

Surgical Robotics

da Vinci® robot revolutionizes the OR

The newest member of the UW Health surgical team stands about six feet tall, has four arms, and is named after a famous Italian painter/inventor.

He's also a robot. And he may represent the future of complex surgery in the United States.

Since January, surgeons at UW Hospital and Clinics have been at the forefront of a growing national trend, performing radical prostatectomies and specialized cardiothoracic surgeries using the da Vinci® surgical robot. Developed by California-based Intuitive Surgical Inc., the robot allows surgeons to execute complex surgeries laparoscopically, offering greater precision and reducing recovery time for patients.

"This has been a very exciting development for us," says David Jarrard, MD, the John Livesey chair in urologic oncology at UW Hospital

and Clinics. "The technology really makes a significant difference in patient recovery."

Along with fellow UW Comprehensive Cancer Center physician Timothy Moon, MD, and Sean Hedican, MD, Jarrard now performs the majority of radical prostatectomies (one of the primary treatments for prostate cancer patients) using the robot.

Patients who have their prostate gland removed in a traditional open procedure remain in the hospital an average of two days. Patients who have the procedure using the surgical robot typically go home the next day and return to normal activity in as little as one week.

A major advantage of the robot is its minimally invasive approach. An open prostatectomy requires an 8-10 inch incision in the lower abdomen, while the robotic procedure uses five pen-sized incisions to create openings for the robotic instruments.

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“The cancer outcomes with the robot are similar to the open prostatectomy,” says Jarrard. “However, the hospital stay and amount of blood loss a patient suffers during the procedure are significantly decreased.”

In addition, the amount of time a patient must have a catheter to drain the bladder after the procedure is reduced by half, from 14 to 7 days.

Surgery, Reimagined

With the patient lying on the operating table under the watchful eye of a surgical assistant, the surgeon operates the robot while seated at a console a few feet away. The surgeon views the patient’s anatomy through a dual-screen viewer that produces a 3-D image magnified ten times.

The robot’s three main arms are controlled by a pair of knobs the surgeon can squeeze like castanets. Each can be fitted with five to eight millimeter surgical instruments that handle cutting and suturing. A fourth arm controls a miniscule camera that gives the surgeon an extremely detailed view of the patient.

Unlike standard laparoscopy instruments that limit the ability



David Jarrard, MD



Niloo Edwards, MD

“We’re really on the front end of the curve with surgical robotics,” says Jarrard. “We’re only just beginning to see the ways in which this will change the way we treat patients.”

of surgeons to move in all directions, the end of the robot’s arms feature “wrists” that can move 360 degrees like the human hand.

UW Health cardiothoracic surgeons have been using the da Vinci® robot to perform a wide range of procedures, from atrial fibrillation to specialized types of gland removal surgeries,

including thymectomies and sympathectomies. Niloo Edwards, MD, head of UW Hospital and Clinics’ division of cardiothoracic surgery, likens the robot’s appendages to “miniature hands.”

“The greatest advantage to using da Vinci® technology is the ability to have articulating wrists in the chest,” says Edwards. “This

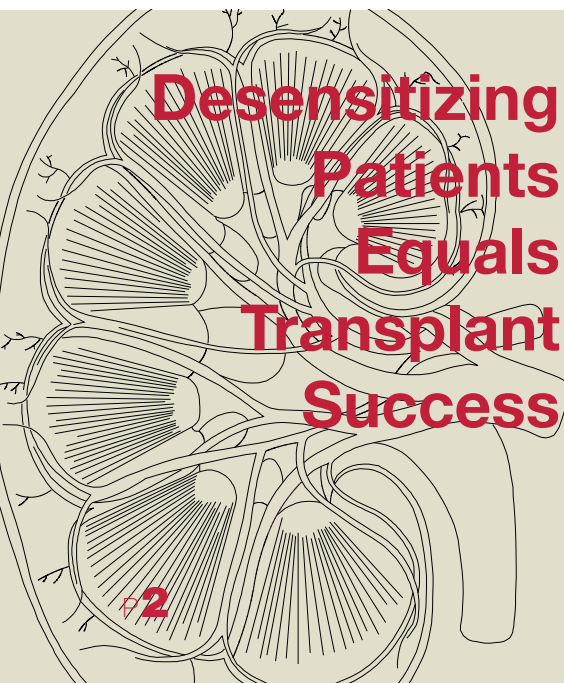
is equivalent to having a hand under the heart—an ability that is otherwise difficult to come by. In this case, four hands in one place really are better than two.”

Currently, UW Hospital and Clinics is the only hospital in the Madison area using robotics in the operating room, and one of only five medical centers in Wisconsin.

In the coming months, OB/GYN surgeons at UW Health will begin using da Vinci® to perform hysterectomies, while cardiothoracic surgeons will use the robot for valve repair and a myriad of other complex heart and thoracic surgeries. UW Health transplant surgeons, meanwhile, will use da Vinci® for live-donor nephrectomies.

“We’re really on the front of the curve with surgical robotics,” says Jarrard. “We’re only just beginning to see the ways in which this will change the way we treat patients.”

To learn more about robotic surgery at UW Health, visit uwhealth.org or call **(608) 263-4757** (for urology) and **(608) 263-1220** (for cardiothoracic).



Instead of being just another name on a long, long waiting list, patients in need of a kidney transplant continue to have new hope for an improved organ. The internationally renowned transplant program at UW Hospital and Clinics is now almost three years into a kidney desensitization program in which patients receive immunosuppressant drugs in advance of surgery to lower antibodies in their bodies that would otherwise make a transplant impossible.

“Patients are getting transplants who would never have received them in the past,” says Milagros Samaniego, MD, a UW Health transplant nephrologist.

Thirty percent of all patients on the kidney waiting list are sensitized to the human leukocyte antigen (HLA) from a previous failed transplantation, blood transfusions or pregnancy. Patients who are highly sensitized have a high risk for rejection following a transplant.

New procedure finally available in U.S.

Hip Resurfacing

For patients awaiting an alternative to traditional hip replacement that allows greater mobility and lessened risk of dislocation, patience has finally been rewarded. After years of testing and research, what has been generally available in Europe and Australia is now available here: In mid-May, the U.S. Food and Drug Administration approved hip resurfacing for general surgical use.

Richard Illgen, MD, a UW Health orthopedic surgeon, is among a handful of U.S. surgeons trained to perform surface replacement arthroplasty, or hip resurfacing. Illgen and his colleagues Matthew Squire, MD and John Heiner, MD began treating patients at UW Hospital and Clinics in early July. Like his patients, Illgen is excited by the advantages of the bone-sparing surgery.

“Hip replacement has really undergone an evolution in the last several years,” says Illgen. “We went from traditional hip replacement, with a metal rod down the middle of the femur bone and a metal ball that’s about half the size of a normal bone to large-head replacement, with a metal rod down the middle of the femur bone with a ball that’s more normal size,” explains Illgen. “Now we’re at the point where we can avoid the metal rod altogether in some cases.”

Unlike traditional hip replacement, which requires surgeons to cut the neck of the femur and remove the femoral head, resurfacing involves removing the cartilage at the end of the femur, placing a metal cap over the top, and repositioning it in a metal socket.

Patients with resurfaced hips report increased range of motion and decreased dislocation. Better still, resurfacing preserves bone for future hip revision surgeries, a very real possibility for patients who undergo hip replacements in their 30s and 40s.

“For young active patients with hip arthritis, resurfacing offers an exciting new alternative to traditional total hip replacement,” says Illgen. “Hip resurfacing gives patients one more option for revision potential, and that’s critically important for certain types of patients. This is the most conservative, bone-sparing option we can offer.”

Illgen cautions that hip resurfacing isn’t right for every patient, and that patients need to discuss carefully with their physician the advantages and disadvantages of the procedure. The operation is invasive—surgeons must pop the hip out and briefly disrupt the blood supply to the femoral head, risking avascular necrosis. It also removes a significant amount of soft



tissue and can’t be performed laparoscopically. Because hip resurfacing is a relatively new procedure, no long-term studies are available to show how well the cemented metal components used in the surgery will hold up over the long term.

For younger, active patients, however, hip resurfacing may offer hope of greater mobility today—and the possibility of other surgical options down the line.

To learn more about hip resurfacing at UW Health or to schedule a referral, visit uwhealth.org or call (608) 263-4069.

“HLA antigens elicit a very robust immune response that is difficult to eradicate,” says Samaniego. “Patients who are highly sensitized have progressively longer median waiting times for kidneys and usually die prior to receiving a transplant.”

Kidney desensitization is helping doctors and patients overcome this barrier. Patients receive a series of plasmapheresis treatments and standard post-surgical immunosuppressant drugs, such as Gamimune and Polygam, prior

to surgery to lower the antibodies in their bodies and make them more responsive to a transplant.

Desensitization isn’t a permanent fix. After a few weeks, the patient’s antibodies will go back up, making a timely transplant critical.

“The effects of desensitization are short-lived,” said Thomas Chin, MD, a UW Health transplant surgeon. “And the desensitization process isn’t something we can repeat easily.

For patients who do not have a living donor lined up, this can be extremely problematic.”

To fix this problem, Chin and Samaniego are working to expand the donor pool through a paired kidney exchange program. This program expands the number of potential donors available to patients in a given state. For example, hospitals in Wisconsin and Minnesota are currently exchanging information to try to increase possible organ donors.

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Hotline activates faster access for heart attack patients

Level 1 protocols for STEMI referrals from area EDs

A joint effort by Med Flight and UW Hospital's heart attack team now expedites transfer of patients experiencing a STEMI heart attack to UW Hospital. This Level 1 heart attack care is just a hotline away.

"The concept of the golden hour, long associated with trauma care, is now applied to regional cardiac care," explains Darren Bean, MD, a UW Health emergency and Med Flight physician who co-directs the Level 1 Heart Attack Program at UW Hospital. "The new process allows the referring physician to activate the airmedical transfer system and interventional cardiology team within the first 30 seconds of the phone call."

As soon as a patient is identified to have ST elevation myocardial infarction, emergency departments can call 1-877-MI2-UWHC, a 24-hour hotline in UW Hospital's Access Center. The call immediately

activates Med Flight and UW Hospital's cardiac catheterization lab to prepare for the patient.

Bean says the activation is similar to Med Flight's rapid response to a trauma scene.

"We don't know all the specifics about the patient when we leave for flight. However, we do know the patient's outcome is absolutely dependent on how quickly blood supply is restored to the starving heart muscle," Bean says. "Simply put, time is myocardium."

By minimizing transfer time, more patients are eligible for primary angioplasty, a strategy that has been shown to reduce major complications and death from STEMI if performed in a timely manner. Even patients who have received thrombolytics benefit from the rapid transport model as many require rescue angioplasty.

Knowing patients will be transferred, referring emergency departments prepare them for rapid transport. Pharmacotherapy strategies that minimize IV infusions can further reduce air-medical ground times.

Once patients are en route to UW Hospital, the referring ED faxes critical information to the UW's cardiac cath lab so staff can further prepare for the patient's arrival.

Modeled after a heart attack response program developed by Abbott Northwestern Hospital in Minneapolis, this Level 1 protocol saves critical time, with a goal of getting patients the most effective care within 90 minutes, the "golden window" recommended jointly by the American Heart Association and the American College of Cardiology to preserve heart function.

Bean has been visiting referring emergency departments to discuss the Level 1 heart attack protocols and provide EDs with necessary forms to partner in the program. Until then, if a referring ED calls the general UW Access Center phone number, to refer a heart patient, one of the first questions asked will be whether the patient has ST elevation. If the answer is "yes," UW's Level 1 heart attack protocol begins.

According to studies in Europe, Level 1 heart attack protocols reduce rates of death, recurrent heart attack, or disabling stroke for patients who are transferred faster for angioplasty. Bean says the protocols have already reduced transport time to benefit these critical patients.

For more information on UW Hospital's Level 1 heart attack program, visit uwhealth.org or contact (608) 263-1325.





One-stop unit offers safety, privacy and plenty of room for visitors

With family-centered care and cheerful, single rooms, patient satisfaction soars

When Niloo Edwards, MD, started to conceptualize an expanded post-chest surgery unit, he knew he wanted to do something special. “We realized we had the opportunity to create change in a positive way,” explains Edwards, a UW Health cardiovascular surgeon and head of the division of cardiothoracic surgery at UW Hospital and Clinics.

Leading the effort was a multidisciplinary team of physicians led by Edwards, administrators headed by heart and vascular care director Lynn Fischer, RN, FACCA, and nurses led by Annette Macias-Hoag, RN.

“We went to several sites around the country and looked at how they functioned,” Edwards says. “We found that safety, privacy and space were the major factors in patient satisfaction.”

With satisfaction in mind, Edwards and his colleagues designed B4/5, the new unit that

acts as a one-stop shop for chest surgery patients. After surgery, patients arrive at one of the unit’s 27 suites, where they remain until discharge instead of moving from ICU to floor rooms and beyond.

“We realized that at some times we needed more ICU beds, but other times we didn’t. That got us thinking about a flexible, rotating system,” Edwards says. “Because the room’s purposes fluctuate based on patient needs, there’s never any pressure to move a patient out of the ICU.”

To achieve this flexibility, equipment rotates, not patients. For example, ventilators are wheeled in as needed. Supplies such as dressings are stocked via two-way closets from outside the room. The two-way closets keep patient disruption low, as most supply stocking is done at night.

Eliminating the need to move patients increases safety, reduces communication errors and avoids delays in care.

“It’s also really beneficial for the nurses,” adds Edwards. “The same nurses take care of the same patients for the entire stay, which fosters a one-on-one relationship with patients and their families.”

“It allows everyone to deliver better care in all aspects,” explains Edwards. “Private rooms and extended visitation hours aren’t a medical necessity. On the other hand, if patients feel better, it helps from a clinical standpoint.”

Edwards says studies show depression and pessimism are predictors of poor outcome for patients, especially in heart surgery. He says the chest surgery unit’s upbeat, cheerful atmosphere could enhance patient outcomes.

“The unit recognizes the importance of the environment,” states Edwards. That includes privacy and a visitor-friendly atmosphere. The new unit offers

patients and their families private suites with bathrooms. Each suite has a wall-length window as well as a TV, VCR and DVD player. “Each room is about 250-300 square feet,” says Edwards. “That helps visitors, because there’s room for them to visit without tripping over cables and monitors.”

Family-friendly spaces are located outside the patient suites, too. Waiting areas are broken into smaller conversation areas, offering families privacy. “We designed the unit to support the family structure as much as the clinical care structure,” Edwards explains.

“The unit speaks to UW Hospital’s commitment to being on the cutting edge of patient care,” Edwards says. “We’re proactive in looking at innovation to deliver care more efficiently and effectively.”

Diagnosing Pediatric Hypertension

Pediatric hypertension silently threatens the health of approximately 4 percent of children in the United States, ultimately increasing their risk of stroke and cardiovascular disease as adults. Updated guidelines for the diagnosis, evaluation and treatment of high blood pressure in children, published in 2004 by the National High Blood Pressure Education Program Working Group on Children and Adolescents, recommend that

Hospital. “This becomes particularly relevant in the context of a growing obesity epidemic in our youth.”

Bartosh explains, “There’s a very real concern that the incidence of hypertension in children is increasing. In a large recent study of 5000 children age 10-19 years, the prevalence of hypertension increased with increasing degrees of obesity, with the most overweight children in the study having an 11 percent incidence of

hypertension. Children differ in that hypertension is much more likely to be secondary particularly in those under 10 years. The most frequent cause of secondary hypertension in children is kidney disease or anatomic kidney abnormalities. Unfortunately hypertension tends to be silent, with only the minority of children experiencing headaches, nosebleeds or seizures. Not infrequently, children who are referred with hypertension already have evidence of detrimental effects on the heart.

To focus attention on this growing problem, Bartosh and her colleagues have created a multidisciplinary pediatric hypertension clinic. Drawing on expertise from pediatric cardiology, pediatric radiology, pediatric nutrition and pediatric fitness experts, the clinic offers pediatric patients diagnostic screening, screening for co-existing lipid abnormalities, screening for “target organ damage,” counseling on non-pharmacologic methods to lower blood pressure (such as nutritional counseling, dietary sodium restriction and exercise) and pharmacologic therapies.

The clinic is staffed by Bartosh, Cheryl Sanchez, MD, a pediatric nephrologist at UW Children’s Hospital and Kim Squires, NP, a pediatric nurse practitioner. Together, they offer blood and urine testing as well as X-ray diagnostics, screening for end-organ damage and drug therapy. Another key service is 24-hour ambulatory blood pressure monitoring, a tool that helps differentiate children with “white-coat” hypertension—elevated blood pressure that triggers only in a medical setting—from those with true hypertension.

“We are very successful at treating high blood pressure in childhood,” says Bartosh. “Now we just need to improve the frequency with which we look for and recognize the condition in children”.

To learn more about the Pediatric Hypertension Clinic or make a referral, contact **(608) 255-6020** or visit **uwhealth.org**.



blood pressures be taken every time a child over the age of three is seen in a medical setting, whether for a well child check or an emergency visit.

Unfortunately, these recommendations do not reflect what is occurring in most medical settings. “In general, opportunities to measure blood pressure are frequently missed,” says Sharon Bartosh, MD, UW Health pediatric nephrologist and chief of pediatric nephrology at the University of Wisconsin Children’s

hypertension. As children and teenagers increase in weight, their blood pressures are increasing, and those high blood pressures are tracking into adulthood.”

After early childhood, most children visit their primary care providers office for urgent care needs. “The expectation is that we will take every opportunity to measure a blood pressure, regardless of why they are in the office.”

In adults, the most frequent cause of hypertension is “primary” or “essential”



Sidelining sarcomas, saving limbs

Twenty years ago, surgical treatment for musculoskeletal tumors consisted largely of massive amputations to remove diseased bone and tissue.

Today, the prognosis for patients with bone and soft tissue tumors is vastly more promising, thanks to innovative treatments borne of highly specialized research, clinical trials and multidisciplinary approaches in orthopedic oncology.

“Now, with new combinations of chemotherapy and radiation, the vast majority of sarcoma patients can have their legs or arms saved,” says John Heiner, MD, a UW Health orthopedic surgeon who works collaboratively with UW Comprehensive Cancer Center (UWCCC) specialists to develop multifaceted treatment plans that may include radiation, surgery, medication, chemotherapy, or a combination of therapies tailored to the location and type of tumor.

Working with UWCCC researchers and cancer specialists, Heiner and the multidisciplinary musculoskeletal oncology team treat bone and soft tissue tumors with innovative methods of radiation delivery

designed to shrink the tumors prior to attempting surgical removal.

“The smaller we can make a tumor prior to resecting it, the less tissue we have to remove with it—and therefore, the better the chance we can save the limb,” Heiner explains.

UW Health team members also include UWCCC physicians Howard Bailey, MD, an adult oncologist; pediatric oncologist Carol Diamond, MD; and radiation oncologist Steven Howard, MD.

In addition to bone and soft tissue tumor patients, the musculoskeletal oncology team treats patients with other types of cancer that have metastasized to the bones. Cancers most likely to spread to bone include cancer of the breast, prostate, lung, kidney and thyroid.

Bone tumors tend to be more complicated to treat surgically than soft tissue tumors, because the surgeon must reconstruct the skeleton after removing the diseased bone. Bone tumors also tend to be quite large—often longer than 12 centimeters, or even up to 25 or 30 centimeters in the most complicated cases.

Part of the reason tumors grow so large is that patients often attribute their pain symptoms to other injuries, and don’t immediately see a physician and obtain X-rays.

“Bone tumors tend to spread fairly quickly—by the time the patient comes in, three-quarters of their femur may already be involved,” Heiner says

With expertise gained from performing about 200 surgeries per year, Heiner is able to lend his specialized knowledge to physicians who have less experience interpreting bone abnormalities in X-rays.

“It’s not uncommon to spot something in an X-ray that’s interpreted as a tumor, but is really more of an abnormality of the bone,” Heiner explains. “It takes a lot of experience to differentiate between situations in which something needs to be done versus those in which something can be observed and monitored over time, thus saving some patients from a surgery they don’t need.”

To learn more about musculoskeletal oncology treatment at UW Health, visit uwhealth.org or call Cancer Connect at **(800) 622-8922** or **(608) 262-5223**.

Desensitizing *from page 3*

A number of different desensitization protocols have been designed to help patients with specific antibodies that might complicate their living -donor transplant. While long-term survival data is still several years away from becoming available, short-term success rates vary from 30 to 60 percent for patients who meet the protocol criteria.

“This is progress,” says Samaniego. “There used to be a 100 percent transplant failure, and now it’s 20 percent treatable—that’s a success.”

Samaniego said the goal is to have 24 patients receive transplants a year through kidney desensitization.

For more information on UW Health’s kidney desensitization program, visit uwhealth.org/transplant or call the UW Health Transplant program at **(608) 263-1384**.



In early June, UW Hospital and Clinics unveiled its newly redesigned **emergency department**, a 26,000-square-foot area that nearly triples the size of the hospital's old facility.

The new department features 29 private patient rooms and multiple triage rooms to help ensure patient confidentiality. Private waiting rooms are available for families to gather in comfort while they await word of their loved ones.

The new emergency department also includes two large waiting rooms—one for adult patients and another tailored to the needs of children and their families. The pediatric area features colorful tree murals on the walls and a game station where children can play.

In addition to an on-site CT scanner in the radiology suite that will allow for faster diagnosis of trauma and heart patients, a state-of-the-art decontamination area is designed to handle biohazard and bioterrorism emergencies.

"We are on the leading edge now," says **Donna Sollenberger**, president and chief executive officer of UW Hospital and Clinics. "We have a facility that really matches the world-class care we give."

As of September 26, the **UW Comprehensive Cancer Center** will become the **Paul P. Carbone Comprehensive Cancer Center**. UWCCC's central research tower will be known as the **Harold Rusch Translational Research Tower**.

The name changes honor a pair of men who were prominent leaders in their field.

Rusch, an eminent basic scientist, began planning for the McArdle Memorial Laboratory for Cancer Research in the 1930s. He later became director of both McArdle and the UW Comprehensive Cancer Center. His successor at UWCCC, Paul P. Carbone, was a world-renowned cancer pioneer who guided the center for more than two decades. He was responsible for key innovations in research and patient care.



Paul P. Carbone

Speaking of the **Comprehensive Cancer Center, its Pain and Policy Studies Group** (PPSG) has scored a trifecta of joint funding for its U.S. pain policy evaluation program: the **American Cancer Society**, the **Susan G. Komen Breast Cancer Foundation** and the **Lance Armstrong Foundation** (LAF) have each announced they will provide a three-year grant to enable the PPSG to evaluate federal and state laws, regulations and agency guidelines that can impact patient access to effective pain relief. PPSG will prepare state policy profiles for the next three years, as well as report cards that grade states' policies and compare them to the 2000 and 2003 grades. Release of the 2006 reports is anticipated in September, which is also Pain Awareness Month.

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