FOR PATIENTS, SURVIVORS & THEIR CAREGIVERS

cure®

Cancer Updates, Research & Education®

Food FIGHT

Could fasting save your life? With special diets, cancer treatments could be more effective and tolerable

ALSO INSIDE

curetoday.com

FALL 2020 · VOL.19 NO.4

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.

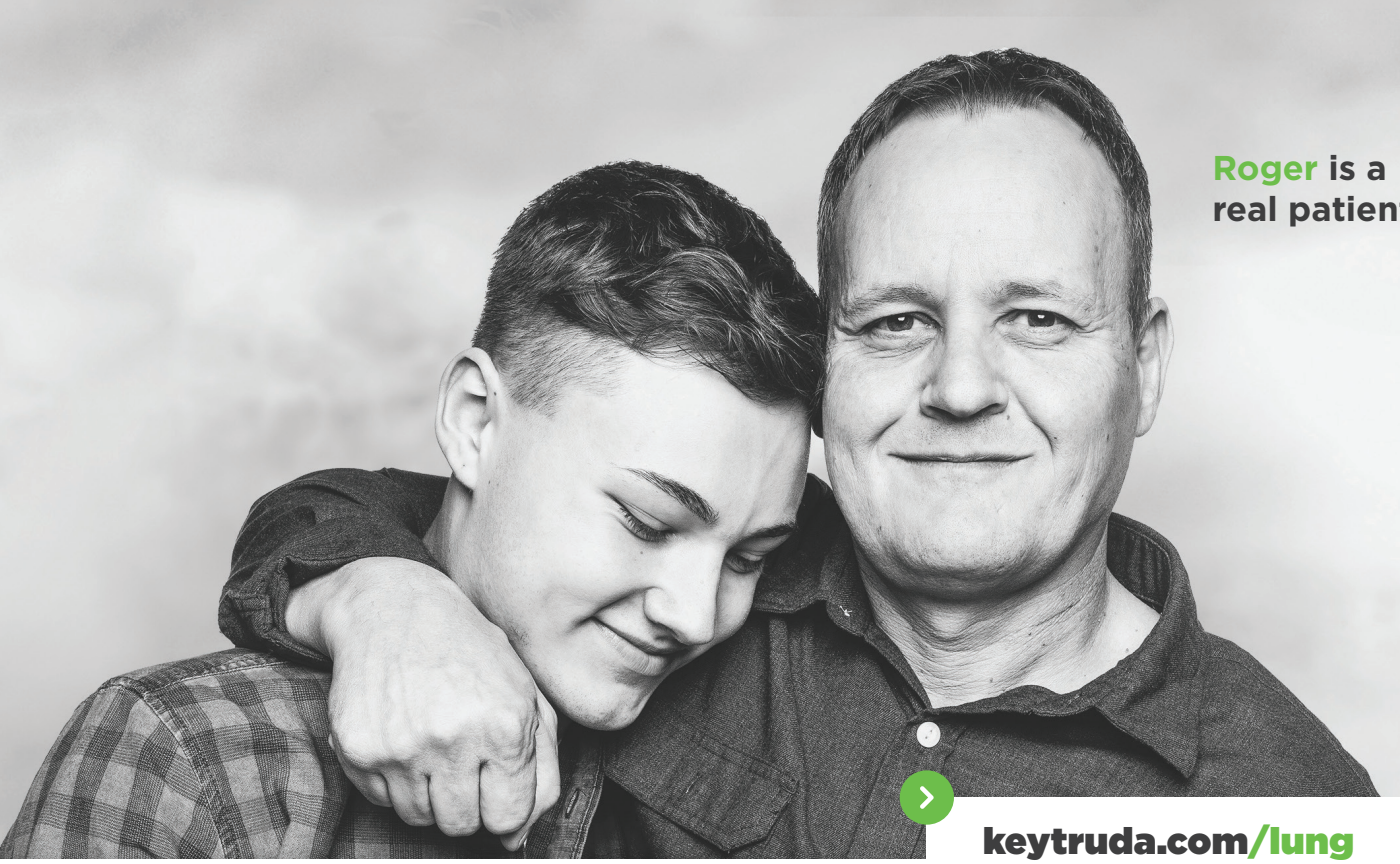
IMPORTANT SAFETY INFORMATION

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. These problems may happen any time during treatment or even after your treatment has ended.

Call or see your doctor right away if you develop any symptoms of the following problems or these symptoms get worse:

- **Lung problems (pneumonitis).** Symptoms of pneumonitis may include shortness of breath, chest pain, or new or worse cough.
- **Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include diarrhea or more 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, including hepatitis.** Signs and symptoms of liver problems may include yellowing of your skin or the whites of your eyes, nausea or vomiting, pain on the right side of your stomach area (abdomen), dark urine, or bleeding or bruising more easily than normal.
- **Hormone gland problems (especially the thyroid, pituitary, adrenal glands, and pancreas).** Signs and symptoms that your hormone glands are not working properly may include rapid heartbeat, weight loss or weight gain, increased sweating, feeling more hungry or thirsty, urinating more often than usual, hair loss, feeling cold, constipation, your voice gets deeper, muscle aches, feeling very weak, dizziness or fainting, or headaches that will not go away or unusual headache.
- **Kidney problems, including nephritis and kidney failure.** Signs of kidney problems may include change in the amount or color of your urine.
- **Skin problems.** Signs of skin problems may include rash, itching, blisters, peeling or skin sores, or painful sores or ulcers in your mouth or in your nose, throat, or genital area.
- **Problems in other organs.** Signs and symptoms of these problems may include changes in eyesight; severe or persistent muscle or joint pains; severe muscle weakness; low red blood cells (anemia); swollen lymph nodes, rash or tender lumps on skin, cough, shortness of breath, vision changes,

Important Safety Information is continued on the next page.



Roger is a real patient

keytruda.com/lung

IMPORTANT SAFETY INFORMATION *(continued)*

or eye pain (sarcoidosis); confusion, fever, muscle weakness, balance problems, nausea, vomiting, stiff neck, memory problems, or seizures (encephalitis); pain, numbness, tingling, or weakness in the arms or legs; bladder or bowel problems including needing to urinate more frequently, urinary incontinence, difficulty urinating, or constipation (myelitis); and shortness of breath, irregular heartbeat, feeling tired, or chest pain (myocarditis).

- **Infusion (IV) reactions that can sometimes be severe and life-threatening.** Signs and symptoms of infusion reactions may include chills or shaking, shortness of breath or wheezing, itching or rash, flushing, dizziness, fever, or feeling like passing out.
- **Rejection of a transplanted organ.** People who have had an organ transplant may have an increased risk of organ transplant rejection if they are treated with KEYTRUDA.
- **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 severe and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with KEYTRUDA. Your doctor will monitor you for the following signs and symptoms: skin rash, liver inflammation, abdominal pain, and diarrhea.

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

Before you receive KEYTRUDA, tell your doctor if you have immune system problems such as Crohn's disease, ulcerative colitis, or lupus; have had an organ transplant or plan to have or have had a bone marrow (stem cell) transplant that used donor stem cells (allogeneic); have lung or breathing problems; have liver problems; or have any other medical problems.

If you are pregnant or plan to become pregnant, tell your doctor. KEYTRUDA can harm your unborn baby. If you are able to become pregnant, your doctor will give you a pregnancy test before you start treatment.

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

If you are breastfeeding or plan to breastfeed, tell your doctor. 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 doctor 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, bones, or joints and stomach area (abdominal) pain; decreased appetite; itching; diarrhea; nausea; rash; fever; cough; shortness of breath; and constipation.

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; and mouth sores.

These are not all the possible side effects of KEYTRUDA. Tell your doctor if you have any side effect that bothers you or that does not go away. For more information, ask your doctor or pharmacist.

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. These problems may happen anytime during treatment or even after your treatment has ended.

Call or see your doctor right away if you develop any symptoms of the following problems or these symptoms get worse:

Lung problems (pneumonitis). Symptoms of pneumonitis may include:

- shortness of breath
- chest pain
- new or worse cough

Intestinal problems (colitis) that can lead to tears or holes in your intestine. Signs and symptoms of colitis may include:

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

Liver problems, including hepatitis. Signs and symptoms of liver problems may include:

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

Hormone gland problems (especially the thyroid, pituitary, adrenal glands, and pancreas). Signs and symptoms that your hormone glands are not working properly may include:

- rapid heart beat
- weight loss or weight gain
- increased sweating
- feeling more hungry or thirsty
- urinating more often than usual
- hair loss
- feeling cold
- constipation
- your voice gets deeper
- muscle aches
- feeling very weak
- dizziness or fainting
- headaches that will not go away or unusual headache

Kidney problems, including nephritis and kidney failure. Signs of kidney problems may include:

- change in the amount or color of your urine

Skin problems. Signs of skin problems may include:

- rash
- itching
- blisters, peeling or skin sores
- painful sores or ulcers in your mouth or in your nose, throat, or genital area

Problems in other organs. Signs and symptoms of these problems may include:

- changes in eyesight
- severe or persistent muscle or joint pains
- severe muscle weakness
- low red blood cells (anemia)
- swollen lymph nodes, rash or tender lumps on skin, cough, shortness of breath, vision changes, or eye pain (sarcoidosis)
- confusion, fever, muscle weakness, balance problems, nausea, vomiting, stiff neck, memory problems, or seizures (encephalitis)
- pain, numbness, tingling, or weakness in your arms or legs, or bladder or bowel problems, including the need to urinate more often, leaking of urine, trouble urinating, or constipation (myelitis)
- shortness of breath, irregular heartbeat, feeling tired, or chest pain (myocarditis)

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

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

Rejection of a transplanted organ. People who have had an organ transplant may have an increased risk of organ transplant rejection. Your doctor 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 severe 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 doctor will monitor you for the following signs and symptoms: skin rash, liver inflammation, stomach-area (abdominal) pain, and diarrhea.

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

What should I tell my doctor before receiving KEYTRUDA?
Before you receive KEYTRUDA, tell your doctor if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have received an organ transplant, such as a kidney or liver
- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have lung or breathing problems
- have liver problems
- have any other medical problems
- are pregnant or plan to become pregnant
  - KEYTRUDA can harm your unborn baby.

  Females who are able to become pregnant:
  - Your doctor 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 doctor about birth control methods that you can use during this time.
  - Tell your doctor 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 doctor about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Know the medicines you take. Keep a list of them to show your doctor and pharmacist when you get a new medicine.

How will I receive KEYTRUDA?

- Your doctor 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 doctor will decide how many treatments you need.
- Your doctor will do blood tests to check you for side effects.
- If you miss any appointments, call your doctor 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, bones or joints and stomach-area (abdominal) pain, decreased appetite, itching, diarrhea, nausea, rash, fever, cough, shortness of breath, and constipation.

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, and mouth sores.

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.

In children, feeling tired, vomiting and stomach-area (abdominal) pain, and increased levels of liver enzymes and decreased levels of salt (sodium) in the blood are more common than in adults.

These are not all the possible side effects of KEYTRUDA. For more information, ask your doctor or pharmacist.

Tell your doctor if you have any side effect that bothers you or that does not go away.

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 KEYTRUDA

Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. If you would like more information about KEYTRUDA, talk with your doctor. You can ask your doctor or nurse for information about KEYTRUDA that is written for healthcare professionals. For more information, go to www.keytruda.com.

Based on Medication Guide usmg-mk3475-iv-2006r033 as revised June 2020.

MERCK

cure® CONTENTS

FALL ISSUE · 10.20

COVER IMAGE BY GOOD STUDIO / STOCK.ADOBE.COM; TOP PHOTO: BILLIONPHOTOS.COM / STOCK.ADOBE.COM; PEOPLE PHOTOS BY (MIDDLE & BOTTOM): LAURA SQUIRE; ALYSSA STEFEK

cure®

is proud to be partners with a number of leading advocacy groups across the country, giving them national reach and visibility for their cutting edge initiatives, programs, content, research and thought leadership.

Diagnosing Asymptomatic Cancer With Blood Tests Could Save Lives

LIQUID BIOPSIES ARE an emerging technology that is changing the cancer experience.

These tests that can detect microscopic signs of cancer in the blood are working their way into practice as a way to help direct treatment. They can aid doctors in determining whether a treated cancer is likely to recur and in checking for new gene mutations that may have developed in a tumor, indicating the need for a different therapy choice.

In certain blood cancers, liquid biopsies can also be used to look for the earliest signs of cancer in people with no symptoms. This can lead to a diagnosis when a cancer is at its very earliest stages, allowing therapy to start when the disease is easiest to successfully treat or even cure. But what if there were blood tests that could look for a whole scope of cancers, including solid tumors, in asymptomatic patients?

Those tests are on the horizon, and the life- and cost-saving possibilities they could introduce into the field are astonishing. In a feature in this issue of *CURE*®, we delve into this topic with a close look at diagnostic cancer blood tests that are in development.

We also consider exciting new findings in the targeted drug arena by exploring medicines being developed to treat two gene mutations that are considered "superdrivers" of cancer. Specifically, we discuss drugs designed to treat KRAS G12C and EGFR exon 20 insertions in non-small cell lung cancer, which doctors say could be game changers for eligible patients.

Meanwhile, in our cover story, we explain early research that indicates there may be an advantage to fasting or following a ketogenic diet during chemotherapy and other treatments for cancer to make the therapies more effective and the side effects more tolerable. You'll read about how depriving cancer cells of glucose essentially starves them so they can't grow.

In another diet-related article, we discuss updates to the nutritional labels on food, outlining what new information you'll see after a recent update.

Elsewhere in this issue, we focus on specific cancer types, sharing recent news from the European Society for Medical Oncology Virtual 2020 Congress about emerging treatments for breast, liver and colorectal cancers. In other cancer-type news, we report on a vaccine for patients with advanced melanoma, early-detection options in pancreatic cancer and quality of life in cholangiocarcinoma. And we offer a look at a rare condition, von Hippel-Lindau disease, which in some cases can lead to kidney and other cancers.

We hope you enjoy these stories and others in the issue, and that they leave you more informed about your cancer journey and inspired by what's on the horizon when it comes to both diagnosis and treatment. As always, thank you for reading.

MIKE HENNESSY SR.
Chairman and Founder

cure®

SALES & MARKETING

Vice President, CURE Media Group Erik Lohrmann / elohrmann@mjhassoc.com
Vice President & Executive Producer, MJH Productions David Lepping / dlepping@mjhassoc.com
Executive Vice President, Oncology Professional Relations Donna Short, M.A.
Vice President, Strategic Alliances and Patient Engagement Strategy Sandra Shaw
Director, Patient Education Marty Murphy
Senior National Accounts Manager James Rivellino
National Accounts Associates Jacqueline Diblin
Strategic Alliance Partnership Manager Brooke Weinstein
Senior Marketing Manager Melissa Hindle
Sales & Marketing Coordinator Samantha Gullace

OPERATIONS & FINANCE

Circulation Director Jon Severn, subscribe@curetoday.com circulation@mjhassoc.com
Vice President, Finance Leah Babitz, CPA
Controller Katherine Wyckoff

CORPORATE

Chairman & Founder Mike Hennessy Sr.
Vice Chairman Jack Lepping
President & CEO Mike Hennessy Jr.
Chief Financial Officer Neil Glasser, CPA/CFE
Chief Marketing Office Michael Baer
Executive Vice President, Operations Tom Tolvé
Executive Vice President, Global Medical Affairs and Corporate Development Joe Petroziello
Senior Vice President, Content Silas Inman
Senior Vice President, I.T. & Enterprise Systems John Moricone
Vice President, Human Resources & Administration Shari Lundenberg
Vice President, Mergers & Acquisitions Chris Hennessy
Executive Creative Director, Creative Services Jeff Brown

EDITORIAL & PRODUCTION

Editor-in-Chief Debu Tripathy, M.D.
Editorial Director Kristie L. Kahl
Associate Editorial Director Ryan McDonald
Managing Editor Beth Fand Incollingo / editor@curetoday.com
Assistant Web Editor Conor Killmurray
Social Media Manager Jessica Skarzynski
Copy Chief Jennifer Potash
Copy Supervisors Rachelle Laliberte, Paul Silverman
Medical & Scientific Quality Review Editor Stacey Abels, Ph.D.
Copy Editors Cheney Baltz, Georgina Carson, Rebekah Harrison, Kirsty Mackay
Creative Director, Publishing Melissa Feinen
Senior Art Director Gwendolyn Salas
Photo Editor & Production Coordinator Emily Hakkinen
Contributing Writers Monica Fawzy Bryant; Tatyana Gann; Katie Kosko; Len Lichtenfeld, M.D.; Lori Luedtke; Katherine Malmo; Lynne O'Connor, M.S.N., RN; Anna L. Schwartz; Andrew Smith; Arlene Weintraub
Contributing Photographers Chandler Crowell; Mike Kitada; Claudio Papapietro; Laura Squire; Alyssa Stefek

AN MJH life sciences™ BRAND

MJH Life Sciences, LLC.
2 Clarke Drive, Suite 100
Cranbury, N.J. 08512
609-716-7777

All the stories you read in *CURE*® are reported and edited without the influence of advertisers or sponsors.

Subscriptions: *CURE*® is FREE to cancer patients, survivors or caregivers who live in the U.S. FREE bulk subscriptions are available for physicians, cancer centers and other organizations. Subscriptions may be obtained at www.curetoday.com/subscription, or by calling 800-210-2873 or requested via email to subscribe@curetoday.com.

CURE® (ISSN 1534-7664, USPS 022-616) is published quarterly for cancer patients, survivors and caregivers by CURE Media Group, LLC, Inc., 2 Clarke Drive, Suite 100, Cranbury, NJ 08512. Periodicals postage paid at Princeton, NJ and additional mailing offices. POSTMASTER: Send address changes to *CURE*®, P.O. Box 606, Cranbury, NJ 08512.

United States Postal Service
STATEMENT OF OWNERSHIP, MANAGEMENT, and CIRCULATION
Required by 39 USC 3685

1. Publication Title: Cure
2 .Publication Number: 22616
3. Filing Date: 9-30-20
4. Issue of Frequency: Quarterly
5. Number of Issues Published Annually: 4
6. Annual Subscription Price: Free to qualified subscribers
7. Complete Mailing Address of Known Office of Publication (Not Printer): Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not Printer): Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor - Publisher: Michael Hennessy Jr, Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619; Editor: Kristie Kahl, Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619; Managing Editor: Beth Fand Incollingo, Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619
10. Owner - Full name: Cure Media Group, LLC, 2 Clarke Dr, Suite 100, Cranbury, NJ 08512-3619
11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None
12. Publication Title: Cure
13. Issue Date for Circulation Data Below: August 2020
14. Extent and nature of circulation

	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total number of Copies (Net press run)	294,640	289,373
b. Legitimate Paid and/or Requested Distribution		
(1) Outside County Paid/ Requested Mail Subscriptions stated on PS Form 3541.	158,385	153,419
(2) In-County Paid/Requested Mail Subscriptions stated on PS Form 3541.	0	0
(3) Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid or Requested Distribution Outside USPS	0	0
(4) Requested Copies Distributed by Other Classes Mailed Through the USPS	41,382	40,612
c. Total Paid and/or Requested Circulation [Sum of 15b 1,2,3,&4]	199,767	194,031
d. Nonrequested Distribution (By Mail and Outside the Mail)		
(1) Outside County Nonrequested Copies stated on PS Form 3541	88,873	92,842
(2) In-County Nonrequested Copies stated on PS Form 3541	0	0
(3) Nonrequested Copies Distributed Through the USPS by Other Classes of Mail	3,333	0
(4) Nonrequested Copies Distributed Outside the Mail	0	0
e. Total Nonrequested Distribution (Sum of 15d (1), (2), and (3)	92,206	92,842
f. Total Distribution (Sum of 15c and 15e)	291,973	286,873
g. Copies not Distributed	2,667	2,500
h. Total (Sum of 15f and 15g)	294,640	289,373
i. Percent Paid and/or Requested Circulation	68.42%	67.64%

15. Publication of Statement of Ownership – Will be printed in October 2020 issue of this publication.
16. I certify that all information on this form is true and complete. Signature and title of Editor, Publisher, Business Manager, or Owner – Jonathan Severn, Circulation Director, 9-30-20

Could 'Starving' Cancer Cells Be an Effective Way to Slow Their Growth?

THE TERM CANCER energetics, which describes the way cancer cells obtain their energy that allows growth and spread, may sound like a new-age or trendy buzzword, but it represents the core of what cancer is.

Cancer cells develop out of a process of survival of the fittest — just like the evolution of species. As mutations befall the DNA of normal cells, they often die because the damage is too great. Every once in a while, however, the mutation turns out to be "activating" and may drive growth or invasion. And one mutation tends to prompt more — because once a cell is growing abnormally, it's more susceptible to developing additional mutations, and over time, those cells with the most aggressive set of mutations end up dominating the tumor. These cells, then, need more energy because of the huge metabolic demands, so they adapt accordingly. They don't "intelligently" adapt; they do so randomly, but the few that happen to accomplish this successfully thrive and multiply.

We have known for decades that cancer cells have huge appetites for glucose and amino acids. That's why directly targeting metabolism and energy generation — the production of adenosine triphosphate, a molecule that stores energy and is considered the energy currency of life — has been a holy grail of cancer treatment. Recently, newer agents that target energy production pathways, notably oxidative phosphorylation (or OXPHOS) inhibitors, have been "trending" as new cancer therapeutics.

In this issue of *CURE*®, we address this topic by looking at a different, lower-tech strategy that is also trending: depriving cancer cells of the energy they need by simply starving them. Our diets generate the power we need, but not all food is equal in how it is metabolized by normal cells and cancer cells. Certain diets, like those that are "keto-friendly," impede the free flow of sugar into cells. That not only slows cancers down but also dampens inflammation and other pathways that cause side effects from conventional cancer therapies such as chemotherapy. Well, at least in mice it does.

Now, several investigators are poised to conduct definitive trials in patients with different cancer types, and early data suggest that these fasting diets may be an effective strategy. But not an easy one: It's difficult to stick to the diets required to produce this effect. To help with compliance, food supplements that mimic ketogenic diets are being developed. As you read the article, two leaders in the field of diet and cancer energetics provide insights into this elegantly simple concept and its potential.

DEBU TRIPATHY, M.D.
Editor-in-Chief
Professor of Medicine
Chair, Department of Breast Medical Oncology
The University of Texas MD Anderson Cancer Center

EDITOR'S NOTE:
In our Rare Cancers Special issue, the article titled "Salivary Gland Cancer: As Rare As It is Diverse" was published with an incorrect byline. The author of the piece is Sonya Collins.

MIKE KITADA

We want to know what you think about CURE®. *Address your comments to editor@curetoday.com. If you prefer that your comment not be published, please indicate.*

facebook.com/**curemagazine**
twitter.com/**cure_magazine**
instagram.com/**curetoday**

Living With Change

We asked readers on *CURE*®'s Facebook page to share the most surprising thing that's changed in their lives since receiving a cancer diagnosis. *Here's what they told us.*

"Some people leaving my life." — *P.C.*

"The amazing people I've met who are also fighting the disease." — *M.M.*

"The courage to beat stage 3 ovarian cancer for 13 years so far." — *J.J.*

"Getting a second cancer from my (breast implant after mastectomy) called anaplastic large cell lymphoma." — *C.S.*

"Everything." — *B.M.*

"I no longer plan for the future; it may never happen. Live for the moments now!" — *D.J.M.*

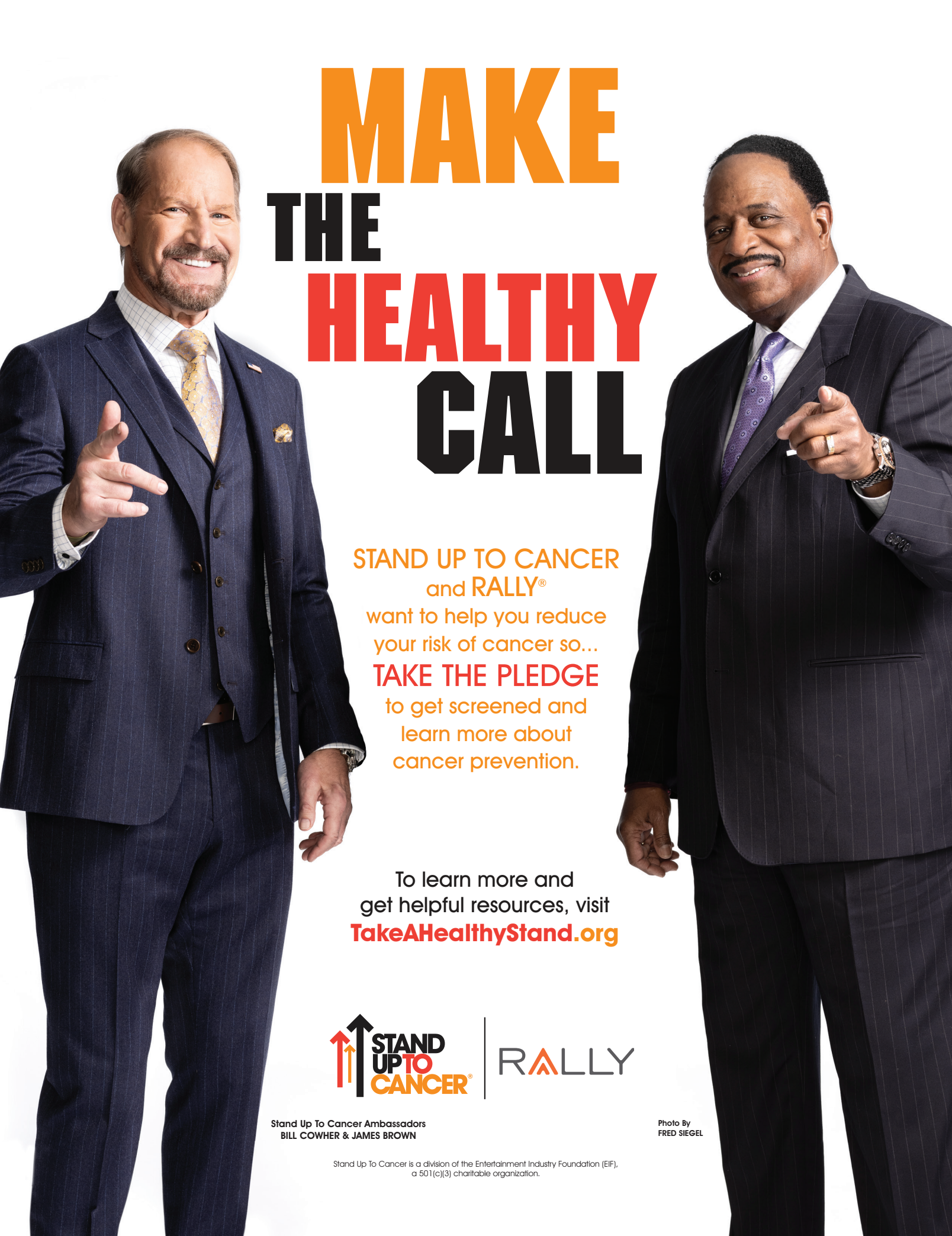
"Respect for Canadian health care." — *E.B.*

"How many of my dreams cancer crushed. I thought I would have treatment and move on. It stole my life." — *M.B.T.*

"Losing a career in education was the most difficult and unexpected. …With the multiple side effects, I find it difficult to commit to a full-time job — such a change, since I previously worked a full-time job as well as one or two part-time jobs." — *D.L.P.*

"Having five out of six of our kids not care to help in any way. And to this day, I might as well not exist for them." — *A.M.C.*

"Paying attention to the little things I never took the time to notice before." — *M.M.M.*


MAKE
THE
HEALTHY
CALL
STAND UP TO CANCER
and RALLY®
want to help you reduce
your risk of cancer so...
TAKE THE PLEDGE
to get screened and
learn more about
cancer prevention.
To learn more and
get helpful resources, visit
TakeAHealthyStand.org
STAND UP TO CANCER®
RALLY
Stand Up To Cancer Ambassadors
BILL COWHER & JAMES BROWN
Photo By
FRED SIEGEL
Stand Up To Cancer is a division of the Entertainment Industry Foundation (EIF),
a 501(c)(3) charitable organization.

FIRSTLINE

PEOPLE POST / LIFESTYLE AND CANCER / UNCOVERING SCAMS / CHILDREN'S CANCERS / HOUSE CALL

PEOPLE POST

Dame Diana Rigg Died From Lung Cancer

ACTRESS DAME DIANA Rigg, best known for her roles in the 1960s TV series "The Avengers" and "Game of Thrones," died from lung cancer on Sept. 10. She was 82.

DAME DIANA RIGG

Rigg received a diagnosis of lung cancer in March of this year, according to her daughter Rachael Stirling. Rigg was a celebrated actress whose career spanned decades, from the hit 1960s show "The Avengers," in which she played superspy Emma Peel, to multiple award-winning roles on Broadway and in the West End. In 1994, she was given the title of Dame Commander of the Order of the British Empire, an honor for the United Kingdom's most recognized citizens.

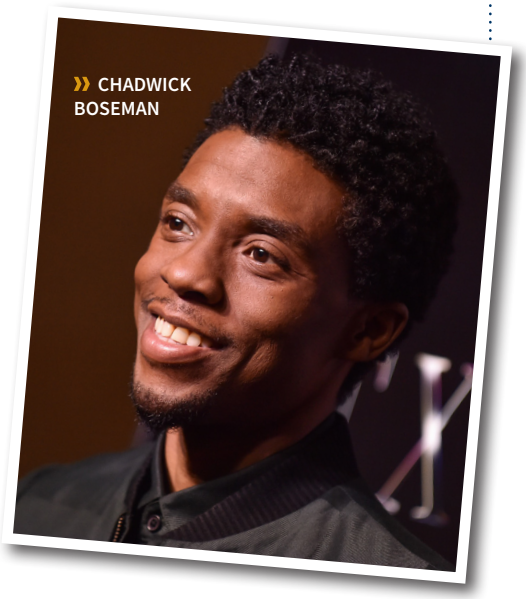
"She spent her last months joyfully reflecting on her extraordinary life, full of love, laughter and a deep pride in her profession," her daughter said. Many other actors and directors took to social media to remember her, citing her generosity, ability to have fun no matter what the situation on set and her sweeping talent. — *By Conor Killmurray*

Death of Actor Chadwick Boseman From Colorectal Cancer Prompts Call for Awareness About Disease

COLON CANCER SURVIVORS are calling for more awareness and discussion around the disease in the wake of actor Chadwick Boseman's death due to stage 4 cancer.

"The very word 'colonoscopy' is still a colloquialism for the thing you'd least prefer to do in life. Is it any wonder there is still a reluctance to normalize conversation about it?" said stage 3 colon cancer survivor Sara Stewart in a column for CNN.

Survivors like Stewart are hoping that more people, especially young people, take screening for colon cancer seriously to find the disease in early stages when it is treatable. The American Cancer Society just two years ago lowered the recommended age for colorectal cancer screening from 50 to 45.



CHADWICK BOSEMAN

Stewart herself was hesitant to take her own symptoms and warning signs seriously. Her doctors told her that the abdominal pain she was experiencing was most likely due to irritable bowel syndrome, but she was diagnosed with colorectal cancer at age 45. Stewart and many other survivors are calling on people to insist on getting colonoscopies and to normalize discussion around the disease as cases are projected to rise in the next decade. Less-invasive testing, such as Cologuard, is also available and can signal the need for a colonoscopy. — *By Conor Killmurray*

Survivor Worried About Health Insurance Was Troubled by Senate Staffer's Response

THREE-TIME CANCER survivor Bev Veals reached out to her senator for help with an insurance dilemma and received an insensitive response that went viral.

Veals, a native of North Carolina, has beaten cancer three times in 20 years, but this March her husband was furloughed due to COVID-19 and she was worried about losing her health insurance. Given past insurance issues, Veals reached out to her senator, Thom Tillis (R-N.C.). While speaking with someone on the senator's staff, Veals grew frustrated with the staffer's lack of empathy, so she began recording the call.

When Veals asked what she should do if she couldn't get health care because she can't afford it, the staffer replied, "If I want to go to the store and buy a new dress shirt, if I can't afford that dress shirt, I don't get to get it."

"To compare (health care) to a dress shirt made me incredibly angry and hurt," Veals told interviewers. The video went viral when it was posted online. When local media sent the video to Tillis' office, the senator's spokesperson replied with a statement condemning the way the staffer spoke with Veals.

"We need our legislators to listen to us and help us solve this problem, because it's not just my problem — not being able to afford health care," Veals said in response to the apology. "It's the problem of hundreds and thousands of North Carolinians." — *By Conor Killmurray*

UNCOVERING SCAMS

Fundraising Operation That Claimed to Help Patients With Cancer Is Disbanded

A LEGAL SETTLEMENT IS disbanding a fundraising operation that allegedly scammed millions of dollars from people donating to multiple causes, including cancer.

The settlement was part of a lawsuit filed by the Federal Trade Commission and the attorneys general of Virginia, New York, Minnesota and New Jersey against the operation, which comprised multiple companies under owner Mark Gelvan and his associates Thomas Berkenbush, William English and Damian Muziani. According to the lawsuit, the charities claimed to use donations for homeless veterans, retired and disabled law enforcement officers, breast cancer survivors and others.

"Sham organizations that solicit funds from kind-hearted Virginians who think they are giving to important causes like veterans' charities or cancer survivors are despicable and must be held accountable for their deceptive practices," said Virginia Attorney General Mark Herring in a statement.

Gelvan and his companies — Outreach Calling, Inc., Outsource 3000, Inc., and Production Consulting Corp. — could be responsible for monetary restitution of $56 million. *— By Conor Killmurray*

Stomach Cancer Farce Extends Prison Stay

A WOMAN WHO LIED about having stomach cancer to delay serving a federal prison sentence for fraud was sentenced to an additional five years.

From 2017 to 2019, Kassie Bond Carpenter submitted at least nine sets of forged medical records that said she was diagnosed with and being treated for adenocarcinoma, according to the U.S. Attorney's Office for the Northern District of Texas. She had been sentenced to 41 months for wire fraud and faked the diagnosis to delay the start of the sentence.

Carpenter pleaded guilty to obstruction of justice in February and was sentenced to the additional five years this fall. She will serve those five years consecutively with the previous 41-month sentence.
— By Conor Killmurray

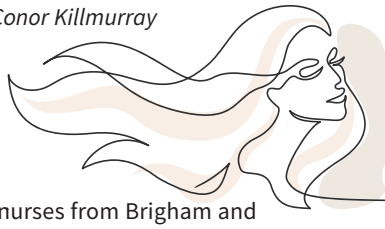
LIFESTYLE AND CANCER

Coffee May Lengthen Survival in Patients Who Have Metastatic Colorectal Cancer

PATIENTS WITH METASTATIC colorectal cancer who reported drinking two to three cups of coffee a day had a higher association with living longer overall and living longer before their disease progressed compared with patients who didn't drink coffee, according to data published in the medical journal *JAMA Oncology*.

"Although it is premature to recommend a high intake of coffee as a potential treatment for colorectal cancer, our study suggests that drinking coffee is not harmful and may potentially be beneficial," explained the study's senior author Dr. Kimmie Ng, a medical oncologist at Dana-Farber Cancer Institute, in an interview.

Patients who drank even more coffee saw even more benefit. According to one of the study authors, several compounds in coffee have antioxidant and anti-inflammatory properties that may be active against cancer. *— By Conor Killmurray*



Study: At-Home Hair Dyes Are Not Linked to Most Cancers

RESEARCHERS REVIEWED DATA from 117,200 female nurses from Brigham and Women's Hospital in Boston over 36 years to analyze their exposure to hair dyes and incidence of cancer. Results showed no increased risk of developing or dying from cancers in women who used permanent hair dyes compared with those who didn't. Specifically, researchers looked for an increased risk of cancers of the bladder, brain, colon, kidney, lung, blood/immune system, skin or breast.

However, some risk of cancer was associated with the dyes. Researchers identified a slight increased risk of basal cell carcinoma linked to permanent dyes, with the risk higher in women with naturally light hair. Use of permanent dyes was also associated with increased risk of ovarian cancer and estrogen receptor-negative, progesterone receptor-negative and hormone receptor-negative breast cancers.

Paul Pharoah, a professor of cancer epidemiology at the University of Cambridge in England, said in an interview that the results linking hair dyes to certain cancers aren't that compelling.

"The reported associations are very weak and, given the number of associations reported in this manuscript, they are very likely to be chance findings," said Pharoah, who was not affiliated with the research. "Even if they were real findings, the associations may not be cause-and-effect, and even if they were causal associations, the magnitude of the effects are so small that any risk would be trivial."
— By Conor Killmurray

CHILDREN'S CANCERS

Summer Camp for Kids With Cancer Burns in Fire

A CALIFORNIA WILDFIRE that has been burning through the state since August has scorched a 32-cabin camp for pediatric patients with cancer.

Camp Okizu hosts approximately 700 children with cancer each year, along with their families, to provide a respite and vacation from hospital visits by creating a traditional summer camp experience. The camp community also honors members lost to cancer by planting new trees in their memory.

"It is devastating," camp Board Member Hanna Malak said in an interview. "I think I'm going through the stages of loss and feel like I'm still in denial. It's still hard to believe, but we are staying positive and are especially thankful no one was hurt." *— By Conor Killmurray*

Share *Your* Cancer Story

There are so many questions that come with a cancer diagnosis — questions about treatment, side effects, caregiving, survivorship and more.

Your stories and artwork help us achieve our mission of combining science and humanity to make cancer understandable.

Send your submissions to: **editor@curetoday.com.**

HOUSE CALL

Signing Off With a Look Back

THIS IS MY LAST column for *CURE*®. After many years of sharing thoughts with you, I have left the American Cancer Society and consequently the opportunity to write this column.

Over these past years, our cancer world has certainly changed, much of it for the better:

- The rates of cancer have declined, and could drop even more if everyone had access to adequate care, including screenings.
- We have more drugs and treatments that work in ways that were gleams in researchers' eyes only a short time ago. They have helped many; however, we still have a long journey ahead of us.
- We have seen dramatic declines in deaths from advanced lung cancer, melanoma, chronic myelogenous leukemia and breast cancer, among others. Yet we can and will do even more with better care and better treatments.

We also have problems that must be acknowledged:

- Too many still die from cancer — way more than would be the case if everyone had access to quality care.
- Too many can't afford effective cancer care because of cost and availability of adequate insurance coverage.
- We know too little about the long-term impacts of cancer, including side effects and financial toxicity.
- In the midst of a pandemic, too many have faced delays in care, and screening to prevent some cancers and find others early has declined to levels that mean thousands more will die from cancer over the next decade.

"Although I may no longer be a regular part of these pages, I will always hold you in my heart with the sincere hope that perhaps, in some small way, my words have brought comfort and knowledge into your lives."

— LEN LICHTENFELD, M.D.

In the past, I used to rail about what I called "the hype and the hope:" the overpromising and underdelivering of care for patients with cancer. Today, I have considerable hope, although, unfortunately, some of the hype certainly remains.

I truly believe we are at a moment in time where we can see a future with an incredible reduction in the burden and suffering from cancer. It will come from earlier detection, better diagnostic tools, better treatments, better supportive care, better understanding of the financial consequences of cancer and application of that knowledge for the well-being of those with cancer.

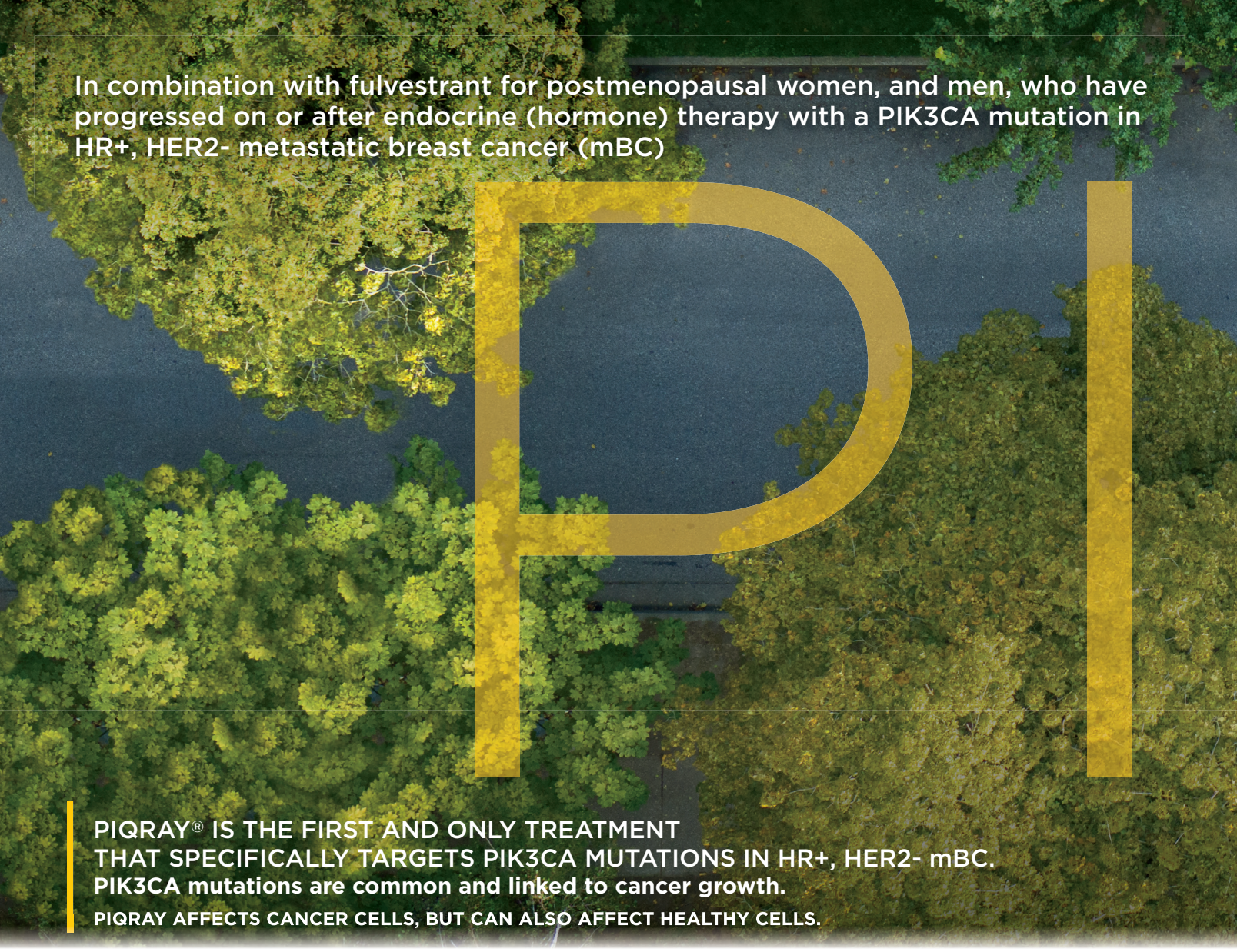
We must never forget that everyone must have the opportunity to take advantage of those advances. Today, too many are left behind.

Although I may no longer be a regular part of these pages, I will always hold you in my heart with the sincere hope that perhaps, in some small way, my words have brought comfort and knowledge into your lives.

I know you have certainly brought meaning and purpose to mine. C

Len Lichtenfeld, M.D., is a medical oncologist and the former interim and deputy chief medical officer of the American Cancer Society. He shares his insights online at drlen.blog.

COURTESY OF LEN LICHTENFELD, M.D.



INDICATION

PIQRAY® (alpelisib) tablets is a prescription medicine used in combination with the medicine fulvestrant to treat women who have gone through menopause, and men:

- who have hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative advanced breast cancer or breast cancer that has spread to other parts of the body (metastatic), with an abnormal phosphatidylinositol-3-kinase catalytic subunit alpha (PIK3CA) gene, **and**
- whose disease has progressed on or after endocrine therapy

Your health care provider will test your cancer for an abnormal "PIK3CA" gene to make sure that PIQRAY is right for you.

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

IMPORTANT SAFETY INFORMATION

Do not take PIQRAY if you have had a severe allergic reaction to PIQRAY or are allergic to any of the ingredients in PIQRAY.

PIQRAY may cause serious side effects, including:

- **Severe allergic reactions:** Tell your health care provider or get medical help right away if you have trouble breathing, flushing, rash, fever, or fast heart rate during treatment with PIQRAY
- **Severe skin reactions:** Tell your health care provider or get medical help right away if you get severe rash or rash that keeps getting worse, reddened skin, flu-like symptoms, blistering of the lips, eyes or mouth, blisters on the skin or skin peeling, with or without fever
- **High blood sugar levels (hyperglycemia):** Hyperglycemia is common with PIQRAY and can be severe. Your health care provider will monitor your blood sugar levels before you start and during treatment with PIQRAY. Your health care provider may monitor your blood sugar levels more often if you have a history of Type 2 diabetes. Tell your health care provider right away if you develop symptoms of hyperglycemia, including excessive thirst, dry mouth, urinate more often than usual or have a higher amount of urine than normal, or increased appetite with weight loss
- **Lung problems (pneumonitis):** Tell your health care provider right away if you develop new or worsening symptoms of lung problems, including shortness of breath or trouble breathing, cough, or chest pain
- **Diarrhea:** Diarrhea is common with PIQRAY and can be severe. Severe diarrhea can lead to the loss of too much body water (dehydration) and kidney problems. If you develop diarrhea during treatment with PIQRAY, tell your health care provider right away. Your health care provider may tell you to drink more fluids or take medicines to treat diarrhea

Your health care provider may tell you to decrease your dose, temporarily stop your treatment, or completely stop your treatment with PIQRAY if you get certain serious side effects.

Before you take PIQRAY, tell your health care provider about all of your medical conditions, including if you:

- have a history of diabetes
- have a history of skin rash, redness of skin, blistering of the lips, eyes or mouth, or skin peeling
- are pregnant or plan to become pregnant. PIQRAY can harm your unborn baby

  Females who are able to become pregnant:
  - Your health care provider will check to see if you are pregnant before you start treatment with PIQRAY
  - You should use effective birth control during treatment with PIQRAY and for 1 week after the last dose. Talk to your health care provider about birth control methods that may be right for you during this time
  - If you become pregnant or think you are pregnant, tell your health care provider right away

  Males with female partners who are able to become pregnant should use condoms and effective birth control during treatment with PIQRAY and for 1 week after the last dose. If your female partner becomes pregnant, tell your health care provider right away.
- are breastfeeding or plan to breastfeed. It is not known if PIQRAY passes into your breast milk. Do not breastfeed during treatment with PIQRAY and for 1 week after the last dose

You should also read the Full Prescribing Information of fulvestrant for important pregnancy, contraception, infertility, and lactation information

Tell your health care provider about all of the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. PIQRAY and other medicines may affect each other causing side effects. Know the medicines you take. Keep a list of them to show your health care provider or pharmacist when you get a new medicine.

The most common side effects of PIQRAY when used with fulvestrant include:

- rash
- nausea
- tiredness and weakness
- decreased appetite
- mouth sores
- vomiting
- weight loss
- hair loss
- changes in certain blood tests

PIQRAY may affect fertility in males and in females who are able to become pregnant. Talk to your health care provider if this is a concern for you.

These are not all of the possible side effects of PIQRAY. Call your doctor for medical advice about side effects. 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.

Please see Summary of Important Information on the following page.

SUMMARY OF IMPORTANT INFORMATION

WHAT IS PIQRAY USED FOR?

PIQRAY® (alpelisib) tablets is a prescription medicine used in combination with the medicine fulvestrant to treat women who have gone through menopause, and men:

- who have hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative advanced breast cancer or breast cancer that has spread to other parts of the body (metastatic), with an abnormal phosphatidylinositol-3-kinase catalytic subunit alpha (PIK3CA) gene, **and**
- whose disease has progressed on or after endocrine therapy

Your health care provider will test your cancer for an abnormal "PIK3CA" gene to make sure that PIQRAY is right for you.

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

WHO SHOULD NOT TAKE PIQRAY?

Do not take PIQRAY if you have had a severe allergic reaction to PIQRAY or are allergic to any of the ingredients in PIQRAY.

WHAT SHOULD I TELL MY HEALTH CARE PROVIDER BEFORE TAKING PIQRAY?

Before you take PIQRAY, tell your health care provider about all of your medical conditions, including if you:

- have a history of diabetes
- have a history of skin rash, redness of skin, blistering of the lips, eyes or mouth, or skin peeling
- are pregnant or plan to become pregnant. PIQRAY can harm your unborn baby

  Females who are able to become pregnant:
  - Your health care provider will check to see if you are pregnant before you start treatment with PIQRAY
  - You should use effective birth control during treatment with PIQRAY and for 1 week after the last dose. Talk to your health care provider about birth control methods that may be right for you during this time
  - If you become pregnant or think you are pregnant, tell your health care provider right away

  Males with female partners who are able to become pregnant should use condoms and effective birth control during treatment with PIQRAY and for 1 week after the last dose. If your female partner becomes pregnant, tell your health care provider right away.

  You should also read the fulvestrant Prescribing Information for important pregnancy, contraception, and infertility information.
- are breastfeeding or plan to breastfeed. It is not known if PIQRAY passes into your breast milk. Do not breastfeed during treatment with PIQRAY and for 1 week after the last dose.

WHAT OTHER MEDICATIONS MIGHT INTERACT WITH PIQRAY?

Tell your health care provider about all of the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. PIQRAY and other medicines may affect each other causing side effects. Know the medicines you take. Keep a list of them to show your health care provider or pharmacist when you get a new medicine.

WHAT ARE THE POSSIBLE SIDE EFFECTS OF PIQRAY?

PIQRAY may cause serious side effects, including:

- **Severe allergic reactions:** Tell your health care provider or get medical help right away if you have trouble breathing, flushing, rash, fever, or fast heart rate during treatment with PIQRAY
- **Severe skin reactions:** Tell your health care provider or get medical help right away if you get severe rash or rash that keeps getting worse, reddened skin, flu-like symptoms, blistering of the lips, eyes or mouth, blisters on the skin or skin peeling, with or without fever
- **High blood sugar levels (hyperglycemia):** Hyperglycemia is common with PIQRAY and can be severe. Patients with a history of type 2 diabetes may require closer monitoring by their health care professional. Your health care provider will check your blood sugar levels before you start and during treatment with PIQRAY. Tell your health care provider right away if you develop symptoms of hyperglycemia, including excessive thirst, dry mouth, urinate more often than usual or have a higher amount of urine than normal, or increased appetite with weight loss
- **Lung problems (pneumonitis):** Tell your health care provider right away if you develop new or worsening symptoms of lung problems, including shortness of breath or trouble breathing, cough, or chest pain
- **Diarrhea:** Diarrhea is common with PIQRAY and can be severe. Severe diarrhea can lead to the loss of too much body water (dehydration) and kidney problems. If you develop diarrhea during treatment with PIQRAY, tell your health care provider right away. Your health care provider may tell you to drink more fluids or take medicines to treat diarrhea

Your health care provider may tell you to decrease your dose, temporarily stop your treatment, or completely stop your treatment with PIQRAY if you get certain serious side effects.

The most common side effects of PIQRAY when used with fulvestrant include:

- rash
- nausea
- tiredness and weakness
- decreased appetite
- mouth sores
- vomiting
- weight loss
- hair loss
- changes in certain blood tests

PIQRAY may affect fertility in males and in females who are able to become pregnant. Talk to your health care provider if this is a concern for you.

These are not all of the possible side effects of PIQRAY. Call your doctor for medical advice about side effects. 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.

WHAT LABORATORY MONITORING TESTS DO I NEED WHEN TAKING PIQRAY?

Your health care provider will check your blood sugar levels before you start and during treatment with PIQRAY. Your health care provider may monitor your blood sugar levels more often if you have a history of Type 2 diabetes.

GENERAL INFORMATION ABOUT THE SAFE AND EFFECTIVE USE OF PIQRAY

Medicines are sometimes prescribed for purposes other than those listed. Do not use PIQRAY for a condition for which it was not prescribed. Do not give PIQRAY to other people, even if they have the same symptoms you have. It may harm them. You can ask your health care provider or pharmacist for more information about PIQRAY that is written for health professionals.

For more information about PIQRAY, talk with your doctor or pharmacist or call 1-833-4-PIQRAY (1-833-474-7729). The FDA-approved product labeling or prescribing information can be found at PIQRAY.com.

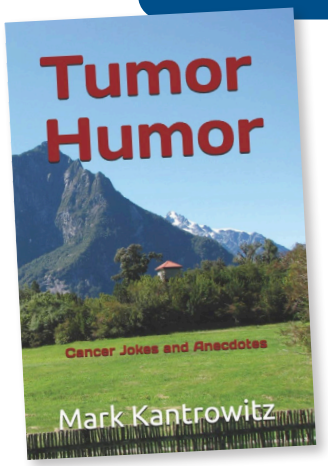
NOVARTIS

PIQRAY® (alpelisib) tablets

Novartis Pharmaceuticals Corporation
East Hanover, New Jersey 07936-1080

Finding the Humor in the Cancer Journey

One man discovered that his experience with testicular cancer inspired jokes he could share with others. By BETH FAND INCOLLINGO



"Tumor Humor: Cancer Jokes and Anecdotes" is **MARK KANTROWITZ's 13th book. His previous books included five bestsellers about planning and paying for college. He has also written two puzzle books of laddergrams, a type of puzzle invented by Lewis Carroll. "Tumor Humor" is available on Amazon.com in paperback ($9.95) and on Kindle ($4.99).**

***"MY DOCTOR TOLD** me that cancer treatment will add years to my life. After my first week of chemotherapy, I feel older already."*

Mark Kantrowitz knew there was nothing funny about receiving a diagnosis of testicular cancer two weeks after the birth of his son. But he believed in the healing power of laughter, and the passage of nearly 20 years hasn't changed that. Hence, his latest book: "Tumor Humor: Cancer Jokes and Anecdotes," published this year by Cerebly, Inc.

Kantrowitz started writing cancer jokes and posting them to his website while he was in treatment for the disease in 2003. Since then, the collection has grown. Some are corny puns that fall into the "dad joke" category. Others are more risqué. Kantrowitz advises those who are easily offended not to read his quips, but hopes that, for most, they will help dispel stress and depression.

"Beware," he writes, "cancer jokes are contagious."

The 143-page book is set up in chapters. Having a bad experience in the infusion room? Read jokes about chemotherapy. Worried about your next needle stick? Read jokes about IVs and blood draws. The book includes silliness about nausea, dietary restrictions, hair loss, paperwork, money, oncology nurses, specific cancer types and more.

Along the way, Kantrowitz shares pieces of his own journey, which inspired much of the humor, and the text is punctuated with occasional cartoons by Jerry King. Kantrowitz discusses being strapped in for scans that lasted hours, receiving test results, living with chemotherapy's side effects, and enduring hospital parking problems and the things people say.

"One time I was talking to a young man about my cancer experience and he exclaimed, 'Did you survive?' to which I replied, 'Well, I am standing here talking to you, aren't I?'" Kantrowitz recalls in the book.

He adds that, "One acquaintance said, 'Good luck on your double vasectomy.' I think they meant to say mastectomy, but I was having an orchiectomy. I was having my testicle removed, not my breasts. Seriously, dude."

Kantrowitz also gives "helpful" advice to those with cancer who want to pull pranks on their caregivers, such as using a green glow stick to make it look like they're radioactive after radiation therapy; eating beets, blackberries or asparagus to change the color of urine; and even convincing someone a glass of apple juice is a urine sample and then drinking it.

The book is a good place to turn for a giggle, even when your situation doesn't seem to call for humor. "It can take your mind off the cancer," Kantrowitz says, "at least for a little while."

"One acquaintance said, 'Good luck on your double vasectomy.' I think they meant to say mastectomy, but I was having an orchiectomy. I was having my testicle removed, not my breasts. Seriously, dude." *—MARK KANTROWITZ*

SHARE YOUR STORY! Whether you are a patient, survivor, caregiver or health care provider, we want to publish your stories about cancer and the people, places and moments of the experience. They can be funny, poignant or practical. Send stories to **editor@curetoday.com,** or share on our Facebook page at **facebook.com/curemagazine**. Submissions should be no more than 600 words and include your name, phone number and email.

IMAGES COURTESY OF KELLY FOSSO RODENBERG

Insights Into Future Treatments Are Shared at Oncology Conference

Findings presented at the international ESMO Virtual Congress 2020 spotlight new practice-changing findings for patients who have breast, liver and colorectal cancers.

AT THE EUROPEAN SOCIETY for Medical Oncology Virtual Congress 2020, an annual global conference, researchers presented an array of promising new research results that may have a positive impact on care for patients with cancer. Here, we share some of those developments.

Tecentriq Combo Improves Response Rates in Triple-Negative Breast Cancer

ADDING THE IMMUNOTHERAPY Tecentriq (atezolizumab) to the chemotherapy regimen Abraxane (nab-paclitaxel), Adriamycin (doxorubicin) and Cytoxan (cyclophosphamide) before surgery significantly improved pathologic complete responses (pCR) in patients with stage 2 or stage 3 triple-negative breast cancer (TNBC), compared with placebo plus chemotherapy. This is notable because a higher pCR rate strongly predicts fewer recurrences and longer survival.

The data came from the phase 3 IMpassion031 trial.

Findings from the randomized, multicenter trial that included 333 participants demonstrated that patients with early-stage disease who received presurgical Tecentriq with chemotherapy achieved a pCR rate of 57.6%, compared with 41.1% in the group that received placebo plus chemotherapy. pCR means there is no evidence of invasive cancer in the surgical specimens taken from the breast and any affected lymph nodes following treatment.

Senior study author Dr. Nadia Harbeck, head of the Breast Center at the University of Munich in Germany, said the new combination therapy "may offer an improved curative treatment option for this patient population with high unmet medical need."

Previously, results from the IMpassion031 trial demonstrated that adding Tecentriq to Abraxane improved progression-free survival (the time from the start of treatment until disease worsens) and overall survival (the time from the start of treatment until death) in patients with PD-L1-positive metastatic TNBC with an acceptable safety profile compared with Abraxane alone. PD-L1 is a protein that acts as sort of a "brake," stopping the body's immune system from killing cancer cells. However, Harbeck noted that the cancer did not need to express the protein PD-L1 in order to respond when Tecentriq was added to the treatment regimen.

Tecentriq plus the chemotherapy regimen also appeared to delay the worsening of disease and the time without disease and increase length of life; however, Harbeck noted that the data are immature and that longer follow-up is ongoing.

Almost all patients (99.4%) in the Tecentriq arm experienced at least one side effect, and 100% in the placebo arm experienced at least one side effect. Treatment-related serious or severe side effects were reported in 56.7% of patients who received the Tecentriq-chemotherapy regimen and 53.3% of patients who received the placebo.

The most common presurgical side effects in both the Tecentriq-chemotherapy arm and the chemotherapy-only arm included hair loss (75% vs. 77.2%, respectively), nausea (64.6% vs. 67.1%) and diarrhea (41.5% vs. 44.3%). The most common side effect in both arms of special interest of any grade was rash (48.8% vs. 49.1%, respectively).

"This combination can also provide benefit to patients who are unfit for platinum-containing anthracycline-taxane-based (presurgical) chemotherapy," the authors wrote, referencing a more toxic chemotherapy regimen that also improves pCR rates compared with standard chemotherapy. — *RYAN MCDONALD*

New Arterial Infusion Therapy Helps Patients with Inoperable Liver Cancer

Patients with hepatocellular carcinoma (HCC) whose tumors couldn't be surgically removed lived longer after being treated with hepatic arterial infusion chemotherapy (HAIC) compared with those who received transarterial chemoembolization (TACE), according to phase 3 study findings.

Both procedures delivered medicine directly to the liver through a hepatic artery, but each infused different chemotherapies. Of 315 study participants, roughly half were put in the HAIC group to receive oxaliplatin, leucovorin and fluorouracil. The other half in the TACE group received epirubicin, and lobaplatin with lipiodol and polyvinyl alcohol particles designed to trap the chemotherapy for a longer period of time in the liver.

Patients in the trial, conducted in China, were mostly men with a primary HCC tumor (the most common type of liver cancer) measuring more than 7 centimeters. In addition, 90% had hepatitis B infection, 60% had liver cirrhosis and about half had more than three lesions.

TACE is the current standard of care for patients with unresectable intermediate-stage HCC, but some patients do not respond to it.

Patients who were treated with HAIC received up to six cycles, whereas TACE was given on demand. Treatment continued until tumor progression or the patient could no longer tolerate it.

The researchers found that the time from the start of treatment until death was a median 23.1 months with HAIC compared with 16.07 months with TACE. With HAIC, a higher proportion of patients experienced a complete or partial response compared with TACE patients, at 45.9% versus 17.9%, respectively. The median time a patient lived without disease progression was 9.63 months in the HAIC group versus 5.4 months in the TACE group.

Although both groups experienced serious side effects, HAIC had a better safety profile compared with TACE, study author Dr. Ming Shi, of Sun Yat-sen University in Guangzhou, China, said. Serious side effects occurred in the TACE group at a rate of 30% versus 19% in the HAIC

group. These included abdominal swelling caused by accumulation of fluid, elevated bilirubin (a substance made during the breakdown of red blood cells) in the blood, upper gastrointestinal bleeding, inflammation of the bile duct system and infection. However, the HAIC group experienced more occurrences of blood-count lowering and diarrhea. Two treatment-related deaths occurred in each group.

"HAIC is not a globally accepted treatment for HCC," Dr. Lorenza Rimassa of Humanitas University in Milan, Italy, said in a discussion after the presentation. "It is mainly used in China where this trial has been conducted and more clinical trials are needed to define its true (value)." — *KATIE KOSKO*

New Immunotherapy Appears Safe With Preliminary Efficacy in mCRPC

AMG 160, A NOVEL bispecific T-cell engager (BiTE) immuno-oncology therapy, demonstrated a manageable safety profile with preliminary evidence of efficacy in men with metastatic castration-resistant prostate cancer (mCRPC) who had received numerous previous treatments, according to preliminary results from a phase 1 study.

"There remains an urgent need for treatments that can overcome resistance to hormonal therapies, chemotherapies and radiation therapies. And despite impressive activity in other cancers, novel immune-based therapies have offered limited efficacy in mCRPC," Dr. Ben Tran, of Peter MacCallum Cancer Centre in Victoria, Australia, explained during a presentation.

He and his colleagues evaluated IV infusion of AMG 160, a targeted half-life extended BiTE immune therapy that engages patients' own T-cells to kill prostate cancer cells by binding the protein CD3 on T-cells and the prostate-specific membrane antigen on cancer cells.

In the ongoing phase 1 study, the researchers are investigating the drug in two phases. In the first, they're assessing the safety and tolerability of AMG 160 monotherapy, and in the second they're testing the drug in combination with a second immunotherapy, Keytruda (pembrolizumab), in men with mCRPC that was resistant to prior novel hormonal therapy and up to two taxane-based chemotherapy regimens with evidence of progressive disease.

Median prostate-specific antigen (PSA), a protein whose rising levels in blood can indicate the presence of prostate cancer, was 79.2 ng/mL at baseline.

Forty-three patients received one or more doses of AMG 160 monotherapy, with 41 experiencing treatment-related side effects. These included cytokine release syndrome, in which the immune system attacks healthy organs (90.7%), fatigue (44.2%), vomiting (44.2%), nausea (39.5%), fever (37.2%), headache (34.9%), diarrhea (32.6%), dry mouth (30.2%), rash (27.9%), low levels of phosphate in the blood (25.6%), low blood pressure (23.3%), chills (23.3%), taste disruption (23.3%) and decreased appetite (20.9%). No deaths occurred, and no side effects resulted in treatment discontinuation.

In total, 27.6% of patients had a confirmed PSA response to AMG 160. Overall, 68.6% of patients across all monotherapy groups showed PSA decline, and 34.3% of patients showed a reduction of 50 ng/mL or more.

Among the 15 patients with measurable disease, three experienced a partial response and eight had stable disease.

The maximum tolerated dose has not been reached, and researchers continue assessing the safest and most effective dose of AMG 160. Meanwhile, the investigation of AMG 160 in combination with Keytruda continues. — *KRISTIE L. KAHL*

Keytruda Boosts Health-Related Quality of Life in Some Colorectal Cancers

THE IMMUNOTHERAPY KEYTRUDA (pembrolizumab) as an initial treatment showed clinically meaningful improvements in the health-related quality of life for patients with microsatellite instability-high (MSI-H) and/or mismatch repair-deficient (MMRD) metastatic colorectal cancer compared with standard chemotherapy, according to new data.

The phase 3 KEYNOTE-177 study analyzed 294 previously untreated U.S. patients with MSI-H and/or MMRD metastatic colorectal cancer. Cancer that falls into those categories has trouble repairing its own DNA when damaged and these tumors are felt to trigger the immune system to a greater extent.

In the study, researchers demonstrated that, compared to chemotherapy with or without the targeted drugs Avastin (bevacizumab) or Erbitux (cetuximab), Keytruda alone provided a superior delay in the time from treatment until disease progression (worsening). They also found that, over the course of two years, health-related quality of life continued to increase for patients receiving Keytruda.

Patients were divided into groups to receive either Keytruda or standard chemotherapy with or without Avastin or Erbitux. In a follow-up at 18 weeks, clinically meaningful improvement was found based on the results of two questionnaires. One questionnaire found that health-related quality of life improved by 8.96 points, and another found an increase of 7.38 points, for patients receiving Keytruda compared with those receiving chemotherapy. During the time period 18 to 45 weeks after the start of treatment, the quality-of-life score for patients receiving Keytruda improved by another 5 to 10 points, while the score for those receiving chemotherapy dropped by several points.

Patients receiving Keytruda also reported improvements in anxiety, weight and, for men, sexual interest between baseline and week 18; patients receiving chemotherapy also saw an improvement in anxiety but reported declines in body image and, among men, sexual interest. Sexual interest dropped for women on both regimens.

In addition, time to deterioration, including physical and social functioning and fatigue, was delayed in patients who received Keytruda versus chemotherapy.

Side effects such as urinary frequency, abdominal pain, bloating and stoma care problems improved over time with Keytruda, and issues including buttock pain, dry mouth, alopecia, taste alterations and sore skin increased with chemotherapy.

Said the study's lead author, Dr. Thierry André of the Saint Antoine Hospital, Assistance Publique Hôpitaux de Paris, "These findings further support use of pembrolizumab as a standard of care for first-line treatment of patients with (microsatellite instability-high and/or mismatch repair-deficient metastatic colorectal cancer)." — *CONOR KILLMURRAY*

Note to Self: Investigate Health Insurance Options

From Nov. 1-Dec. 15, consumers can shop for health plans offered under the Affordable Care Act. One advocate suggests that all patients compare policies to ensure the best fit for their particular needs and budget. By MONICA FAWZY BRYANT

TAXES, PHYSICAL EXAMS and oil changes are a few of the items on our "To Do" list each year. One more item, however, should be added: Review your health insurance options.

Under the Affordable Care Act (ACA), former President Barack Obama's health care law, Americans have more options for health insurance and consumer protections than ever before. Yet few of us are ever taught how to choose the right health insurance plan.

The ACA created the health insurance marketplace (aka exchanges). A lot of confusion exists about this group of exchanges, with many people mistakenly believing the plans are government insurance. They're not. Private health insurance companies sell their plans through the marketplace.

So why, then, would someone buy a plan through the marketplace instead of just going directly to the health insurance company? Purchasing health insurance through the exchanges offers several benefits, as follows:

- Every plan must offer comprehensive coverage of essential health benefits, such as hospitalization, prescription drugs and mental health care.
- Companies must provide information about each plan in a standardized format called the summary of benefits and coverage (SBC). Because every SBC has the same format, it makes it easier to compare choices.
- Marketplace plans have standardized levels: platinum, gold, silver, bronze and catastrophic. The difference between these plan levels is the amount of money that consumers pay out of pocket for their health care costs (i.e., cost sharing).
- Consumers may be eligible for financial assistance based on their household size and income level (i.e., premium tax credit and/or a cost-sharing subsidy).

But you can only buy a policy through the marketplace during the open enrollment period. For most exchanges, open enrollment this year will run from Nov. 1-Dec. 15. Because these are calendar-year plans, coverage will not start until Jan. 1, 2021, so patients should make sure they have some other type of coverage until then. Some states may have a longer open-enrollment period. For more information, visit **https://triagecancer.org/health-insurance-state-laws.**

The only way to purchase a policy outside of open enrollment is if someone experiences a life-changing event, such as losing their job, getting married or moving to a different state. In those instances, a special enrollment period allows 60 days to shop for and buy a marketplace plan.

Even for those who already have a health care plan that works for them, it's always still a good idea to investigate and compare different plans. Shopping around can't hurt, even for those who have health insurance coverage through their employer. Plans and pricing can change every year, so it may be possible to find new coverage that is more affordable or a better fit for a patient's needs, e.g., by including specific providers in the network or covering certain prescription drugs.

By taking the time to compare your current plan with new options, you may find a cheaper plan or discover that you're entitled to other benefits, like financial assistance.

Consider these five key questions when choosing a health insurance plan:

1. What is the monthly premium?
2. How much is the deductible?
3. What is the out-of-pocket maximum for the year?
4. Are my health care providers included in the plan?
5. Are my prescription drugs covered by the plan?

To calculate the true cost of a health insurance policy, multiply the monthly premium by 12 to get the yearly cost and then add the out-of-pocket maximum. The total is the most you will pay for the year to use in-network, covered services.

To review the available plans on the health insurance marketplace, visit HealthCare.gov and enter the state where you live.

If you feel confused or overwhelmed, you're not alone. Numerous studies show that a majority of Americans do not understand health insurance, so it's no surprise that people may not be using their policies to maximum potential. To further compound this confusion about the health care system, things are frequently changing at the state and federal levels and people often don't know where to turn for reliable, unbiased information. For more information and free resources, visit **https://triagecancer.org/healthinsurance.**

Monica Fawzy Bryant *is a cancer rights attorney, speaker and chief operating officer of Triage Cancer, a national, nonprofit organization that provides education on the practical and legal issues that may affect individuals diagnosed with cancer and their caregivers. Bryant has led hundreds of educational seminars, written articles and blogs, and co-authored a book published by the American Bar Association called* "Cancer Rights Law: An Interdisciplinary Approach."

CANCER

Did you know you can sell your life insurance for immediate cash?

- *No Fees*
- *No Obligation*
- *Most Settlements are Tax Free*
- *No Doctor Visits Necessary*
- *Private and Confidential*
- *Immediate Cash*

For peace of mind, confidentiality, and expert advice, trust in the strength and stability of an industry leader.

Call Greg or Lisa today.

- *Group Life*
- *FEGLI*
- *Term Life*
- *Whole Life*
- *Universal Life*

Available in most states.

Working with cancer patients and their families for over 23 years.

LIBI
LIFE INSURANCE BUYERS, INC.
Since 1995

1-800-936-5508

www.lifeinsurancebuyers.com

Racing Toward Treatments for Childhood Cancers

The RACE for Children Act will create more clinical trial options for young patients with cancer and, ultimately, more pediatric oncology drugs.

By BETH FAND INCOLLINGO

THE NUMBER OF CANCER clinical trials available to children is expected to grow substantially under a new law that went into effect Aug. 18.

The Research to Accelerate Cures and Equity (RACE) for Children Act requires that those testing new drugs in adults must also test the medications in children if both populations share the molecular anomaly targeted by the therapy.

Originally signed into law in August 2017, the RACE for Children Act amends the Pediatric Research Equity Act (PREA) that had similar requirements but also had a loophole: If the pediatric cancer in question was considered an orphan, or rare, disease, sponsors did not have to conduct trials in children.

» TRISH ADKINS

Since all pediatric cancers are orphan diseases, defined as those that affect 200,000 or fewer individuals nationwide each year, that was a major problem, says Trish Adkins, a writer for the nonprofit organization Alex's Lemonade Stand Foundation and the mother of a childhood cancer survivor. Adkins has much more hope for the RACE for Children Act.

"Less than 4% of our federal cancer research budget goes toward childhood cancer research, and that's something that's always been a drumbeat in the pediatric cancer community — that our children need more research, that they need more funding," Adkins said. "As a parent, this is one more option. Pediatric cancer research is something we all have to work on together, from passing legislation that compels pharmaceutical companies to participate to funding research privately through foundations like Alex's Lemonade Stand."

The Food and Drug Administration has listed 205 molecular targets common to both pediatric and adult cancers to help guide the application of the act. "If a drug company is studying these molecular targets for adults, they also have to study them for children," Adkins says, either by adding a trial arm or creating a separate study.

Adkins is excited about the long-term possibilities this could open up for childhood cancer survivors.

"Kids who have been treated for cancer are twice as likely to have chronic health conditions later in life versus their peers who have not," she says. "Those conditions can be fatigue and sleeplessness, severe heart conditions or multiorgan failure later in life because of all the harsh drugs they've been given to help them survive. The thought is that, by targeting cancer in a precise way (with novel drugs), not only are you more effective, but these treatments are also safer. They leave fewer long-term devastating side effects."

Now that more clinical trials are expected, will parents be willing to enroll their children? Adkins is certain they will.

VECTOR ARTWORK: TERAVECTOR / STOCK.ADOBE.COM; PHOTOS PROVIDED BY TRISH ADKINS

"Families and their oncologists usually start with the standard of care, and if that fails, the options left are mostly pediatric clinical trials or studies," she says. "For families, enrolling in a clinical trial represents hope, (and) I think families are incredibly receptive to enrolling in clinical trials."

Adkins got involved with Alex's Lemonade Stand Foundation a couple of years after her daughter, Lily, received a diagnosis of ependymoma, a brain tumor, at 14 months old. While Lily was receiving treatment at Children's Hospital of Philadelphia, Adkins heard a talk there by Liz Scott — mother of Alexandra Scott, the namesake of Alex's Lemonade Stand Foundation — about research the organization had funded and the hope that science held for children with cancer.

"As a mom who was really worried about her child, that was what I needed to hear," Adkins recalls. "So my family became involved as volunteers and fundraisers. And then Alex's was hiring a writer, so it was a really good fit for me."

Today, Lily, 14, is cancer free after standard-of-care surgery and proton beam radiation, although she lives with long-term side effects.

"We always live with the specter of not just whether the cancer could come back, but whether the radiation she had could cause a secondary cancer," Adkins says. "Those are things that she now, as a young adult, has to carry with her and soon take responsibility for on her own."

For now, Lily navigates those issues with the help of her two younger siblings, who have been by her side through years of physical and occupational therapy and follow-up MRIs, Adkins says.

TRISH ADKINS and her husband, **MIKE ADKINS,** work with their children to raise funds for pediatric cancer research through the Alex's Lemonade Stand Foundation. The children, from tallest to smallest, are **LILY ADKINS, CHLOE ADKINS** and **NICHOLAS ADKINS.**

"As they all get older, they start to understand more and more what's at stake," she says. "But working with Alex's Lemonade Stand Foundation, both as a staff member and as a family that volunteers, it helps them see how much power they have. We can't control if cancer comes back, but the things we can control are advocating, working, fundraising and trying to make sure there's more research and more treatment for kids."

Looking ahead, Adkins points out that the RACE for Children Act is "just one piece of how cures for children are going to happen."

Other positive steps will include "a push through Alex's Lemonade Stand Foundation to ensure that big data (extremely large data sets that may reveal patterns, trends and associations) is analyzed, harmonized and available for researchers, which can accelerate treatments. And there's the piece that involves supporting families through treatments so they can get to these clinical trials, especially through COVID-19, which has created more travel restrictions. It's all of those pieces working together that really can make this happen. And it's nice to see this RACE Act adding to the pot and leveling the playing field for kids."

BILLIONPHOTOS.COM / STOCK.ADOBE.COM

Can a Blood Test Detect Cancer?

A liquid biopsy may soon be available to find early signs of cancer in asymptomatic patients, when the disease is still treatable and even curable.

By KATHERINE MALMO

Picture this: At your annual doctor's appointment when they draw your blood to check your cholesterol, thyroid and liver enzymes, they also run a test for cancer. That little vial of blood, however, doesn't just screen for a few types of cancer but for all 100-plus of them — including hard-to-find forms like pancreatic and ovarian.

And if this blood draw leads to a scan or biopsy and if you receive a diagnosis of cancer, it is more likely to be in the asymptomatic, early stages when the tumor is treatable and more likely to be cured.

This was exactly how diagnosis played out for Rosemary Jemo of Hazle Township, Pennsylvania, in 2016, when she enrolled in the DETECT study being run by Johns Hopkins University and Geisinger Health. Jemo, who works as a hairdresser and exercise instructor, was one of 10,000 women ages 65 to 75 in the study with no prior history of cancer.

"I felt wonderful at the time," Jemo says. "I always went to my doctor for my yearly checkups. Then I had the first blood test of the trial and a second blood test, and then they called me to get a PET scan. Then my doctor told me I had a tumor the size of a football on my ovary. I had no pain or (inkling) that I was even sick. They were able to remove the tumor in one piece. It's been a year and a half since then, and everything looks good. I have no other signs of cancer, so I'm pretty happy." »

This is the promise of what a liquid biopsy can do. Such tests already exist, but they're just beginning to make their way into mainstream care as a means to check for recurrence or lingering microscopic cancer in patients who have already been treated for the disease. Using them to find early signs of cancer in asymptomatic patients would be a new venture, but it may not be far off: Several liquid biopsy candidates are in clinical trials for this purpose.

If they prove effective, they could save lives and money, prompting a change in the medical system.

> **"The majority of cancers are found when the person has symptoms, and many times by the time they see a doctor and are diagnosed, it's hard to cure or even prolong the patient's life. We're trying to detect cancers as early as we can."**
>
> ***— NICK PAPADOPOULOS, Johns Hopkins University School of Medicine***

FOLLOWING A DREAM

One of the first to imagine a cancer-screening blood test was Nick Papadopoulos, who holds a doctorate in biomedical sciences and is a professor of oncology and pathology at Johns Hopkins University School of Medicine and a member of the Sidney Kimmel Comprehensive Cancer Center there. Papadopoulos is a co-founder of Thrive Earlier Detection Corp., which has licensed the CancerSEEK test (formerly known as DETECT-A), a liquid biopsy designed to detect multiple types of cancer at the earliest stages possible, before noticeable symptoms.

"The majority of cancers are found when the person has symptoms, and many times by the time they see a doctor and are diagnosed, it's hard to cure or even prolong the patient's life," Papadopoulos says. "We're trying to detect cancers as early as we can."

He says that for 30 or 40 years, scientists have known that some kind of signal must exist in the blood of someone with cancer to broadcast that the disease is there. It's just taken decades to find it.

So what is that signal? Adam Buchanan, director of Geisinger Genomic Medicine Institute and principal investigator on the DETECT study, says the liquid biopsy looks for protein biomarkers and pieces of DNA that have been shed from a tumor and are circulating through the blood.

These biomarkers can be found in people with numerous cancer types, which means that testing the blood may reveal the presence of cancers that are difficult to detect any other way. In fact, of the more than 100 cancer types that exist, there are screening tests for only five: cervical, breast, prostate, lung and colon, says Sudhir Srivastava, who holds a doctorate in biological science and is senior scientific officer and chief of the Cancer Biomarkers Research Group at the National Cancer Institute.

The real power of these tests, then, lies in finding the remaining 95-plus cancers, says Dr. Joshua Ofman, chief medical officer and head of external affairs for GRAIL, a health care company developing another liquid biopsy.

"Right now, about 71% of cancer deaths occur due to cancers that have no routinely recommended early detection testing," Ofman says.

Pancreatic cancer is one of them and, as a result, it's often diagnosed months after symptoms begin. By then, only about 15% to 20% of patients are eligible for surgery, and only 10% of those with the diagnosis live beyond five years.

Sue Friedman, founder and executive director of Facing Our Risk of Cancer Empowered (FORCE), a national nonprofit focused on hereditary cancers, is a 23-year breast cancer survivor who has a BRCA gene mutation that puts her at high risk of developing pancreatic cancer.

"Right now, the testing that's available for pancreatic cancer is not usually covered by insurance for people who do not have a family history, even if they're at high risk," Friedman says. "There's a certain specialized MRI or endoscopic ultrasound, but both tests are expensive, and my health plan won't cover them."

In addition to screening for cancers that are otherwise hard to detect, liquid biopsies could supplement the effectiveness of other tests and help determine when those tests are necessary — for example, the prostate-specific antigen (PSA) blood test used to screen for prostate cancer.

"If men have a PSA between 4 ng/mL and 10 ng/mL, there is only a 20% to 30% chance that they will have biopsy-positive prostate cancer, but even so, the doctor may advise the patient to undergo biopsy," Srivastava says. Perhaps a liquid biopsy test could identify which men with PSAs at that level could benefit from biopsy, he says, allowing doctors to spare the others from the unnecessary procedure and to place them under active surveillance.

TESTING THE TEST

Figuring out how liquid biopsies might fit into the diagnostic process is something that researchers on the DETECT study hoped to find out.

According to the study's results, 96 of the 10,000 enrolled women received diagnoses of cancer during the trial. Of those, 26 were identified by the blood test, 24 by standard screening methods and 46 after they developed symptoms.

Of the patients diagnosed by the blood test, 14 had hard-to-find cancers in organs such as ovaries, kidneys or the lymphatic system. Nine of these tumors had not yet spread beyond their original sites.

"One of the things we wanted to see with this trial was if we were competing with the standard of care, or if the test is additive and synergistic," Papadopoulos says. "We detected 26 cancers with our blood tests within the population that we tested. And then (24 cancers were) detected with the standard of care. So the blood test doubled the screen-detected cancers, which was a very good result."

According to Buchanan, the goal of the trial was primarily to assess the test's feasibility and safety. Researchers wanted to know how well it worked, but also if it could be used to minimize negative outcomes like false positives that would lead people to have additional medical tests.

"We want to encourage participants to continue standard-of-care screening that is already known to be helpful," Buchanan says. "We're trying not to discourage people from doing the useful stuff, and we don't want results to lead to unnecessary emotional, medical or financial cost."

In the case of the CancerSEEK test, a positive result does not tell a clinician where the cancer is located, so those results must be followed by a full body PET/CT scan to identify the tumor's origin. This could add unnecessary testing and radiation for those with false positives. But, according to Buchanan, the trial found that the test's false positive rate was under 1%.

However, not all liquid biopsies work the same way. While Srivastava says CancerSEEK looks for any of approximately 16 mutated genes, some blood tests, such as GRAIL's, measure the patterns of gene methylation. Buchanan describes methylation as an on/off switch on DNA. It happens when methyl groups, made up of one carbon and three hydrogen atoms, attach themselves to DNA, modifying the expression of genes.

"We found methylation patterns to be the most effective method of finding cancer because methylation is a signature," Ofman says. "They're these tiny molecules that attach to the DNA in groups that are abnormal in cancer. They also contain information about where the tissues originated from. It's a very rich signal. So our test is detecting the cancer signal and then localizing the signal to a specific tissue or organ."

That's why the GRAIL test can tell the clinician not only if the patient likely has a tumor but also what type of cancer it is likely to be. In a clinical trial of the test, researchers detected more than 50 cancer types with 93% accuracy.

But not all liquid biopsies are conducted using blood. Other trials are being done with saliva and cerebrospinal fluid.

David Wong is a professor and an associate dean for research at the University of California Los Angeles (UCLA) School of Dentistry and part of a project looking at saliva for "fingerprints" of lung cancer malignancy.

"You can find this fingerprint in blood too," Wong says. "But it is easier to access in saliva. You may not realize it, but we produce three soda cans of saliva every day."

Looking for DNA

Thrive Earlier Detection Corp., which has licensed the CancerSEEK test (formerly known as DETECT-A), a liquid biopsy designed to detect multiple types of cancer at the earliest stages possible, before noticeable symptoms. The liquid biopsy looks for protein biomarkers and pieces of DNA that have been shed from a tumor and are circulating through the blood.

MAKING LIQUID BIOPSY WIDELY AVAILABLE

According to Ofman, the risk of cancer increases significantly after age 50, so if the GRAIL liquid biopsy was available to complement standard-of-care screening for everyone older than 50, it could avert many deaths by earlier detection of up to 75% of all the cancers that have less than a 50% five-year survival rate.

These tests could potentially save hundreds of thousands of lives, but Srivastava says some questions need to be answered before they become widely available.

- How specific (false-positive rate) and how sensitive (false-negative rate) are they?
- Do these tests shift stage of cancer diagnosis to an earlier one?
- Do they help reduce unnecessary diagnostic work-ups or biopsies?
- Do randomized trials show that these tests reduce cancer mortality? »

The DETECT study showed that the test was feasible and safe, and the results provided helpful information to patients and their doctors. Papadopoulos says the next phases of testing will include a more diverse population of varying ages, genders, races and ethnicities. While the testing process has been slowed by COVID-19 restrictions, he thinks that the CancerSEEK test will be available in the next four or five years.

Buchanan, however, thinks CancerSEEK will come to market faster, becoming available to some health systems and insurers within the next year or two — although he doesn't expect it to have Food and Drug Administration (FDA) approval at that point.

He noted that the FDA will wait to review clinical trial outcomes before granting the test approval, and that will be key to it being covered through Medicare and private insurance.

Ofman says the timeline for GRAIL will be shorter still, with the test possibly being introduced in the next year. He notes that the FDA has already given the test a breakthrough device designation, meaning that it will get an expedited review, with the company fulfilling some "evidence-generation requirements in the post-approval setting."

As for the saliva test out of UCLA, Wong says it is in its second year of a trial that aims to accrue 360 participants.

PUTTING LIQUID BIOPSY INTO PRACTICE

Once a test is available, clinicians will need to determine how often it should be used and on what populations.

Papadopoulos thinks CancerSEEK should be used every two or three years, but he says the details of who gets it and how often will be determined based on each person's risk profile. Patients who are worried about a recurrence of cancer or, like Friedman, face genetic risk, may be tested earlier and more often.

Testing for recurrence may be slightly different for GRAIL because, in those individuals, the goal will be to look for methylation patterns that may have been altered by treatment. Other tests for recurrence, such as one developed by a company called Natera, uses the DNA sequence of the original tumor to develop a customized test that detects tiny amounts of the DNA in the blood if the tumor is recurring but before it is detectable by scans.

"We're doing research right now to understand how well our test performs in different populations," Ofman says, "and whether chemotherapy or surgery affect it."

> **"Right now, about 71% of cancer deaths occur due to cancers that have no routinely recommended early detection testing."**
>
> *— JOSHUA OFMAN, GRAIL, a health care company developing a liquid biopsy*

Pinpointing Cancer Type

A liquid biopsy being developed by a company called GRAIL can tell a clinician not only if the patient likely has a tumor but also what type of cancer it is likely to be. In a clinical trial of the test, researchers detected more than 50 cancer types with 93% accuracy.

While Friedman is enthusiastic about the possibility of a liquid biopsy to detect cancer, she cautions others to be careful about using tests that have not yet been validated through rigorous research studies.

"On the one hand, there is the unmet need of the community," Friedman says. "On the other hand, an unvalidated test doesn't necessarily benefit people. We've seen this several times over the past 20 years, especially with ovarian cancer — blood tests that are put on the market and then taken off."

To help speed the process along, Friedman recommends that people enroll in clinical trials. Those interested can find a list of trials that are enrolling on FORCE's website (tinyurl.com/y2ucntua).

THE POTENTIAL TO SAVE LIVES

If these liquid biopsies work like they're designed to, doctors will find more cancers — and find them earlier. Ofman says this could reduce the cancer-related five-year mortality rate by 15% to 24%. Given that an estimated 600,000 Americans will die of cancer this year, if Ofman is right, this technology could save 144,000 lives per year in the United States alone.

"Furthermore, treating cancer early is about half the cost of treating it in the late stages," Ofman says. Since Americans are projected to spend $158 to $207 billion this year on cancer care, the savings could be significant.

Srivastava says liquid biopsies could also save Americans billions of dollars in unnecessary diagnostic work-ups. "So you'll reduce the cost of treating cancer dramatically, and then, given all the false positives that are generated by single-cancer screening tests, you'll reduce it even more."

PHYSICIANS & PATIENTS

NOW ENROLLING: TIL THERAPY CLINICAL TRIALS

Investigational

EXPLORE TIL IMMUNOTHERAPY

TIL MANUFACTURING AT IOVANCE STARTS WITH ISOLATING TUMOR-INFILTRATING LYMPHOCYTES (TIL) from a surgically resected piece of a patient's tumor. The isolated TIL, which may recognize multiple patient-specific antigens expressed by the tumor, are expanded to billions of cells. Prior to infusion of TIL, the patients are treated with non-myeloablative lymphodepletion preconditioning to remove the suppressive tumor micro-environment. Once the TIL are infused, the patients receive up to 6 doses of IL-2 to support expansion and anti-tumor activity of the TIL.

22 DAY PROCESS, ONE-TIME THERAPY

CERVICAL CANCER

HEAD & NECK CANCER

MULTIPLE SOLID TUMORS

YOU OR SOMEONE YOU KNOW MAY QUALIFY FOR ONE OF OUR TIL THERAPY CLINICAL STUDIES IF INITIAL CRITERIA ARE MET:

- Diagnosis of:
  - Recurrent, metastatic or persistent cervical cancer
  - HPV + or - recurrent and/or metastatic HNSCC
  - Unresectable or metastatic melanoma, stage IIIC or IV
  - Locally advanced or metastatic NSCLC, stage III or IV
- At least one resectable tumor for TIL generation
- 18 years old or older
- ECOG PS 0-1

If these key eligibility criteria are met, you may be eligible to participate in our clinical study program. There are additional eligibility criteria that must be met and can only be assessed by a study physician.

TIL Therapy is an investigational therapy and has not been approved for any indication by the United States Food and Drug Administration (USFDA) or any other regulatory agency. The safety and efficacy of this therapy has not been determined.

TO LEARN MORE ABOUT THE TRIALS

Call 1-866-565-4410, and press option 3, email clinical.inquiries@iovance.com or, go to www.iovance.com/clinical/our-clinical-program

VISIT CLINICALTRIALS.GOV

Cervical Cancer: NCT03108495
Head and Neck Cancer: NCT03083873
Multiple Solid Tumors: NCT03645928 (Melanoma, HNSCC, NSCLC)

IOVANCE BIOTHERAPEUTICS

PATTOONPATI / STOCK.ADOBE.COM ADAPTED BY GWEN SALAS

Targeting 'Superdrivers'

Ultra-precise drug targeting brings new hope for patients with non-small cell lung cancer that harbors rare mutations.

By ARLENE WEINTRAUB

After Robin Kwiecien was diagnosed with non-small cell lung cancer (NSCLC) in 2018, she started a course of targeted radiation, which kept the disease under control for nearly two years. When the cancer progressed in late 2019, a biopsy revealed that the tumors had an "activating" genetic mutation called KRAS G12C — making Kwiecien eligible for a clinical trial of a drug targeting that exact abnormality.

Kwiecien, 66, a retired pharmacy technician in Duluth, Georgia, was accepted into the trial in February and put on a dosage of eight tablets per day of the experimental oral drug sotorasib. After six weeks on a daily dose of sotorasib, Kwiecien got some good news: The tumors had shrunk by 22%. She didn't need to undergo chemotherapy or take any other drugs during the trial. So aside from a little shortness of breath caused by the cancer, she says, "I'm not showing any major symptoms. I haven't felt bad in any way, shape or form."

Oncologists have long been aware of "driver" mutations in genes — abnormalities that can cause the onset and growth of cancer. KRAS and EGFR are examples of genes that can become mutated and drive lung tumors and several other cancers. But in recent years, oncology researchers have discovered subsets of these mutations that some refer to as "superdrivers" because they can cause cancer growth on their own, seemingly without the dependence on other tumor mutations. »

KRAS G12C and EGFR exon 20 insertions are super-driver mutations that can make NSCLC particularly difficult to treat. About 12% of patients with NSCLC have the KRAS G12C mutation. EGFR mutations are quite common in NSCLC, with a prevalence of about 32% in a recent analysis of records from more than 115,000 patients worldwide. Exon 20 insertions account for 4% to 10% of those EGFR-positive cases.

Patients with KRAS G12C and EGFR exon 20 insertions typically don't respond well to chemotherapy and other established treatments, including drugs that were approved by the Food and Drug Administration to target other EGFR mutations. The good news is that drugs developed to address these less common mutations are progressing through clinical trials — and offering the prospect that targeted treatments will improve the prognosis for patients in the future.

"This reflects the evolution of lung cancer therapy. We're dividing lung cancer into smaller subgroups and then developing more specific therapies for each of them," says Dr. John Heymach, chair of thoracic/head and neck medical oncology at The University of Texas MD Anderson Cancer Center in Houston. "It's an exciting time."

CRACKING A CHALLENGING MUTATION

The KRAS gene belongs to a class of genes that, when mutated, are known to cause normal cells to become cancerous. KRAS encodes proteins that are involved in normal cell signaling, but mutations can cause those signals to become sustained, resulting in uncontrolled cancer growth. KRAS mutations can also make some cancer cells resistant to chemotherapy. But targeting KRAS with drugs has proven challenging.

There are several subtypes of KRAS mutations, including G12D and G12V, but KRAS G12C is of particular interest in lung cancer because of its prevalence. Sotorasib, the most advanced drug in the pipeline targeting KRAS G12C, is designed to lock the mutated cancer-associated protein into an inactive state "so it no longer signals and no longer drives cancer growth," explains Dr. Greg Durm, assistant professor of clinical medicine at Indiana University School of Medicine and one of the investigators for the sotorasib trial.

In September, data from an early trial of sotorasib was released showing that 32% of patients with NSCLC who participated responded to the drug and that the overall rate of disease control was 88%. Phase 2 trial results announced in October confirmed those findings.

A second KRAS G12C inhibitor, MRTX849, also looks promising in NSCLC. Six patients with NSCLC received the drug in a study released in October 2019, and three of them had a partial response.

The drugs also seem to be well tolerated, with few serious side effects reported in the trials so far. "Many of the patients we've had (on sotorasib) tell me they feel as well on this drug as they have in some time," Durm says. "That's because many of them have been on chemotherapy, with side effects like fatigue, vomiting and rashes. Most of that resolves on this drug when it's given alone."

Even though KRAS G12C inhibitors are still in early testing as solo therapies, oncologists and drug developers are already thinking about their potential as part of combination strategies. Sotorasib is being tested along with the chemotherapy drug docetaxel, for example, as well as in combination with Keytruda (pembrolizumab), an immunotherapy drug that blocks the checkpoint protein PD-1.

"These combination approaches are based on biological evidence that targeting multiple pathways related to KRAS could result in additive benefit," says Dr. Suresh Ramalingam, deputy director of Winship Cancer Institute of Emory University and a professor of hematology and medical oncology at the Emory University School of Medicine in Atlanta and one of the investigators for the sotorasib trials.

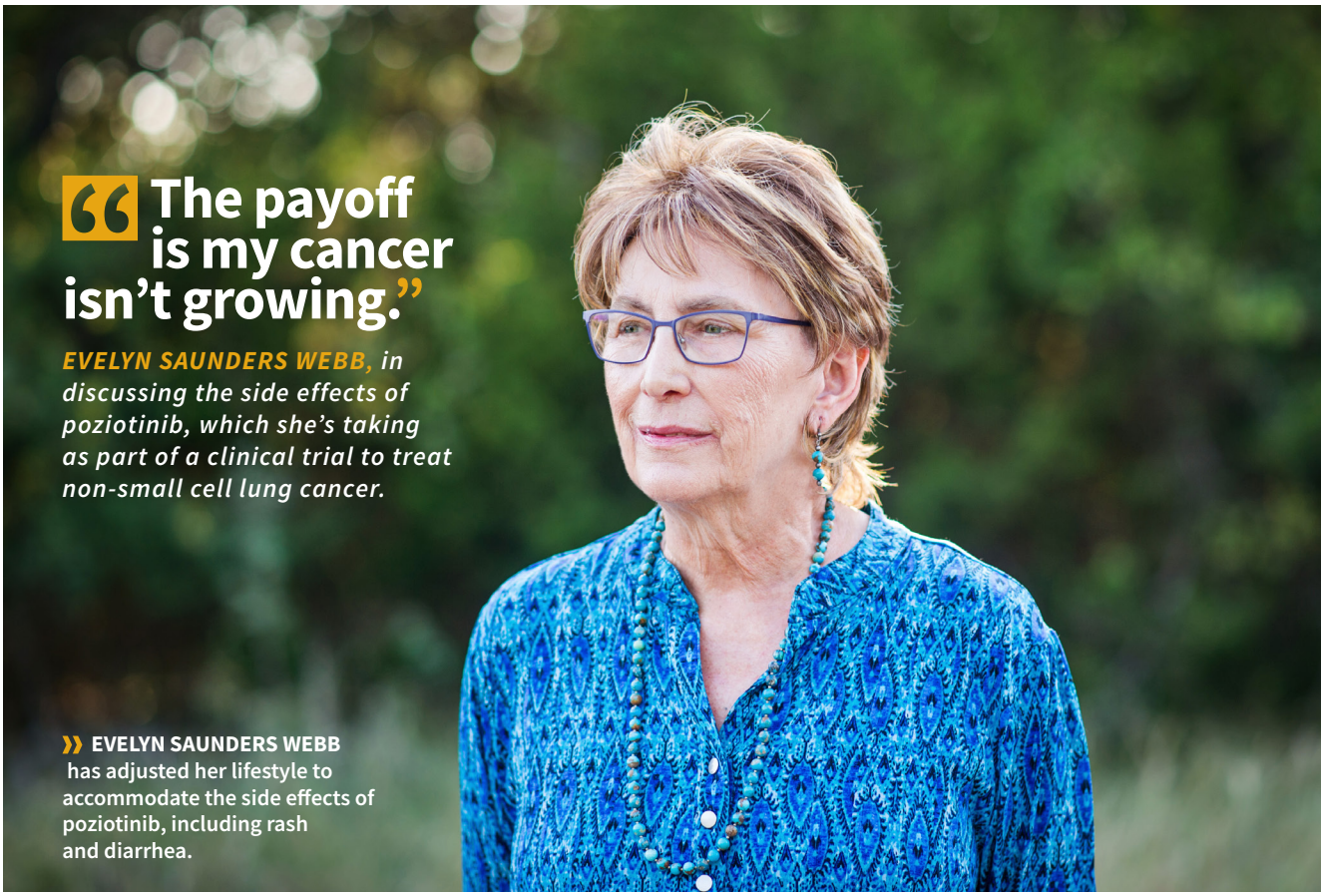
3 QUESTIONS TO ASK YOUR DOCTOR

- ❑ WAS MY TUMOR TESTED for and found to harbor a KRAS G12C mutation or an EGFR exon 20 insertion?
- ❑ DO YOU KNOW OF any clinical trials testing drugs that target those mutations for which I might be eligible?
- ❑ WHERE CAN I LOOK FURTHER for such clinical trials on my own?

TARGETING EGFR MUTATION SUBTYPES

Evelyn Saunders Webb had part of her right lung removed while being treated for NSCLC in 2014. That's when her doctors at MD Anderson Cancer Center discovered her cancer had the EGFR exon 20 insertion mutation. Four years later, after chemotherapy and radiation helped tamp down two recurrences of the disease, Webb was accepted into a trial of an experimental oral drug called poziotinib.

Shortly after Webb was first administered poziotinib, her cancer regressed by 50%. Her disease has been stable ever since. Aside from occasional digestive issues and a rash that she controls with an antibiotic, Webb hasn't noticed any



» **EVELYN SAUNDERS WEBB** has adjusted her lifestyle to accommodate the side effects of poziotinib, including rash and diarrhea.

EVELYN SAUNDERS WEBB BY LAURA SQUIRE

symptoms from either the drug or the cancer. “I feel good,” says Webb, 74, who lives in San Antonio. “I walk two to three miles a day and do everything I would normally do.”

Heymach says that EGFR-targeted drugs such as Tarceva (erlotinib) and Gilotrif (afatinib) are often effective in patients with the most common EGFR mutations: exon 19 deletions and L858R. “But about 20% of patients have what we call atypical EGFR mutations, and the biggest group have exon 20 insertions,” he says.

EGFR exon 20 insertion has been challenging to target, in part because the mutated version of the gene looks similar to normal EGFR, which is involved in the growth and differentiation of healthy cells in the body. “So, the trick has been to develop drugs that inhibit the mutation but leave normal EGFR alone,” Heymach says.

Poziotinib is currently in phase 2 trials in patients with NSCLC harboring EGFR exon 20 insertion mutations. Data released in September from one trial showed that 63 out of 90 patients who received the drug achieved disease stabilization and 67 had tumor shrinkage. Studies from Heymach’s group at MD Anderson have shown response rates of 30% to 40%.

“Our best EGFR inhibitors for classical mutations work in 60% to 70% of patients, but none of those drugs work for exon 20 insertion mutations,” Heymach says. “So (poziotinib) isn’t quite as good (as EGFR inhibitors are in treating classical mutations), but it’s much better than nothing.”

The side effects of the drug, primarily rash and diarrhea, were difficult for Webb at first, but they became manageable after she was switched to a lower dose of poziotinib. She still watches what she eats — for example, the spicy Mexican food that’s so popular in Texas is off-limits — and she has to stay out of the sun as much as possible. But it’s worth it, she says: “The payoff is my cancer isn’t growing.”

Mobocertinib, another drug being developed for patients with the EGFR exon 20 insertion mutation, received breakthrough designation from the FDA in April and will get an expedited review, based on data showing an overall response rate (including all partial and complete responses) of 43% in patients participating in an early trial. The drug is now being tested in a phase 3 trial comparing it with chemotherapy in newly diagnosed patients.

Another drug for exon 20 insertion mutations that received an FDA breakthrough designation is amivantamab, which is referred to as a “bispecific antibody” because it has two modes of action. One arm targets EGFR and the other targets MET, another gene that can drive EGFR-mutated cancers. The drug is also designed to direct »

WEBB says she feels good while taking experimental poziotinib to treat non-small lung cancer, walking two to three miles a day and doing everything she'd normally do.

EVELYN SAUNDERS WEBB BY LAURA SQUIRE

the body's own cancer-killing immune cells to tumors. In an early trial, 41% of patients who had previously been treated with chemotherapy responded to amivantamab.

Amivantamab is now being studied in a phase 3 trial in combination with two chemotherapy drugs. Oncologists are also interested in exploring other combination strategies for treating patients with EGFR exon 20 mutations, but in this case, those combinations are unlikely to include immunotherapy, says Dr. Pasi Jänne, director of the Lowe Center for Thoracic Oncology at Dana-Farber Cancer Institute and a professor of medicine at Harvard Medical School, both in Boston. "Lung cancer patients who have EGFR mutations don't really benefit from immunotherapy, and there is clearly more toxicity when you add checkpoint inhibitors to an EGFR inhibitor," he says.

EXPLORING EARLY TREATMENT WITH TARGETED DRUGS

Several drugs being tested for EGFR exon 20 insertions are also being studied in patients with human epidermal growth factor receptor 2 (HER2) gene mutations. HER2 is a member of the same family as EGFR, and the mutation is so structurally similar to the EGFR exon 20 insertion that "if you make a drug against one, it will most likely inhibit the other," Jänne says. About 4% of patients with NSCLC have HER2-mutated tumors.

In a small trial of poziotinib in HER2-positive NSCLC, approximately 50% of patients responded, and more extensive data in this subset of patients is expected soon for some of the other drugs originally designed to target EGFR exon 20 insertion mutations.

One drug that was FDA approved to treat HER2-positive breast cancer, Enhertu (fam-trastuzumab deruxtecan-nxki), is showing promise in HER2-positive NSCLC. In an ongoing phase 2 trial, 90% of patients treated with Enhertu saw the disease improve or stay stable, and 62% of patients had tumors partially or completely respond. All patients in the trial had received at least one prior therapy.

KRAS G12C, HER2 and EGFR exon 20 insertion mutations can be detected with DNA, or "biomarker," testing of tumor samples collected during biopsies. Some insurance companies may not cover all available tests, so patients should talk with their oncologists about both the logistics and costs of comprehensive biomarker testing.

The early promise of drugs addressing KRAS G12C and EGFR exon 20 insertion mutations has raised interest in studies designed to determine whether they should be used earlier in the treatment process — before chemotherapy or other targeted drugs.

"These are mutations that happen early on and are in every single part of the cancer," says Dr. Joel Neal, associate professor of medicine at Stanford University Medical Center in California and one of the investigators for the mobocertinib trial. "That makes them powerful to target because if you can turn off the proteins that result from these mutations, you can kill a lot of the cancer cells or make them not divide."

Six months after entering the trial of sotorasib, Kwiecien learned that the tumors stopped shrinking. But she isn't discouraged, she says. In fact, she's so optimistic that scientific advances will improve the chances for patients in the future that she's already looking for another clinical trial.

"I didn't go into a clinical trial with an expectation of a cure," Kwiecien says. "I wanted to somehow give back in some small way through research. I would like to continue to do that."

WORRIED
ABOUT YOUR CLL?

Apply to the CLL Society Expert Access™ Program
—it's free to see a top CLL specialist

"I went from fatalistic to hopeful in 30 minutes!"

VISIT: CLLSOCIETY.ORG/EAP

A CLL EXPERT PHYSICIAN CAN GIVE YOU A 2ND OPINION ONLINE AT NO COST TO YOU!

The CLL Society is a nonprofit focused on the unmet needs of the CLL community in terms of patient support, education, research and advocacy. Learn more about all of CLL Society's programs including educational forums, CLL-specific support groups, webinars, the latest news, research, and more at **CLLSOCIETY.ORG**.

CLL SOCIETY

Smart Patients Get Smart Care™


Chips
Yogurt

Food FIGHT

Cancer loves glucose, which is why fasting, restricting calorie consumption or following the ketogenic diet may make chemotherapy and some other cancer treatments more effective and easier to tolerate, early evidence shows.

By ANDREW SMITH

Jocelyn Aguilar felt bad enough after the first of a scheduled four rounds of chemotherapy that she thought about quitting.

She had no detectable cancer after undergoing double mastectomy for breast cancer, so the chemotherapy was an optional treatment that Aguilar, age 37 when diagnosed in October 2019, had chosen to reduce the risk of recurrence.

She ultimately decided to continue because, starting with her next round of chemotherapy, she was going to help test a counterintuitive-but-promising strategy for reducing chemotherapy's side effects and increasing its cancer-fighting power: a very low-calorie diet designed to mimic the effects of fasting.

"On weeks (when) I was due to receive chemo that Friday, I got four boxes of food labeled Tuesday, Wednesday, Thursday and Friday. The only food I ate those days came from that day's box. On Saturday morning, I woke up and eased myself back into normal eating," says Aguilar, a nurse who works at the University of Southern California (USC), where the trial took place.

"The pain I experienced with that first round of chemo, before the fasting, was so terrible that I didn't think I could go on," says Aguilar, who described the sensation as aches and pains all over her body. "With the fast, there were still some effects, but they were not nearly as bad. It was a huge difference." »

GOOD STUDIO / STOCK.ADOBE.COM

Aguilar says that her food boxes each contained about 300 calories worth of plant-based food. The diet is billed by its distributor as containing "micro- and macronutrients" that are nourishing but not recognized as food by the body, which mimics fasting.

It's hard to imagine a more counterintuitive cancer treatment than fasting — why deprive the body of vital nutrients when it would seem to need them most? — but a growing body of research suggests that fasting decreases the toxicity of cancer treatments and may increase their efficacy too.

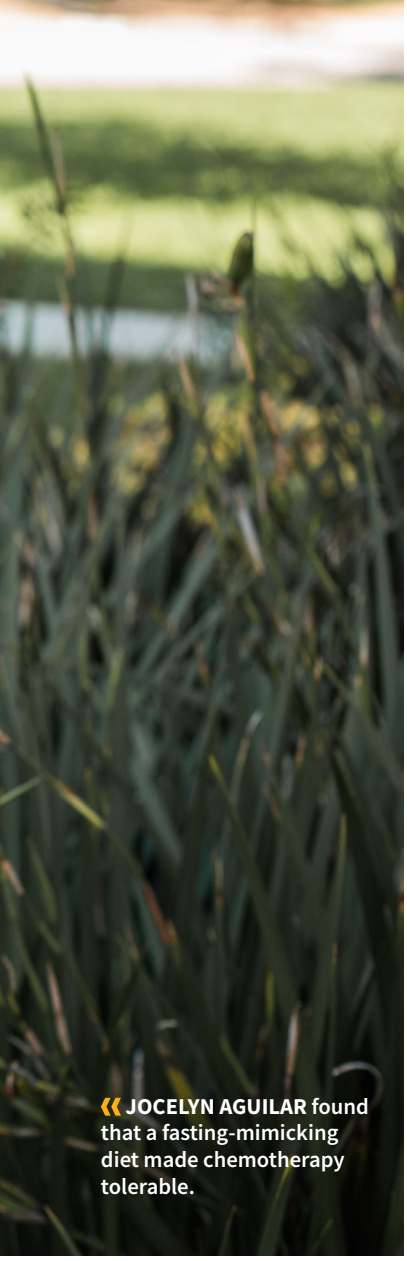
Some evidence also shows that a ketogenic diet, which deprives the body of carbohydrates rather than all calories, may increase the efficacy of some cancer treatments. In fact, there is even some thought that the two diets may help prevent cancer, although evidence for this is currently limited.

When it comes to supplementing cancer therapies, the benefits of either dietary intervention also have yet to be definitively proven — unless you're a mouse.

"The animal data for fasting, which started in our lab but is now coming from many labs, is extraordinary. It's hard to think of anything in the past, ever, that has done better," says Valter Longo, who holds a doctorate in biochemistry and is the Edna M. Jones Professor of Gerontology and Biological Sciences and the director of the Longevity Institute at the USC Leonard Davis School of Gerontology.

Healthy cells and tumor cells respond differently to fasting. Healthy cells shut down their growth-promoting pathways

JOCELYN AGUILAR BY ALYSSA STEFEK



« JOCELYN AGUILAR found that a fasting-mimicking diet made chemotherapy tolerable.

> **"The pain I experienced with that first round of chemo, before the fasting, was so terrible that I didn't think I could go on. With the fast, there were still some effects, but they were not nearly as bad. It was a huge difference."** — ***JOCELYN AGUILAR, who ate a fasting-mimicking diet in combination with chemotherapy for breast cancer***

shortly after the food stops coming in and focus on cell repair. Cancer cells, on the other hand, rarely slow their unrestrained growth enough to engage in this self-protective behavior.

Fasting thus increases the ability of healthy cells to withstand stressors such as chemotherapy or radiotherapy, but it leaves cancer cells, which suddenly have less nutritional support to sustain their rapid growth, unusually weak and vulnerable.

Fasting also depletes stored carbohydrates. Normal cells can adapt to this by running mostly on two fat-derived energy sources — fatty acids and ketones — but cancer cells are far more reliant on sugars, starches and the insulin that drives them into cells.

Most of the mouse studies to date have assessed fasting's effect on chemotherapy or radiotherapy, but at least one study has found that a low-calorie fasting-mimicking diet (FMD) plus simple vitamin C can slow the progression of KRAS-mutated colon cancer. Another study, this one published in the prestigious journal *Nature*, found that both fasting and a FMD increased and extended the efficacy of the hormonal treatments tamoxifen and Faslodex (fulvestrant) in mouse models of hormone-receptor-positive breast cancer.

MAKING THE CASE FOR FASTING IN HUMANS

The first clinical trial of short-term fasting in humans, which was published in 2009, reported results in 10 patients with various types of cancer. It found that fasting reduced chemotherapy-related toxicities —fatigue, weakness and gastrointestinal side effects — in the six patients who fasted 48 to 140 hours before and five to 56 hours after some (but not all) of their chemotherapy sessions.

Several other trials in humans, all of them following small patient populations for short periods of time, have also found that fasting reduced treatment-related toxicities such as fatigue or DNA damage in healthy cells. For example, one Dutch trial assigned six patients with breast cancer to follow normal dietary guidelines and seven others to fast 24 hours before and after chemotherapy. Nonhematological toxicity did not differ between the two groups, but the researchers found evidence that fasting reduced bone marrow toxicity and reduced chemotherapy-induced DNA damage in some healthy blood cells.

Data from several of these small trials also suggested that fasting increased treatment efficacy, but none of them were large enough (or lasted long enough) to prove that fasting extended patients' survival. There is even less evidence to support the use of fasting or the ketogenic diet in combination with immunotherapy treatments, although that remains a tantalizing possibility.

The only large trial in humans to have reported results so far was inconclusive — for a somewhat unexpected reason.

Investigators randomly assigned 131 Dutch women, all of whom were slated to receive chemotherapy for stage 2/3 HER2-negative breast cancer, either to eat according to standard guidelines or to follow the FMD. Sixty-six of the women were assigned to follow the FMD but, unfortunately, so few actually complied that it was impossible to evaluate the diet's effects. Just 32% of women in the fasting group fasted before at least half of their chemotherapy cycles, and just 24% of them fasted before all of them.

Patient noncompliance was particularly disappointing because the FMD was designed by Longo — who has a financial interest in a company that sells FMD meal kits — as a less demanding way to get all the effects of a true, zero-calorie fast. »

Sticking with a low-calorie diet "wasn't easy, but it was doable," **AGUILAR** says.

"It wasn't easy," says Aguilar, "but it was doable. I'm not normally a healthy eater, and I was being given steroids at the time, so my appetite was out of control, but I still managed it because it reduced the pain so much."

Hopefully, patients in several other large studies, all of which are nearing their scheduled completion dates, will comply with fasting protocols well enough to help researchers determine whether short-term fasting can extend life, reduce treatment toxicity or both for patients with glioblastoma, non-small cell lung cancer, lung adenocarcinoma, ovarian cancer, breast cancer and colorectal cancer.

Positive results could change standards of care for all those tumor types within the next couple of years.

IS FASTING AN OPTION?

For patients who can't wait that long to select their treatment plan, the obvious question is whether they should ask their oncologists about starting now with short-term fasts or the FMD.

Some experts believe it's too early to use fasting anywhere outside of clinical trials. Indeed, a group of Italian clinicians recently published a letter in *Nature Reviews Cancer* that cautioned against what they perceive as excessive enthusiasm about fasting's potential benefits and insufficient caution about its potential to harm some patients.

It is worrying "that the application of fasting in oncology has been prematurely reported by the media as a potential advance in medical oncology, to the point where FMD kits have recently been commercialized," the clinicians wrote. "These may negatively interfere with cancer care, as patients at risk of malnutrition or sarcopenia (muscle loss) could autonomously decrease protein-calorie intake during treatment."

Longo agrees that neither malnourished patients nor those who are responding to their current treatment should try fasting or the FMD outside of clinical trials. However, he believes the data from both animal models and early human trials are strong enough to make fasting an option when approved treatments stop working.

"I think (the evidence so far) is enough for an oncologist to say, 'Look, your therapy isn't working. I'm out of options here. This fasting-mimicking diet is so effective in mice. Why don't we give it a shot? You have to understand there are risks, but you also have to understand that we're out of options.' That conversation would be appropriate now," Longo says.

IS THE KETOGENIC DIET AN OPTION?

Fasting isn't the only way to drive blood sugar and insulin down. Patients can achieve nearly equivalent reductions by following a ketogenic diet that provides

JOCELYN AGUILAR BY ALYSSA STEFEK

about 80% of calories from fat, 12% from protein and 8% from carbohydrates.

Low sugar consumption means low blood sugar, which, in turn, means low levels of insulin — a hormone secreted by the pancreas to drive sugar into muscles and fuel their growth and/or activity. Healthy tissue, as mentioned before, can adapt to deriving nearly all its energy from fat, although many people feel pretty drained for a week or so at the beginning of that adjustment. (This lousy feeling is known as "keto flu.") Many tumors, on the other hand, seem far less able to overcome their dependence on insulin and sugar (aka glucose).

"We've known for 100 years that cancer cells take up glucose at a much higher rate than do the normal tissues from which those cancer cells emerge," says Lewis Cantley, who holds a doctorate in biophysical chemistry and is the Meyer Director of the Sandra and Edward Meyer Cancer Center and a professor of cancer biology in medicine at Weill Cornell Medical College.

This does not mean that patients can starve their tumors to death simply by following ketogenic diets, but it has led many researchers to speculate that adding a ketogenic diet to standard treatment protocols might increase the efficacy of many of those regimens.

It has been difficult to test this theory, however. Because no pharmaceutical company can patent a ketogenic diet, no one has a financial incentive to spend the millions of dollars that large studies cost. Instead, studies get funded through the National Institutes of Health and foundation grants. Tests of FMDs face the same issue.

The ketogenic diet also runs into the same problem that makes it hard to test fasting: patient compliance. Indeed, researchers who work for the Department of Veterans Affairs in Pittsburgh enrolled 11 patients with cancer in a 16-week trial of the ketogenic diet. Only four of them actually followed the diet all 16 weeks.

In spite of the challenges, several recent discoveries suggest that ketogenic diets may be particularly helpful for certain cancer treatments — helpful enough to drive funding and convince patients to follow the diet.

Cantley discovered a previously unknown link between sugar, insulin and cancer growth more than three decades ago: an enzyme called phosphoinositide 3-kinase (PI3K) that helps drive sugar into cells. Mutations in the genes that regulate PI3K — causing an increase in PI3K activity — are among the most common of all cancer mutations.

His discovery eventually led to the creation of PI3K-inhibiting medications, three of which have been approved for the treatment of several cancers. But all three have a big drawback.

"When you give patients a PI3 kinase inhibitor, which hits the same enzyme that propagates the insulin response, you get the unsurprising result that the patient instantly becomes insulin resistant. Many of the patients in the trials of these drugs had to drop out because of high blood sugar," Cantley says.

Extra insulin, whether created by the body in response to rising blood sugar or deliberately injected, will solve the problem by driving the sugar into muscles, but it also drives sugar into tumors and destroys treatment efficacy.

Cantley's team hypothesized that PI3K inhibitors would be far safer and more effective if used in combination with some tool that would control blood sugar without driving it into tissues. They saw dramatically improved results in mice when they paired PI3K inhibitors with a class of diabetes medications called SGLT2 inhibitors, which reduce the body's absorption of glucose via the kidneys so that excess glucose is excreted through the urine. Results were better still when they fed mice a ketogenic diet.

> **"Blood sugar levels hardly went up. Insulin levels hardly went up. Tumors melted away."**
>
> *— **LEWIS CANTLEY** of Weill Cornell Medical College, on the combination of the ketogenic diet and SGLT2 inhibitors in mice*

"Blood sugar levels hardly went up. Insulin levels hardly went up. Tumors melted away," says Cantley, who also has a financial interest in a company that makes prepackaged meals for patients with cancer. "Every tumor we tried essentially disappeared whenever we gave a PI3 kinase inhibitor with a ketogenic diet."

A large human trial will compare the current standard for using PI3K inhibitors against treatment plans that combine PI3K inhibitors with either SGLT2 inhibitors or a ketogenic diet. The ongoing global pandemic delayed the trial for several months, but enrollment has now begun.

And it's not the only trial that's testing the ketogenic diet's effect on cancer treatments. At least 18 other such studies are either recruiting patients or preparing to do so.

"The whole thing comes down to energy. Without energy, nothing can grow," says Thomas N. Seyfried, who holds a doctorate in genetics and biochemistry and is a biology professor at Boston College who studies how metabolic therapies such as a ketogenic diet can affect cancer and other diseases. "Tumor cells make energy by fermenting glucose and the amino acid glutamine. If we restrict the availability of glucose and glutamine, this will create tremendous metabolic stress on the tumor cells."

Reading the Fine Print

Paying attention to the updated nutritional labels on food can help Americans stay within dietary guidelines and prevent illness, including cancer.

By BETH FAND INCOLLINGO

IT HAD BEEN 25 YEARS since the requirements for what's included on nutritional labels had been updated. Because our eating habits and understanding of dietary health have changed quite a bit since then, the Food and Drug Administration (FDA) recently updated its format for the labels attached to nearly all foods sold in the United States.

The FDA published its final rule on the subject in 2016, and by January of this year, most major food manufacturers were in compliance. Smaller food manufacturers have until January 2021 to start using the new labels.

Jill Reedy, chief of the Risk Factor Assessment Branch in the National Cancer Institute's Division of Cancer Control and Population Sciences, contributed to some of the research that helped inform the Dietary Guidelines for Americans, which serves as the basis for information on the labels and prompted some of the changes.

"It was really time to update that food label for consumers," says Reedy, who holds a doctorate in nutrition and a master's degree in public health. "Now there's updated science, nutrition and public health information, including updated dietary guidance."

> **"Some of these recent changes to the food label, like the inclusion of added sugars, really tie back to that research that's been done to understand the relationship between diet and health outcomes, including cardiovascular disease and cancer. It's really exciting to see an updated food label that reflects that current science for overall health promotion and disease prevention, including cancer prevention."** — *JILL REEDY, National Cancer Institute*

In an interview with *CURE*®, Reedy shared more about what shoppers will see on food labels and why.

Q: *CURE*®: What is the main goal of the changes?

A: Reedy: The goal is to ensure that the nutrition facts label is aligned with the science about diet and its impact on health — because the label has been and will continue to be a key tool that helps consumers follow the Dietary Guidelines for Americans and make better-informed food choices. The guidance that we have from the dietary guidelines recommends a healthy dietary pattern that includes and encourages foods like fruits, vegetables, whole grains, low-fat dairy and a variety of lean proteins, and limits and constrains foods that are high in added sugars, saturated fats and sodium. And so, some of these recent changes to the food label, like the inclusion of added sugars, tie back to research that's been done to understand the relationship between diet and health outcomes, including cardiovascular disease and cancer. It's exciting to see an updated food label that reflects that current science for overall health promotion and disease prevention, including cancer prevention.

Q: Have there been any changes in what constitutes a serving of a food?

A: How much Americans eat and drink have changed since that previous food label over 25 years ago. One example ... is the reference amount that's used to set a serving. For example, a serving of ice cream used to be half a cup on the food label, and now it's two-thirds of a cup. And the reference amount for a soda used to be 8 ounces and now is 12 ounces on the food label. The serving sizes that are included on the label have to be based on the amount of food and beverages that people are actually consuming, not what's recommended that they should be eating.

ASIANDELIGHT / STOCK.ADOBE.COM

Q: As far as vitamins and minerals, what has been added and deleted from the nutritional label?

A: We now see vitamin D and potassium as new things listed on the updated food label. They're included because of data (showing) that Americans don't always get enough (of them). We will still see calcium and iron on the food label; those were there before. What we won't see are vitamins A and C. Those are no longer required on the food label because most Americans are consuming enough of those.

Q: What are the changes on the labels regarding sugar?

A: To follow a healthy dietary pattern, the recommendation is to limit calories from added sugars to less than 10% of total calories per day. We know from our data looking at the state of the American diet that we're consuming too many calories from added sugars, and that makes it really difficult to meet our overall nutrient needs while staying within our calorie limits. Added sugars come from obvious sources like sugar-sweetened beverages, such as soda and sweetened coffees and teas. But then they are also in some packaged foods where we might not be thinking that there would be added sugars, like ketchup, spaghetti sauce or yogurt. That's something we can now look at on the food label, and having that information can help increase our awareness and help us make choices to limit added sugars.

Q: What is the Dietary Patterns Methods Project, and how did its findings contribute to this initiative?

A: Researchers have done a lot of research on this topic, with the goal of strengthening the evidence base for the dietary guidelines, and that includes the Dietary Patterns Methods Project. In that project, we looked at key quality indices, including the Mediterranean diet score, DASH (Dietary Approaches to Stop Hypertension) score, the Healthy Eating Index and the Alternative Healthy Eating Index. We used those indices to examine the dietary patterns of people who participated in three very large studies, the NIH-AARP (National Institutes of Health-American Association of Retired Persons) Diet and Health Study, the Women's Health Initiative and the Multiethnic/Minority Cohort Study of Diet and Cancer. And we found very similar results across all three cohorts. People whose diets were consistent with any of these dietary indices had anywhere from an 11% to 28% reduced risk of dying from cancers, from cardiovascular diseases and from all causes combined. We also found that the healthier the diet based on these indices, the greater the reduction in the risk of dying, including from cancer. Relevant to the new, updated label is that higher intake of added sugars was associated with an increased risk for those negative health outcomes. So we can really see from this kind of analysis that a healthier diet, defined by any of these dietary patterns, is associated with better health outcomes.

Q: What should people know about diet and lifestyle as they read the information on food labels?

A: We can consider information about each food through tools like the food label but also in the context of the overall dietary pattern. We also know that there are interrelationships with diet, physical activity, sleep and weight; these things are all connected. Diet, physical activity and obesity are all linked to many cancers, and so our goal is to support and address all these behaviors because it's not necessarily just one or the other. It's all of those things together. And as part of that, the nutrition facts label and the dietary guidelines are great resources for the public.

Q: How will people know about the changes to food labels?

A: To help people better understand the updated nutrition label, the FDA has developed a really comprehensive public education campaign. They have videos and a lot of other helpful information on their website that folks can access to answer specific questions, either for us as consumers or for us as health educators.

Q: What percentage of Americans pay attention to food nutrition labels?

A: There are studies that look at this, and we see that the majority of Americans do read the food label. And studies show that those who are using the food label are more likely to consume more fruits and vegetables and fewer sodas. So more frequent use of the food labels is associated with better diet quality.

Q: What else should people know?

A: The science underlying the dietary guidelines and the food label comes from research that's grounded in the idea of the total diet and dietary patterns. And it's important for us to take this more holistic approach and look at dietary patterns — rather than only looking at an individual food or nutrient — as we think across our lifetime, and any person's lifetime, because we know it's not just one thing that we eat that can affect health. It's really that totality of our diet. And the food labels are an important tool that we have to continue to improve our dietary patterns. C

LEARN MORE ONLINE

- For information on dietary guidelines, visit **https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines**.
- For general information about the new food labels, visit **www.fda.gov/food/food-labeling-nutrition/changes-nutrition-facts-label** and **www.fda.gov/NewNutritionFactsLabel**.

LIBTAYO®
(cemiplimab-rwlc)
Injection 350 mg

In patients with CSCC that has spread or cannot be cured by surgery or radiation:

LIBTAYO helps your immune system fight advanced CSCC

LIBTAYO was studied in 219 patients in 2 clinical trials of patients with CSCC that had spread or could not be cured by surgery or radiation.

46%

In 1 clinical trial of 137 patients,*
63 out of 137 patients
saw an improvement in their advanced CSCC.

Responses to LIBTAYO lasted 6 months or longer in **50 out of 63 patients (79%)** and 12 months or longer in **34 out of 63 patients (54%)**.

41%

In the same clinical trial, in a separate group of 56 patients with CSCC that had spread who took LIBTAYO at the recommended dose,†
23 out of 56 patients
saw an improvement in their advanced CSCC.

Responses to LIBTAYO lasted 6 months or longer in **15 out of 23 patients (65%)**.

50%

In a different clinical trial of 26 patients,*
13 out of 26 patients
saw an improvement in their advanced CSCC.

Responses to LIBTAYO lasted 6 months or longer in **11 out of 13 patients (85%)**.

In these trials, responses lasted between 1 month and more than 2 years (24.2+ months); plus sign (+) denotes ongoing at last assessment.

*Patients were dosed by body weight.
†LIBTAYO 350 mg over a 30-minute infusion every 3 weeks.

LIBTAYO Surround® offers support and resources to patients prescribed LIBTAYO.
If you think LIBTAYO may be right for you, talk to your doctor.

What is LIBTAYO?

LIBTAYO (Lib-TIE-oh) is a prescription medicine used to treat people with a type of skin cancer called cutaneous squamous cell carcinoma (CSCC) that has spread or cannot be cured by surgery or radiation.

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

Important Safety Information

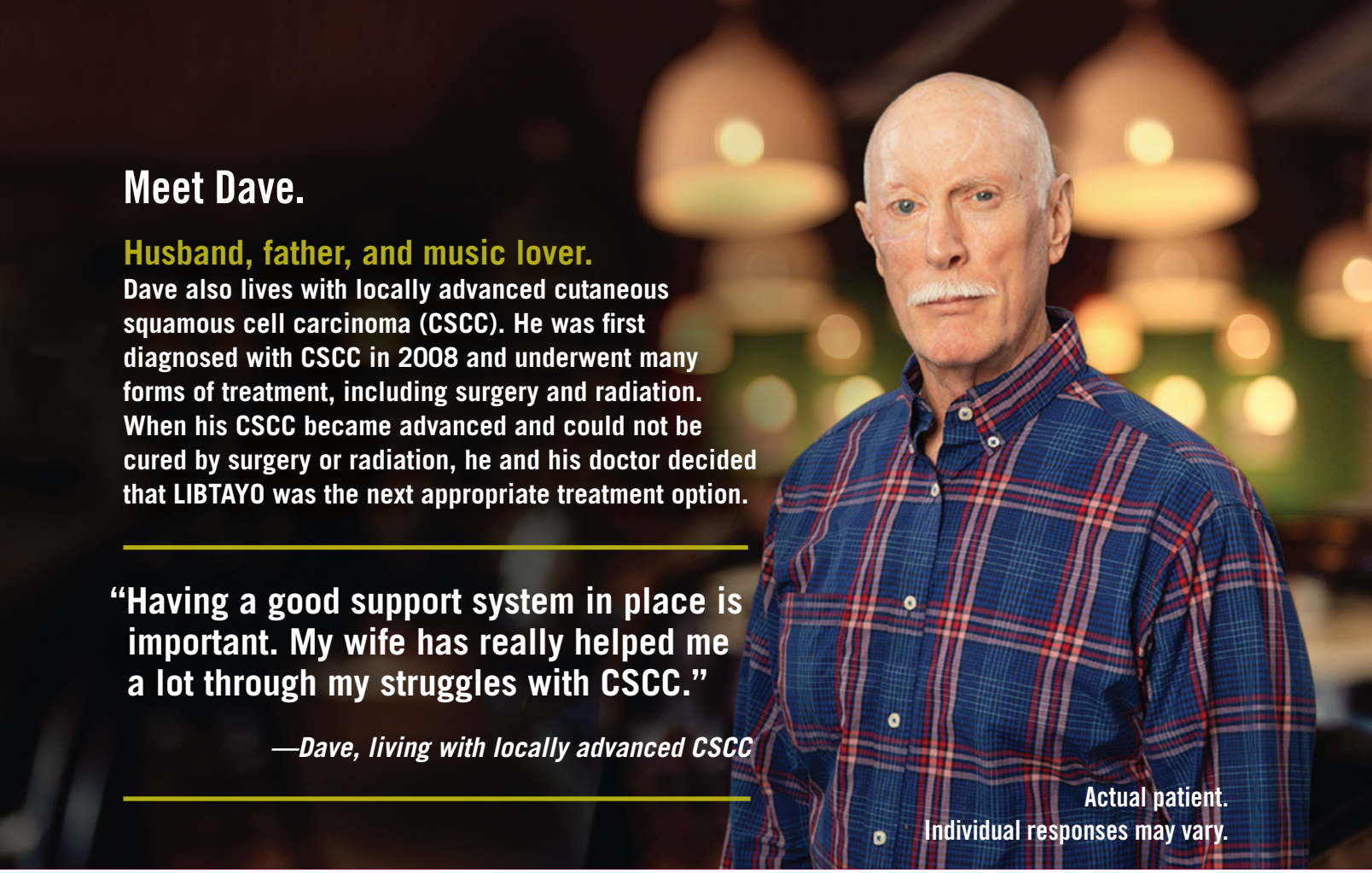
What is the most important information I should know about LIBTAYO?

LIBTAYO is a medicine that may treat a type of skin cancer 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 problem at the same time. These problems may happen any time during treatment or even after your treatment has ended.

Call or see your healthcare provider right away if you develop any symptoms of the following problems or these symptoms get worse:

- **Lung problems (pneumonitis).** Signs and symptoms of pneumonitis may include new or worsening cough, shortness of breath, and chest pain.
- **Intestinal problems (colitis) that can lead to tears or holes in your intestine.** Signs and symptoms of colitis may include diarrhea (loose stools) or more frequent bowel movements than usual; stools that are black, tarry, sticky or that have blood or mucus; and severe stomach-area (abdomen) pain or tenderness.
- **Liver problems (hepatitis).** Signs and symptoms of hepatitis may include yellowing of your skin or the whites of your eyes, severe nausea or vomiting, pain on the right side of your stomach area (abdomen), drowsiness, dark urine (tea colored), bleeding or bruising more easily than normal, and feeling less hungry than usual.
- **Hormone gland problems (especially the adrenal glands, pituitary, thyroid and pancreas).** Signs and symptoms that your hormone glands are not working properly may include headaches that will not go away or unusual headaches, rapid heartbeat, increased sweating, extreme tiredness, weight gain or weight loss, dizziness or fainting, feeling more hungry or thirsty than usual, hair loss, feeling cold, constipation, deeper voice, very low blood pressure, urinating more often than usual, nausea or vomiting, stomach-area (abdomen) pain, and changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness.
- **Kidney problems, including nephritis and kidney failure.** Signs of these problems may include decrease in your amount of urine, blood in your urine, swelling in your ankles, and loss of appetite.
- **Skin problems.** Signs of these problems may include rash, itching, skin blistering, and painful sores or ulcers in the mouth, nose, throat, or genital area.

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



Meet Dave.

Husband, father, and music lover.

Dave also lives with locally advanced cutaneous squamous cell carcinoma (CSCC). He was first diagnosed with CSCC in 2008 and underwent many forms of treatment, including surgery and radiation. When his CSCC became advanced and could not be cured by surgery or radiation, he and his doctor decided that LIBTAYO was the next appropriate treatment option.

"Having a good support system in place is important. My wife has really helped me a lot through my struggles with CSCC."

—Dave, living with locally advanced CSCC

Actual patient.
Individual responses may vary.

To learn more about Dave and other patient stories, visit MeaningfulStories.com

Important Safety Information (continued)

Call or see your healthcare provider right away if you develop any symptoms of the following problems or these symptoms get worse (continued):

- **Problems in other organs.** Signs of these problems may include headache, tiredness or weakness, sleepiness, changes in heartbeat (such as beating fast, seeming to skip a beat, or a pounding sensation), confusion, fever, muscle weakness, balance problems, nausea, vomiting, stiff neck, memory problems, seizures (encephalitis), swollen lymph nodes, rash or tender lumps on skin, cough, shortness of breath, vision changes, or eye pain (sarcoidosis), seeing or hearing things that are not there (hallucinations), severe or persistent muscle pain, severe muscle weakness, low red blood cells (anemia), bruises on the skin or bleeding, and changes in eyesight.
- **Rejection of a transplanted organ.** Your doctor should tell you what signs and symptoms you should report and monitor you, depending on the type of organ transplant that you have had.
- **Infusion (IV) reactions that can sometimes be severe and life-threatening.** Signs of these problems may include chills or shaking, itching or rash, flushing, shortness of breath or wheezing, dizziness, fever, feeling of passing out, back or neck pain, and facial swelling.

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 delay or completely stop treatment 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 had an organ transplant;
- have lung or breathing problems;
- have liver or kidney problems;
- have diabetes;
- 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 tiredness, rash, diarrhea, muscle or bone pain, and nausea. 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.

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.

Please see Brief Summary of full Prescribing Information on the following pages.

REGENERON | SANOFI GENZYME

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 a type of skin cancer 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 problem 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 symptoms of the following problems or these symptoms get worse:

Lung problems (pneumonitis). Signs and symptoms of pneumonitis may include:
- new or worsening cough
- shortness of breath
- chest pain

Intestinal problems (colitis) that can lead to tears or holes in your intestine. Signs and symptoms of colitis may include:
- 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 (hepatitis). Signs and symptoms of hepatitis may include:
- yellowing of your skin or the whites of your eyes
- severe nausea or vomiting
- pain on the right side of your stomach area (abdomen)
- drowsiness
- dark urine (tea colored)
- bleeding or bruising more easily than normal
- feeling less hungry than usual

Hormone gland problems (especially the adrenal glands, pituitary, thyroid, and pancreas)**.** Signs and symptoms that your hormone glands are not working properly may include:
- headache that will not go away or unusual headaches
- rapid heart beat
- increased sweating
- extreme tiredness
- weight gain or weight loss
- dizziness or fainting
- feeling more hungry or thirsty than usual
- hair loss
- feeling cold
- constipation
- your voice gets deeper
- very low blood pressure
- urinating more often than usual
- nausea or vomiting
- stomach-area (abdomen) pain
- changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness

Kidney problems, including nephritis and kidney failure. Signs of these problems may include:
- decrease in your amount of urine
- blood in your urine
- swelling in your ankles
- loss of appetite

Skin problems. Signs of these problems may include:
- rash
- itching
- skin blistering
- painful sores or ulcers in mouth or nose, throat, or or genital area

Problems in other organs. Signs of these problems may include:
- headache
- tiredness or weakness
- sleepiness
- changes in heartbeat, such as beating fast, or seeming to skip a beat, or pounding sensation
- seeing or hearing things that are not there (hallucinations)
- severe or persistent muscle pain
- severe muscle weakness
- low red blood cells (anemia)
- bruises on the skin or bleeding
- changes in eyesight
- confusion, fever, muscle weakness, balance problems, nausea, vomiting, stiff neck, memory problems, or seizures (encephalitis)
- swollen lymph nodes, rash or tender lumps on skin, cough, shortness of breath, vision changes, or eye pain (sarcoidosis)

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

Infusion (IV) reactions that can sometimes be severe and life-threatening. Signs of these problems may include:
- chills or shaking
- itching or rash
- flushing
- shortness of breath or wheezing
- dizziness
- fever
- feel like passing out
- back or neck pain
- facial swelling

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 delay or completely stop treatment with LIBTAYO if you have severe side effects.

What is LIBTAYO? LIBTAYO is a prescription medicine used to treat people with a type of skin cancer called cutaneous squamous cell carcinoma (CSCC) that has spread or cannot be cured by surgery or radiation. It is not known if LIBTAYO is safe and effective in children.

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 had an organ transplant
- have lung or breathing problems
- have liver or kidney problems
- have diabetes
- 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 with LIBTAYO.
  - You should use an effective method of birth control during your treatment and for at least 4 months after the last dose of LIBTAYO. Talk to 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.

Continued on following page

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 tiredness, rash, diarrhea, muscle or bone pain, and nausea.

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.

REGENERON | SANOFI GENZYME

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

Changing the Narrative in Melanoma

A personalized vaccine shows long-term survival benefits for patients with advanced-stage melanoma that has a high likelihood of recurrence, researchers say. By RYAN MCDONALD

A PERSONALIZED VACCINE has demonstrated long-term disease-free and overall survival benefits in patients with stage 3 or stage 4 melanoma at high risk of recurrence following complete surgical removal of the cancer, according to Elios Therapeutics, the vaccine's manufacturer.

Elios Therapeutics recently reported final data from a randomized, double-blind, phase 2b clinical trial that followed patients in real time to evaluate their post-surgical use of the company's personalized tumor lysate, particle-loaded, dendritic cell (TLPLDC) vaccine. Made individually from each patient's blood and tumor cells, the vaccine introduces a tumor antigen into the body that stimulates the immune system to recognize and fight cancer. The vaccine is made during a three-week process that includes loading it into yeast cell wall particles. The combination is then introduced to the patient's dendritic cells (central to the initiation of primary immune responses), leading to the creation of the final TLPLDC vaccine.

Researchers developed and assessed two versions of the vaccine: one produced by isolating dendritic cells from 120 milliliters (mLs) of a patient's blood (vaccine-A) and one with dendritic cells isolated from 50 to 70 mL of blood after a single injection of filgrastim, which helps bone marrow make more white blood cells (vaccine-B).

The study included 144 patients divided into groups to receive either version of the vaccine or placebo to prevent recurrence of melanoma — which is less common than other forms of skin cancer but more aggressive. In addition, the study protocol was amended to allow concurrent treatment with immunotherapy drugs called checkpoint inhibitors after those drugs were approved to be given to patients in this population following standard therapy, Elios stated in a company press release.

Of the 144 patients, 46 received vaccine-A, 57 received vaccine-B and 41 received placebo, with 42 of the 144 patients also receiving checkpoint inhibitors.

The main goal of the trial was to measure disease-free survival, the percentage of patients free of any signs of cancer two years after starting treatment. Secondary goals were to measure disease-free survival and overall survival, the proportion of patients still alive, three years after starting treatment.

Vaccine-A, when compared with vaccine-B and placebo, significantly improved 36-month disease-free survival (51.8% vs. 23.4% vs. 27.1%, respectively) and overall survival (92.9% vs. 62.8% vs. 70.3%, respectively).

Importantly, treatment with vaccine-A in combination with checkpoint inhibitors doubled 36-month disease-free survival compared with checkpoint inhibitors alone (48.5% vs. 24.1%).

EVGENIY KALINOVSKIY / STOCK.ADOBE.COM

"These new data, combined with the doubled rate of disease-free survival among patients treated with (vaccine-A) and standard-of-care checkpoint inhibitors, further strengthen our confidence that the personalized TLPLDC vaccine provides a clinically meaningful benefit for people with high-risk melanoma," said Buddy Long, CEO of Elios Therapeutics, in the release.

In the release, the company also explained why vaccine-B turned out to be ineffective: Producing the vaccine with filgrastim was intended to increase white blood cell and dendritic cell counts, requiring less blood to be drawn from patients to create the vaccine. The use of filgrastim did increase dendritic cell production; however, because it took only 72 hours to create the vaccine, those cells did not have enough time to mature, the company stated.

Of the 34.7% of patients in the trial who experienced treatment-related side effects, more than 90% reported issues that were minor in nature.

"To demonstrate a long-term survival benefit with low toxicity in a therapeutic is what we hope for in every clinical trial. Achieving this with an aggressive disease like melanoma offers great promise for patients," Dr. Mark B. Faries, co-director of the melanoma program at Cedars-Sinai at The Angeles Clinic and Research Institute and principal investigator of the study, said in the release. "With data showing a two-fold increase in disease-free survival with the vaccine alone and in combination with checkpoint inhibitors, we hope to one day change the narrative for people with melanoma, turning this disease into a chronic condition that can be treated and managed over time."

Moving forward, the company plans to conduct a phase 3 trial of vaccine-A.

Many Mutations. Many Cancers.

One Community.

FORCE improves the lives of the millions of individuals and families facing hereditary breast, ovarian, pancreatic, prostate, colorectal and endometrial cancers.

Our community includes people with a BRCA, ATM, PALB2, CHEK2, PTEN or other inherited gene mutation and those diagnosed with Lynch syndrome.

If your cancer, or the cancer in your family, could be caused by an inherited gene mutation, visit the FORCE website for resources and support.

FacingOurRisk.org

Toll-free Helpline: 866-288-RISK (7475)
info@FacingOurRisk.org

FORCE

Facing Hereditary Cancer EMPOWERED

Cholangiocarcinoma Exerts a Heavy Impact on Patient Quality of Life

Patients with bile duct cancer face numerous symptoms and side effects that warrant better understanding and outreach, according to a survey.

By BETH FAND INCOLLINGO

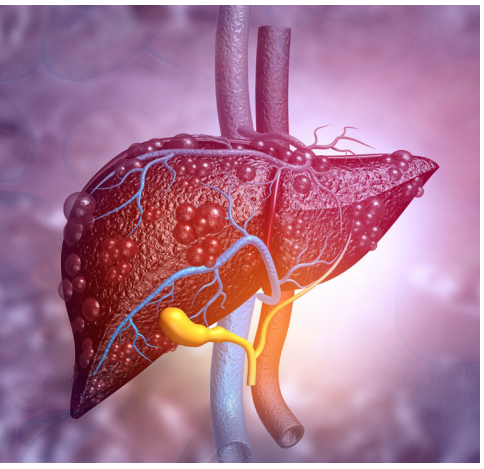
A SURVEY ADMINISTERED by the pharmaceutical company Incyte and the nonprofit Cholangiocarcinoma Foundation found that patients with bile duct cancer face more than a dozen symptoms of their disease or treatment-related side effects that negatively affect their daily lives, including depression that may be severe.

The results were reported by Kristen Bibeau, head of global health outcomes and real-world evidence generation at Incyte, during the virtual annual conference of the Cholangiocarcinoma Foundation. The company and the nonprofit foundation collaborated to administer the 30-minute online survey to patients in the United States from Aug. 23-Sept. 20, 2019.

"(Patients with cholangiocarcinoma) experience an unbelievable number of symptoms that impact their everyday lives," said Bibeau, who holds a doctorate in epidemiology. "A lot of patients, nearly half, are screening as severely depressed, and that warrants further research and a better understanding and outreach regarding how patients' mental health can be managed."

She noted that the disease tends to strike people who are "in the prime of their lives" and are working, raising children and, in some cases, taking care of aging parents.

Cholangiocarcinoma is cancer of the bile ducts, which are tubes that carry bile (fluid made by the liver to help in digestion and fat absorption) between the liver/gallbladder and the small intestine. *Intrahepatic* cholangiocarcinoma develops inside the liver, and *extrahepatic* cholangiocarcinoma develops in tubes outside the liver.



Cholangiocarcinoma is treated with surgery, radiation therapy, chemotherapy and, in some cases, the targeted drug Pemazyre (pemigatinib); immunotherapy is being tested in clinical trials. Increasingly, experimental therapies chosen on the basis of tumor genomic sequencing are also being tested in clinical trials for advanced disease.

The goal of the survey was to understand patients' experiences with diagnosis, treatment, health outcomes and quality of life, Bibeau said.

Of the 707 participants, 77% were male and 50% were ages 45 to 50. The survey included 157 patients with stage 1 or 2 disease, 461 with stage 3, 43 with stage 4 and 30 in remission with no evidence of disease. For the purposes of analysis, those with stage 3 cholangiocarcinoma were recategorized as having either stage 3a, meaning that the cancer was potentially operable (364 patients), or 3b, meaning that surgery probably wasn't an option (97 patients).

A large proportion of the survey population, 47%, had perihilar (also called Klatskin) tumors, 41% had intrahepatic tumors and 12% had extrahepatic (also called distal) disease. Perihilar and intrahepatic are the most common forms.

As part of the survey, patients took several validated questionnaires to measure their self-reported symptom burdens and their depression status.

THE DIAGNOSIS AND TREATMENT JOURNEYS

Patients reported receiving a diagnosis of cholangiocarcinoma an average of 22 months after they first noticed symptoms, at an average age of 44. One-third of patients said they had initially received an erroneous diagnosis of a different cancer type; among that group, more than half were misdiagnosed with gallbladder cancer.

Bibeau noted that the journey toward diagnosis tends to be more difficult for patients with intrahepatic cholangiocarcinoma, which causes fewer outward symptoms — making it more difficult to diagnose at an earlier stage.

Just over half of patients sought a second or third opinion after receiving their diagnosis, with the average number of oncologists consulted totaling 2.5.

Bibeau said that approximately two years had passed from the time patients received their diagnoses until they took the survey. During that period, some patients had moved from an initial cancer stage to a later stage; for example, 56% had stage 1 or 2 disease at diagnosis, but 51% of the study population had stage 3a disease at the time of the survey.

When asked what influenced their treatment decisions, patients reported that physician's judgment/

RASI / STOCK.ADOBE.COM

recommendation was the main driver, Bibeau said. The quality of life that could be expected on a particular treatment regimen ranked second, she said. "The later the stage, the more the quality of life began to creep up and up to rival the importance of physician judgment," she noted.

WEIGHING SYMPTOM BURDEN

Patients also were asked to report their experiences with the following 16 symptoms related to cholangiocarcinoma and treatments received: yellowing of the skin (jaundice) and whitening of the eyes, intensely itchy skin, white-colored stools, darker-than-normal urine, discolored nail beds, fatigue, abdominal pain, unintended weight loss, insomnia, anxiety, depression, neuropathy (damage or dysfunction of nerves resulting in numbness, tingling, muscle weakness and pain), loss of hearing, loss of hair, diarrhea and constipation.

It turned out that 100% of the surveyed patients had experienced at least one of the symptoms, and the average number of symptoms that patients reported facing in daily life was 14. For every symptom listed, most patients said it had a "considerable or greater" impact on their lives.

"So much gravitas was given to each symptom (that we determined) it's not any one symptom affecting their lives — it's all of them," Bibeau reported.

Survey responders also took a validated questionnaire that asked about symptoms specific to biliary cancers, but not to cholangiocarcinoma in particular, including eating, anxiety, jaundice, tiredness, pain, treatment side effects, drainage bags/tubes and weight loss. Approximately half the responders reported negative quality-of-life impacts in these areas, with those in the 18 to 44 age group reporting the highest dissatisfaction in all categories except weight loss. Most patients also reported experiencing a lack of sexual desire or a loss of intimacy with their partner.

In addition, through a mental health questionnaire, researchers found that 47% of the patients surveyed "screened high enough to indicate that they may have severe depression" and 38% appeared to have moderate depression, Bibeau said. The vast majority reported that this symptom was making daily life difficult, she said, noting that "we think (that's) an important finding not appropriately studied in the literature."

Of patients who were employed at the time of the study, 70% reported that cholangiocarcinoma was impairing their ability to do their jobs, Bibeau said. Similarly, among all the patients surveyed, 65% said the disease impaired their activities.

Bibeau noted that the number of symptoms impacting daily life is highest in patients who may be surgical candidates, which may be because these patients continue to shoulder responsibilities such as working and caring for others. Moving forward, she and her colleagues want to investigate "what makes stage 3a patients different from some of the later-stage patients."

Expanding Remission

Adding the targeted drug duvelisib to standard chemoimmunotherapy could improve remission rates in younger patients with chronic lymphocytic leukemia, a study found. By BETH FAND INCOLLINGO

LONG-TERM REMISSION is an important goal of treatment for many patients with chronic lymphocytic leukemia (CLL), and a new drug regimen tested in an early clinical trial showed promising results in that regard, although it had some significant side effects.

The phase 1b/2 study found that adding the targeted drug duvelisib to a standard "FCR" regimen of fludarabine, cyclophosphamide and Rituxan (rituximab) was associated with an excellent remission rate in 32 patients under age 65.

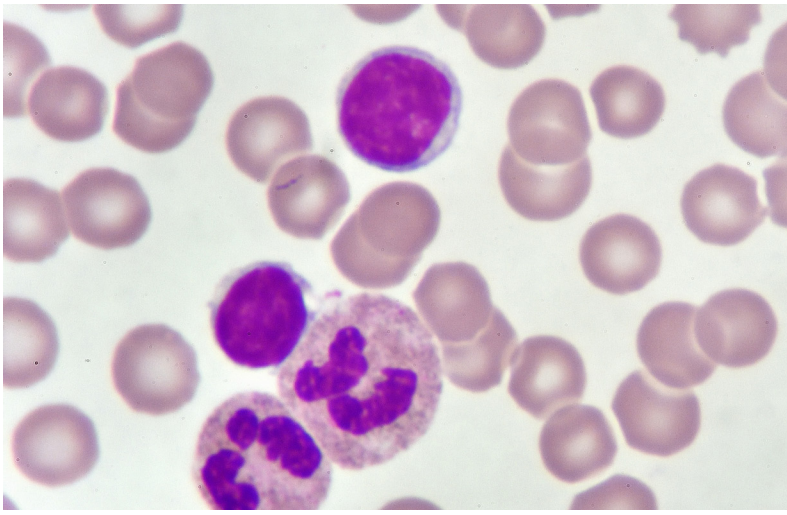
Duvelisib interferes with the activity of proteins known as kinases to slow or stop the growth of cancer cells. Rituxan interferes with the activity of the cancer-driving protein CD20. Fludarabine and cyclophosphamide are chemotherapies.

CURE® sat down with Dr. Matthew S. Davids, a medical oncologist who is the study's lead author, director of clinical research for the Division of Lymphoma at Dana-Farber Cancer Institute in Boston and an associate professor of medicine at Harvard Medical School, to learn more about the results of the study and what they could mean for patients.

Q: *CURE*®: What led you and your colleagues to study duvelisib in combination with FCR as an initial treatment for patients with CLL under the age of 65?

A: Davids: We've had an interest in trying to optimize the outcomes of younger patients with CLL. In general, this is a smaller group, because the average age of diagnosis is about 70 years of age, and patients often don't need treatment for a few years. But we tend to see a lot of patients at our center who are younger; we even have patients in their 30s or 40s. The approach there needs to be different, because I'm expecting several decades of life ahead of them, and my goal is to try to maximize their lifespan with as good a quality of life as possible. That was the impetus for developing combination approaches with FCR, which has been our gold standard chemoimmunotherapy regimen for these younger, fit patients under the age of 65 for many years now.

Around the time this study was designed, we were learning that patients could have very long remissions from FCR — 12 to 15 years after just six months of the chemoimmunotherapy regimen. We consider some of these patients to be functionally cured of their CLL, usually those with the mutated IgHV (gene). The aims of the combination study with FCR were twofold. One was to bring the 60% to 65% of patients with unmutated IgHV into the category of patients who may have durable response and long-term functional cure. The second was to take the patients with mutated IgHV and increase the odds that they would be cured, because right now only half of them achieve long-term functional cure.



Blood smear of chronic lymphocytic leukemia, as seen under a microscope.

DAVID A LITMAN / STOCK.ADOBE.COM

Q: How does duvelisib work against cancer?

A: This drug can help to release CLL cells from the lymph nodes and bone marrow, where they tend to be in a protected microenvironment. The idea is that you're flushing the cells out of the bushes where they're hiding and into the open where they can then be more effectively killed off by the chemoimmunotherapy.

Q: What was the design of the study?

A: We started with one week of just the duvelisib pills, allowing the mobilization of these cells. In the second week, we started the traditional FCR, given the same way we would outside the trial setting. Then, the duvelisib was continued throughout the course of that six-month period when patients were on the combination therapy. At that point, we figured it might

be helpful to have a tail of duvelisib treatment. It is not feasible to keep going with chemotherapy beyond six months, because it really wears the patients down over time. But because the duvelisib is a novel agent and is often well tolerated, we extended that for up to two years, so the patients could potentially have a deepening of response over time.

Q: What were the study's results?

A: The phase 1b portion was about defining the dose of duvelisib to use with FCR, which we determined was 25 mg twice a day. We learned from the study that this is a highly effective combination. Well over half the patients achieved complete remission and about two-thirds got to an undetectable minimal residual disease (MRD) state in the bone marrow irrespective of IgHV mutation status, which suggests that this regimen is very powerful.

We also learned that there are some toxicities associated with the regimen, so right now, we wouldn't necessarily consider it a standard of care. With duvelisib, there are some risks around liver inflammation, rash, diarrhea and even colitis. We also saw infections, as we commonly see with the regimen, and we saw myelosuppression, meaning that the blood counts were suppressed in some patients for longer periods of time. I think if we study this regimen further, we need to do so in ways that might help to mitigate some of the toxicities. Ideas that we've had are perhaps to reduce the number of FCR cycles and continue on with the duvelisib. There are already studies ongoing with duvelisib looking at intermittent dosing strategies. It may be that if you're not giving it every day, that reduces the toxicity.

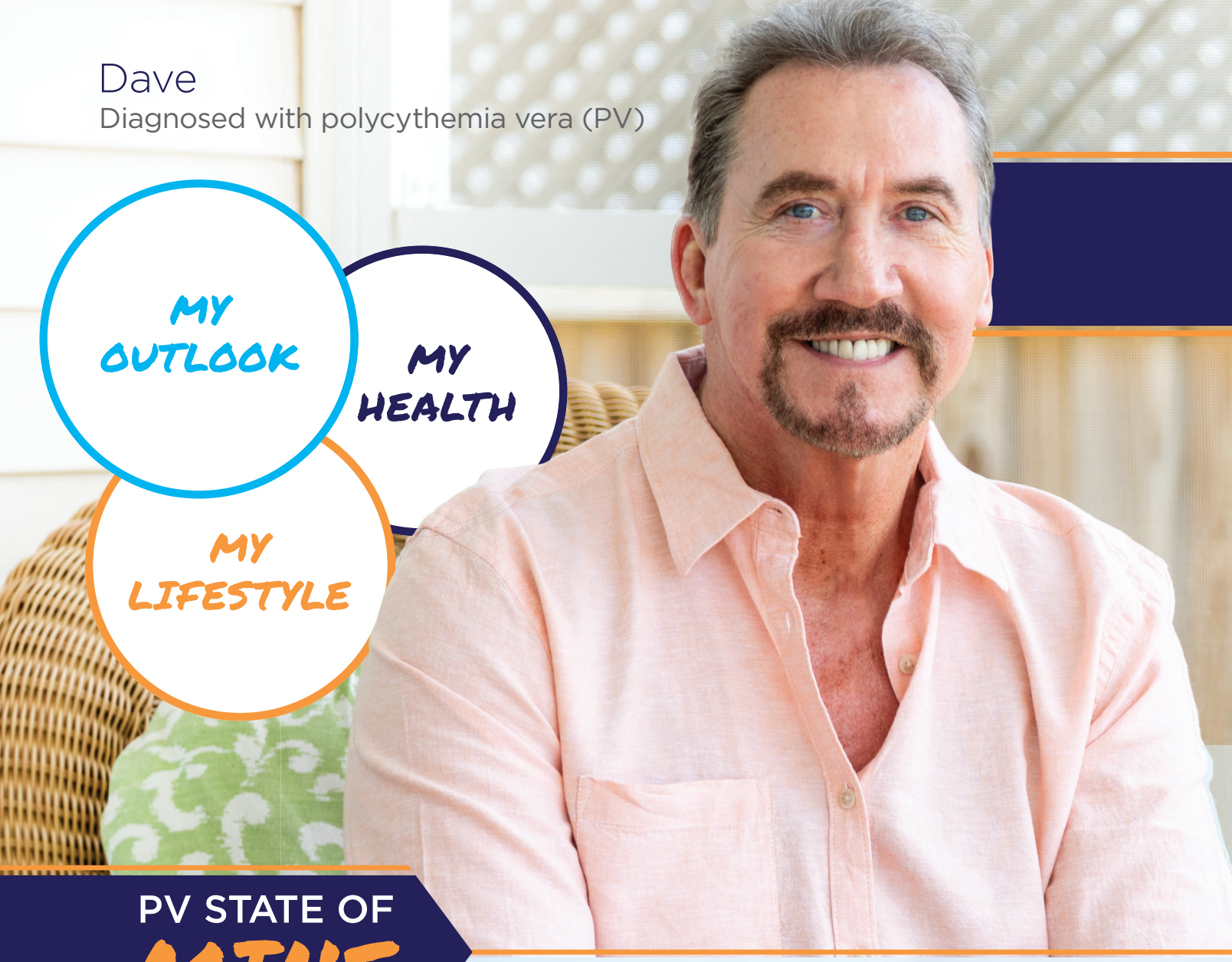
Q: Is it unusual to study younger patients with CLL?

A: Historically, the focus of CLL clinical trials was the younger patients, which seems kind of counterintuitive, because you would think you'd want to study the more commonly affected population. But about a decade ago, all we had was chemoimmunotherapy, and that was the population that could tolerate it, so that was the population that was studied.

As the novel agents have come of age, we've gotten better at shifting the studies into older patients. In fact, one gap I can see right now is that, because the pendulum has swung appropriately toward the older population in terms of trials, we actually do seem to have fewer trials focused on the young, fit patients compared to a decade ago. So, that is an area of interest for us, trials of the novel agent-based approaches in the young patients.

This interview has been edited for clarity.

Dave
Diagnosed with polycythemia vera (PV)



PV STATE OF MINE

UNDERSTANDING YOUR PV

Polycythemia vera, or PV, is a rare, chronic blood cancer in which the bone marrow produces too many red blood cells. You may also have too many white blood cells and platelets (blood clotting cells) in the blood, but having too many red blood cells causes most of the problems associated with PV.

Some people with PV may not have symptoms, while others have symptoms that interfere with their daily lives. That's why tracking your PV on a regular basis—and talking with your Healthcare Professional—are both so important.

"I LOOKED AT THIS LIKE OTHER THINGS IN MY LIFE: A CHALLENGE. I ACCEPT THE CHALLENGE."

When Dave had his annual checkup, blood tests revealed a higher than normal hematocrit (red blood cell volume) level. This led to a diagnosis of PV. Because his lifestyle had always focused on nutrition and exercise, he was in denial at first. But he decided to approach his diagnosis as yet another challenge to overcome. Between adjusting his diet and exercise routine and using the ***PV Tracker Tool*** to monitor his blood counts, Dave now actively manages his PV. He also regularly discusses any fluctuations in his condition with his Healthcare Professional.

Watch Dave's full story at
VoicesOfMPN.com/Dave

KEEPING TRACK OF YOUR *PV State of Mine*

Recognizing your ***PV State of Mine***—or where you are on your journey with PV—can help you identify changes in your condition over time. By monitoring symptoms, blood counts, and medical procedures, you can become more aware of trends in your health. Remember, having this information not only helps you better understand your disease status, but also empowers you to **advocate for your own health** and take a more active role in your care. It also helps ensure that you are having **more informed conversations with your Healthcare Professional**.

>> Access helpful PV tracking tools at PVSymptomTracker.com <<

Promising Drug Puts Focus on Rare Condition

The FDA is reviewing what could become the first-ever medication specifically for kidney cancer associated with von Hippel-Lindau disease. By BETH FAND INCOLLINGO

A RECENT PROMISE BY the Food and Drug Administration (FDA) to give an expedited review to the experimental drug MK-6482 as a treatment for renal cell carcinoma (kidney cancer) associated with von Hippel-Lindau (VHL) disease was an exciting development for people with VHL.

Granted a breakthrough therapy designation from the FDA, the HIF-2a inhibitor is the first medication specifically indicated for people with VHL, which causes masses, some of them malignant, to grow in any of 10 organs. The disease is caused by a mutation to the VHL gene.

MK-6482 interferes with the activity of the HIF-2a protein, which — in the absence of a properly working VHL gene — accumulates, leading to the formation of tumors.

Because it's a rare condition that affects about 10,000 people in the United States and 200,000 worldwide, VHL is not widely understood or recognized. *CURE*® spoke with Joshua Mann, director of engagement and outreach for the nonprofit VHL Alliance (vhl.org), to learn more.

"This offers a lot of hope to the VHL community, as it could mean, one day, an alternative to these repeated, dangerous and painful surgeries." — *JOSHUA MANN, VHL ALLIANCE*

Q: *CURE*®: Please tell us a little bit about VHL.

A: Mann: Von Hippel-Lindau disease is a rare hereditary tumor predisposition syndrome. It's caused by a mutation in the VHL gene, which normally prevents tumor growth. This mutation can cause tumors to grow and develop in up to 10 different organs repeatedly throughout a patient's lifetime. There's no cure, and the best practices for treatment involve invasive surgeries that can be dangerous, painful and expensive. VHL runs in families, but it's not restricted or predominant to any particular demographic. Its prevalence is about 1 in 36,000.

Q: Is this always an inherited condition?

A: Not strictly. Approximately 80% of people who have the disease inherited it from a parent. Every child of a parent with VHL has a 50% chance of inheriting the disease. The other 20% of people with VHL have it as a result of a random genetic mutation that occurred soon after fertilization during the early human cell-division process.

Q: Which cancers are associated with VHL?

A: In people with VHL, tumors may develop in up to 10 different parts of the body, including the brain, spine, eyes, ears, kidneys, adrenals, pancreas, lungs, liver and reproductive organs. All of these tumors involve the abnormal growth of blood vessels. Most of the tumors are benign, meaning they won't spread to nearby organs. However, VHL tumors in the kidneys, adrenals and pancreas can grow to a stage where they become malignant, which is when the cancer can spread to other parts of the body.

It's also important to mention that just because some of the tumors associated with VHL are benign does not mean that they aren't serious or dangerous. Brain and spinal lesions can lead to extreme pain and permanent disability, and retinal tumors can lead to blindness. VHL is different in every patient, even in the same family. Since it's impossible to predict exactly which VHL manifestations each person will have, and at what age, it's important to continue to check for all the possibilities throughout a patient's lifetime.

Q: How can people find out they have VHL if no one else in their family has it?

A: Oftentimes, it happens that a manifestation of the disease comes out that's unexplained any other way, and then the patient is sent for genetic testing. The rule of thumb is that, when any of the features of VHL are found, a diagnosis of VHL should be considered and a full diagnostic evaluation of all the other areas of the body should be carried out.

The only conclusive way to diagnose VHL is through a genetic test. Anybody who thinks they might have VHL in their family should see a genetic counselor.

It is estimated that no DNA mutation or deletion can be found in approximately 10% of people who are clinically diagnosed with VHL. These people still have VHL and should begin a surveillance protocol.

Q: Are there any preventive measures people can take if they know they have the disease?

A: To prevent some of the worst outcomes associated with the disease, the best thing people can do is be vigilant about active surveillance and always work with VHL-experienced specialists. Other than that, having a healthy diet and an active lifestyle, not smoking and

PHOTO COURTESY OF VHL ALLIANCE

moderating alcohol intake are things that can be done to contribute to overall good health.

Q: What does active surveillance look like throughout an affected person's lifetime?

A: Surveillance is the first line of defense in preventing the worst aspects of the disease, and it should begin as soon as there's a diagnosis, before symptoms appear, to make sure that any issues are found early and treated at the best time to ensure long-term health.

The VHL surveillance guidelines include an annual eye exam with a retinal specialist and a complete physical exam. At age 5 begins an annual urine collection or blood testing for pheochromocytomas, which are associated tumors in the adrenal glands. Starting at age 11, patients will get an annual hearing test by an audiologist, as well as imaging of the brain and spine every two years. Then around age 15, they will begin getting an MRI of the abdomen every two years to check their pancreas and kidneys. It's certainly an ongoing endeavor. If anybody's interested in learning about the specific details of the surveillance guidelines, you can find them at vhl.org/surveillance-guidelines.

Q: What are your thoughts on the development of MK-6482?

A: We are extremely excited by the designation of MK-6482 as a breakthrough therapy by the FDA. If approved, it would be the very first medication specifically for VHL. This offers a lot of hope to the VHL community, as it could mean, one day, an alternative to these repeated, dangerous and painful surgeries.

It's also exciting because the VHL Alliance's vision is curing cancer through VHL. Advanced treatments and a cure for VHL are going to have major implications not just for patients with VHL, but also for the general population. For example, renal cell carcinoma is a major disease that affects many people, and by finding a cure for VHL and improved treatments for its manifestations, we're going to be able to cure renal cell carcinoma. It starts with research at the basic level, and that's why supporting VHL research is so crucial.

In fact, the 2019 Nobel Prize in Physiology or Medicine was awarded to three doctors including Dr. William Kaelin Jr., a VHL researcher. The reason we have MK-6482 today is because of that research. I think the world is finally starting to see the importance of medical research with the VHL gene.

Q: What were the origins of the VHL Alliance?

A: The VHL Alliance was founded in 1993 by three families affected by VHL. This was done in the pre-internet era when people had limited means to connect and share information, so this was a vital service for those who had this disease that not much was known about. Since then, we've grown significantly. We have an international network of VHL clinical care centers capable of providing coordinated care by VHL-experienced specialists, and we have an enormous reach online and via social media, engaging with thousands of patients and families annually from all over the world.

We've also put a major emphasis on research, developing an in-depth, longitudinal online patient registry called MyVHL, as well as awarding over $2.3 million in research grants. We are the largest provider of research grants specifically for VHL in the world. Recently, we have been active in lobbying Congress to support spending on rare diseases and have participated in FDA listening sessions to share firsthand the importance of VHL research, clinical trials and the development of noninvasive treatment alternatives.

Q: Are there any special projects on the horizon for the group?

A: We are in the final stages of publishing an updated VHL handbook with information about research and best practices and details of the disease. And we recently had a task force of top VHL experts in different specialties that put together updated surveillance guidelines based on a literature review, from which a manuscript will be published soon. We're also focusing on addressing the needs of marginalized populations to make sure that everyone in the VHL community has access to quality care.

In October, we'll have two huge online events. One is our Annual Family Weekend Oct. 23-25, where we bring families impacted by VHL together to talk with doctors and each other for support and to learn what can be done to better support the community. Our biennial Research/Medical Symposium will be Oct. 29-31. We'll bring together top VHL researchers and physicians from all over the world to discuss what's going on in research and see where we can capitalize on improvements and things that we've learned. We're very excited about the great things that are going to come out of it.

Q: How has the COVID-19 pandemic affected your organization?

A: The biggest impact that the COVID-19 pandemic has had on our organization was transitioning our Annual Family Weekend and biennial Research/Medical Symposium from being large, well-attended, in-person events into remote, digital events.

Over the past seven months, we've put a focus on bringing our community together digitally. We created an initiative called Surviving and Thriving Together, which consisted of several dozen live videos on Zoom and Facebook where patients, family members and caregivers had a chance to interact and support each other. At other events, they had a chance to learn more about their doctors, advances in research and our staff. The end goal was to make sure that everybody felt a sense of community.

FOR POSTMENOPAUSAL WOMEN WITH HR+, HER2- METASTATIC BREAST CANCER (MBC)

LIVING LONGER IS POSSIBLE & PROVEN

INDICATIONS

KISQALI® (ribociclib) is a prescription medicine used in combination with:

- an aromatase inhibitor to treat pre/perimenopausal or postmenopausal women with hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative breast cancer that has spread to other parts of the body (metastatic), as the first endocrine-based therapy; or
- fulvestrant to treat postmenopausal women with HR-positive, HER2-negative metastatic breast cancer as the first endocrine-based therapy or with disease progression following endocrine therapy

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

IMPORTANT SAFETY INFORMATION

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

KISQALI may cause serious side effects, including:

Lung problems. KISQALI may cause severe or life-threatening inflammation of the lungs during treatment that may lead to death. Tell your health care provider right away if you have any new or worsening symptoms, including:

- trouble breathing or shortness of breath
- cough with or without mucus
- chest pain

Severe skin reactions. Tell your health care provider or get medical help right away if you get severe rash or rash that keeps getting worse; reddened skin; flu-like symptoms; skin pain/burning; blistering of the lips, eyes, or mouth; or blisters on the skin or skin peeling, with or without fever.

Heart rhythm problems (QT prolongation). KISQALI can cause a heart problem known as QT prolongation. This condition can cause an abnormal heartbeat and may lead to death. Your health care provider should check your heart and do blood tests before and during treatment with KISQALI. Tell your health care provider right away if you have a change in your heartbeat (a fast or irregular heartbeat), or if you feel dizzy or faint.

Liver problems (hepatobiliary toxicity). KISQALI can cause serious liver problems. Your health care provider should do blood tests to check your liver before and during treatment with KISQALI. Tell your health care provider right away if you get any of the following signs and symptoms of liver problems:

- yellowing of your skin or the whites of your eyes (jaundice)
- dark or brown (tea-colored) urine
- feeling very tired
- loss of appetite
- pain on the right side of your stomach area (abdomen)
- bleeding or bruising more easily than normal

Low white blood cell counts (neutropenia). Low white blood cell counts are very common when taking KISQALI and may result in infections that may be severe. Your health care provider should check your white blood cell counts before and during treatment with KISQALI. Tell your health care provider right away if you have signs and symptoms of low white blood cell counts or infections such as fever and chills.

Your health care provider may tell you to decrease your dose, temporarily stop, or completely stop taking KISQALI if you develop certain serious side effects during treatment with KISQALI.

KISQALI + fulvestrant can help you live longer with mBC.

In a clinical trial, KISQALI + fulvestrant extended the length of time women were alive from the start of treatment—also called overall survival (OS). Median OS is the length of time when half of the women were still alive. Median OS was not reached for KISQALI + fulvestrant vs 40 months for those taking fulvestrant alone. Median progression-free survival (PFS) is the length of time when half of the women had not yet progressed. KISQALI + fulvestrant delayed disease progression for a median of 20.5 months vs 12.8 months for fulvestrant alone.

Ask your doctor if KISQALI can help you live longer.

KISQALI®
ribociclib 200 mg tablets

KISQALI.com

What should I tell my health care provider before taking KISQALI?

Before you take KISQALI, tell your health care provider if you:

- have any heart problems, including heart failure, irregular heartbeats, and QT prolongation
- have ever had a heart attack
- have a slow heartbeat (bradycardia)
- have problems with the amount of potassium, calcium, phosphorus, or magnesium in your blood
- have fever, chills, or any other signs or symptoms of infection
- have liver problems
- have any other medical conditions
- are pregnant, or plan to become pregnant. KISQALI can harm your unborn baby
  - If you are able to become pregnant, your health care provider should do a pregnancy test before you start treatment with KISQALI.
  - Females who are able to become pregnant and who take KISQALI should use effective birth control during treatment and for at least 3 weeks after the last dose of KISQALI.
  - Talk to your health care provider about birth control methods that may be right for you during this time.
  - If you become pregnant or think you are pregnant, tell your health care provider right away.
- are breastfeeding or plan to breastfeed. It is not known if KISQALI passes into your breast milk. Do not breastfeed during treatment with KISQALI and for at least 3 weeks after the last dose of KISQALI

Please see Summary of Important Information on the following page.

Tell your health care provider about all of the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. KISQALI and other medicines may affect each other, causing side effects. Know the medicines you take. Keep a list of them to show your health care provider or pharmacist when you get a new medicine.

What should I avoid while taking KISQALI?

Avoid eating grapefruit and avoid drinking grapefruit juice during treatment with KISQALI since these may increase the amount of KISQALI in your blood.

The most common side effects of KISQALI include:

- neutropenia
- nausea
- infections
- fatigue
- diarrhea
- leukopenia
- vomiting
- hair loss
- headache
- constipation
- rash
- cough

KISQALI may cause fertility problems if you are male and take KISQALI. This may affect your ability to father a child. Talk to your health care provider if this is a concern for you.

Tell your health care provider if you have any side effect that bothers you or that does not go away.

These are not all of the possible side effects of KISQALI. For more information, ask your health care provider or pharmacist. Call your doctor for medical advice about side effects. 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.

SUMMARY OF IMPORTANT INFORMATION

What is KISQALI® (ribociclib)?

KISQALI is a prescription medicine used in combination with:

- an aromatase inhibitor to treat pre/perimenopausal or postmenopausal women with hormone receptor (HR)-positive, human epidermal growth factor receptor 2 (HER2)-negative breast cancer that has spread to other parts of the body (metastatic), as the first endocrine-based therapy; or
- fulvestrant to treat postmenopausal women with HR-positive, HER2-negative metastatic breast cancer as the first endocrine-based therapy or with disease progression following endocrine therapy

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

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

KISQALI may cause serious side effects, including:

Lung problems. KISQALI may cause severe or life-threatening inflammation of the lungs during treatment that may lead to death. Tell your health care provider right away if you have any new or worsening symptoms, including:

- trouble breathing or shortness of breath
- cough with or without mucus
- chest pain

Severe skin reactions. Tell your health care provider or get medical help right away if you get severe rash or rash that keeps getting worse; reddened skin; flu-like symptoms; skin pain/burning; blistering of the lips, eyes, or mouth; or blisters on the skin or skin peeling, with or without fever.

Heart rhythm problems (QT prolongation). KISQALI can cause a heart problem known as QT prolongation. This condition can cause an abnormal heartbeat and may lead to death. Your health care provider should check your heart and do blood tests before and during treatment with KISQALI. Tell your health care provider right away if you have a change in your heartbeat (a fast or irregular heartbeat), or if you feel dizzy or faint.

Liver problems (hepatobiliary toxicity). KISQALI can cause serious liver problems. Your health care provider should do blood tests to check your liver before and during treatment with KISQALI. Tell your health care provider right away if you get any of the following signs and symptoms of liver problems:

- yellowing of your skin or the whites of your eyes (jaundice)
- dark or brown (tea-colored) urine
- feeling very tired
- loss of appetite
- pain on the right side of your stomach area (abdomen)
- bleeding or bruising more easily than normal

Low white blood cell counts (neutropenia). Low white blood cell counts are very common when taking KISQALI and may result in infections that may be severe. Your health care provider should check your white blood cell counts before and during treatment with KISQALI. Tell your health care provider right away if you have signs and symptoms of low white blood cell counts or infections such as fever and chills.

Your health care provider may tell you to decrease your dose, temporarily stop, or completely stop taking KISQALI if you develop certain serious side effects during treatment with KISQALI.

What should I tell my health care provider before taking KISQALI?

Before you take KISQALI, tell your health care provider if you:

- have any heart problems, including heart failure, irregular heartbeats, and QT prolongation
- have ever had a heart attack
- have a slow heartbeat (bradycardia)
- have problems with the amount of potassium, calcium, phosphorus, or magnesium in your blood
- have fever, chills, or any other signs or symptoms of infection
- have liver problems
- have any other medical conditions
- are pregnant, or plan to become pregnant. KISQALI can harm your unborn baby
  - If you are able to become pregnant, your health care provider should do a pregnancy test before you start treatment with KISQALI.
  - Females who are able to become pregnant and who take KISQALI should use effective birth control during treatment and for at least 3 weeks after the last dose of KISQALI.
  - Talk to your health care provider about birth control methods that may be right for you during this time.
  - If you become pregnant or think you are pregnant, tell your health care provider right away.
- are breastfeeding or plan to breastfeed. It is not known if KISQALI passes into your breast milk. Do not breastfeed during treatment with KISQALI and for at least 3 weeks after the last dose of KISQALI

What other medications might interact with KISQALI?

Tell your health care provider about all of the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements (especially St. John's wort). KISQALI and other medicines may affect each other, causing side effects. Know the medicines you take. Keep a list of them to show your health care provider or pharmacist when you get a new medicine.

What should I avoid while taking KISQALI?

Avoid eating grapefruit and avoid drinking grapefruit juice during treatment with KISQALI since these may increase the amount of KISQALI in your blood.

What laboratory tests do I need if I am prescribed KISQALI?

Your doctor should check your heart rhythm, liver, and blood before you start KISQALI and periodically during your treatment with KISQALI. Your doctor may eventually stop checking some of these tests. If you are able to become pregnant, your health care provider should do a pregnancy test before you start treatment with KISQALI.

The most common side effects of KISQALI include:

- neutropenia
- nausea
- infections
- fatigue
- diarrhea
- leukopenia
- vomiting
- hair loss
- headache
- constipation
- rash
- cough

KISQALI may cause fertility problems if you are male and take KISQALI. This may affect your ability to father a child. Talk to your health care provider if this is a concern for you.

Tell your health care provider if you have any side effect that bothers you or that does not go away.

These are not all of the possible side effects of KISQALI. For more information, ask your health care provider or pharmacist. Call your doctor for medical advice about side effects. 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.

General information about the safe and effective use of KISQALI

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use KISQALI for a condition for which it was not prescribed. Do not give it to other people, even if they have the same symptoms you have. It may harm them. You can ask your health care provider or pharmacist for more information about KISQALI.

For more information, go to www.kisqali.com or call 1-844-KIS-QALI (1-844-547-7254).

NOVARTIS

KISQALI® ribociclib 200 mg tablets

Novartis Pharmaceuticals Corporation
East Hanover, New Jersey 07936-1080

Sit Less, Move More

Exercise may help prevent cancer or its recurrence and improve quality of life for survivors of the disease.

By ANNA L. SCHWARTZ

PHYSICAL ACTIVITY IS ONE of the most important things people of all ages and abilities can do to reduce their risks of several cancers and improve health during and after cancer treatment. Exercise has been strongly associated with both preventing cancer and lowering the risk of recurrence and death from the disease. In fact, a direct causal effect of exercise on cancer outcomes is currently being tested in several controlled trials.

In 2018, the American College of Sports Medicine (ACSM) reviewed thousands of research studies on exercise for cancer prevention and updated its exercise guidelines for cancer survivors. And this year, the American Cancer Society released updated recommendations that mirror parts of the ACSM guidelines.

Exercise is an important part of any effort to prevent an initial diagnosis or the recurrence of cancer. The benefits of physical activity are clear:

- Is associated with a lower risk of developing seven types of cancer (colon, breast, kidney, endometrium, bladder, stomach and esophageal).
- Is linked to Improved survival before and after breast, colorectal or prostate cancer diagnoses.
- Reduces risk of recurrence of breast, colon and prostate cancers by 20% to 40%.
- Counteracts inactivity and prolonged sitting, both of which may increase the risk of certain cancers, such as endometrial, lung and colon.

So, what should a good preventive exercise routine look like? Recommendations for cancer prevention and general health and to reduce the risk of cancer recurrence include the following:

- Engage in moderate-intensity aerobic exercise such as walking, biking, jogging or dancing for 150 to 300 minutes per week. This is agreed upon by both ACSM and the American Cancer Society.
- Perform strength-training exercises two days per week, focusing on the large muscle groups (arms, legs, chest, back and stomach). Do 12 to 15 repetitions of each.

> **"It's important for survivors to know that exercise is the best way to treat cancer-related fatigue because as strength and fitness improve, it becomes easier to do activities that are meaningful and important."** *— ANNA L. SCHWARTZ, professor and associate director of research at Northern Arizona University School of Nursing and an oncology nurse practitioner.*

Exercise is safe during and after cancer treatment, and there are specific guidelines for cancer survivors who want to improve their quality of life. In general, walking, bicycling, dancing or any enjoyable activity that keeps the body moving and gets the heart rate up is good.

Because many people have never exercised or don't enjoy it, the ACSM guidelines for cancer survivors focus on the least amount of movement necessary to see significant reductions in anxiety, depression and fatigue and improvements in physical functioning and quality of life. The guidelines are based on carefully conducted studies and in many ways resemble the recommendations for cancer prevention. They are as follows:

1. Avoid inactivity. This is emphasized by both the ACSM and the American Cancer Society.
2. Engage in aerobic exercise at least three days a week for a total of 90 minutes, with the goal of building up to »

SKYLINE1 / STOCK.ADOBE.COM

150 to 300 minutes. This can consist of walking, cycling, swimming, jogging, dancing or any enjoyable activity that increases the heart rate and causes faster breathing.

3. Perform resistance exercises at least two days a week using body weight, resistance bands, dumbbells or fitness equipment, focusing on large muscle groups. Increase the resistance or weight slowly over time, and perform at least three exercises each for upper and lower body strength.

It's important for survivors to know that exercise is the best way to treat cancer-related fatigue because as strength and fitness improve, it becomes easier to do activities that are meaningful and important. Exercise also improves sleep and bone health. Fortunately, those who have breast cancer-related lymphedema can do both aerobic and resistance exercise without making the condition worse.

Beginning an exercise program when you don't feel well is difficult. The first hurdle is learning to pace yourself. Exercising beyond your ability (for too long a time period or at too high an intensity) makes movement unpleasant. When it comes to aerobic exercise, start slowly and gradually build up time and intensity. The same is true for strengthening exercises. Start with light weights and gradually increase the load. Pushing too hard and feeling sore and exhausted are the most common reasons people stop a new exercise program. Be kind to your body. With some time and effort, you will feel the difference as your fatigue improves and you get stronger.

Launched by ACSM, Moving Through Cancer (tinyurl.com/y3b9qrru) is an initiative with the goal of educating health care professionals and ensuring that all cancer survivors are engaged in an appropriate exercise or rehabilitation program. This includes a registry of cancer exercise programs worldwide, including both live and web-based programs such as Livestrong at the YMCA, Macmillan Move More and phone apps such as Cancer Exercise (annaschwartzphd.com/cancer-exercise-app/).

Also consider including a family member in exercise activities. Research shows physical and emotional health benefits for both cancer survivors and their exercise partners.

The biggest takeaway — for all survivors and their families — is simply this: Move more and sit less. C

***Anna L. Schwartz, Ph.D., FNP-BC, FAAN**, is a professor and associate director of research at Northern Arizona University School of Nursing and an oncology nurse practitioner. A pioneer in exercise oncology research, she was co-author of the American College of Sports Medicine cancer exercise guidelines and is a member of the organization's Moving Through Cancer task force charged with implementing the exercise recommendations into clinical practice. She is also a member of* CURE®*'s advisory board.*

I AM *MORE* THAN A PATIENT.

I AM AN *ENTREPRENEUR*, A *FRIEND*, AN *ADVOCATE* AND A *TRAIL BLAZER*.

Those who have gone through cancer are more than their diagnosis. At *CURE*®, we provide insight to everyday people whose lives have been touched by cancer, letting them know that they are not alone. We strive to give readers an identity that extends beyond their diagnosis. *CURE*® makes cancer understandable, and we aim to make life with cancer understandable.

A community of more than just patients. ***Join us.*** curetoday.com

Just Say Something

In looking back at her journey, one woman realizes that many people don't know how to interact with a loved one who has cancer. Here is her advice. By LORI LUEDTKE

THIS IS A HARD ESSAY to write, but one that I think is important. I am going to start by sharing some advice that my grandfather gave me when I was in middle school. He said, "You have to think of your life as a theater. You have your front row, the people seated in the theater and the people waiting to get in. The point is, you decide where they sit."

My grandfather was the director of a community theater at that time, and I was mad at someone who "stole" my boyfriend (or something trivial like that). As I have gone through this cancer journey, I have reflected on that advice numerous times. It comes to my mind when I notice that a lot of people, even those who have been in my theater for a long time, don't know what to say or do when it comes to my cancer. It's not intentional, but it's true.

Based on my experiences, I can offer some advice to those who are unsure about how to speak with and help a friend or loved one with cancer.

Say something. I don't care if it's a text, email or Hallmark card, just say *something*.

It has been more than five years, and there are "friends seated in my theater" I still haven't heard from — well, I thought they were friends.

It's hard to reach out and ask someone to do something for you when you're used to being independent. So the last thing you want to hear back from them is, "I'd rather not. I have a happy hour that starts at 5." That person is not in the front row anymore.

On the other hand, I had a couple friends who set up a "meal train," taking turns bringing meals to my family. That was wonderful.

I had a point person — a friend who would listen to me, especially after I had just seen a doctor or had a test — and she would send out a single email blast informing loved ones of my health status. This was helpful, as it is exhausting to repeat yourself over and over.

I had a friend who sent me one card every week. It was something to look forward to.

I had a friend who set up a "Team Lori" Facebook page where people could post positive and encouraging thoughts and where I could also post updates.

I had a friend who would call me on her way home from work almost every day. She would ask what I was doing and say she was stopping for a smoothie and was headed my way. She knew how to get in and she knew I was in bed watching TV. She would bring me a smoothie and just crawl into bed with me and start watching whatever I was watching. She was present. She was there to listen. She was and is a devoted friend.

My amazing husband always had something planned so I would have something to look forward to.

If you want to provide meaningful help, here are some do's and don'ts to keep in mind when someone you know has received a cancer diagnosis:

Make specific offers. Don't ask, "What can I do for you?" Instead say:

- **"I would like to bring you and your family dinner tonight. Would a 6:30 drop-off be OK?" Or, "I am on my way to the grocery store. Can I pick something up for you?"**
- **"We are taking our kids to the park on Saturday. Can I pick up your child/dog and bring them with us?"**
- **"I'm available all next week to take you to any appointments or just come sit with you if you would like company." And be a second set of ears if the person asks you to come along. Take notes.**

YAKOBCHUK OLENA / STOCK.ADOBE.COM

Help organize paperwork. Patients with cancer must contend with piles of insurance forms, receipts, test results and appointment reminders.

Be encouraging but don't give false hope or talk about another person's cancer outcome. Remember, each person is different, and hearing other people's stories may scare your friend or loved one. Supportive words and phrases include:

You are strong. You can do this.
This sucks. I love you.
Never, never, never give up.
Where do we start? We're in this together.

Just listen. Your friend or loved one has a lot to think about, and one of the best gifts you can give is to be a sounding board. Don't focus on your own worries and sadness about the diagnosis. The patient shouldn't feel like he or she has to take care of you. Instead, offer strength, humor and practical help. Listen actively, making eye contact, and put down your phone so you can focus.

Speak and show your appreciation. The best way to do this is to say a few simple but powerful words: "You matter to me" or "I love you." However, if you find it difficult to verbally express how you feel, know that you can show someone your appreciation in many other ways.

Ask permission. Before visiting, giving advice and asking questions, ask if it is welcome. Be sure to make it clear that saying no is perfectly OK.

Make plans. Don't be afraid to make plans for the future. This gives your friend something to look forward to, especially in the face of sometimes long and drawn-out cancer treatments. However, make plans that are easy to change in case something comes up that requires your friend to cancel or reschedule.

Laugh together. Be humorous and fun when appropriate and as needed. A light conversation or a funny story can make a friend's day.

Allow for sadness. Do not ignore uncomfortable topics or feelings.

Check in. Make time for a check-in phone call. Let your friend know when you will be calling. Also let your friend know that it is OK to not answer the phone.

Be observant. Your friend will give you cues if they are tired or you have overstayed your welcome. Visits should generally last 30 to 45 minutes; patients with cancer are often fatigued and need rest.

> **"Just listen. Your friend or loved one has a lot to think about, and one of the best gifts you can give is to be a sounding board. Don't focus on your own worries and sadness about the diagnosis."** — LORI LUEDTKE

Follow through. If you commit to help, it is important that you follow through on your promise.

Treat them the same. Try not to let your friend's condition get in the way of your friendship. As much as possible, treat him or her the same way you always have.

Talk about topics other than cancer. Ask about interests, hobbies and other topics unrelated to cancer. People going through treatment sometimes need a break from thinking and talking about the disease.

Read their blog, web page or group emails. Oftentimes, people living with cancer blog about their experience to share with friends and family.

Remember, a family member who is responsible for the care of the person with cancer can become isolated and stressed, so you may want to check in to see how that person is doing too. These caregivers may also be able to share ideas about how you can best help the person with cancer.

The bottom line: Say something to let someone with cancer know that you care, and beyond that, simply show up, listen and respond from your heart.

Lori Luedtke *is a native Texan but has lived in Florida since 1996. She is married and has one biological son and two stepchildren. Luedtke received a diagnosis of incurable, grade 4 glioblastoma, a brain cancer, in May 2012. After doctors gave her a prognosis of two months, she received standard treatment, which consisted of radiation and chemotherapy, and also took part in a clinical trial at Moffitt Cancer Center in Tampa, Florida.*

SHARE YOUR STORY!

Whether you are a patient, survivor, caregiver or health care provider, we want to publish your stories about cancer and the people, places and moments of the experience. They can be funny, poignant or practical. Send stories to **editor@curetoday.com,** or share on our Facebook page at **facebook.com/curemagazine**. Submissions should be no more than 600 words and include your name, phone number and email.

What advice would you give someone looking to help a friend or loved one with cancer?

We asked *CURE*® readers how the people in their lives can best support them. Here's what they told us.

"Spend time with them, call them, pray for them!"

"Check on them. Visit with a mask and gloves. Bring books and flowers. Talk about your day."

"Be there if they need you. Call them. Let them know they can call you anytime."

"Bring them a cup of tea, a few saltines, a blanket, a pillow, tissues, etc., all without them having to ask. And just be present."

"Check in with a text or 'thinking of you' card. Do not say, 'Call me if you need anything.' You will never be called. Instead say, 'I want to bring you dinner. What night would be best?' "

"As time goes on, friends get involved in their own lives and sometimes forget that just a quick phone call now and again can make a huge difference in our day. I know I can call some of my friends anytime, but I don't always want to be the one to reach out, as it can feel like I'm begging for attention. Don't forget the friends who may need you the most."

"Be consistent in checking on them. They will need as much or more care months later. I speak from personal experience. When I was first diagnosed, there was a flurry of attention and gifts. As the weeks turned into months, people would quit paying attention to what I might need."

"Just let them know you care. Spend a little time with them. Ensure they have all the help they may need."

Keep inspiring

Because CLL/SLL shouldn't define you

Ask your doctor about CALQUENCE for CLL/SLL

Learn more at CALQUENCE.com

CLL=chronic lymphocytic leukemia; SLL=small lymphocytic lymphoma.

Select Safety Information

CALQUENCE is a prescription oral treatment for adults with chronic lymphocytic leukemia or small lymphocytic lymphoma. May cause serious side effects including: serious infections, bleeding problems, decrease in blood cell count, new cancers, and heart rhythm problems. Some may lead to death. Tell your doctor if you experience infections such as flu-like symptoms; unexpected bleeding such as blood in your stool or urine; or heart rhythm problems such as fast or irregular heartbeat. Use sun protection when outside.

If you cannot afford your medication, AstraZeneca may be able to help. Visit AstraZeneca-us.com to find out how.

Please see Brief Summary of Prescribing Information on adjacent pages.

CALQUENCE®
(acalabrutinib) 100 mg capsules

PATIENT INFORMATION
CALQUENCE® (KAL-kwens) (acalabrutinib) capsules

CALQUENCE®
(acalabrutinib) 100 mg capsules

What is CALQUENCE?

CALQUENCE is a prescription medicine used to treat adults with:

- Chronic lymphocytic leukemia (CLL) or small lymphocytic lymphoma (SLL).

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

Before taking CALQUENCE, tell your healthcare provider about all of your medical conditions, including if you:

- have had recent surgery or plan to have surgery. Your healthcare provider may stop CALQUENCE for any planned medical, surgical, or dental procedure.
- have bleeding problems.
- have or had heart rhythm problems.
- have an infection.
- have or had liver problems, including hepatitis B virus (HBV) infection.
- are pregnant or plan to become pregnant. CALQUENCE may harm your unborn baby and problems during childbirth (dystocia).
  - If you are able to become pregnant, your healthcare provider may do a pregnancy test before you start treatment with CALQUENCE
  - Females who are able to become pregnant should use effective birth control (contraception) during treatment with CALQUENCE and for at least 1 week after the last dose of CALQUENCE.
- are breastfeeding or plan to breastfeed. It is not known if CALQUENCE passes into your breast milk. Do not breastfeed during treatment with CALQUENCE and for at least 2 weeks after your final dose of CALQUENCE.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements. Taking CALQUENCE with certain other medications may affect how CALQUENCE works and can cause side effects. Especially tell your healthcare provider if you take a blood thinner medicine.

How should I take CALQUENCE?

- Take CALQUENCE exactly as your healthcare provider tells you to take it.
- Do not change your dose or stop taking CALQUENCE unless your healthcare provider tells you to.
- Your healthcare provider may tell you to decrease your dose, temporarily stop, or completely stop taking CALQUENCE if you develop certain side effects.
- Take CALQUENCE 2 times a day (about 12 hours apart).

(continued)

- Take CALQUENCE with or without food.
- Swallow CALQUENCE capsules whole with a glass of water. Do not open, break, or chew capsules.
- If you need to take an antacid medicine, take it either 2 hours before or 2 hours after you take CALQUENCE.
- If you need to take certain other medicines called acid reducers (H-2 receptor blockers), take CALQUENCE 2 hours before the acid reducer medicine.
- If you miss a dose of CALQUENCE, take it as soon as you remember. If it is more than 3 hours past your usual dosing time, skip the missed dose and take your next dose of CALQUENCE at your regularly scheduled time. Do not take an extra dose to make up for a missed dose.

What are the possible side effects of CALQUENCE?

CALQUENCE may cause serious side effects, including:

- **Serious infections** can happen during treatment with CALQUENCE and may lead to death. Your healthcare provider may prescribe certain medicines if you have an increased risk of getting infections. Tell your healthcare provider right away if you have any signs or symptoms of an infection, including fever, chills, or flu-like symptoms.
- **Bleeding problems (hemorrhage)** can happen during treatment with CALQUENCE and can be serious and may lead to death. Your risk of bleeding may increase if you are also taking a blood thinner medicine. Tell your healthcare provider if you have any signs or symptoms of bleeding, including:
  - blood in your stools or black stools (looks like tar)
  - pink or brown urine
  - unexpected bleeding, or bleeding that is severe or you cannot control
  - vomit blood or vomit that looks like coffee grounds
  - cough up blood or blood clots
  - dizziness
  - weakness
  - confusion
  - changes in your speech
  - headache that lasts a long time
  - bruising or red or purple skin marks
- **Decrease in blood cell counts.** Decreased blood counts (white blood cells, platelets, and red blood cells) are common with CALQUENCE, but can also be severe. Your healthcare provider should do blood tests to check your blood counts regularly during treatment with CALQUENCE.

(continued)

- **Second primary cancers.** New cancers have happened in people during treatment with CALQUENCE, including cancers of the skin or other organs. Your healthcare provider will check you for skin cancers during treatment with CALQUENCE. Use sun protection when you are outside in sunlight.
- **Heart rhythm problems (atrial fibrillation and atrial flutter)** have happened in people treated with CALQUENCE. Tell your healthcare provider if you have any of the following signs or symptoms:
  - fast or irregular heartbeat
  - dizziness
  - feeling faint
  - chest discomfort
  - shortness of breath

The most common side effects of CALQUENCE include:

- headache
- diarrhea
- muscle and joint pain
- upper respiratory tract infection
- bruising

These are not all of the possible side effects of CALQUENCE.

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

How should I store CALQUENCE?

- Store CALQUENCE at room temperature between 68°F to 77°F (20°C to 25°C).

Keep CALQUENCE and all medicines out of the reach of children.

General information about the safe and effective use of CALQUENCE.

Medicines are sometimes prescribed for purposes other than those listed in a Patient Information leaflet. Do not use CALQUENCE for a condition for which it was not prescribed. Do not give CALQUENCE to other people, even if they have the same symptoms you have. It may harm them. You can ask your healthcare provider or pharmacist for more information about CALQUENCE that is written for health professionals.

What are the ingredients in CALQUENCE?

Active ingredient: acalabrutinib

Inactive ingredients: silicified microcrystalline cellulose, pregelatinized starch, magnesium stearate, and sodium starch glycolate.

Capsule shell contains: gelatin, titanium dioxide, yellow iron oxide, FD&C Blue 2, and black ink.

AstraZeneca

For more information, go to www.CALQUENCE.com or call 1-800-236-9933.

Distributed by:
AstraZeneca Pharmaceuticals LP, Wilmington, DE 19850

US-34063 11/19

This Patient Information has been approved by the U.S. Food and Drug Administration. Revised: 11/2019 US-34063 11/19

Keeping Watch

On behalf of the National Pancreas Foundation, Dr. Diane Simeone offers insight into early detection options for those at increased risk of pancreatic cancer, including surveillance and screening. By KRISTIE L. KAHL

FOR INDIVIDUALS AND THEIR family members facing an increased risk of pancreatic cancer, early detection could make a world of difference. However, not many options are available aside from surveillance programs, and even early detection requires specialized imaging.

On the plus side, researchers are dedicated to finding better early detection options, such as a blood test.

"Early detection for pancreatic cancer is really a holy grail we have in the field," Dr. Diane Simeone, director of the Pancreatic Cancer Center at NYU Langone Health in New York City, said in an interview with *CURE*®. "We really put a big effort in place and, in partnership with the National Pancreas Foundation, try to get information about what early detection tests are out there."

CURE® spoke with Simeone about potential early detection options for those at increased risk of developing pancreatic cancer.

Q: *CURE*®: What early detection methods are available now?

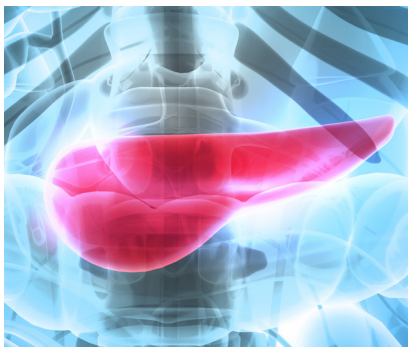
A: Simeone: We currently don't have a perfect early detection test for pancreatic cancer. There are a lot of people that are working on developing and validating an early detection blood test for pancreatic cancer. I do think, based on the number and the high level of those efforts, that we're likely to have such a test in the next five years.

Q: What do surveillance programs consist of?

A: An important way to detect pancreatic cancer is to figure out who is at elevated risk and (which individuals) have sufficient elevated risk that they should be enrolled in a screening program. One of the important things that has been an advance is we've been able to develop guidelines (stating) that all patients with pancreatic cancer should get germline testing (for an inherited predisposition to the disease).

There are two points of value with that. One is, we know now that if someone has a pancreatic cancer that's associated with certain germline mutations and a BRCA (gene) mutation, they would be a perfect example. That actually changes how we treat that patient. It will drive us to give that patient a different set of therapies than we otherwise would.

Second, it helps us identify patients' family members who should also get tested or be put in a screening program. So (it's really about) first making sure anybody who's got pancreatic cancer gets tested (so that) we can identify family members at risk. We need doctors, when they see patients in the clinic as part of the routine physical exam, to do a thorough family history of cancer, and if that person has a family history of pancreatic cancer, to get them plugged in at a center that has expertise to really make sure that the appropriate patients get screened.



YODIYIM / STOCK.ADOBE.COM

Q: Can you discuss germline testing and its role in early detection?

A: Germline testing is a critical part of screening and testing for individuals at high risk. It's surprising that germline testing is underutilized for patients at high risk. I see it all the time. I see individuals who have multiple family members with pancreas cancer that are seen by their doctor, and no one has recommended that they get germline testing.

Germline testing is a simple blood test (in which) DNA is isolated from the blood, and you can test for a battery of cancer susceptibility genes. Right now, we've identified about 15 genes that are associated with increased pancreatic cancer risk, and there are more to be found. With the cost so low, we advocate that anyone who has a family history of pancreas cancer please seek an expert opinion about whether a germline test should be done.

Q: What are the next steps in early detection testing?

A: We're at the cusp of developing an early detection blood test. I fully expect that that will be something available in the clinic in the next five years. Whether it's a sensitive or specific enough test to be used for the general population or (for the) more refined population at risk still remains to be determined. We are really pushing for improved imaging modalities to find small pancreatic cancers.

Also, trying to better understand the link between diabetes and who has a new pancreatic cancer is important. About two-thirds of patients with pancreatic cancer will present with new-onset diabetes. And we don't have a test that helps differentiate everybody that presents with diabetes, which is a large number of patients, versus those who selectively present with a new pancreatic cancer. So if we can develop a test and differentiate (between) those two (groups of patients), all of these things are going to be game changers to improve survival for pancreatic cancer.

Thanks for an Extraordinary Evening!

CURE® magazine would like to thank everyone who attended the 2020 Extraordinary Healer® Award for Oncology Nursing virtual reception!

Congratulations to Christie Santure, B.S.N. RN, OCN, of the UPMC Hillman Cancer Center in Pittsburgh, who received ***CURE*®'s 2020 Extraordinary Healer® Award for Oncology Nursing** at a virtual ceremony Sept. 17 before an audience of her nurse peers. Christie, who works in the infusion room, was honored for launching a Caring for the Caregiver program that has supported many through the difficult process of taking care of a loved one who has cancer. She was nominated by **Lynne O'Connor, M.S.N., RN**.

And, we congratulate the winner of our Finest Hour Award, **Elizabeth "Liz" Farrat, B.S.N., RN, CCRN-K**, of Memorial Sloan Kettering Cancer Center in New York City, who was recognized for her selfless achievements in caring for patients during the COVID-19 pandemic. Liz was nominated by Evangelina "Rose" SantaTeresa, CCRN.

OUR CONGRATULATIONS ALSO GO TO OUR TWO FINALISTS FOR THE EXTRAORDINARY HEALER® AWARD FOR ONCOLOGY NURSING AND THE READERS WHO NOMINATED THEM:

Vicki Dodson, B.S.N., RN, OCN - Providence Sacred Heart Medical Center in Spokane Washington - Nominated by Laurie Loe, RN, OCN

Maria Rodriguez, B.S.N., RN - Temple University Hospital in Philadelphia - Nominated by Laura Brinkley, B.S.N., RN-BC, OCN

TOP FROM LEFT: **ELIZABETH "LIZ" FARRAT, B.S.N., CCRN, AND EVANGELINA "ROSE" SANTATERESA, CCRN**

BOTTOM FROM LEFT: **LYNNE O'CONNOR, M.S.N., RN, and CHRISTIE M. SANTURE, B.S.N., RN, OCN**

FINALLY, *CURE*® CONGRATULATES ALL OF THIS YEAR'S EXTRAORDINARY HEALER® AWARD NOMINEES:

Dioanne Adsuara, B.S.N., RN, CCRN
New York, New York

Kate Bearry, B.S.N., RN, OCN
Milwaukee, Wisconsin

Patricia Beaty, M.P.H., RN, OCN
Ohio

Jennifer Becker, RN
North Wilkesboro, North Carolina

Marzanna Bendeth, RN
East Hills, New York

Alicia Castanon, M.S.N., OCN, APRN, FNP-C
Lubbock, Texas

Tina Chacon, B.S.N., RN, OCN
West Jordan, Utah

Catherine M. Concert, D.N.P., RN, FNP-BC, AOCNP, NE-BC, CNL, CGRN, FNAP, FNYAM
New York, New York

Molly Conklin, B.S.N., RN, PCCN
Houston, Texas

Elaine DeMeyer, M.S.N., RN, AOCN, BMTCN
Texas

Vicki Dodson, B.S.N., RN, OCN
Spokane, Washington

Courtney Ebbeskotte, RN
Omaha, Nebraska

Sandi Godfrey, RN
Joplin, Missouri

Kelley Greel, RN, OCN
Gloucester, Massachusetts

Sue Wardian Hartung, M.S.N., RN, OCN
Omaha, Nebraska

Tonya Helmstetter, RN, OCN
La Mesa, California

Joy V. Hepkins, M.S.N., RN, OCN
Darby, Pennsylvania

Nicole Heston, RN
Wichita, Kansas

P.J. Hetkey, B.S.N., RN, OCN
Uniontown, Ohio

Joelle Hicks, B.S.N., RN
Uniontown, Ohio

Naureen Ismail, M.P.A.-H.C.A., B.S.N., RN, OCN
Houston, Texas

Gretchen P. Jackson, RN
Atlanta, Georgia

Susan Long, RN
Bend, Oregon

Patty Manea, B.S.N., RN, CCRP
San Antonio, Texas

Betsy Mitchell, M.S.N., B.S.N., RN, ANP-BC
Chicago, Illinois

Daria Mlynarski, B.S.N., RN, OCN
Boston, Massachusetts

Kim Moore, RN, CPHON
New York, New York

Julie Morrissette, B.S.N., RN
Lowell, Massachusetts

Ellen Mulkerrins, B.S.N., RN, OCN
New York, New York

Diane Nechi-Fragassi, B.S.N., RN, OCN
Chicago, Illinois

Joan Rataczak, B.S.N., RN, CPHON
Minneapolis, Minnesota

Nadeen Robinson, M.S.N., RN, OCN
New York, New York

Maria Rodriguez, B.S.N., RN
Philadelphia, Pennsylvania

Lindsey Roy, RN
Dallas, Texas

Beth Sandy, M.S.N., CRNP
Philadelphia, Pennsylvania

Christie Santure, B.S.N., RN
Pittsburgh, Pennsylvania

Mary Schueller, M.S.N., RN-BC, AOCNS, CHPN
Kohler, Wisconsin

Megha Shah, B.S.N., RN, OCN
Geneva, Illinois

McKenzie Siegmund, B.S.N., RN
Fort Worth, Texas

Wyndelon "Nikki" Simmons, B.S.N., RN, OCN
Jackson, Mississippi

Leslie Smith, RN
Philadelphia, Pennsylvania

Sally Stade, RN
New Mexico

Cassandra Stephens, B.S.N., RN, OCN
Temple, Texas

Molly Szuminski, M.S.N., RN, CPNP
Oakland, California

Deborah Austin Thompson, B.S.N., RN, OCN
Decatur, Georgia

Heather Van den Bergh, B.S.N., RN, OCN
West Harrison, New York

Alice Vandermeer, B.S.N., RN, OCN
Meridian, Idaho

Pat Wilson, CRNP
Birmingham, Alabama

Heather Woods, RN
Porterville, California

Maura Znavo, B.S.N., RN
Pittsburgh, Pennsylvania

Visit **curetoday.com/extraordinaryhealer** to see videos, photos and more from this year's event!

cure®

WINNING ESSAY

CARING FOR THE CAREGIVER

cure Extraordinary HEALER 2020

CURE® Readers Honor Oncology Nurses

The winning entry from CURE®*'s 2020 Extraordinary Healer® Award for Oncology Nursing essay contest. By* LYNNE O'CONNOR, M.S.N., RN

WORKING IN THE INFUSION room at the University of Pittsburgh Medical Center Hillman Cancer Center can be extremely busy, but that did not stop **Christie Santure, B.S.N., RN, OCN**, from sharing her dream of having a caregiver program. Christie approached me, her unit director, three years ago about starting Caring for the Caregiver.

CHRISTIE SANTURE, B.S.N., RN, OCN
University of Pittsburgh Medical Center Hillman Cancer Center, Pittsburgh, Pennsylvania

Christie communicated that, time and time again, she noticed that caregivers did not have the tools to take care of themselves while caring for the patient. They often told her that they didn't receive enough support and were unable to take care of themselves because they were so worried about their loved one. Wanting to help those who were helping others, she researched how to start the support group, found a sponsor to help her and ran with it.

The first sessions took place once a month and had low attendance. That did not deter Christie. She advertised the sessions on all three floors of the Hillman Cancer Center and at other sites in our network. She also attended nursing huddles to help promote her program. Through her belief in this program and her perseverance, the sessions began to thrive. Now, three years later, Christie offers the sessions twice a month at the Hillman Cancer Center. Additionally, she has worked with leadership at two of our network sites to start the Caring for the Caregiver program at those locations.

The group offers support and education to those whose loved ones are battling cancer. Members not only discuss topics and practices around self-care, mindfulness, stress management, compassion fatigue and nutrition but also support each other by sharing personal stories and struggles, so they experience the comfort of knowing they aren't alone. Christie constantly works to improve the program, researching topics, resources and teaching materials for the caregivers. This is done outside her normal business day.

Caregivers in the Pittsburgh region are thankful for Christie's kindness and dedication to this often overlooked population in the medical setting. Here are thoughts from some of the caregivers Christie has helped through this valuable program.

Facilitator Joni Sturgill: Christie is one of the kindest, most compassionate people I know. I've seen her, time and time again, go out of her way to help connect caregivers with the resources and support they need, as well as offer a listening ear to caregivers who just need to talk. Her knowledge, dedication and compassion are an asset to the Pittsburgh oncology community and to anyone who is a caregiver.

A caregiver: Caring for the Caregiver is a unique group in the Pittsburgh area and perhaps beyond, because it takes the time and effort to reach out to people in an oncology unit who are often not seen although they're standing in plain sight: the caregivers. In most places in the cancer world, we caregivers are just there. We're the concerned spouse standing in the corner. We have a name but not a story because we don't have cancer. Many people see us, and some might even understand our burden, but few reach out. They don't have the time or tools to do anything. Thank God that Christie came along and reached out with this group. Putting together Caring for the Caregiver wasn't mandatory in her everyday job, but it was necessary for us. Christie saw us walking in numbers through hospitals, doing everything for our loved ones and nothing for ourselves. She understood we were tired/empty/confused and decided we needed help, too.

I've been part of the group for a only short period of time, but I can tell you without reservation that had Christie not started this group and thrown the doors open to everyone like me, I would be in a dark place, maybe not able to help my wife and certainly not able to help myself. There are times in life when saying thank you to someone who has suddenly appeared in your life and straightened things out just doesn't seem to be enough. The Extraordinary Healer® Award would help a lot of us say thank you in a special way to a deserving woman.

A caregiver: One topic we often discuss in our caregivers' group is gratitude. I am grateful at each meeting that Christie started this group. For the last year and a half, I have felt supported and encouraged by Christie and our facilitator, Joni. I have learned many ways of taking care of myself during my husband's illness. Numerous times, Christie has explained medical procedures and aspects of treatment that have allayed my fears and helped me face whatever we had to deal with, one day at a time, regarding Dave's esophageal cancer. This group is a true blessing. Christie's passion for helping the caregivers — those who are often forgotten in the process — along with her perseverance to make the program a success make her a great candidate for the Extraordinary Healer® Award.

PHOTOS OF FARRAT & SANTATERESA BY CLAUDIO PAPAPIETRO
PHOTOS OF O'CONNOR & SANTURE BY CHANDLER CROWELL

Breast Cancer Taught Me to Love Myself

One woman discovered that breast cancer made her wiser, more mature and more open to love — including self-love. By TATYANA GANN

I WAS TALKING WITH a friend when I saw that my nurse was calling me on the other line. It was a Wednesday afternoon, and I was enjoying my usual stroll in the lobby of the office building where I worked. I don't remember much of what happened after I hung up the phone.

I couldn't feel my knees because it felt like somebody hit them with a baseball bat. I found myself in a meeting room being hugged by one of my co-workers as I was sobbing and screaming: "How could this happen? Maybe it's a mistake."

I drove home with black mascara and tears running down my cheeks, trying to pay attention to where I was going.

Then I was sitting in my SUV in front of my home, wondering how I would tell my family that I had breast cancer and didn't know whether I would live or die.

Those questions were racing through my mind, but I realized I had to get out of my head and find peace if I wanted to keep my sanity. But first, I had to adjust my perspective.

I called my sister, Ingrid, in Russia. We had not spoken in a long time, and it was an opportunity to heal our relationship. She lost her husband to cancer in 2012, so I knew she would understand. I tried to keep myself together, but I couldn't. I cried. I was scared. I let it out. I told her I loved her.

That night, she told me something that became my anchor going forward. "Look at this challenge as your quest to discover who you are," she said. "Remember you are loved, and you are love. It is your journey to accept love again. You always give love, but you are afraid to receive it."

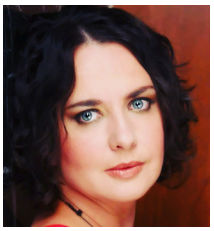
Instead of accepting my cancer diagnosis as a major health challenge, I looked at it as my awakening to the truth about what mattered in my life. It became my mission to heal my body, and I felt like a new woman, ready to conquer the world and thrive again. It infused my spirit with courage and faith. I made a tough choice — to keep going and never give up.

The next three months revealed what needed to be done. Every day I learned something new about self-care and practicing mindfulness. One night after seeing my surgeon, I came home and sat on the floor and prayed to God. I prayed for miracles and asked for guidance.

My intuition led me to Dr. Pat Whitworth, a brilliant breast cancer surgeon with Nashville Breast Center. Suddenly, everyone was telling me about him. Even a lady who ran a local donut shop said, "Honey, he saved my life!" I believed her while savoring my Bavarian cream donut and drinking coffee on a Saturday morning.

The moment Whitworth walked into the room, I just knew he was the right doctor for me. My search stopped right there.

"That night, (my sister) told me something that became my anchor going forward. 'Look at this challenge as your quest to discover who you are,' she said. 'Remember you are loved, and you are love. It is your journey to accept love again.'"



— TATYANA GANN

He was different from any other doctor I have met. He was calm and knew how to bring me out of my funk and into a state of inner peace. His energy spoke before he did. He helped me see my life in a new light, embrace each moment and never lose hope. His care has helped me accept myself as a "wounded warrior," with all my flaws and scars. Every time I would experience anxiety, his response would be "Tatyana, find your peace and stay there."

Since I started my breast cancer journey, I have met a few women who are powerful cancer survivors. They told me that cancer had given them a new lease on life.

Some of the life lessons I have learned include the following:

- Be with people you love.
- Let go of everything that feels lukewarm or toxic.
- Stop doing things that do not excite you anymore and do something kind for yourself. Forgive often and say "I love you" without fear of looking stupid.

Breast cancer makes you wiser and more mature, but it also opens your heart to see that love is around you.

Cancer also taught me another lesson about trusting myself and listening to my intuition. The most beautiful gift you can give to yourself is to listen to your inner voice, the one you are so afraid to trust and often brush off, believing that you're overthinking things.

Cancer has shown me something I initially didn't want to accept, which was that I can love myself.

Tatyana Gann *is a publicity strategist, mindset coach, writer, lifestyle advocate and breast cancer thriver. Her aim is to inspire women to tell their story to heal their mind and body. Gann resides in Nashville with her two sons. You can follow her on Instagram at instagram.com/tatyanagann/.*

PHOTO COURTESY OF TATYANA GANN


EXPECT MORE FROM A JOURNEY
YOU NEVER EXPECTED TO BE ON.
When it comes to the treatment of multiple myeloma, learn how you can Expect More at themmrf.org
MM RF
MULTIPLE MYELOMA
Research Foundation

CANCERFINANCES.ORG

We know that cancer is expensive. This site is here to guide you through some key topics that may impact your financial situation. Why trust **CancerFinances.org**?

We dream of a world where everyone has access to information and resources needed to live their best lives. Beyond diagnosis.

Whether you are newly diagnosed, or many years past active treatment, our **free** toolkit can help you navigate finances after cancer.

GET STARTED.

YOU'RE NOT ALONE. WE CAN HELP.

Designed so you feel like you're getting the one-on-one help you deserve, our toolkit guides you through a number of topics including:

- Life Insurance
- Clinical Trials
- Caregiving
- Genetics & Genomics
- Education
- Health Insurance
- Disability Insurance
- Estate Planning
- Financial Assistance Resources