Skull base disorders present unique challenges, given the major nerves, blood vessels, and other structures that pass through this area of the head.

UT Southwestern’s Comprehensive Skull Base Program – part of the Peter O’Donnell Jr. Brain Institute – meets these challenges by combining a multidisciplinary approach with the latest techniques and technology.

The program currently counts specialists in neurosurgery, neurotology, neuro-ophthalmology, neurologic oncology, radiation oncology, interventional radiology, otolaryngology-head and neck surgery, plastic surgery, and pathology among its team members. Expertise is also offered in treating neurofibromatosis. (See next page.)

“Our program’s physicians are nationally recognized experts in both clinical care and research,” says **Brandon Isaacson, M.D.**, Professor of Otolaryngology, who is a Co-Director of the program, along with **Samuel Barnett, M.D.**, Professor of Neurological Surgery and Otolaryngology. (For a complete list of team members, see box on next page.)

“We have extensive experience in the latest minimally invasive techniques that have revolutionized the field of skull base surgery,” Dr. Barnett adds. “UT Southwestern skull base surgeons were the first in the U.S. to use endoscopic techniques to remove an acoustic neuroma through the ear canal.”

He notes also that UTSW has one of the few fellowship-trained physicians in Texas who has advanced training in endoscopic skull base surgery.

**Continued page 2**
Skull Base Program meets unique challenges

(Continued from page 1)

“UT Southwestern is recognized as one of the world’s premier neurological treatment centers and is home to a state-of-the-art neurological intensive care unit. As a result, patients and their referring physicians can be assured they are receiving the best care possible,” Dr. Isaacson says.

“We offer patients the full spectrum of skull base treatments, including both minimally invasive and conventional surgical options, as well as nonsurgical options such as CyberKnife, Gamma Knife, image-guided radiation therapy, and intensity-modulated radiation therapy,” he adds. “We also offer ancillary services, such as audiology, vestibular testing, and facial nerve rehabilitation.”

Evaluations and treatments are coordinated with specialists at UT Southwestern’s Harold C. Simmons Comprehensive Cancer Center – the only NCI-designated Comprehensive Cancer Center in North Texas – so patients can see all the physicians involved in their care in one setting.

“All patients with skull base tumors are seen promptly,” Dr. Barnett says. “Same-day and next-day appointments are often available.”

Expertise in Neurofibromatosis Type 2

As part of the Skull Base Program, UT Southwestern brings together multiple specialists to provide comprehensive care for those living with neurofibromatosis type 2 (NF2), a rare and complicated genetic disorder that causes noncancerous tumors to form on nerves in the brain and spinal cord that are important for hearing, vision, balance, and swallowing.

The numerous and diverse conditions caused by NF2 require a team experienced in treating these unique problems.

“While there is no cure for NF2, our multidisciplinary team can help improve a patient’s quality of life by lessening the debilitating consequences of the disease,” says Walter Kutz, M.D., Associate Professor of Otolaryngology and head of the NF2 clinic.

Most of the treatments for NF2 are aimed at symptom management. Treatments include microsurgery, radiosurgery, chemotherapy, and hearing rehabilitation, including cochlear and auditory brainstem implants.

“UT Southwestern is one of the few centers in the southern U.S. that offers auditory brainstem implants to treat hearing loss in NF2 patients,” Dr. Kutz notes.

“In some cases, microsurgery is required for growing tumors when deafness occurs or the tumors become large enough to cause symptoms;” he adds. UTSW neurotologists and neurosurgeons remove the intracranial tumors and offer three microsurgical approaches for the management of vestibular schwannomas: translabyrinthine, middle fossa, and retrosigmoid craniotomies. These approaches can provide hearing preservation in some cases.

For more information or to refer a patient to the UT Southwestern Skull Base Program, call 214-645-8898.

Skull Base Program Team Members

Neurosurgery
- Samuel Barnett, M.D.
- Bruce Mickey, M.D.
- Toral Patel, M.D.

Otolaryngology
- Ashleigh Halderman, M.D.
- Jacob Hunter, M.D.
- Brandon Isaacson, M.D.
- Walter Kutz, M.D.
- Bradley Marple, M.D.
- Matthew Ryan, M.D.

Radiation Oncology
- Lucien Nedzi, M.D.
- Robert Timmerman, M.D.
- Zabihullah Wardak, M.D.

Neurofibromatosis Team Members
- Walter Kutz, M.D.
  Co-Director, Neurotology
- Laura Klesse, M.D., Ph.D.
  Co-Director, Neurological Surgery
- Samuel Barnett, M.D.
  Neurological Surgery
- Kevin Morrill, M.D.
  Neuro-Oncology
- Lucien Nedzi, M.D.
  Radiation Oncology
- Edward Pan, M.D.
  Neuro-Oncology
- Shai Rozen, M.D.
  Plastic Surgery
- Kathleen Tibbetts, M.D.
  Otolaryngology

Treating a Wide Range of Conditions

UT Southwestern’s team of physicians is experienced in the diagnosis and treatment of a wide range of conditions involving the skull base, including:

- Acoustic neuromas
- Cerebrospinal fluid (CSF) leaks
- Cholesterol granulomas
- Chondrosarcomas
- Chordomas
- Encephaloceles
- Endolymphatic sac tumors
- Esthesioneuroblastomas
- Fibrous dysplasia
- Hemangiopericytomas
- Inverted papillomas
- Meningiomas
- Osteomas
- Osteomyelitis
- Paragangliomas (glomus tumors)
- Pituitary and sinus tumors
PHYSICIAN UPDATE

Advanced surgical care for pancreatic cancer patients

UTSW leads in robotic Whipple procedures

With the recruitment of Herbert J. Zeh III, M.D., as Chair of the Department of Surgery earlier this year, UT Southwestern now offers the most cutting-edge surgical technique available for pancreatic cancer patients.

The robotic pancreaticoduodenectomy, also known as the Whipple procedure, removes the head of the pancreas, where most pancreatic tumors occur, along with some of the surrounding intestine and a portion of the bile duct. This is one of the most complex surgeries performed in the abdomen because of its location and the precise reconstruction of the surrounding delicate organs needed after tumor removal.

Fewer complications, faster recovery

As is common with other types of robotic surgery, patients have less pain and are able to recover more quickly with a robotic pancreas resection than with traditional/open surgery, but robotic expertise provides something even more important for pancreatic cancer patients – fewer complications from surgery and the ability to move on to the next stage of cancer treatment, such as chemotherapy, faster.

According to data published by Johns Hopkins, about 46 percent of patients who have traditional/open pancreatic resections do not receive chemotherapy. Following the robotic approach, however, close to 90 percent of patients do have chemo, Dr. Zeh has observed.

“Every patient who has pancreatic cancer needs chemotherapy either before or after surgery,” he says. “With this robotic technique, patients are more likely to get the integrated, multidisciplinary care they need.”

A surgical trailblazer

Dr. Zeh was one of the early pioneers of robotic pancreas resections. He was among the first to adopt the surgery in 2007 and has now performed it more than 500 times, likely more than anyone else in the world.

Similar to flying an Airbus 380 to France, he says, this is one of the most technically challenging procedures available, and it is not a surgery that doctors should perform alone. Dr. Zeh’s surgical team at UT Southwestern includes Adam Yopp, M.D., and Patricio Polanco, M.D., both experienced gastrointestinal surgical oncologists who have been performing the open Whipple procedure for many years.

Unique advantage for surgeons

The advantages of robotic pancreas resections for patients are clear, but another interesting part of the technology benefits surgeons, Dr. Zeh says.

“Because every motion is recorded, we can go back, like football teams, and review game film. We can see what worked well and what we can do better,” he says. “We can scrutinize our performance and the outcomes and link those in a way that’s not possible with other forms of surgery. The quality improvement potential is extremely important. I know others in the medical field will understand this.”

To make a referral to the Department of Surgery, call 214-645-8300.

Whipple Surgery: What’s Involved

In a standard Whipple procedure – robotic or otherwise – the surgeon removes the head of the pancreas, the gallbladder, the duodenum, a portion of the stomach, and surrounding lymph nodes. The surgeon then reconnects the remaining pancreas and digestive organs.

In some cases, patients undergo a modified version of the Whipple procedure, which keeps the entire stomach and the pylorus.

A robotic Whipple procedure typically takes about four to six hours, with patients spending about five to seven days in the hospital after surgery.
Cardiology

New cardio risk calculator offers precision medicine for people in midlife

A team of researchers led by cardiologists at UT Southwestern has developed a new online tool to more accurately predict who among those ages 40-65 is at the highest risk of suffering a heart attack or stroke in the next 10 years.

Measuring coronary artery calcium is among the most powerful and novel cardiovascular risk assessment tests. Until now, patients could not easily combine this measurement with traditional risk factors such as blood pressure and cholesterol to predict the risk of having a stroke or heart attack.

The new tool, named the Astronaut Cardiovascular Health and Risk Modification (Astro-CHARM) calculator, was developed by the National Space Biomedical Research Institute (NSBRI) together with a research team led by UT Southwestern preventive cardiologist Amit Khera, M.D. Its purpose is to facilitate precise cardiovascular risk assessment for astronauts as well as the general population.

“We found that the Astro-CHARM tool significantly improves cardiovascular risk prediction. It will be an important step forward in decision-making for preventive treatments in the general population for people in midlife,” says Dr. Khera, Professor of Internal Medicine and Director of UT Southwestern’s Preventive Cardiology Program. “Cardiovascular risk assessment can also be critical in younger populations, particularly those in high-risk occupations.”

NASA launched the study with UT Southwestern to enhance cardiovascular risk prediction for astronauts, who are predominantly middle-aged men and women.

The full study on Astro-CHARM was recently published in the journal *Circulation*. The Astro-CHARM cardiovascular disease prevention tool can be found at astrocharm.org.

**Helping astronauts and earthlings**

“This study is a perfect example of how NASA (and NSBRI)-sponsored research helps both astronauts and the general population on Earth. The study was inspired by a critical question asked by flight surgeons and answered quickly by a partnership with academia,” says senior author and UT Southwestern sports cardiologist Benjamin Levine, M.D.

Dr. Levine is Director of the Institute for Exercise and Environmental Medicine at Texas Health Presbyterian Hospital Dallas and a Professor of Internal Medicine/Cardiology at UT Southwestern.

For this study, the following risk factors were self-reported: race/ethnicity, history of cardiovascular diseases, medication usage, family history of myocardial infarction, and smoking status. Height, weight, blood pressure, plasma lipids, body mass index (BMI), and glucose were measured using standard methods. The researchers also looked at the patients’ personal and/or family history of diabetes and myocardial infarction.

The mean age of the 7,382 study participants was 51, and the group was 45 percent female and 55 percent nonwhite. Data for this study were pooled from the Multi-Ethnic Study of Atherosclerosis, the Dallas Heart Study, and the Prospective Army Coronary Calcium Project. It was independently validated with the Framingham Heart Study Offspring and Third Generation cohorts.

To refer a patient to a UT Southwestern cardiologist, call 214-645-8300.

The heart attack and risk calculator was developed by UT Southwestern, NASA, and NSBRI.
PHYSICIAN UPDATE

Limb Salvage Service helps manage diabetic foot problems and prevent amputations

People with diabetes have a higher risk of foot amputation than anyone else. The main reasons are that diabetes can lead to nerve damage, poor circulation, and impairment of the immune system, all of which can make it more difficult for a wound to heal.

What for most people would be a normal foot issue – a cut, scrape, blister, or ingrown toenail – can lead to infection and limb-threatening complications for someone with diabetes.

“Foot ulcers are a serious complication for people with diabetes and pose one of the biggest risks for loss of a toe, foot, or lower leg to amputation,” notes Katherine Raspovic, D.P.M., Co-Director of UT Southwestern’s Limb Salvage Service, which strives to preserve the function of the limbs of people who suffer from diabetes complications or who have experienced trauma. “A cut or minor blister can too easily develop into an ulcer for someone with diabetes because, not having the ability to feel the feet properly and realize there’s an injury, the person will continue walking on it, aggravating the problem.”

Patients’ development of neuropathy, which prevents them from feeling pain, heat, or cold in the lower extremities, and/or peripheral vascular disease are the two major causes of foot problems in diabetes, notes Dr. Raspovic, who specializes in foot and ankle surgery.

“If a foot wound becomes infected, things can escalate quickly,” she says. “A diabetic foot infection can lead to sepsis, which can be life-threatening. In some cases, amputation becomes necessary to stop the spread of infection. That’s why it’s crucial to spot complications early on.”

Team of experts

In addition to foot and ankle surgeons like Dr. Raspovic, the Limb Salvage Service multidisciplinary team includes experts from specialties such as:

► **Vascular surgery:** to help restore blood flow to wounds and surgical sites to promote healing
► **Infectious diseases:** to deliver and manage antibiotic treatment for diabetic foot infections
► **Internal medicine:** to nonsurgically manage patients’ other medical conditions, such as diabetes, heart disease, and kidney disease
► **Endocrinology:** to help patients better control their blood glucose levels to optimize healing
► **Emergency medicine:** to evaluate patients who come to the Emergency Department with foot problems
► **Plastic surgery:** to perform specialized procedures for complex and/or large wounds and tissue defects
► **Physical and occupational therapy:** to help post-surgical patients restore as much function as possible and teach them how to perform their activities of daily living

The team’s physicians and surgeons use advanced therapies and techniques to avoid amputation whenever possible. They offer a number of procedures that can help salvage limbs, such as:

► Debridement and treatment of chronic wounds/ulcerations
► Incision and drainage of infections
► Reconstruction of foot and ankle bone deformity/Charcot foot reconstruction
► Injury treatment and repair

In cases where amputations must be performed, the service comprehensively supports patients throughout their recovery and rehabilitation.

To schedule a referral with the Limb Salvage Service, call 214-645-8300.
The medical community is still making inroads into understanding chronic thromboembolic pulmonary hypertension (CTEPH), a rare form of pulmonary hypertension. As the only place in North Texas that provides treatment for the disease, UT Southwestern is at the forefront of that discovery.

Specialists in UTSW's new CTEPH program are trained not only to diagnose and evaluate this often-unrecognized condition but also to perform the complex procedures to cure it.

Although the pathobiology of CTEPH remains poorly understood, clinical evidence suggests that the disease's process most certainly begins with an acute pulmonary embolus, with subsequent scar tissue building up over time, blocking blood flow to the pulmonary arteries and causing pressure to increase in these vessels and the right side of the heart to enlarge.

“The vascular obstruction, over time, results in failure of the right side of the heart and early mortality,” says Sonja Bartolome, M.D., Medical Director of the UT Southwestern CTEPH program. “Fortunately, however, we also know that with the proper diagnosis and treatment, CTEPH might be curable.”

**Often-unrecognized condition**

Dr. Bartolome notes that in its early stages the symptoms of CTEPH can be vague and non-specific, which is why it often goes undiagnosed or misdiagnosed as asthma or chronic obstructive pulmonary disease (COPD).

The main symptom, she says, is shortness of breath, especially with light exercise, such as climbing stairs. As the disease progresses, patients might feel fatigue or light-headedness, and fainting is a possibility. Eventually, fluid can back up into the abdomen and cause the legs to swell.

“Without intervention, the natural history of CTEPH is progressive and outcomes are poor, so we need to focus on early diagnosis,” Dr. Bartolome says. “In expert hands and with modern CT technology, the sensitivity and specificity for CTEPH diagnosis is improved.”

When patients are referred to UTSW's program with symptoms of CTEPH, Dr. Bartolome and the team conduct a series of tests to help make the diagnosis; these tests can include: a lung ventilation-perfusion scan, echocardiogram, right-heart catheterization, pulmonary angiogram, and CT scan.

**Treatment options**

Once a diagnosis is made, the UTSW team of CTEPH experts evaluates each patient's situation to determine the best procedure to address it.

“The definitive treatment for this disease is surgical pulmonary thromboendarterectomy (PTE), but to achieve the best outcomes this procedure needs to be performed at an expert center with multidisciplinary team experience, as we have at UT Southwestern,” Dr. Bartolome says.

Through the complicated PTE surgical procedure, performed at only a few centers across the country, old scarred-in blood clots are carefully removed from the arteries of the lungs while a heart-lung machine takes over the patient's circulation.

Patients who are poor operative candidates or with surgically inaccessible disease might be considered for a newer endovascular approach, also offered at UT Southwestern, called balloon pulmonary angioplasty (BPA).

“With BPA, an interventional radiologist working with a cardiologist and a pulmonary hypertension specialist performs the procedure by accessing the lungs via a catheter inserted in the patient's vein,” Dr. Bartolome explains. “With advanced imaging technology, we're able to maneuver the catheter directly to the clots, and the catheter is equipped with a balloon at its tip that's inserted into the clogged vessel to open it and restore blood flow.”

For patients without more curative options, medication has been shown to improve exercise capacity, Dr. Bartolome notes. The treatment approach is individualized for each patient and focused on achieving the best outcome, including the restoration of quality of life.

To refer a patient to the CTEPH program at UT Southwestern, call 214-645-8300.
A UT Southwestern faculty member is one of the country’s leading specialists in the use of a minimally invasive, in-office procedure for benign prostatic hyperplasia (BPH) that uses steam ablation to reduce the size of the prostate.

UTSW Faculty Associate Ken Goldberg, M.D., recently performed his 300th Rezum (pronounced “resume”) procedure, a therapy that was approved by the Food and Drug Administration in 2016 following clinical trials conducted at UT Southwestern and elsewhere. Depending on the size of the prostate, the procedure consists of two to seven treatments, each nine seconds in duration, that are received in a single one- to two-hour office visit under local anesthesia.

The procedure works, Dr. Goldberg explains, by inserting .5 cc of sterile water vapor (steam) – less than half a teaspoon – into the prostate gland, destroying prostate cells and prostate tissue that are causing obstructions and reducing urine flow. As the obstructive cells and tissue are destroyed, the size of the prostate shrinks and symptoms improve.

There is no damage to the prostate, he says. The therapy is targeted to a defined area, with injections typically placed about a centimeter apart on either side of the enlarged area and into the center, if necessary.

Rezum is indicated for patients ages 50 and older with prostates 30-80 grams in size, notes Dr. Goldberg, a board-certified urologist. Larger prostates (up to 110 grams), he adds, can be treated after medications are first used to shrink them down to a manageable size. Prostates larger than 110 grams are referred for robotic prostatectomy.

Candidates for the procedure are men who aren’t satisfied with their symptom management, men whose symptoms are progressing, and men who don’t want to take medication, Dr. Goldberg says. Before any patient is accepted, he must first undergo an evaluation to determine the size of the prostate and whether the procedure is right for him.

Excellent results

According to Dr. Goldberg, results to date have been excellent. “More than 90 percent of patients are satisfied to very satisfied with both the procedure experience and the results, and close to 100 percent would recommend it to a friend,” he says.

“The procedure is not difficult on my patients,” he adds. “No one has asked me to stop the process after we’ve started.”

Although there are no known side effects, Dr. Goldberg advises patients beforehand that their symptoms will worsen after the procedure before they get better due to swelling. He also tells them they will need a catheter for two to four days afterward.

“Typically, I tell patients that in the first two weeks after the procedure their urine flow will be markedly weak. There’s no pain, just more difficulty urinating because of inflammation,” he says. “At two weeks, symptoms tend to turn as the swelling goes down, and at four weeks patients are back to baseline condition. By six weeks, patients are typically off medication – alpha blockers and anti-inflammatories – and voiding well.”

Medicare and most insurance plans now cover the Rezum procedure. To refer a patient to Dr. Goldberg for evaluation at his Lewisville clinic, call 972-420-8500.

To view a video about the Rezum procedure, visit utswmed.org/doctors/kenneth-goldberg.
UT Southwestern physicians offer consultations and treatment in approximately 80 specialties. Recognizing that navigating through the many programs and resources at UT Southwestern can be challenging, the University established Patient and Physician Referral Services to assist external physicians and their staff with securing patient appointments. Offices may call one centralized phone number to schedule a consultation in any clinic or to fax patient records related to a referral. The UT Southwestern referral coordinator will work closely with the appropriate physician or clinic to coordinate the patient’s appointment, as well as contact the patient and referring physician’s office with the appointment details.