Advances in science and technology are helping patients live longer, healthier lives.
According to the American Cancer Society, an estimated 125,000 new cases of cancer will be diagnosed in Texas alone this year. That’s 125,000 new reasons driving what we do every day at the Harold C. Simmons Comprehensive Cancer Center.

Our team of hundreds of leading cancer physicians and oncology-trained support staff are trusted partners in returning patients with cancer to good health. Through a combination of expertly delivered compassionate care and our initiatives to develop new lines of defense against cancer, we offer more than most cancer centers. Turn to page 8 to discover how our team helped a new dad overcome thyroid cancer during one of the most tumultuous times of his life.

And when it comes to the support offered at the Simmons Cancer Center, cancer care extends far beyond the clinical setting. While the medical staff works to fight the disease itself, a comprehensive network of other care providers helps patients and their families deal with some of the logistical and spiritual challenges of cancer. On page 14 we explore some of the lesser-known challenges of fighting cancer – and the support our team can provide.

Still, the mission that drives us is to someday conquer cancer altogether. UT Southwestern Simmons Cancer Center physicians and scientists conduct research in the laboratory, the clinic, and the community, all with the goal of developing new treatments and prevention strategies that will improve patient care and ultimately save lives. Please turn to page 10 to read how our experts are harnessing artificial intelligence to improve health care, and page 6 to learn about advances in breast cancer treatment.

We look forward to continuing to share the latest news and information from the front lines of cancer care and research – and providing you with health and wellness information to help you thrive.

Sincerely,

CARLOS L. ARTEAGA, M.D.
Director, Harold C. Simmons Comprehensive Cancer Center
Striking Out Cancer
Diagnosed with thyroid cancer at age 31, Scott Burchett turned to the team at Harold C. Simmons Comprehensive Cancer Center to help him fight back.

Artificial Intelligence in Medicine
How UT Southwestern doctors and scientists are harnessing AI.

Easing the Burdens of Cancer
Learn about some of the lesser-known challenges of fighting cancer – and how UT Southwestern can help.
LEADING THE WAY WITH RESEARCH

A new phase III clinical trial of carbon ion radiation therapy may change the standard of care in the kind of radiation that should be used for unresectable pancreatic cancer. In contrast to traditional photon, or X-ray, radiotherapy, carbon ion radiation is both significantly more precise and more potent. The international study, called CIPHER, aims to test carbon ion versus photon radiation therapy, called IMRT, for locally advanced, unresectable pancreatic cancer. The goal of this study is to see if carbon ion radiation improves overall survival in comparison to IMRT.

In this trial, patients are randomized to either IMRT at Simmons Cancer Center or carbon ion radiation, which would be delivered at a specialty cancer center in Japan. If patients are assigned to carbon ion radiation, they and a caregiver are flown to and housed in Japan free of charge for the three-week treatment.

Take Supplements? Tell Your Doctor

Herbal supplements sound harmless. After all, they’re natural! They’re full of antioxidants! And your neighbor swears they helped cure her cancer. But not all of them should be part of your cancer treatment plan. That’s why it’s important to tell your doctor about any complementary therapies you’re using.

In an analysis of data from the Centers for Disease Control and Prevention, UT Southwestern Assistant Professor of Radiation Oncology Nina Sanford, M.D., found that a third of cancer patients use some form of complementary medicine, such as herbal medication, nutritional supplements, chiropractic care, yoga, or acupuncture. She also found that nearly 30 percent of patients using complementary therapies do not disclose them to their physicians, which, she says, is a mistake.

“Some of these supplements are kind of a mishmash of different things. Unless we know what’s in them, I would recommend patients avoid using them during radiation because there’s likely not data on certain supplements, which could interfere with treatment,” Dr. Sanford says. “With radiation specifically, there is concern that very high levels of antioxidants could make radiation less effective.”

There also is the possibility that herbal supplements could negatively interact with chemotherapy drugs. And that could result in toxicity and reduced efficacy.
Grateful Family Gives Back to Simmons Cancer Center

Morgan Aaron was diagnosed with stage 4, triple-negative breast cancer in 2016 at the age of 28. Triple-negative breast cancer is not hormone driven, meaning it does not respond to hormonal therapy medicines, which really limits treatment options.

When Morgan’s cancer was diagnosed, it had already spread to her brain. Within days, Simmons Cancer Center doctors treated five brain tumors using Gamma Knife stereotactic radiosurgery, a type of radiation treatment that uses highly precise, focused beams to target the tumor while minimizing effects on surrounding healthy tissue. Her treatment course continued with chemotherapy, surgery, radiation, and two additional Gamma Knife procedures.

Today, Morgan’s cancer is behind her, and the survivor of 2½ years isn’t taking anything for granted.

“When I was cleared to leave my diagnosis behind, that’s exactly what I did,” Morgan says. “I’m really happy. I’ve reached new heights, made new friends, and started taking on new challenges. Life is really starting again.”

Giving Back in a Big Way

“How do you thank someone for saving your daughter’s life?” asks Morgan’s mother, Dawn. “We are thankful to the Simmons Cancer Center and for the incredible work of her medical team. We were in such fine hands – such capable, compassionate, brilliant hands. It was with a human touch the entire way.”

Morgan’s parents and grandparents donated $250,000 to support triple-negative breast cancer research at UT Southwestern.

“The generosity of grateful families like the Aarons continues to help the Simmons Cancer Center nurture the scientific discoveries in cancer that bring good health and hope to others,” says UT Southwestern President Daniel K. Podolsky, M.D. “There are currently no targeted therapies for triple-negative breast cancers, and this gift helps our researchers take aim at the disease.”

AWARD-WINNING CARE

Congratulations to Oncology Social Worker Kim Keely, LMSW, and W. Phil Evans III, M.D., for being honored for their dedication to North Texas breast cancer patients at the National Breast Cancer Foundation Women of Hope Awards Luncheon in May.

Ms. Keely was named Medical Professional of the Year, which the foundation describes as someone who goes above and beyond for their patients as they face one of life’s greatest challenges. And Ms. Keely does exactly that every day. Her passion for supporting both patients and their caregivers is evident.

Dr. Evans received the prestigious Lifetime Achievement Award for devoting his 40-plus-year career to helping women overcome breast cancer. As Chief of UT Southwestern’s Breast Imaging Division, Dr. Evans has made it his life’s work to screen for and diagnose breast cancer in its earliest, most treatable stages. He is a true leader in breast cancer care, having served thousands of women in his career.
Advances in Breast Cancer Care

A UT Southwestern expert offers insight into the latest treatment options – and what they might mean for patients.

With treatments like antiestrogens, chemotherapy, targeted therapies, and immunotherapies, and improved radiotherapy approaches like the GammaPod, there are more options for patients with breast cancer than ever before. Sangeetha Reddy, M.D., Assistant Professor in the Department of Internal Medicine at UT Southwestern Medical Center, shares how targeted therapies, immunotherapies, and other advances in care are helping breast cancer patients live healthier, longer lives.

Q. How have treatment options in breast cancer improved in recent years?

Dr. Reddy: First of all, there are a lot more options now, and many of them are more sophisticated than before. Previously, we would treat many patients with chemotherapy drugs that non-specifically kill any rapidly dividing cells in the body, which include cancer cells but also some normal cells, resulting in a lot of side effects. Now we have identified the specific abnormal proteins or pathways in a patient’s cancer cell that help cancer cells grow, and we can block that growth with focused targeted therapies that are highly effective but have less toxicity.

Another breakthrough in cancer care has been the rapid progress being made in cancer immunotherapy. Immune therapy uses the patient’s own immune system to attack the cancer, the way it would a virus or other infection. It turns out that the patient’s own immune system, when deployed against the cancer, may be a powerful alternative or complementary approach to current chemotherapies or targeted therapies. Tumors that are metastatic and generally felt to be incurable or shorten life spans have now responded to immunotherapy, with some patients almost behaving as if they have cures and long-term responses, which was almost completely unheard of and is incredibly promising.

Breast cancer is only beginning to see some of these benefits compared to some of the other solid tumors, but we are seeing a subset of breast cancer patients living longer due to these immunotherapies. There are many exciting clinical trials that are looking at expanding these benefits to more breast cancer patients.
select patients. The device offers more precise treatments for breast cancer, delivering higher doses of radiation to a narrowly targeted area. UT Southwestern is the first center in Texas and only the second center in the world to offer GammaPod as a treatment option.

Q. Where do clinical trials fit in?

Dr. Reddy: We believe in providing our patients with a high-quality standard of care in fighting cancer, but in many aspects, we can do better. While providing the best possible level of care, clinical trials can help doctors find the best approach to fighting a specific type of cancer and unlock new ways to treat even the most aggressive forms.

Treatment as part of a clinical trial helps patients while contributing to the research community, ultimately helping patients as a whole. Whether someone might need more aggressive or less aggressive treatment, either way, clinical trials elevate the quality of cancer care and patient outcomes. I am developing a breast cancer immunotherapy program for our patients, while other breast cancer physicians at UT Southwestern are tackling other important aspects of breast cancer care to provide the very best treatment options for each patient.
During a routine physical, Scott Burchett’s doctor felt something in his patient’s neck. He suspected it was nothing, but he referred Mr. Burchett to an ear, nose, and throat specialist just to make sure. The specialist agreed it was probably nothing, but ordered a biopsy – again, just to be sure.

Mr. Burchett was diagnosed with thyroid cancer on May 25, 2012.

“The first time you hear that, you’re scared and confused,” he says. “I didn’t even understand what the thyroid did.”
Mr. Burchett, Chief Operating Officer of the Frisco RoughRiders (a minor league affiliate of the Texas Rangers), was just 31. Two days later, he and his wife – his high school sweetheart, Caroline Burchett – learned they were having twins.

“It was a real roller-coaster time,” he says.

**Trust and Treatment**

Mr. Burchett worked to process his diagnosis and focused on figuring out how to be as healthy as possible as quickly as possible. Unsure of what to do next, he reached out to a thyroid cancer support group for help. Members of the group recommended that he call UT Southwestern.

He’s glad he took their advice.

“UT Southwestern has done some great things for me and my family,” says Mr. Burchett, whose care team included endocrinologist Ildiko Lingvay, M.D., and endocrine surgeon Shelby Holt, M.D. “There’s so much uncertainty after you get a diagnosis and finding someone you trust feels really good.”

Educating himself was critical, too. His mom even bought him a 500-page book on the thyroid.

“I like to learn as much as I can and consider things from all angles,” he says. He went from knowing nothing about the thyroid to becoming an expert on this small organ in the neck that releases metabolism-controlling hormones.

The American Cancer Society estimates that 52,000 new cases of thyroid cancer will be diagnosed in the U.S. this year – and only about 14,200 of those in men. Fortunately, the disease has a high survival rate.

Mr. Burchett’s tumor was growing toward his vocal cords and causing discomfort when he spoke or sang. Treatment involved surgically removing his thyroid and about 90 lymph nodes in the area. Next, he took radioactive iodine, a treatment used to destroy any thyroid tissue not removed by surgery.

The medication came in a pill and required him to check his radiation levels.

“I had to be isolated from my family at that time to keep from exposing them” to the radiation, he says. “My parents were fantastic. My dad (Dave, a longtime TV producer for the Texas Rangers) picked me up and housed me during my period of radioactivity.”

**A Second Chapter of Life**

Today, Mr. Burchett is more than seven years into his journey, and the experience has changed him. “It changes your perspective on life to focus on what’s important and let go of what’s not,” he explains. “It set up a second chapter of my life.”

Mr. Burchett is the proud father of 6-year-old twins, Clara and Bennett, and 1-year-old Lucy. And in 2017, he was named Executive of the Year for Texas League.

But life isn’t without challenges. “I’ve had to learn to live without a thyroid, which is rough,” he says. “You just don’t feel well at all. You have brain fog, you feel run down, you feel tired.”

For people who have their thyroid removed, the body can’t make thyroid hormones. Without those hormones, a person develops signs and symptoms of underactive thyroid (hypothyroidism), such as fatigue, weight gain, sensitivity to cold, and more. Taking a daily pill containing a synthetic hormone replacement can help minimize these symptoms.

“There’s still some stuff that’s there. It has to be monitored for the rest of my life,” he says, explaining that his cancer eventually came back, but he put his trust in Dr. Lingvay’s expert opinion and decided to closely monitor it rather than go through another round of treatment. “There’s a better-than-zero chance I may have to have another surgery at some point.”

And there’s the isolation that comes with cancer, too. “People don’t know how to talk to you about it,” he explains. The challenges aside, Mr. Burchett has remained focused on having a high quality of life once he felt confident in his ability to survive his cancer.

“I’m just so grateful for what UT Southwestern and the doctors have done in my life and my family’s life.”

**COMPREHENSIVE CARE FOR THYROID CANCER**

The Simmons Cancer Center provides an exceptional level of care for patients with thyroid cancer. Learn more at utswmed.org/conditions-treatments/thyroid-cancer.
With artificial intelligence (AI), researchers are using the power of computers to make inroads in diagnosing and treating diseases.

“AI is going to transform health care. Nothing is comparable,” says Steve Jiang, Ph.D., Professor of Radiation Oncology and Director of UT Southwestern’s Medical Artificial Intelligence and Automation Laboratory (MAIA). “Almost everything we do in health care will be impacted by artificial intelligence – to improve the efficiency and quality of the work. AI helps humans do a better job, faster.”

UT Southwestern experts share a few ways they see AI bringing changes to health care.
TO PREDICT WHETHER CANCER WILL PROGRESS

Gaudenz Danuser, Ph.D., Professor and Chairman of the Lyda Hill Department of Bioinformatics at UT Southwestern, says, “It’s becoming very clear that artificial forms of intelligence can in many ways massively outperform human intelligence. But AI is going to augment – not replace – human decisions.”

Dr. Danuser’s laboratory is using AI to predict whether stage 3 melanoma is likely to advance to stage 4. For the research, a computer monitors cells under a microscope for four hours, and an AI system then extracts 50 numbers for each cell that best represent the cell behavior.

By collecting and mapping many sets of 50 numbers from many different cells, AI can predict which cancers will progress. Dr. Danuser’s lab is working to reverse engineer what these numbers signify.

“We have no understanding as humans what these 50 numbers mean,” he says. “The AI system is extracting information from data that we as human beings would never think of. That is, for me, the most exciting aspect.”

TO PRIORITIZE WORKFLOW FOR RADIOLOGISTS

Artificial intelligence is also making solid inroads in medical imaging, since imaging analysis is an area where technology excels.

Thomas O’Neill, M.D., Assistant Professor of Radiology, explains how three factors combine to make AI valuable in medical imaging: machines and algorithms that are good at computer vision, a large number of scans, and metadata labels attached to the images for training AI algorithms.

AI algorithms can screen images immediately after the scan is finished and use that information to help optimize workflow for the radiologist.

As part of a research project that’s now used clinically, an algorithm can detect and flag a possible intracranial hemorrhage on a head CT. “The computer-aided detection tool notifies the radiologist and prioritizes those scans, so we look at those studies first,” Dr. O’Neill says.

Early data shows that turnaround time for these patients is improving. “You still need a radiologist to make the final interpretation, but it’s definitely a workflow assistance tool,” he says.

Similar algorithms are helping radiologists detect cervical spine fractures and pulmonary embolisms, and also predict which tumor nodules are likely to become cancer. “AI tools are good at these specialized tasks,” says Dr. O’Neill.

In the future, Dr. O’Neill expects to see AI used for automated tumor segmentation, identifying fractures on plain films, and spotting lung nodules on chest X-rays to help detect cancer early.

TO INTEGRATE AND MINE KNOWLEDGE PLATFORMS TO MAKE NEW DISCOVERIES

The Kidney Cancer Program at Simmons Cancer Center, led by Director James Brugarolas, M.D., Ph.D., is using information technology to automatically extract information from the electronic medical record (EMR) and integrate this data with genomics and drug responses in avatars. “A lot can be learned from 3,000 patient records, over 1,500 whole exomes, and more than 100 patient avatars,” says Payal Kapur, M.D., the Director of GU Pathology and of the Histology Core of the Kidney Cancer Specialized Program of
Once the data from medical records is entered consistently, researchers can create algorithms to search for similarities between symptoms, diagnoses, or drug interactions.

Research Excellence.
Together with doctors Satwik Rajaram, Ph.D., Assistant Professor of Bioinformatics, and Ivan Pedrosa, M.D., Ph.D., Professor of Radiology, her team is also deploying AI to analyze kidney cancer samples and vertically integrate multiple platforms, including imaging, pathology, and molecular data.

TO ACCESS INFORMATION IN ELECTRONIC MEDICAL RECORDS
Information technology is making inroads in EMRs. Shaalan Beg, M.D., Associate Professor of Medical Oncology and Medical Director of the Clinical Research Office at the Simmons Cancer Center, explains how.

He says some valuable data in EMRs – like the details the doctor enters about your symptoms and the reason for your visit – can’t easily be compared among different doctors, patients, or health care systems.

Coding or structuring this data consistently would make the data more searchable. So, the American Society of Clinical Oncology is launching an initiative to define which variables need to be entered in structured fields.

“That way, you can write whatever you need to, but a few of those elements need to be entered in a certain way and consistently across different centers,” Dr. Beg says.

That might sound like a simple solution, but it has powerful ramifications. Once the data from medical records is entered consistently, researchers can create algorithms to search for similarities between symptoms, diagnoses, or drug interactions.

“We can use that information to make clinical observations and decisions,” Dr. Beg says.

TO BUILD SMARTER HOSPITALS
Dr. Jiang and his team of MAIA medical physicists are busy developing intelligent medical devices and computer algorithms for Simmons Cancer Center clinicians to improve treatment and patient safety. Among its many projects, the group has been working to incorporate artificial intelligence into the fabric of a medical clinic.

The team’s Real Time Location System (RTLS) uses sensors based on Bluetooth technology to track the location of patients, clinical staff, and equipment in order to improve workflow and patient safety.

“We’ve been working on this for a couple of years,” Dr. Jiang says. “The first step is to give a patient a wristband with a sensor in it to wear during their clinic visit. We can then track the cancer patient – just like a GPS. We can also verify the patient’s identity using the sensor.”

If a patient has been waiting in an exam
room for, say, 15 minutes, the system can send a text or other reminder to staff. If the patient is still waiting 15 minutes or a half-hour later, the system can send a stronger reminder.

“We think future hospitals should be really smart – with sensors in the building, on the walls, in the ceiling, on the patient, and on the equipment collecting data,” Dr. Jiang says. “AI can then analyze that data to create the best workflow and patient monitoring.”

**BETTER PLANNING THROUGH AUTOMATION**

Treatment planning for cancer radiotherapy, where an optimal treatment strategy is designed for each individual patient and executed for the whole treatment course, is similar to the design of a blueprint for building construction. If a treatment plan is poorly designed, the desired treatment outcome cannot be achieved, no matter how well other components of radiation therapy are performed.

In the current clinical workflow, a treatment planner works toward a plan, and multiple rounds of consultation between the planner and physician are often needed. Consequently, planning time can be up to a week for complex cases, and plan quality can vary significantly.

Researchers at the Medical Artificial Intelligence and Automation Laboratory (MAIA) are working to combat this by revolutionizing treatment planning with the use of AI technologies. Treatment planning consists of two major aspects: commonality and individuality. By exploiting the commonality through deep supervised learning, physicians can develop a treatment plan as good as those for previously treated similar patients, and individuality can be actualized by learning physicians’ special considerations for a particular patient using deep reinforcement learning. Combined, these elements can consistently and efficiently produce high-quality treatment plans.

“AI is changing the world and also changing health care,” says Steve Jiang, Ph.D., Professor of Radiation Oncology and Director of the MAIA Lab. “That’s what we’re working on. We’re trying to use AI to solve important clinical problems.”
Easing the Burdens of Cancer

From chaplains and financial counselors to experts in palliative care and bereavement, a whole network of support is available to patients and their families. Learn about some of the lesser-known challenges of fighting cancer – and how Simmons Cancer Center can help.

A cancer diagnosis, no matter the stage or the complexity of the disease, can bring about a slew of questions and feelings of uncertainty. What will happen? What will my medical bills be like? What about my family and my job?

While the medical staff at the Harold C. Simmons Comprehensive Cancer Center is fighting the disease, a comprehensive network of care providers helps patients and their families work through some of the logistical and spiritual challenges of cancer. Tammy Wynn, M.Div., BCC, Chaplain at Simmons Cancer Center, says cancer treatment goes far beyond just the medical care. “You’re seeking doctors for your medical care but recognize that this doesn’t just affect you physically and biologically – it affects you emotionally and spiritually.”
Living Well During Treatment

In her work as a spiritual adviser, Ms. Wynn can help patients address their fears of the unknowns associated with cancer treatment and survivorship. “Sometimes allowing them to name their own anxieties and get them out – they lose their power over patients,” she says. “If that can lessen their burden a little bit, I think that’s helpful to the whole person so they can withstand the treatment through this process.”

Chaplains are theologically and clinically trained to help patients of any spiritual or religious preference, Ms. Wynn says, as well as those who have no religious preference.

She works closely with Simmons Cancer Center’s other care professionals, including Stephanie Terauchi, M.D., Medical Director of Palliative Care at UT Southwestern, and her 20-person palliative care team. Palliative care, often confused with hospice, is specialized care for patients battling serious illness. Palliative care professionals help ease patients’ physical and mental stresses to improve quality of life, addressing a variety of symptoms, including pain, fatigue, anxiety, shortness of breath, nausea, constipation, and side effects from cancer or cancer treatment.

“The whole goal is to help patients live in the best way that they can with the illness they’re fighting,” Dr. Terauchi says. “They’re able to stay active and engaged in their life as much as possible.” For patients who are overwhelmed with their diagnosis and growing list of doctor visits, adding one more appointment can feel daunting, Dr. Terauchi says. But patients tell her making time for palliative care treatment makes those burdens easier to handle. In fact, properly managing symptoms can make a significant difference for patients who are battling cancer, Dr. Terauchi says, helping them live longer, better lives. “Palliative care is very much about living and living well,” she says.

Tackling the Costs of Cancer Care

For many patients, the cost of treatment can be a significant source of stress. Redia Simmons-Winters, Patient Financial Services Supervisor at Simmons Cancer Center, estimates chemotherapy treatment alone can range from $10,000 to $250,000 for patients without medical coverage. Patients with insurance can still face substantial deductibles and copayments throughout their care. “We want to try to ease the financial burden for all of our patients,” Ms. Simmons-Winters says. The Financial Services Department answers billing questions, provides cost estimates, connects patients with community resources, identifies financial assistance, and helps secure full or partial payment toward the often-expensive medications used to fight cancer. Some patients are open to talking about their monetary hardships. But for many, discussing finances is difficult. “We have found that transparency, compassion, resources, and reassurance all help,” Ms. Simmons-Winters says. “I’m very fortunate to have a compassionate team that goes above and beyond daily to help our patients.”

Life changes throughout a patient’s care can add more uncertainty to an already difficult situation. “We’ve had patients who have lost their job, their coverage, or they’ve switched to a cheaper plan and it’s out of network,” Ms. Simmons-Winters says. “It’s important for the patient to let us know when that happens so we can provide them with whatever financial services we have available.”

A Sacred Space

Chaplain Wynn also encourages patients to be open about what they need. “We can’t lessen your burden if we don’t know,” she says. “Don’t be scared to reach out.”

While Ms. Wynn meets primarily with patients, she also welcomes spouses and caregivers to come to her for support. “Cancer doesn’t just affect the patient,” she says. “It affects their community, their family, and their caregivers. Unfortunately, it’s one of those things that has a ripple effect.” Her sessions are confidential and allow patients to open up about what they’re going through. “It’s a freeing place where they can express those things they’re thinking about but not sure if they want to tell their children or their spouse,” Ms. Wynn says. “I feel privileged to be in that safe space with them. That is, to me, a sacred space.”
Seven years ago, Scott Burchett was a busy guy. An executive with the Frisco Texas RoughRiders, a Minor League Baseball team, he hadn’t visited a doctor for a while. When he finally found time for a routine physical, the doctor felt something on his neck. Tests would confirm it was thyroid cancer. Two days later, he and his wife learned they were having twins. Suddenly, his busy world was even crazier.

That’s when he was referred to UT Southwestern Simmons Cancer Center. A specialized, multidisciplinary team headed by Dr. Shelby Holt and Dr. Ildiko Lingvay was with Scott every step of the way — through his surgery and subsequent treatment. And today, his world is back to normal.

As an NCI-designated comprehensive cancer center, UT Southwestern ranks among the most advanced in the world. This is where you’ll find innovative treatments, leading-edge clinical trials, and a caring, dedicated team committed to your good health.

To learn more about hope, visit utswmed.org/cancer