

NIH News in Health

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Advances in Breast Cancer Screening and Treatment Get Personal

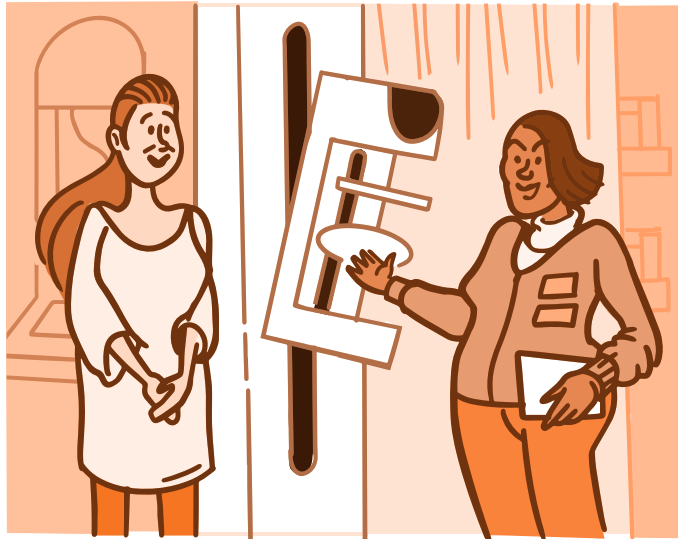
Breast cancer is the second most common cancer among American women. Breast cancer death rates have been falling over the past 30 years. But nearly 13% of women are still diagnosed in their lifetime. Men can get breast cancer too, although it's rare.

Cancer is caused by changes to **genes** that control the way our cells function. These changes affect how cells grow and divide. Cancer results when cells divide uncontrollably. In breast cancer, this happens in the breast tissue.

Researchers are studying the risk factors for different types of breast cancer. They're also searching for more personalized treatments.

Unraveling The Risks • “Breast cancer is caused by a combination of factors,” says Dr. Montserrat García-Closas, a cancer researcher at NIH. Your genes, lifestyle, and environment all contribute to your risk. Researchers are trying to better understand how each plays a role.

People with a family history of breast cancer are at increased risk for the disease. Some are born with rare versions of certain genes that put them at high risk. These include the genes *BRCA1* and *BRCA2*.



“But the vast majority of patients have no known family history and no known gene that causes cancer,” explains Dr. Margaret Gatti-Mays, a breast cancer treatment specialist at The Ohio State University.

So researchers are also searching for combinations of genes that may lead to breast cancer. “Women can inherit hundreds or thousands of common versions of genes that each have tiny effects, but in combination can put them at substantial risk for developing breast cancer,” García-Closas says. An NIH study called the Confluence Project is trying to unravel these combinations.

Other factors can increase your risk for breast cancer, too. These include your age, whether you've had children, alcohol use, and obesity.

Studies are examining how all these factors—genes, medical history, and lifestyle—interact to affect cancer risk. One is called Connect for Cancer Prevention. “It's recruiting 200,000 people in the U.S. and following them for years to see who

develops different types of cancers,” says García-Closas.

Staying Ahead of Breast Cancer • Another study, called the Wisdom Study, is exploring how to best personalize breast cancer screening. Screening tests look for signs of a disease before symptoms appear. Finding cancer early may increase the chance that it can be treated and cured.

If you're at high risk for breast cancer, your doctor may advise you to get screenings at an earlier age than most, or more often.

“Women from 40 to 50 should talk with their doctor about when they should start screening. And that should be based on their personal risks,” says Dr. Brandy Heckman-Stoddard, an NIH expert on breast cancer.

Mammograms are the most common way to screen for breast cancer. These are X-ray pictures of the breast. An NIH study called TMIST is comparing whether 2D or 3D mammograms are better for screening. 2D mammograms are taken from two sides of the breast. 3D mammograms are taken from different angles around the breast. Then, a computer builds a 3D-like image.

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Definitions

Genes

Stretches of DNA you inherit from your parents that defines features, like your risk for certain diseases.

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Magnetic resonance imaging (MRI) is sometimes used to screen women at high risk of breast cancer. MRIs can create a clearer image of the breast and don't use radiation.

Researchers are looking for other ways to detect breast cancer, too. García-Closas' team is trying to detect cancer using blood samples. These "liquid biopsies" detect DNA from cancer cells, which travel around the body in the bloodstream.

"Liquid biopsies should reflect what's going on in your whole body," García-Closas says, "versus when you look at a tissue biopsy, you're taking a tiny sample of tissue in a

Definitions

Receptors

Molecules that receive and respond to signals, such as hormones.

Hormones

Substances made in the body's glands that signal another part of the body to react a certain way.

Immune System

The system that protects your body from invading viruses, bacteria, and other microscopic threats.

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particular location."

Liquid biopsies may one day be able to detect cancer before other clinical tests, she says. "And, they might be able to better monitor what's happening in your body after cancer has been diagnosed."

Fighting Back • When breast cancer is found, treatment depends on the type of tumor. Surgery and radiation are common. Chemotherapy may also be used. Doctors might recommend other treatments as well, depending on the type of breast cancer.

"There are three main types of breast cancer," Gatti-Mays says. "The subtype is determined by the presence or absence of three **receptors**." These receptors respond to the **hormones** estrogen or progesterone or a protein called HER2.

"If your tumor has estrogen and progesterone receptors, then you can be treated with hormone therapies," says Heckman-Stoddard. These block the action of hormones that can cause certain cancers to grow.

Hormone treatments can also be used to prevent or lower the risk of cancer for certain women. One such drug is called tamoxifen. But it has side effects that make it unappealing for prevention. Heckman-Stoddard's team is studying whether using the drug as a gel lessens the side effects.

There are newer treatment options called targeted treatments. These block specific proteins that control how cancer cells grow, divide, and spread. Targeted treatments for HER2-positive cancer have improved survival over the last decade.

The most recent type of cancer treatment is called immunotherapy. It trains your body to fight cancer using your own **immune system**.

"Immunotherapy is very promising, but the benefits are still limited to only some patients with triple negative breast cancer," says



Ask Your Doctor About Your Breast Cancer Risk

Certain factors put you at higher risk for breast cancer. These include:

- Being 40 years old or older
- A personal history of breast cancer or benign (noncancer) breast disease
- Radiation exposure to the breast or chest
- Having a close relative who's had breast cancer
- Greater exposure to estrogen over time. (Starting menstruation early or entering menopause later in life.)
- Hormone therapy for symptoms of menopause
- Obesity
- Drinking alcohol

Gatti-Mays. These cancers lack all three receptors. But researchers are trying to expand this treatment to more patients with breast cancer. They're also testing whether using it in combination with other treatments will work better.

Scientists continue to look for ways to improve screening, prevention, and treatment. "In the next five to 10 years, there should be better ways for women to determine their risk of breast cancer," says García-Closas. "That should help them have a conversation with their physicians on what will be the best tailored prevention strategies."

No matter what your personal risk of cancer, a healthy lifestyle is the best way to prevent it. Eat a heart-healthy diet, reduce alcohol intake, don't smoke, and get regular exercise. See the Wise Choices box and talk with your health care provider about ways to lower your risk. ■



Web Links

For more about breast cancer, see "Links" in the online article: newsinhealth.nih.gov/2022/02/advances-breast-cancer

Delving Into Devices

Children and Screen Time

“Screen time” used to mean sitting around and watching TV. For kids, too much time in front of the TV is linked to obesity, as well as trouble in school. But screen time doesn’t refer just to television anymore. Smartphones, tablets, and other handheld devices are now everywhere.

These new screens pose new challenges for parents, says Dr. Jenny Radesky, a pediatrician at the University of Michigan. “There’s so much content available now on something a child can carry from room to room,” she explains.

Almost all this new technology was designed for adults, not children, Radesky says. For example, a recent study by her team analyzed ads on YouTube channels marketed to kids. They found that more than half featured some age inappropriate ads, such as those for violent video games.

Parents may find it hard to know how much time their kids

really spend on handheld devices. Another study from Radesky’s team found that young children who had their own tablets used them almost two hours a day. But only about a third of their parents accurately guessed that amount.

Researchers are exploring how this type of media use affects kids’ developing brains. They’re interested in whether the use of phones and tablets alters the brain’s executive functioning, Radesky explains. That’s the ability to focus on important tasks, resist distractions, and use self-control.

“Devices like tablets give you lots of stuff that’s really exciting, all at once, with no waiting,” Radesky says. Researchers want to know: Does that get in the way of kids doing harder tasks that help them build life skills?

Studies have already shown that too much media use can affect other aspects of kids’ health, including mental health and physical activity.

“And sleep is a major one,” adds Radesky. “A lot of studies have shown that the more kids use media, especially around bedtime, the worse their sleep is.”

But some uses of handheld devices can have benefits. Kids can use video chat to talk with relatives who live far away. Some educational apps and programs designed especially for children can help them in school. So how can parents find a balance?

“There are ways to set some limits about how much time they can spend on devices,” Radesky says. You can set timers. Some apps let



you stop content from continuing to play automatically. For more tips on limiting screen time, see the Wise Choices box.

It can be hard for parents to track what their children are doing on portable screens. But adults can model thinking critically about what they see when watching TV or other media with their kids. You can talk about what you like and don’t like about a show or ad. You can point out when and why you think something is false or misleading. This can help kids learn these skills and use them on their own.

“From an early age, make it a norm that you can talk about what’s on devices,” says Radesky. “You want kids to come to you if they see something creepy, or if they’re just confused, because they know you can help them understand it.” ■



Wise Choices

Setting Screen Time Boundaries

- Set a good example. Be a role model and limit your own screen time.
- Create a house rule that limits screen time and enforce it.
- Don’t allow screens during meals or homework.
- Give your kids alternatives to screen time. Suggest playing outside, finding a new hobby, or learning a sport.
- Do other activities together, such as family board games, puzzles, or going for a walk.
- Don’t put a TV or computer in your child’s bedroom or let them go to bed with a portable device.



Web Links

For more about kids’ screen time and an online-only Q&A, see “Links” in the online article: newsinhealth.nih.gov/2022/02/delving-into-devices



Health Capsules

For links to more information, please visit our website and see these stories online.

Reducing the Health Risks of Night Shifts

Night shift work increases the risk of developing diabetes, heart disease, and obesity. It disrupts the body's circadian rhythms—the 24-hour internal “clock” that controls when you sleep and wake.

Studies have shown that eating at night alters the body's metabolism. Specifically, it impairs your ability to process blood sugar, or glucose.

Now, a study suggests there may be a way to combat these effects of night shift work: limit eating to daytime. Researchers found that eating only during the day prevented

the high blood sugar linked to night shift work.

Nineteen people took part in the study. They underwent simulated night work conditions over two weeks. Each person was randomly assigned to receive one of two meal schedules. One group ate meals during both day and night. This pattern is typical of night shift workers. The other group ate only during the daytime.

The study found that nighttime eating boosted blood sugar levels. High blood sugar is a risk factor for

diabetes. Eating at night increased blood glucose by 6.4% on average. Eating meals only during daytime prevented this effect.

“This study reinforces the notion that when you eat matters for determining health outcomes such as blood sugar levels, which are relevant for night workers as they typically eat at night while on shift,” says Dr. Sarah Chellappa of the University of Cologne in Germany, who led the study. ■

Life With Low Vision

Some vision problems can't be fixed with glasses, contact lenses, or even surgery. This is known as low vision. It can make everyday tasks difficult. Your low vision may make it hard to read or drive. You might have trouble recognizing people's faces or telling colors apart.

Low vision is more common in older adults. It can be caused by many different eye conditions. One of the most common causes is age-related macular degeneration. This eye disease can blur your central

vision. Other diseases that can cause low vision include cataracts, where the lens of the eye becomes cloudy. Glaucoma, which damages the eye's optic nerve, can also cause untreatable vision loss.

Eye doctors can check for low vision during an eye exam. They'll give you drops to widen, or dilate, your pupil. This allows them to check for conditions that can cause low vision.

Unfortunately, low vision is often permanent. Treatment options depend on what's causing your low

vision. But there are things you can do to make the most of your remaining sight.

If your vision loss is minor, you may find that brighter lights help. Wearing anti-glare sunglasses may also help you see better. A vision rehabilitation specialist can show you how to use technologies and magnifying devices that aid with vision loss. They can also share resources to help you cope with vision loss. Learn more at go.usa.gov/xtTgZ. ■



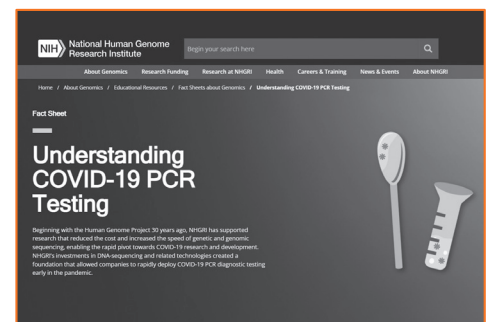
Featured Website

Understanding COVID-19 PCR Testing

go.usa.gov/xtTgB

Testing is important to stop the spread of COVID-19. PCR tests for COVID-19 are very accurate. They make many copies of the virus'

genetic material in a sample. That lets the test detect very low levels of virus. Learn more about how PCR testing works.



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