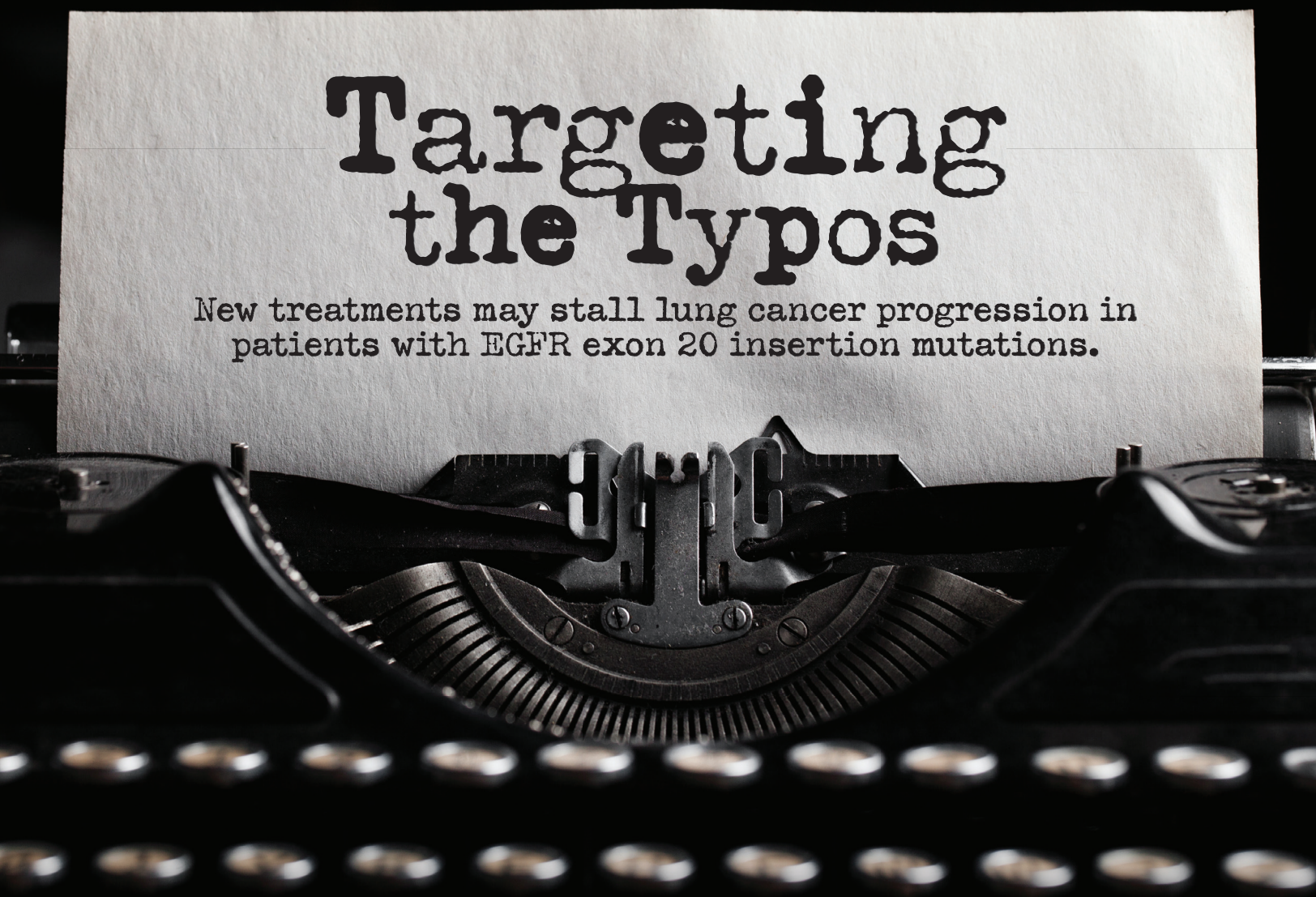
FOR PATIENTS, SURVIVORS & THEIR CAREGIVERS

LUNG CANCER

cure® 20TH anniversary

Cancer Updates, Research & Education®

SPECIAL ISSUE · 11.2022



Targeting the Typos

New treatments may stall lung cancer progression in patients with EGFR exon 20 insertion mutations.

ALSO IN THIS ISSUE

FOLLOW-UP SCANS
Monitoring for potential metastases after treatment and beyond.

AT-HOME EXERCISES
Experts describe light exercises to improve breathing after lobectomy.

BIOMARKER TESTING
Twenty years of progress in identifying genetic mutations for treatment strategies.

curetoday.com

KEYTRUDA IS A BREAKTHROUGH IMMUNOTHERAPY.

FOR TODAY

KEYTRUDA is a potential first treatment for **3 out of 4 patients** with advanced non–small cell lung cancer (NSCLC).

KEYTRUDA is also used to treat **more patients** with advanced lung cancer than any other immunotherapy.

FOR THE FUTURE

Ongoing clinical trials are exploring if KEYTRUDA can help treat more patients.

KEYTRUDA may be your first treatment for advanced NSCLC, either in combination with chemotherapy or used alone as a chemotherapy-free option.
Ask your doctor if KEYTRUDA is right for you.

KEYTRUDA is a prescription medicine used to treat a kind of lung cancer called non–small cell lung cancer (NSCLC).

- **KEYTRUDA + CHEMOTHERAPY, NONSQUAMOUS**
  It may be used with the chemotherapy medicines pemetrexed and a platinum as your first treatment when your lung cancer has spread (advanced NSCLC) **and** is a type called "nonsquamous" **and** your tumor does not have an abnormal "EGFR" or "ALK" gene.
- **KEYTRUDA + CHEMOTHERAPY, SQUAMOUS**
  It may be used with the chemotherapy medicines carboplatin and either paclitaxel or paclitaxel protein-bound as your first treatment when your lung cancer has spread (advanced NSCLC), **and** is a type called "squamous."
- **KEYTRUDA USED ALONE, PD-L1 POSITIVE**
  It may be used alone as your first treatment when your lung cancer has not spread outside your chest (stage III) and you cannot have surgery or chemotherapy with radiation, **or** your NSCLC has spread to other areas of your body (advanced NSCLC), **and** your tumor tests positive for "PD-L1" **and** does not have an abnormal "EGFR" or "ALK" gene.
- **KEYTRUDA AFTER CHEMOTHERAPY, PD-L1 POSITIVE**
  It may also be used alone for advanced NSCLC if you have tried chemotherapy that contains platinum and it did not work or is no longer working **and**, your tumor tests positive for "PD-L1" **and** if your tumor has an abnormal "EGFR" or "ALK" gene, you have also received an "EGFR" or "ALK" inhibitor medicine that did not work or is no longer working.

PD-L1 = programmed death ligand 1;
EGFR = epidermal growth factor receptor;
ALK = anaplastic lymphoma kinase.

IMPORTANT SAFETY INFORMATION

KEYTRUDA is a medicine that may treat certain cancers by working with your immune system. KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen any time during treatment or even after your treatment has ended.

Call or see your health care provider right away if you develop any signs or symptoms of the following problems or if they get worse. These are not all of the signs and symptoms of immune system problems that can happen with KEYTRUDA:

- **Lung problems:** cough, shortness of breath, or chest pain.
- **Intestinal problems:** diarrhea (loose stools) or more frequent bowel movements than usual; stools that are black, tarry, sticky, or have blood or mucus; or severe stomach-area (abdomen) pain or tenderness.
- **Liver problems:** yellowing of your skin or the whites of your eyes; severe nausea or vomiting; pain on the right side of your stomach area (abdomen); dark urine (tea colored); or bleeding or bruising more easily than normal.
- **Hormone gland problems:** headaches that will not go away or unusual headaches; eye sensitivity to light; eye problems; rapid heartbeat; increased sweating; extreme tiredness; weight gain or weight loss; feeling more hungry or thirsty than usual; urinating more often than usual; hair loss; feeling cold; constipation; your voice gets deeper; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness.
- **Kidney problems:** decrease in the amount of your urine; blood in your urine; swelling of your ankles; loss of appetite.
- **Skin problems:** rash; itching; skin blistering or peeling; painful sores or ulcers in your mouth or in your nose, throat, or genital area; fever or flu-like symptoms; swollen lymph nodes.
- **Problems can also happen in other organs and tissues.** Signs and symptoms of these problems may include: chest pain; irregular heartbeat; shortness of breath; swelling of ankles; confusion;

Important Safety Information is continued on the next page.

keytruda.com/lung

IMPORTANT SAFETY INFORMATION *(continued)*

sleepiness; memory problems; changes in mood or behavior; stiff neck; balance problems; tingling or numbness of the arms or legs; double vision; blurry vision; sensitivity to light; eye pain; changes in eyesight; persistent or severe muscle pain or weakness; muscle cramps; low red blood cells; bruising.

- **Infusion reactions that can sometimes be severe or life-threatening.** Signs and symptoms of infusion reactions may include chills or shaking, itching or rash, flushing, shortness of breath or wheezing, dizziness, feeling like passing out, fever, and back pain.
- **Rejection of a transplanted organ.** Your health care provider should tell you what signs and symptoms you should report and they will monitor you, depending on the type of organ transplant that you have had.
- **Complications, including graft-versus-host disease (GVHD), in people who have received a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic).** These complications can be serious and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with KEYTRUDA. Your health care provider will monitor you for these complications.

Getting medical treatment right away may help keep these problems from becoming more serious. Your health care provider will check you for these problems during treatment with KEYTRUDA. They may treat you with corticosteroid or hormone replacement medicines. They may also need to delay or completely stop treatment with KEYTRUDA if you have severe side effects.

Before you receive KEYTRUDA, tell your health care provider if you have immune system problems such as Crohn's disease, ulcerative colitis, or lupus; have had an organ transplant or have had or plan to have a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic); have had radiation treatment in your chest area; have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome.

If you are pregnant or plan to become pregnant, tell your health care provider. KEYTRUDA can harm your unborn baby. If you are able to become pregnant, you will be given a pregnancy test before you start treatment.

Use effective birth control during treatment and for at least 4 months after your final dose of KEYTRUDA. Tell them right away if you think you may be pregnant or you become pregnant during treatment with KEYTRUDA.

Tell your health care provider if you are breastfeeding or plan to breastfeed. It is not known if KEYTRUDA passes into your breast milk. Do not breastfeed during treatment with KEYTRUDA and for 4 months after your final dose of KEYTRUDA.

Tell your health care provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Common side effects of KEYTRUDA when used alone include feeling tired; pain, including pain in muscles; rash; diarrhea; fever; cough; decreased appetite; itching; shortness of breath; constipation; bones or joints and stomach-area (abdominal) pain; nausea; and low levels of thyroid hormone.

Common side effects of KEYTRUDA when given with certain chemotherapy medicines include feeling tired or weak; nausea; constipation; diarrhea; decreased appetite; rash; vomiting; cough; trouble breathing; fever; hair loss; inflammation of the nerves that may cause pain, weakness, and paralysis in the arms and legs; swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina; mouth sores; headache; weight loss; stomach-area (abdominal) pain; joint and muscle pain; and trouble sleeping.

These are not all the possible side effects of KEYTRUDA. Talk to your health care provider for medical advice about side effects.

Please read the adjacent Important Information About KEYTRUDA and discuss it with your oncologist.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088.

Having trouble paying for your Merck medicine?

Merck may be able to help. www.merckhelps.com

IT'S TRU. KEYTRUDA® (pembrolizumab) Injection 100 mg

MERCK

Important Information About KEYTRUDA® (pembrolizumab) injection 100 mg. Please speak with your healthcare professional regarding KEYTRUDA (pronounced key-true-duh). Only your healthcare professional knows the specifics of your condition and how KEYTRUDA may work with your overall treatment plan. If you have any questions about KEYTRUDA, speak with your healthcare professional. **℞ONLY**

What is the most important information I should know about KEYTRUDA?

KEYTRUDA is a medicine that may treat certain cancers by working with your immune system. KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.

Call or see your healthcare provider right away if you develop any new or worsening signs or symptoms, including:

Lung problems

- cough
- shortness of breath
- chest pain

Intestinal problems

- diarrhea (loose stools) or more frequent bowel movements than usual
- stools that are black, tarry, sticky, or have blood or mucus
- severe stomach-area (abdomen) pain or tenderness

Liver problems

- yellowing of your skin or the whites of your eyes
- severe nausea or vomiting
- pain on the right side of your stomach area (abdomen)
- dark urine (tea colored)
- bleeding or bruising more easily than normal

Hormone gland problems

- headaches that will not go away or unusual headaches
- eye sensitivity to light
- eye problems
- rapid heartbeat
- increased sweating
- extreme tiredness
- weight gain or weight loss
- feeling more hungry or thirsty than usual
- urinating more often than usual
- hair loss
- feeling cold
- constipation
- your voice gets deeper
- dizziness or fainting
- changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness

Kidney problems

- decrease in your amount of urine
- blood in your urine
- swelling of your ankles
- loss of appetite

Skin problems

- rash
- itching
- skin blistering or peeling
- painful sores or ulcers in your mouth or in your nose, throat, or genital area
- fever or flu-like symptoms
- swollen lymph nodes

Problems can also happen in other organs and tissues. These are not all of the signs and symptoms of immune system problems that can happen with KEYTRUDA. Call or see your healthcare provider right away for any new or worsening signs or symptoms, which may include:

- chest pain, irregular heartbeat, shortness of breath, swelling of ankles
- confusion, sleepiness, memory problems, changes in mood or behavior, stiff neck, balance problems, tingling or numbness of the arms or legs
- double vision, blurry vision, sensitivity to light, eye pain, changes in eyesight
- persistent or severe muscle pain or weakness, muscle cramps
- low red blood cells, bruising

Infusion reactions that can sometimes be severe or life-threatening. Signs and symptoms of infusion reactions may include:

- chills or shaking
- itching or rash
- flushing
- shortness of breath or wheezing
- dizziness
- feeling like passing out
- fever
- back pain

Rejection of a transplanted organ. Your healthcare provider should tell you what signs and symptoms you should report and monitor you, depending on the type of organ transplant that you have had.

Complications, including graft-versus-host-disease (GVHD), in people who have received a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic). These complications can be serious and can lead to death. These

Continued on next page.

complications may happen if you underwent transplantation either before or after being treated with KEYTRUDA. Your healthcare provider will monitor you for these complications.

Getting medical treatment right away may help keep these problems from becoming more serious. Your healthcare provider will check you for these problems during treatment with KEYTRUDA. Your healthcare provider may treat you with corticosteroid or hormone replacement medicines. Your healthcare provider may also need to delay or completely stop treatment with KEYTRUDA if you have severe side effects.

Before receiving KEYTRUDA, tell your healthcare provider about all of your medical conditions, including if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have received an organ transplant
- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have received radiation treatment to your chest area
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome
- are pregnant or plan to become pregnant. KEYTRUDA can harm your unborn baby.

  Females who are able to become pregnant:
  - Your healthcare provider will give you a pregnancy test before you start treatment with KEYTRUDA.
  - You should use an effective method of birth control during and for at least 4 months after the final dose of KEYTRUDA. Talk to your healthcare provider about birth control methods that you can use during this time.
  - Tell your healthcare provider right away if you think you may be pregnant or if you become pregnant during treatment with KEYTRUDA.
- are breastfeeding or plan to breastfeed. It is not known if KEYTRUDA passes into your breast milk. Do not breastfeed during treatment with KEYTRUDA and for 4 months after your final dose of KEYTRUDA.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

How will I receive KEYTRUDA?

- Your healthcare provider will give you KEYTRUDA into your vein through an intravenous (IV) line over 30 minutes.
- In adults, KEYTRUDA is usually given every 3 weeks or 6 weeks depending on the dose of KEYTRUDA that you are receiving.
- In children, KEYTRUDA is usually given every 3 weeks.
- Your healthcare provider will decide how many treatments you need.
- Your healthcare provider will do blood tests to check you for side effects.
- If you miss any appointments, call your healthcare provider as soon as possible to reschedule your appointment.

What are the possible side effects of KEYTRUDA?
KEYTRUDA can cause serious side effects. See "What is the most important information I should know about KEYTRUDA?"

Common side effects of KEYTRUDA when used alone include: feeling tired, pain, including pain in muscles, rash, diarrhea, fever, cough, decreased appetite, itching, shortness of breath, constipation, bones or joints and stomach-area (abdominal) pain, nausea, and low levels of thyroid hormone.

Side effects of KEYTRUDA when used alone that are more common in children than in adults include: fever, vomiting, upper respiratory tract infection, headache, and low levels of white blood cells and red blood cells (anemia).

Common side effects of KEYTRUDA when given with certain chemotherapy medicines include: feeling tired or weak, nausea, constipation, diarrhea, decreased appetite, rash, vomiting, cough, trouble breathing, fever, hair loss, inflammation of the nerves that may cause pain, weakness, and paralysis in the arms and legs, swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina, mouth sores, headache, weight loss, stomach-area (abdominal) pain, joint and muscle pain, and trouble sleeping.

Common side effects of KEYTRUDA when given with chemotherapy and bevacizumab include: tingling or numbness of the arms or legs, hair loss, low red blood cell count, feeling tired or weak, nausea, low white blood cell count, diarrhea, high blood pressure, decreased platelet count, constipation, joint aches, vomiting, urinary tract infection, rash, low levels of thyroid hormone, and decreased appetite.

Common side effects of KEYTRUDA when given with axitinib include: diarrhea, feeling tired or weak, high blood pressure, liver problems, low levels of thyroid hormone, decreased appetite, blisters or rash on the palms of your hands and soles of your feet, nausea, mouth sores or swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina, hoarseness, rash, cough, and constipation.

These are not all the possible side effects of KEYTRUDA.

Call your healthcare provider for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

General information about the safe and effective use of KEYTRUDA

Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. You can ask your pharmacist or healthcare provider for information about KEYTRUDA that is written for health professionals.

Based on Medication Guide usmg-mk3475-iv-2203r050 as revised March 2022.

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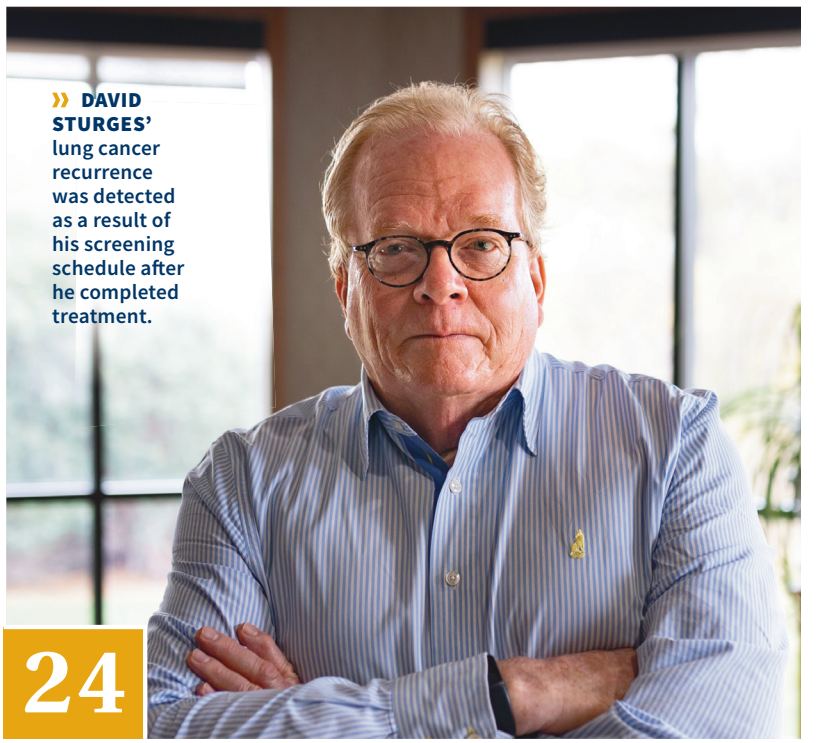
cure® 20TH anniversary Contents

LUNG CANCER SPECIAL ISSUE · 11.22



» **DAVID STURGES'** lung cancer recurrence was detected as a result of his screening schedule after he completed treatment.

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» **CHRIS HEBERT** underwent tests for a potential clot associated with his blood cancer, which turned out to be lung cancer.

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RENATA MULLER received treatment that specifically targeted her EGFR exon 20 insertion mutation.

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MULLER BY RACHEL CAPIL

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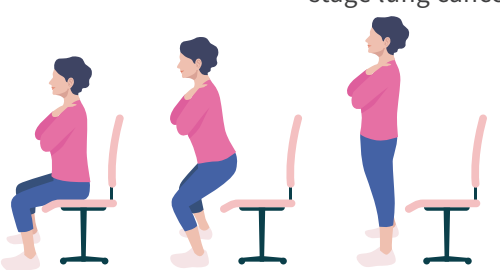

publisher's note

A Glimmer of Hope

ALTHOUGH MORE RESEARCH IS needed, biomarker discoveries and advances in molecular diagnostics and drug development have ushered in the age of personalized medicine in the field of oncology and brought hope to countless patients, especially those with mutations that not long ago were considered "undruggable."

In this special issue of *CURE®*, we spoke with two patients whose EGFR exon 20 insertion mutations were detected via next-generation sequencing. Thanks to two agents approved by the Food and Drug Administration in just the last 11 months, they can now receive more personalized and effective treatment. Further studies, however, are required to determine why the mutations can be so unrelenting, as one patient experienced after some time on the drug.

> "Biomarker discoveries ... have ushered in the age of personalized medicine in the field of oncology."

We also talked with two other patients about how they have benefited from vigilance and strict adherence to screening schedules that can detect recurrence and metastases. They show us the importance of follow-up throughout the cancer journey, even during survivorship.

Also in this issue, as part of *CURE®*'s 20th anniversary series, a cancer center director highlights the advances in biomarker testing in patients with lung cancer, which has also opened the doors to further development of effective treatments. She highlights the progress that has been made during the past 20 years and outlines what needs to be accomplished in the next 20 years to make it a more effective target.

"There's real potential to be able to manage lung cancer in the future with fewer deaths than we have now, even though we are doing much better than we did back in 2002," Joann Sweasy, director of the University of Arizona Cancer Center in Tucson, said in an interview.

Other topics addressed in this special issue are exercises for at-home recovery after lobectomy, surgical treatment decision-making in early-stage lung cancer and the effect that a delayed diagnosis can have on patients.

As always, we hope you find our stories inspirational and informative. Thank you for reading.

MIKE HENNESSY JR.
President & CEO
MJH LIFE SCIENCES®

cure®

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CURE® Extraordinary Healer® 2023

SHINE A LIGHT ON AN *Extraordinary* ONCOLOGY NURSE!

Margaret Campbell, B.S.N., RN, Winner of 2022 Extraordinary Healer

CURE® is now accepting essay nominations for the 2023 Extraordinary Healer® award for oncology nursing! We invite you to describe the compassion, expertise and helpfulness a special oncology nurse has exhibited in caring for patients with cancer. Nominations are accepted from patients, caregivers, survivors, family members and peers.

Submit your essay today!

SUBMISSION DEADLINE: JANUARY 4, 2023

Scan the QR code or visit curetoday.com/EH23

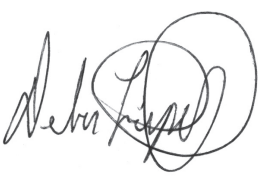
Screening After a Diagnosis

DURING THE PAST COUPLE of decades, lung cancer screening has become more important than ever, owing to the advent of better imaging technology and well-designed clinical trials that have confirmed their effectiveness at early detection and a role in improved outcomes. The Centers for Disease Control and Prevention recommend that certain populations be screened for lung cancer with low-dose CT scans. But what happens once a patient has been diagnosed? Does screening continue after treatment is completed and survivorship status is determined?

In this issue of *CURE*®, we learn how critical it is to continue having follow-up exams and tests, every month or so until disease progression has been controlled and perhaps less frequently thereafter. Patients who have been treated for lung cancer are at risk not only for recurrence due to residual microscopic cancer cells, but also for completely new, independent cancers of the lung and other areas. Follow-ups give oncologists the opportunity to check whether new nodules have developed or disease has spread. A regular screening schedule after a diagnosis is important because if cancer is detected, care teams can act quickly and hopefully obtain positive outcomes. Optimal surveillance guidelines, for both health care professionals and patients, are continually updated and available on websites like those of the American Cancer Society (cancer.org) and the American Society of Clinical Oncology (asco.org).

Even with high-tech methods to identify lung cancer recurrence, there is no foolproof way to predict whether the disease will come back. This would be especially helpful for patients with small cell lung cancer, which is more likely than others to spread. Once a recurrence has been identified on imaging tests, a multidisciplinary approach can help patients and their families understand the pattern of recurrence and lead to better treatment moving forward. In addition, a new lung or other cancer (not a recurrence of the original cancer) can develop years later, which may be curable with resection and/or other therapies.

Although smoking sometimes plays a role in a patient's increased risk for lung cancer — and cessation does, over time, lower the risk of certain secondary cancers — factors like genetic predispositions and air pollution may also contribute to this higher risk. Even so, patients can reduce the risk by making healthy choices with respect to diet and physical activity. C



DEBU TRIPATHY, M.D.
EDITOR-IN-CHIEF
Professor of Medicine
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The University of Texas MD Anderson Cancer Center

MIKE KITADA

Biomarker Testing Provides 'Real Potential' to Manage Disease

Identifying genetic mutations has allowed researchers to develop treatments that target specific biomarkers over the past 20 years, but more research is needed to further the space.

By DARLENE DOBKOWSKI, MA

THE USE OF BIOMARKERS in lung cancer has grown by leaps and bounds from where it was 20 years ago. Back then, not much was known about the molecular basis of lung cancer, and thus there were no targeted agents with which to treat it. Today, biomarkers are a mainstay in determining the most beneficial approach.

In honor of its 20th anniversary, *CURE*® spoke with Joann Sweasy, director of the University of Arizona Cancer Center in Tucson, to learn more about how far the study of biomarkers has advanced and where it may be headed.

"We've come amazingly far," she said. "It's a game changer what we're doing right now. We are so ahead of where we were in 2002, it's amazing."

WHAT ARE BIOMARKERS?

Technically, biomarkers are mutations — similar to typos — in DNA. These typos can be big, small or even a rearrangement in the DNA sequence.

"The mutation, they profile a number of different genes," Sweasy explained. "These genes encode proteins, and essentially, what happens is (that) these mutant or altered proteins … make every single cell survive, and the cancer cells survive. That's what they're about, promoting survival."

Testing for biomarkers is performed primarily via biopsy, although it can also be done by bronchoscopy (a procedure that allows doctors to look at a patient's airways and lungs) or by testing sputum (saliva and mucus from the respiratory tract). Although it is standard at National Cancer Institute-designated centers, patients should inquire about the testing regardless of where they receive their diagnosis and treatment, Sweasy advised.

"I would ask, 'How are you really going to diagnose (lung cancer)? And are you going to profile the genomics and look for genetic changes in my cancer?'" Sweasy explained.

FROM BIOMARKERS TO THERAPEUTICS

Progress has been made because researchers have come to understand the three-dimensional structure of the proteins involved. By comparing normal and mutant proteins, they can see where the change has occurred and use that information to design drugs that target the mutation, Sweasy said.

The challenge now is to understand why tumors become resistant to targeted therapies over time.

TREATABLE BIOMARKERS

According to the American Lung Association, the Food and Drug Administration has approved treatments for lung cancer for the following biomarkers:

- EGFR mutation
- ROS1 gene rearrangement
- ALK gene rearrangement
- NTRK fusion
- BRAF V600E mutation
- RET gene rearrangements
- MET amplification or MET exon 14 skipping
- PD-L1 level

"The goal of the cancer (cells) is to survive," Sweasy said. "As that cancer proliferates and proliferates, more and more mutations are arising, so that's where the resistance comes in. A targeted therapy is provided; you can be on that therapy and doing well for quite a while and then, all of a sudden, the tumor becomes resistant. That's where we really need to get better these days."

UNMET NEEDS AND FUTURE RESEARCH

In addition, more research is required to detect biomarkers for other types of cancer. Further investigation is needed to determine which biomarkers are actionable for small cell lung cancer, which is often associated with cigarette smoking. Smoke itself can cause mutations in the tumor.

"People with lung tumors with lots and lots of mutations generally respond to immunotherapy, but not all the time," Sweasy said. "And some people who don't have high levels of mutations in their tumors respond. We need to figure that out, too."

Although biomarker testing is becoming a bigger part of a patient's care journey, not every patient has access to these tests. Social determinants of health and rural disparities make it more difficult for certain individuals to access these tests, and insurance does not cover them in all circumstances, Sweasy noted.

Despite unmet needs in this area, the progress that has been made offers patients more effective treatments and allows them to learn more about the disease.

"I think the field continues to grow," Sweasy said. "There's real potential to be able to manage lung cancer in the future with fewer deaths than we have now, even though we are doing much better than we did back in 2002."

Improving Breathing *After* Lobectomy

PATIENTS WITH NON-SMALL cell lung cancer who undergo surgical removal of a pulmonary lobe must exercise to avoid such complications as collapse of the unaffected lung and the pooling of secretions that may obstruct air passages if not cleared by coughing due to postoperative pain.

Light exercises, which can be done at home, may also be beneficial for patients who require additional therapy like chemotherapy or radiation because exercise helps reduce the toxicities that can occur with these treatments.

To learn more about these exercises, *CURE*® spoke with Dr. Scott L. Shofer, a pulmonologist at Duke Cancer Center in North Carolina and Durham Veterans Affairs Medical Center, and Susan Blackwell, a physician assistant in the thoracic oncology program at Duke Cancer Center. Both suggest that patients speak with their cancer team before starting to exercise.

WALKING

Patients can walk outdoors on flat ground (tracking how much they walk with a pedometer) or on a treadmill. A pulse oximeter, which measures blood oxygen saturation and estimates heart rate, can allow patients to gauge how much more they can exercise.

"(Patients) can probably think about working in a level of intensity that's maybe 20% above their baseline heart rate," Shofer said. "If their normal heart rate is in the 80s or 90s, and they're exercising up to the 110s or 120s, that's a reasonable level of exercise for people to start with."

Blackwell added, "I tell patients to start out slow so they don't get overwhelmed and they don't quit. ... I do not want them to get discouraged and stop exercising."

RESISTANCE BANDS

These elastic bands, which come in different levels of resistance, can be used to do arm curls, leg lifts and other exercises.

"Start with (a band) that allows you to complete eight to 10 repetitions of a particular exercise, and aim for three sets of eight to 10 repetitions," Shofer said. "Increase band resistance as you become more accustomed to the exercise."

CHAIR EXERCISES

Patients can work on movements from sitting to standing, which allows them to move in a controlled manner.

"(For a patient who is) early post-op, (if they) want to start moving a little bit but (they're) not quite ready to get into a (rehabilitation) program, things we often do are things like sit to stand (exercises), working from the chair," Shofer said.

BREATHING EXERCISES

An incentive spirometer is often given to patients at the hospital, which can be taken home for further use.

"It has a volume measurement … (that shows) how big the breath is on inhalation," Shofer explained. "(Patients) can continue to work on getting (the volume) higher and higher to a defined target level."

ADVICE

- Stay adherent to respiratory medications to help clear secretions, open airways and lead to more effective breathing.
- Patients may be pushing themselves too hard if they feel lightheaded, sweaty or clammy, or if they feel like they can't catch their breath. If a patient experiences these feelings, find a place to sit and rest until these symptoms resolve. If they don't go away after several minutes, consult with a doctor or get emergency attention before restarting an exercise program.

FOR EVERY PERSON. ON EVERY FRONT. EVERY DAY.

Lung cancer does not discriminate, and access to quality healthcare shouldn't either. From the realization of risk to the moment of diagnosis, from finding care to staying informed and building your resources, we relentlessly advocate for all people at risk and living with lung cancer to confront the disease.

As your friends, your guides, your teachers, your advocates, and your support system, GO2 is your go-to. Not just because it's Lung Cancer Awareness month—we do this every month, every day, for everyone.

Confronting lung cancer starts here.

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Helpline: 1.800.298.2436

Targeting the Typos

FOR PATIENTS WITH RARE GENETIC MUTATIONS

New treatments may stall lung cancer progression in patients with EGFR exon 20 insertion mutations.

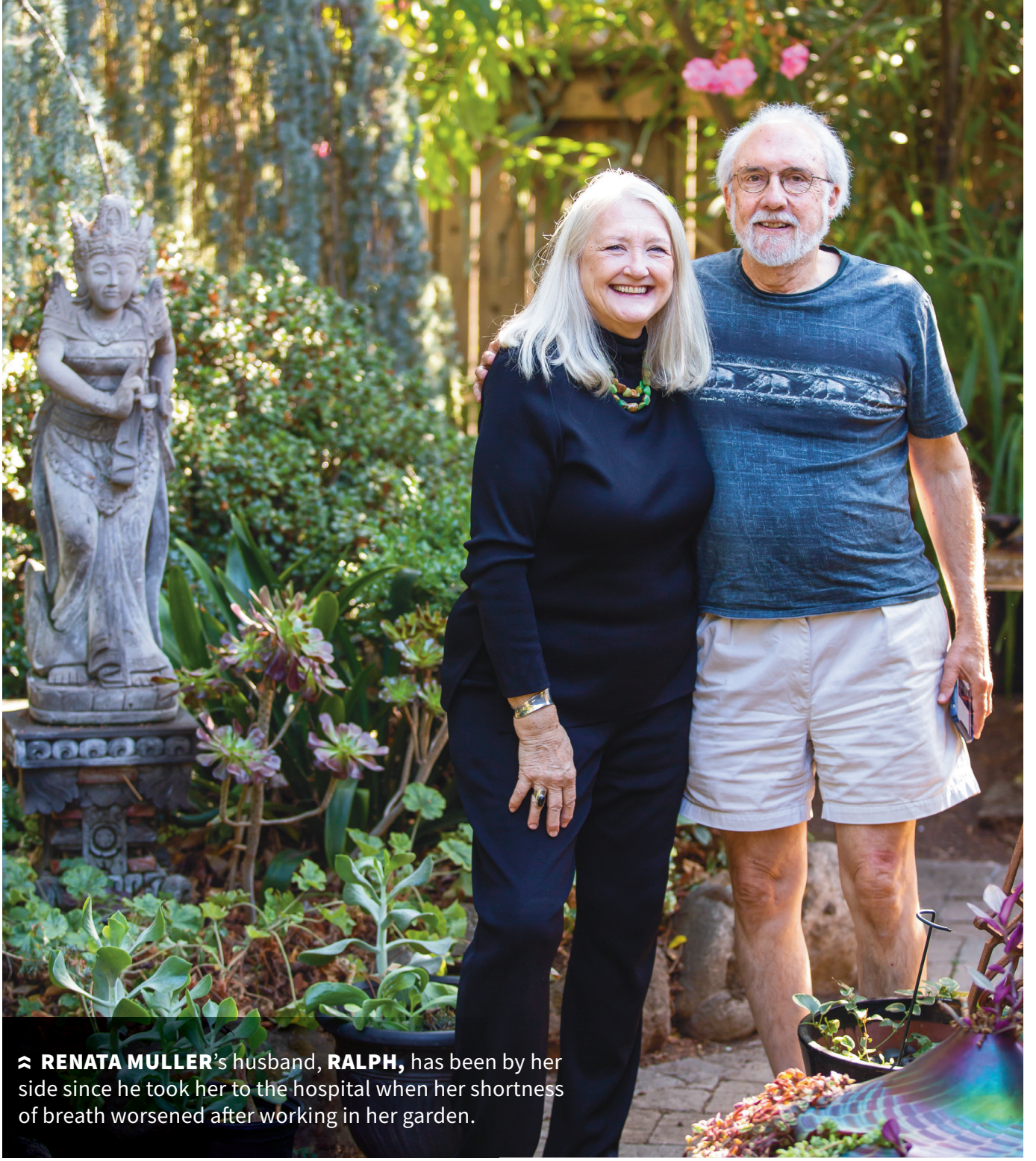
By AMY PATUREL, M.S., M.P.H.

After spending a warm spring day in 2022 pulling weeds and planting perennials, Renata Muller, 66, tucked herself into bed and noticed that she was short of breath. When she woke up the next morning, she felt pressure in her chest.

"I figured I overdid it with the garden work," she says. But her symptoms didn't subside. They got worse. As the day went on, she felt overwhelmingly tired, was unable to go up the stairs without becoming winded and began struggling to breathe. Concerned, her husband, Ralph, took her to the emergency room that evening.

"After 11 hours of waiting and tests, the doctor told me I had a buildup of fluid in the space around my heart and I needed immediate surgery," Muller recalls. Four days later, she learned she had stage 4 lung cancer. »

RACHEL CAPIL



» **RENATA MULLER**'s husband, **RALPH,** has been by her side since he took her to the hospital when her shortness of breath worsened after working in her garden.

RACHEL CAPIL

Lung cancer is the leading cause of cancer death worldwide, and non-small cell lung cancer (NSCLC) accounts for 85% of those deaths. In recent years, immunotherapy drugs have dramatically extended the lives of patients with advanced lung cancer, so Muller's oncologist was optimistic. He ordered comprehensive genetic testing called next-generation sequencing (NGS). With this kind of sequencing, doctors can detect 4 million variants, some of which can be targeted with treatment.

"My doctor wanted to put me on an immunotherapy drug called Keytruda (pembrolizumab) right away, even before the (next-generation sequencing) results came back, followed by several cycles of two chemotherapy drugs," she says.

But when Muller realized that starting the treatment regimen would prevent her from participating in a clinical trial, she transferred her care to Stanford. By then, she had the NGS results, which indicated that her cancer was driven by a rare mutation called epidermal growth factor receptor (EGFR) exon 20 insertion, which is often described as an "undruggable" target in the lung cancer world. For the 1% to 2% of patients with NSCLC who have these mutations, immunotherapy agents offer limited benefit and can even cause additional harm.

Muller's decision to transfer care opened the door for her to participate in a clinical trial investigating an agent that specifically targets EGFR exon 20 insertion mutations: Exkivity (mobocertinib), a small-molecule kinase inhibitor approved by the Food and Drug Administration (FDA) in November 2021. Six months earlier, the agency had approved another drug targeting the same mutations, a bispecific antibody called Rybrevant (amivantamab).

"For the first time, we have options that target these rare genetic mutations, and that's a game changer for patients," says Dr. Estelamari Rodriguez, a thoracic oncologist and clinical research lead of the Thoracic Site Disease Group at Sylvester Comprehensive Cancer Center at the University of Miami. "In the past, after patients failed chemotherapy, we didn't have much to offer. … Now we have these new targeted therapies that are currently used for what doctors call 'salvage therapy,' after patients don't respond to chemotherapy."

The drugs are the first FDA-approved treatments to specifically target EGFR exon 20 insertion mutations, but several more are in the pipeline, and they may buy patients more time so that science can effectively catch up to them.

EGFR MUTATIONS EXPLAINED

EGFR is a protein in cells known as a growth factor receptor, which helps them grow. Some mutations in the EGFR gene can activate the receptor and lead to uncontrolled cell growth, thus leading to or accelerating cancer. With NGS, doctors can uncover the changes in the DNA that might be fueling (driving) cancer. In NSCLC, EGFR mutations are one of those oncogenic drivers.

Think of DNA as an instruction manual. If there's a typo in the manual, cells receive incomplete or incorrect instructions and may become cancerous. Doctors look for those typos to determine whether a patient is a candidate for therapies that target them specifically. Besides misspelled words (point mutations), there may be other mistakes, like missing words (deletions) and added words (insertions). EGFR mutations include all three.

Mutations in exon 19 and exon 21, which are often referred to as "classical" EGFR mutations, account for about 85% of EGFR mutations in NSCLC. Doctors treat them with drugs called tyrosine kinase inhibitors, which block the action of enzymes that preferentially signal cancer cells to divide and grow. Up to 80% of patients with classical EGFR mutations respond to tyrosine kinase inhibitors, which can keep the cancer at bay for an average of 19 months — and much longer for a subset of patients.

"Unfortunately, the treatments we use for classical EGFR mutations aren't effective in patients with EGFR exon 20 insertions," says Dr. John V. Heymach, chair of thoracic/head and neck medical oncology at The University of Texas MD Anderson Cancer Center in Houston. The additional insertions in these mutations cause defects in the drug-binding pocket, reducing sensitivity to tyrosine kinase inhibitors.

That's why it's important for patients with lung cancer to characterize their disease before beginning treatment. For NGS, doctors place tumor tissue in a machine that can rapidly sequence the tumor's DNA and identify a large number of biomarkers all at once. If patients can't undergo a traditional biopsy for NGS, doctors may use a liquid biopsy to search for the biomarkers by analyzing tumor DNA in the bloodstream.

"PCR (polymerase chain reaction) testing is not sufficient to pick up certain mutations, including EGFR exon 20 insertion mutations," Rodriguez says. "So it's extremely important for patients to get NGS or a liquid biopsy upfront, so they can take advantage of new treatments that can extend their lives."

Experts say that NGS should be standard of care following a diagnosis for all patients with lung cancer because treatments vary depending on the mutations they have. According to some estimates, however, only half of patients know this critical information when they begin treatment.

NOVEL TREATMENT OPTIONS

Many patients with EGFR exon 20 insertion mutations have never smoked, so they're not flagged for lung cancer screening. By the time they develop symptoms, they have advanced disease and surgery is no longer an option. And radiation won't work because the cancer has spread throughout the body and there are too many targets to treat. That leaves two options: cutting off the fuel that is driving the cancer and/or killing the cancer cells.

Doctors typically start with traditional platinum-based chemotherapy, but in patients with EGFR exon 20 insertion mutations, chemotherapy shrinks tumors by only 20% to 25%, which may provide patients six months on average, according to Heymach. Now, however, doctors have two additional treatments.

RYBREVANT

Delivered by infusion every two weeks, Rybrevant targets both EGFR and an oncogene called MET. Instead of disabling the ATP-binding kinase activity of EGFR, as tyrosine kinase inhibitors do, the antibodies in Rybrevant go after the EGFR protein on the cell surface to disable the receptor and allow the body's natural killer cells to attack the cancer. Studies show a response rate of up to 40% with Rybrevant, and a median progression-free survival (the length of time during and after treatment when a patient with cancer lives without disease worsening) of seven months.

Approximately 65% of patients have »

ASHLEY STACK

an infusion reaction, which may include becoming flushed, feverish and short of breath, so the first infusion is often delivered very slowly, says Dr. Jyoti D. Patel, medical director of thoracic oncology and assistant director for clinical research at the Lurie Cancer Center of Northwestern University in Chicago. Most patients have a reaction only to the first or second infusion. Other side effects include rash (86%), paronychia, an infection of the nail bed (45%), and diarrhea (12%).

EXKIVITY

Exkivity is active against both EGFR and human epidermal growth factor receptor 2 (HER2). A capsule taken orally, Exkivity is specially designed to accommodate the narrow binding pocket of the EGFR exon 20 insertion mutation.

"It attaches to the internal part of the EGFR receptor, interrupting signaling from the receptor downstream," says Dr. Lyudmila A. Bazhenova, a medical oncologist at Moores Cancer Center, University of California, San Diego.

The response rate with Exkivity hovers around 28%, and the median progression-free survival is seven months. Its side effects are similar to Rybrevant's but more pervasive, with up to 82% of patients experiencing diarrhea, 46% rash and 39% nausea and vomiting.

There hasn't been a head-to-head study comparing the safety and efficacy of these drugs, so doctors aren't sure which works best. But they know that both eventually stop working.

"Patients can develop secondary mutations that prevent the medications from binding appropriately, or the cancer becomes more resistant and learns to bypass EGFR," Heymach says.

Without a clear advantage, patients typically decide whether they want to start with an oral medication or an infusion. Because they have different mechanisms of action, doctors usually sequence the drugs, starting with one and then turning to the other when the disease progresses.

"Unfortunately, neither of these drugs show(s) significant activity in the brain or spinal cord, and most patients with EGFR mutations suffer from metastases to the brain," says Patel. "So there's a huge need for new drugs that can penetrate the central nervous system, and some of the drugs under development are being designed specifically for that purpose."

In the meantime, patients like Muller whose have brain metastases are affected turn to Gamma Knife radiation treatments that deliver multiple radiation beams simultaneously to kill cancer cells while sparing healthy tissue.

"To ensure the rays are focused on the tumors, they stretch a mask over your head and face, making you look

like a superhero," says Muller, who has had two Gamma Knife procedures, each in under an hour.

Once her brain lesions were addressed, she started on Exkivity and has been taking the drug ever since. "As long as I'm able to tolerate the medication, and it's keeping the cancer at bay, I'll stay on it," she says.

SEQUENCING TREATMENT

On Feb. 15, 2021, Jeff Battles, 53, felt odd chest pains. They became so intense that he went to the emergency room at 2 a.m., during a blizzard. A computed tomography scan revealed large tumors in his chest and throughout his rib cage. Battles had stage 4 lung cancer.

A local oncologist ordered NGS genetic testing on his tumor, and while Battles awaited the results, he did two cycles of chemotherapy. "A few weeks later, when testing showed I had the EGFR exon 20 insertion mutation, we started looking into clinical trials," says Battles, who owns a medical device manufacturing company in Meadville, Pennsylvania.

The trial, ZENITH20, at Cleveland Clinic was designed to assess the efficacy and safety of poziotinib.

"I took an 8-milligram pill daily, and it stalled disease progression for about seven months," says Battles. "But when the cancer began growing and spreading again, my doctors put me on (Rybrevant) infusions."

As he had with poziotinib, Battles experienced a noticeable reduction in tumor size during the first month, but after seven months on Rybrevant, the effects leveled off. When his disease began progressing again, Battles did two more rounds of chemotherapy.

"We've used most of the tools in the toolbox at Cleveland Clinic, so now we're investigating other trials and treatments," he says.

Unfortunately, Battles' experience is common among patients with EGFR exon 20 insertion mutations. Targeted treatments like Rybrevant and Exkivity can control the cancer for months or even years, depending on the patient and the drug, but they will not cure it.

NEW HORIZONS

The hallmark of cancers driven by EGFR exon 20 insertion mutations is "acquired resistance," meaning that they learn to outsmart treatments. When resistance is acquired, doctors often repeat biopsies and order biomarker testing to identify new mutations they can target with different therapies — and for the first time, patients with these rare mutations have options.

"This is the beginning of the story," Rodriguez says. "It's our first attempt at getting at this mutation for patients who had previously been bundled into the EGFR category. But since we're getting a response from targeted treatment after patients (progress on) chemotherapy, we know these are effective agents." »

JEFF BATTLES' disease was responding to targeted treatments for seven months until it started to progress, which is a common occurrence in patients with this genetic mutation.

Now that scientists have established EGFR exon 20 insertion mutations as a targetable mutation, the next step is learning how to improve response rates with currently approved drugs. That starts with understanding the different drug responses within EGFR exon 20 insertion mutations. For instance, emerging research suggests that the insertion location within EGFR mutations affects how patients respond to treatment. The more scientists learn about these responses, the better equipped they'll be to target them.

The good news is that the pace of research is rapid. Several drugs that target EGFR exon 20 insertion mutations are under development, and a few are already available. And, unlike other drugs, these treatments can work quickly, with patients responding systemically within six weeks in some cases.

Previously, overall survival of only two to three years was probable. But patients on Exkivity and Rybrevant are living much longer.

"And there's a host of other new drugs coming down the pipeline," Heymach says. "The exciting thing is, it's very likely there's going to be multiple options for these patients in the future."

In the meantime, the goal for these patients is to stay one step ahead of the cancer by using Rybrevant and Exkivity as a bridge to the next best therapy.

"When I was diagnosed … I didn't anticipate I'd be doing this well several months later," Renata says. "My blond hair is more gray these days, and I don't have the high energy I used to, but I'm able to do most of my usual activities, including gardening." Next up: a trip to Indonesia with her husband. "I'd like to go scuba diving," she says.

LEARN MORE ONLINE
SCAN THE QR CODE to hear more about Jeff Battles' cancer journey.

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What is RYBREVANT® (amivantamab-vmjw)?

RYBREVANT® is a prescription medicine used to treat adults with non-small cell lung cancer (NSCLC) that:

- has spread to other parts of the body (metastatic) or cannot be removed by surgery, **and**
- has a certain abnormal epidermal growth factor receptor "EGFR" gene(s) **and**
- whose disease has worsened while on or after chemotherapy that contains platinum.

Your healthcare provider will perform a test to make sure that RYBREVANT® is right for you.

It is not known if RYBREVANT® is safe and effective in children.

RYBREVANT® is approved based on medical studies that measured how many patients responded to treatment. There are ongoing studies to confirm the continued approval of RYBREVANT®.

IMPORTANT SAFETY INFORMATION

Before you receive RYBREVANT®, tell your healthcare provider about all of your medical conditions, including if you:

- have a history of lung or breathing problems
- are pregnant or plan to become pregnant. RYBREVANT® can harm your unborn baby.

  Females who are able to become pregnant:
  - Your healthcare provider should do a pregnancy test before you start treatment with RYBREVANT®.
  - You should use effective birth control (contraception) during treatment and for 3 months after your final dose of RYBREVANT®.
  - Tell your healthcare provider right away if you become pregnant or think you might be pregnant during treatment with RYBREVANT®.
- are breastfeeding or plan to breastfeed. It is not known if RYBREVANT® passes into your breast milk. Do not breastfeed during treatment and for 3 months after your final dose of RYBREVANT®.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

How will I receive RYBREVANT®?

- RYBREVANT® will be given to you by your healthcare provider by intravenous infusion into your vein.
- Your healthcare provider will decide the time between doses as well as how many treatments you will receive.
- Your healthcare provider will give you medicines before each dose of RYBREVANT® to help reduce the risk of infusion-related reactions.
- If you miss any appointments, call your healthcare provider as soon as possible to reschedule your appointment.

What should I avoid while receiving RYBREVANT®?

RYBREVANT® can cause skin reactions. You should limit your time in the sun during and for 2 months after your treatment with RYBREVANT®. Wear protective clothing and use sunscreen during treatment with RYBREVANT®.

What are the possible side effects of RYBREVANT®?

RYBREVANT® may cause serious side effects, including:

- **infusion-related reactions.** Infusion-related reactions are common with RYBREVANT® and can be severe or serious.

RYBREVANT® is the only targeted antibody treatment approved specifically for mNSCLC with *EGFR* exon 20 insertion mutations after chemotherapy that contains platinum

In a clinical trial, RYBREVANT® (amivantamab-vmjw) was studied in 81 people* who had mNSCLC with *EGFR* exon 20 insertion mutations whose disease had worsened while on or after chemotherapy that contains platinum

- 40% of people treated with RYBREVANT® after chemotherapy that contains platinum saw their tumors disappear† (3.7%) or get smaller (36%)

RYBREVANT® can cause serious side effects, including infusion-related reactions, lung problems, skin problems, and eye problems.

See Important Safety Information below and Patient Information on the following page.

*Most people in the trial were women (59%) and over half never smoked (53%). The main goal of the trial was to measure the number of people who responded to RYBREVANT® overall.

†The disappearance of all signs of cancer in response to treatment does not always mean the cancer has been cured.

Talk to your doctor to find out if RYBREVANT® is an option for you

RybrevantAndMe.com

EGFR, epidermal growth factor receptor; mNSCLC, metastatic non-small cell lung cancer.

Tell your healthcare provider right away if you get any of the following symptoms during your infusion of RYBREVANT®:

- shortness of breath
- fever
- chills
- nausea
- flushing
- chest discomfort
- lightheadedness
- vomiting

- **lung problems.** RYBREVANT® may cause lung problems that may lead to death. Symptoms may be similar to those symptoms from lung cancer. Tell your healthcare provider right away if you get any new or worsening lung symptoms, including shortness of breath, cough, or fever.
- **skin problems.** RYBREVANT® may cause rash, itching, and dry skin. You may use alcohol-free moisturizing cream for dry skin. Tell your healthcare provider right away if you get any skin reactions. Your healthcare provider may treat you with a medicine(s) or send you to see a skin specialist (dermatologist) if you get skin reactions during treatment with RYBREVANT®. See "What should I avoid while receiving RYBREVANT®?"
- **eye problems.** RYBREVANT® may cause eye problems. Tell your healthcare provider right away if you get symptoms of eye problems which may include:
  - eye pain
  - dry eyes
  - eye redness
  - blurred vision
  - changes in vision
  - itchy eyes
  - excessive tearing
  - sensitivity to light

Your healthcare provider may send you to see an eye specialist (ophthalmologist) if you get eye problems during treatment with RYBREVANT®. You should not use contact lenses until your eye symptoms are checked by a healthcare provider.

The most common side effects of RYBREVANT® include:

- rash
- infusion-related reactions
- infected skin around the nail
- muscle and joint pain
- shortness of breath
- nausea
- feeling very tired
- swelling of hands, ankles, feet, face, or all of your body
- sores in the mouth
- cough
- constipation
- vomiting
- changes in certain blood tests

Your healthcare provider may temporarily stop, decrease your dose or completely stop your treatment with RYBREVANT® if you have serious side effects.

These are not all of the possible side effects of RYBREVANT®.

Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

General information about safe and effective use of RYBREVANT®

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. You can ask your healthcare provider or pharmacist for information about RYBREVANT® that is written for health professionals.

Please read the Patient Information on the next page and discuss with your doctor.

cp-213277v2

RYBREVANT® (amivantamab-vmjw)
Injection for IV Use | 350 mg/7 mL (50 mg/mL)

Janssen Oncology
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PATIENT INFORMATION
RYBREVANT (RYE–breh–vant)
(amivantamab-vmjw)
Injection, for intravenous use

What is RYBREVANT?
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What should I avoid while receiving RYBREVANT?
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What are the possible side effects of RYBREVANT?
RYBREVANT may cause serious side effects, including:
- **infusion-related reactions.** Infusion-related reactions are common with RYBREVANT and can be severe or serious. Tell your healthcare provider right away if you get any of the following symptoms during your infusion of RYBREVANT:
  - shortness of breath
  - fever
  - chills
  - nausea
  - flushing
  - chest discomfort
  - lightheadedness
  - vomiting
- **lung problems.** RYBREVANT may cause lung problems that may lead to death. Symptoms may be similar to those symptoms from lung cancer. Tell your healthcare provider right away if you get any new or worsening lung symptoms, including shortness of breath, cough, or fever.

What are the possible side effects of RYBREVANT? (continued)

RYBREVANT may cause serious side effects, including:

- **skin problems.** RYBREVANT may cause rash, itching, and dry skin. You may use alcohol-free moisturizing cream for dry skin. Tell your healthcare provider right away if you get any skin reactions. Your healthcare provider may treat you with a medicine(s) or send you to see a skin specialist (dermatologist) if you get skin reactions during treatment with RYBREVANT. See "What should I avoid while receiving RYBREVANT?"
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  - dry eyes
  - eye redness
  - blurred vision
  - changes in vision
  - itchy eyes
  - excessive tearing
  - sensitivity to light

  Your healthcare provider may send you to see an eye specialist (ophthalmologist) if you get eye problems during treatment with RYBREVANT. You should not use contact lenses until your eye symptoms are checked by a healthcare provider.

The most common side effects of RYBREVANT include:

- rash
- infusion-related reactions
- infected skin around the nail
- muscle and joint pain
- shortness of breath
- nausea
- feeling very tired
- swelling of hands, ankles, feet, face, or all of your body
- sores in the mouth
- cough
- constipation
- vomiting
- changes in certain blood tests

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What are the ingredients of RYBREVANT?

Active ingredient: amivantamab-vmjw

Inactive ingredients: EDTA disodium salt dihydrate, L-histidine, L-histidine hydrochloride monohydrate, L-methionine, polysorbate 80, sucrose, and water for injection.

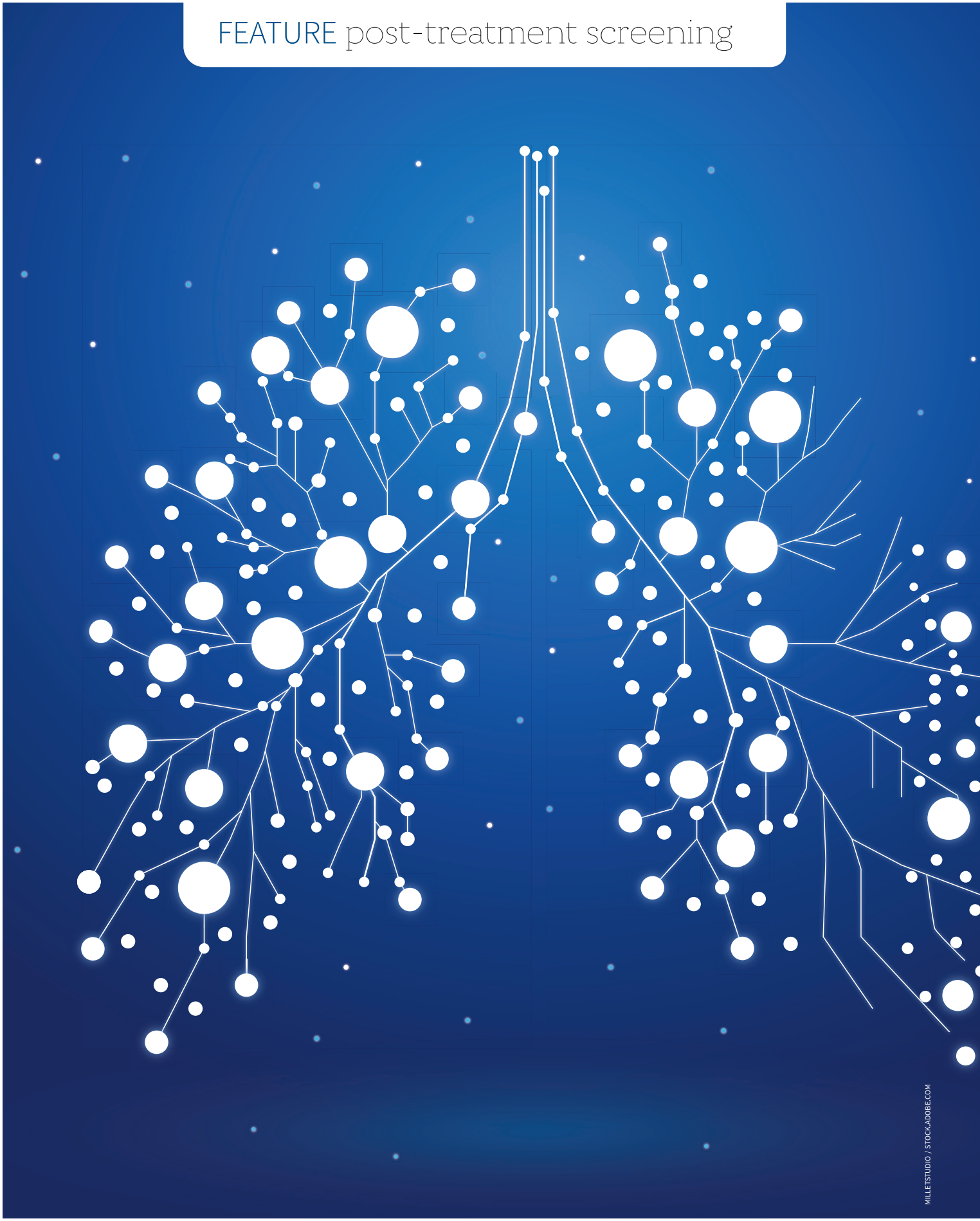
Product of Ireland

Manufactured by: Janssen Biotech, Inc., Horsham, PA 19044.

U.S. License Number 1864

For more information, call Janssen Products, LP at 1-800-526-7736 (1-800-JANSSEN) or go to www.RYBREVANT.com.

This Patient Information has been approved by the U.S. Food and Drug Administration. Issued: 05/2021



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LUNG CANCER *ON THE MOVE*

Tumors can spread from one lung to the other and beyond. How are possible metastases diagnosed in early stages?

By KATHERINE MALMO

In 2002, 53-year-old David Sturges made an appointment with a cardiologist to screen for heart disease, which ran in his family. He underwent electron beam computed tomography (CT) to check calcification in the arteries, an indicator of the disease.

Although significant calcium buildup was not detected, he saw something else in the results.

"It was literally a note that said, 'We noticed this mass … on the lower lobe of the right lung,'" Sturges, now 75, recalls. "If it's being followed (by a physician), good, keep following it. If not, we suggest the patient go in for further follow-up,' which I did."

Sturges' biopsy was performed in February 2002 and showed that he had stage 1a non-small cell lung cancer. He underwent a lobectomy to remove the lower lobe of his right lung and continued with follow-up exams and scans, per his oncologist's instructions, for a year after diagnosis, when another suspicious nodule was detected. »

Some eight months later, his then-surgeon recommended the tumor be removed. Unfortunately, the night before surgery, Sturges had a heart attack, and the procedure was not performed. He ended up seeing another oncologist, this time at UCLA, who did not recommend surgery. Monitoring continued until late 2016, when imaging showed that the tumor had grown. Surgery was once again on the table and was finally performed in August 2017 at Mayo Clinic in Rochester, Minnesota.

The follow-up schedule that Sturges' oncologists suggested, which included CT scans and blood tests, allowed them to monitor not only tumor growth, but also cancer recurrence.

THE FACTS ABOUT LUNG CANCER

There are two main types of lung cancer: non-small cell lung cancer (NSCLC), which constitutes some 85% of cases, and small cell lung cancer (SCLC), which accounts for the other 15%. According to Dr. Malcolm DeCamp, chair of the Division of Cardiothoracic Surgery at the University of Wisconsin School of Medicine and Public Health in Madison, SCLC usually grows and spreads more quickly and is often treated with chemotherapy and radiation because tumors are too large or widespread for surgical removal.

"Non-small cell lung cancers are broken down into stages 1, 2, 3 and 4," DeCamp says. "If it's under 5 centimeters without lymph nodes involved, it's stage 1 and treated primarily with surgery, assuming the patient is fit enough. Stage 2 disease is typically treated with surgery plus chemotherapy, as lymph nodes within the lung near the tumor are now involved. Stage 3 disease is locally advanced and requires chemotherapy plus radiation or plus surgery, or maybe all three. Then stage 4 is metastatic disease that has spread outside the chest. This stage is rarely, if ever, cured and treated primarily with chemotherapy, (targeted therapy or immunotherapy) to extend survival."

Catching a tumor in the early stages, when it can be removed, is optimal since it is potentially curable. Because Sturges' cancer was diagnosed at stage 1a, he only underwent surgery and needed no further intervention, although afterward he learned that a different treatment plan may have been more beneficial.

"It was probably two or three years after my initial surgery when (doctors) said they were finding that adjuvant therapy in combination with surgery probably gave a better outcome for people in my situation," he says.

LIFE AFTER TREATMENT

As with many other cancers, the fear of recurrence can linger long after treatment is over. But how likely is lung

J. ANNE DESIGNS PHOTOGRAPHY

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STURGES started advocacy work with the founding of a nonprofit organization, which focuses on raising money for lung cancer research.

> I've been very active in terms of sounding the alarm on the need for research and money to support research.
>
> —*STURGES*

cancer to come back, and how can doctors monitor it?

Dr. Xiuning Le, assistant professor of thoracic/head and neck medical oncology at The University of Texas MD Anderson Cancer Center in Houston, explains that the disease typically does not return for most patients with stage 1 non-small cell lung cancer. The five-year survival rate for patients with stage 2 disease is 40% to 60%, which decreases to 15% to 35% in patients with stage 3 disease.

According to the American Cancer Society, most doctors recommend that patients who no longer show evidence of disease come in for follow-up, which may include CT scans and blood tests, every three months during the first two years, every six months for the next three years, and at least once annually after five years.

Dr. Dennis Wigle, clinician scientist and chair of thoracic surgery at Mayo Clinic in Rochester, puts it this way: "With the higher stages and potentially higher recurrence rates, we want to look more frequently right after someone's finished … treatment so that we can detect recurrences as early as possible."

Screening with low-dose CT scans is also done to detect new cancers, not recurrences, which are more common in current and ex-smokers (for about five to 10 years, then the risk decreases). But new cancers are more curable than recurrences, which are rarely curable.

SCLC is altogether different.

"Small cell lung cancer has a reputation of early metastasis and early recurrence," Le says. "It often spreads to the brain." The five-year survival rate is 29% if the cancer is localized, 18% if it has spread in the chest and 3% if it has spread beyond the chest.

THE POTENTIAL OF RECURRENCE

"We don't have a good way to predict where the cancer is going to recur," Le says. "It can recur at the same location, spread to the other side of the lung or spread to other organs like the liver, adrenal glands and colon. Most thoracic oncologists do a CT scan that includes the lungs but also the upper part of the abdomen because these are the high-risk locations for metastasis."

Additionally, Le notes that oncologists say they don't know exactly why NSCLC is more likely to spread to certain organs than others, but some experts hypothesize that it is because these locations are rich in blood circulation. »

Screening and the Unexpected

IN 2021, CHRIS HEBERT went to a cardiologist to find out why he had been feeling short of breath. He had lived with polycythemia vera, a type of blood cancer, for 16 years and knew that he was at increased risk for blood clots in the lungs. Blood work revealed that his D-dimer — a protein that indicates a clot may be present — was elevated, so he was referred for a CT scan and then a bronchoscope. Hebert received a diagnosis of stage 3 lung cancer on his 46th birthday, in November 2021.

"A lot of times, people with polycythemia vera will actually eventually end up with one form of leukemia, chronic myeloid leukemia," Hebert says. "In my case, (doctors) could never find … JAK2 and different genetic markers, which basically say, hey, this person is more likely to possibly end up with leukemia. Instead, I got lung cancer. It's a whole different arena."

Hebert began treatment with chemotherapy, but his tumors didn't shrink, so radiation was added. He then underwent biomarker testing, which showed that he had the KRAS G12C mutation, for which a number of treatments are being studied. "It's the area with the most clinical development right now," he says.

Hebert is currently receiving treatment with adagrasib (MRTX849) as part of a clinical trial at The University of Texas MD Anderson Cancer Center in Houston. Screening every six weeks has shown positive effects on his cancer cells and lymph nodes.

He hopes that both consistent screening and effective therapies for lung cancer will allow him and others to lead a full life.

"This doesn't last a week," he says. "You're dealing with a chronic health condition that will last for the rest of your life. You just hope that you can get some time in between where you're able to sit back, enjoy life and not have to worry about when the next game is."

If a patient has a recurrence, Le takes a multidisciplinary approach.

"We start by evaluating the pattern of recurrence," she says. "If the cancer comes back in one location, we may be able to offer local treatment, but if it comes back in multiple locations, there is still a role for aggressive treatment. In that case, we need to consult with medical oncology, surgery and radiation oncologists."

After Sturges' heart attack, his doctor recommended he have CT scans every three months and then yearly until late 2016, when the scan showed his tumor had grown. In August 2017, he underwent a wedge resection in the upper lobe of his right lung and has been disease-free ever since.

EFFECTIVE SCREENING METHODS

So how do physicians catch lung cancer in the beginning or in the early stage of a recurrence?

DeCamp says that people at high risk should be on the lookout for voice changes or a cough that doesn't go away or worsens. However, by the time symptoms appear, the disease may already be advanced. So the

COLLIN RICHIE

best way of detecting early-stage tumors is with CT scans. This is primarily considered in individuals at high risk due to smoking history.

Wigle agrees and points to the National Lung Screening Trial, in which 53,454 patients who were current or former smokers were assigned to undergo regular CT scans or chest X-rays. Investigators found more lung cancers in the CT group, and those patients had better survival outcomes.

"Increasing the buy-in to screening, at least in the at-risk population, is the lowest-hanging fruit and is the easiest way to improve survival," DeCamp says. "The next lowest-hanging fruit is preventing people from smoking and getting people who smoke to quit. Then it's going to be getting a better understanding of that group that gets cancer despite not smoking."

The U.S. Preventive Services Task Force recommends annual screening for adults aged 50 to 80 years who have a 20 pack-year smoking history.

Wigle says that much of his job entails determining the risk level for each patient's lung mass. "The frequency of having any kind of nodule is relatively high," he says. "I always tell patients if we randomly did 100 scans in people at risk for lung cancer, 25 would have some kind of lung nodule that would require more investigation, but (fewer) than one of those would actually have a lung cancer."

LOOKING TO THE FUTURE

Currently, there is no approved screening test for nonsmokers, but some interesting plans are in the works.

"Dogs have an incredible sense of smell," DeCamp says. "Some can actually smell … cancer (if they are trained to do so). We're trying to understand what those neural pathways are in the canine. Then we can create a device that a patient can breathe into that can detect some of the byproducts of cancer metabolism to use as a screening test."

DeCamp also says that because the entire respiratory tract can be at risk for lung cancer, it may be possible to develop a test that looks for a particular structure of cells swabbed from the nose or mouth that will show whether an individual is predisposed to it.

And there are a number of companies looking for molecular markers present in the blood of patients with cancer that disappear when the tumor is removed. If found, such biomarkers could be used to screen for lung cancer and test for recurrence.

Wigle suggests that this type of blood test could be used in combination with standard screening. "It might even take over as the screening protocol, meaning you wouldn't get a CT scan until you had a positive result on some kind of blood test."

NONSMOKING-RELATED LUNG CANCER

Sturges had smoked for about 17 years but had stopped 15 or 20 years before his diagnosis.

"There's … an attitude that there's nothing you can do for those patients," DeCamp says. "That's wrong. There's something to do for almost all of them. And then there's the stigma. 'Oh, they did it to themselves; they smoked, right?' Well, a growing population of lung cancer patients have never smoked. So we need to change the face of lung cancer. Our society views a woman with breast cancer as a victim. But people don't often look at lung cancer patients as victims."

According to DeCamp, of the 200,000 people in the U.S. who develop lung cancer every year, about 15% (30,000 patients) do so without having any known cancer risk. Two-thirds of those 30,000 are women, but it is not known why.

But is the number of nonsmokers with cancer growing, or is the number of smokers who are diagnosed with lung cancer decreasing?

"The epidemiology is changing over time," Le says. "Smoking overall has declined in (the) U.S. … in the last decade. We definitely see more nonsmoker lung cancer patients, but I don't think this number is growing. They are proportionally more of the patients we see in the clinic."

PAYING IT FORWARD

According to Wigle, lung cancers are the deadliest cancer in America and lead to more deaths annually than many other cancers combined. Nevertheless, research in the field suffers from low funding from the National Institutes of Health and other government agencies.

After undergoing two surgeries and witnessing the benefits of screening for himself, in 2009 Sturges and two others set up the Lung Cancer Foundation of America. This nonprofit organization raises money for research into innovative treatment modalities that may one day lead to a cure.

"I've been very active in terms of sounding the alarm on the need for research and money to support research," Sturges says. "We started our foundation because we were concerned that we weren't getting … a fair share from the National Cancer Institute and others, not enough money, not enough focus. … And we need the money for research, and hopefully we can find a cure or at least as many treatment options as other cancers, so we can live and go forward."

SCAN THE QR CODE to hear more about the work David Sturges does with the Lung Cancer Foundation of America.

The potential to celebrate more of life's everyday moments.

Living longer could start with LIBTAYO.

LIBTAYO will not work for everyone.

Patient portrayal.

What is LIBTAYO?

LIBTAYO (Lib-TIE-oh) is a prescription medicine used to treat people with a type of lung cancer called non–small cell lung cancer (NSCLC). LIBTAYO may be used as your first treatment when your lung cancer has not spread outside your chest (locally advanced lung cancer) and you cannot have surgery or chemotherapy with radiation, OR your lung cancer has spread to other areas of your body (metastatic lung cancer), and your tumor tests positive for high "PD-L1," and your tumor does not have an abnormal "EGFR," "ALK," or "ROS1" gene.

It is not known if LIBTAYO is safe and effective in children.

Important Safety Information

What is the most important information I should know about LIBTAYO?

LIBTAYO is a medicine that may treat certain cancers by working with your immune system. LIBTAYO can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.

Call or see your healthcare provider right away if you develop any new or worsening signs or symptoms, including:

- **Lung problems:** cough, shortness of breath, or chest pain
- **Intestinal problems:** diarrhea (loose stools) or more frequent bowel movements than usual, stools that are black, tarry, sticky or have blood or mucus, or severe stomach-area (abdomen) pain or tenderness
- **Liver problems:** yellowing of your skin or the whites of your eyes, severe nausea or vomiting, pain on the right side of your stomach area (abdomen), dark urine (tea colored), or bleeding or bruising more easily than normal
- **Hormone gland problems:** headache that will not go away or unusual headaches, eye sensitivity to light, eye problems, rapid heartbeat, increased sweating, extreme tiredness, weight gain or weight loss, feeling more hungry or thirsty than usual, urinating more often than usual, hair loss, feeling cold, constipation, your voice gets deeper, dizziness or fainting, or changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness
- **Kidney problems:** decrease in your amount of urine, blood in your urine, swelling of your ankles, or loss of appetite
- **Skin problems:** rash, itching, skin blistering or peeling, painful sores or ulcers in mouth or nose, throat, or genital area, fever or flu-like symptoms, or swollen lymph nodes
- **Problems can also happen in other organs and tissues. These are not all of the signs and symptoms of immune system problems that can happen with LIBTAYO. Call or see your healthcare provider right away for any new or worsening signs or symptoms, which may include:** chest pain, irregular heartbeat, shortness of breath or swelling of ankles, confusion, sleepiness, memory problems, changes in mood or behavior, stiff neck, balance problems, tingling or numbness of the arms or legs, double vision, blurry vision, sensitivity to light, eye pain, changes in eyesight, persistent or severe muscle pain or weakness, muscle cramps, low red blood cells, or bruising
- **Infusion reactions that can sometimes be severe.** Signs and symptoms of infusion reactions may include: nausea, chills or shaking, itching or rash, flushing, shortness of breath or wheezing, dizziness, feel like passing out, fever, back or neck pain, or facial swelling
- **Rejection of a transplanted organ.** Your healthcare provider should tell you what signs and symptoms you should report and monitor you, depending on the type of organ transplant that you have had
- **Complications, including graft-versus-host disease (GVHD), in people who have received a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic).** These complications can be serious and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with LIBTAYO. Your healthcare provider will monitor you for these complications

In a study,

LIBTAYO was proven to help patients with advanced NSCLC live longer versus chemotherapy

LIBTAYO® (cemiplimab-rwlc) Injection 350 mg

Median overall survival (OS)*

- At 22.1 months, half of the patients taking LIBTAYO (178 out of 356 patients) were alive versus 14.3 months for patients taking chemotherapy (177 out of 354 patients)

*Median overall survival (OS) is the time in a trial—expressed in months or years—when half of the patients are still living.

More patients were alive with LIBTAYO compared with chemotherapy

- As of March 2020, results from the trial showed that 248 out of 356 patients (70%) taking LIBTAYO were alive, compared with 213 out of 354 patients (60%) taking chemotherapy†

Individual results may vary.

†Patients were enrolled between June 27, 2017, and February 27, 2020. Patients were treated with LIBTAYO for an average of 27 weeks. The study is still ongoing, and patients will be followed up for up to 4 years.

Important Safety Information (continued)

Getting medical treatment right away may help keep these problems from becoming more serious. Your healthcare provider will check you for these problems during your treatment with LIBTAYO. Your healthcare provider may treat you with corticosteroid or hormone replacement medicines. Your healthcare provider may also need to delay or completely stop treatment with LIBTAYO if you have severe side effects.

Before you receive LIBTAYO, tell your healthcare provider about all your medical conditions, including if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have received an organ transplant
- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome
- are pregnant or plan to become pregnant. LIBTAYO can harm your unborn baby

  Females who are able to become pregnant:

  – Your healthcare provider will give you a pregnancy test before you start treatment

  – You should use an effective method of birth control during your treatment and for at least 4 months after your last dose of LIBTAYO. Talk with your healthcare provider about birth control methods that you can use during this time

  – Tell your healthcare provider right away if you become pregnant or think you may be pregnant during treatment with LIBTAYO
- are breastfeeding or plan to breastfeed. It is not known if LIBTAYO passes into your breast milk. Do not breastfeed during treatment and for at least 4 months after the last dose of LIBTAYO

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

The most common side effects of LIBTAYO include muscle or bone pain, tiredness, rash, and diarrhea. These are not all the possible side effects of LIBTAYO. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088. You may also report side effects to Regeneron Pharmaceuticals and Sanofi at 1-877-542-8296.

Please see additional Important Safety Information on the previous page and Brief Summary of full Prescribing Information on the following pages.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit fda.gov/medwatch, or call 1-800-FDA-1088.

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Explore what could be possible with LIBTAYO

Scan this QR code with your phone to learn more, or visit LIBTAYO.com/NSCLC

IMPORTANT PATIENT INFORMATION ABOUT LIBTAYO® (cemiplimab-rwlc) INJECTION

Please speak with your healthcare provider regarding LIBTAYO. Only your healthcare provider knows the specifics of your condition and how LIBTAYO may work with your overall treatment plan. If you have any questions about LIBTAYO (pronounced Lib-TIE-oh), speak with your healthcare professional. Prescription Only.

What is the most important information I should know about LIBTAYO? LIBTAYO is a medicine that may treat certain types of cancers by working with your immune system. LIBTAYO can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.

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- yellowing of your skin or the whites of your eyes
- dark urine (tea colored)
- bleeding or bruising more easily than normal
- severe nausea or vomiting
- pain on the right side of your stomach area (abdomen)

Hormone gland problems.
- headache that will not go away or unusual headaches
- urinating more often than usual
- hair loss
- eye sensitivity to light
- feeling cold
- eye problems
- constipation
- rapid heartbeat
- your voice gets deeper
- increased sweating
- dizziness or fainting
- extreme tiredness
- changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness
- weight gain or weight loss
- feeling more hungry or thirsty than usual

Kidney problems.
- decrease in your amount of urine
- swelling of your ankles
- loss of appetite
- blood in your urine

Skin problems.
- rash
- painful sores or ulcers in mouth or nose, throat, or genital area
- itching
- skin blistering or peeling
- fever or flu-like symptoms
- swollen lymph nodes

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- chest pain, irregular heartbeat, shortness of breath or swelling of ankles
- confusion, sleepiness, memory problems, changes in mood or behavior, stiff neck, balance problems, tingling or numbness of the arms or legs
- double vision, blurry vision, sensitivity to light, eye pain, changes in eyesight
- persistent or severe muscle pain or weakness, muscle cramps
- low red blood cells, bruising

Infusion reactions that can sometimes be severe. Signs and symptoms of infusion reactions may include:
- nausea
- chills or shaking
- itching or rash
- flushing
- shortness of breath or wheezing
- dizziness
- feel like passing out
- fever
- back or neck pain
- facial swelling

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- have received an organ transplant
- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barre syndrome
- are pregnant or plan to become pregnant. LIBTAYO can harm your unborn baby.

Continued on following page

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- Tell your healthcare provider right away if you become pregnant or think you may be pregnant during treatment with LIBTAYO.

• are breastfeeding or plan to breastfeed. It is not known if LIBTAYO passes into your breast milk. Do not breastfeed during treatment and for at least 4 months after the last dose of LIBTAYO.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

How will I receive LIBTAYO?
- Your healthcare provider will give you LIBTAYO into your vein through an intravenous (IV) line over 30 minutes.
- LIBTAYO is usually given every 3 weeks.
- Your healthcare provider will decide how many treatments you will need.
- Your healthcare provider will do blood tests to check you for side effects.
- If you miss any appointments, call your healthcare provider as soon as possible to reschedule your appointment.

What are the possible side effects of LIBTAYO?
LIBTAYO can cause serious side effects, including:
- **See "What is the most important information I should know about LIBTAYO?"**

The most common side effects of LIBTAYO include muscle or bone pain, tiredness, rash, and diarrhea.

These are not all the possible side effects of LIBTAYO. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

General information about the safe and effective use of LIBTAYO. Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. If you would like more information about LIBTAYO, talk with your healthcare provider. You can ask your healthcare provider for information about LIBTAYO that is written for health professionals.

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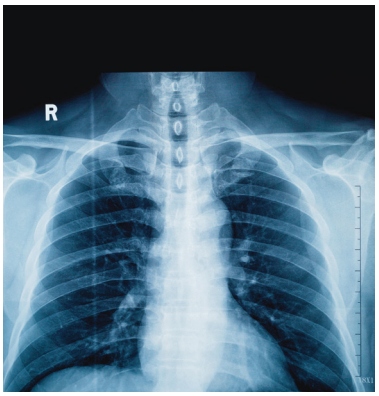
This is a brief summary of the most important information about LIBTAYO. For more information, talk with your healthcare provider, call 1-877-542-8296, or go to www.LIBTAYO.com



'Considerable Overlap' in Appearance of Chest Abnormalities May Delay Cancer Diagnoses

Patients should describe their symptoms in detail and seek early care for suspected lung cancer, especially since the disease may resemble pneumonia and bronchitis on imaging tests.

By DARLENE DOBKOWSKI, MA

ACCORDING TO THE Centers for Disease Control and Prevention, the symptoms of lung cancer can include chest pain, coughing and shortness of breath. Unfortunately, they can also be symptoms of other conditions such as pneumonia and bronchitis. Not only that, but the latter can also present as cancer on CAT scans and X-rays, thus resulting in delayed diagnoses.

"A provider's first inclination might be to think of those conditions before thinking of lung cancer," Dr. Akshu Balwan, assistant professor of pulmonary and critical care at The University of New Mexico School of Medicine in Albuquerque, told *CURE®*.

Lung cancer is often diagnosed by biopsy, but imaging tests are generally used to determine in which direction to proceed.

"For certain patients, I see the CAT scan, and (I think), this is cancer until proven otherwise," Balwan explained. "And there are other ones that we see, and (it) looks more like inflammation and pneumonia than a cancer. But there's considerable overlap in both the conditions and how they look."

THE DOMINO EFFECT OF DELAYS

Delays in the diagnosis of lung cancer can affect whether patients see the right specialist and even the treatment they receive.

"Nowadays, most cancer centers have a multidisciplinary team, and … with diagnosing lung cancer, we try to avoid those delays," Balwan noted. "Instead of seeing everybody in the pathway, we want to try to get them to the treatment as soon as we can. We discuss and we try to get them to the right physician, whether it's an oncologist, a surgeon or a radiation oncologist, in the shortest amount of time."

That's not to say that health care professionals cannot determine what lung cancer is and isn't, but their conclusions may depend on the patient's medical history, including smoking status.

"Most providers should be able to identify the chronicity of symptoms and would think about the diagnosis such as lung cancer in a patient who has smoked or has other risk factors for lung cancer," Balwan told *CURE®*. "Sometimes diagnosis can be challenging in patients who develop lung cancer despite being nonsmokers."

Most physicians are receptive to what patients think, especially if they're concerned about lung cancer and have the risk factors for it. But that doesn't mean patients are immediately biopsied. Doctors tend to start with chest imaging to spare patients from such unnecessary complications as pain, infection and blood clots.

WHAT PATIENTS SHOULD DO

Balwan recommends that patients describe their symptoms in detail and seek care early on instead of waiting to see what happens.

"(It's important to be) aware of your bodily functions and what is normal or abnormal for you to avoid any delays," he explained.

Sometimes, he added, symptom duration can help a physician diagnose a patient in a timely manner, especially if that patient received treatment for another condition but saw no improvement.

"If your symptoms persist despite treatment for the diagnosis that you received, and are in line with possible symptoms with lung cancer, you should discuss (it) with your health care provider, especially if you have risk factors for lung cancer and consider chest imaging," Balwan concluded.

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Strength in Numbers

CURE® is proud to partner with several leading advocacy groups across the country. Our shared goal is to connect patients and their caregivers to valuable resources and support to assist with navigating the cancer journey.

Scan the QR code with your mobile device to visit curetoday.com and check out our advocacy group partnerships.

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Celebrating Individuals Who Have Transformed the Space

The *CURE*® Lung Cancer Heroes program thanks those who have positively affected the lives of patients with lung cancer.

By RYAN MCDONALD

TWO ONCOLOGISTS AND A clinical research nurse, who is also a cancer survivor, were honored at *CURE*®'s third annual Lung Cancer Heroes® awards ceremony on Sept. 23.

Dr. Estelamari Rodriguez, Dr. Pierre de Delva and Alesha Arnold received their awards during the 2022 North America Conference on Lung Cancer, organized by the International Association for the Study of Lung Cancer. Support for the 2022 Lung Cancer Heroes® was provided by Takeda Oncology, Blueprint Medicines and Mirati Therapeutics.

Colleagues, patients and their relatives submitted essays detailing the noble actions of the trio and 15 others and nominating them for the accolade.

"This year, *CURE*® celebrates its 20th anniversary, and as I look back on how far we've come in the lung cancer space in 20 years, it feels like night and day," said Kristie L. Kahl, vice president of content at *CURE*® and its parent company, MJH Life Sciences®, during the event. "What once was considered a poor prognosis for all is now a disease (about which) patients and their loved ones can have hope, survivorship and quality of life, because science has rapidly advanced in recent years and care has improved tenfold."

Tackling Lung Cancer

In 2006, Chris Draft, at the time a linebacker for the Carolina Panthers,

LUNG CANCER HEROES® HONOREES

FROM LEFT: **DR. ESTELAMARI RODRIGUEZ, DR. PIERRE DE DELVA AND ALESHA ARNOLD**

PHOTOS BY LARRY REMIKER

FROM LEFT: *CURE*® Vice President of Content **KRISTIE L. KAHL; ALESHA ARNOLD; DR. PIERRE DE DELVA; DR. ESTELAMARI RODRIGUEZ;** and keynote speaker **CHRIS DRAFT.**

met Keasha Rutledge, a pharmaceutical sales executive in the prime of life. As she was preparing for a 10K race in November 2010, she began experiencing shortness of breath. A routine visit to her primary care physician led to a chest X-ray that revealed she had stage 4 lung cancer.

One year later — on Nov. 27, 2011 — Draft and Rutledge launched the nonprofit Team Draft at their wedding, with the goal of continuing to tackle lung cancer. Sadly, Rutledge died from the disease a month later, at the age of 38.

Since then, Draft, founder, president and CEO of the Chris Draft Family Foundation, has spent the past 11 years empowering families to lead a healthy lifestyle. He has also dedicated his life to developing close relationships with lung cancer survivors, their caregivers, doctors and cancer centers across the country.

During his keynote address, he stressed the importance of honoring those who have transformed the space of lung cancer and thanked *CURE*® for instituting and continuing with the program. And he encouraged everyone to take a stand against lung cancer, noting that "the positive change that we want … will happen because amazing people have decided to take a stand."

He added, "The lung cancer community for too long has stayed silent. For too long, we've allowed the old messages of just getting people to stop smoking to play out, without making it clear that the times have changed. Prevention is not good enough; survivorship has to be the goal. We can still max out prevention. But we have early detection and treatment, research and survivorship."

A Physician and Community Activist

One of the three Lung Cancer Heroes® recipients was Dr. Estelamari Rodriguez, associate director of community outreach in thoracic oncology at the University of Miami Sylvester Comprehensive Cancer Center.

She was nominated by her colleague, Tisdrey Torres, an advanced practice registered nurse at the center. Torres wrote that Rodriguez had dedicated her career to caring and advocating for patients with lung cancer and their caregivers, focusing on improving lung cancer screening programs and raising awareness about the need for more funding for lung cancer research.

What really sets Rodriguez apart, according to Torres, is the work she does with the community.

"In addition to her arduous work in the clinical field, Dr. Rodriguez also finds time to frequently engage in community activities," Torres wrote in her nominating essay.

Inspiration Without Ever Meeting

Alesha Arnold, who has been a nurse since 1997, has spent the past several years working as a breast cancer research nurse at Indiana University Comprehensive Cancer Center in Indianapolis.

While in college, she used to travel back to her hometown to care for her mother, who had breast cancer. »

Unfortunately, her mom died of the disease at 51. Her connection to cancer didn't end there, as her grandfather died from lung cancer. When she was 44, Arnold herself received a diagnosis of advanced lung cancer, which shocked her because she had never smoked, as she told her nominator, LaTrice G. Vaughn, also a registered nursein Indiana.

What most impresses Vaughn is Arnold's willingness to connect with others and educate them about the disease.

"She has brought awareness of lung cancer to her family, sorority, colleagues, church family, friends and even to those she doesn't know," Vaughn wrote in her nominating essay, "my aunt being one."

Vaughn and Arnold are both from Gary, Indiana. Vaughn's aunt was recently diagnosed with stage 4 lung cancer. Vaughn said she told Arnold about the news and notes that Arnold let her know about a project she was participating in, known as the White Ribbon Project.

"Well, wouldn't you know that Alesha and her wood carving party members made over 25 ribbons, and she brought one to me for my aunt," Vaughn recalled. "I took it home when I was going to one of my aunt's chemotherapy and doctor's appointments. I had to remember that my aunt lived through an era when smoking was permitted. … She had a sense of her diagnosis being a cause of her own destructive habit. What she did not know was that lung cancer can affect a nonsmoker. What she did not know is that lung cancer affected a 44-year-old African American woman from her hometown. … My aunt was astonished that this amazing person would take time out to make a white wooden ribbon especially for her."

Reducing Incidence and Mortality Rate

Dr. Pierre de Delva, section chief of general thoracic surgery at the University of Mississippi Medical Center in Jackson, was nominated by Amy Ellis.

CHRIS DRAFT spoke with **DR. PIERRE DE DELVA** at the awards ceremony.

In her essay, she noted that de Delva practices in a state with some of the poorest lung cancer outcomes in the nation and serves at its sole academic health science center, medical school and safety net hospital.

She further explained that de Delva's research interests include outcomes and quality improvement in thoracic surgery, health disparities in cancer and the development of biologic tracheal substitutes. Of note, a tracheal substitute is a method to replace a person's affected and/or diseased airway.

Ellis also mentioned that de Delva had led a project to address common barriers to biomarker testing within the state.

"Under Dr. de Delva's leadership, almost every hospital treating cancer patients in Mississippi joined the pilot with representation from almost 90 multidisciplinary thoracic clinicians," Ellis wrote. "The biomarker pilot has the downstream potential to impact the course of cancer care for nearly all of the 2,810 Mississippians estimated by the American Cancer Society to be diagnosed with lung cancer in 2022."

Although the project closed in January 2022, Ellis noted that de Delva had become inaugural chair of the newly formed Mississippi Lung Cancer Roundtable, which is committed to reducing the incidence, affect and mortality of lung cancer in the state.

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Time Is *of the* ESSENCE

Cancer Treatment Centers of America

As part of its "Speaking Out" video series, *CURE*® spoke with Dr. Peter Baik, on behalf of Cancer Treatment Centers of America, about treatment decision-making in early-stage lung cancer.

By KRISTIE L. KAHL

DR. PETER BAIK

THE FIVE-YEAR SURVIVAL RATE for patients with early-stage lung cancer that has not spread to the lymph nodes or other organs is 56%; however, when the disease spreads, the survival rate decreases to just 5%. Therefore, an open and honest discussion with one's oncologist is key to determining which treatment will be best in the most efficient time frame, Dr. Peter Baik says.

As part of the *CURE*® "Speaking Out" video series, Baik — a thoracic surgeon at Cancer Treatment Centers of America in Phoenix and Chicago — discussed the importance of prioritizing quality of life while also contemplating a second opinion when considering treatment options for early-stage lung cancer in an expeditious way.

Q: Why is it important for patients to have an active role in choosing treatment options, especially when quality of life is a concern?

A: With lung cancer treatment, especially early stage, the first thing we think of is surgery; but now there's radiation and new therapies coming up. So, quality of life, we have to take that into consideration. What do you like to do? Do you like to run marathons and can't do without it? Then surgery may not be the best option. (Another example is if you're a longtime smoker and do not want to carry an oxygen bottle around), … I have to make sure that they understand the potential complications (of surgery). If you are in the hospital for two or three days, sometimes five, after surgery, you're going to be debilitated. Who's going to help you after surgery? (Will you) have the right support, physically, emotionally and mentally? That's the other important thing that we have to consider, can family support you? And so talking about all those things is paramount.

But the most important thing is for you to understand exactly what you're dealing with. You're told that you have stage 1 lung cancer, you have a small nodule, you could just take it out surgically. What does that mean? What I try to do is share images with a patient. I show them the (combined positive score [the ratio of the number of all PD-L1-expressing cells]).

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to see more videos from our "Speaking Out" series.

I may even draw it out for them, or whatever I have to do, so patients can understand it's a shared decision.

Q: What are some of the benefits of minimally invasive surgery?

A: (The difference between minimally invasive and invasive is) a big cut versus a small cut. For example, there are a lot of patients who love to golf. And when you swing, the big back muscle, the wing muscles, your swings can be really affected. But if you do (minimally invasive surgery), you don't have to do all those things (with invasive surgery). For example, I had a patient who came in with a nodule that needed to be removed, and they were planning on doing an open procedure. If he had the (open) procedure, he would not be able to go back to golf for at least six weeks. And it was kind of interesting, because I did the (minimally invasive surgery and he) was discharged the next day. Two weeks later, when I saw him in clinic, he asked me, "Hey, when can I play golf?" And knowing him (personally), I asked him, "You haven't played yet?"

It's all about the pain and being able to recover. The wound heals (better) when it's smaller. If you have a big (wound), it's going to take longer; you've got big muscle groups that are cut and it has to heal, and it's never going to be the same.

Q: How can patients learn more about their surgical options and what might be best for them?

A: That's the good thing about Dr. Google, but you have to make sure that you go to reputable resources. There are sites that try to give you a lot of different options for surgery. But the most important thing is, if you have any doubts or questions, you could always ask for a second opinion. (When patients get a) second opinion, (it's to help) if they don't understand (their options) or they just don't feel comfortable. It doesn't hurt me if patients don't feel comfortable with me. As long as the patient understands what the options are, the best options, and they get the best treatment. That's the most important thing. If they don't feel comfortable, it doesn't hurt my feelings. Why? Because there has to be a trust, there has to be confidence. And all those things play (a role) when it comes to healing.

Q: What is the most important piece of advice you have for patients newly diagnosed with lung cancer who are weighing their treatment options?

A: The important thing is to make sure things are progressing. You don't want to wait two months, three months to get things done or the staging done. Anytime you have a lung nodule, and it's diagnosed as lung cancer, you have a chance for those microscopic cancer cells to (spread) somewhere else, because that's what they like to do. And once lung cancer (spreads) into the lymph nodes farther away, or you have metastasis, your five-year survival decreases dramatically. So you want to make sure that you get the proper treatments, workup, expeditiously. It's not possible to get the stage tomorrow and then get the surgery. If you have to wait a month for an appointment, another month for a procedure, then another month to see someone else, time is of the essence.

Transcription edited for clarity and conciseness.

You have questions about lung cancer. We can help.

LUNGevity has the information and support that patients and caregivers need to make informed healthcare decisions. Visit www.LUNGevity.org to learn more.

Lung Cancer 101 is a comprehensive, medically vetted online guide to understanding how lung cancer develops, how it can be detected, treatment options and what to expect. Includes downloadable tip sheets, booklets, and informational videos.

The Lung Cancer Patient Gateways are user-friendly information portals designed to provide up-to-date and relevant information for patients & caregivers based on their type of lung cancer. Gateways include KRAS, Non-Small Cell Lung Cancer, ALK, EGFR, Rare Mutations and Fusions, and Small Cell Lung Cancer. Resources include Find a Specialist, Expert Videos, a curated newsfeed, and Find Your Community.

Experts Blog includes clear discussions about the latest developments in research and what they mean for patients.

Online Survivor and Caregiver Resource Centers help patients live well with lung cancer, and provide tip sheets with questions for visits with one's medical team.

LifeLine matches patients and caregivers to mentors who have had similar experiences, for personalized one-on-one support.

Lung Cancer Support Community message boards provide patients and caregivers with peer-to-peer support and information.

The International Lung Cancer Survivorship Conferences for patients and caregivers are virtual and in-person events, with the latest information from medical experts and inspirational speakers. These meetings build communities of hope for people at all stages of a lung cancer diagnosis.

Weekly Virtual Meetups allow patients, survivors, and caregivers to connect 'face-to-face' and share valuable information and encouragement.

About LUNGevity Foundation

LUNGevity Foundation is firmly committed to making an immediate impact on increasing quality of life and survivorship of people with lung cancer by accelerating research into early detection and more effective treatments, as well as by providing community, support, and education for all those affected by the disease. For more information, please visit www.LUNGevity.org. Call the toll-free Lung Cancer HELPLine at 844-360-5864.

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