and its outcome at a press conference that was broadcast internationally. Off camera, however, dozens of other physicians, nurs-

es, technicians, therapists, pharmacists, facilities workers and support staff also played a role in giving the 26-year-old Iraq War veteran the opportunity to once again use his hands.

Transplant nurse practitioner Cindy Cohen describes the forces supporting this surgery as "TNTC: too numerous to count." Planning for the transplant began almost two years ago, and the teamwork and planning by the nursing staff proved crucial, Lee says. The following details, provided by Cohen, nurse practitioner Kate Knott, operating room nurses Shruti Thomas and Mary Grace Hensell and nurse educator Dorothy McDevitt, capture the breadth of this collaborative effort.

Complex Planning, Complex Surgery

The double arm transplant required coordinating four operations; a team of surgeons was assigned to preparing each arm of the patient and of the donor for surgery. Multidisciplinary teams discussed each stage of the endeavor, from the recovery of a suitable donor's arms to the patient's special needs after surgery. In addition, surgeons went through four rehearsals operating on cadavers at the Curtis National Hand Center at MedStar Union Memorial Hospital.

Transplant coordinators and operating room nurses scheduled regular meetings—one group met every week for almost two years—at The Johns Hopkins Hospital. Some meetings were held in the operating room on Sunday mornings. One goal was to determine how to configure the space for the roughly 35 people who would use it during the surgery, making room for 16 sitting stools for the surgeons, as well as two microscopes and other equipment.

During several run-throughs, stands for the surgical staff were positioned around the two operating tables. Roughly 20 instrument trays, each holding 50 to 100 tools, were needed for this highly

"I think the resilience of the human spirit is overwhelming. It's such a powerful thing that Brendan is who he is despite what he has faced, and that his family is so determined to see him through this."

—DOROTHY MCDEVITT

specialized transplant; some pieces of equipment, custom-made for the surgery, were ordered in advance. Planners also procured extra headlights for the surgeons and placed electricians on call in case any power problems occurred.

OR nurse leaders staged two trial runs of the phone tree call to surgery, making certain there were enough nurses and technicians to be able to work with the surgeons for 24 hours if the situation required it. They also filled thick back-up notebooks with detailed instructions of necessary preparations, including worksheets, diagrams of the room's physical setup, lists of instruments and equipment and phone lists.

As Marrocco and his physicians waited for a donor who would be a good match for his arm size and skin color, transplant coordinators arranged for prosthetic arms that would eventually replace the donor's own, basing their requirements on Marrocco's own. (The gift of artificial arms enabled the donor's family to have an open-casket viewing that was aesthetically appropriate, if that was their wish.)

Surgery Nears

On Dec. 16, when word came that a suitable donor was available, the countdown to surgery began. One surgeon was summoned from California, another was recalled from a Christmas trip to Austria. The next evening, Johns Hopkins surgeons flew to Pennsylvania to recover the arms from the deceased donor. (Because of dense fog in the Baltimore area, the team was forced to fly out of Dulles airport. Fortunately, the weather had improved sufficiently for them to return to Baltimore-Washington International Airport, saving time that was precious for the transplant.)

When Marrocco arrived at the hospital, numerous care providers prepared him for surgery, looking for potential medical problems, drawing his blood for tissue typing, and using ultrasound to make sure that the veins in what remained of his original arms—his left arm had been amputated below the elbow, his right arm above it—were located and properly marked to help the surgeons connect them. A counselor evaluated his psychological readiness.

As the patient entered the operating room a little past midnight on Dec. 18, he thanked the group who had spent months rehearsing for his arrival. They began their work. By mid-afternoon, Brendan Marrocco had two new arms.

An Unforgettable Christmas

The young veteran spent the Christmas holidays in the surgical intensive care unit, where he benefited from another piece of advance planning. Because the postoperative stage of recovery required a temperature of 80 degrees to ensure good blood circulation, a facilities specialist removed the patient's room from the building's

"Kidney transplants, heart transplants and liver transplants save lives. Brendan's transplant is life-changing. Hopefully we've given him a chance to do the things he couldn't do."

—CINDY COHEN

Count'

levels of the hospital.

"It's amazing to me how many people at Hopkins went out of their way to help make Brendan's surgery successful. The kind of planning and teamwork that were involved went way beyond any routine job description."

—W.P. ANDREW LEE

temperature-controlled power grid and reset it manually prior to the surgery.

When Marrocco was transferred to his room, more than a dozen nurses assisted in his care. They met regularly to update one another on his condition and to assemble reports that also might prove critical in caring for the next arm transplant patient.

Three days after surgery, Marrocco began working with Molly Ferris, a clinical hand therapist who continues to see him six days a week in the Johns Hopkins Outpatient Center. His doctors expect that it will take several years for nerves to reinnervate the muscles for maximum function of his new hands.

—Linell Smith



At an overflow press conference in January, Brendan Marrocco and his doctors explained Johns Hopkins Hospital's first bilateral arm transplant. "I've overcome so much in the last four years," said Marrocco. "It was worth it to work through this. ... I feel like I'm getting a second chance." About 300 news outlets worldwide covered the story. View highlights at hopkinsmedicine.org/transplant/news_events/double_arm_transplant.html.

A Partnership of Healing

How a Johns Hopkins hand therapist keeps transplanted hands in shape until they can be used.



Hand therapist Molly Ferris and combat veteran Brendan Marrocco engage in passive range of motion exercises that help his new arms to heal. These therapy sessions occur twice a day, six days a week.

The occupational therapist gently unwraps the splint and bandage on her patient's left arm, then carefully massages his hand, one finger at a time, with her strong, knowledgeable fingers. Settling back on his pillow, the young man closes his eyes while she turns her attention to his right arm. For four hours a day, six days a week, these two engage in the slow work of healing. Their mission: bringing two hands and 10 fingers to renewed strength and purpose.

It's a sacred moment, one of many occurring in the hospital at intersections of hope, determination and expertise. Yet no recent case better captures such spirit than that of Brendan Marrocco, the 26-year-old Iraq War veteran from Staten Island who lost both of his arms and legs to a roadside bomb.

In December 2012, W.P. Andrew Lee, Johns Hopkins Hospital's director of the Department of Plastic and Reconstructive Surgery, led a 16-member team of surgeons in a meticulously planned transplant operation that brought Brendan two new arms, courtesy of a deceased donor. Now the former Army sergeant is on the long journey toward recovery. Gaining sensation in his new limbs will require extraordinary doses of patience as well as perseverance.

Since the 2009 attack, Marrocco has relied on his shoulders and left elbow to propel his wheelchair, and still does. These muscles also enable him to move the new arms he

cannot yet feel. Because nerves can only grow an inch a month at most, it may take several years before those in the remainder of his original arms regenerate into his transplanted limbs and reinnervate the new muscles to function as they should.

For now, Molly Ferris, a certified hand therapist in the Department of Physical and Rehabilitation Medicine, performs his exercises. "I do all the motion for him to keep the joints supple and the tissue its proper length," she explains. "I move his arms up and down and side to side to maintain the passive range of motion. As the nerves regenerate, we try to work more into the active range of motion for those muscles."

Ferris began working with Marrocco three days after his transplant on Dec. 18. Now, at a therapy session at the Johns Hopkins Outpatient Center, she first checks Marrocco's skin to make sure that his protective splint is not chafing and looks for telltale red dots that might indicate that his body is rejecting his arms. She also examines his surgical scars for adhesions.

In silent concentration, his expression shaded by a New York Yankees cap, Marrocco watches Ferris guide his fingers through their familiar routine, joint by joint. She bends his wrists and turns each arm back and forth as if she were rousing it from a deep sleep. This graceful, therapeutic choreography of curling and uncurling, tilting and twisting, extending and flexing underscores the potential of his arm—and the importance of her work.

Later, Marrocco uses the active muscles of his shoulders and upper arms to move his lower arms across his chest and behind his head. He squeezes a ball between his elbows to strengthen his triceps and chest. At one point, he tosses the ball back and forth with Ferris to improve his eye-hand coordination as well as his body's spatial awareness.

The hand therapist usually works with people who have tendinitis, finger fractures or wrist fractures. Never before has she worked for so long with someone in such an intensive way. She will continue to meet with Marrocco, she says, until he begins the next stage of recovery at Walter Reed National Military Medical Center, sometime this spring.

Along the way, there have been flutters of encouragement.

Like some expectant mothers, Marrocco will see evidence of new life before he feels it. Although he and Ferris weren't sure at first, both have seen twitches near his left elbow that signal nerves on the move.

"I was afraid that it was one of those things that you want to see so badly that you think you see it when you don't," Ferris says. "But then we got others to confirm it."

Although the contraction near his left elbow occurs involuntarily, she believes that Marrocco may have managed to cause it himself on at least one occasion. And just the other day, she says, it happened again.

—Linell Smith



Face-to-face contact at huddles produces a bond not possible with emails, says one active participant.

Suburban Hospital's Power Huddles: A Win-Win

Daily meetings tackle—and often resolve—patient care problems in real time.

As any football coach will tell you, huddles are pivotal to ensuring that players receive clear instructions for their next play. Similarly, in the hospital setting, brief, focused meetings, also called huddles, are gaining traction to address daily patient care issues.

In April 2012, Suburban Hospital embraced the huddles concept. Every day, representatives from executive level staff, nursing and ancillary departments that intersect—like Environmental Services and Nutrition—come together for 15 to 20 minutes to discuss feedback from patients. “It’s very focused and effective rounding,” says Barbara Jacobs, Suburban’s senior director of nursing. “We’re trying to capture the patient experience.”

The list of concerns runs the gamut: One patient is upset because the system won’t allow her to order a third cup of coffee. Another patient, who experienced a long wait in the emergency department, finally got the last available bed, only to discover that his roommate became confused and agitated at night. And one family reported that a hand sanitizer dispenser in their room was empty.

At the heart of any response to these complaints, says Jacobs, is “lots of apologizing.” Then, a plan is hatched to address the problem that very day.

In the case of food preferences, nutritional assistants visit patients to express regret and inquire about specific requests.

For the patient whose roommate suffered confusion, there was no other bed immediately available, but in the interim, a patient advocate bearing a plant came in to talk to him. “He was surprised at how attentive we were,” says Jacobs.

And because nurses had no clarity about whether Environmental Services or Facilities should handle gel dispensers, at a recent huddle, both departments’ representatives agreed that either of them could fix the problem.

All of this is proof, says Jacobs, that even small gestures help patients feel that their needs are being addressed. At the same time, the benefits to staff are undeniable. “Nursing directors don’t feel like they’re in this alone,” she says. And it also helps everyone recognize that contributions to patient satisfaction come from all quarters—like a facilities person who fixes an overflowing toilet. “It’s making a huge difference,” says Jacobs, “in how we work together as a team.”

Joe Linstrom, senior director of diagnostic and support operations, agrees: “The huddles are very productive, in that we’re dealing with issues in real time.” In the beginning, he admits, some employees were sensitive to what they perceived as criticism. But the face-to-face contact has created an “automatic bond” not possible with emails: “You can’t read body language or frustration in an email.” That’s why when Linstrom spots staff members who seem unhappy during a huddle, he’ll seek them out afterward to discuss lingering concerns.

Since the focused meetings became mandatory, patient satisfaction scores have improved in every realm. Jacobs, however, cautions that it’s too soon to report a lasting impact. Still, anecdotally, team members at all levels say patients—and staff—seem much happier. “I don’t know why we didn’t think of this before,” says Linstrom. “[The huddles] were fairly easy to implement, and now people welcome them.”

—Judy F. Minkove

Getting Wise About Owls

Scientists discover truths about owls’ head-turning agility—and why humans suffer more neck injuries.

Who gives a hoot about owl anatomy? Johns Hopkins researchers, that’s who. They’ve uncovered some mysteries about these birds of prey, such as how they can rotate their heads 270 degrees on a horizontal axis and 180 degrees on the vertical without damaging delicate blood vessels in their necks or cutting off the blood supply to their brains.

A group of medical illustrators and neurological imaging experts at Johns Hopkins recently embarked on a research study to find out just why that is and to draw human parallels.

In what may be the first use of angiography, CT scans and medical illustrations to explore the anatomy of a dozen wide-eyed, night-hunting owls, the Hopkins team, led by medical illustrator Fabian de Kok-Mercado, found four major biological adaptations that prevent injury to the bird’s bone structure and vascular network needed to support its top-heavy head. The lack of such adaptations in humans could explain why they’re at higher risk for neck injury. The team’s findings were published in the Feb. 1 issue of the journal *Science*.

The researchers found through experiments with

dye—used to mimic blood—that the arteries at the base of the owls’ heads temporarily expand as more fluid enters and before the fluid begins to pool. The researchers believe these reservoirs supply extra blood to the owls’ large heads and eyes during head rotations. Secondly, owl vertebrae have holes that are about 10 times larger in diameter than the vertebral artery traveling through them, creating a cushion of air that allows the artery to move easily when the head is twisted.

In addition, the team found that the owl’s vertebral artery enters the neck higher up than in other birds, allowing for more vessel room when the owl twists its head. Finally, owls have small blood vessel connections between the carotid and vertebral arteries that allow blood to be exchanged between the two. The researchers say these connections allow for continuous blood flow to the brain, even if one route becomes blocked.

“Until now,” says study senior investigator and interventional radiologist Philippe Gailloud, “brain imaging specialists like me, who deal with human injuries caused by trauma to arteries in the head and neck, have always been puzzled as to why rapid, twisting head movements did not

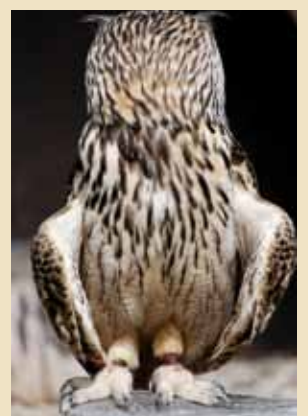
leave thousands of owls lying dead on the forest floor from stroke.”

Carotid and vertebral arteries in the necks of most animals, including humans, are fragile, according to the study. And in humans, neck trauma, often from vehicular whiplash or overzealous chiropractic manipulations, can prove serious. Sudden twisting of the human head and neck, explains Gailloud, can stretch and tear blood vessel linings, producing clots.

The in-depth study of owl anatomy, says Gailloud, reveals precisely which biological adaptations are needed to handle various head gyrations. The team’s work won first place in the posters and graphic category of the National Science Foundation’s 2012 International Science & Engineering Visualization Challenge.

Next up for study: hawk anatomy, to see if other bird species possess similar adaptive features.

—David March, Judy F. Minkove and Erin Montgomery





Neurologist Ray Dorsey says telehealth consultations often help patients feel more comfortable discussing their health from home.

Taking the Long (Distance) View

The Office of Telehealth and Interactive Learning bolsters medical teleconferencing at Johns Hopkins.

Johns Hopkins neurologist Ray Dorsey gained an unusual degree of insight into the life of patient Mark Matulaitis during a recent consultation. With the help of a laptop, the physician sat in a conference room in Green Spring Station while his patient, diagnosed with Parkinson's disease in 2011, spoke into his own computer screen from his living room in Salisbury, Md.

"Can I see you walk a little bit?" asked Dorsey, who directs the Division of Movement Disorders as well as neurology telemedicine. Matulaitis paced. He also shared his concerns about depression and said he was determined to follow Dorsey's advice to stick with yoga, even though he found it awkward. At one point, the 57-year-old patient stepped away from his computer screen to collect his bottles of pills so he could tell Dorsey the precise dosages.

The consultation between doctor and patient, conducted through a teleconferencing system from New Jersey-based Vidyio, took 20 minutes. This arrangement saves Matulaitis a five-hour round-trip drive and gives Dorsey a glimpse of his patient's home life. The technology allows Dorsey to see five patients each Wednesday afternoon, the time he devotes to his telehealth appointments. Teleconsultations often result in better relationships, he says, because patients are more comfortable at home and better able to keep appointments.

Until recently, telehealth at Johns Hopkins Medicine developed in a piecemeal fashion through individual departments. The new Office of Telehealth and Interactive Learning (OTIL) signals a more unified approach. Its telemedicine operations group, formed last summer, includes legal and billing experts who hash out such nuts and bolts issues as liability, credentialing and billing.

"We now have a central resource that can be very helpful to physicians," says William Baumgartner, vice dean for clinical affairs at the Johns Hopkins University School of Medicine.

Baumgartner says the rapid expansion of Johns Hopkins' own health system makes the technology more appealing. So do federal laws that reward hospital accountability by encouraging collaboration and cost efficiencies. And in Maryland, a new law mandates private-payer coverage of telehealth services.

Telehealth at Johns Hopkins serves several purposes. Clinical programs like Dorsey's provide direct care to patients. Distance education allows physicians at affiliated hospitals, such as Johns Hopkins Bayview Medical Center in Baltimore and All Children's Hospital in St. Petersburg, Fla., to participate in Grand Rounds. The technology can also improve administrative communication by including groups from other hospitals in meetings.

Alex Nason, program director, estimates that a dozen telehealth projects are under way or in pilot stages. One, developed by Neeraj Naval, director of the Neurosciences Critical Care Unit at Johns Hopkins Bayview, provides crucial coverage, especially during overnight hours, when there is less staff.

The system is used for assessing new overnight Neuro-ICU patients, and when an inpatient's condition turns for the worse. Using a two-way audio and two-way video, Naval can speak to the on-call residents and nurses and assess the patient for signs of neurological deterioration, such as seizures and changes in pupil reaction. He can also review a continuous EEG monitor and prescribe the correct level of medication for a patient in an induced coma.

Naval uses the system each night, to "go over the plan for each patient, which includes the first diagnostic and therapeutic response if the patient [crashes]. The result is optimal and expeditious remote management of critically ill patients" and fewer middle-of-the-night physician visits to Bayview.

Naval started the program in trial about 15 months ago, working with Nason to find the telesystem that best met the needs of his Neuro-ICU patients. The first system lacked a high-definition camera, so it was impossible to get a close look at the patients' pupils. The second required camera manipulation by an on-site nurse who might also need to attend to patient problems. The chosen system, called MedVision, allows Naval to remotely move the camera.

Dorsey, who came to Johns Hopkins three years ago, became interested in telemedicine at the University of Rochester, where he developed a telehealth program to serve Parkinson's patients in far-flung nursing homes. And, with the help of a recently awarded \$50,000 Verizon Foundation grant, the neurologist is taking his Parkinson telemedicine clinic global, providing free consultations in 11 countries to patients who need only a computer and high-speed Internet. Soon, he adds, smartphones will provide even greater access.

—Karen Nitkin

Emergency Alert System Safeguards the Institution—and You

As of last month, Johns Hopkins Hospital employees, students, postdocs and residents are required to sign up to receive messages through the emergency alert system. The goal, says Howard Gwon, senior director of the Office of Emergency Management, is to notify as many people as possible should an emergency or a potentially disastrous event—be it a bomb threat or an earthquake—strike. Within seconds, Johns Hopkins' disaster control or security communications team will send a text message to enrolled faculty, staff and students, alerting them of the situation. "It's important that we do everything we can to keep our campuses safe and, when necessary, relocate employees and students to a safe place," says Gwon. "We need everyone's help to do that." If you haven't yet enrolled, go to <http://intranet.inside-hopkinsmedicine.org/emergency/eas> and follow the prompts.

Weight Loss Support

It takes two to lose weight—you and your coach. That's the concept behind Innergy, a new weight-loss benefit available to many Johns Hopkins Health System employees, starting March 1. Instead of using fad diets, pre-made meals and gimmicks, the program promotes interactive website support and regular phone calls from health coaches trained to help participants set realistic goals, eat healthfully and address issues that can trigger overeating. The program is based on results from Johns Hopkins-led research that found that participants enrolled in a weight-loss program featuring coaching by telephone along with Internet support lost 5 percent of their body weight and kept it off. To enroll in the program, employees must have a BMI of 30 or greater. Those who enroll during the first year will be charged a discounted rate of \$11.54 per paycheck. To register or for more information, visit jhhs.innergynow.com.

Culturally Diverse Networking

Respect for diversity in the workplace requires vigilance. To that end, career development for medical school faculty was one of the topics at a recent luncheon arranged by the school of medicine's Office of Diversity and Cultural Competence. The annual event brings administrators, senior faculty and staff together with junior faculty from culturally diverse backgrounds to foster opportunities for professional growth. The ODCC hosts several networking receptions throughout the year to promote an inclusive campus environment that supports diversity at all levels. Such events allow senior leadership to learn about the work experiences of junior staff and to offer career advice in an informal setting. In addition, the ODCC solicits participants' feedback to help with the planning of various diversity programs.



Bernard Farrell, third from left, with members of the pulmonary rehab team.

Pulmonary Rehab Program Marks Milestone

Patients in Howard County General Hospital's pulmonary rehab program have been breathing easier over the past three decades, thanks to the vision of Bernard Farrell, the hospital's medical director of pulmonary rehabilitation and pulmonary diagnostics. Recruited by Howard County General in 1981, Farrell, a native of Ireland, founded a program to improve the quality of life for the growing number of patients at the hospital with chronic lung disease. In 1983, with help from two staff members, he launched and directed the HCGH Pulmonary Rehabilitation Program—the first of its kind in Maryland and one of the first on the entire East Coast. Now marking its 30th anniversary, the program boasts a large space, a staff of 10, and 34 exercise machines. Though pulmonary rehab can't change lung function, says Farrell, it can improve exercise tolerance and ease activities of daily living. Farrell's efforts legitimized pulmonary rehab as the standard of care for chronic lung disease.

Presenters Sought for JHM Patient Safety Summit

Johns Hopkins Medicine will host its fourth annual Patient Safety Summit on June 21, and organizers are seeking abstracts from faculty and staff who would like to make oral presentations or display posters. The abstract submission deadline is Friday, March 8. The one-day summit will give participants a forum to share their research, as well as their solutions in such areas as culture change, the identification and prevention of harm, and patient and family involvement. To submit an abstract, visit http://www.hopkinsmedicine.org/armstrong_institute/training_opportunities/abstracts.html.

Registration for the summit will open in early April. The event, to be held in Turner, is free, but space is limited.

NAS Honors



Solomon Snyder, M.D., professor of neuroscience, pharmacology and psychiatry, has been named the recipient of the National Academy of Science's 2013 Award in the Neurosciences, which recognizes Snyder's groundbreaking work on opiate receptors, gaseous signaling in the nervous system and other achievements in neuropharmacological processes.



King-Wai Yau, Ph.D., professor of neuroscience and ophthalmology, has received the 2013 Alexander Hollaender Award in Biophysics from the National Academy of Science. The award, bestowed every three years, recognizes Yau's transformational research into how signals from light and odor are recorded and relayed to the brain.

EAST BALTIMORE



John Carey, M.D., professor of otolaryngology—head and neck surgery, has been promoted to chief of the Division of Otolaryngology, Neurotology, and Skull Base Surgery.



Howard Francis, M.D., M.B.A., associate professor and deputy director of the Department of Otolaryngology—Head and Neck Surgery, has been appointed to serve also as director of the Johns Hopkins Listening Center.

Adam Kaplin, M.D., Ph.D., assistant professor of psychiatry and neurology, has received the 2013 Key Innovator in health information and technology award from Elsevier for a Web-based program Kaplan designed that texts patients at a specific time, asking them to record their moods.



Timothy Pawlik, M.D., M.P.H., associate professor, chief of the Division of Surgical Oncology and director of the Liver Tumor Center, has been elected president of the Association of Academic Surgery for the 2014-2015 term.

Jonathan Powell, M.D., Ph.D., associated professor of oncology and pharmacology, has been awarded an inaugural, two-year, \$100,000 grant from the Harrington Discovery Institute to pursue his research on a novel therapy for treatment of type 2 diabetes and obesity.

Roger Reeves, Ph.D., professor of physiology, has received a 2012 Sisley-Jérôme Lejeune International Award for Translational Research in Intellectual Disabilities.

Notable Nurses

Hershaw Davis, M.S.N., B.S.N., R.N., of Emergency Medicine, has been appointed chair of the governmental affairs committees of the National Emergency Nurses Association, as well as the Maryland Emergency Nurses Association for 2013 and 2014.

Sharon Dudley-Brown, F.N.P.-B.C., Ph.D., Elizabeth Jordan, R.N., D.N.Sc., and Christine Savage, R.N., Ph.D., C.A.R.N., have been named fellows of the American Academy of Nursing.

Marketing and Communications

The **Office of Marketing and Communications'** teams in editorial services and graphic design have been recognized for outstanding work by the Association of American Medical Colleges (AAMC). M&C's monthly publication *Dome* received a 2013 Award of Excellence, the AAMC's "best of the best" honor, for internal audience periodicals. Also earning an AAMC honorable mention recognition in the special events/public relations category was the New Clinical Buildings Expo.

JOHNS HOPKINS HEALTH SYSTEM AND HOSPITAL

Health and wellness programs provided by **The Johns Hopkins Health System** and **The Johns Hopkins Hospital**, as well as aging adult resource and referral services and backup eldercare, were among initiatives offered by **The Johns Hopkins University** that were cited by the WorldatWork's Alliance for Work-Life Progress in awarding the university its Work-Life Seal of Distinction.

JOHNS HOPKINS BAYVIEW MEDICAL CENTER



William Greenough, M.D., professor of medicine in the Division of Geriatrics and Gerontology, has received the Dr. Mary Betty Stevens Award from the Maryland chapter of the American College of Physicians. The award honors Greenough for his discovery, along with colleagues, of a method of treating dehydration.



David Hellmann, M.D., professor, director of the Department of Medicine, and vice dean, has received the William McCarthy Award from the board of trustees in recognition of his accomplishments, including the creation of the Johns Hopkins Center for Innovative Medicine and the Miller-Coulson Academy for Clinical Excellence.

PICTURE THIS



JOE RUBINO

PRIZED RESEARCH:

More than 20 years ago, Bert Vogelstein redefined the field of cancer research by discovering one and then a series of genetic mistakes responsible for colon cancer. Today, Vogelstein is an acclaimed leader in cancer research and continues to lead his lab and others around the world in developing genetic tests, diagnostics and therapies for cancer. In recognition of his groundbreaking work, Vogelstein, co-director of the Ludwig Center at Johns Hopkins and a Howard Hughes Medical Institute investigator, was recently awarded a Breakthrough Prize in Life Sciences. Vogelstein was among 11 inaugural winners who will receive \$3 million each for their research. "This is a tremendous honor—an honor I share with my fellow investigators who have worked with me so tirelessly over the last three decades to pinpoint molecular genetic causes of cancer," said Vogelstein, the Clayton Professor of Oncology at the Johns Hopkins Kimmel Cancer Center. Vogelstein first became interested in cancer research during his training at The Johns Hopkins Hospital as he observed young children suffering from leukemia.

Eric Strain, M.D., professor and director of the Center for Substance Abuse Treatment and Research, has been elected the next president of the College on Problems of Drug Dependence.

HOWARD COUNTY GENERAL HOSPITAL

Jay Blackman, executive vice president/COO, and his wife, **Lu Ann Blackman**, have been named national trustees of the Foundation Fighting Blindness.

SUBURBAN HOSPITAL

The **Cardiac Rehabilitation Program** celebrated its 30th anniversary in March. In the past five years, the Cardiac Rehab Center has treated more than 350 new patients annually.

AAMC-JHM Affiliation Renewed

Anne Arundel Medical Center and **Johns Hopkins Medicine** have renewed their affiliation, begun five years ago, ensuring continued increased access to medical care for patients. Recently, the two institutions celebrated the opening of a new Odenton Medical Pavilion. They also collaborate on providing services to the AAMC satellite facility on the Eastern Shore's Kent Island.

JOHNS HOPKINS MEDICINE INTERNATIONAL (JHI)

Fundación Santa Fe de Bogotá, one of Colombia's premier health institutions, has signed an expanded agreement with JHI to extend their collaboration for another 10 years. The partnership, begun in 2011, involved research projects, nursing initiatives and other efforts to enhance health care delivery, patient safety and education in the region.



Renata Mattson, J.D., has been named JHI's first chief compliance officer. Recently, she served as compliance attorney for Axion Law, a 1,000-person firm with 11 offices and four delivery centers worldwide.



Jose Solis Padilla, M.B.A., has been named director of Global Services for Latin America. With a decade of experience in health care project management, Padilla will lead the Latin American team in its creation of opportunities for JHI's affiliates there.

Pacífico Salud, a consortium of Peruvian hospitals, laboratories and outpatient centers, has signed an agreement with JHI to strengthen and improve the quality of care across its expansive health care system. Hopkins experts will work with their counterparts to develop clinical and patient services programs, with a goal being to help Pacífico Salud achieve accreditation at its hospitals, outpatient centers and laboratories from Joint Commission International.

PICTURE THIS



ALL HANDS ON DECK

It seems like a no-brainer: Don't go near patients until you're certain that your hands are clean. Yet for whatever reason—usually related to rushing—many people inadvertently overlook this dictum. The "Hopkins Hands" campaign, which kicks off this month, aims to remind employees at all levels that hand hygiene remains a top priority. At the same time, the project fosters a sense of community at each Hopkins institution. The underlying goal is to encourage every staff member to practice and improve good hand hygiene skills to protect patients, visitors, colleagues and friends. The campaign will include the naming of individual hand hygiene champions, coverage in Hopkins publications, a plasma screen saver, and the launching of a website—www.hopkinsmedicine.org/CleanHands.

Dome

Published monthly for members of the Johns Hopkins Medicine family by Marketing and Communications.

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Read *Dome* online at
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