The coronary artery bypass graft — or CABG — is one of the most common operations performed by cardiac surgeons. Since it was first performed in the 1950s, the procedure has evolved both technically and clinically with emerging technologies and techniques. The latest phase of this evolution involves the groundbreaking use of robotic technology.

CAMC has performed minimally-invasive procedures using the da Vinci® Surgical System for more than 10 years, primarily in the general and urological surgery realms. However, in recent years, CAMC cardiothoracic surgeons have utilized this type of robotic surgery for cardiac procedures, including the CABG.

The coronary arteries are vessels that deliver blood to the heart muscle. If one of these arteries become weakened, damaged, or in the case of a heart attack, completely blocked, the heart will not receive enough blood flow. To repair the issue, cardiothoracic surgeons often need to perform a CABG procedure that makes a path for blood to flow around a blockage.

The surgery involves implantation of a bypass graft into the coronary artery that is damaged or blocked. The graft is taken from a healthy blood vessel in another part of the body — most often the internal thoracic artery (also known as the internal mammary artery) in the chest wall or the saphenous vein in the leg. In some cases, surgeons may use the radial artery in the wrist. The choice of vessel for the graft depends on a number of factors including the location and extent of the blockage, the availability and condition of the arteries and veins, and other patient medical factors.

In a traditional CABG, one member of the surgical team “harvests” the graft while another works on accessing the heart by making an incision and opening the entire chest wall. Once the chest is open, a small opening is made in the coronary artery past the blockage and the graft is sewn into the opening and attached to the aorta.

The robotic CABG is a relatively new, minimally-invasive surgical technique that utilizes the da Vinci® robotic technology. Guided remotely by the cardiothoracic surgeon, the robotic arms enable intricate surgery through tiny incisions in the chest with the help of a miniature 3-D camera and light.

Through an incision approximately 3 inches long, the surgeon is able to access the heart without opening the chest wall and instead attaches the bypass graft to the heart through small cuts between the ribs.

From a surgical perspective, the robotic technique allows for improved precision and range of motion of the surgical instruments. According to CAMC cardiothoracic surgeon John Deel, MD, “Using this method allows the surgeon to be more precise and provides improved visibility.”

For the patient, smaller incisions mean less scarring and less surgical trauma. The robotic CABG also provides reduced risk of surgical complications, like bleeding and infection, and quicker recovery time than with a traditional CABG. Recovery usually involves 1-3 days of hospitalization and then 2-3 weeks of recovery at home. Patients who undergo the traditional CABG procedure often face closer to 4-6 weeks of recovery.

There are several factors that influence whether a patient is a candidate for robotic CABG, including the severity of coronary artery disease and the location of blockage, as well as the patient’s medical history.

“There is a lot of preoperative work that goes into determining if a patient is a good candidate for the robotic CABG, such as their lung function, their weight and the number of blockages,” Deel said. “With this type of surgery, they’re typically only good for one bypass, so when there are multiple arteries that are damaged or blocked, it normally requires a different approach such as a stent.”

Deel has performed more than 2,000 traditional CABG procedures but says robotic surgery for cardiac procedures like this is gaining momentum. “I think we can do it better — with less pain for the patient, fewer incisions — and do as good a job using the robot,” he said. “Robotics is the way of the future.”

For more information and to view a robotic CABG performed by CAMC cardiothoracic surgeons, visit camcinstitution.org/imagine/.

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The Cutting Edge

More than one in three adults in West Virginia have high blood pressure. Now CAMC is participating in research to see if a new device can safely lower and help patients control their high blood pressure. Page 4

Urologists practicing at CAMC are the first in West Virginia to offer a new, minimally-invasive treatment option for men with enlarged prostate. Page 4

Download the CAMCGo app

Nearly half of people who access camc.org and CAMC PatientLink are using a mobile device to do so. Because smartphones are an essential part of our lives, CAMC recently launched a new app.

CAMCGo provides quick and convenient access to key CAMC services for patients and visitors.

CAMCGo offers these helpful features:

• Find a doctor — search nearly 700 physicians practicing at CAMC
• Find a location
• Hospital routes — directions to departments and locations within CAMC hospitals
• Directions are powered by Bluetooth beacons in the hospitals. When you enter the hospital and find the CAMCGo sign, open the app and choose the location to which you’d like directions. You’ll then get turn-by-turn photo directions to the location in the hospital you choose.
• Health news
• Events calendar
• Emergency notifications
• Access to PatientLink, CAMC’s patient portal, and online bill pay
• Make a donation (CAMC Foundation)

Search CAMCGo in the Apple Store or Google Play to download it to your device. Visit camc.org/camc-go for more information about the app.

CAMC Health System
Innovative thinking leads to improvements

CAMC is continually innovating the way it interacts with patients, physicians and employees.

In early 2017, CAMC launched a new website making it easier to find a doctor, get directions to facilities and learn about services or employment. Users can click the “Treatments and Conditions” tab to research adult and pediatric health libraries and learn about CAMC services. The site also has special sections for patients, doctors, physicians and employees. The new website is more responsive to mobile devices, easier to navigate and user-friendly.

CAMC’s patient portal, PatientLink, was recently upgraded and contains new features, including appointment requests and prescription renewals for patients of CAMC outpatient departments. CAMC now offers proxy account access so guardians can manage the records of children or other family members.

Because smartphones are an essential part of our lives, CAMC recently launched two apps: one for the public and one for employees and physicians.

The CAMCgo app offers helpful features such as: find a doctor, step-by-step directions with locations and directions within CAMC’s hospital, health news, events calendar and access to PatientLink.

The MyCAMC app helps employees and physicians stay up to date on important news and events from CAMC. Text updates, documents and videos can all be distributed through the app, and events can be added onto the devas’s calendar.

Our struggling economy and the nationwide nursing shortage has driven CAMC to search for innovative ways to keep beds open and care available to the communities we serve.

During the summer of 2017, the CAMC Foundation board of directors approved a multi-million dollar initiative to support a series of programs aimed at providing funding for tuition assistance and educational assistance for employees, dependents and nursing students. The initiative is expected to strengthen CAMC’s nursing workforce, keep qualified and capable members of the community in the state, maintain quality care for our community in the future by educating and employing qualified nurses, and stimulate economic development in West Virginia by providing educational opportunities and ensuring steady employment after graduation.

CAMC is already looking for its next generation of caregivers. The Medical Explorers program helps high school students explore health career opportunities, life skills, service learning, character and leadership.

The inaugural junior nursing academy introduced middle and high school students to the wide variety of nursing specialties including the lab tech, simulation center, operating rooms and many nursing units. The academy’s goal is to help students explore and establish an educational path that may lead them to a professional career in nursing.

CAMC’s Health Care Career Showcase introduces high school students to many health care career opportunities. Students start by visiting displays by West Virginia schools offering the academic programs needed for many of the most in-demand jobs and are then guided by CAMC employees through the various career opportunities available.

In 2017, CAMC was recognized for outstanding achievements and best practices to improve patient safety. CAMC’s recognition includes the following: Technology Strategic Plan included in the symposium; the implementation of a new video surveillance system in the operating room; and the use of a new technology for patient monitoring.

CAMC also launched the warm welcome, a five-minute custom video, to orient patients to their hospital stay and improve the patient experience. CAMC’s warm welcome video has helped improve patient satisfaction scores in the Devon’s care area for patient care.

CAMC also is on the cutting edge of medical technology from breakthroughs inside the operating room to reaching out to patients in rural areas of West Virginia. CAMC was recently one of 15 innovators from across the country invited to Washington D.C. to share health care innovations and new technology ideas.

These and other innovations will help CAMC be a medical and economic leader in West Virginia for years to come.

Cancer Screening & Prevention Day at the CAMC Cancer Center: Join us for a day dedicated to your health!

SATURDAY, MARCH 10
1 a.m. to 4 p.m.
3415 MacCorkle Ave. SE, Charleston, WV 25304
Call (304) 388-8612 to register for blood work or for more information.

BLOOD WORK (ages 18 and older)

**Minimal time** fasting and pre-registration required. Call by March 9 to register.

- Prostate Specific Antigen (PSA) - $22
- Comprehensive Metabolic & Lipid Panel (CMP) - $20
- CBC - $6
- Hemoglobin A1c - $6
- Thyroid Stimulating Hormone (TSH) - $20
- Hepatitis C Antibody Screen - $20
- *Check or cash only

SCREENING MAMMOGRAMS at the CAMC Breast Center (annual screening, your insurance will be billed)

FREE SCREENINGS

- Lung cancer risk assessment (ages 50-77)
- Colonoscopy for colon cancer (ages 50+)
- Home collection kit to detect hidden blood in the stool, which can be an early sign of cancer.
- Oral, head and neck screening

FREE EDUCATION

- Breast health
- Obesity/Exercise/Healthy Steps program
- Alcohol consumption
- Healthy diet
- Sunlight exposure (check your skin in our skin analyzer)
- Tobacco control
- Genetic counseling for cancer
- HPV prevention & importance of immunization

PLUS INFORMATION ABOUT:

- Radiation Oncology
- Clinical Trials
- Advanced Medical Devices
- Pharmacy
- Imaging Services

**FREE SCREENINGS**

Many patients have lab work completed once per year, or less frequently, because of lack of insurance or high deductible costs. Now, patients can manage their health and wellness with better access to common lab tests.

CAMC LabWorks is now offering direct access lab testing, which means that patients can choose from several low-cost lab tests without a physician’s order or insurance billing. LabWorks will offer these tests at its Charleston Avenue and Teays Valley Hospital locations every Wednesday from 6:30 a.m. to 5:30 p.m.

- Basic metabolic panel - $10
- Complete blood count (CBC) - $10
- Iron - $10
- Comprehensive metabolic panel (CMP) - $15
- Folates - $15
- Hemoglobin A1c - $15
- Hepatitis C Antibody Screen - $20
- Lipid Panel - $15
- Prostate Specific Antigen Screen (PSA) - $15
- Thyroid Stimulating Hormone (TSH) - $15
- Vitamin D - $25

No appointments or pre-registration are required, and payments are cash only at the time of service. Results will be available online in CAMC PatientLink or can be mailed to the patient.

For more information about LabWorks and common lab tests, visit camc.org/labworks

**NEW CAMC LabWorks location**

**CAMC Women and Children’s Hospital**

Suite 101, Medical Staff Office Building

Open Monday through Friday, 8 a.m. to 5:30 p.m.

No appointment or pre-registration required

Open to patients of all ages, and our staff has specialized experience in pediatrics.

Recuperating from an accident, major surgery or illness can be challenging. CAMC’s Medical Rehabilitation Center is focused on helping patients restore mobility and independence.

Patients at the center are recovering from a wide range of physical disabilities, including strokes, amputations, multiple-system trauma, orthopedic injuries and neurological disorders. The Ekso GT is a wearable robotic exoskeleton that allows patients to take literal steps towards recovery. The equipment is designed for use by stroke, traumatic brain or spinal cord injury patients. The suit provides physical therapists the ability to mobilize patients earlier, more frequently and with a greater number of high intensity steps.

The CAMC Foundation launched a fundraising campaign in 2016 to bring the Ekso GT robotic exoskeleton to CAMC, and raised the funds needed to purchase the suit. The exoskeleton arrived at CAMC in early December and staff are seeing an immediate impact and patient improvement. The Ekso GT can be programmed to provide the appropriate level of assistance for the patient depending on their ability, and patients can even operate the suit themselves using a remote attached to a walker.

Staff will use the Ekso GT daily with inpatients and outpatients and hopefully improve the speed of recovery, build confidence in and create hope for as many as possible.
Women’s Health Addictions Program to combat drug epidemic in region

Drug use in West Virginia continues to rise, devastating families, friends and communities. In a 2016 Kanawha County Behavioral Health Epidemiological profile from the Bureau of Behavioral Health & Health Facilities, more than 7 percent of Kanawha County residents ages 12 or older reported using an illicit drug in the past month.

The drug problem doesn’t have a demographic—it affects every socioeconomic class, gender, and job type. The problem is overwhelming, but the CAMC Women’s Medicine Center is ready to face the issue head on. Over the past several years, the center has established a drug treatment program for pregnant women struggling with opioid addiction, and has recently started accepting non-pregnant咯reneacy patients.

The program is one-of-a-kind: unlike many other drug treatment programs that provide drug replacement therapy long-term, the Women’s Health Addictions Program at the CAMC Women’s Medicine Center is abstinence-based, meaning that the patients are ultimately weaned completely off the replacement medication.

Of the nearly 600 OB patients seen at the Women’s Medicine Center in the past year, 38 percent had a positive urine drug screen for at least one substance; 20 percent tested positive for a drug other than THC (marijuana).

The Women’s Health Addictions Program provides a comprehensive approach to drug treatment. In addition to the medication-assisted therapy, patients benefit from individual and group therapy at the Family Resource Center, just steps away from the Women’s Medicine Center office. The program is managed by a full-time program coordinator and registered nurse, Jennifer Deford, MSN, RN, two board-certified OB/GYN physicians, Brian Calhoun, MD, FACOG, ASAM, and Mark Doets, MD, and substance abuse and mental health counselor Ashley Murphy, LCSW.

The medications used at the Women’s Medicine Center are buprenorphine (or Subutex) and Suboxone, which is a combination of buprenorphine and naltrexone. It acts similarly to an opioid, for the effects are less intense. The medication also reduces the symptoms of withdrawal. Patients typically get prescribed a week’s worth of medication at a time, unlike clinics that provide Methadone and require patients to come to the clinic daily for medication dispensing. Buprenorphine has only been FDA approved since 2002, so there is less research about its effectiveness, but the team at the Women’s Medicine Center has seen its benefits firsthand.

The treatment program is covered by most insurances, including Medicaid. While it is undoubtedly safer for a patient who was using illicit drugs to be on a prescribed medication like Subutex, Suboxone or Methadone, there are still some dangers involved in long-term medication-assisted therapy. Some pregnant women may think that since their physician is providing a medication, it won’t have any negative effects on the fetus. However, 40-60% of babies born to mothers who are still on a maintenance drug like Subutex will exhibit symptoms of neonatal abstinence syndrome, which can include severe shaking, high-pitched crying, vomiting and other heartbreaking symptoms. That’s why the Women’s Medicine Center is dedicated to weaning as many patients off the medication before delivery as possible.

“Some women may be scared to make an appointment and start treatment because they are afraid of withdrawal,” said Angie Casto, RN, manager of the center. “What we want them to know is that there is no abrupt or acute withdrawal with buprenorphine, so it’s a very gradual process and we’ll give you the resources you need to taper down.”

For a regular OYN patient, seeking treatment, the standard taper period is 12-18 months. For pregnant patients, the taper is quicker in hopes that the mother can deliver drug-free.

The women in the program are grateful for its existence. A former patient said: “This program has truly saved my life! After countless attempts to get clean and stay clean, nothing worked until this program didn’t exist. I honestly don’t know where I’d be or where my daughter would be.”

Women interested in the program should call (304) 388-2427 to make an appointment, or visit camc.org/womens-health-addictions-program for more information.

Portable imaging comes to tiny patients

X-ray imaging is very common for diagnostic treatment at the hospital, but it gets more complicated when the patient is a baby weighing only a couple of pounds in the neonatal intensive care unit.

For years, the imaging department at Women and Children’s Hospital has had a portable computer X-ray machine that can be brought to the NICU so that the babies don’t have to be transported. While that is a huge benefit to the tiny patients, the X-ray still required processing time, meaning a delay in the physician and radiologist being able to see the results.

In mid-July, imaging services purchased a new digital portable X-ray machine that has been a huge benefit to the NICU. The machine works much the same way as the previous equipment, but has many improvements.

“We’re thrilled to have this new machine,” said Kelly Combo, imaging operations manager at Women and Children’s Hospital. “It means lower radiation dose to patients, faster image processing, superior image quality and more efficient and enhanced workflow for our technologists.”

A computer X-ray machine requires an imaging plate to be placed under the patient. The plate would have to be removed and processed for each image. With the new digital machine, taking multiple images is much quicker and doesn’t require a different plate.

“The biggest benefit is the real-time imaging at the bedside,” Combo said. “We can provide the physician and radiologist with images in seconds, which leads to quicker diagnosis and treatment.”

This machine has also allowed the imaging department to expand the scope of care available at the bedside. The machine can be used in virtually any department of the hospital, benefiting the entire patient population.

To learn more about the imaging services available at CAMC, visit camc.org/imaging.
CAMC urologists offer new treatment for enlarged prostate

CAMC Urology is the first in West Virginia to offer a new, minimally-invasive treatment option for men with benign prostate hyperplasia (BPH), which is an enlargement of the prostate gland – the most common prostate problem in men 50 and older.

Rezum® is an FDA-approved treatment that injects small amounts of steam directly into the prostate, killing some of the benign tissue. The gland then shrinks as it repairs itself, relieving men of symptoms caused by the enlarged prostate, which may include symptoms such as the need to urinate more frequently and with more urgency (especially at night), irregular flow and straining to urinate.

“Rezum® offers many advantages over traditional treatments for BPH,” said Nathan Hale, DO, urologist at CAMC. “The ability to target the extra tissue that needs to be removed while sparing the tissue around the prostate, with very few side effects, is what makes this procedure different and effective.”

Hale said this procedure can free men from taking daily medications, it doesn’t require major surgery, and it allows men to retain normal sexual function, unlike some existing treatments.

“Candidates for this procedure are men who may have been on medication and are no longer finding it to be effective,” Hale said. “It’s also an option for men who don’t want to commit themselves to a lifetime of taking medications or who don’t want to deal with the side effects that they’re experiencing with medications.”

Rezum® is performed under twilight anesthesia (a mild dose of general anesthesia). It does not require an overnight hospital stay, and most men return to normal activities within a few days. Patients often notice significant improvement in their symptoms within two weeks.

“Other minimally-invasive treatments have come and gone, but they have not been able to provide the lasting effects that we think Rezum® will provide,” Hale said.

For more information call CAMC Urology at (304) 388-1900 or visit camc.org/BPH.

Research investigates possible treatment for the “silent killer”

According to the West Virginia Department of Health and Human Resources, more than one in three adults in West Virginia (41%) has high blood pressure, that’s an estimated 602,000 people.

High blood pressure can lead to heart disease and stroke, the leading causes of death in West Virginia.

CAMC is one of a select group of hospitals in the U.S. participating in a clinical research study to investigate an interventional device, the ROX Coupler. The Coupler device is designed to safely lower blood pressure and help patients control their high blood pressure.

Blood pressure is the measure of force with which blood moves through the body, and the pressure it creates against the artery walls. Normally, blood pressure rises and falls throughout the day. If it stays high, you are forcing your heart to work beyond its capacity.

If you have been diagnosed with uncontrolled high blood pressure, you may be a candidate for participation in the CONTROL HTN-2 clinical study.

The CONTROL HTN-2 study is a randomized, double blinded study. Patients will be randomly assigned to one of two groups: those patients who receive the Coupler and a control group that does not. Neither the patient nor the doctor will know to which group patients are assigned.

All eligible candidates will undergo a screening period involving visits to the study doctor’s office. At each visit, a care team will measure blood pressure and perform diagnostic tests including blood work.

For patients receiving the ROX Coupler, it is about the size of a dime and is implanted in the upper thigh using catheters introduced through small needle-like punctures.

The device will create a passage between an artery and a vein in the pelvis allowing a small amount of blood to flow from the artery to the vein.

Since the blood in the artery is at a higher pressure than the blood in the vein, doctors want to know if patients will experience an immediate reduction in blood pressure.

All participants will be seen by the study doctor for a series of follow-up visits for at least one year from the date of their randomization.

For more information on this and other studies, call the CAMC Clinical Trials Center at (304) 388-9944. 

Common signs and symptoms of BPH include:

• The need to urinate often
• Feeling that the bladder is full, even right after urinating
• Feeling that urinating “can’t wait”
• Weak urine flow
• Dribbling of urine
• The need to start and stop urinating several times
• Trouble starting to urinate
• The need to push or strain to urinate
• In severe cases, you might not be able to urinate at all

In rare cases, BPH gets worse so you may have to. When left untreated, it can lead to bladder dysfunction, damage to the bladder, recurrent urinary tract infections, obstruction of the kidneys and even kidney failure. If you are experiencing these symptoms, or want more information about treatment options for BPH, talk to your primary care physician or call CAMC Urology at (304) 388-1900.

Bottom: The ROX Coupler creates a passage between an artery and a vein in the pelvis allowing a small amount of blood to flow from the artery to the vein.

Below: It is implanted in the upper thigh through small needle-like punctures.