Leaving pain behind

Innovative surgical solutions relieve a painful side effect experienced by many breast cancer survivors
MISSION
The mission of The University of Texas MD Anderson Cancer Center is to eliminate cancer in Texas, the nation and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.

VISION
We shall be the premier cancer center in the world, based on the excellence of our people, our research-driven patient care and our science.
We are Making Cancer History®.

CORE VALUES
Caring
By our words and actions, we create a caring environment for everyone.

Integrity
We work together to merit the trust of our colleagues and those we serve.

Discovery
We embrace creativity and seek new knowledge.

ON THE COVER
Breast cancer survivor Zelma Reid developed lymphedema, a painful side effect of treatment, when she was bitten by a mosquito. Edward Chang, M.D., was able to provide relief through a non-invasive surgical procedure.

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Preventing cancer and so much more

Prevention. It’s one of the four major fronts in MD Anderson’s mission to eliminate cancer, along with patient care, research and education, and it’s something that should be an important part of everyone’s life. By taking an active role in making healthy lifestyle choices, getting screened and vaccinating girls and boys against HPV, the risk of getting cancer can be reduced or prevented altogether.

MD Anderson physicians and researchers are continuing to increase their understanding of how genetic, environmental and behavioral factors contribute to cancer’s development. Through genetic screening, they can tell if a person carries an inherited mutation that can increase the risk of certain cancers. This knowledge can lead to catching cancer early, when it’s much easier to successfully treat.

In addition to preventing cancer itself, the doctors, nurses and staff of the nation’s top cancer hospital are providing unrivaled patient care through their prevention of other things. They’re enhancing the quality of patients’ lives by preventing pain caused by treatment side effects such as lymphedema and neuropathy.

They’re improving survival rates for pancreatic cancer patients with routine presurgical treatments and the establishment of a high-risk clinic.

They’re making genetic testing for gene mutations linked to an increased risk of cancer more accessible with at-home tests.

And new facilities at MD Anderson locations outside of the Texas Medical Center are offering high-quality and convenient care closer to home.

These stories and others are included in what we’re calling “The Prevention Issue” of Conquest. We hope they provide some insight into the immense breadth and depth of the institution’s efforts and dedication to helping patients, and you’ll learn something new.
As a professor of Clinical Cancer Prevention and Epidemiology, she cares for breast cancer patients and conducts research to determine how factors like genetics, ethnicity and obesity influence a woman’s risk and survival.

Breast cancer prevention over treatment,” Brewster says. “It was a whole new perspective for me. I was sold.”

At Johns Hopkins, she found “what my passion was and what I wanted to do” while studying with oncology professor Kathy Helzlsouer, M.D., who piqued Brewster’s interest in cancer epidemiology — the study of the distribution and determinants of cancer in defined populations — or as Brewster explains, “the study of where on the map people get cancer, and why they get it.”

Although Brewster says she’s had some “amazing” mentors, her parents influenced her more than anyone.

“My father always told us to do our best. My mother, who died of cancer four years ago, taught me how scary a cancer diagnosis can be for patients. Because of her, I changed how I approach my own patients.”

The lessons she learned from her mother are simple, but profound.

For example, when Brewster first started practicing medicine, she’d enter the exam room to find a patient waiting for her, already in a gown. Without meaning to, Brewster’s mom changed that practice.

“My mom knew what it was like to be waiting for the oncologist with that fear, anxiety and expectation,” Brewster says. “It made me realize that’s not the time for a patient to be sitting in a gown, because it makes them feel even more vulnerable.”

Now, when Brewster meets a new patient or has a consultation, she asks her nurse to keep the patient dressed in street clothes.

“I want to meet them as an individual, and have that interaction in a very respectful manner,” she says. “It brings down their anxiety level.”

Today, Brewster offers advice to young doctors about communicating with patients.

“I tell them, ‘patients are picking up on everything about you, from the time you walk into that exam room. Everything about your body language conveys a message,’” she says. “So, no matter what’s going on in your personal life, when you open that door, you’ve become a partner to that patient. And in doing that, you have to enter with a positive attitude.”

She strives to strike a balance between work and activities outside the hospital, and is an avid traveler and scuba diver. One of her favorite underwater destinations is Belize’s Blue Hole, a sinkhole caused by the collapse of a cavern formed during the glacial ages tens of thousands of years ago. A perfectly circular expanse of sapphire blue water measuring almost a thousand feet across and just over 400 feet deep, Blue Hole is home to a variety of marine life and is considered one of the 10 best dive spots on the planet.

Brewster also is something of a foodie. She loves Houston’s diverse restaurant scene and exploring new eateries with friends. She also walks almost every day to relieve stress.

And it’s an exciting time to be a breast cancer researcher, she says.

“We have so many new drugs for HER2 and estrogen-receptor positive breast cancer,” she says. “We’re still struggling with triple negative breast cancer, but tremendous amounts of resources are being spent to optimize treatment for this type of cancer.”

And Brewster wants to be there for all the victories.
Abenaa Brewster, M.D., created a performance improvement program to increase the use of anti-estrogen drugs by women with a condition that greatly elevates their chances of developing the disease. The drugs lower that risk. Read about the program on page 31.
arrett Gragg enjoyed a special relationship with his “Grammy,” Ruth Ann Field.

Grandmother and grandson lived more than 650 miles apart, but stayed in constant contact. During video chats and phone calls, they held “joke parties,” exchanging jokes that Grammy found in library books and Garrett found on the internet.

Each year, Ruth Ann traveled from her home in Tulsa, Oklahoma, to visit Garrett in Parker, Colorado, for Grandparents’ Day at school.

Ruth Ann kept visiting even after she was diagnosed with melanoma in 2008. Whether she felt sick or had to wear a wig, which she hated, Grammy made it for Grandparents’ Day.

“She was just awesome,” Garrett says. Ruth Ann was treated at MD Anderson for eight years before she died in 2016, but her attitude and courage left a lasting impression on Garrett.

“She was such a fighter,” says Whitney Gragg, Ruth Ann’s daughter and Garrett’s mother. “Even when she was involved in clinical trials at MD Anderson, which weren’t always fun, she kept fighting. She didn’t know if the trials were going to work, but her attitude was always so positive. Whether or not a cure was possible, she knew that by participating in trials, she could help somebody else down the road.”

When Ruth Ann succumbed to melanoma, the family was devastated to lose her, but Garrett decided to turn the heartbreak into something positive. Inspired by his grand-

mother’s altruism, he wanted to save others from melanoma.

While researching ways to help, Garrett and his mother learned how preventable melanoma and other skin cancers can be. Simple acts like wearing sunscreen or protective clothing, hats and sunglasses can significantly reduce the risk of developing skin cancer, especially in places like Colorado where there are lots of sunny days.

They also learned that some states, including Colorado, don’t permit kids to have or apply sunscreen at school because the Food and Drug Administration considers it an over-the-counter drug.

“Well excuse me, but I have one word for that,” Garrett says. “Stupid.”

Whitney began contacting legislators about the need for sunscreen in schools, while

Garrett Gragg and his mom Whitney are taking steps to protect schoolchildren from skin cancer.

Garrett Gragg and his mom Whitney are taking steps to protect schoolchildren from skin cancer.

Inspired by his Grammy’s fight, student is driven to prevent skin cancer

By Clayton Boldt, Ph.D.
fifth-grader Garrett declared it his mission to raise awareness about skin cancer among his classmates at North Star Academy.

The school conducts quarterly service projects each year designed to reinforce core values and build positive character traits. Garrett suggested to his principal that one of the projects focus on educating students about sun safety.

“The theme for this year’s character education projects was compassion, which fit perfectly with Garrett’s idea," says North Star Academy principal Kendra Hossfeld. “Because his grandmother had gone through cancer, he really wanted to bring awareness to the potential dangers of the sun.”

The project moved forward. Students were allowed to wear protective hats and sunglasses while participating in outdoor service projects on Earth Day, in exchange for a small donation. The money they raised, more than $1,000, was donated to the Colorado Cancer Coalition.

North Star also brought Ray and the Sunbeatables™, A Sun Safety Curriculum, to its K-5 students. The program was created and developed by MD Anderson researchers through the Melanoma Moon Shot™ and deployed through the cancer prevention and control platform, part of the institution’s Moon Shots Program™.

The evidence-based curriculum uses superhero characters Ray and the Sunbeatables to educate children, parents and teachers about sun protection, and promote sun safety behaviors to reduce a child’s lifetime risk of developing skin cancer.

North Star students performed a skit in May for the entire school. They dressed as Ray and the Sunbeatables, and acted out each character’s sun-safety superpower to teach classmates how to protect themselves from the sun and reduce skin cancer risk.

Garrett is pleased with the efforts so far, but his mission is not complete. He plans to continue teaching his classmates about cancer prevention.

“Cancer is like one of my number one enemies now,” he says.

Garrett and his mom are working with state lawmakers to advance legislation in Colorado that will allow students to bring sunscreen to school.

Ultimately, they just want to save others from the pain of losing a loved one to cancer.

“That’s what Grammy would want, huh Garrett?”

“Exactly,” he says.

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### Tips for prevention and early detection of skin cancer

#### 8 risk factors for skin cancer

Skin cancer is the most common cancer in the United States. If you have one or more of these risk factors, consult your doctor or schedule a skin cancer-screening exam.

- Red or blond hair, fair skin, freckles and blue or light-colored eyes
- More than 50 moles
- History of frequent or intense sun exposure
- History of tanning bed use
- One or more blistering sunburns
- Family history of melanoma
- Personal history of melanoma
- Personal history of basal cell and/or squamous cell skin cancers

Having dark skin does not protect you from skin cancer. The disease is increasing among African-Americans and Hispanics.

#### Lower your skin cancer risk

- **Stay in the shade**
  Look for shady areas when outside. Avoid going outdoors between 10 a.m. and 4 p.m.

- **Use sunscreen and lip balm**
  Apply liberally, 30 minutes before going outside. Reapply every two hours. Choose products with SPF 30 or higher.

- **Cover up**
  Wear dry, tightly woven clothing. Pick a hat with a large brim to protect your ears and neck. Remember that water, snow and sand amplify the sun’s rays.

- **Wear sunglasses**
  Look for lenses that provide both UVA and UVB protection.

- **Skip the tanning bed**
  Indoor tanning is no safer than outdoor tanning. UV rays damage skin no matter where they come from.

Always be on the lookout for moles, spots or bumps that change or grow.

www.mdanderson.org/skin-safety
Daniel Epner, M.D., teaches doctors how to deliver challenging news more effectively.
Treating patients with a large dose of empathy

Workshop teaches doctors how to put the emphasis on understanding during difficult conversations

By Ronda Wendler

The news was devastating. The doctor had to tell a 39-year-old single mother of two that her leukemia had returned after a year in remission.

The patient sat quietly while absorbing the news, then began to weep.

“I can see you weren’t expecting this,” the doctor said. “This must be very upsetting.”

“How will I tell my children?” the patient asked. “Will I get well?”

This scenario wasn’t real; it’s a role-playing enactment in an MD Anderson workshop that teaches doctors how to deliver serious news to patients.

Led by Daniel Epner, M.D., professor of Palliative, Rehabilitation and Integrative Medicine, and Jennifer McQuade, M.D., instructor in Melanoma Medical Oncology, the “Difficult Conversations” workshops originated in 2010 in response to research that showed many physicians are uncomfortable with delivering challenging news.

“Nobody likes doing it,” Epner says, “but at some point during their practice, most oncologists will need to convey some unwelcomed news to patients.

Led by Daniel Epner, M.D., professor of Palliative, Rehabilitation and Integrative Medicine, and Jennifer McQuade, M.D., instructor in Melanoma Medical Oncology, the “Difficult Conversations” workshops originated in 2010 in response to research that showed many physicians are uncomfortable with delivering challenging news.

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Practice makes perfect

Patients must be told when their cancer recurs, their treatment stops working, or when it’s time to plan for end-of-life care.

“Even telling someone with an excellent prognosis that they have cancer can be distressing,” Epner says. “It’s difficult news to deliver, and even more difficult to hear.”

Doctors acknowledge the importance of such discussions, yet many lack confidence about how to say what needs to be said. And they’re unprepared to handle the emotional reactions of patients and family members that may follow such conversations, such as crying, getting angry, demanding to know why, or denying the seriousness of the situation.

Workshop attendees prepare for these scenarios by acting out the roles of doctor, patient, and patients’ family members with instructors. In a safe learning environment with close supervision, participants have discussions that occur when people are seriously ill. At the end of each scene, they review what went right and wrong, and where improvements might be made.

“Our goal is to teach doctors how to deliver the message in the most effective and compassionate way possible,” McQuade says, “without creating confusion or additional distress for patients.”

A key to successful communication, she says, is avoiding the use of medical jargon.

“Don’t say ‘You have a nuclear grade 1 ER/PR positive spiculated 4-centimeter lesion,’” she advises. “Instead, say ‘You have a fairly good-sized tumor in your breast.”

Knowing when not to talk

After hearing disheartening news, patients need time to respond.

“Often, there’s a long period of silence while the patient tries to process the information,” Epner says. “As much as most doctors want to speak to fill the void, I advise them to be quiet. Give the patient space.”

Epner uses these silent moments to imagine himself in the patient’s shoes, then validates their emotions with empathic statements such as, “This must be very upsetting for you,” or “I can see you’re worried about what lies ahead.”

“Empathy is key,” he says. “Continually imagining yourself on the other side of the conversation will help you be as understanding and respectful as possible.”

Understanding the effect of overwhelming news

Studies show that bad news overwhelms the brain with emotion, so it can’t absorb new information right after a shock. Epner is careful to keep the patient engaged as he broaches how to proceed with treatment. He asks “Are you with me so far?” and “What questions do you have?”
He also carefully clarifies the desires of patients who have a terminal diagnosis before discussing next steps.

“Understandably, physicians don’t want patients to lose hope,” he says, “so they start listing all the additional tests or experimental treatments that can be tried.”

By first asking patients how they envision their future, doctors can avoid the clinical vacuum in which treatment plans too often are made.

“Some people want to pull out all the stops and try every drug or procedure we can offer,” Epner says. “Others want to forego medical interventions so they can spend a year of uninterrupted, treasured time with family instead of two years in and out of the hospital. We need patients to understand that it’s their life, and their choice.”

Epner says patients need assurance they won’t be abandoned, but that their physician will continue to accompany them throughout their illness.

“Most people want to know the truth, no matter how upsetting it proves to be,” he says. “They want to have conversations about end-of-life care, but often don’t end up having them, because these conversations are intensely emotional for both the patient and the health care team.”

For many patients, there’s an unwanted visitor in the exam room — the doctor’s computer.

Today, electronic health records are the norm, and doctors frequently enter data into a computer as they interview their patients. But a study led by Ali Haider, M.D., assistant professor of Palliative, Rehabilitation and Integrative Medicine at MD Anderson, reveals that most patients would like to give the computer the boot.

For the study, Haider and colleagues showed two videos of doctor-patient interactions to 120 patients with advanced cancer. The first depicted a doctor talking with a patient, using only paper and pen. The second showed the same doctor entering the patient’s data into a computer during the doctor-patient conversation.

Study participants filled out a questionnaire rating the doctor’s communication skills, professionalism and compassion after watching each video. Nearly three-quarters of patients preferred the doctor in the face-to-face video over the doctor using the computer.

“To be sure, electronic health records have benefits, including legibility, electronic prescriptions, and centralized location of information,” Haider says. “But the computer is definitely a third party in the exam room, and it does change the dynamics of doctor-patient communication.”

Haider says the findings call to mind different options that could be evaluated in future studies.

For example, doctors could attend training sessions to learn how to conduct their computing in a way that guides and encourages conversations, rather than shutting them down.

Exam room furniture could be rearranged, or laptops on wheeled stands could be used, allowing patients and doctors to sit side-by-side to review data on screens.

Some hospitals and clinics are employing medical “scribes” — professionals who remain in the exam room and enter the patient’s data into the computer during the medical appointment. This frees doctors to provide their patients with eye contact and undivided attention.

“People hearing bad news and facing serious decisions need to know that the doctor who’s caring for them also cares about them,” Haider says.
A conscious decision in the operating room

Clinical trial tests the use of hypnosedation instead of general anesthesia during some breast cancer surgeries

By Michael Hardy

Most people think of hypnosis as a kind of party trick — a mischievous way to make somebody unconsciously do your bidding. But at MD Anderson, a groundbreaking study is evaluating the use of hypnosis as a substitute for general anesthesia during certain kinds of breast cancer surgery. The study has the potential to revolutionize the way hospitals across the country conduct surgery.

“People think that when you’re hypnotized you’re going to be instructed to do things you wouldn’t otherwise do, like get up on stage and cluck like a chicken, or reveal deeply hidden secrets,” says the study’s principal investigator, Lorenzo Cohen, Ph.D., professor of Palliative, Rehabilitation and Integrative Medicine and director of the Integrative Medicine Program. “Actually, it just allows people to dissociate from the place they’re in and achieve a deep relaxation.”

Like meditation, hypnosis is a simple skill that almost anyone can learn. And in the ongoing trial, it’s proving to be a remarkably effective alternative to general anesthesia in patients undergoing a simple breast lumpectomy. Today, standard practice at MD Anderson and most other American hospitals is to fully sedate patients during operations. But there’s a growing body of research pointing to the health risks of general anesthesia.

“For many people it can cause postoperative nausea and vomiting,” Cohen says. “It can cause short- and long-term cognitive deficits. And there’s evidence that it causes immune suppression, something we do not want happening when we’re trying to control cancer growth.”

Given the current opioid crisis, there’s also been a backlash against what some consider an over-reliance on drugs in pain management.
ight now there’s a movement all over the world questioning how much medicine we give patients,” says Dalliah Black, M.D., associate professor of Breast Surgical Oncology and leader of the surgical part of the study. “Do we really need to knock out everyone who has surgery?”

Finding cancer patients willing to try hypnosedation in lieu of general anesthesia was easier than the doctors anticipated. Rosalinda Engle, a trained mind-body therapist at MD Anderson, meets with each patient during two 20-minute sessions prior to the surgery to introduce herself and explain the process. She tells them to practice closing their eyes, relaxing their hands, feet and jaw, and taking deep, slow breaths. Engle then asks them to think of a place where they were truly relaxed — a vacation spot or a childhood home.

“Your brain is receiving the message that you’re at ease,” she explains. “There is no state of alert, there is no crisis, and you can relax even more deeply.”

Patients remain conscious during surgery but in a dissociated state, similar to the feeling of not remembering the details of driving a car to a destination.

“We do this every single day when we split our attention while we’re driving somewhere, or sitting at our desk imagining a future vacation,” Engle says.

Hypnosedation can’t completely replace more traditional pain treatments. Local anesthetics are still used to numb the breast during the operation, and the patient receives some IV pain medications tailored to their needs. An anesthesiologist is always standing by to administer general anesthesia if necessary.

An anesthesiologist is always standing by to administer general anesthesia if necessary. But out of the study’s more than 50 surgeries, general anesthesia had to be used only one time. The reaction from patients has been overwhelmingly positive.

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“Patients come out of these surgeries asking for a recap of what I did, because they want to use it again during future treatments,” Engle says.

For the study, each patient is hooked up to an EEG machine that tracks their brains’ electrical activity during surgery. The researchers have noticed a pattern of altered activity in the visual cortex and pain receptors of people under hypnosedation.

“The pain is being controlled and the visual image components of the brain are being affected,” says Elizabeth Rebello, M.D., an associate
professor of Anesthesiology and Perioperative Medicine, and the study’s lead anesthesiologist.

Several study participants originally were skeptical about hypnosis, but all have been impressed by the results.

“It’s really interesting to see how awake our patients are as they’re leaving the operating room, as opposed to having general anesthesia, where they take significant time to wake up in the recovery room,” Rebello says. “I don’t think hypnosis will replace general anesthesia for all types of surgery, but for a certain percentage of patients, this is a great option. It also may offer immune-related benefits, which we’re exploring.”

Although many people still request to be put under during surgery, more and more have been expressing interest in alternatives. Some with high-pressure jobs, like airline pilots or police officers, worry about the lingering effects of general anesthesia. Others, such as those with vascular problems, may not be healthy enough to tolerate general anesthesia. And many simply don’t want to take more drugs than necessary.

“Especially in the midst of the current opioid epidemic, it’s worth noting that this is an example of a non-pharmacological approach to pain and recovery,” Cohen says. “Patients can take this new recovery technique with them, and use it in the following days and months. That’s more important now than ever before.”
Innovative study delivers gene-mutation screening to your doorstep

Innovative MAGENTA study highlights the need for greater access to testing that can reveal cancer risk and counseling that follows

By Scott Merville

When Elizabeth White started a new job as executive director of the Michigan Ovarian Cancer Alliance in 2017, she decided it was time to have her own risk assessed for developing that cancer.

Inspired to work against ovarian cancer following her mother’s death from the disease in 2006, White knew that experts’ knowledge about genetic risk had deepened since then.

“Here I was working for ovarian cancer organizations for 10 years, lost my mom to the disease, and I hadn’t taken the time to get tested,” White recalls.

On her second day on the job, she read about MAGENTA, the Making Genetic Testing Accessible study that’s designed to make it easier for women to learn their risk with an at-home screening for 19 genetic abnormalities.

“I remember thinking, ‘I should do this so I can know the process and encourage others to do it,’ so I went to the MAGENTA website and signed up,” White says. “I wasn’t expecting my test to come back positive.”

She filled out an online questionnaire and consent form, received the screening kit and sent a saliva sample to a company called Color Inc. for DNA analysis. She soon learned she had the BRCA2 mutation, one of the main abnormalities that raise ovarian cancer risk.

“The whole process was so easy. I didn’t have to leave the house or go to a series of medical appointments,” White says. “I’m forever grateful for gaining this knowledge, allowing me to take action.”

For the 33-year-old White, that action will be a preventive double mastectomy later this year and plans to have her ovaries removed before she turns 35.

“MAGENTA is a way for us to empower women to know whether their family history and genetic mutations put them at increased risk,” says Karen Lu, M.D., MAGENTA principal investigator and chair of Gynecologic Oncology and Reproductive Medicine at MD Anderson.

Family history and the presence of known cancer-promoting mutations are separate risk factors for developing ovarian or breast cancer. When both factors are present, consideration of risk-reducing treatment is warranted.

“By providing genetic testing from your living room, we want to break down barriers to screening that we’ve known about for years,” Lu says.

Those obstacles include:
• Health care providers fail to recommend it
• Lack of access to genetic screening and counseling in medically underserved areas
• Cost of screening
• Miscommunication within families — history and genetic screening outcomes not always shared.

Until now, genetic testing has involved a visit to a doctor’s office and the drawing of blood for genetic analysis. MAGENTA provides participants with free access to both testing and counseling, and overcomes gaps in knowledge among family members.

“This is new and very exciting,” Lu says. “We’re taking something that used to be scary, expensive, high-tech and inaccessible, and putting it in the hands of women. This will change how we deliver genetic testing and counseling.”

The original version of MAGENTA was launched by Lu and her colleagues at MD Anderson in 2014. In April 2015, the project was adopted by Stand Up to Cancer — an organization started by entertainment and media leaders to support collaborative cancer research — and the national rollout was completed by late 2017.

Participants are randomly placed into groups that receive online educational information, telephone counseling or both, before screening and when test results are reported. All women who are found to harbor one of the 19 risk-raising mutations will receive expert counseling over the phone.

The randomized aspect of the study will gauge the effectiveness of online education and counseling in both educating women and reducing the stress involved in cancer-risk screening.

As of this past April, more than 1,800 women had enrolled in the study, with participants joining from every state.
More on MAGENTA

Who’s eligible?
Women age 30 or older who have
• A health care provider
• At least one ovary and no history of ovarian cancer
• A valid U.S. mailing address
• Internet access

Two groups of participants:
• Women with a known risk mutation in the family
• Women who have a family history of breast or ovarian cancer, or a personal history of breast cancer

Genetic mutations for which MAGENTA screens:
ATM, BARD1, BRCA1, BRCA2, BRIP1, CDH1, CHEK2, EPCAM, MLH1, MSH2, MSH6, NBN, PALB2, PMS2, PTEN, RAD51C, RAD51D, STK11, TP53

For more information, visit magenta.mdanderson.org

Ovarian cancer facts
• 70 percent of ovarian cancer cases are high-grade serous ovarian cancer, the most common and lethal form
• About 20 percent of cases are caused by genetic mutations
• The National Cancer Institute estimates 22,240 cases will be diagnosed in 2018. That’s 1.3 percent of all cancer diagnoses.
• An estimated 14,070 women will die of the disease. That’s 2.3 percent of all cancer deaths.
They want to know the whys of certain blood cancers

A researcher and a clinician search for answers to tough questions about myelodysplastic syndromes and acute myeloid leukemia

By Clayton Boldt, Ph.D.

Photos by Adolfo Chavez III

Why do current therapies used to treat myelodysplastic syndromes (MDS) fail in most patients? Why do some people have a greater risk of developing acute myeloid leukemia (AML) after being treated for other cancers?

There are no easy answers to questions such as these, which drive the work of Simona Colla, Ph.D., and Koichi Takahashi, M.D.

But together, Colla — a researcher who uses mouse models of disease to unravel biological pathways — and Takahashi — a physician scientist who specializes in complex genetic analyses — are approaching complex questions from multiple angles.

The answers may mean the difference between life and death for patients, which is precisely what fuels the duo’s work on one of the central projects of the MDS and AML Moon Shot™. That project focuses on understanding and overcoming the challenges associated with pre-leukemia and MDS.

Words of wisdom

Before becoming an assistant professor of Leukemia, Colla was an instructor in the laboratory of former MD Anderson President Ron DePinho, M.D. It was there that her interest in MDS research was sparked while working with a strain of mice that developed the disease.

A bit of advice from DePinho, a professor of Cancer Biology, helped refine that interest.

“One thing that Dr. DePinho always taught me was when you have the possibility of doing impactful research you need to understand which is the most important question,” Colla says.

From Guillermo Garcia-Manero, M.D., co-leader of the Moon Shot and professor of Leukemia, she learned the most important problem for MDS patients is the failure of standard therapies known as hypomethylating agents (HMAs).

“For MDS, the only cure is not a cure,” Colla explains. “The majority of patients either do not respond to therapy or relapse.”

To understand why HMAs ultimately fail, Colla began an ambitious project funded by the Moon Shots Program™.

An analysis of more than 250 samples from patients with MDS, taken at different stages of disease, revealed HMAs eliminated the mature cancer cells but left stem cells alive, leading to relapse.

The team discovered patients could be divided into two groups based on a profile of those stem cells. According to Colla, each group is biologically distinct, and requires different
approaches to overcome resistance to HMAs. Colla’s group already has made progress in finding drugs that may be able to treat these two subgroups, and they continue their work to advance these therapies to the clinic.

The patient encounter
As a clinician, Takahashi is motivated by his interactions with patients.

“The encounter with my patients really drives me. I can see the unmet needs from my direct contact with them,” the assistant professor of Leukemia says. “In the clinic, patients often ask very good questions, and if I don’t have an answer, that drives my research.”

Takahashi came to MD Anderson as a clinical fellow, during which time he began working with Andy Futreal, Ph.D., co-leader of the Moon Shots Program and chair of Genomic Medicine. That work cultivated his interest in the genetic mutations that cause cancer, but he has always been drawn to leukemia because of the challenges it presents to patients.

“Having leukemia, patients are really facing serious life or death issues, and I wanted to help in those difficult times,” he says. “I know that research can really affect those outcomes, and I thought it was a good way to dedicate myself.”

For the moon shot, Takahashi’s focus is on understanding the pre-leukemia state, before cancer has even developed. A better understanding would allow him to diagnose the disease early, and perhaps even prevent it in those at high risk.

In a rare subset of patients, the treatments themselves can lead to the development of MDS or AML. By studying DNA from these patients, Takahashi identified specific genetic mutations that predispose some people to a higher risk of therapy-related leukemia.

The Moon Shot team is working to learn why these mutations can cause the diseases. Once that is known, they can identify and test drugs to prevent it.

“**In the clinic, patients often ask very good questions and if I don’t have the answer, that drives my research.**”

— Koichi Takahashi, M.D.

A revolutionary approach
Colla and Takahashi both credit the Moon Shots Program for enabling them to pursue their research through seamless collaboration with world-class scientists and clinicians at MD Anderson.

“For us, the moon shot was revolutionary,” Colla says. “That was a reality you cannot have at other great universities. These are the best doctors in the world.”

Not only does the Moon Shots Program fund these investigations, it provides valuable technical expertise and infrastructure through its research platforms, Takahashi says.

“It’s an unbelievably unique environment we are in here,” he says. “I think it will have a huge impact, not only on MDS and AML, but in other solid tumors as well. This is a very, very unique program.”
She won’t be sidelined by a painful side effect

Zelma Reid had her lymph nodes removed during breast cancer surgery, and for three years escaped lymphedema, a chronic condition that occurs when lymph fluid pools under the skin and causes swelling.

Then she was bitten by a mosquito.

By Ina Fried
Photos by Robert Seale
Breast cancer survivor Zelma Reid found relief from lymphedema, a painful side effect of treatment, at MD Anderson. Now she's back to enjoying her life and beautiful Gulf Coast sunsets.
When patients have cancer surgery, nearby lymph nodes usually are removed to check for the spread of cancer. Within days, I noticed that my left arm was swelling below my elbow,” Reid recalls. “I had been warned: ‘Don’t hurt that arm; don’t let them take blood from it, because you have no lymph nodes there.”’

Her arm became bright red and painful. Its skin became tight and hot. She developed chills and a fever.

**Plumbing problem**

When patients have cancer surgery, nearby lymph nodes usually are removed to check for the spread of cancer. Chemotherapy and radiation can cause additional damage to the lymph vessels.

“It boils down to a plumbing problem,” says Edward Chang, M.D., associate professor of Plastic Surgery at MD Anderson.

“Essentially, you have a clog in the pipes that are draining fluid from the arm or leg. So the fluid backs up, like a sink or bathtub overflowing.”

The lymph fluid that collects in the skin and underlying tissues can interfere with wound healing and lead to infections.

“The arm or leg swells and gets heavier, making it difficult for patients to do their regular activities,” Chang says. “Some can’t wear their wedding rings anymore.”

**Avoiding flare-ups**

Up to 3 million cancer survivors in the United States — and millions more worldwide — develop lymphedema, sometimes years after surgery. Injuries can lead to flare-ups, so cancer survivors are advised to use razors with care, wear rubber gloves to wash dishes, avoid having cuticles cut during manicures and apply insect repellent, because bites can become infected.

The lymphatic system plays a major role in the immune system, so lymphedema can be painful and even life-threatening.

“The lymph nodes contain immune cells that help fight infection by attacking and destroying germs and other harmful substances that are carried along in the lymph fluid, before returning that fluid to the circulatory system,” Chang explains. “When you remove the nodes, the fluid can...”
Edward Chang, M.D., performs pioneering surgical techniques to help patients overcome lymphedema.

no longer drain, so in breast cancer, the arm may swell and become at high risk for infection.”

Gentle, regular massages to stimulate new pathways for the lymphatic fluid are often prescribed, along with mummy-style compression bandages and custom-made compression garments that are worn on the affected limb.

Chang, who performed Reid’s breast reconstruction, referred her to physical therapy where she tried all these procedures, plus a Flexitouch device that inflates and deflates to pump fluid out of the arm. Reid spent hours each week in therapy for three years, but her lymphedema improved only a little.

Now, nearly pain-free surgery can provide major relief from this troubling condition.

Surgical relief

MD Anderson is one of only a few centers in the country with experience in surgery to reduce lymphedema.

A highly effective bypass procedure connects lymph vessels to blood vessels so the fluid can bypass “clogs” and drain from the arm or leg into the bloodstream. The operation takes two or three hours, with patients advised to refrain from strenuous activity for about four weeks.

For those who don’t have lymph vessels appropriate for bypass, a more complex lymph node transfer procedure, which takes six to eight hours, is performed. Surgeons take healthy lymph nodes from elsewhere in the body to replace the ones that were removed. Using sutures finer than a human hair and specialized microscopes, the surgeons sew together tiny blood vessels to maintain blood flow and keep the lymph nodes alive. Patients remain in the hospital for about five days and are advised to allow two months for recuperation.

“We’re one of the few institutions that are able to offer both operations,” Chang says. “One of the things that we started here at MD Anderson is doing both the transfer and the bypass together, which we think is more synergistic. Combining the two approaches probably has a better impact than doing either one alone.”

MD Anderson also has pioneered combining breast reconstruction with lymph node transfers. Using tissue from the patient’s abdomen to rebuild the breast provides the woman with a tummy tuck at the same time.

“Multiple studies have shown that breast reconstruction improves a patient’s psychological health, self-esteem and well-being,” Chang says.

Tremendous progress

This February, Chang surgically created three bypasses in Reid’s arm. The incisions were like paper cuts, she says, so they were practically pain-free. An overnight stay at the hospital allowed time for IV antibiotics before she headed home.

“My left arm and hand had been very red and very tight. Before I went home, my hand already looked almost like my right hand,” Reid says. “In just two months, there’s been tremendous progress. It’s much softer.”

While Chang recognizes performing surgery to relieve lymphedema is not curing cancer, it’s still very beneficial.

“But going through cancer treatment is not an easy journey. If we can do something to help patients’ quality of life, I’m hoping we can have a pretty big impact.”
Yogini Patel tried for eight years to walk without pain, but every step she took was excruciating. “It was torture,” she says. “Like walking on a bed of nails.”

It turns out the chemotherapy drugs that were keeping Patel’s breast cancer at bay for years were also attacking the nerves in her feet, causing a condition called chemotherapy-induced peripheral neuropathy.

“Chemotherapy drugs are formidable weapons in the battle against cancer,” says Sal Abdi, M.D., Ph.D., chair of Pain Medicine at MD Anderson. “But the drugs can’t distinguish between healthy and cancerous cells. This means normal cells are damaged along with cancer cells.”

Nerve cells are especially sensitive, Abdi explains, and easily injured. Symptoms of nerve damage start first in the hands and feet, then move toward the center of the body.

Patel says the pain was the hardest part of her cancer treatment. “Every step I took was agony,” she says. “Tears fell from my eyes. Sometimes I’d drop to my knees.”

Her hands hurt, too, but the pain couldn’t compare to what she felt in her feet, which bore all of her weight when standing.

Patel tried to keep going. She navigated grocery store aisles while leaning on a shopping cart. She glued thick sponges to the pedals of her car so she could brake and accelerate without pain. She tried steroid shots, pain patches, creams and sprays. She spent more than a thousand dollars on shoes with soft, padded insoles. Nothing worked.

Eventually, she gave up and began using a wheelchair.

“Movie date nights with my husband were over because I couldn’t manage the stairs in the theater,” she says. “Lunches with my friends stopped because I was in too much pain to enjoy meals and conversation. I wore flip-flops even in winter, because shoes and socks hurt. I slept with my feet overhanging the bed, because the weight of the sheet was agonizing.”

Every case is different

Patel’s experience is not uncommon. It’s estimated that as many as 90 percent of patients who receive chemotherapy suffer from chemo-induced peripheral neuropathy.

Some begin experiencing it with the first dose of chemo, while others don’t feel it until late in their treatments. Some have mild symptoms, while others’ are more severe. Some continue to suffer well after treatment has ended. For others, the neuropathy ends as soon as chemo stops.

Symptoms also vary.

Some patients have pain, but some only feel numbness, tingling and a loss of sensation. Sometimes their hands and feet get cold; sometimes they’re hot. Some people feel as though something heavy is sitting on their legs. Others feel like they’re walking on broken glass.

“Every case is different,” Abdi says. “Because neuropathy is caused by nerve damage, its effect on you depends largely on how well your nerves recover. And that depends on the length of your treatment, the intensity of your chemo dosage, the extent of your nerve damage, and genetic factors that make some people more susceptible to the side effects of chemotherapy.”

Neuromodulation therapies are relieving neuropathy caused by chemotherapy without the use of opioids

By Ronda Wendler
Photos by Wyatt McSpadden
Reclaiming her life

Patel eventually began taking opioid medications to lessen her pain, but the pills made her drowsy and "zoned out."

"I hated taking them, but the pain was unbearable," she recalls. "I went to bed in the early afternoon and didn't get up until the next day."

One morning, Patel woke up and asked herself, "Where have the last few years gone?"

"I threw those pills away," she says. "I'm a very independent woman. I wanted to wake up and enjoy life, not float around in a fog."

At the time, Abdi was trying a new type of pain treatment that was free of drugs and side effects.

Scrambler therapy, as it's called, uses low doses of electrical stimulation to reset — or "scramble" — pain messages being sent to the brain.

Electrodes connected to the scrambler device are placed on the patient's skin near damaged nerves. When the scrambler is turned on, the electrodes begin sending non-pain messages to the brain to replace pain messages. The new signals break the pain cycle and retrain the brain to understand that it's not really experiencing pain.

The therapy is delivered for 10 days in 45-minute sessions, and can be repeated if needed. Pain typically begins to lessen within five to 10 minutes during the first session.

Healing the hurt

"The benefit lasts for at least several months," Abdi says, "and when patients' pain comes back, it's never as bad as it was prior to treatment. The results we're seeing are phenomenal."

Abdi recently completed testing the treatment on more than 20 patients, including Patel. He and his colleagues are planning a new study in which patients will be followed for at least six months to determine the long-term effects of the therapy.

Patel, for one, is sold.

"I instantly knew it was working," she says. "During the sessions I felt tingling, and then the pain subsided. Dr. Abdi is my guardian angel. He gave me my life back. I would've been happy to lessen my pain by 25 percent, but it's 90 percent gone. Tylenol knocks out the rest."

She's out of the wheelchair and back to discovering new restaurants, visiting museums, reconnecting with friends, and buying "cute shoes, not clunky ones."

"I'm alive again," she says. "You don't realize what you have until it's gone. When it comes back, you're overjoyed."

Abdi hopes more patients will benefit from scrambler therapy.

"None of the medications for treating chemotherapy-induced peripheral neuropathy are especially effective, and all have adverse effects," he says. "This new therapy is very promising."
Training the brain

Given the limitations of drugs, more doctors are prescribing “neuromodulation” therapy that trains the brain to do something different than what it is currently doing by using feedback, stimulation or other non-drug means.

“Anything the brain can learn to do — including processing pain — it can learn to do differently,” says Sarah Prinsloo, Ph.D., assistant professor of Palliative, Rehabilitation, and Integrative Medicine.

Scrambler therapy is one form of neuromodulation. Others are repetitive transcranial magnetic stimulation (rTMS) and neurofeedback.

Repetitive transcranial magnetic stimulation

With rTMS, brief magnetic pulses, which pass easily and painlessly through the skull, are used to influence electrical activity in the brain. An electromagnetic coil shaped like a figure eight is held close to the scalp, near the area of the brain that plays a role in pain perception. The pulses it generates are similar to those generated by magnetic resonance imaging (MRI) machines. They’re delivered in rapid succession and can produce long-lasting changes in brain activity.

Prinsloo is conducting a clinical trial of rTMS for chemotherapy-induced peripheral neuropathy in cancer patients. Participants complete 10 treatment sessions during which they sit in a comfortable chair while targeted magnetic pulses encourage the brain to change its activity. Each session lasts less than an hour.

“We would like to control, and perhaps even reverse, chemotherapy-induced pain,” Prinsloo says.

Neurofeedback

Neurofeedback is a form of conditioning that modifies behavior by reinforcing the positive consequences of achieving a desired change in the brain.

“The brain likes to learn,” Prinsloo says. “Once it figures out that it will get a reward if it changes its function in a particular site, it will keep trying to earn that reward by doing the new function over and over again. Eventually that becomes the normal function of that part of the brain.”

Neurofeedback is based on the knowledge that different brain states, such as pain and non-pain, create unique brain-wave patterns. The goal is to teach patients, during 20 practice sessions each lasting less than an hour, how to adjust their brain waves to a more pain-free state.

In a typical session, the patient sits at a laptop loaded with special software that monitors electrical activity in the brain. Sensors on the patient’s scalp connect to the laptop and allow it to read brain-wave patterns as the patient plays a computer game designed for neurofeedback use. One game, for example, asks patients to control a car that goes faster when the desired brain waves are achieved or slower if they are not.

“Patients are, in a sense, playing the video game with their brains,” Prinsloo says. “At first, people can’t consciously control their brain-wave patterns. But over time, their brains become conditioned to associate non-pain brain waves with a reward for good behavior — in this instance, faster cars.”

Neurofeedback differs from pharmaceuticals in that it specifically targets areas of the brain involved in pain perception. And while drugs work only as long as they’re in the body, neurofeedback can create lasting changes long after sessions have ended.

“I’m encouraged to see the significant improvements in patients’ quality of life after treatment,” Prinsloo says. “This treatment is customized to the individual and is relatively inexpensive, non-invasive and non-addictive.”

In the lab

Annieke Kavelaars, Ph.D., director of the Neuroimmunology Laboratory in the Symptom Research department, is investigating how to protect nerve cells’ mitochondria — the structures inside the cells that help them breathe and give them energy.

“Chemotherapy damages those energy-producing mitochondria, mainly in the extremities, and that’s why chemotherapy-induced peripheral neuropathy often starts in the feet and hands,” Kavelaars explains. “The damage to the mitochondria causes the nerve endings to retract from the skin in the hands and feet, and this is related to the pain and numbness patients feel.”

Kavelaars and her research team are exploring how the diabetes drug metformin and other compounds may protect mitochondria and therefore halt, or even reverse, neuropathy caused by chemotherapy.
Pancreatic cancer rates have been steadily climbing, and it’s now the third-leading cause of cancer deaths in the country. By 2020, it’s expected to occupy the No. 2 spot. Rates are rising faster than any other cancer in the country.

What’s driving this alarming climb?

“Advances for pancreatic cancer are lagging behind lung, colon and breast cancer, which have seen dramatic improvements from plummeting smoking rates, improved cancer detection methods and new therapies,” says Robert Wolff, M.D., professor of GI Medical Oncology and a program leader for MD Anderson’s Pancreatic Cancer Moon Shot™. “In contrast, pancreatic cancer is notoriously tricky to detect and treat.”

Unlike breast, prostate and colon cancers, which have effective screening methods, there are no reliable early-detection tests for pancreatic cancer. The pancreas is difficult to scan with current imaging technologies because of its location deep within the body. And pancreatic tumors are often surrounded by dense tissues that render drugs useless. Surgery is the only treatment known to cure the disease, but less than 20 percent of cases are operable.

“It’s not that pancreatic cancer is becoming more lethal,” says Wolff. “It’s as lethal as it ever has been, but we’ve done better with other cancers.”

He says he’s seeing more overweight, diabetic patients, who are twice as likely to develop pancreatic cancer.

“A patient of mine has a body mass index between 30 and 35 — 30 is obese — has high blood pressure, diabetes or pre-diabetes, and takes a lipid-lowering drug,” Wolff says.

Making better lifestyle choices — eating healthier, exercising more and not smoking — would go a long way toward stemming the rising tide of pancreatic cancer, says Wolff, who estimates that 25 to 30 percent of pancreatic cancer cases are preventable.

On the research and treatment front, MD Anderson has pioneered many pancreatic cancer advancements, including neoadjuvant chemotherapy (chemotherapy given before surgery), the chemotherapy drug gemcitabine and the discovery of the genetic causes of pancreatic cancer.

Today, MD Anderson’s pancreatic cancer experts are...
focusing their efforts on three main areas: novel therapeutic strategies, therapy prior to surgery and early detection. Here’s a closer look:

**Gut check**

In recent years, immune-blockade drugs have successfully treated some cancers by freeing the immune system to attack tumors. But pancreatic cancers have been stubbornly resistant. Could gut bacteria be to blame?

“There may be several reasons at work: the immune checkpoints targeted so far may not be relevant in pancreatic cancer, and the microenvironment (in the gut) that surrounds pancreatic cancer is strongly immunosuppressive, so T cells have a hard time getting activated around the tumor,” says Florencia McAllister, M.D., assistant professor of Clinical Cancer Prevention and director of MD Anderson’s clinic for high-risk pancreatic cancer patients.

She’s leading several animal studies targeting the gut microenvironment in combination with immunotherapy. Preliminary results suggest that bacteria play an important role in directing immune responses and ultimately affecting pancreatic cancer.

**Prehabilitation**

Pancreatic cancer tumors release proteins that disturb the body’s physiology and break down muscle, leaving patients frail and weak. Matthew Katz, M.D., co-leader of the Pancreatic Cancer Moon Shot and chief of the Pancreatic Surgery service at MD Anderson, is studying prehabilitation to strengthen pancreatic cancer patients for surgery and allow them to receive chemotherapy afterward.

Patients in the study either exercise moderately up to 30 minutes a day, five days a week and strength train two days a week, or receive a brochure about how to exercise safely. All patients receive fitness trackers to record their steps. Their fitness levels are tested up to seven months after surgery to see if their overall fitness and quality of life improve.

“Patients like it,” Katz says. “It’s something they can really feel a part of, instead of just receiving chemotherapy or other drugs, this is actually something they can do themselves. And it makes them feel better.”

The researchers also are examining patients’ tumor specimens to see whether exercise expands the blood vessels supplying the tumors, making them more receptive to chemotherapy, as demonstrated in their mouse studies.

**Quicker, focused radiation**

Stereotactic body radiation therapy, or SBRT, allows radiologists to deliver high doses of focused radiation, with minimal side-effects, over five days instead of six weeks.

“This allows out-of-town patients to spend just one week at MD Anderson getting this kind of care,” says Joseph Herman, M.D., division head ad interim of Radiation Oncology. “The stress and financial implications for patients are minimized.”

Herman and Katz are comparing SBRT and chemotherapy versus chemotherapy alone for patients with tumors that are located close to blood vessels, making them difficult to completely eradicate through surgery alone. The trial’s goal is to see which approach best enhances the effectiveness of surgery.

MD Anderson radiologists also are studying an intravenously administered radiation protector to shield the neighboring bowel from the toxic effects of high doses of radiation. In addition, they’re developing novel pathways...
to combine immunotherapy with radiation, and exploring radiomics, looking at patterns in imaging to pinpoint cancerous areas and help select patients for specific therapies.

**Better detection**

Because it’s hard to detect, more than 85 percent of pancreatic cancer patients have advanced disease by the time they’re diagnosed. Less than 10 percent survive five years past diagnosis.

“Our goal is to catch this disease at the earliest possible stage and come in with novel therapies to improve survival as much as possible,” says Anirban Maitra, M.B.B.S, scientific director of MD Anderson’s Pancreatic Cancer Research Center and co-leader of the Pancreatic Cancer Moon Shot.

MD Anderson has launched a clinic for people at high risk of developing pancreatic cancer and is investigating several methods to screen for the disease, including liquid blood biopsies as a potential alternative to conventional, invasive needle biopsies. The technology analyzes a single vial of blood, and provides genetic information about the patient’s tumor, allowing doctors to “match” patients to the best clinical trial. Information collected from this study will guide drug development and allow clinicians to track how a patient’s tumor responds to therapy.

**Other advances**

A new clinical trial at MD Anderson is currently enrolling patients to test a therapy that uses a patients’ own T cells to fight tumors. Several new drugs are entering Phase I clinical trials including IACS-10759, which targets abnormal metabolism within cancer cells. The drug is currently being used in an ongoing trial for acute myeloid leukemia. And researchers are developing therapies that inhibit abnormal genes and pathways in pancreatic cancer, including KRAS, which is mutated in as many as 95 percent of pancreatic cancer cases.

“I think there’s no question that, compared to 10 or even five years ago, we’ve come a long way, and I do see long-term survivors all the time now — I mean, five years, seven years, even 10 years,” Maitra says. “We’re making progress.”

Stereotactic body radiation therapy, or SBRT, delivers high doses of focused radiation over five days instead of six weeks.

With SBRT, doctors are able to use a much higher dose of radiation while sparing healthy tissue surrounding the tumor.
A blueprint for **better access to the best care**

The new and expanded Houston-area locations are designed to make quality cancer treatment more comprehensive and even more convenient for patients.

By Emily Watkins

Hospital design is changing the way patients are cared for. That’s why MD Anderson took a new, patient-centered approach to the design and layout of four comprehensive care centers going up around the Houston area.

This process began with patient and family interviews and included tours of health care facilities across the United States, evaluations of design concepts and solutions with clinical providers, and the creation of full-size mock-ups of clinical spaces and staff work areas.

The results are innovative, collaborative designs that create the best possible patient experience without compromising the provider experience.

**Meeting patients’ needs**

MD Anderson has been working to make high-quality care more accessible to patients outside the Texas Medical Center since 1999, when it opened a radiation treatment center in Bellaire, about four miles west of MD Anderson’s main campus. Today, services are offered around the Houston area,
from a surgical clinic in Memorial City to breast imaging and diagnostic services at selected Memorial Hermann locations. Most recently, MD Anderson has been focused on four leased locations that offer the institution’s renowned multidisciplinary care as well as a range of supportive services and access to clinical trials. Currently, about 15 percent of new patients start their care at one of these locations, located in the Bay Area, Katy, The Woodlands and Sugar Land. And the demand for comprehensive, conveniently located care is growing.

“Our patients are asking us to put all of the services they need closer to where they live and work,” says Kent Postma, executive director of Hospital and Clinics for the Houston-area locations. “By doing this, we’re able to touch more patients and ensure they get the timely care they need.”

MD Anderson teams strategically evaluated how to best meet the needs of patients by considering the historical performance of current locations, the projected population growth across the city and the financial implications of building facilities of its own.

“Following this extensive evaluation, we determined that rather than continuing leases, we’d be better positioned to achieve our mission by building permanent facilities that allow for anticipated growth,” Postma says.

The first permanent facility will open this fall in League City. It will be five times the size of the Bay Area location that it’s replacing. Next year, a new West Houston facility will replace the Katy location. Replacements for The Woodlands and Sugar Land locations will follow.

Patient-centered design

The new buildings will share a look and feel — both inside and out — that’s very different from the TMC Campus.

“As with any new building, it’s an opportunity to introduce new concepts, finishes and furniture to increase patient satisfaction,” says Lucy Nye, manager, Facilities Planning Design and Construction. “It will be a restful, soothing environment for our patients with lots of color, textures and a fresh design.”
Renderings of staff work areas show a design intended to encourage collaboration and creativity.

The buildings will feature commissioned artwork from local artists to further foster a healing environment.

In addition, the Ambulatory Treatment Centers were designed so that the infusion bays will be larger and more private, allowing family members to sit with patients. The infusion bays also will be positioned near exterior windows so there’s more natural light.

On the practical side, the building layouts are designed to improve patient flow and minimize wait times.

Each floor has a similar layout to make it easier for patients to find their way. All points of entry are centered on the lobby, which stretches the entire length of the building, and patients can access every clinical area from that space.

The layout of the clinical areas also was dictated by service proximity. For example, the lab is next to the Ambulatory Treatment Center, making multiple stops easy for patients.

“All of the changes you see in the new buildings really are focused more around the outpatient experience,” says Richard Ehlers II, M.D., associate professor, Breast Surgical Oncology.

“We’ve tried to design an experience where patients and their families will feel cared for and want to come for healing.”

— Richard Ehlers II, M.D.
The architecture of accessibility

**League City**
2280 Gulf Freeway S., League City  
**Projected opening date:** Fall 2018

**Services offered:** Ambulatory Treatment Center, Outpatient Clinics (Breast, Colorectal, Genitourinary, Gynecologic, Head and Neck, Pain Management), Diagnostic Imaging*, Radiation Oncology, Pharmacy, Pathology/Lab, Rehabilitation Therapy, Appearance Center  
**Space:** Moving from 40,000 square feet to nearly 200,000 square feet

**West Houston**
13900 Katy Freeway, Houston  
**Projected opening date:** Spring 2019

**Services offered:** Ambulatory Treatment Center, Outpatient Clinics (Breast, Colorectal, Dermatology, Genitourinary, Gynecologic, Head and Neck, Pain Management, Thoracic), Diagnostic Imaging**, Interventional Radiology*, Endoscopy*, Bronchoscopy*, Post Anesthesia Care Unit*, Pharmacy, Pathology/Lab, Radiation Oncology, Rehabilitation Therapy, Appearance Center  
**Space:** Moving from 33,500 square feet to nearly 260,000 square feet

**The Woodlands**
100 Fellowship Drive, Conroe  
**Projected opening date:** Fall 2019

**Services offered:** Ambulatory Treatment Center, Outpatient Clinics (Breast, Colorectal*, Dermatology, Gynecologic, Head and Neck, Pain Management, Thoracic), Diagnostic Imaging, Interventional Radiology*, Endoscopy*, Bronchoscopy*, Post Anesthesia Care Unit*, Pharmacy, Pathology/Lab, Radiation Oncology, Rehabilitation Therapy, Appearance Center  
**Space:** Moving from 52,000 square feet to nearly 210,000 square feet

**Sugar Land**
Details and projected opening date to be determined

*Sерvices added to expansion sites  
**Diagnostic Imaging, West Houston is located near this facility and its services will move to this location in a few years.
This patient’s cancer journey includes *less time stuck in traffic*

Judy Brinkerhoff vividly remembers the day a routine mammogram showed a suspicious lump in her right breast.

“My first thought was, ‘Do I have cancer?’ she recalls. “My second was, get me to MD Anderson.”

Brinkerhoff, who lives in Orange, Texas, doesn’t mind the two-hour drive to reach MD Anderson in the Bay Area where she receives breast cancer care. She’s just grateful for the peace of mind that comes from being treated at the country’s No. 1 cancer center.

“I’m very assured to know I’m getting the most up-to-date care available anywhere,” she says. “At the Bay Area location, I get the same high-quality treatment I’d get at MD Anderson’s flagship location in the Texas Medical Center, but the drive from Orange to the Bay Area is faster and less complicated,” she says.

By taking Interstate 10 to Nassau Bay, where MD Anderson in the Bay Area is located, she travels a straightforward route, avoiding traffic jams and road construction.

Free parking and designated parking spaces for patients at the Bay Area campus make the trip even less stressful, says Brinkerhoff, a registered nurse in the neonatal intensive care unit at a Port Arthur hospital.

“I see firsthand the pressure families face when their newborns are hospitalized,” she says. “I understand that stress. It’s interesting to see it now from a patient’s point of view.”

Brinkerhoff has completed two 12-week cycles of chemotherapy at the Bay Area location, and will start a year of targeted therapy just in time for the campus’ upcoming move to League City this fall.

“I’m excited to see the new cancer center and to complete my treatment there,” she says. “Things just keep getting better at MD Anderson.”

““At the Bay Area location, I get the same high-quality treatment I’d get at MD Anderson’s flagship location in the Texas Medical Center ...”

— Judy Brinkerhoff
Less than 30 percent of the women in the U.S. with abnormal, benign lesions known as atypical hyperplasia (AH) and lobular carcinoma in situ (LCIS) — a condition that significantly increases their risk of developing breast cancer — take advantage of available preventive therapies that can significantly reduce that risk.

In an effort to improve those rates, Abenaa Brewster, M.D., professor of Clinical Cancer Prevention, worked with colleagues to implement a performance improvement program in MD Anderson’s Cancer Prevention Center (CPC). That program, reported recently in Cancer Prevention Research, resulted in an increase in the use of preventive anti-estrogen therapies such as tamoxifen and raloxifene from 44 percent to more than 80 percent.

“Driven to reduce the incidence of breast cancer, this work was funded by MD Anderson’s Breast Cancer Moon Shot™, part of the Moon Shots Program™, a collaborative effort to accelerate the development of scientific discoveries into clinical advances that save patients’ lives,” Brewster says.

“If we can get more of these women to take preventive therapy, we can prevent more breast cancers,” Brewster says.

“Among women receiving screening mammograms, AHTLCIS are premalignant lesions found in approximately 10 percent of biopsies with benign findings. The lifetime risk of developing breast cancer is greater than 20 percent for women with these conditions, but clinical trials suggest preventive therapies could lower that risk by as much as 75 percent.”

Despite recommendations by the National Comprehensive Cancer Network, most women with AHTLCIS are not taking preventive medications. Reasons for the inaction include doctors not advocating strongly for these therapies and patients’ fear of side effects.

Strengthening the recommendation from healthcare providers was a key component of the MD Anderson program. Through comprehensive education, training and internal audits, physicians in the CPC were able to standardize the strong recommendation to their patients, explained Brewster.

In addition, it was important to provide accurate information to patients about possible, but rare, side effects associated with these medications. The most frequent of which include hot flashes, vaginal discharge/dryness and joint pain.

“When we counsel women about these medications and we counsel them about side effects, we often fail to convey that the majority of women don’t experience any side effects,” Brewster says. “We also don’t do as good a job at reassuring women that if they have side effects, we’re going to be actively engaged in helping them to manage those symptoms.”

Tamoxifen is also associated with more serious, though very rare, side effects, including increased risk of blood clots and uterine cancer. However, women must be counseled that their risk of developing breast cancer without tamoxifen is much higher than the risks of developing these conditions while taking tamoxifen, explained Brewster.

“Tamoxifen is also associated with more serious, though very rare, side effects, including increased risk of blood clots and uterine cancer. However, women must be counseled that their risk of developing breast cancer without tamoxifen is much higher than the risks of developing these conditions while taking tamoxifen,” Brewster says. “That’s an important message to get across to women.”

Through concerted efforts on the part of all providers in the CPC, the performance-improvement program more than doubled the percentage of MD Anderson patients in this group who are taking preventive therapies.

Brewster acknowledges that this approach may not be feasible across all institutions, but she hopes to begin working with MD Anderson’s Physician Network to bring the system-level strategy to other clinics and evaluate its effectiveness in those settings.

The goal remains to encourage more women at high risk of developing breast cancer to consider these preventive medications and ultimately prevent breast cancers from occurring wherever possible.

— Clayton R. Boldt, Ph.D.
A low-cost diagnostic technique called dermoscopy can help determine the potential malignancy of skin lesions — especially melanoma, in which early diagnosis is key to survival. However, providers with the specialized knowledge and experience to interpret dermoscopic findings often are limited to large academic dermatology programs and cannot be accessed by patients in underserved areas.

To help remedy this disparity, MD Anderson dermatologists are using telementoring to train dermatology residents in underserved communities to use dermoscopy for skin cancer screening.

“Dermoscopy can substantially improve a physician’s ability to evaluate a skin lesion and make appropriate decisions about whether to biopsy the lesion,” says Kelly Nelson, M.D., an associate professor of Dermatology.

Nelson uses dermoscopy in her practice at MD Anderson and leads the telementoring program to share her expertise.

Outreach effort trains dermatologists to catch melanoma in its earliest stages

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**Low cost, highly effective**

“Dermoscopy is a relatively low-tech, low-cost tool that can improve providers’ accuracy in diagnosing melanoma and nonmelanoma skin cancer,” Nelson says.

In dermoscopy, the clinician evaluates skin lesions using a brightly lit, handheld magnifier called a dermatoscope. The dermatoscope reveals detailed patterns of blood vessels and pigmentation, helping the physician recognize signs of malignancy, such as asymmetry and disorganization in shape and color, as well as features of normal skin lesions. Polarized light — rather than regular visible light — can be used to illuminate chrysalis structures, which are found in the lesion and are associated with scarring, fibrosis and inflammation.

Beyond increased clarity, a dermatoscope allows the physician to take high-quality photographs for later reference.

“The development of true mastery of skin cancer diagnosis requires the ability to take not only regular clinical photographs but also dermoscopic photographs of what you see in the course of your clinical care,” Nelson says, “so that when something unexpected is seen, you can go back and learn from it.”

Better skill in evaluating skin lesions translates into more appropriate uses of skin biopsy. In particular, dermoscopic proficiency has been shown to result in fewer biopsies of normal skin growths, which reduces anxiety, scarring and financial cost to the patient. For lesions that require biopsy, dermoscopy can be used to select the most appropriate biopsy site and technique.

**Telementoring in dermoscopy**

MD Anderson’s Melanoma Moon Shot™ has taken the lead in sharing the institution’s dermoscopy expertise with providers in underserved communities through Project ECHO, or Extension for Community Healthcare Outcomes.

The telementoring program is bringing education in early melanoma detection to six dermatology residency programs across Texas — and one in Missouri — in the form of monthly educational lectures led by Nelson and her colleagues. Each lesson focuses on a specific topic related to dermoscopy, and the effectiveness of the lessons is tracked by quizzing participants using a series of dermoscopic images at the beginning and end of each session.

“We go through a lot of pictures because we as dermatologists learn through pattern recognition,” Nelson says.

**More to come**

MD Anderson plans to partner with more dermatology residency programs over time, and to develop educational content that other programs can teach independently.

Also in the works over the next two to three years is an online dermoscopy curriculum for primary care physicians. Nelson envisions a curriculum that is efficient enough to be useful to busy physicians and effective enough to teach them to accurately screen patients for melanoma.

— Sarah Bronson

This story originally appeared in the April 2018 issue of OncoLog, MD Anderson’s report to physicians, about the latest advances in cancer care and research.
LOCATIONS
MD Anderson has Houston-area locations in the Texas Medical Center, Bay Area, Katy, Sugar Land, The Woodlands, Bellaire and West Houston (diagnostic imaging), Memorial City (surgery) and The Woman's Hospital of Texas (gynecologic oncology). MD Anderson physicians also provide cancer care to Harris County's underserved patients at Lyndon B. Johnson Hospital. In addition, there are two research campuses in Bastrop County, Texas. The institution also has developed a network of national and international locations.

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