Doctors, support staff, lifestyle changes and drug treatment come together for effective care

The Right Combination

Doctors, support staff, lifestyle changes and drug treatment come together for effective care
Welcome to the summer issue of The Vanguard, where we strive to keep you up to date on the latest in cancer prevention, research, and treatments.

Simmons Cancer Center is the only National Cancer Institute-designated Comprehensive Cancer Center in North Texas and one of just 49 NCI-designated Comprehensive Cancer Centers in the nation. In addition, Simmons Cancer Center is among only 30 U.S. cancer research centers to be designated by the NCI as a National Clinical Trials Network Lead Academic Participating Site.

NCI “comprehensive” designation is the gold standard for cancer programs. It reflects our promise — and ability — to deliver cutting-edge cancer care and discover new treatments that will allow patients to live longer and healthier lives.

In this issue, we’re highlighting a few of the ways our team of doctors and researchers is working to deliver the future of cancer care, today — and how cancer care goes so far beyond one doctor treating one patient in one office. At UT Southwestern, we strive to treat each patient on a holistic level, offering support services that focus on mind, body, and spirit.

On page 8 (In My Own Words), meet Susan Watkins, who was diagnosed with a rare form of a cancer-like condition in 2015 — and learn how the team of highly specialized medical professionals and support staff at UT Southwestern gave her the gift of a second chance.

For patients undergoing cancer treatment, mind and body wellness is essential, so on page 12 we’re offering up smart health habits and technology tips that just might give you an edge in the fight of your life (5 Things That Can Help You Fight Cancer).

Research is a huge part of how we work to advance cancer care, and on page 14 you’ll find exciting news about a new combination of drugs that looks promising for patients with lung cancer (A Targeted Attack).

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
In My Own Words
The diagnosis of a rare form of cancer requires a highly specialized, skilled team of medical professionals on your side.

5 Things That Can Help You Fight Cancer
Here's a look at a combination of smart health habits and technology that just might give you an edge.
Grilling meat at high temperatures causes carcinogens to form that have been linked to increased risk for cancer. But a recent study found seasoning with 1 gram (about 1/4 of a teaspoon) of ground black pepper for every 100 grams (about 3.5 ounces) of meat can protect meat from developing carcinogens during cooking. If that’s too much for your taste, don’t worry. Researchers found mixing pepper with other spices like oregano and garlic was equally effective.

1 gram

Allen Americans Draft UTSW to Fight Cancer

This spring, the Allen Americans hockey team partnered with UT Southwestern’s Harold C. Simmons Comprehensive Cancer Center for the first annual Americans Fight Cancer Weekend.

“Cancer has personally affected a number of members of the Allen Americans family, and we wanted to fight back this year,” says Americans Director of Game Operations Tom Manning. “After research into options for cancer treatment in North Texas, we saw UT Southwestern leading the fight with innovative treatments, cutting-edge research, and promising breakthroughs setting the course for better cancer treatments in the future.”

On April 6 and 7, members of the Americans, which is affiliated with the NHL’s San Jose Sharks, wore purple jerseys featuring the names of those in the Americans family who have been affected by cancer. The jerseys were then auctioned, and the proceeds were donated to Simmons Cancer Center for cancer research.
What would you do with $27 million? Thanks to recent awards from the Cancer Prevention and Research Institute of Texas (CPRIT), UT Southwestern researchers will be investing more than $27 million in research and cancer prevention programs. “Texas taxpayers’ support of CPRIT furthers research by UT Southwestern scientists to learn more about how cancer occurs, to develop improved cancer therapies, and to step up prevention efforts,” says Carlos L. Arteaga, M.D., Associate Dean of Oncology Programs and Director of Simmons Cancer Center.

A Promising Pediatric Cancer Drug

A success rate of 93 percent is high in most situations from algebra test scores to basketball shots sunk, but it’s almost unheard of in cancer drug trials. And yet, that’s the success rate UT Southwestern researchers and colleagues across the U.S. found in studying one cancer drug in pediatric patients.

Larotrectinib, which received FDA breakthrough therapy designation, is a first-of-its-kind drug that targets a fused gene common in several rare pediatric cancers, including infantile fibrosarcoma, cellular congenital mesoblastic nephroma, and papillary thyroid cancer. In these cancers, part of the \( TRK \) gene attaches to another gene, causing \( TRK \) to be turned on when it shouldn’t be, leading cells to grow uncontrollably. Larotrectinib addresses that fusion.

“Every patient with a \( TRK \) fusion-positive solid tumor treated on this study had their tumor shrink,” says the study’s lead author, Theodore W. Laetsch, M.D., Assistant Professor of Pediatrics and a member of the Simmons Cancer Center. “The nearly universal response rate seen with larotrectinib is unprecedented.”

Equally important, the response was long-lasting for most patients. Dr. Laetsch soon will lead a new trial involving a similar drug for those patients who developed resistance to larotrectinib.

KEEP THE COFFEE COMING

With a coffee shop on every corner, it’s not surprising coffee consumption in the U.S. is on the rise. A recent industry survey found nearly two-thirds of American adults had at least one cup of coffee the previous day. And cancer experts can name more than one health reason they are pleased to hear the report on java.

“We don’t quite know how coffee exerts its health benefit because there are many different compounds in coffee. But researchers have shown that both caffeinated and decaf can be helpful,” says Muhammad Shaalan Beg, M.D., a gastrointestinal cancer specialist at the Simmons Cancer Center. “Studies suggest that people who drink coffee may decrease their risk of colon cancer.”

And it’s not just colon cancer. Scientists also have found associations between coffee consumption and a decreased risk of prostate, endometrial, skin, and liver cancers.
Doctors and researchers are making strides every day in the fight against brain cancer. Read on to learn about some of the new developments underway at UT Southwestern.

About one-third of brain tumors are gliomas — cancers that can long lie dormant, then transform into a fast-growing, deadly type called glioblastoma. At UT Southwestern’s Simmons Cancer Center, Peter O’Donnell Jr. Brain Institute, and Advanced Imaging Research Center, researchers have developed a groundbreaking imaging technique that allows doctors to track a substance called 2HG that a subset of gliomas, with IDH1/2 gene mutations, overproduces. We discussed this and other improvements in brain tumor care with neuro-oncologist Elizabeth Maher, M.D., Ph.D., and neurological surgeon Bruce Mickey, M.D.
Q. How has 2HG detection changed the diagnosis of brain cancer?

Dr. Mickey: In some cases it can be difficult with a conventional MR scan to distinguish between a low-grade brain tumor and an inflammatory process, such as multiple sclerosis. Many times this technology can provide a definite tumor diagnosis and eliminate or delay the need for a biopsy.

Dr. Maher: The ability to provide a definite diagnosis (because the presence of 2HG means the tumor has an IDH mutation) and give general prognosis (because patients with IDH-mutant gliomas have a significantly longer survival than those without the mutation) is helpful to the patient and family at a time when the news of a tumor is so shocking and frightening.

Q. In what ways do patients benefit throughout their care?

Dr. Mickey: There is no blood test that can assess brain tumor activity the way prostate-specific antigen (PSA) is used in prostate cancer screening and evaluation. Using an MR scan to measure 2HG in a low-grade glioma can provide similar information. It has been shown in a large group of glioma patients at UT Southwestern that 2HG levels rise as a tumor progresses, and decrease with successful treatment.

Dr. Maher: Sometimes we can’t see a difference over time in standard imaging measures on MRI. Having 2HG levels that are stable or in the undetectable range helps in decision-making regarding when to begin treatment. Also, there are now clinical trials of drugs targeting the IDH-mutant enzyme.

Dr. Mickey: Development of these inhibitors is a promising advance. UT Southwestern was one of only a few medical centers selected for the initial trials of this strategy.

Dr. Maher: The initial study, using (an IDH inhibitor called) AG-120, led to prolonged stable disease in over 60 percent of the patients. We have two long-term patients on study, for 45 months and 35 months.

Q. How might robotic technology like the Gamma Knife Icon benefit patients receiving radiotherapy for brain tumors?

Dr. Mickey: The Perfexion and the Icon were designed to allow the Gamma Knife to more efficiently treat patients with both benign and malignant brain tumors. For a patient with cancer elsewhere in the body that has spread to multiple sites in the brain, this new technology concentrates high doses of radiation in each metastatic tumor while keeping the radiation dose to the surrounding normal brain at a low, safe level. This strategy fits nicely with the emphasis of the O’Donnell Brain Institute on brain protection.

[Note: UT Southwestern was the first institution in North Texas to install a Gamma Knife Perfexion, and its later upgrade, the Gamma Knife Icon.]

Q. What other factors impact brain tumor care at UT Southwestern?

Dr. Mickey: There is growing evidence that outcomes are better for brain tumor patients treated by high-volume surgeons in high-volume hospitals. UT Southwestern physicians and surgeons care for large volumes of brain tumor patients and are supported by colleagues in neuroradiology, neuropathology, neuropsychology, and physical medicine and rehabilitation, and by a large team of experienced nurses, nurse practitioners, and physician assistants. Everyone involved shares the goal of providing the best outcome possible for each patient.

A GLOBAL APPROACH

Scientists at UT Southwestern have been sharing their innovative method for tracking the brain cancer biomarker 2HG worldwide. For gliomas with certain IDH genetic mutations, 2HG can help reveal when the cancer is advancing and whether it’s responding to treatment.

In 2012, Changho Choi, Ph.D., of the Advanced Imaging Research Center, Elizabeth Maher, M.D., Ph.D., and their colleagues published their magnetic resonance (MR) spectroscopy–based protocol to measure 2HG. Dr. Choi has since worked with MR physicists from academic medical centers on four continents to help them modify their spectroscopy protocols. And in 2016 the team published a study of 136 patients — 76 followed over time — showing the technique was an important clinical tool that could reliably track patients’ cancers.

The research was sparked by a National Institutes of Health (NIH) Challenge Grant that Dr. Maher led. The work had additional support from the NIH, Cancer Prevention and Research Institute of Texas, Annette Strauss Center for Neuro-oncology, A IRC, and UT Southwestern.
The symptoms were there for months, but it was easy to look past them. I knew I didn’t feel right, but I didn’t feel terrible either. There were plenty of possible explanations. I was over 50 and had just been through menopause. Maybe my plantar fasciitis was acting up again, causing my foot pain. And I knew my exercise and diet habits weren’t what they should have been.

What’s perhaps more significant is that most doctors would have looked past my symptoms, too. In March 2015, at a checkup with my primary care physician, I told him I was upset that I couldn’t wear my cute shoes for spring because of my swollen feet and ankles. He adjusted my blood pressure medication. But six weeks later, I called him because I was getting worse — not better. After some additional tests, he discovered something was wrong with my kidneys.

He referred me to a nephrologist (a kidney specialist), and she tested me for various possible conditions before performing a kidney biopsy. The specimen was sent to a hospital in Minnesota, where highly specialized personnel used a microscope to analyze the kidney tissue.

That analysis provided my dreaded diagnosis: immunoglobulin light-chain amyloidosis, or AL amyloidosis. This extremely rare disease can affect your heart, kidneys, skin, nerves, and liver. With this cancer-like condition, your bone marrow plasma cells produce abnormal antibodies that are deposited in your tissues as a type of protein called amyloid, which prevents normal organ function.
WHEN FACED WITH A RARE DIAGNOSIS, SUSAN WATKINS FOUND THE CARE AND SUPPORT SHE NEEDED AT UT SOUTHWESTERN.
FINDING THE RIGHT DOCTOR
My mother was — fortuitously — staying with me that summer because she had undergone cataract surgery. I don’t know what I would have done without her. She came with me to my first appointment with an oncologist.

It was a devastating meeting. The doctor had never heard of amyloidosis, though he had printed out a page from Wikipedia. There was nothing he could do, he said.

In that — again, fortuitous — moment, I texted my best friend, who has non-Hodgkin lymphoma. She happened to be at her oncologist’s office. She texted me back: “My doctor says you need to see Dr. Larry Anderson at UT Southwestern. He’s the only doctor in Texas who can help.”

If she had not been at her doctor’s office at that time, I probably would not be alive today.

That afternoon, I scheduled an appointment with Larry Anderson, M.D., Ph.D., Director of UT Southwestern’s Myeloma, Waldenstrom’s, and Amyloidosis Program, and faxed him my medical records.

Dr. Anderson was a breath of fresh air. He understood my disease. He knew what would give me a fighting chance.

“It’s gonna be rough, and you’re not gonna like it,” he told me. “But you’ll come out on the other end.”

TREATMENT BEGINS
In the summer of 2015, my treatment began with a bone marrow biopsy, which was used to determine the level of involvement of the plasma cells. Two weeks later, I started chemotherapy. From July through December, I had weekly appointments — three weeks on, one week off.

Within the first few weeks, the chemo started working. The numbers that were supposed to go up went up. The numbers that were supposed to go down went down.

Meanwhile, I was coping with the stress of my disease being so rare that there’s no billing code for it — making it hard to communicate with insurance companies.

“At UT Southwestern, we want to treat the whole person. The medical team does an amazing job of assessing, prescribing, and managing the physical side effects, and Support Services seeks to help patients and care partners deal with the stress and emotional impact of the diagnosis,” says Alex Huffman, who was a social worker in the Bone Marrow Transplant Clinic when I was there, and is now Manager of Support Services at UT Southwestern.

Alex helped me get access to the resources I needed. She also helped me be an advocate for myself and for my quality of life.

I asked for one mini-reprieve. In September, my son got married, and I wanted to be able to celebrate with my family and not feel so sick. Dr. Anderson granted me two weeks off of chemo so I could be part of this joyous event.

When my chemo ended in December, it was time for the next phase of my treatment. I checked into the hospital on Dec. 20, 2015. On day one, they gave me a massive dose of chemotherapy.

On Dec. 24, I had an autologous stem cell transplant. “For amyloidosis, we use the patient’s own bone marrow-derived stem cells rather than a donor’s stem cells,” Dr. Anderson explains.

Over the next month in the hospital, I was horribly sick from the chemotherapy. My hair fell out. The nausea, accompanied by vomiting and diarrhea, was debilitating. I lost 40 pounds in the hospital.

“The premise is that the … high-dose chemotherapy wipes out the plasma cells (that produce amyloid),” Dr. Anderson explains. The stem cells that are collected in advance are frozen and then used to replace the plasma cells and develop into healthy bone marrow.

THE JOURNEY TO RECOVERY
When I came home from the hospital, I was incredibly weak. My son carried me up the stairs, and my mother, who had basically moved in, cared for me. She fed me, washed me, and put me to bed like she did when I was a baby.

“Having a support system is incredibly important. “When you have caregivers who offer to help, use them,” Alex says. “Seek and accept that kind of support.”

With my support system in place, I got better. I went back to see Dr. Anderson every two days, then every five days, then weekly and biweekly. (These days, I see him every three months.)

When I came home from the hospital, I had little goals like brushing my own teeth. My mother had me walk to the mailbox and back, then to the end of the block and back, then around the block. After about eight months — once I could balance myself — I started walking at an indoor mall.

When I told Alex about my mall walking, she gave me information on a fitness program called FitSteps for Life. Based in Texas, FitSteps’ facilities are designed for patients along the cancer journey. Their physical and occupational therapists and exercise physiologists are
specially trained to work with cancer patients. Working with them did wonders for me physically.

**LIVING FOR TODAY**

Amyloidosis is a complex and nuanced disease. As Dr. Anderson says, “If you’ve see one case of amyloidosis, you’ve see one case of amyloidosis.”

Today, I go to church and the grocery store and to live theater performances and Texas Rangers games. But I have to be very careful around sick people and children who’ve recently been vaccinated for certain diseases.

The transplant process kills the immune system, so I had to be re-vaccinated for everything. Today, my immune system is similar to that of a 2½-year-old child, and I’ll never recover to the point where I can have a live virus vaccine.

“There are many levels of remission in amyloidosis,” Dr. Anderson explains. “You can have a partial remission or a very good partial remission. Susan is in complete remission — with normal light chains and no detectable proteins in her marrow, blood, or urine.”

While I’m in remission, I know it could come back tomorrow, in 20 years or in 30 years, or it could never come back. That thought never goes away. But I’m living.

I’m traveling to Italy with three other women in my family this summer. And that sweet couple whose wedding I attended during treatment — they’re having a baby this summer, and I couldn’t be more excited to become a grandmother.

Amyloidosis is a cruel and mysterious disease. And primary care doctors and specialists alike need more education to be able to recognize its symptoms. I know I’m fortunate to have gotten an early diagnosis — that convergence of the right people in the right places at the right times was essential.

There’s nobody else in Texas that could have done for me what UT Southwestern did. Other doctors in the nation look to Dr. Anderson. Alex is amazing, and the whole staff of oncology nurses was incredible. It’s an extraordinary place.

“We are a center that specializes in complicated stem cell transplants, including amyloidosis,” Dr. Anderson notes. “I would advise against going somewhere that only does a couple of stem cell transplants for amyloidosis per year.”

The stars aligned for me to get to Dr. Anderson. He saved my life.
Things That Can Help You Fight Cancer

Here’s a look at a combination of smart health habits and technology that just might give you an edge.

1. **START STEPPING.**

   For years, we’ve heard the advice to get 10,000 steps a day for good health. Undergoing cancer treatment can be draining, but physical activity can help increase energy, boost self-esteem, and improve quality of life.

   “Physical activity is something people often neglect,” notes Dr. Beg, Assistant Professor of Internal Medicine. Wearable trackers like Fitbits or simple pedometers can be great for both motivation and awareness.

   “Physicians don’t always do a good job of assessing how active their patients are,” he explains. “Patients might have a hard time expressing it, or they might under- or over-report their exercise — perhaps not even consciously. So it can take a lot of work to tease out how much activity someone is doing.”

   Activity trackers have implications for researchers, too, as they can provide objective data and insights into the relationship between physical activity and cancer treatment, according to a recent study by researchers at Simmons Cancer Center. Evaluation of a patient’s functional status is a key part of clinical encounters and affects treatment decisions. Cancer patients often are older, and subtle differences in functional status can be particularly important in evaluating elderly patients. Adding objective data from physical activity monitors can sharpen oncologists’ assessments of their patients, the researchers said.

Every day, researchers make progress in the fight against cancer in laboratories and clinical trials across the country, including at UT Southwestern. But for all these advances in medical science, it’s also clear that patients can have a clear impact on their treatment.

Muhammad Shaalan Beg, M.D., Medical Director for the Clinical Research Office and Co-Leader of GI Oncology at Simmons Cancer Center, frequently talks to his patients about diet and exercise in particular. As he conducts research and works with patients, he is also exploring ways that technology and data can help patients and researchers alike have greater impact.
OPT FOR BALANCED NUTRITION RATHER THAN RESTRICTIVE DIETS.

“One thing that routinely comes up is diet,” Dr. Beg notes. “Some people try to start limiting the foods they eat, thinking there’s a magic diet. But based on all the data we have, nothing beats a balanced diet.”

He acknowledges the stress around food, noting that food is important for strength and even pleasure.

“There are very few things that are pleasurable right now (during cancer treatment),” he says. “It’s OK to eat some ice cream.”

If you want to keep track of your diet, jot down your meals in a food journal or use an app like MyFitnessPal. Throughout the course of treatment, you might want to also note how you feel in order to gain some valuable insight into the impact of your diet.

WORK WITH A DIETITIAN.

A dietitian can help you find foods that work for you — whether that’s managing changes in taste or lack of appetite.

Plus, Dr. Beg sees opportunities to use data in patients’ electronic medical records and lab reports to identify those who might be at risk for cachexia, for example, which refers to an unintended loss of muscle mass. Then, high-risk patients could see a dietitian early to create a plan to reduce their risk for that atrophy.

MANAGE INFORMATION OVERLOAD AND OTHER STRESSORS.

Dr. Beg recommends only a couple of trusted websites to his patients. “Beyond that, the internet is a dark, dark place … you can get sucked into the fringes,” he says.

One way to manage stress and information overload is through mindfulness meditation. Apps like Headspace or 10% Happier can help guide you through the process.

SEEK OUT SOCIAL SUPPORT.

Having a strong social support network also can be helpful for managing stress, Dr. Beg says. Loved ones can help patients and their families manage day-to-day activities and provide emotional support, too.

“Patients who come with a family member do much better than those coming by themselves,” Dr. Beg observes. “If a patient is always coming alone, I invite them to bring someone who can listen in.”

Consider using your phone and having a friend or family member on speakerphone, or use your phone to record parts of your appointment (be open with your doctor that you’re recording). In the stress of the moment, you might forget important information, so these tools can help. Dr. Beg adds that writing down your questions on paper or in the notes app of your phone can help as well.

If you’re struggling to find the support you need, explore in-person and online support groups. The level of conversation can vary, Dr. Beg says, but support is important, so explore the resources that work for you.

STAYING ONE STEP AHEAD

Using wearable technology and AI to prevent serious complications

In an effort to identify patients at risk for adverse outcomes, with the ultimate goal of intervening before these events occur, UT Southwestern’s Department of Radiation Oncology is performing a study that revolves around Fitbit tracking devices. The study, led by David Sher, M.D., M.P.H., Associate Professor of Radiation Oncology, involves the use of these devices to collect data, such as heart rate, steps taken, and sleep habits, for head and neck cancer patients undergoing chemoradiotherapy or surgery with or without postoperative radiotherapy.

Researchers in the study are hypothesizing that changes in heart rate may predict increasing pain, dehydration, and physiologic stress, with changes in daily step count serving as a surrogate for performance status during treatment.
A lung cancer diagnosis can be devastating. The disease has just an 18.6 percent five-year survival rate, and it’s the leading cause of cancer deaths in the United States. But new research may offer hope.

A combination of two currently available drugs could treat most cases of lung cancer, UT Southwestern researchers say. The Food and Drug Administration-approved drugs — one that’s already used to treat some cancers and another that typically fights inflammatory diseases like arthritis — have been effective in treating brain cancer in the lab.

Zeroing In on Cancer

The drug combo treatment is a type of targeted therapy. With targeted therapy, experts identify abnormalities that are specific to cancer cells and develop drugs that can attack those cells without harming other, healthy cells.

Targeted therapies are already approved as treatments for many types of cancer, including a small percentage of lung cancers. Now, there’s the possibility that this type of treatment might work for the majority of lung cancers.

Researchers know that the epidermal growth factor receptor (EGFR) is expressed in many types of cancer, but a drug that targets EGFR works well only for a small subset of lung cancer cases. When scientists tried to figure out why they found that, in the cases where it did work for lung cancer, those tumors had a genetic mutation.

A Breakthrough at UT Southwestern

The UT Southwestern research team discovered that when targeted therapies block EGFR, most of the time — when there’s no genetic mutation — the cancer releases a protein called tumor necrosis factor (TNF). “By increasing TNF, the cancer cells fight back, to go to their original state,” explains Amyn Habib, M.D., Associate Professor of Neurology and Neurotherapeutics and a member of the Simmons Cancer Center at UT Southwestern.

Adding a second drug that blocks TNF makes the combo treatment effective against lung cancer, lab studies have found. Once TNF is blocked, the cancer responds to the EGFR treatment.

“The idea that you could block both [EGFR and TNF] in patients is very feasible,” Dr. Habib says. The two drugs are already FDA-approved, so researchers aim to launch a phase two clinical trial within a year.

Targeted therapies are already approved as treatments for many types of cancer. Now, there’s the possibility that this type of treatment might work for the majority of lung cancers.
Better Survival Rates, Fewer Side Effects
For many people diagnosed with lung cancer, treatment follows a familiar path — surgery to remove the tumor, then radiation and/or chemotherapy to destroy remaining cancer cells. While these treatments may be effective, radiation and chemotherapy don’t only target cancer cells — they can harm healthy tissue, too. Chemotherapy’s side effects can include hair loss, mouth sores, digestive issues, increased infection risk, and fatigue.

If the new combo therapy works, it could be used along with surgery to treat most people with lung cancer. Both drugs are well tolerated and have relatively few side effects. And the new therapy may improve lung cancer survival rates, says Dr. Habib.

The two-drug combo treatment could also work for a type of brain cancer called glioblastoma, which spreads aggressively through the brain. The clinical trial is expected to include both lung cancer and brain cancer patients. If the treatment is effective, it may work for other types of cancer as well, including colon and head and neck cancers.

LUNG CANCER BY THE NUMBERS

| Ranking of lung cancer among causes of cancer deaths in both men and women. | 1 |
| Proportion of all cancer deaths attributed to lung cancer in 2017. | 26% |
| Proportion of lung cancers where the two-drug combo treatment is expected to be effective. | 85% |
| Proportion of people eligible for low-dose CT screening for lung cancer who were tested in 2015. That’s just 262,700 of the 6.8 million people who could benefit from the test. | 3.9% |

| Adults with mental illness who smoke. That’s more than double the 15% of adult smokers with no mental illness. | 1 in 3 |
| Estimated number of new cases of lung cancer diagnosed in the U.S. in 2018. | 234,030 |
| Year when the lung cancer diagnosis rate peaked in the U.S. It has been declining steadily since then. | 1992 |
| Years of life a smoker can regain, on average, by quitting at age 40 or earlier instead of continuing to smoke for a lifetime. | 9 |

Sources: American Cancer Society, National Cancer Institute, The Tobacco Atlas, UT Southwestern
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