

UT Southwestern Simmons Cancer Center

# the Vanguard

## FIGHTING CANCER FROM WITHIN:

Developing Biomarkers  
for Immunotherapy

THE FUTURE OF CANCER CARE, TODAY

WINTER 2020



## RESEARCH THAT MAKES A DIFFERENCE

At the Harold C. Simmons Comprehensive Cancer Center, our driving mission is to improve patient care and save lives. As part of an NCI-designated Comprehensive Cancer Center, our physicians and scientists conduct laboratory research, clinical research, and population-based research, leading to new drugs and treatments that improve lives for residents of Dallas and beyond.

At Parkland Memorial Hospital, where Simmons Cancer Center physicians often treat impoverished and uninsured patients, a dedicated research team

is working to provide the same access to clinical trials that patients at UT Southwestern receive. Read more about this important initiative on page 4.

Outside the lab, Simmons Cancer Center physicians are using innovative treatments to help patients overcome cancer. On page 6, discover how a multidisciplinary clinic dedicated to diagnosing and treating cutaneous lymphoma is changing patients' lives for the better. And don't miss the inspiring story on page 8 of how one patient is fighting back against colorectal cancer after being diagnosed in his 30s.

On page 12, learn how interventional radiology is being used as an alternative to surgery, with minimal recovery times and a low risk of complications. Finally, for a look at how scientists at UT Southwestern are exploring innovative ways to combat cancer through the use of biomarkers, turn to our cover story on page 14. Research discoveries and innovative strategies are showing a promising path forward.

Best wishes for a happy and healthy new year – we look forward to continuing to share our research and discoveries with you in 2020.

Sincerely,

**CARLOS L. ARTEAGA, M.D.**

Director, Harold C. Simmons Comprehensive Cancer Center

### UT Southwestern Simmons Cancer Center

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Roberto Cowan is fighting back against colorectal cancer with the help of the team at Simmons Cancer Center.

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## Clinical Trials at Parkland Are a Win-Win

Latinos make up about 17% of the U.S. population, yet only about 10% of clinical trial participants in 2015 were Latino. And participation is even lower in cancer-specific trials. Simmons Cancer Center researchers are trying to change that, and it's a win-win for everyone.

Simmons provides cancer care to UT Southwestern patients as well as patients of Parkland Memorial Hospital, an independent safety net hospital owned and operated by Dallas County. Although the majority of Parkland patients are uninsured, they should have the same access to clinical trials as patients receiving treatment at UT Southwestern, the researchers reasoned. Thus, Simmons has begun staffing

Parkland with a dedicated research manager, five research coordinators, and a navigator who facilitate clinical trials at the county hospital. The program benefits both sides.

"It's a win-win because it makes those novel treatment opportunities available to patients who otherwise wouldn't have them, and it makes our clinical trials much more reliable when we have diverse representation," says Shaalan Beg, M.D., Medical Director of the Clinical Research Office at Simmons, who specializes in treating gastrointestinal cancer. "A drug that's very effective in a group of 75-year-old white males might be very different in a younger Hispanic population, for example."

### GET CONNECTED

Want more Simmons news? Find UT Southwestern Simmons Comprehensive Cancer Center on Facebook and follow us on Twitter @utswcancer.

## ADVISORY BOARD CONNECTS SIMMONS AND THE COMMUNITY

While Simmons Cancer Center impacts lives across the U.S. and around the world, its first priority always is the North Texas community. To stay connected, Jasmin Tiro, Ph.D., Associate Director of Community Outreach, Engagement, and Equity at Simmons, recently founded a community advisory committee made up of 26 community members representing patients, caregivers, nonprofit organizations, minority groups, faith-based organizations, academic institutions, and more.

In the board's short tenure, it has already voted to form working groups to assist the Cancer Center in three specific areas:

**1 Town halls.** The board will help conduct a listening tour to encourage community engagement in research activities and communication about community needs.

**2 Communication.** This group is looking at how Simmons can do a better job of letting the community know of the Cancer Center's efforts to deliver high-quality cancer care, research, and programs to prevent cancer and improve the survivorship experience.

**3 Clinical trial access.** This group is focused on raising awareness about the importance of clinical research and encouraging underrepresented minorities to participate in trials in an effort to ensure everyone has access to the highest-quality care and new treatments.



## Support for People Living with Cancer

The Supportive Services staff at Simmons Cancer Center is always exploring new ways to assist patients. Recent initiatives include:

### + YOUNG ADULT SUPPORT GROUP.

For young adults with cancer, finding someone to talk to can be tough. "It's a unique patient population," says Alexandra Huffman, LCSW, OSW-C, Manager of Support Services at Simmons Cancer Center. "Not only are they juggling doctor appointments and cancer treatment, but



they're also probably finishing up school, making a name for themselves at work, and building a family of their own." So Ms. Huffman decided to form a five-member patient committee to start a Young Adult Support Group in Dallas, and the group now meets every third Tuesday of the month at Simmons. Questions? Email [youngadults@utsouthwestern.edu](mailto:youngadults@utsouthwestern.edu).

### + JOURNEY OF COURAGE AND HOPE FOR COUPLES RETREAT.

This weekend retreat, made possible by a grant from the National Breast Cancer Foundation, provided eight couples with an opportunity to connect and engage with others. Lillie Shockney, former Director of Cancer Survivorship Programs and Faculty at the Johns Hopkins University School of Medicine, joined as a guest facilitator. Sangeetha Reddy, M.D., a medical oncologist and clinical trialist at UT Southwestern, and Melanie Hullings, Manager of Clinical Research in the Breast Clinic, participated in a Q&A session, answering questions specific to patients in attendance. Couples also enjoyed relaxing massages, yoga, and lighthearted games. As one attendee said: "The retreat reminded me of the importance of community and the support it can provide."

## MULTIPLE MYELOMA SURVIVOR GIVES BACK, FUNDS RESEARCH

After undergoing a physical in October 2009, Ellis Skinner was diagnosed with multiple myeloma, an incurable type of bone marrow cancer. He turned to UT Southwestern for guidance and care through his cancer journey. Following his remission, and to help improve outcomes for future patients, he and the management of the Ellis M. Skinner Co. made a \$200,000 gift to support his physician's multiple myeloma research at UT Southwestern's Harold C. Simmons Comprehensive Cancer Center.

"The cancer came out of nowhere," Mr. Skinner says. "I'll never forget sitting with Dr. Larry Anderson and my wife, Linda. I'd been diagnosed with

this incurable cancer, and I had two pages of questions that all revolved around the question of 'how long am I going to live?' In 2010, I spent my 69th birthday undergoing a stem cell transplant."

According to the Multiple Myeloma Research Foundation, just a decade ago patients diagnosed with multiple myeloma survived only a few years. Today, the disease is rarely curable but highly manageable. With sophisticated therapies, the average survival period is now eight to 10 years.

"You can't really apply the word 'cure' to multiple myeloma yet," says Larry Anderson, M.D., Ph.D., Associate Professor of Internal Medicine in the Division



FROM LEFT: SKINNER CO. MANAGING PARTNER JESSICA TONEY WITH COMPANY OWNER ELLIS SKINNER AND HIS WIFE, LINDA SKINNER.

of Hematology and Oncology. "But we're hoping with further research and combinations of immunotherapy and other forms of myeloma therapy that we can get there."

**INTERESTED IN MAKING A GIFT TO SIMMONS CANCER CENTER?**

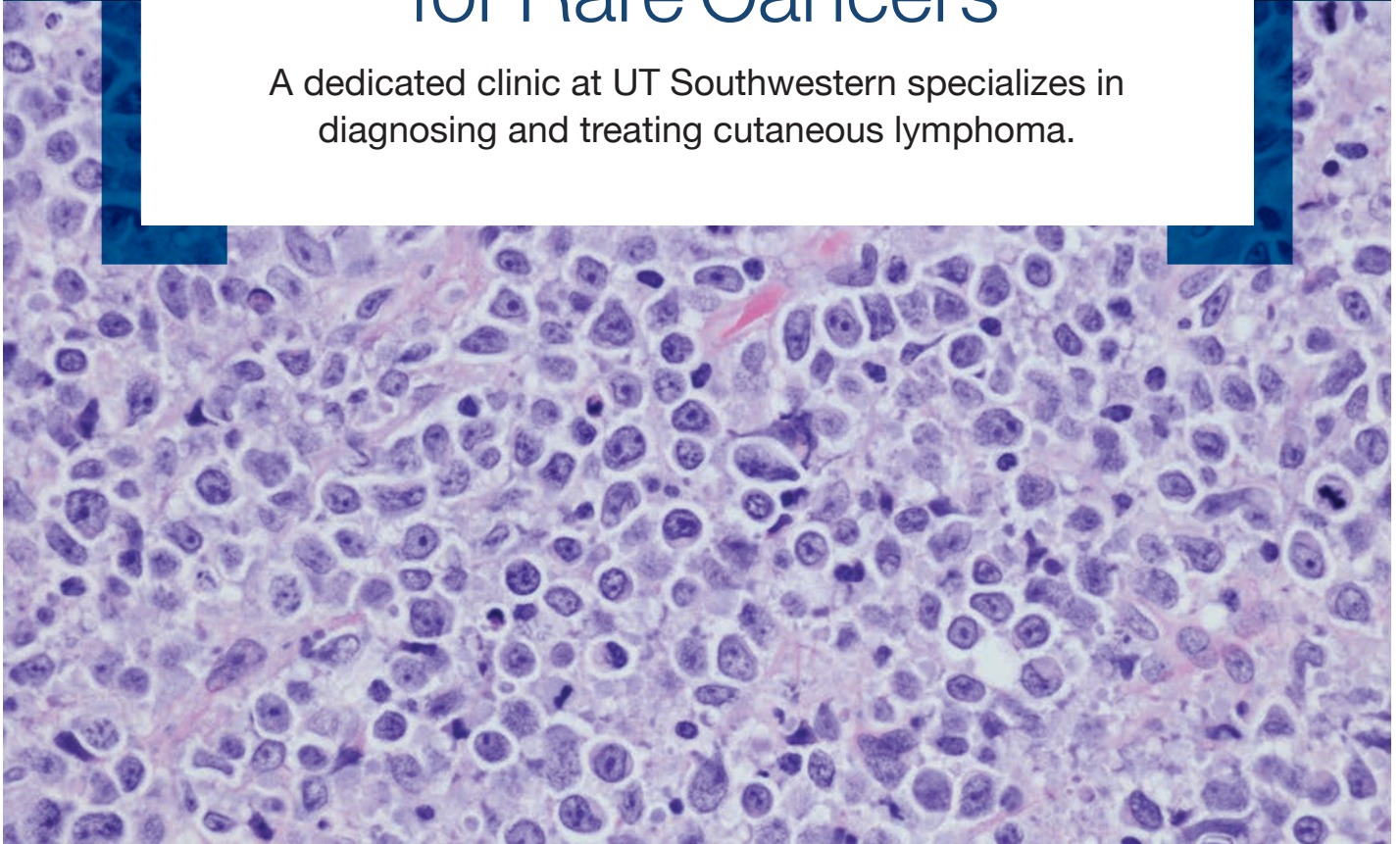
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# Targeted Treatments for Rare Cancers

A dedicated clinic at UT Southwestern specializes in  
diagnosing and treating cutaneous lymphoma.



When most people think of lymphomas, they think of cancers that are linked with the lymph nodes. But lymphomas can develop in other parts of the body as well, such as in the gastrointestinal tract, brain, liver, spleen, or, in the case of cutaneous lymphoma, even the skin.

A skilled team of experts at UT Southwestern's dedicated cutaneous lymphoma clinic specializes in diagnosing and treating this rare type of lymphoma. The clinic has been in operation for more than five years. Its multidisciplinary approach pairs the dermatology expertise of UTSW's Heather Goff, M.D., M.P.H., with the hematology/oncology background of Syed Rizvi, M.D., Assistant Professor of Internal Medicine. The duo sees patients in tandem.

"We are able to communicate, collaborate, and formulate a treatment plan so patients can get all the care they need under one roof in one day," Dr. Goff says, noting that one referral from a patient's primary care physician will cover both the dermatologist and the oncologist.

The clinic also has a radiation oncologist who specializes in treating cutaneous lymphomas and can see patients that same day. "That's especially important for patients who are driving long distances," Dr. Goff says. "We have people driving from as far away as Louisiana, two or three hours away."

### Specialized Team Focuses on an Uncommon Disease

Cutaneous lymphoma is diagnosed in only six people per million every year, and its rarity can make diagnosis difficult. "The average person might undergo six or more skin biopsies before diagnosis," Dr. Goff says. That's because cutaneous lymphoma can look like benign skin conditions such as psoriasis, eczema, or allergic contact dermatitis.

"At the cutaneous lymphoma clinic, we see patients in a multidisciplinary setting," Dr. Rizvi says. "This is helpful because these are uncommon diseases. Having dermatological expertise in addition to medical oncology is important because these diagnoses can be very tricky."

Working together, Drs. Rizvi and Goff can correlate how biopsied cells look under the microscope with the signs and symptoms a patient presents.

"Cutaneous lymphoma can mimic other conditions, and it's important to exclude those conditions," Dr. Rizvi says. "That clinical path correlation is important because not everything that looks the same under the microscope behaves the same way. We want to avoid overtreatment or undertreatment people. Some diseases don't require excessive treatment – something local and lower in intensity can work – while others require a more intense approach."

### A Rare Disease Needs Specialized Expertise

For most people, cutaneous lymphoma is an early stage lymphoma. "It's manageable, and it doesn't affect longevity," Dr. Rizvi notes. In early stages, doctors can offer patients a range of treatment options:

- + Light therapy
- + Steroids
- + Topical chemotherapy
- + Ointments
- + Radiation

"For a small percentage of patients, the disease will progress over time, but if it does, we have management options. People should think of it as a chronic disease like diabetes or high blood pressure – it can be managed," Dr. Rizvi says. Advanced cutaneous lymphoma might be treated with:

- + Targeted therapies
- + Chemotherapy
- + Bone marrow transplant

In these advanced cases, patients might need to combine therapies for the most effective treatment.

### Targeted Therapies Spare Most Healthy Cells

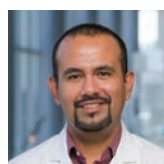
For some types of cutaneous lymphomas, targeted therapies are good treatment options. Sometimes called precision medicines, targeted therapies stop cancer from growing and spreading by interfering with specific molecules. These therapies focus on cancerous cells without affecting most of the nearby healthy cells.

"Targeted therapy can lead to excellent responses. Responses can be very dramatic," Dr. Rizvi says.

One targeted therapy, called brentuximab, acts like a "smartbomb" and kills off cancer cells, Dr. Goff adds. "It has a good effect. With patients with more advanced disease, we're seeing close to clinical remission."

Another targeted therapy, called mogamulizumab, is an antibody specific to these cancer cells and leads to their destruction.

"We are in a unique position to manage these patients because we see them in a multidisciplinary setting with more than one physician's expertise. We have a volume of accumulated experience, and we look at every patient individually. We're not reflexively treating them," Dr. Rizvi says.



SYED RIZVI, M.D.

### ASK THE EXPERT: CUTANEOUS LYMPHOMA

Tune into our Q+A with Syed Rizvi, M.D., where he covers FAQs about this rare disease. Visit [bit.ly/2Olj645](https://bit.ly/2Olj645).



# ON THE RISE

Colorectal cancer rates in young people are increasing, and 31-year-old Roberto Cowan knows firsthand what that looks like.

At 30 years old, Roberto Cowan was busy making a name for himself in his career as a sales manager for Medieval Times in Dallas, and he had an active social calendar. Colorectal cancer was the furthest thing from his mind. So when he started noticing blood in his stool in 2018, he didn't think to get it checked right away.

"I have irritable bowel syndrome, so I kind of just assumed it was a symptom of that and maybe had something to do with the way I was eating," Mr. Cowan says. "About a year went by before I mentioned it to my general practitioner."

When that finally happened, his doctor ordered a colonoscopy, but Mr. Cowan still wasn't too worried. He scheduled the test for three weeks later.

"I expected going into it that they would come out and tell me, 'Oh, you're young; everything's fine.' I expected them to tell me that I just needed to change my diet," he says. "But no, I woke up and they said I had a mass in my colon."

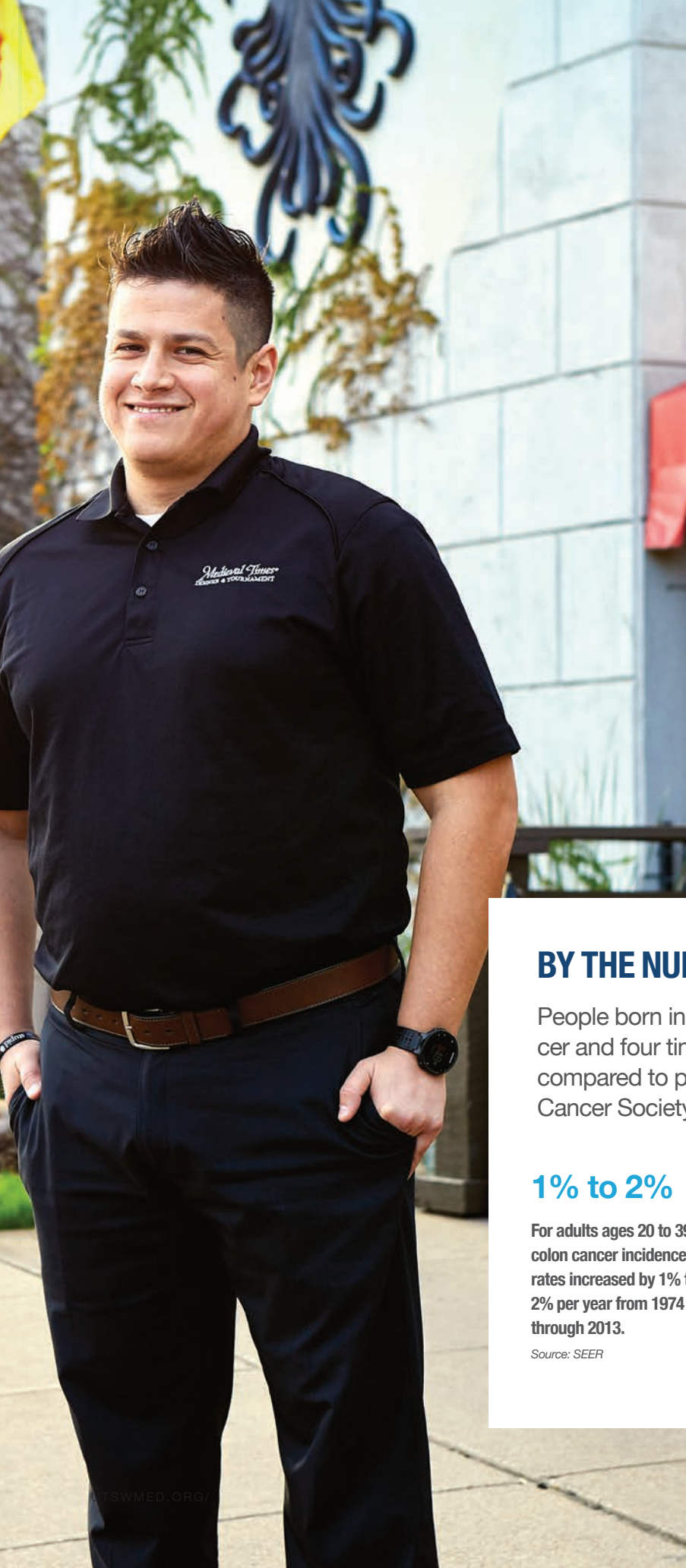
After seeing a proctologist, Mr. Cowan learned the mass was actually in his rectum and was cancerous.

"I couldn't believe it," he says. "I never even thought about people my age getting cancer."

Roberto Cowan was shocked to receive a cancer diagnosis at the age of 30. "I never even thought about people my age getting cancer."







## MORE YOUNG ADULTS GETTING COLORECTAL CANCER

Unfortunately, people Mr. Cowan's age do get cancer, and more and more of them are getting colorectal cancer specifically. Colorectal cancer encompasses both colon cancer and rectal cancer, which share biological features.

"The incidence and mortality of colorectal cancer in adults over age 50 has been declining over the years, and we think that is probably due in part to increased screening leading to removal of precancerous lesions, decreased smoking, and improvements in treatment," says Nina Sanford, M.D., a radiation oncologist at Simmons Cancer Center. "But since about the early '90s, the incidence of what we call young-onset colorectal cancer has been gradually increasing and is expected to continue increasing over the next several decades."

Doctors are unsure exactly what's causing the increase but suspect environmental factors might play a role.

"There is speculation that lifestyle factors such as diet and decreased activity could be contributing to the increased incidence of colorectal cancer," Dr. Sanford says, "but these remain active areas of investigation. Also, many young patients diagnosed with colorectal cancers previously led healthy lifestyles, so there must be other factors at play as well."

For some patients, genetic factors might also play a role, particularly among the youngest adult patients.

## BY THE NUMBERS

People born in 1990 are twice as likely to develop colon cancer and four times more likely to develop rectal cancer as compared to people born in 1950, according to the American Cancer Society.

### 1% to 2%

For adults ages 20 to 39, colon cancer incidence rates increased by 1% to 2% per year from 1974 through 2013.

Source: SEER

### 10,950

There were an estimated 10,950 new cases of colorectal cancer in Texas in 2019, making it the state's third most common cancer type.

Source: cancerstatisticscenter.cancer.org

### 3%

Rectal cancer incidence rates have been increasing even longer and faster than colon cancer, rising about 3% per year from 1974 to 2013 in adults ages 20 to 29 and from 1980 to 2013 in adults ages 30 to 39.

Source: SEER

**JOIN THE DISCUSSION**

Visit [bit.ly/34lqJNk](https://bit.ly/34lqJNk) to watch a Q+A with national colorectal cancer expert Caitlin Murphy, Ph.D., Assistant Professor in the Department of Population and Data Sciences at UT Southwestern.

One study found that more than a third of people who develop colorectal cancer before age 35 had a hereditary cancer syndrome as compared with 2% to 5% of all cases of colorectal cancer. Although more research is needed to say for sure, the numbers suggest genetics might be affecting younger patients more than older patients.

### **YOUNGER PATIENTS DIAGNOSED LATER**

Because young adults at average risk don't get screened for colorectal cancer, their diseases are often diagnosed at later stages than older patients. As with Mr. Cowan, most young adults aren't diagnosed until they see their doctor about symptoms that are bothering them. And by the time they experience symptoms, their cancer typically has already progressed beyond stage 1, which is the earliest stage.

Even physicians are sometimes caught off guard by the thought of colorectal cancer affecting their young adult patients. But if you have symptoms, you need to request a thorough diagnostic evaluation.

"Your physician might be thinking irritable bowel syndrome or inflammatory bowel disease, but if you are noticing danger signs – blood in the stool, unexplained weight loss, persistent abdominal pain and cramping, and a change in the consistency of your stool or not passing stool for several days – you should discuss with your physician further testing," says Syed "Ali" Kazmi, M.D., a hematologist-oncologist at Simmons.

He notes that while younger patients usually have more advanced cancers, that doesn't always translate to higher mortality rates.

"It depends on each individual person's circumstances, of course, but generally younger patients can better tolerate higher doses of chemotherapy, so we can be more aggressive with treatment than with older patients who might have other comorbidities," Dr. Kazmi says.

### **CHOOSING SIMMONS FOR TREATMENT**

After Mr. Cowan received his diagnosis, he was referred to Simmons Cancer Center for treatment so he could participate in a clinical trial.

"I was excited to be accepted into a trial," he



**With care from Simmons, Mr. Cowan was able to fight back against cancer and return to his routine.**

says. "I was pretty much willing to do whatever I was told the best course of treatment was, so I was excited that I was getting an opportunity to participate in something that might help me even more."

Typically, patients with colorectal cancer have chemoradiation therapy (a combination of chemotherapy and radiation delivered on the same days), followed by surgery and then more chemotherapy by itself. The trial Mr. Cowan is participating in is testing a different sequence of treatments and new trial drugs given during chemoradiation to improve its benefit.

"With the traditional approach, we were noticing that many patients were unable to complete chemotherapy after surgery because they were too fatigued from prior treatment and just didn't have the strength to go through it," Dr. Kazmi says. "In the trial, patients begin with chemotherapy and then get chemoradiation, and some, like Roberto, also get a trial drug. They then undergo surgery, allowing most patients to be able to get the full recommended treatment."

Mr. Cowan is currently enrolled in the trial and received immunotherapy as a trial drug in combination

**"Young patients have really unique challenges to navigate in addition to a new cancer diagnosis. A lot of them are in the workforce, so they need to arrange time off work."**

**–NINA SANFORD, M.D.**





with chemoradiation. His doctors say the early scans to assess response look promising.

“At my last CT scan and MRI, they found that the chemo had shrunk my tumor,” Mr. Cowan says. “So, that was very exciting.”

## THE TOLL CANCER TAKES ON YOUNG ADULTS

Mr. Cowan says he’s grateful to have the Simmons team by his side.

“I feel like it’s been a pretty expeditious process, and I’ve been happy with it,” he says. “I’ve been happy with everyone at UT Southwestern. It’s just been a wonderful experience.”

Still, cancer treatment is a lot for anyone to take on, especially for those who have other responsibilities on their plate.

“Young patients have really unique challenges to navigate in addition to a new cancer diagnosis,” Dr. Sanford says. “A lot of them are in the workforce, so they need to arrange time off work. Many are caring for young children or are concerned about their future fertility. And don’t forget, these patients don’t have Medicare, so they’re having to navigate the insurance and financial aspects of cancer as well.”

But perhaps the most difficult part of having cancer in one’s 30s is finding anyone to relate to.

“We often hear from these patients that they feel isolated,” Dr. Sanford says. “When they’re in the waiting room to get treatment, most of the other patients are a

lot older; meanwhile, they might feel awkward talking to their parents and feel their friends might not fully understand.”

That definitely described Mr. Cowan. So he decided to do something about it.

“I’m part of a committee that’s starting up a Young Adult Support Group at UT Southwestern,” he says. “Basically, our idea is to provide a social aspect, a supportive aspect, and an educational aspect for people 18 to 39 who are going through treatment or have had cancer. It’s a very refreshing thing to be around people your own age who have cancer. It’s really weird, but it’s like a weight off your shoulders just to be able to talk and relate to someone.”

*For more on the Young Adult Support Group, see page 5.*

## WHEN TO GET SCREENED

In response to colorectal cancer increasingly affecting younger adults, last year the American Cancer Society updated its colorectal cancer screening guidelines, which now state people at average risk should begin screening at

age 45 (the previous guideline was 50) and continue through at least age 75. People who have an increased risk for colorectal cancer should work with their physician to come up with a modified screening schedule, which might call for undergoing

screening earlier or more frequently. Colonoscopy is the gold standard for colorectal cancer screening, but there are other options. Just keep in mind that if any of the other screenings come back abnormal, you’ll need to have a colonoscopy anyway.

### STOOL-BASED TESTS

#### TEST

Highly sensitive fecal immunochemical test

Highly sensitive guaiac-based fecal occult blood test

Multi-targeted stool DNA test

#### FREQUENCY

Every year

Every year

Every 3 years

### VISUAL EXAMS

Colonoscopy

CT colonography (virtual colonoscopy)

Flexible sigmoidoscopy

Every 10 years

Every 5 years

Every 5 years

*Source: American Cancer Society*



# Fighting Cancer with **Interventional Radiology**

Innovative treatment kills cancer cells while sparing nearby healthy tissue.

The goal of cancer treatment is to destroy cancerous cells without harming other parts of the body. Interventional radiology uses imaging techniques – real-time X-rays, ultrasound, CT, or MRI – to guide treatments right to the cancer site, focusing directly on tumors or their blood supplies.

Often, interventional radiology is an alternative to surgery, providing minimal recovery times and a low risk of complications.

“These are same-day procedures. People come in, get treatment, and go home. They maintain their quality of life with few complications,

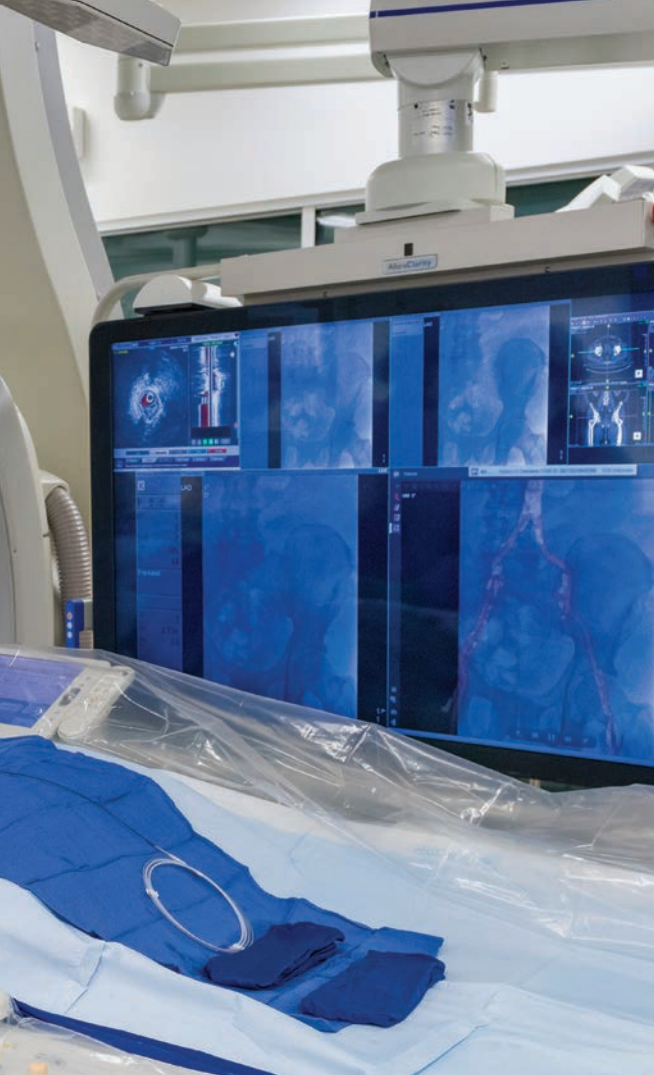
and they are back with their loved ones almost immediately,” says Anil Pillai, M.D., Chief of the Vascular and Interventional Radiology Division at UT Southwestern.

Doctors use interventional radiology to help diagnose and treat a range of cancers. Here, Dr. Pillai explains how it works in treating three challenging types of cancer.

## **Battling Primary and Secondary Liver Cancers**

People with primary liver cancer (cancer originating in the liver) often also have liver damage from cirrhosis, hepatitis, or other causes. “This type of cancer





#### FIND A PROVIDER

Our interventional radiologists specialize in minimally invasive, image-guided procedures to diagnose and treat cancer. Visit [utswmed.org/conditions-treatments/interventional-radiology](https://utswmed.org/conditions-treatments/interventional-radiology) to learn more and find a specialist.

has the second-highest rate of cancer-related death, and that rate is growing. It's a significant problem," Dr. Pillai says.

Treatment options for primary liver cancer need to be carefully considered. Because their livers are damaged, patients often are not good candidates for surgery. The chemotherapy options available to them are not very effective, and the immunotherapy and biological agent options are still investigational or reserved for very advanced cancer.

External beam radiation – where radiation beams are directed from outside the body to the liver – is an option. But many tumors are not easily accessible. "You can cause collateral damage to the liver or bowel in getting to these lesions," Dr. Pillai explains.

Interventional radiology gives patients two additional treatment options. With one, doctors use angiographic techniques to access the tumor blood supply to deliver radiation or chemotherapy directly to the artery supplying the tumor. By thus targeting only the tumor, the damage to surrounding liver or bowel tissue is avoided. In addition, the tumor is also deprived of blood supply, which enhances the eradication of tumor cells.

With the second option, doctors can use imaging

to guide a needle into the center of the tumor, where they can then kill the tumor cells by inducing thermal injury. Heating by radiofrequency (microwave energy) or cooling by creating an ice ball over the tumor (cryoablation) are mechanisms of destroying tumors using thermal injury.

Some people have secondary liver cancer – cancer that started somewhere else in the body and spread to the liver. "In those cases, patients have more choices because they usually have normal liver function," Dr. Pillai says. If surgery and chemotherapy aren't effective, they can try interventional radiology treatments.

### Treating Cancer that Strikes the Kidney

People with kidney cancer can also benefit from interventional radiology treatments. "If kidney cancer is very small – less than 3 centimeters – patients do not need to undergo extensive surgery," Dr. Pillai says. Instead, using imaging guidance (CT or ultrasound), doctors can insert a needle into the tumor and use heat or cold to destroy the cancerous cells, the same way they do for the liver.

For larger kidney tumors, doctors can use interventional radiology to block off the blood flow to part of the kidney, a technique that can allow patients to undergo surgery with less blood loss.

### Easing the Pain of Bone Cancer

Bone cancer often is very painful, and these tumors can't be surgically removed without destroying the bone. With interventional radiology, doctors can destroy the tumor with heat and then put bone cement in its place to reinforce the bone and make it easier for patients to bear weight.

"After this treatment, patients are often relieved of pain, and they can walk around. The need for narcotic medication is reduced, and the patients have a better quality of life," Dr. Pillai says. This procedure can be done in the spine and in the longer bones of the body.

# DECODING THE BODY'S BIOMARKERS

From profiling genes to targeting molecules, research discoveries are bringing important benefits to patients.

## 1 Fighting Cancer with Immunotherapy Biomarkers

With immunotherapy, a patient's own immune system is recruited to battle cancer. "In a subset of cancers, the patient's immune system is able to recognize the cancer cells as foreign and starts to generate an antitumor immune response," explains Sangeetha Reddy, M.D., a breast medical oncologist at Simmons Cancer Center. If the cancer fights back, immunotherapy can help the patient's immune cells kill the cancer cells.

But immunotherapy doesn't work in all patients, and it can have side effects. "The immune system can be activated against not only the tumor but also against the patient's normal body cells, leading to autoimmune toxicities," Dr. Reddy says. Identifying biomarkers helps doctors identify the patients most likely to benefit from immunotherapy and least likely to suffer dangerous side effects from the treatment.

"Studying our patients' cancer tissue and blood samples will also help us identify better treatment strategies as we strive to increase the numbers of patients who will respond to these types of therapies," Dr. Reddy says.

She adds: "An important part of providing personalized cancer care for each patient is studying each patient's tumor to understand what is uniquely driving each person's cancer and then identifying the best treatment options, whether that is a certain immunotherapy, a targeted therapy, or chemotherapy, or some combination." Dr. Reddy and others at UT Southwestern have developed tissue-collection protocols as well as a clinical trial program to push this type of personalized medicine forward.

## 2 Personalizing Therapy with Novel Approaches

Despite advances in this area, some cancers, such as kidney cancer, have proved more challenging than others, and reliable biomarkers remain elusive. However, new research from the Kidney Cancer Program at UT Southwestern shows a promising path forward.

Investigators have developed a means for identifying patients most likely to respond to immunotherapy. The novel radiology test is designed to illuminate kidney cancers that respond to checkpoint inhibitors, the most common form of immunotherapy treatment today.

The strategy involves transforming an immunotherapy drug into a diagnostic tracer that can be visualized using a PET (positron emission tomography) scanner, which is routinely used for diagnostics. Most commonly, PET scanners







**“Studying our patients’ cancer tissue and blood samples will also help us identify better treatment strategies as we strive to increase the numbers of patients who will respond to these types of therapies.”**

– SANGEETHA REDDY, M.D.

a specific gene that is mutated in some patients, leading to more aggressive disease, a worse prognosis, and a life expectancy diminished by approximately half. Investigators are using a variety of approaches, including artificial intelligence and machine learning, to better understand how the mutation induces aggressive kidney cancer and to identify targets for drug development.

### **3 Fighting Wasting Syndrome**

Cachexia is a very serious and prevalent problem for people with cancer. It’s a wasting syndrome that affects about 50% of people with cancerous solid tumors, and it’s responsible for about 30% of cancer-related deaths. Patients with cachexia often have loss of fat, muscle, and appetite without knowing why.

“If we can reverse cachexia, patients live longer, regardless of treatments specifically targeting their tumors,” says Puneeth Iyengar, M.D., Ph.D., a radiation oncologist at UT Southwestern. “My collaborator, Rodney Infante, M.D., Ph.D., and I are attempting to identify a set of biomarkers that would allow us to predict whether a patient is going to lose additional weight as part of cachexia syndrome. If we can identify patients early in cachexia, then pharmacological interventions might be valuable in reversing the effects of the syndrome.”

Drs. Infante and Iyengar are tackling this problem on two fronts: They are seeking to understand how cachexia develops in animal models and cell culture-based systems, and they are trying to identify those patients who are at higher risk for developing cachexia at some stage in their disease course.

For their research, they are collecting blood and tissue samples from newly diagnosed cancer patients, and they plan to continue collecting samples from those patients.

“Ideally, we will collect samples from patients who never develop cachexia, samples from patients with mild versions, and then some with very significant versions,” Dr. Iyengar says. They can then examine those samples to identify biomarkers of cachexia that correlate with the clinical manifestations of the syndrome.

are used to visualize a sugar tracer (radioactive-labeled glucose), which is readily taken up by cancer cells, allowing their discovery by PET. In the current research, investigators have taken an immunotherapy drug and labeled it with a radioactive particle generated at UT Southwestern’s cyclotron facility. Employing a single, small dose of the drug (1% of the treatment dose), the investigators can see whether the tumor is likely to be recognized by the drug and determine whether the patient will respond to immunotherapy.

Referred to as iPET (for immuno-PET), this new approach opens a molecular window to what is going on inside a cancer patient. After obtaining an investigational new drug approval from the U.S. Food and Drug Administration, investigators have opened a clinical trial, led by Alex Bowman, M.D., an Assistant Professor in the Division of Hematology/Oncology at UT Southwestern.

Existing checkpoint inhibitors work on kidney cancer but only in about 40% of patients. “We hope that by using this approach we can figure out who is in that 40% and spare the patients who are unlikely to benefit,” says James Brugarolas, M.D., Ph.D., Director of the Kidney Cancer Program.

Another new initiative builds on UT Southwestern’s discoveries pertaining to the genetics of kidney cancer. Investigators with the Kidney Cancer Program uncovered

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