

Learning about Breast Cancer Risk and Prevention



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This info is a general resource. It is not meant to replace your doctor’s advice. Ask your doctor or health care team any questions. Always follow their instructions.

If you need this document in large print or another language, call 216-286-4636.

Intro

This booklet is written for women who are seen in our Center for Breast Cancer Prevention. It reviews common topics about breast cancer risk and things that may help lower the risk of breast cancer. If you have any questions after reading this booklet, please speak with your doctor or nurse.

What is breast cancer?

Breast cancer is a disease in which cancer cells form in the tissues of the breast. Breast cancer is the second most common type of cancer in American women.

What is prevention?

Cancer prevention is action taken to lower the chance of getting cancer. By preventing cancer, the number of new cases of cancer in a group or population is lowered. Hopefully, this will lower the number of deaths caused by cancer.

Cancer is not a single disease but a group of related diseases. Many things in our genes, our lifestyle, and the environment around us may increase or decrease our risk of getting cancer. To prevent new cancers from starting, scientists look at **risk factors** and **protective factors**.

- A cancer **risk factor** is anything that raises your chance of developing cancer.
- A cancer **protective factor** is anything that lowers your chance of developing cancer.

Avoiding risk factors and increasing protective factors may help prevent cancer.

Avoiding cancer risk factors may help prevent certain cancers. Risk factors include smoking, being overweight, and not getting enough exercise. Increasing protective factors such as quitting smoking, eating a healthy diet, and exercising may also help prevent some cancers. By meeting with a doctor or nurse practitioner in our Center for Breast Cancer Prevention, you can learn more about how you might lower your risk of breast cancer.

How can someone learn more about their breast cancer risk?

You can learn more about your risk for breast cancer by meeting with an expert in our Center for Breast Cancer Prevention. During this visit, we ask many questions about the health of you and your family. We then enter the data into a special computer program designed to assess a person's breast cancer risk. Based on the findings, we help you make your own breast cancer prevention and screening plan. The plan may include seeing an expert in our center for yearly follow-up visits. Each person's plan depends on their breast cancer risk.

Your chances of getting breast cancer are higher if you have any of these risk factors:

- A mother, sister or daughter had breast cancer
- A family member with ovarian cancer
- A male family member with breast cancer
- A breast biopsy that was not normal (called atypical)
- Dense breast tissue
- You are of Ashkenazi (Eastern European) Jewish ancestry with any family member with breast cancer or other risk factors
- You or a family member have a genetic mutation that raises your risk of breast cancer
- You had radiation to your chest before you were 30 years old

Our team can do a full breast cancer risk assessment for anyone who is worried about their breast cancer risk, even if they do not have any of the risk factors listed above.

Breast Cancer Risk Factors

This section explains more about breast cancer risk factors. There are some risk factors you can control and some that you cannot.

Lifestyle factors

Alcohol

Drinking alcohol increases the risk of breast cancer. The more a person drinks, the higher the risk.

Alcoholic drinks can contain up to 15 cancer-causing compounds called carcinogens. The type of alcohol does not matter. Drinking and smoking cause an even higher risk of cancer in general.

The American Cancer Society has guidelines for lifestyle changes that can lower the risk of cancer. They say it is best to not drink alcohol. If you do drink alcohol, women should not have more than 1 drink a day and men should not have more than 2 drinks a day. A drink is 12 ounces of beer, 5 ounces of wine or 1 ½ ounces of 80-proof liquor.

Exercise

Women who exercise at least 2 ½ or more hours a week have a lower risk of breast cancer. Doing 5 or more hours of exercise a week is ideal. The effect of exercise on breast cancer risk may be greatest in women who **have not** gone through menopause and who have normal or low body weight.

Some studies have shown that strenuous exercise for more than 4 hours per week may decrease the risk of breast cancer by up to 30 to 40%.

Exercise can include things like brisk walking, riding a bike, swimming and yoga. Even mowing the lawn counts if it gets your heart rate up and makes you breathe a bit faster than usual. If exercise isn't part of your routine, start slowly and progress at your own pace. Some exercise is better than none.



Being overweight (obesity)

Being overweight increases the risk of breast cancer at any time of life. This is mainly in women who have gone through menopause and have not used hormone replacement therapy. Fat tissue makes extra estrogen. High levels of estrogen have been linked to an increased risk of breast, endometrial and other cancers. Women who are overweight also tend to have more insulin, which has been linked to breast cancer.



Breastfeeding

Breastfeeding can reduce the risk of breast cancer.

Diet

There is no one food or special diet alone that can prevent breast cancer. The best diet you can follow is one that includes many types of fruits, vegetables, and whole grains.



Hormone therapy for menopause symptoms

Studies have shown an increased risk of breast cancer in women who take hormone replacements after menopause. Hormone replacements may include estrogen and/or progesterone. Talk with your health care provider about the pros and cons of taking hormone therapy to treat symptoms from menopause.

Other factors

This list includes other risk factors for breast cancer that you cannot control.

Dense breasts

Breast density is a factor in breast cancer risk. The level of risk depends on how dense the breast tissue is. Women with very dense breasts have a higher risk of breast cancer than women with low breast density.

Race/Ethnicity

Breast cancer is slightly more common in white women. However, black and African-American women are more likely to have more aggressive and advanced breast cancer at a young age and die from the disease.

Your risk of breast cancer is also higher if your family is of Ashkenazi (Eastern European) Jewish ancestry and members have had breast or ovarian cancer.

A personal or family history of breast cancer or benign (noncancer) breast disease

Women with any of the following have an increased risk of breast cancer:

- A history of invasive breast cancer, ductal carcinoma in situ (DCIS) or lobular carcinoma in situ (LCIS).
- A history of benign (non-cancer) breast disease.
- A family history of breast cancer in a first-degree relative (mother, sister, or daughter).

Inherited gene changes

Women with a family history of breast cancer in a first-degree relative (mother, sister, or daughter) have an increased risk of breast cancer.

Women who have inherited changes in the BRCA1 and BRCA2 genes or in certain other genes have a higher risk of breast cancer. The risk of breast cancer caused by inherited gene changes depends on the type of gene mutation, family history of cancer, and other factors.

Men with BRCA2 variants, and to a lesser extent BRCA1 variants, are also at increased risk of breast cancer and prostate cancer. Both men and women with harmful BRCA1 or BRCA2 variants are at increased risk of pancreatic cancer, although the risk increase is low.

Reproductive history resulting in greater exposure to estrogen

Estrogen is a hormone made by the body. It helps the body develop and maintain female sex characteristics. Being exposed to estrogen over a long time may increase the risk of breast cancer. Estrogen levels are highest during the years you have a period. The factors listed below increase the length of time that breast tissue is exposed to estrogen and may increase the risk of breast cancer:

- **Early menstruation (periods):** Having periods before age 12 increases the number of years the breast tissue is exposed to estrogen.
- **Starting menopause at a later age:** The more years a woman has a period, the longer the breast tissue is exposed to estrogen.
- **Older age at birth of first child or never having given birth:** Pregnancy lowers how many periods you have. Breast tissue is exposed to more estrogen for longer periods of time in someone who is pregnant for the first time after age 35 or who never becomes pregnant.

Being a woman and older age

Being a woman and older age are the main risk factors for breast cancer. The risk of breast cancer in a 70 year old woman is about 10 times that of a 30 year old woman. Over her lifetime, a woman's risk of developing breast cancer is about one hundred times a man's risk.

Radiation to the chest or breast before age 30

Getting radiation to the chest or breast before age 30 can increase the risk of breast cancer. This risk lasts throughout one's lifetime. The risk is related to the dose of radiation given and the age at which it was given. The risk is even higher if the radiation was given during puberty.

It is not clear whether the following affect the risk of breast cancer:

Birth control pills

Taking birth control pills (contraceptives) may slightly increase the risk of breast cancer in current or former users. Some birth control pills contain estrogen. Progestin-only birth control that are injected or implanted do not appear to increase the risk of breast cancer.

Environment

Studies have not proven that being exposed to certain substances in the environment, such as chemicals, increases the risk of breast cancer.

The following have little or no effect on the risk of breast cancer.

- Having an abortion.
- Making diet changes such as eating less fat or more fruits and vegetables.
- Taking vitamins, including fenretinide (a type of vitamin A).
- Using underarm deodorant or antiperspirant.
- Taking statins - drugs that lower cholesterol.
- Taking bisphosphonates – drugs used to treat osteoporosis and high calcium.
- Changes in your circadian rhythm (physical, mental and behavioral changes that are mainly affected by darkness and light in 24 hour cycles), which may be affected by working night shifts or the amount of light in your bedroom.

New ways to prevent breast cancer are being studied in clinical trials.

Cancer prevention clinical trials are used to study ways to lower the risk of developing certain types of cancer. Clinical trials are taking place in many parts of the country. Info about clinical trials can be found in the Clinical Trials section of the National Cancer Institute (NCI) website at www.cancer.gov. Check NCI's list of cancer clinical trials for breast cancer prevention trials that are taking patients or call 1-800-422-6237.

Breast Cancer Screening Tests

Mammogram

Mammography is the most common screening test for breast cancer. A mammogram is an x-ray of the breast. This test may find tumors that are too small to feel. A mammogram may also find ductal carcinoma in situ (DCIS). In DCIS, there are abnormal cells in the lining of a breast duct, which may become invasive cancer in some women. A mammogram is the test that finds out if a patient has dense breasts.

Mammograms are less likely to find breast tumors in women with dense breasts. This may be because denser breast tissue and breast cancer tumors both appear white on a mammogram and the denser breast tissue may hide the breast cancer tumors.

Factors that may affect whether a mammogram is able to detect (find) breast cancer are:

- The size of the tumor
- How dense the breast tissue is
- The skill of the radiologist

Women who have screening mammograms have a lower chance of dying from breast cancer than women who do not have screening mammograms.

Tomosynthesis (3-D Mammogram)

We offer an advanced 3-D mammogram called Tomosynthesis that helps us find breast cancer sooner. It finds more cancers that may be hiding in an area of dense breast tissue that may be missed on a normal mammogram. It also helps decrease the number of women who must return for more images after a screening mammogram.

Clinical breast exam (CBE)

A clinical breast exam is an exam of the breast by a doctor or other health care provider. The doctor will carefully feel the breasts and under the arms for lumps or anything else that does not seem normal. It is not known if having clinical breast exams lowers the chance of dying from breast cancer.

Breast self-exams may be done by women or men to check their breasts for lumps or other changes. It is important to know how your breasts most often look and feel. If you feel any lumps or notice any other changes, talk to your doctor.

MRI (magnetic resonance imaging) in women with a high risk of breast cancer

MRI is a test that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This test is also called nuclear magnetic resonance imaging (NMRI). MRI does not use any x-rays.

MRI may be used as a screening test for women who have one or more of the following:

- Certain gene changes such as in the BRCA1 or BRCA2 genes, or genetic syndromes such as Li-Fraumeni or Cowden syndrome
- A high chance of developing breast cancer as determined by a thorough risk assessment
- Radiation to the chest for Hodgkin's Lymphoma treatment under the age of 30

MRIs find breast cancer more often than mammograms do, but it is common for MRI results to appear abnormal even when there isn't any cancer.

FAST MRI - Abbreviated MRI

Fast MRI is a self-pay option for a fast screening breast MRI with contrast. Fast MRI takes about 10 minutes. It is for women who have an average risk or slightly higher than average risk of developing breast cancer. Fast MRI does not replace a mammogram. It is done in addition to a mammogram. Fast MRI has been shown to find more cancer, but it may also find more areas of concern that are not cancer.

Breast ultrasound

Screening breast ultrasound is sometimes used in patients with dense breasts to find cancers that may be hidden on a normal mammogram. However, it also increases the number of women who must return for more images. It may also lead to an increase amount of biopsies that are not needed.

Medicines to Lower the Risk of Breast Cancer

Based on your risk assessment, we can discuss if you might benefit from medicines (drugs) that reduce the risk of breast cancer. These drugs come as pills and may include:

Tamoxifen and raloxifene which belong to a class of drugs called **selective estrogen receptor modulators (SERMs)**. SERMs act like estrogen on some tissues in the body, but block the effect of estrogen on other tissues. With either drug, the reduced risk of breast cancer lasts for many years after treatment is stopped.



Aromatase inhibitors (anastrozole, letrozole) and **inactivators** (exemestane). These drugs lower the amount of estrogen made by the body. Before menopause, estrogen is made by the ovaries and other tissues in a woman's body, such as the brain, fat tissue, and skin. After menopause, the ovaries stop making estrogen, but the other tissues do not. Aromatase inhibitors block the action of an enzyme called aromatase, which is used to make all of the body's estrogen. Aromatase inactivators stop the enzyme from working.

This chart provides basic information about drugs that can lower the risk of breast cancer. Always talk with your doctor about the risks and benefits of any new drug **before** taking it.

Drug name	Lowers the risk of breast cancer in:	Risks include but are not limited to:
tamoxifen	<p>Women who have gone through menopause.</p> <p>Women who have not gone through menopause that are at high risk for breast cancer. High-risk women under the age of 50 may benefit the most from tamoxifen.</p>	<p>hot flashes</p> <p>endometrial (uterine) cancer</p> <p>stroke</p> <p>cataracts</p> <p>blood clots</p> <p>The risk of having these problems increases with age.</p>
raloxifene	Women who have gone through menopause.	<p>blood clots</p> <p>strokes</p>
anastrozole, letrozole or exemestane	Women who have gone through menopause.	<p>muscle and joint pain</p> <p>osteoporosis (bone loss)</p> <p>hot flashes</p> <p>feeling very tired (fatigue)</p>

Surgery Options to Reduce the Risk of Breast Cancer

Surgery can be offered to reduce the risk of breast cancer in women who carry a very high risk of the disease, but have never had cancer.

It is important to talk with a breast cancer surgeon to learn your surgery choices. Find out what happens during surgery. Ask what the risks are and what types of problems might happen. Ask a lot of questions and think about what means the most to you. This can help ensure that you are making a choice you feel good about.

Surgery to reduce the risk of breast cancer can be done for women at very high risk such as those with a breast cancer gene mutation.

Surgery options for women with a very high risk of breast cancer:

Bilateral Prophylactic Mastectomy

This surgery removes both breasts. Breast reconstruction can be done after mastectomy.

If you choose to have breast reconstruction, the skin and sometimes the nipple are left in place. This is done so breasts look more natural. Breast reconstruction can be done with implants or your own tissue. Patients are seen by a Plastic Surgeon to decide the best choice.

Though the risk is not gone, this surgery greatly lowers a woman's risk of breast cancer, by up to 95%.

What are some of the more common risks with this surgery?

- Bleeding, infection, pain and chest numbness are some of the most common problems
- The way you see your body may change and it may be hard to adjust.
- Nipple feeling and function is lost.

Bilateral Prophylactic Salpingo-oophorectomy Also called prophylactic ovary removal

This surgery is offered if you also have a high risk of ovarian cancer. This surgery removes both ovaries and fallopian tubes.

This surgery can lower the risk of ovarian cancer by about 90% and the risk of breast cancer by about 50%.

If you have not yet gone through menopause, taking out the ovaries lowers the amount of estrogen your body makes. Breast cancer risk is only reduced if the ovaries are removed before menopause.

What are some of the more common risks with this surgery?

- Bleeding and infection are 2 of the most common problems.
- If you have not gone into menopause, you will have early menopause after the surgery.
- You may have menopause symptoms such as hot flashes, depression and not being able to sleep (insomnia).
- Long term effects can include decreased sex drive, vaginal dryness and decreased bone density.

There are risks with any surgery. It is vital to discuss these risks and benefits in detail with your surgeon **before** you make any final decisions.

Genetic Testing for Hereditary Cancer Risk

Most cancers happen by chance, meaning the cause is unknown. These are known as “sporadic” cancers. In some families, cancer happens more often than what we expect by chance. This may happen because of shared lifestyle, or a combination of shared environmental and genetic risk factors. For other families, cancer may happen more often than we expect because of a single genetic risk factor that is passed down through the family. This is referred to as hereditary cancer.

Genes tell our bodies how to work. Many of our genes protect the body and help prevent cancers from happening. When there is a change in one of these genes, it may not work the way it should to prevent cancer. These gene changes are called mutations. **Having a gene mutation does not mean that a person has cancer or will get cancer for certain.** It means that a person has a higher chance for developing certain types of cancer.

Genetic testing looks for gene changes (mutations) that can cause hereditary cancers in families. Learning more about your risk for cancer can sometimes make a person worry. However, it can also help you understand what steps you need to take to be proactive such as extra cancer screening or ways to reduce cancer risk.

What should I know about hereditary breast and ovarian cancer?

Most of the time, breast cancer and ovarian cancer is not due to a hereditary cause. However, in some families, a gene mutation can be passed down through the generations that increases the risk for breast cancer, ovarian cancer, and sometimes other types of cancer too. The most common causes of hereditary breast and ovarian cancer are the BRCA1 and BRCA2 genes. Other genes have also been linked to hereditary breast cancer and/or ovarian cancer.

Gene mutations can be passed down from your father’s side of the family or from your mother’s side of the family. That’s why your genetic counselor looks at the cancer history on both sides of your family.

You may want to think about genetic testing if you and/or your family have a history of:

- Breast cancer before age 50 and/or more than 1 relative with breast cancer
- Ovarian cancer
- Male breast cancer
- Pancreatic cancer
- Aggressive prostate cancer
- Ashkenazi (Eastern European) Jewish ancestry
- A blood relative who had genetic testing that shows an increased risk for breast or ovarian cancer

What happens at a cancer genetics visit?

At your first visit, you will meet with a genetic counselor and/or a genetics doctor. They will:

- Ask you about your personal and family history of cancer
- Evaluate if the cancers in your family appear to follow a pattern of being passed down
- Discuss what you and your family members can do to manage your risk for cancer
- Explain if and how genetic testing might help you and your family

Genetic testing may not be helpful for every family. Even if testing is offered, you may choose not to have it done. The choice is yours. If you do decide to have genetic testing, it is usually done by taking a sample of your blood or saliva. Results are typically ready in about 3 to 4 weeks. A follow-up visit is scheduled to review your test results

What happens at a cancer genetics follow-up visit?

Your genetics team will:

- Explain the results of your genetic testing
- Discuss the risk of cancer for you and your family
- Discuss what you can do to manage your risk for cancer, such as extra cancer screening or ways to lower cancer risk
- Discuss if other family members should consider genetic testing

Your genetic information will be part of your medical record. All medical records are protected by federal privacy laws. Talk with your genetics team if you have any questions.

Does health insurance cover the cost of genetic testing?

Most health insurance covers this testing but not all plans are the same. During a genetics appointment, the genetic counselor will discuss the cost of testing with you.

How can I learn more or schedule a visit?

You can meet with a genetic counselor at many University Hospital locations. To schedule a visit or to ask questions, call the **Center for Human Genetics** at **216-844-3936**.

Ways We Can Help

This section lists extra services within the University Hospitals system that you may find helpful. Most services are free. Some may be covered by your insurance.

Answers to Billing Questions

216-286-3814 – For last names A-M

216-286-3809 – For last names N-Z



Our financial counselors can answer billing questions and discuss our financial aid programs.

Dietitian

Ask to speak with our dietitian if you have diet or nutrition concerns.

The dietitian can answer your questions and provide education resources.



Social Work

Our social workers can help with day-to-day concerns, problem solving and coping with stress, and referrals to local resources. To get in touch with a social worker, call 216-844-5432,

Puck Learning Resource Center

216-286-4636

The health librarian in the Puck Learning Resource Center can help you find information and resources about many health topics. Found on the lobby level of the UH Seidman Cancer Center, behind the fireplace. If you cannot visit, feel free to call the librarian and ask that information is mailed to you.

Connor Integrative Health Network

216-285-4070 or visit: uhconnorintegrativehealth.org

Programs include but are not limited to:

- Acupuncture
- Yoga
- Massage Therapy
- Meditation
- Music Therapy
- Reflexology

Call or visit the Connor Integrative Health Network website for a full list of programs.

UH McDonald's Center for Women's Health

216-831-8311

Call to learn more about these programs:

- Nutrition Services
- Strong Women, Strong Bones classes
- Strong Women, Healthy Hearts classes

To Quit Smoking or Tobacco Use

University Hospitals Tobacco Cessation Program

Smokefree.gov or 1-800-QUIT-NOW



Substance Abuse Help

UH Addiction Recovery Services

216-983-3066

To learn more

These resources can provide more information about breast cancer risk and prevention.

- National Cancer Institute – visit cancer.gov or call 1-800-422-6237
- American Cancer Society – visit cancer.org or call 1-800-227-2345
- FORCE – Facing Our Risk of Cancer Empowered – visit facingourrisk.org or call 1-866-288-7475
- Breastcancer.org – visit breastcancer.org/risk
- American Institute for Cancer Research (AICR) – visit aicr.org
- Centers for Disease Control and Prevention (CDC) – visit cdc.gov/cancer/breast or call 1-800-232-4636



Words to know

aromatase inhibitor - (uh-ROH-muh-tays in-HIH-bih-ter)

A drug that prevents the formation of estradiol, a female hormone, by interfering with an aromatase enzyme. Aromatase inhibitors are used as a type of hormone therapy for postmenopausal women who have hormone-dependent breast cancer.

breast cancer risk assessment models

Computer programs that use you and your family's health history and genetics to estimate your chance of developing breast cancer. The most common programs are the Gail risk model and the Tyrer-cuzik model.

cancer - (KAN-ser)

A term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems. There are several main types of cancer. Also called malignancy.

clinical trial - (KLIH-nih-kul TRY-ul)

A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called clinical study.

estrogen - (ES-truh-jin)

A type of hormone made by the body that helps develop and maintain female sex characteristics and the growth of long bones.

genetic - (jeh-NEH-tik)

Having to do with genes. Most genes are sequences of DNA that contain information for making specific proteins or molecules of RNA that perform important functions in a cell. The information in genes is passed from parents to children.

hormone therapy - (HOR-mone THAYR-uh-pee)

Treatment that adds, blocks, or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes a certain hormone. Also called endocrine therapy, hormonal therapy, and hormone treatment.

mammogram - (MA-muh-gram)

An x-ray of the breast.

mastectomy - (ma-STEK-toh-mee)

Surgery to remove part or all of the breast. There are different types of mastectomy that differ in the amount of tissue and lymph nodes removed.

menopause - (MEH-nuh-pawz)

The time of life when a woman's ovaries stop producing hormones and menstrual periods stop. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility.

ovarian cancer - (oh-VAYR-ee-un KAN-ser)

Cancer that forms in tissues of the ovary (one of a pair of female reproductive glands in which the ova, or eggs, are formed).

ovary - (OH-vuh-ree)

One of a pair of female reproductive glands in which the ova, or eggs, are formed. The ovaries are located in the pelvis, one on each side of the uterus.

premenopausal - (pree-MEH-nuh-PAW-zul)

Having to do with the time before menopause. Menopause ("change of life") is the time of life when a woman's menstrual periods stop permanently.

prophylactic surgery - (PROH-fih-LAK-tik SER-juh-ree)

Surgery to remove an organ or gland that shows no signs of cancer, in an attempt to prevent development of cancer of that organ or gland. Prophylactic surgery is sometimes chosen by people who know they are at high risk for developing cancer.

radiation therapy - (RAY-dee-AY-shun THAYR-uh-pee)

The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that travels in the blood to tissues throughout the body. Also called irradiation and radiotherapy.

salpingo-oophorectomy - (sal-PIN-goh-oh-oh-foh-REK-toh-mee)

Surgery to remove the fallopian tube and ovaries.

Sources: The American Cancer Society, The American Society for Clinical Oncology, The National Cancer Institute, The National Comprehensive Cancer Network