Michigan Healthcare PROFESSIONALS

TREATMENT JOURNEY GUIDE

MHP PATIENT MANUAL

A GUIDE TO HELP OUR BREAST CANCER PATIENTS THROUGH THEIR TREATMENT

The purpose of this guide is to provide you with information about cancer, and the cancer treatment you will receive from Michigan Healthcare Professionals, P.C. (MHP), so that you will be sufficiently informed and empowered to most effectively participate in your own treatment. With better understanding, your experience of your cancer treatment should be physically and emotionally more comfortable, as well as more likely to produce good outcomes.

In this guide we cannot cover everything every cancer patient might need or want to know. We hope it will be a helpful introduction or overview, but it cannot replace good communication between yourself and our physicians and other health care professionals.

You and your loved ones are embarking on a journey you never asked to be on. We cannot guarantee it will never be difficult, frightening, painful, confusing or all the other undesirable things you may be experiencing or anticipating. What we can guarantee is that you will not be alone on this journey.

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CANCER: AN OVERVIEW

This section defines cancer, and discusses the types of cancer, the causes of cancer, and how cancer is diagnosed.

What is Cancer, and What are the Different Types of Cancer?

Cancer is the uncontrolled clonal multiplication of damaged, malfunctioning cells.

The name for the type of cancer a person has is determined by where the cancer originated. For example, if a person first has cancer in a breast, and this cancer then spreads to the liver, it is considered breast cancer and not liver cancer. Whereas if the cancer had started in the liver, it would be categorized as liver cancer.

Frequently cancer does indeed spread, as cancer cells travel through the blood and lymph systems and establish themselves elsewhere in the body. When cancer spreads beyond where it first developed, it is said to have *metastasized*. So for instance, colon cancer that spreads to the bones, or anywhere else in the body outside the colon, is *metastatic colon cancer*.

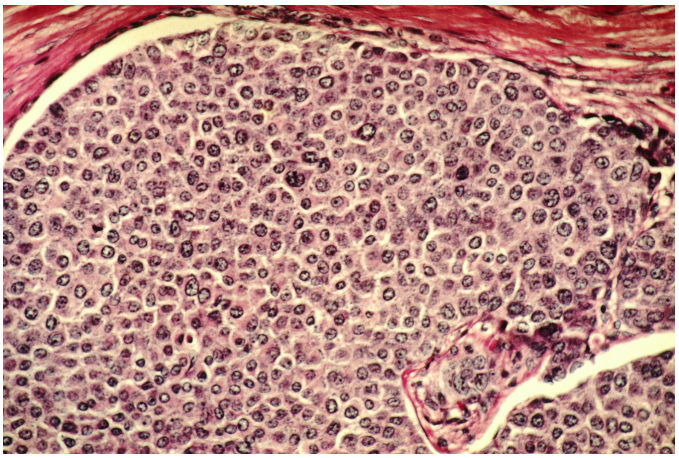
There are over 200 types of cancer. Broadly speaking, they fall into five categories. (Remember, the categorization is based on where the cancer started, not where it is currently. Each of these types of cancers can be found in other areas of the body.)

- Carcinoma: Cancer of the skin or of internal tissues that line or cover bodily organs.
- Central nervous system cancer: Cancer of the brain or spinal cord.
- Leukemia: Cancer of the bone marrow or other blood-forming tissue.
- Lymphoma and myeloma: Cancer of the cells of the immune system.
- Sarcoma: Cancer of the bones, blood vessels, cartilage, fat, muscles, or other supportive tissue.

In the United States, the most common cancer is skin cancer, followed by lung cancer, prostate cancer, and breast cancer, all of which are in the carcinoma category. In fact, about 80% of cancer cases are carcinoma.

When all the cancer cells are present only in the layer of cells in which they originated, they are said to be *in situ*. When they have spread beyond that initial layer but remain limited to the same organ in which they originated, they are said to be *localized*. When they have metastasized to neighboring areas of the body, they are said to be *regional*. And when they have metastasized to farther areas of the body, they are said to be *distant*.

Breast Cancer



Pancreatic cancer cells. (Photo source: National Cancer Institute\USC Norris Comprehensive Cancer Center. Creator: Min Yu, Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC.)

The overwhelming majority of breast cancer cases fall into one of two categories. *Ductal* carcinoma starts in the ducts that carry milk from the breast to the nipple. *Lobular* carcinoma starts in the lobules of the breast that produce milk. Infrequently breast cancer can start in other areas of the breast.

It is estimated that one in seven women will develop breast cancer at some point in their lives. A small number of men also develop the disease.

Causes of Cancer

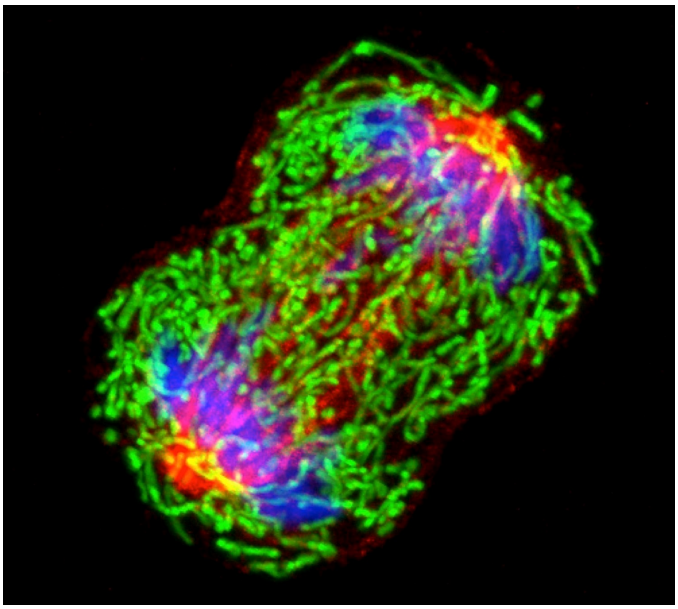
The malfunctioning of cells that constitutes cancer can come from a number of causes. The specific cause in a given case can only be inferred probabilistically from the circumstantial evidence of what carcinogen the person was exposed to.

In general, the amount of exposure to a carcinogen matters. That is, there is no amount—no bright line—above which a person will definitely develop cancer or below which a person definitely will not develop cancer.

Among the causes of cancer are:

- Toxic substances, such as asbestos, benzene, or tobacco smoke.
- Radiation, such as from sunlight, X-rays, or nuclear weapons.
- Pathogens, such as the human papillomavirus (HPV), the hepatitis B virus or the hepatitis C virus.

In addition, there are genetic factors that make some people more at risk or less at risk of developing cancer. In fact, one of the more significant advances in cancer care in recent years has been the growth in understanding of some of the genetic roots of cancer.



Dividing breast cancer cell. (Photo source: National Cancer Institute\Univ. of Pittsburgh Cancer Institute. Creator: Wei Qian.)

Breast Cancer Risk Factors

Many factors have been shown to be correlated with a greater risk of developing breast cancer specifically. Besides gender (women get breast cancer approximately one hundred times more often than men), these include:

- Advanced age.
- Family history of breast cancer.
- Menstruation starting at an earlier than average age.
- Menopause coming at a later than average age.
- Not having given birth, or only having given birth after age 30.
- Having received hormone replacement therapy (HRT) with estrogen for several years.
- Consuming more than an average of two servings of alcohol per day.
- Having taken diethylstilbestrol (DES)—a drug to prevent miscarriage.

Diagnosing Cancer

In order to diagnose cancer, as well as to further differentiate which type of cancer it is, where it originated, whether it has metastasized, the size and number of cancerous tumors, the tumor grade (the degree to which the cancerous cells have deviated from the normal functioning of healthy cells), what treatment is appropriate, etc., medical science has many tools and methods available. Your physician may use any or all of the following to learn more about your condition:

- Your medical history.
- Your symptoms.
- Complete blood counts and other blood studies.
- Your genetic makeup.
- Imaging studies, including X-rays, CT scans, MRI scans, radionuclide scans, ultrasound, and endoscopies.
- Biopsies (removal and examination of tissue samples).

Some biopsies may require surgery to obtain the necessary tissue. It can occasionally happen in such cases that

the biopsy process doubles as treatment, if the surgeon is able to remove all the cancerous material when performing the biopsy.

The tissue sample obtained for the biopsy is not simply examined to determine whether or not cancer is present in it. If cancer is discovered, sophisticated molecular tests are then done on the cancer cells themselves, tests that can provide much valuable information about what we're facing.

TREATING CANCER

There are many cancer treatment options available for different breast cancer patients, including surgery, radiation therapy, chemotherapy, hormonal therapy, and biological therapy.

Patient Responsibilities

As a patient of an MHP physician you have a key role in helping us provide you with the best care possible and have the following responsibilities:

- To provide accurate and complete information about your health. This includes present complaints, past illnesses, hospitalizations, medications and other matters regarding your health.
- To provide any current health care proxy or advance directive designations to your nurse.
- To ask questions when you do not understand what you have been told.
- To ask questions when you do not understand what you are expected to do.
- To follow the treatment plan recommended by your physician and health care team.
- To inform your health care team when you do not understand your plan or the instructions.
- To actively participate in your care.
- To keep your appointments and notify the health care team if you are unable to do so.
- To be respectful and considerate of other patients and their privacy.
- To provide us information regarding your health care insurance, especially when it has changed.

Michigan Patient Rights and Responsibilities

In State Licensed Facilities

(Partial list as provided by statute, MCLA 333.20201; MSA 14.15(20201)

1. A patient or resident ***shall not be denied*** appropriate care on the basis of race, religion, national origin, sex, age, handicap, marital status, sexual preference, or source of payment.

2. An individual ***may obtain or inspect*** his/her medical records and a third party shall not be given a copy without authorization of the patient except as required by law and third party contract.

3. A patient or resident is ***entitled*** to privacy, to the extent feasible, in treatment and caring for personal needs with consideration, respect, and full recognition of his/her dignity and individuality.

4. A patient or resident is ***entitled*** to adequate and appropriate care and to receive information about his/her medical condition unless medically contraindicated by the physician in the medical record.

5. A patient or resident is ***entitled*** to receive and examine an explanation of his/her bill. Also, he/she is ***entitled*** to know who is responsible for his/her care.

6. A patient or resident is ***entitled*** to associate and have private communication with his/her physician, attorney or any other person, and to receive personal mail unopened, unless medically contraindicated. A patient's or resident's civil and religious liberties shall not be infringed and the facility shall encourage and assist in the exercise of these rights.

7. A patient or resident is ***entitled*** to be free from MENTAL and PHYSICAL ABUSE and from physical and chemical restraints, except those necessitated by an emergency to protect the patient and/or others.

8. A patient or resident is ***entitled*** to retain and use personal clothing and possessions as space permits. At the request of a patient, a nursing home shall provide for safekeeping of personal property, funds, and other property, except that a nursing home shall not be required to provide for the safekeeping of property which would impose an unreasonable burden on the nursing home.

9. A health care facility, its owner, administrator, employee, or representative ***shall not*** discharge, harass, retaliate or discriminate against a patient because a patient has exercised rights protected by law.

10. A patient or resident is ***entitled*** to adequate and appropriate pain and symptom management as a basic and essential element of his or her medical treatment.

Attorney General 24-hour Health Care Fraud Hotline: 1-800-24-ABUSE / 1-800-242-2873
Department of Community Health Complaint Hotline: 1-800-882-6006
Legal Hotline for Michigan Seniors: 1-800-347-5297

Preparing for Your Doctor Visits

Sometimes we forget to take papers with us or ask questions when we go to see our doctors. Below is a list of reminders for your doctor's appointments:

- Talk to your doctor or nurse about any physical, emotional or social concerns you are having.
- Remember to tell your doctor if you need prescription refills or referrals.
- Remember to bring referral forms with you that are required by your insurance company.
- Bring in any insurance forms or paperwork required for disability or other forms that you need completed by the physician.
    - ◊ Allow a few weeks for completion.
    - ◊ Give your physician a pre-addressed envelope to where you would like the completed paperwork sent with a stamped, self-addressed envelope.
    - ◊ If your insurance carrier requires a co-pay bring in a form of payment.
    - ◊ Bring in your insurance cards to be copied.
- Ask if special preparation is required for tests, procedures or treatments.
- Check your medications to see if they are getting low and if you need another prescription.
    - ◊ Give your doctor at least 48 hours notice when you need a prescription filled.

Coping With Cancer

In effect you yourself provide part of the treatment for your cancer through the attitudes you adopt, how and what you communicate, and how you behave. A patient who is highly stressed, pessimistic, depressed or lacking a good support structure is more likely to forget a doctor's recommendation, cut corners on treatment, refrain from communicating something medically important to their doctor, experience fatigue and a loss of will to continue the fight, etc. Whereas if you are able to maintain a positive attitude and put yourself in an emotionally supportive environment with the help of family, friends, and maybe a support group, you give yourself your best chance for treatment success.

When a person is diagnosed with breast cancer the patient as well as their family and friends are affected. A cancer diagnosis can be among the hardest things to deal with in life for all those involved. Everyone copes with difficult life challenges differently. A person's age, life experiences, and established patterns of how they usually deal with tough situations can determine how they react to something as potentially stressful as a cancer diagnosis.

Many cancer patients and their families may experience the following feelings:

- Anger.
- Anxiety.
- Denial.
- Guilt.
- Loss of control.
- Sadness.

Having cancer affects many aspects of one's life. Some breast cancer patients find themselves facing:

- Lifestyle changes.
- Body image issues.
- Changes in their physical appearance.
- Changes in physical function.
- Changes in relationships.
- Fear of disability or recurrence or death.

Being honest with those around you is usually best. Initially you may not wish to speak about your cancer. Some individuals worry how others will react. Please remember that those close to you will know something is wrong even if you do not say anything. Patients have usually found it beneficial to:

- Tell your loved ones, including the children, that you have breast cancer.
- Tell them that they cannot "catch" cancer.
- Keep life as normal as possible.
- Share and listen to each other's needs.
- Let them know that their roles and responsibilities in the family may change.

If you feel you need help dealing with the psychological, emotional, and social aspects of your cancer, please speak to us about your concerns. Also there are resources listed in the back of this guide that may help you.

Medications and Your Cancer Treatment

- Carry with you a list of all medications you are on in your wallet or purse, as well as a list of any allergies you have. Your cancer care providers will often need to check and double check this information.
- Include on your list of medications any over-the-counter medications, supplements, vitamins, herbs, antioxidants, complementary therapy, etc.
- Do not start any new medication or stop taking any medication without talking to your physician.
- If you do start or stop any medication—with your doctor's knowledge and consent—remember to update your list.
- Do not cut pills in half without the approval of a pharmacist. Some pills are not meant to be crushed, cut, or dissolved. If your pharmacist does approve, you can purchase an inexpensive pill cutter at most pharmacies.
- Keep all medication out of the reach of children and animals.
- If you have trouble opening the childproof cap of modern pill bottles, ask your pharmacist for bottles that can be more easily opened. But if you do obtain such bottles, you will need to be all the more diligent about keeping your medication away from children and animals.
- Most pharmacies stock pill boxes that separate pills by the days of the week and time of day, if that's something you would find convenient.
- Never keep your pills in a container meant for other pills. Many pills look alike but the drugs are different. Some medications have to be stored in certain types of containers.
- Talk with your physician, nurse, or pharmacist for assistance with setting up a medication schedule that meets your lifestyle.
- Take your medications precisely as directed. If you deviate, or are inclined to deviate, from this in any way, talk to your doctor about why. Don't be embarrassed if the reason is financial and you are tempted to skip medications because of the expense. Resources are available to assist patients struggling to pay for their medications.

Diagnostic Centers

Your cancer treatment may require you to visit one of MHP's diagnostic centers. So we'd like to introduce the centers to you and explain a little about what to expect there.

Let's start with their locations.

Oakland Imaging Diagnostic Center

Primary Location

27483 Dequindre Road, Suite 101
Madison Heights, MI 48071
TEL: (248) 544-9050

CT Scan and Pulmonary Function Test Location

27301 Dequindre Road, Suite 106
Madison Heights, MI 48071
TEL: (248) 544-9050

MRI Scan Location

1385 E. 12 Mile Road
Madison Heights, MI 48071
TEL: (248) 544-9050

http://omgimaging.com

Millennium Diagnostic Center

32255 Northwestern Highway, Suite 100
Farmington Hills, MI 48334
TEL: (248) 945-0000

http://www.millenniummedicalgroup.org/DiagnosticCenter.aspx

Your Visit to the Diagnostic Center

On your first visit to the diagnostic center, you should bring your photo ID, insurance information, prescription from your doctor, and a list of your medications.

You will meet the relevant diagnostic center personnel, and there will be forms for you to fill out. You will be asked for a medical history. The procedure for the test you will be receiving will be explained to you. Depending on the test, you may be asked to change into a gown.

Tests Performed at the Diagnostic Centers

Your doctor may have you undergo one or more of many available tests at one of our diagnostic centers.

Among these tests are:

- Bone density test: X-rays are used to measure the quantity of calcium and other bone minerals in a segment of your bone.
- Cardiology tests: Procedures including a cardiac event monitor, echocardiogram, holter monitor, stress test, and 24 hour blood pressure monitor may be used to test the functioning of your heart.
- CT (Computed Tomography) Scan: Also known as a CAT scan, special X-ray equipment and computers produce multiple, cross-sectional images of the inside of your body.
- EEG (Electroencephalogram): Electrodes are attached to the head to evaluate the electrical activity in your brain.
- EMG (Electromyogram): Needles and electrical stimulation are used to evaluate the electrical activity produced by your muscles and nerves.
- Fluoroscopy: A special type of X-ray procedure that uses a fluorescent screen or image intensifying tube connected to a closed-circuit television system is used to display an image of the inside of your body.
- Mammography: Examination of the breast using low-dose X-rays.
- MRI (Magnetic Resonance Imaging): A powerful magnetic field and radio waves are used to create high resolution, three dimensional images of the inside of your body.
- Nuclear medicine: Different tests make use of radioactive substances to image your body and treat disease.
- PFT (Pulmonary Function Test): Different methods are used to measure how well your lungs take in and release air, and how well they move gases such as oxygen from the atmosphere into the body's circulation.
- Ultrasound: Sound waves are used to generate echoes that are then interpreted into an image of the inside of your body.
- X-ray: Electromagnetic radiation is used to create an image of the inside of your body.

SURGERY

The majority of breast cancer patients will be recommended for and undergo some form of surgical intervention. Surgery can be used diagnostically in the form of a biopsy to determine if cancer is present, and to obtain information about the cancer. In the treatment stage, surgery can be used to remove the cancer cells or tumor, to shrink the size of the tumor, or to relieve symptoms that may be caused by the cancer. Thus the surgeon can be very important both in establishing the diagnosis and in providing treatment.

A surgeon who provides cancer care is sometimes referred to more specifically as a *surgical oncologist* or *oncologic surgeon*.

Surgical treatment of breast cancer generally involves a lumpectomy (partial mastectomy) or mastectomy. Both of these options often are combined with a surgical axillary node evaluation, with ductal carcinoma in situ sometimes being an exception. A decision regarding lumpectomy versus mastectomy will be based both on the specific characteristics of the tumor and on the woman's subjective assessment of the factors relevant to her. Both procedures have advantages and disadvantages that need to be considered.

Lumpectomy

Also called a partial mastectomy or breast-conserving surgery, a lumpectomy attempts to remove the cancer without removing the entire breast. When the surgeon performs a lumpectomy, a small amount of the tissue surrounding the tumor is also removed in the process. This increases the chances that the surgery will succeed in getting all the cancer cells.

The edges of the tissue removed are called *margins*. When cancer cells are still present at the margin, often a second surgery—called a re-excision—is performed. Following a lumpectomy with good margins, radiation therapy is usually recommended.

Some advantages of lumpectomy include conservation of the breast itself, and preservation of body image. Also, a lumpectomy generally has a shorter recovery period than a mastectomy.

Disadvantages include the frequent need for a second operation to clear the surgical margins and/or for radiation treatment. Also, a woman who chooses lumpectomy in part in order to preserve her body image may be disappointed to find that the saved breast looks or feels different after surgery and radiation.

Women who are generally not considered good candidates for lumpectomy include the following:

- Women who have already had radiation therapy on that same side of the chest wall or breast.
- Women who have two or more areas of cancer that are not in close proximity or in the same quadrant of the breast.
- Women whose amount of disease relative to the size of their breast will not allow adequate cosmetic results.
- Pregnant women who would require radiation while pregnant.
- Women who have certain connective tissue disorders that make their body tissues sensitive to the effects of radiation, and who therefore would not be able to tolerate the radiation therapy following a lumpectomy.
- Women who have other medical conditions that would render them unable to tolerate radiation therapy.

Mastectomy

Mastectomy refers to the surgical removal of the entire breast.

There are several different forms of mastectomy. A *nipple-sparing mastectomy* preserves the nipple, areola, and the majority of the breast skin when immediate reconstruction is planned. A *skin-sparing mastectomy* preserves the majority of the breast skin when immediate reconstruction is planned, but includes removal of the nipple and areola. When the breast skin is preserved, there is less scarring and a better cosmetic result

following reconstruction. These patients may also retain more of the sensation to their breast skin.

A *simple mastectomy* removes the breast including the nipple and areola, but does not remove any lymph nodes. A *modified radical mastectomy* removes the breast including nipple and areola, in addition to removing axillary lymph nodes in the underarm. The latter is recommended when there is known lymph node involvement with tumor. After modified radical mastectomy, the chest wall on the side of the mastectomy appears flat and there is usually a scar that runs across the chest wall.

A *radical mastectomy* removes the breast including the nipple and areola, axillary lymph nodes, and underlying chest muscle tissue including the pectoralis major and the pectoralis minor. Until the 1970s this surgery was performed on 90% of women treated for breast cancer in the United States. Today it is very rare.

Breast Reconstruction

Breast reconstruction is surgery performed after a mastectomy to rebuild a breast mound as a replacement for the surgically removed breast. The procedure is generally performed by a plastic surgeon.

If breast reconstruction is an option, the patient will usually see the plastic surgeon before the mastectomy. The type of reconstruction and the timing depends on the patient's personal preferences, the size and shape of her body, the size and shape of her breast, details about her cancer, and additional medical issues individual to the patient. Because there are several options, a plastic surgeon can discuss the choices with the patient and the breast surgeon to determine what kind of reconstruction is preferred.

Breast reconstruction requires multiple surgical procedures, so it is performed in stages. In some cases, the first procedure occurs at the time of the initial mastectomy. In other cases, reconstruction is delayed until after the completion of the cancer treatment.

A plastic surgeon performing a breast reconstruction may use tissue from other parts of the body, or an implant. If the surgeon uses the patient's own body tissue—usually the muscle and fat of the abdominal wall or the back—it is called *autologous tissue reconstruction*.

Autologous tissue reconstruction requires a longer recovery period and hospitalization, whereas placement of an implant is done as an outpatient operation with an overnight stay in the hospital. The latter is usually a two to three step process. The first procedure involves placement of a tissue expander, which is gradually inflated over a series of weeks. The second operation replaces the expander with a saline or silicone-filled implant. Reconstruction of a nipple and areola generally requires a third procedure.

Lymph Node Surgery

Lymph nodes are a part of the immune system. Their function is to clear away bacteria, dead cells and other foreign particles. *Axilla* is the medical name for the underarm, so *axillary lymph nodes* are the lymph nodes located in the underarms.

Surgical evaluation of the axilla is performed to determine whether cancer cells have spread from the breast to the axillary lymph nodes. Physical exam and radiological studies like mammogram, ultrasound, CT scan and MRI are sometimes not sensitive enough to determine the presence of cancer cells in the lymph nodes, whereas surgery will produce a definite answer. (If it is known that the patient is suffering from ductal carcinoma in situ specifically, the procedure is generally not called for, as this is the one form of breast cancer that does not have the ability to spread outside the breast.)

Lymph node surgery involves removing for examination some or all of the axillary lymph nodes. Once they are removed, they are evaluated by a pathologist.

One type of lymph node surgery is *sentinel node mapping.* The first nodes that receive drainage from the breast are called the *sentinel nodes*; it is these nodes that are at highest risk of containing cancer cells. If a woman has no clinical or radiologic evidence of cancer in her lymph nodes, a sentinel node mapping is

generally the preferred procedure. Only the sentinel nodes are surgically removed, and if they are found to contain no cancer, then it is unlikely there is cancer elsewhere in the axillary lymph nodes, so the remaining axillary lymph nodes can be safely left. On the other hand, if the sentinel nodes do contain cancer cells, then further surgery to remove the remaining axillary lymph nodes is usually recommended.

When a sentinel node mapping is performed, the sentinel nodes are first identified by injecting a blue dye and/or a radioisotope into the breast to see where the dye reaches first, and thus what are the sentinel nodes. These nodes are frequently evaluated in a preliminary fashion immediately through a process called *touch prep*. If there are no cancer cells evident on this preliminary evaluation, then the nodes are submitted to a pathologist for a fuller examination. The results can take several days to be returned.

For a woman who has already been determined to have cancer in her axillary lymph nodes, *axillary lymph node dissection* rather than sentinel node mapping is generally performed. This involves the removal of lymph nodes beyond the sentinel nodes. The number of nodes removed varies from patient to patient.

YOUR SURGICAL EXPERIENCE

Pre-Surgery

Prior to your surgery, you will receive a phone call from a pre-screening nurse who will review with you your medical history. You will need to provide the nurse with a list of all the medications you are taking. This includes herbal supplements, vitamins, alternative medicine treatments, etc. There are many such substances—including but not limited to aspirin, non-steroidal anti-inflammatories, and blood thinners—that your surgeon may want you to stop taking several days before your surgery. The nurse also will give you information about the day of surgery.

If you smoke, it is best to stop smoking several days before your surgery.

If your surgery is scheduled for early in the day, you must not eat or drink anything after midnight the night before your surgery, not even gum, candy or water, with the exception of certain medications that require you to take them with a sip of water. If your surgery is to be later in the day, you may be allowed to have clear liquids. This is another matter you can discuss with the pre-screening nurse. But be aware that if you have anything by mouth within eight hours of your surgery the procedure may have to be cancelled.

You may want to obtain plenty of easy-to-prepare foods to have for when you come home from your surgery. In general, make whatever preparations you can that will make things easier for you for the time you will be at less than full strength.

You will receive a phone call the night before your surgery telling you exactly where to register the next morning and what to bring. Generally you'll be told to bring a photo ID and insurance card, and to leave all other valuables at home.

You'll need to bring an adult companion with you to the hospital, someone who is able to drive you to and from. This will also give you someone to rely on for company and emotional support as you wait for your surgery.

You may shower the day of your surgery, but you should not wear any makeup, oils, perfumes, acrylic nails, nail polish, or jewelry of any kind. All body piercings and adornments need to be removed. You should wear comfortable, loose-fitting clothing that is easy to take on and off. A blouse that buttons down the front is a good choice.

At the hospital, you will be asked to sign an *advance directive*, which is a standard form that enables you to inform hospital personnel of your resuscitation wishes. If you already have completed one, please bring a copy with you.

Understand that the advance directive form is totally routine for all hospital patients, and is not some kind of

indication of the riskiness of your surgery.

Following registration, depending on the kind of surgery you are having, you will be taken to your next stop, which may be *radiology*, *breast imaging*, *nuclear medicine*, or directly to the pre-operative area.

In preparation for your surgery, you will be asked to undress completely and put on a surgical gown. You may be asked for a urine sample. You will be asked to sign a consent form for your surgical procedure.

As the scheduled time of your surgery approaches, you can expect plenty of repetition, including being asked yet again about your medical history and the medications you are taking. Similarly you will be asked multiple times to point out on which breast you are having surgery. This may seem pointless or excessive, but by checking, double checking, and triple checking, the possibility of error is reduced to near zero.

You will be placed on an IV, usually in the hand opposite the side you are having surgery.

Before the surgery, your surgeon, an operating room nurse, an anesthesiologist, and a nurse anesthetist will speak with you and explain the procedure and what they'll need you to do. They will answer any questions you might have.

You will then be taken from the pre-operative area to the operating room, closely monitored by the anesthesia team. Once you are in the operating room, the operating room team—including an operating room nurse, a surgical technologist, and possibly a surgical assistant—will aid your surgeon with your surgery.

Post-Surgery

After surgery, you will be taken to the *post-anesthesia care unit (PACU)*, which is the recovery room, where you will stay until you can safely be discharged.

You will typically not further interact with your surgeon immediately after your surgery, as you'll need to rest and fully regain consciousness. Instead, the surgeon will speak with whomever accompanied you to the hospital. The surgeon can explain how the procedure went, tell them how long the pathology report generally takes to complete, answer any questions they might have, etc., and then they can later relay that information to you.

Once you are conscious, you may experience some mild pain or discomfort. This is normal. Tell the nurse anything like that that you feel. You may be asked to rate the pain on a scale of 1 to 10, with 1 being the mildest and 10 the most severe. This will help the nurse to ascertain what type and level of pain medication you might need.

In the recovery room, you will be offered a light snack and something to drink. You need to eat and drink at some point before discharge so that the staff knows you are fine to go home.

Upon discharge, you will be provided with instructions about how to care for yourself post-surgery, contact information for your doctor, and any prescriptions that have been prescribed for you for pain or other medications. You will arrange your first follow-up appointment. You will be asked to sign your instructions and be given a copy to take home with you.

It is important that your companion be present at this time to also hear and review all this material, as you might not yet be one hundred percent over the effects of the anesthesia.

You should plan to have someone with you your first night after surgery, and for as long as you feel weakened or impaired and in need of assistance in the activities of daily living.

Instructions on when you may shower after surgery should be included in the material you receive upon discharge, or your surgeon will speak to you about this. Typically you are instructed to wait 24 to 48 hours after the surgery before showering.

The first business day after you are discharged, a nurse will call you to follow up. You will be asked how you are feeling, how well you are eating and drinking, if you have any questions or concerns about your discharge instructions, etc.

But at no time do you have to wait to be contacted. You are always welcome to contact your MHP physician, your surgeon, or anyone on the team providing your care.

You will have an incision from your surgery, and depending on the type of surgery you may have had a drain installed to temporarily perform the functions of your removed axillary lymph nodes. Your discharge instructions will guide you in tending to your incision wound and/or drain.

Modern surgical techniques sometimes allow your surgery to be completed without external stitches, staples, and paper dressings. But if you do have bandages or dressing covering your incision, when the time comes to remove it, gently lift the tape covering the dressing (and the drain tube, if present). If there are any staples, stitches, or butterfly tape, do not remove these until directed to do so by your surgeon. After removing your dressing, you may want to place a small piece of gauze between your incision wound and clothing to prevent rubbing.

If you have a drain, it can be attached to your clothes, tucked into a pocket, or attached to a cord around your neck. If you hang the drain on a cord around your neck, or attach it to a soft belt on your waist, you can shower without having to hold onto the drain. You do not want to let the drain dangle, as it is sutured in place and will cause significant discomfort if it dangles. You may also tape the drain tubing to your skin to help prevent rubbing and discomfort. You may leave the drain in place to shower. Simply let the warm, soapy water run over the area, pat it dry and replace the tape. If desired, you may replace the dressing after showering.

If the drainage stops, or there is leakage at the insertion site, check the tubing for clots. To eliminate a clot, grasp the tubing between your thumb and finger, and stabilize it against your body. Compress the tubing and slide your thumb and finger down the tube about six inches. Repeat until the clot is moved into the bulb container. (An alcohol swab can facilitate the movement of the thumb and finger down the tubing.)

Drains are usually removed after 7 to 21 days. The specific timing of the removal depends on how much fluid is accumulating in a 24 hour time period.

Nutrition

Issues of nutrition can be especially important when your cancer is treated surgically. Surgery increases the body's needs for nutrients and energy to heal wounds, fight infection, and recover from the operation. If a patient is malnourished before surgery, nutrition care and counseling may be initiated before the procedure to lessen the risk of problems during recovery.

Among the possible nutrition-related problems that can arise after surgery are difficulties chewing, swallowing, tasting, smelling, or making saliva, as well as changes in appetite. These problems can also be caused, or exacerbated, not just by the surgery itself but by emotional stress about the surgery.

Nutrition therapy can help relieve these side effects of surgery. Nutrition therapy includes:

- Nutritional supplement drinks.
- Enteral nutrition (feeding liquid through a tube into the stomach or intestines).
- Parenteral nutrition (feeding through a catheter into the bloodstream).
- Medicines to increase appetite.

It is common for patients to have pain, fatigue, and/or loss of appetite after surgery. For a short time, some patients may not be able to eat what they usually do because of these symptoms. Following certain tips about food may help. These include avoiding carbonated drinks and foods that cause gas, such as:

- Sodas.
- Beans.
- Peas.
- Broccoli.
- Cabbage.
- Brussels sprouts.
- Green peppers.
- Radishes.
- Cucumbers.

To increase energy and help wounds heal, you'll want to keep your calories up. Post-surgery is typically not the time to diet. Consider the following if you need to increase your calories:

- High-calorie, high-protein supplements.
- Eggs.
- Cheese.
- Whole milk.
- Ice cream.
- Nuts.
- Peanut butter.
- Meat.
- Poultry.
- Fish.
- Gravies.
- Mayonnaise.
- Salad dressing.
- Fried foods.

You will need to empty the collection bulb of the drain two to three times per day, or when it is full. Follow these steps to do so:

- **Wash your hands with soap and water for at least fifteen seconds.**
- **Open the bulb by pulling out the stopper.**
- **Empty the contents into a measuring container or estimate the volume based upon the markings on the bulb.**
- **Squeeze the air out of the bulb, and re-plug the opening of the bulb while squeezing the bulb.**
- **Re-attach the device to your clothing.**
- **Measure the amount of drainage in the container and record the amount. (You should have been provided with a record sheet at discharge for this purpose. Be sure to bring this record sheet to your first post-surgical doctor's appointment.) If you have two drains, record each amount separately.**
- **Empty the container into the toilet and flush. Rinse the container with clean water.**
- **Wash your hands again.**

Side Effects

There are potential risks and side effects to any surgical procedure. Risks associated with surgery include those related to medications, including anesthesia, or infection.

Sometimes these effects are expected and are not anything to worry about. For example, if you had a sentinel node mapping procedure using blue dye, your urine might be blue or green for a few days after your surgery. You may notice a slight grayish tint to your skin color.

After surgery it is normal for there to be minor swelling, bruising, discoloration, or bleeding in and around the incision.

Minor pain after surgery is not unusual, and should be treated as instructed by your doctor, which may be prescription pain medication, Tylenol®, or Extra Strength Tylenol®. Do not use products containing aspirin or anti-inflammatory medications such as Motrin® (ibuprofen) unless specifically approved by your surgeon.

If you experience minor discomfort in your side, it may help to use an ice pack, or to place a small pillow under the arm to relieve pressure.

Some possible complications of surgery, though, need to be brought to the attention of your doctor immediately. These include:

- Redness, swelling, bleeding, pain, or discharge around your incision that is more than mild, increases, or is long-lasting.
- A temperature over 100°F (37.8°C).
- Pain that is not relieved by your present medication.
- Any sign of infection.

If you have specifically axillary lymph node dissection, you should be aware of the following possible side effects:

- Numbness and other abnormal sensations: Because sensory nerves may be cut during your surgery, you may experience numbness, tingling, pins and needles, or burning sensations in the shoulder, underarm, or chest. These problems generally go away in a few weeks, though in some patients a certain amount of numbness is permanent.
- Shoulder and arm stiffness: After surgery, the skin in the breast area may feel tight to you, and movement of the arm and shoulder may be restricted. A physical therapist may be able to help you regain movement and strength in the arm and shoulder. The stiffness may extend to your neck and back. There are exercises that are often helpful in reducing pain and stiffness. Consult your surgeon for exercise recommendations. If you have a mastectomy with immediate reconstruction, you'll need to have any exercise approved by your plastic surgeon also. Most women regain full movement and strength fairly quickly.
- Lymphedema: There is much to say about this side effect, so we will devote the next section to it.

After Your Breast Surgery

- **Doctor visits: You'll need to see your doctor regularly after your surgery. Follow-up care is a crucial part of treatment.**
- **Exercise: Your doctor will let you know when you can safely become more active and begin to exercise, and what exercises are recommended. There are exercises that will help keep your arm and shoulder active, and enable you to achieve full motion in your arm. Most of the problems people have with arm limitations after breast surgery are due to restriction of motion at the shoulder joint.**
- **Routine: It can be psychologically helpful to resume your normal activities as soon as you can. Keeping busy and returning to your normal life can help your attitude and speed your recovery.**
- **Moderation: Don't overdo it; it's important to get plenty of rest after surgery. Don't drive until your doctor says it's OK. Avoid lifting heavy objects. Don't tire yourself out. On the other hand, don't be too sedentary and afraid to do anything. If you don't at least walk around, you are at risk of developing blood clots in your legs.**

Remember, don't go by any general guide like this over the advice of your doctor. Every case is different. Discuss all these matters, and any other questions or concerns you might have, with your doctor.

Lymphedema

Lymph node surgery (and radiation) can reduce the ability of lymph fluid to drain from the arm and hand. In some women, this results in lymph fluid backing up in the breast or in the arm and hand, causing swelling and discomfort, from slight to severe. This condition is called *lymphedema.*

The primary risk factor for developing lymphedema is having a higher number of lymph nodes removed for cancer diagnosis and treatment. Secondary risk factors include receiving radiation to the lymph nodes, the tumor being of a larger size, the lymph nodes themselves being cancerous, obesity or weight gain, and soft tissue compression of the remaining lymph nodes.

Lymphedema can often be prevented by avoiding compressing and damaging the remaining lymph nodes, by preventing the lymphatic fluid from accumulating, and by preventing infection, since the lymphatic system has to work harder to remove the extra fluid and white blood cells that your body generates to fight infection.

Ways to avoid compression to the lymph nodes include:

- Using soft tissue massage in the area of the chest wall that contains the incision and/or irradiated tissue.
- Stretching the chest wall muscles and shoulder to keep these areas loose and avoid pain.
- Avoiding tight clothing, poorly fitting sleeves, tourniquets, and blood pressure sleeves on the arm on the side of the surgery.

Ways to avoid lymphatic fluid building up include:

- Avoiding heat by not going in saunas, going in hot tubs, using hot packs to the chest or arm on the side of the surgery, or going out in the sun unless protected by sunscreen of at least SPF 30.
- Avoiding overexertion and overuse of the arm on the side of the surgery to the point of fatigue or soreness.
- Wearing a special lymphedema sleeve during exercise or activity, or during high risk events such as long flights.
- Going slowly when introducing new activities.
- Avoiding trauma, high impact sports, falls, and prolonged contractions of the arm on the side of the surgery.

Ways to lessen the chances of infection include:

- Avoiding cracks and breaks in the skin with lotions such as Lubriderm® or Aquaphor®.
- Avoiding blood draws in the arm on the side of the surgery.
- Treating any break in the skin by cleaning it with soap and water, and applying antibiotic ointment twice daily for four days.
- Contacting your doctor promptly if you have a warm, swollen, red area larger than a dime, and/or fever or chills.

Symptoms of lymphedema include a feeling of fullness or tightness in the arm, swelling, and pain. If you experience any such signs of lymphedema, please contact your doctor for referral to a lymphedema specialist.

The standard of care for lymphedema is called *complex decongestive therapy* performed by a trained physical therapist. This therapy consists of a *decongestive phase* and a *maintenance phase*.

The decongestive phase consists of education, skin care, manual lymphatic drainage, and sequential wrappings. Patients attend physical therapy five days a week, and the arm is wrapped at all times except during therapy.

During the maintenance phase, a compressive sleeve is worn during the day, and the arm is independently wrapped nightly for six months. At the end of the six months, the patient is re-evaluated. The compressive sleeve and nightly wrapping may be continued, in some cases periodically for life.

Exercise

As a breast cancer patient, you can benefit from aerobic exercise such as walking, cycling, or swimming at any point after your diagnosis and during your cancer care, as long as you have consulted with your physician and obtained approval. If you already exercise regularly, you should continue your current regimen. If you do not exercise regularly, you will want to start slowly—perhaps five minutes per day in the early going—and gradually increase as your body can handle it. Many people find they enjoy an exercise regimen more and are more likely to stick with it if they exercise with a partner or group and/or if they exercise at the same time every day.

The earlier a patient is evaluated and diagnosed, the easier it is to treat lymphedema. A patient evaluation is recommended when any of the following conditions obtain:

- **The tumor was larger than 2 cm.**
- **More than 10 lymph nodes were surgically removed.**
- **Radiation was administered to the breast and underarm.**

In addition to conventional aerobic exercise, there are specific exercises that breast cancer patients—again, only if they have their doctor's approval—can benefit from following their surgery.

Stretching of the skin, muscles, and joints can decrease pain, decrease the risk of developing lymphedema, and improve shoulder function. Soft tissue massage should be initiated after the surgical incision is healed and the drain removed. The recommended technique is small circles of pressure with three fingers over the incision, chest wall, and underarm, firm, but not to the point of pain.

Strength training can improve endurance, mobilize lymphatic fluid, and decrease pain. Immediately after surgery, start with such simple motions as opening and closing your hand, bringing your wrist up and down, and bending and straightening your elbow. After the surgical incision has healed and the drain has been removed, continue these exercises and begin using light weights. Incorporate the military press into your exercise routine. Do 15-20 repetitions of each exercise daily, as long as this is not causing soreness or swelling. If you experience any soreness or swelling, back off. Decrease the weight and/or the number of repetitions.

Follow-up Plan

Your physician will put together the best follow-up plan for you based on your individual circumstances, but typically the recommended care after breast cancer surgery is:

- Physical examination and history by a breast care professional once every four to six months for the first two years, once every six months for the next three years after that, and then once a year after those first five years.
- In the case of a lumpectomy, a mammogram of the affected breast after six to twelve months, and then a mammogram of both breasts once a year. In the case of a mastectomy, a mammogram of the remaining breast once a year. (No mammograms are required after a *bilateral*—or *double—mastectomy*.)

Pathology

One of the most important tools our physicians will use to obtain knowledge of your breast cancer and determine treatment are the pathology reports completed after every surgery. The pathology report often is done in stages, as some tests take longer than others. Typically the first results are obtained from the laboratory within one to two weeks of when tissue is removed from the body. If more time than that has passed and you have not heard from your physician, call to find out if any results have been received yet.

A pathology report will contain information including the following:

- *Specimen:* This tells whether the tissue sample was taken from the breast or the lymph nodes under your arm (axilla).
- *Clinical history:* This is a brief description of how your abnormality was found, and the type of procedure you underwent to obtain the tissue.
- *Clinical diagnosis:* This is the diagnosis your doctor anticipated prior to the pathology report.
- *Gross description:* This gives the size, weight, and color of the tissue sample.
- *Microscopic description:* This describes how the tissue sample appears microscopically.
- *Special tests or markers:* This gives the results of testing for proteins, genes, and other markers.
- *Summary diagnosis:* This is a short statement of all the important findings in the tissue sample.

Type of Breast Cancer

The pathology report is used to identify your breast cancer as ductal, lobular, or another type. It also is used to determine if your cancer has grown beyond the area of the breast where it started (*invasive*) or is still contained

where it started (*non-invasive* or *in situ*). Invasive cancer can spread not only to other areas of the breast but to other parts of the body through the blood or lymphatic system.

Grade of Breast Cancer

A "grade" is determined by comparing the sample's cancer cells to normal breast cells. There are three grades of cancer cells, based on how much they have deviated from normal cells:

- *Grade 1—Low Grade or Well Differentiated:* Grade 1 cancer cells look only slightly different from normal cells. They are usually slow-growing.
- *Grade 2—Intermediate/Moderate Grade or Moderately Differentiated:* Grade 2 cancer cells have much less resemblance to normal cells. They are usually growing somewhat faster than Grade 1 cells or normal cells.

Suggested Post-Surgical Exercises (If Approved By Your Doctor)

Stand an arm's length away from the wall, facing the wall. Slowly walk both hands up the wall as far as possible. Step toward the wall, lean into your arms, hold for five seconds, relax, and repeat.

Stand an arm's length from the wall, with your side turned to the wall. Slowly walk your hand on that side up the wall as far as possible. Step toward the wall, lean into the arm, hold for five seconds, relax, and repeat.

Sit erect with your hands at the nape of your neck. Move your elbows forward and touch them together. Push your elbows apart, relax, and repeat.

Sit erect with your hands on your shoulders. Circle your elbows forward—up, out, and down. Repeat.

Perform these exercises only after having any drain removed:

While sitting or lying down, clasp hands, and lift your arms up and over your head, keeping your elbows as straight as possible. Relax and repeat.

While sitting or lying down, move your arms outward away from your sides, clasp hands overhead, and return your arms to your sides, keeping your elbows as straight as possible. Relax and repeat.

Sit erect, with your hands in front of your chest and your elbows bent. Push the heels of your palms together and hold for five seconds. Hook your fingers together and pull for five seconds. Relax and repeat the sequence.

While sitting or standing erect, hold a two pound weight in each hand with your arms at your sides. Swing your arms back and hold for five seconds. Relax and repeat.

Sit with your back supported, holding a two pound weight in your hand with your elbow bent. Lift your arm as far as you comfortably can toward the ceiling. Then do the same while holding the weight in your other hand. Repeat, alternating arms.Stand erect an arm's length away from the wall, facing the wall. Put both hands on the wall at shoulder height with your elbows bent. Push away from the wall, straightening your elbows and rounding your back. Hold for five seconds. Relax and repeat.

- *Grade 3—High Grade or Poorly Differentiated:* Grade 3 cancer cells do not look at all like normal cells. They are fast-growing.

Stage of Breast Cancer

There are five breast cancer stages. They are Stage 0, Stage I, Stage II, Stage III and Stage IV. Cancer stage is based on multiple factors, including the size of the tumor, whether or not lymph nodes are involved, and whether the cancer has spread beyond the breast. The presence of cancer in the skin of the breast or in the chest wall behind the breast is also taken into account in determining the cancer stage.

Margins

When cancer cells are surgically removed from your breast, the surgeon takes out all the known cancerous tissue, along with an extra area—the *margin*, or *margin of resection*—of presumably normal tissue around it. Since the exact borders of how far the cancer has spread cannot be known ahead of time, removing a margin increases the likelihood of getting it all.

The pathologist will then look very carefully at this margin to see if it contains cancer cells, and to measure the distance between whatever cancer cells it contains and the outer edge of the tissue sample. A pathology report describes margins in three ways:

- *Negative*: There are no cancer cells close to the outer edge of the sample. Usually no more surgery is needed.
- *Close*: Cancer cells are present in the sample, but thin out as they approach the edge and do not quite reach the edge of the sample. Additional surgery might or might not be needed.
- *Positive*: Cancer cells are present right to the edge of the tissue, meaning there are likely cancer cells still in the body beyond the sample that was removed. Probably more surgery or other treatment will be needed to deal with the remaining cancer cells.

If any lymph nodes were surgically removed, the pathology report will also include information on that tissue. Lymph nodes act as filters along the lymph fluid channels, potentially catching and trapping cancer cells before they spread to other parts of the body as lymph fluid leaves the breast and goes back into the bloodstream. When those lymph nodes have been removed or are themselves cancerous, they cannot perform this defensive function, and there is an increased risk of the cancer spreading.

The pathology report may note that a test of the lymph node tissue is *positive*, meaning cancer cells are present, or *negative*, meaning the sample contains no cancer cells. But it may also include more detail, as it is important not just whether there are cancer cells present but to what extent. The more lymph nodes there are that contain cancer cells, and the more cancer cells those lymph nodes contain, the more serious the cancer may be. The report may describe the amount of cancer with these terms:

- *Microscopic*: So few cancer cells are in the lymph node that a microscope is needed to find them.
- *Gross*: There are enough cancer cells in the lymph node that they can be seen or felt without a microscope.
- *Extracapsular extension*: Cancer cells extend beyond the wall of the lymph node.

Other Studies That May Be Included in a Pathology Report

- *Estrogen and progesterone hormone receptor tests*: Breast cells that have *hormone receptors* respond to signals from hormones. Breast cells that are *ER-positive* have receptors for the hormone *estrogen*, and breast cells that are *PR-positive* have receptors for the hormone *progesterone*. They respond to the signals from these hormones by producing more cells. Since cell multiplication is precisely what we want to prevent when dealing with cancer, the awareness that your cancer cells are positive for either type of hormone receptor is important information that your doctor will use in determining the best treatment for you. Certain treatments might reduce the amount of the hormone in your body, for instance, or interfere with the hormone receptor's receipt of signals from that hormone. The hormone receptor test may report

the results as simply positive or negative, it might use a scale from 0 to 3+ (with 0 meaning no receptors found, 1+ meaning a small number, 2+ meaning a medium number, and 3+ meaning a high number), or it might use a scale from 0 to 100 (with the number representing the percentage of tested cells that were found to have receptors).

- *HER2/neu test or HER2 status test*: *HER2/neu* is short for *Human Epidermal Growth Factor Receptor 2*, which is a protein over-expressed in about 20% of breast cancers. In addition to being tested for estrogen and progesterone hormone receptors, breast cancer patients are typically tested for HER2/neu hormone receptors. Patients who test positive for HER2/neu may benefit from treatment with the monoclonal antibody trastuzumab (Herceptin®). There are two common HER2/neu tests:

  IHC test: The *IHC (ImmunoHistoChemistry)* test measures the amount of HER2/neu receptor protein in the breast cancer cells. The results are expressed on a scale of 0 to 3+, with 0 or 1+ considered negative, 2+ borderline, and 3+ positive.

  FISH test: The *FISH (Flourescence In Situ Hybridization)* test determines if there is an excess of the HER2 gene in the cancer cells. If there is, the test is reported as *positive*; if there is not, then the test is reported as *negative*.

RADIATION THERAPY

Radiation therapy is the use of high-energy radiation from X-rays, gamma rays, neutrons and other sources to kill cancer cells and shrink tumors. It is also sometimes called *radiotherapy* or *irradiation*. Radiation therapy can be used to cure cancer, control the growth of the cancer, or relieve pain or other symptoms.

Radiation therapy for breast cancer may be used before surgery (neoadjuvantly) to shrink tumors and allow for optimal surgical results, after surgery (adjuvantly) to stop or prevent the growth of any remaining or microscopic residual tumor cells that may have been left behind, or in rare cases as an alternative to surgery. It may also be used in conjunction with other non-surgical treatments such as chemotherapy or hormone therapy. Your team of MHP physicians will make sure you receive the optimal sequencing of treatments.

Radiation in high doses kills cells or keeps them from growing and dividing by damaging the DNA within the cells. Cancer cells grow and divide more rapidly than most normal cells. Disrupting the multiplication of these cells is key in the battle against cancer. When the damaged cancer cells die, the body naturally eliminates them.

In theory, it is possible that taking high doses of certain vitamins, typically called antioxidants, could interfere with the radiation's damaging the DNA in cancer cells, thereby making your radiation treatment less effective. It is important that you inform your radiation oncologist of any vitamins or herbal products you might be taking, so they might be assessed for possible interference with your radiation treatment.

Normal cells are also affected by radiation but, unlike cancer cells, most normal cells recover from the effects of radiation. The intensity and duration of the radiation beam are focused on destroying the cancer cells and protecting healthy cells as much as possible, assisted by a computerized three-dimensional treatment planning process that determines the best position of the radiation beams. This further limits the overall impact of the radiation on normal cells.

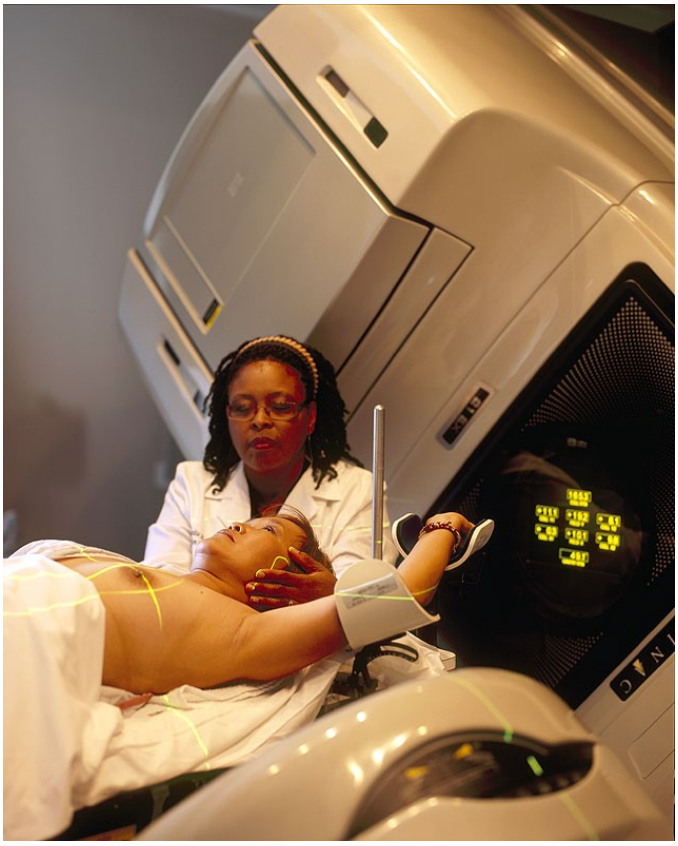
Radiation therapy can be helpful to women hoping to avoid a mastectomy and preserve their breast. Studies have shown that women with early-stage breast cancer who have a lumpectomy to remove the cancer, followed by radiation, live just as long as women who have a mastectomy. In many cases, chemotherapy is used as well. As always, every patient and every case is different, so you'll need to speak with your surgeon and radiation oncologist to determine if breast conserving therapy with radiation is a suitable option for you.

Types of Radiation Therapy

- ***External beam radiation therapy (EBRT)***: The most common type of radiation therapy, *external beam radiation therapy* is delivered from outside the body by a high-energy X-ray machine called a *linear accelerator*. A typical treatment plan is five days a week, for six to seven weeks. Each session lasts approximately 30 minutes. Almost all of that time is devoted to ensuring accurate positioning on the treatment table; the linear accelerator is actually delivering its beam of radiation for a much shorter period of time.
- ***3-dimensional conformal radiotherapy (3DCRT)***: A computed tomography (CT) scan is used in the treatment planning for this type of radiation therapy, which combines multiple radiation treatment fields to deliver precise doses of radiation to the breast—and lymph nodes if called for—while avoiding the surrounding tissue.

Linear accelerator, one of the high technology machines used to deliver radiation therapy. (Photo source: National Cancer Institute. Creator: Daniel Sone.)

- ***Intensity modulated radiation therapy (IMRT)***: *Intensity modulated radiation therapy* is one form of 3 -dimensional conformal radiotherapy. The radiation beam is modified to vary the intensity of radiation across the beam, allowing for optimal treatment precision and dose delivery. By improving the uniformity of the dose of radiation delivered to the breast, acute and long term side effects may be lessened compared to other forms of 3-dimensional conformal radiotherapy. This method is used especially with patients who are being treated with radiation to the breast alone without the lymph nodes, though less often it can be used with patients who are receiving radiation to the lymph nodes as well.
- ***Active breathing control (ABC) or respiratory gating***: One of the challenges of radiation oncology is delivering radiation accurately to a (subtly) moving target. When a patient breathes, there is that very slight movement in the chest. *Active breathing control* is a method of coordinating the radiation delivery with the breathing cycle. In patients with left-sided breast cancers, this method can be especially valuable in reducing the volume of the heart in the radiation treatment field.
- ***Partial breast irradiation (PBI)***: Some patients need radiation not to the whole breast, but only to the tumor site (lumpectomy cavity) and an adequate amount of surrounding normal tissue (the *margin*). Treatment time is typically reduced from once a day for six to seven weeks, to twice a day for one week. Partial breast irradiation may be done by any of multiple techniques:



Patient being prepared for radiation therapy. (Photo source: National Cancer Institute. Creator: Rhoda Baer.)

3-dimensional conformal radiotherapy/quadrant breast irradiation is basically the same as the 3-dimensional conformal radiotherapy described above, except that the radiation is delivered to only part of the breast.

Brachytherapy (BT), or *internal radiation*, introduces radioactive material through a needle or balloon implant into the lumpectomy cavity. The needles or balloon are placed systematically throughout the lumpectomy site. Following placement, dose calculations are verified by your radiation oncologist and radiation physicist. The needles or balloon are connected to a high-dose rate treatment machine, and the prescribed dose is delivered through the needles or balloon. Treatment is done twice daily on an outpatient basis. The implants are temporary and will be removed upon completion of the treatment. Note: the radioactive material will not make you radioactive.

In some cases following a mastectomy, radiation may be appropriate for the chest wall and nearby lymph node areas. The decision regarding whether or not radiation should be used after the surgical removal of a breast is a complex one involving many factors, including the fact that radiation to the lymph node area after axillary lymph node dissection may increase the risk of the pain and swelling of lymphedema. Your doctor will go over the decision with you, explaining the relevance of the number of lymph nodes involved, the size of the removed tumor, the status of the surgical margins, and more.

Radiation Oncology Team

Radiation therapy is delivered by a team of many highly skilled medical professionals. They work together to provide the best treatment plan for each patient.

- Radiation oncologists are board certified physicians who specialize in radiation oncology. They oversee your care as well as develop and prescribe your treatment plan.
- Radiation oncology registered nurses (RNs) coordinate your care while you are receiving treatment. They provide education about the treatment process and your disease. They help you manage side effects of the treatment. They assist with providing or arranging support services.
- Radiation therapists position the patient for treatment, give the radiation treatment and keep records of treatments given. This is all done in accordance with the physician's prescription.
- Dosimetrists work with the radiation oncologists developing the patient's treatment plan and calculating the treatment dose. They develop the plans to ensure that the tumor receives the proper dose of radiation while sparing as much normal tissue surrounding the tumor as possible.
- Radiation physicists work closely with the physicians and dosimetrists developing the patient's treatment plan. They are responsible for maintaining the treatment machines and ensuring they are calibrated in accordance with quality standards.

Planning Your Treatment

Your initial visit will be with your radiation oncologist for a consultation. The physician will decide if radiation therapy is needed. If it is, you will have additional appointments to prepare for the treatment.

In preparation for your treatment, a simulation will be conducted. You will lie on a procedure table—either an X-ray simulator or a computed tomography (CT) simulator—to determine the position you will be in each day for your treatment. Devices may be used to help ensure your proper position. The table height, angles, and size of the area to be treated will be determined at this time. It is very important that you hold perfectly still in this treatment position.

After your simulation the treatment planning will begin. This is the process where the information collected at the time of your simulation is put into a treatment planning computer to determine how the radiation will be delivered to meet the physician's prescription. The radiation physicist, dosimetrist and physician work behind the scenes after your simulation to complete your plan of treatment.

As noted, treatment is usually five days a week, Monday through Friday except for holidays. The radiation therapist will work with you to find a time that is best for your schedule. Treatment times can be changed if situations arise. Please be sure to allow 30 minutes for each treatment session.

Your Radiation Treatment

Each treatment visit, you will proceed to the appropriate dressing room, change into a gown, and leave your clothing in a locker. You should avoid bringing valuables. If you need assistance changing, please notify the nursing desk. You will need to remove all clothing and jewelry items in the area to be treated, but should leave your pants or skirt and shoes on. A therapist will escort you to the treatment room when it is time. Friends and relatives should not accompany you to the treatment room, as there is limited room and it is needed for patients. Any questions or concerns you might have at any point in the process should be brought up to a doctor or nurse.

You will be positioned on the treatment table in the same position and use the same devices to help you hold still that were used in simulation. Once you are positioned, the radiation treatment is usually over in a few minutes. As with other X-ray procedures, to avoid exposure to radiation the therapist will leave the room during the actual delivery of radiation. A closed circuit TV and a two-way intercom system will allow the therapist to see you, hear you, and talk to you at all times during your treatment. You will not see or hear the radiation itself. At most you may feel slight warmth or tingling in the area being treated, but the radiation treatment is painless. If you do feel ill or have any discomfort during a treatment, tell the therapist

immediately.

Radiation therapy does not make you radioactive.

During your treatment your care will be closely monitored. You will have a weekly visit scheduled with the doctor and nurse, though you also may request to see the doctor or nurse at any time during your course of therapy. You may want a family member to be with you on "Doctor Day."

It is strongly recommended that even if you are a smoker, you refrain from smoking for the weeks you are receiving radiation therapy. Research has shown that patients who smoke during radiation treatment have a poorer tolerance and response to radiation treatments than patients who do not smoke.

When you have completed your radiation treatments you will meet with your radiation oncologist. You will then be scheduled for a series of follow-up appointments. These visits may involve diagnostic tests and laboratory work. For best results, it is very important that you stick with this follow-up care.

Radiation Therapy Side Effects

Radiation therapy is a local treatment that affects the cells only in the specific body area being treated, so side effects too are typically specific to the area being treated. Your radiation oncologist will discuss treatment benefits and risks along with the potential side effects with you. Side effects of radiation treatment are usually temporary.

Fatigue is common when a patient is going through treatment. It is important to get plenty of rest. It is important to eat a well-balanced diet during the course of treatment.

Skin Irritation

Skin in the treatment area may become sensitive and easily irritated. In order to prevent or relieve skin problems, practice good skin care.

- Keep the area clean and dry.
- Use mild soap—e.g., Ivory®, Dial®, Dove®—and warm water to clean.
- Pat skin dry, do not rub.
- Do not shave any area in the treatment field without consulting your physician or nurse. Use electric razors only.
- If your underarm is in the treatment area do not use deodorant.
- Your physician or nurse may provide you with lotion to apply to the treatment area. This should be done three times a day, morning, noon and night. Do not apply right before your treatment. Do not apply any lotions, perfumes or powders to the treatment area other than what has been specified by your physician or nurse.
- Avoid direct sunlight; the treated skin is more sensitive to sun and can sunburn easily.
- Avoid tight clothing.
- If your treatment area includes the chest you may be asked not to wear a bra.
- Do not use heating pads or cold packs in the treatment area.
- Hair in the treated area may fall out. It will usually return but may take time.
- Do not wash treatment markings off. If they do come off do not worry. Please do not touch them up. Notify your radiation therapist at your next treatment.

CHEMOTHERAPY

Surgery and radiation are the most common forms of treatment for breast cancer, but many breast cancer patients also receive chemotherapy. Chemotherapy may be used before surgery to decrease the size of tumors so that surgery is safer and easier. It may be used after surgery to lessen the chances of a recurrence of cancer. If cancer remains in the body after surgery, chemotherapy may be used to prevent its further spread, to reduce pain or other symptoms to improve quality of life, or to prolong life.

Taken literally, any chemical treatment of cancer could be considered chemotherapy, even an antibiotic, but most often we use the term more narrowly to refer to the use of cytotoxic substances that interfere with the genes of fast-growing cells.

The type of physician who typically provides chemotherapy is a *medical oncologist*.

One of the most exciting developments in recent years in cancer treatment is targeted chemotherapy. These are new chemo drugs that affect only specific types of cancer cells rather than all rapidly dividing cells indiscriminately. One of the benefits of their increased use is fewer side effects, as fewer cells are affected by the treatment.

Each of our cancer patients has their cells tested to see if they have anything that can function as a target for such specialized chemo drugs. For example, roughly 25% of breast cancers express something called HER2/neu, and there is now a monoclonal antibody that attacks specifically HER2/neu-positive cells.

Not all, or even close to all, cancers have such convenient targets for existing specialized chemo drugs. But this is a situation that is gradually improving as more research is done and more such drugs are developed.

A useful site to learn more about specific chemo drugs is www.chemocare.com. You might also wish to view a short introductory video about cancer and chemotherapy at www.careflash.com/video/chemotherapy.

The Process

Most chemotherapy is given intravenously, i.e., through an IV tube. Less often it is taken orally, as a shot, or even topically (spread directly on the body).

Over time this is changing however. It is estimated that in five to ten years, one-third of chemotherapy treatments will be given orally, and not long after that it will likely become the most common means of administering the drugs.

Sometimes there is a choice in how to take the chemo drugs, and sometimes there is not. Some drugs are available in both intravenous and oral form, and the patient is able to decide which they prefer based on their own criteria (frequency of treatment, duration of treatment, location of treatment, physical discomfort, etc.).

For other chemo drugs, the only option is to take them intravenously. Such a drug might, for example, not be properly absorbed by the gastrointestinal tract if taken orally, or might burn and damage the stomach lining.

Note that contrary to popular belief, intravenous drugs are not by nature stronger than oral drugs. Some of the strongest and most effective chemo drugs are administered intravenously, some are administered orally, some are administered in yet another way, and some are available (at the same level of strength and effectiveness) in multiple forms.

Typically when we administer intravenous chemo drugs, they are introduced into the body via a *port* (short for *Port-A-Cath®*, a brand name for a specific port, which derives from *portal* and *catheter*). A port is a small medical device inserted just under the skin, usually in the upper chest under the collarbone, that allows convenient IV access to a major vein.

The frequency and duration of intravenous chemo treatments vary considerably, depending on the precise facts of your case and which drug(s) you are getting.

Occasionally patients need only one treatment. At the opposite end, there are patients whose cancer has gone into remission that have chemo treatments regularly for the rest of their lives to prevent it coming back. In between are most patients, who receive chemo for several weeks to several months.

Treatment during these weeks or months may be as frequent as five days a week, or as infrequent as once or twice a month.

How long your treatment takes on each visit to the office can also vary. On a typical visit, the nurse will prepare you, you'll receive some kind of anti-nausea medication and possibly other medications to head off side effects, you'll receive your chemo drugs, and then the nurse will remove your port and get you ready to go. For the shortest treatments this whole process may be over in little more than a half hour. Usually, though, you can expect your visit to take at least an hour, and it can be several hours.

You should discuss all of this with your physician in advance. He or she can tell you how many times you'll need to come in for treatment, and roughly how long those visits will take. It's always best to know what to expect.

So why do some people receive chemo so much longer, more frequently, and/or in greater doses than others? It's not necessarily because their cancer is more advanced or severe or difficult to beat. Generally it's because some chemo drugs are harder on the body than others, and so to lessen the risk of damage we space the visits out more to give the body time to recover.

Also, some drugs have simply proven to be most effective with a short exposure, and some need to be delivered in such a way that they remain in the patient's system longer.

There are several things you can do to make your experience getting treatment in the office more comfortable:

- Drink plenty of fluids in the 24 hours before treatment. This helps with kidney function and improves the condition of your veins.
- Eat a light meal prior to treatment, and/or eat a light lunch or snack during the treatment. (Yes, it's usually fine to eat during your treatment, contrary to the widespread belief that chemo makes you miserable and nauseated.)
- Bring a book, music with earphones, writing journal, or something that will peacefully occupy your mind so you don't become too bored or anxious during long treatment.
- Wear clothes in layers, as you may become either warm or cold during treatment. (We also have blankets available.)
- Wear a shirt or top that is loose or otherwise allows access to the chest under the collarbone, so that it does not need to be removed in order for us to attach the IV to the port.

Oncology Drugs

Oncology drugs can be very expensive. Patients who are given prescriptions for oral chemotherapy, even though they may expect the drugs to be costly, frequently are still surprised when they discover how costly they truly are.

Typically your prescriptions can be filled at the local Walgreens or CVS, but MHP now has a much better option for its patients. In 2015, MHP established its own pharmacy. MHP Pharmacy has many significant advantages for our patients.

Due to the effects of chemotherapy on the body, some medications may react undesirably with the chemo drugs. For this reason it is especially important that you compile an accurate list of all medications you are taking and their doses, and that you bring it with you for all appointments. If necessary, you might be taken off these other medications or have their dosages altered.

One such advantage is that MHP Pharmacy works with specialty pharmacies that are much better for oncology drugs than are conventional pharmacies.

Specialty oncology pharmacies are far more likely to have the drugs you need in stock; conventional pharmacies are reluctant to keep drugs on the premises that may cost thousands of dollars for a small quantity. The specialty pharmacies have more experience dealing with insurance companies about oncology drugs, and are more likely, for instance, to know when a drug might be covered if it is classified as a chemotherapy benefit rather than a drug benefit.

With MHP Pharmacy, you have the option of having the drugs delivered right to your door, at no extra charge.

Your MHP oncologist and the whole team at MHP will work with you on an individual basis to be sure that you understand any prescriptions you receive, and that you understand the costs and how to deal with them.

You may for some drugs, for instance, need to be registered with a drug company who will then communicate with your insurance company to make sure you are being covered for everything you should be. We also will typically give certain prescriptions well before you need to start taking the medication, to allow for any possible delay in obtaining them.

Having our own pharmacy as part of that team is crucial to delivering the best possible care in that it facilitates coordination. MHP Pharmacy knows your oncologist, knows his or her prescribing habits and preferences, and communicates with him or her regularly. Your physician and pharmacist, not to mention Biotech Clinical Labs, all are working within the same system of health records, so you won't run into the "one hand not knowing what the other hand is doing" phenomenon. Your pharmacist will know the other prescriptions you've been given, your lab results, and any concerns your physician has expressed, and will be able to take all these facts into consideration in helping you manage your oncology drugs.

We can't know when a conventional pharmacy might go the extra mile for one of our cancer patients, but we do know that our own pharmacy always will.

Chemotherapy Side Effects

Chemotherapy introduces toxic substances into your body. Not as a byproduct or as a flaw, but intentionally. These killer substances attack cancer cells, but other of your cells are vulnerable to them as well. (Though as noted above, this situation is improving as more advanced chemo drugs that precisely target certain kinds of cancer

Some of the common chemotherapy drugs which your medical oncologist may recommend are:

- **Adriamycin**
- **Capecitabine (Xeloda®)**
- **Carboplatin**
- **Cytoxan**
- **Paclitaxol (Taxol®)**
- **Taxotere**

We sometimes measure chemo treatments in what is called *cycles*. Let's say, for instance, that you'll be receiving chemo drugs A, B, and C. It may be that the safest and most effective way to deliver these drugs is not all at once, but first A by itself, then on the next visit A with B, then A by itself again, and then A with C. One cycle for you would then be four visits:

Visit 1: A

Visit 2: AB

Visit 3: A

Visit 4: AC

So if your physician tells you that you'll need to come in twice a week, and that your treatment will consist of six cycles of three, you're looking at nine weeks of chemo. Or if it's three times a week, and you need three cycles of four, then that's four weeks of chemo.

When you are running low on medication and need a refill prescription, it's important to note that if you were prescribed painkillers, these come under different rules from other medications you may have been prescribed. With narcotics, due to their potential for abuse, we cannot, as with other drugs, simply call in the prescription for you, which you then obtain from your pharmacy. We are required to see you in person to give you a handwritten prescription.

cells are developed.)

Because the chemo drugs seek out and attack fast multiplying cells, the cells they can most damage (besides the cancer cells themselves) include those found in the hair follicles, bone marrow, gastrointestinal tract, and reproductive system, as these are the cells your body most rapidly generates. Chemotherapy's side effects largely derive from the damage these cells sustain. These cells usually are replenished quickly, making the damage temporary, but in the short term, if countermeasures are not taken, your body may let you know in unpleasant ways that it's under internal attack.

So a big part of administering chemotherapy is providing additional treatment to deal with all the potential adverse effects of introducing strong toxic chemicals into your system. Just as a bitter tasting medicine may be given a sweet coating to make it more palatable to a child, your chemo drugs may be combined with anti-nausea medication and other mitigating extras to make them easier for your system to handle.

There's a standard regimen that goes with each chemo drug, but that's just a starting point. How a patient's body responds to treatment gives us vital information that can be used to tweak the procedure on subsequent occasions, to deviate as needed from the standard regimen.

Therefore if you do suffer side effects after receiving chemo, you won't necessarily have to go through them again on the next treatment, as changes will be made in response to what you experienced.

If countermeasures are in order, as a rule you're better off anticipating and dealing with a problem

Before we take a closer look at the most common chemotherapy side effects, it's worth highlighting some of them that can arise that we want you to take most seriously. As noted, any side effect you experience we want to know about, but if you experience certain of them specifically, you need to call us right away. These are the side effects of greatest urgency:

- **Numbness or tingling in your hands or feet.**
- **Trouble using your hands.**
- **Feeling unsteady on your feet.**
- **A temperature higher than 100.4ºF (38ºC).**
- **Shaking chills.**
- **Significant changes in your vision.**
- **Severe diarrhea—three or more watery bowel movements per day for more than three days.**
- **Severe constipation—constipated for at least three days, with laxatives having failed to relieve it.**
- **Unusual bruising or bleeding.**
- **Pain at or around the injection site.**
- **Shortness of breath.**
- **Vomiting more than 24 hours after treatment.**
- **Jerky body movements of the head, neck or limbs.**
- **Sores or ulcers in your mouth, or a sore mouth or throat.**

In addition, if you experience something not on this list that you're not sure might or might not be significant enough for us to want to be informed right away, call us. It's better that you err on the side of contacting us sooner than you needed to rather than later than you should have. So when in doubt, pick up the phone and let us know what's happening with you.

preventively rather than waiting until it manifests itself.

For example, often a pattern will be discernible when you are undergoing chemotherapy. You might, say, be getting chemo on Tuesdays, and you notice that by about Thursday evening you are nauseated or suffering some other side effect, that it gradually gets worse until bottoming out about Friday afternoon, and then it gradually lessens. If that's the case, then rather than wait until your condition is intolerable to you, since you know it's coming you can take whatever countermeasures you and your physician have decided on (prescription anti-nausea medication for instance) earlier in the day on Thursdays.

One of the questions we're asked most frequently is how common side effects are. We'll be looking at many possible side effects below; will a person getting chemotherapy really have to endure all of these?

In short, no. But as always, every case is different. It's not possible to give precise probabilities, because the likelihood of your getting any specific side effect depends on what type of cancer you have, what chemo drugs we are treating you with, and the various biological facts about you as an individual and your body that determine how tolerant your system is of these particular toxic substances.

Will you be able to safely travel during the time you're getting chemo?

For the most part the answer is yes, though you'll need to be careful due to the potential complications of side effects. Be sure you're physically up to traveling; if you're too fatigued, don't force it. If you do decide to travel, find out in advance where the nearest hospitals are to where you'll be. We work with hospitals all over the country, and there should be no problem coordinating your care with them if you should experience an emergency.

International travel can be a little trickier. It's typically more taxing, so again best avoided unless you're sure you have the strength to handle it. You especially want to think twice about traveling to any country with subpar medical care, or where there may be problems communicating with us back home.

What we can say in very general terms is this: The one side effect that is common, that you will probably experience to at least some degree, is fatigue. When your body is having to adjust to the introduction of chemo drugs, not to mention battling cancer, chances are you're not going to have all the energy you otherwise would.

As far as the other side effects though, chemotherapy has come a long, long way in recent years and decades. Most patients either suffer no other side effects, suffer only mild versions of any other side effects, or only suffer other side effects temporarily until adjustments are made in their chemotherapy regimen to eliminate them.

But any side effects that you do experience, we want to know. If something happens when you are not in the office, please contact us.

Mouth and Throat Irritation

The cells lining your mouth and throat are among those that can be affected by chemotherapy. You may experience oral mucositis (a painful inflammation and ulceration of the mucus membranes in the mouth), thrush (an overgrowth of yeast), or HSV (herpes simplex virus, i.e., cold sores). Your mouth may be more sensitive than usual, and more easily irritated by spicy, acidic, too hard, too hot, or too cold foods and beverages.

Treatments for these conditions vary. HSV, for instance, requires antiviral medication.

Some patients find that painting tender areas with Maalox® helps with mouth soreness. We also have prescription solutions that can provide relief. They are called *Cool Solution #1* and *#2*. (They are also sometimes referred to as *Larry's Solution #1* and *#2*, after the Johns Hopkins pharmaceutical wizard who first concocted them long ago.) They use slightly different formulas, so if one isn't doing the trick for you, we'll try the other.

Standard mouthwash is probably not going to work for you, as most contain alcohol and/or menthol and will irritate sensitive mucous membranes.

You can ascertain through trial and error what, if any, foods and beverages are irritating your mouth, and then you can stay away from them. You might find, for instance, that hard bread and crackers cause you discomfort and that you need to stick to softer foods.

We suggest that prior to starting your chemotherapy you put yourself on a preventive mouth care regimen. Use a soft toothbrush and brush your teeth gently and frequently. Rinse your mouth after every meal and at bedtime with a solution of 1/2 teaspoon baking soda and 1/2 teaspoon salt in a cup of water.

Should you develop a sore mouth or throat during your chemotherapy, be sure to contact our office. The more information you can provide, the better. Before you call, inspect your mouth and throat and note any sore spots or color changes.

Diarrhea or Constipation

Your bowel habits may be affected by your chemotherapy. Some chemo drugs are more likely to cause diarrhea, some constipation, and some can cause either. In addition, the accompanying pain medications you may be taking and/or the accompanying anti-nausea medications you may be taking can sometimes cause constipation.

Routine dental work should be postponed until your chemotherapy is completed. Dental work stirs up plenty of bacteria in your mouth, which is not good when avoiding infection is a priority. If you need emergency dental work that cannot be put off, let us know beforehand so we can work with your dentist to minimize risk.

For bowel health, you'll want to keep your fluid intake high with water, fruit juices, herbal tea, and other beverages. (Caffeinated and alcoholic beverages are not hydrating.) It is recommended that you drink at least eight glasses of fluid per day.

For treatment of diarrhea, we typically recommend an over-the-counter anti-diarrheal such as Imodium®. We can also talk to you about dietary changes that may help, including stopping dairy products. If you experience discomfort around the rectal area, rinse with water, apply Anusol® ointment or A&D® ointment as needed for skin irritation relief.

You may find that our directions for taking an anti-diarrheal medication contradict the product's insert. This is because some causes of persistent diarrhea make overtreatment seriously damaging to the body, so the inserts err on the side of avoiding overuse. We will go beyond the inserts' instructions only after first making sure your diarrhea does not have such a cause.

Consider the condition C difficile (Clostridium difficile). This is when too much of the good bacteria in your intestines has been killed off (often as an unintended consequence of using antibiotics), and your intestines have been overgrown with bad bacteria. Diarrhea is your body's attempt to flush that bad bacteria out of your system. If you were to just keep using anti-diarrheal medication in larger and larger doses until your body no longer produced diarrhea, you would be preventing this defensive maneuver. Unchecked C difficile can do plenty of harm, and can even be fatal.

So if you're having a problem with persistent diarrhea, we'll want to talk to you about whether you've recently received any antibiotics or are otherwise at risk for C difficile. If so, C difficile is easy to test for with a stool sample. Only after we've ruled out that and other diarrhea causes that require different treatment will we conclude that your diarrhea is being caused by the chemo or the other supportive drugs, and recommend that you go beyond what the anti-diarrheal insert says is a safe dosage.

You may be able to forestall constipation by altering your diet to include natural laxative fruits such as prunes, dates, papayas, and rhubarb, and foods high in fiber such as oat bran. If needed, laxatives such as Metamucil®, Senokot® or Dulcolax® can also be effective.

As with many other side effects, once experience with chemotherapy has revealed that you can expect diarrhea or constipation, you need not wait for them to happen but can use countermeasures preventively. If you know that you usually become constipated starting a few hours after each chemo session, for example, then it would be prudent to take a laxative in advance of the symptom becoming obvious.

If you suffer from persistent constipation, we recommend the following protocol (all these products are available over the counter):

1. No bowel movement for one full day: One dose of Senokot S® in the morning and one in the afternoon.

2. No bowel movement for two full days: One dose of Senokot S® in the morning and one in the afternoon, and one dose of magnesium hydroxide (milk of magnesia).

3. No bowel movement for three full days: One dose of Senokot S® in the morning and one in the afternoon, and one dose of magnesium citrate.

Note: If the problem persists, you must consult your doctor before moving on to Step 4, as the use of enemas or suppositories while undergoing chemotherapy can be dangerous due to the risk of infection.

4. No bowel movement for four full days or more: One dose of Senokot S® in the morning and one in the afternoon, and a Fleet® enema.

Altered Sense of Taste

Chemotherapy can affect your taste buds, changing how things taste to you, and how much you like or dislike certain tastes. Think of it as similar to the way your tastes as an adult differ from your tastes as a child, the way, for example, maybe you loved a super sweet cereal when you were 8, but now it seems overwhelming and rather sickening.

You might discover while undergoing chemotherapy that you like some foods you never used to, and dislike some foods that you've always liked.

The precise effects of course will differ from person to person. One common experience is that food tastes more bland. This leads some patients to prefer to add more spice than in the past to counteract that effect. Others, though, find spicy foods now unpleasant and prefer to stick to the more bland (especially if in addition to taste changes, they're experiencing some mouth sensitivity).

The perception of sweetness seems to be especially likely to change. Sweet foods may have a less enjoyable taste to you, or at least a different taste.

Some chemo patients report that water has a sort of chemical or metallic taste to it. In that case, it can be helpful to add a squirt of lemon juice, or switch to a mildly fruit flavored bottled water.

Really it's just a matter of experimenting. Find out how things taste to you, and what you like and don't like. If your appetite is lessened, or you just don't care to eat as much because the food doesn't have the same taste to you, consider adding food replacement supplements like Ensure® instant breakfast or other protein powders to your diet.

Nausea and Vomiting

With the possible exception of hair loss, no side effect is more closely associated with chemotherapy in most people's minds than nausea and vomiting.

But the truth of the matter is, nowadays you'll likely experience minor or no nausea when undergoing chemotherapy. The chemo drugs themselves have changed over the years, the accompanying anti-nausea drugs have become more sophisticated, and experience has enabled the medical profession to improve the chemotherapy procedure so as to minimize the risk of nausea.

Walk into a room full of people in our office receiving chemo and what you won't see are sick, miserable folks throwing up and trying to endure terrible nausea. Instead, you'll likely see a good number of the people contentedly eating lunch or munching on a snack.

Still, nausea and vomiting remain possible side effects of chemotherapy. This is because the cells in the lining of the stomach and intestines multiply rapidly, making them the type of cells non-targeted chemo drugs seek out and attack.

Patients are sometimes advised that shortly before and after treatment they should avoid spicy foods or foods that can cause indigestion or heartburn. Really though, like so much else with chemotherapy, it's a matter of trial and error. We'd like you to eat whatever is comfort food for you when you're coming in for treatment. If experience reveals that your body has more trouble handling the chemo when you do so, then yes, we'll want you to avoid the foods that seem to be contributing to the problem. But if not, then eat what you want to eat, whether it's carrot sticks or spicy fast food tacos.

Whatever you eat, be sure to stay well hydrated. This is important in lessening the likelihood of multiple side effects.

There are three types of nausea associated with chemotherapy. One is *anticipatory nausea.* This is a psychologically produced nausea that occurs before treatment or at the beginning of treatment because the patient is anxious and expects to be made sick. This has become far less common over the years, as by the time today's patients commence chemotherapy they've been educated as to the improbability of nausea and so are less anxious than in the past.

A second type is *immediate nausea*, which occurs in fewer than 5% of our patients. In these cases, the body reacts immediately to the introduction of the chemo drug into it, making the person sick.

A third type is *delayed nausea.* This occurs after the chemo drug has had a chance to work its way fully into the patient's system. This kind of nausea usually hits 48-72 hours after treatment.

We have many anti-nausea drugs available. We give all our chemotherapy patients one of them prior to their chemo on each visit. Other drugs we send home with them as rescue medicine if they should experience delayed nausea. If a patient is so nauseated that they can't even swallow oral medication, we have anti-nausea drugs in the form of a patch or suppository.

If you have any trouble at all with nausea, we can try different anti-nausea drugs, tinker with the timing and dosage, etc. Similarly, if you experience side effects from the anti-nausea medication itself—such as involuntary jerky movements of the head, neck or limbs—notify us and we will make appropriate adjustments in your medication.

Remember, chemotherapy involves making various adjustments along the way to arrive at the procedure that will be most comfortable for you and avoid side effects.

For all the side effects related in any way to diet, we work with dieticians who will help you with your questions and

On the subject of diet, patients sometimes see cancer as a "wake up call," and become motivated to go on a health kick, including altering their diet significantly. That's good to a degree, but while you're undergoing chemotherapy is not the time to whip your body into shape. One battle at a time.

Get plenty of calories to keep your strength up, and eat what you enjoy eating to keep yourself in a positive frame of mind. When you're through with your chemotherapy and we're talking about keeping you well, that's when we can address getting you accustomed to a healthier diet.

If you experience nausea and vomiting as a side effect of chemotherapy, in addition to taking anti-nausea medications and experimenting with diet to eliminate foods that may be exacerbating the problem, some patients have benefited from:

- **Further increasing fluid intake.**
- **Avoiding intense activity, especially after meals.**
- **Resting after meals with the head elevated.**
- **Being out in the fresh air.**
- **Making use of enjoyable distractions such as music, movies, or relaxing hobbies.**
- **Timing one's sleep to coincide with when nausea occurs or is anticipated.**

make recommendations.

Some of the drugs we have at our disposal to combat nausea and vomiting are:

Aloxi®: A serotonin receptor antagonist with effects that last up to 5 days, thus useful against delayed nausea.

Ativan®: A benzodiazepine drug that enhances the effects of the neurotransmitter gamma-aminobutyric acid.

Compazine®: A dopamine receptor antagonist that patients are most often sent home with, for delayed nausea.

Decadron®: A steroid used preventively.

Emend®: A neurokinin antagonist used preventively.

Marinol®: A marijuana derivative. Some people who are not already used to the effects of marijuana tend not to like how it makes them feel, but others are fine with it.

Sancuso®: A serotonin receptor antagonist in patch form.

Zofran®: A serotonin receptor antagonist.

Fatigue

A certain amount of fatigue is a common, and largely unavoidable, side effect of chemotherapy. If you accept that you likely will have periods when you won't have the level of energy you're used to, and you make sensible adjustments, you should be fine.

Don't try to force yourself to do as much as you usually do. Even if you're one who typically takes care of others, give yourself permission to be selfish and let others take care of you. This is a time for calm and rest.

Often you'll notice a pattern in your energy level relative to your chemotherapy treatments. For example, let's say you're receiving treatment once every two weeks. You might come to realize that you consistently feel the most fatigue from Day 4 to Day 6 of each fourteen day period. If so, then this is valuable information. You can plan your activities so as to take account of the fact that for those three days every two weeks you need to really slow down and take it easy.

Generally there's not much we can do to eliminate fatigue caused directly by chemotherapy. But if it's instead caused by some other factor related to your cancer or cancer treatment, then that's a different story. Are you tired because you're anemic? Depressed? Experiencing a high level of anxiety? Getting insufficient sleep? There are effective medications for all these conditions.

So you might need to simply cope with some fatigue while you're undergoing chemotherapy. But let's first ascertain if there might be some other cause of your fatigue, in which case we may be able to alleviate it.

Rash

Temporary redness, itching or dryness may occur anywhere on your body. Use body oil or hand cream on the skin to help control itching and dryness. Call the office if this does not relieve it or if it appears to be worse after a couple of days. Avoid prolonged sun exposure and use a good sun block.

Discomfort at or Around the Port Injection Site

If pain, redness or a sore develops at the IV site, or especially if you see drainage at the site or any other sign of possible infection, call the office. Most of the time such symptoms can be relieved by applying a cold compress for the first few hours, applying warmth to the site after 24 hours, or taking Tylenol® or other pain medication, but we'll want to talk to you about it to make sure it isn't something more serious.

Altered Blood Counts

Blood cells have a short life span (red blood cells about 120 days, platelets about 10 days, and white blood cells about 1-2 days), and replacements are constantly being generated. This puts them among the innocent bystander cells that are most vulnerable to chemotherapy drugs.

Throughout your chemotherapy we constantly check your blood counts. If one or more of the three types of

blood counts are low, we may even delay treatment until we get it back up.

A low red blood cell count is *anemia.* If you're suffering from anemia, you may notice your energy level is low and you become fatigued unusually quickly. We have medication to boost the red blood cell count. Less often a transfusion may be necessary.

A low white blood cell count is *neutropenia.* The white blood cells are your infection fighters, so with neutropenia your system is at a disadvantage contending with invaders. When you are neutropenic, you need to monitor your body and take every infection or possible infection seriously. Inform us of a temperature of 100.4ºF or more, chills, sinus problems, coughing, urinary problems, or any injuries that develop redness or drainage or other signs they may be infected.

When a patient with neutropenia has a temperature at that level and/or the other noted symptoms, we err on the side of safety by assuming your body is contending with an infection until proven otherwise. We'll direct you to go to the emergency room, and to inform the emergency room personnel upon your arrival that you are a cancer patient and are, or might be, neutropenic. That way they'll know that your symptoms have a greater significance. Pack a bag, as with low blood counts there is a realistic chance you'll be staying overnight or longer to be diagnosed and treated.

Take precautions to avoid infection if you are neutropenic. In the old days neutropenic people were told to avoid fresh fruits and vegetables and even most human contact because of the risk of germs. However, it's not necessary to take things to that extreme. You don't have to mimic Howard Hughes or a bubble boy just because your white blood cell count is low.

What we tell patients nowadays is to use common sense and be a little more careful than usual. Don't avoid fresh fruits and vegetables, just be especially meticulous about thoroughly cleaning them (which really you should be doing anyway). Don't avoid all human contact, just limit your time around people you know are sick, and be wary of confined areas where it's hard to avoid breathing in other people's germs, like crowded theaters, subways, planes, etc.

Tips for Lowering the Risk of Infection

- **Wash your hands often during the day.**
- **Stay away from people who have diseases you can catch, such as a cold, the flu, measles, or chickenpox.**
- **Avoid crowds.**
- **Stay away from children who recently received immunizations, such as vaccines for polio, measles, mumps, and rubella.**
- **Don't cut or tear the cuticles of your nails.**
- **Be careful not to cut yourself when using scissors, needles, or knives. Use an electric shaver instead of a razor to prevent breaks or cuts in your skin. Use an extra soft toothbrush that won't hurt your gums.**
- **Take a warm (not hot) bath, shower or sponge bath every day. Pat your skin dry using a light touch. Don't rub.**
- **Use lotion or oil to soften and heal your skin if it becomes dry and cracked.**
- **Clean cuts and scrapes right away with warm water, soap, and antiseptic.**
- **Wear protective gloves when gardening or cleaning up after others, especially small children or animals.**
- **Don't get any immunization shots without first checking with your doctor.**

For the types of chemo drugs that put you most at risk of neutropenia, we give you an accompanying shot with your treatment designed to boost your white blood cell count.

A low platelet count is *thrombocytopenia.* The main concern when your platelets are low is that your blood will not clot as efficiently as usual. If you have thrombocytopenia, we need you to protect yourself from activities putting you at risk of breaking your skin or getting bruised. You may want to switch to an electric razor and a very soft toothbrush. Use gentle perirectal care and monitor stools for color changes or blood.

There are at this time no effective medications for thrombocytopenia. Besides delaying your treatments until your platelet count is back up, there is the option of a transfusion if your platelet count is severely low.

Vision Problems

As a chemotherapy patient, you may experience issues with your eyes. Most commonly you'll notice that you're not seeing things quite as crisply and clearly as you're used to. This is temporary (so no need to change your prescription if you wear glasses or contact lenses), and generally not something to be concerned about.

On the other hand, occasionally more significant eye problems develop from chemotherapy. If you experience any of these, we'll want to know about it immediately:

- Double vision.
- Loss of vision in one or both eyes.
- Deterioration in vision quality greater than the mild loss of clarity described above.
- Mucus in the eyes.
- Pain around the eyes.
- Swelling around the eyes.

Another possible side effect of chemotherapy is dry eye, which paradoxically may manifest itself as watery eyes. Cells in the tear ducts can be killed off by the chemo drugs, which creates scarring and lower quality tears, leading to dry eye. The eyes then constantly water in an effort to correct the dry eye.

When this happens, we recommend preservative-free Tears Naturale®. If the problem persists or worsens, we will refer you to our ophthalmology colleagues. They might prescribe stronger eye drops, and if that's not enough, there's actually a way to insert a tiny plug in the tear duct to keep tears in the eye longer.

Report any of the following possible symptoms of infection to your doctor immediately. If you have a fever, don't use aspirin, acetaminophen, or any other medicine to bring down your temperature without first checking with your doctor.

- **Fever of 100.4 or greater.**
- **Chills.**
- **Sweating.**
- **Loose bowels.**
- **A burning feeling when you urinate.**
- **A severe cough or sore throat.**
- **Unusual vaginal discharge or itching.**
- **Redness, swelling, or tenderness, especially around a wound, sore, pimple, IV catheter site, or venous-access device.**
- **Abdominal pain.**

Report these signs of possible low platelet count to your doctor:

- **Unexpected bruising.**
- **Small red spots under the skin.**
- **Reddish or pinkish urine.**
- **Black or bloody bowel movements.**
- **Any bleeding from your gums or nose.**
- **Severe headaches.**
- **Dizziness.**
- **An increase in weakness.**

Respiratory Problems

Difficulty breathing is a rare but potentially serious consequence of cancer and chemotherapy, one that it's especially important you notify us of right away if you experience.

Cancer itself puts you at higher risk for a blood clot, which can form in your leg or pelvis, break free, and go to your lung, where it becomes known as a *pulmonary embolism*. If this is what is causing your respiratory issues, pulmonary embolisms are easily treated, but if left untreated can be fatal.

Breathing problems can also be a sign of pneumonia, brought on by an infection made possible by losing too many white blood cells to the chemo drugs.

It's also possible that what feels like shortness of breath is really not a respiratory issue at all, but a matter of fatigue. Often it is hard for a person to differentiate between being tired and drained of energy, versus being out of breath.

But if you feel your breathing is off, you've developed a cough, or you have pain in your chest, we need you to contact the office so you can be evaluated. If you have respiratory problems that become severe, report to the emergency room and they will notify us.

Sexual Function and Procreation

Chemotherapy—some chemo drugs more than others—can attack rapidly generating cells in the reproductive organs, and can cause fluctuations in hormonal levels. This can give rise to a number of symptoms.

For men, impotence and/or infertility are possible. These will likely be temporary, but are occasionally permanent. Medication such as Viagra® may be prescribed for impotence if needed. For a man wishing to have children in the future and concerned about infertility, it may be prudent to freeze some semen at a sperm bank.

For women, vaginal dryness may occur, which can be remedied with a water-soluble lubricant such as K-Y Jelly®, Astroglide®, or Replens®. The estrogen level may be affected in such a way as to induce menopausal symptoms, including hot flashes, erratic periods, mood swings, or weight gain. The closer one is to menopausal age, the more likely this side effect will be permanent menopause. For a younger woman, it will likely be a temporary, pseudo-menopause.

There are medications to treat hot flashes. Vigorous exercise has also been found to be beneficial.

For a woman intending to have children, an injection can put the ovaries to sleep during chemotherapy, increasing the chances they will avoid damage. It is also possible to harvest eggs before the treatment and freeze them, so that in vitro fertilization can later be attempted.

Sexual issues can be difficult for patients to talk openly about, but it is best to overcome any such reluctance. Our physicians and nurses are willing to discuss with you any concerns you might have in this area, or any side effects you might be experiencing. We can also refer you to a reproductive endocrinologist who has experience working with our patients and assisting them with their decisions.

For both sexes there is a risk of decreased libido.

Neuropathy

Neuropathy is a numbness or tingling in the hands and feet, which in severe cases can become painful. It may include reduced feeling and dexterity, making it harder to perform tasks such as gripping and picking up objects or buttoning a shirt. Balance may be affected.

Some chemo drugs can cause neuropathy by attacking the microtubules upon which nerves depend. Some can also make one more vulnerable to cold-induced neuropathy.

Only a small minority of patients are rendered temporarily or permanently infertile by chemotherapy. But even for those for whom pregnancy is possible during chemotherapy, it is highly inadvisable. Remember, chemo drugs are toxic. When they are present in sperm or in a developing fetus, the risk of birth defects is high. If you're going to be sexually active during chemotherapy, by all means use birth control.

You'll want to inform us if you're having any neuropathy symptoms at all. There are treatments available to at least mitigate the condition, including medications, vitamins, physical therapy, acupuncture and massage. There is also the option of switching to different chemo drugs.

Neuropathy is an infrequent but important potential side effect of chemotherapy, in that it can significantly affect quality of life and can take six months to a year after treatment to go away completely. Occasionally it can even be permanent.

Hair Loss

The cells in your hair follicles are among the most rapidly multiplying in your body, and thus among those most vulnerable to the chemo drugs. When enough of these cells are damaged, the result is hair loss, or *alopecia*. Chemotherapy can affect hair follicles not only on your head, but anywhere on your body where you have hair. Whether you suffer hair loss and to what degree is related to the type and dose of chemotherapy, and

the length of treatment.

Hair loss typically begins 10-21 days from the start of your chemotherapy, and may be accompanied by tingling and sensitivity in your scalp.

To prepare for and deal with potential hair loss, you may want to cut your hair to an easy to manage style before treatment begins. If you choose to wear a wig, select one ahead of time to match the color of your hair. [See the **Additional Resources** section of this guide for a list of local salons and wig stores that work with chemotherapy patients.]

We can give you a prescription for a wig, which makes it a tax-deductible medical expense. Wigs are also sometimes covered by insurance.

Some patients prefer to wear a hat rather than a wig. You may want to experiment with different looks to see what you are most comfortable with.

Unlike the other chemotherapy side effects under discussion here, hair loss is almost entirely a cosmetic matter. It would be a mistake, though, to dismiss it as trivial for that reason. It can have a very real effect on a patient's emotional well-being, in part by affecting how he or she is perceived by others.

So we treat it as a serious matter, and we offer another innovative way to deal with it. The Penguin Cold Cap® is a head covering worn while receiving chemotherapy. The cap is cold enough to freeze the hair follicles so that they will not be exposed to the chemo drugs working their way through your system, but not so cold as to risk frostbite or other injury.

It does not succeed in every case, but it certainly decreases the likelihood of hair loss, and many of our patients have been very happy with it.

It's important to be aware of the downside of the Penguin Cold Cap® as well though. Most people would consider it pretty expensive at about $500 per month, and it is generally not covered by insurance. You have to have the cap on for about an hour before and an hour after receiving your chemo, significantly lengthening the treatment session. Most of our patients experience it as mildly to moderately uncomfortable—not terrible, but not pleasant to have on for several hours each time you come in for treatment.

Penguin Cold Cap®.

Most importantly, there is a very small but nonzero chance that a cancer cell could be temporarily lodged in the scalp, avoid the chemo drugs due to the Penguin Cold Cap®, and then reemerge to reestablish the cancer when it might have otherwise been eradicated. This is more of a theoretical possibility—we have had no evidence that any of our patients have ever actually experienced this—but one worth considering.

You can learn more about the Penguin Cold Cap®, including an instructional video, at www.msc-worldwide.com.

Pain

In addition to the specific instances of pain and discomfort detailed above, you may experience other pain, whether as a side effect of treatment or as a result of your cancer itself.

With current medications and technologies, the pain of cancer and hematologic diseases can almost always be relieved. We consider the control of pain with minimal side effects to be an integral part of your overall treatment.

Since the best way to control pain is to prevent it from starting or from worsening, it is important that you feel comfortable talking with your doctor and nurse about pain.

There are many different pain medicines available including aspirin, Tylenol®, anti-inflammatory medications, and narcotics.

You may be prescribed a long-acting pain medicine. These are to be taken on a schedule whether you are having pain at the moment or not. This allows a level of pain medicine to be in your blood and prevents the pain from becoming severe. The goal will most likely be to completely control the pain with long-acting medicines. Individual sensitivity to these medicines varies greatly, so adjusting the dosage or trying a different medicine may be necessary.

In spite of the long-acting medicine, you may experience breakthrough pain. If so, you will be given a short-acting narcotic to take on an as-needed basis. This is usually very effective. If, however, you experience frequent breakthrough episodes we may need to increase the dosage of the long-acting medicine.

The major potential side effects of pain medicines are constipation and sleepiness. As long as you are aware of these problems, they can often easily be handled.

With a combination of long-acting and short-acting pain medicine, cancer-related pain can generally be managed very successfully.

HORMONAL THERAPY

Hormones are chemicals produced in the body by glands such as testicles and ovaries. Sometimes hormones help certain cancer cells to multiply; other times hormones can kill cancer cells, or slow or stop their growth. *Hormonal therapy*—or *endocrine therapy*—for cancer uses drugs, synthetic hormones, or surgery to add, block, or remove hormones.

Hormonal therapy is typically used in conjunction with other cancer treatments, rather than as a standalone treatment.

A *hormone receptor test* can help determine if hormones in your body such as estrogen or progesterone are helping cancer cells to grow. If they are, then hormonal therapy may be an appropriate treatment. The treatment may involve interfering with the interaction between the hormones and the cancer cells, causing the glands to produce less of the hormones, or surgically removing the glands entirely to stop the production of the hormones.

Tamoxifen and raloxifene (Evista®) are medications that bind estrogen receptors and block their effects on the breast tissue. Aromatase inhibitors—e.g., anastrozole (Arimidex®), letrozole (Femara®), and exemestane (Aromasin®)—are drugs that can be used in post-menopausal women to block the conversion of other hormones into estrogen. These drugs may be used if your tumor expresses estrogen and/or progesterone receptors. Your physician will help you decide which of these medications is right for you.

Even when hormonal therapy does not contribute to a cure, it may stall the advance of the disease for months or years, and may help alleviate some of the most painful cancer symptoms.

The potential side effects of hormonal therapy vary depending on the specifics of the treatment and the patient. Some of the side effects that can occur when hormonal therapy is used to treat breast cancer include:

- Hot flashes.
- Vaginal irritation, dryness, or itching.
- Vaginal spotting.
- Nausea and vomiting.
- Headaches.
- Skin rash.
- Increased fertility.
- Fatigue.
- Loss of appetite.
- Weight gain.
- Irregular periods.
- Blood clots.
- Stroke.
- Development of other cancers.
- Cataracts.
- Liver toxicity.
- Birth defects.

It’s a long list, but most of these side effects are highly unlikely. If hormonal therapy is an option in your case, your doctor will discuss with you all the pros and cons, including the risk of side effects.

BIOLOGICAL THERAPY

Biological therapy, sometimes called *immunotherapy*, as a cancer treatment is somewhat similar to chemotherapy but works in an importantly different way.

Chemotherapy involves introducing a toxic substance into the body to kill cancer cells, which also inadvertently can kill certain non-cancer cells. Biological therapy—which can be take the form of pills, shots, or IVs—is intended to trigger the body's own immune system to more effectively fight the cancer. The exact mechanism(s) by which it achieves this is not fully understood, but at least in some patients biological therapy appears to make it easier for the immune system to destroy cancer cells, stop or slow the growth of cancer cells, and keep cancer from spreading further in the body.

The immune system includes the spleen, lymph nodes, tonsils, bone marrow, and white blood cells. It fights infection and disease. But the immune system does not always respond to the presence of cancer in the body as a threat to be eradicated. Basically, biological therapy seeks to change this—rallying the immune system troops to engage the enemy.

Biological therapy can also be a more indirect part of cancer treatment in that it is sometimes used to forestall or counteract the potential side effects of chemotherapy drugs or other cancer treatments.

Among the side effects that can accompany biological therapy are:

- Rashes or swelling around the treatment injection site.
- Flu-like symptoms such as fatigue, fever, chills, achiness, or nausea.
- Lowered blood pressure.

If biological therapy is an appropriate option in your case, your physician will discuss in more detail with you the proposed treatment and the potential side effects.

Clinical Trials

Clinical trials are research studies that involve testing cancer treatments on people. Advances in all of the types of treatments detailed in this guide depend on clinical trials, whether it be new chemotherapy drugs, new approaches to surgery, new medications for hormonal therapy, or any other.

One of the things that sets MHP apart is that we participate in a great number of clinical trials, including large national trials. What this does is potentially give our patients access to treatments not yet commercially available.

Generally in medicine you cannot simply give people a new treatment and then observe what happens, since their awareness that they are receiving a new treatment can itself affect the outcome. So most studies involve splitting participants into two groups randomly, where one group of people receives the new treatment and one group does not, with no one knowing to which group they belong. Then the outcomes for the two groups are compared, to see what is different about the patients who received the new treatment.

When our patients participate in clinical trials they are assigned to a special clinical trials nurse. So in addition to having an opportunity to receive a new treatment before it is available to all patients, patients in a clinical trial also have the advantage of yet another set of eyes looking closely at their case.

A minor drawback to participating in a clinical trial is that it slightly decreases our usual flexibility in administering treatment. With most of our patients, if life events provide a reason to skip a treatment or two (for instance, the patient is attending a wedding out of town, and does not want to risk any side effects that might affect the trip), we can allow that. But when you join a clinical trial, you are committing to making every effort to receive a certain treatment in a certain way, and if you deviate from that, it could throw off the results.

But overall we feel that our access to clinical trials is a real benefit to our patients. One reason is that we can be very selective in which trials we offer to our patients.

For example, let's say there is a study where one set of patients will be receiving a new treatment, and the other set of patients will be receiving a *placebo*. (A placebo is an inert or otherwise medically ineffective treatment intended to resemble the new treatment sufficiently well that trial participants will not know whether they are among those getting the new treatment or not.) If there is an existing treatment that is effective at all, then in effect the patients who receive the placebo are making a sacrifice for the betterment of all patients—including future patients—collectively. The study itself may be justified for its advancement of medical knowledge, but those individual patients receiving the placebo are getting something other than the best available treatment.

We can decline participation in a study like that that carries the risk of our patients not receiving the best care they otherwise could.

On the other hand, consider a study where one set of patients will be receiving the current standard treatment, and the other set will be receiving that treatment plus a new experimental treatment that might or might not be an improvement. In that case, both sets of participants will be at least as well off as if they were not in the clinical trial at

The National Cancer Institute divides clinical trials into four types, or "phases":

Phase I: Studies that are designed to find a safe dose, decide how the new treatment should be given, and see how the new treatment affects the human body.

Phase II: Studies that are designed to determine if the new treatment has an effect on a certain cancer and see how the new treatment affects the human body.

Phase III: Studies that are designed to compare the new treatment with the current standard treatment.

Phase IV: Studies that are designed to further assess the long-term safety and effectiveness of the new treatment.

all, in that even the ones who will not be getting the new treatment will be getting the same current standard treatment that they would have gotten had they never signed up for the trial.

We can offer our patients an opportunity to participate in that study, because in so doing we are not risking their receiving something other than the best available care.

We have that luxury of picking and choosing clinical trials because we receive no money or other incentive for recruiting clinical trial participants. Some health care providers, such as university hospitals, are expected to provide clinical trial participants for any legitimate trial. Much grant money depends on their doing so. Whereas we have zero reason to put people in clinical trials except where doing so is expected to be beneficial to the patient.

Be sure to include a discussion of whether there are any appropriate clinical trials you may qualify for when talking over your treatment options with your physician.

Cancer Survivorship

A *cancer survivor* is simply anyone who has been diagnosed with cancer and is still alive. No matter if you received your diagnosis ten years ago or today, you are a cancer survivor.

Once your treatment has been completed you will be given follow-up appointments to come back so that your physician can monitor you at regular intervals. Some tests may need to be performed to determine the effectiveness of your treatment.

Many patients become nervous when their cancer treatment ends. They miss the security of having their treatment team around. Or having moved on, they prefer to put this experience behind them, and they may feel a little anxious about coming back for their follow-up appointments. In either case it is important to let your health care team know how you are feeling.

Many cancer survivors have the fear that their cancer will return. It is common to think that every ache and pain is cancer-related. As time passes, worries about your health will naturally subside as you get beyond your first follow-up appointments. Emotional recovery takes longer than physical recovery. Be sure to let your loved ones know that recovery takes time and that everyone progresses differently.

Even though your treatment has been completed, you will still need support. So don't lose touch with your support system. Remember to tell your friends and family what you need. They're willing to help and support you; be willing to accept it.

Some tips to remember as a cancer survivor:

- Now is the best time to enhance your quality of life.
- Be kind to yourself.
- Cherish and seek to improve your relationships.
- Remember that you are still a sexual being.
- Get exercise.
- Eat properly.
- Listen to your body. Rest when your body is telling you that it is tired. Understand that you may need more rest now than in the past.
- Set priorities that are appropriate for your energy level.
- Use humor and laughter throughout your day.
- Know your employment rights. The Americans with Disabilities Act (ADA) bans discrimination by employers against qualified workers who have disabilities.
- Discuss any concerns that arise with your physician or nurse.

OUR TEAM

MHP is a physician-run, patient-centered health care organization consisting of dozens of medical practices, hundreds of physicians, and hundreds more other medical professionals. Some of our practices are focused solely or primarily on oncology; we will introduce you to those practices and their physicians in this section, as well as provide some perspective on the broader team of health care professionals that delivers your cancer care.

MEDICAL ONCOLOGY

THE DIVISION OF CLINICAL HEMATOLOGY AND MEDICAL ONCOLOGY OF OAKLAND MEDICAL GROUP

We are pleased to note that our practice has been accredited as a Patient-Centered Medical Home.

Our practice takes a broad, multidisciplinary approach to cancer care. All your cancer-related needs are our concern. From filling out insurance forms to obtaining prescription drugs, we are here to work with you every step of the way throughout your cancer care.

When you have cancer, you and your family have enough to deal with just to hold things together. We do all we can to lessen the burdens and distractions that arise for our cancer patients, because we treat whole people, not body parts and cells.

Keep in mind that every cancer case, every cancer patient, is unique. With cancer, we deal in probabilities, not certainty. There are times it may be useful to refer to such things as the average number of years people diagnosed with a certain cancer survive, the typical side effects of a given cancer treatment, or the most common cause of a certain type of cancer, but while this kind of information is not valueless, remember that you and your cancer are not necessarily average, typical, or common.

As a patient, you are your own best advocate. Speak up. Keep us informed of all you are experiencing throughout your treatment. Ask questions. Ask for help. Don't worry that your doctor seems too busy, that it might be a "dumb" question, that it might require your doctor to repeat something he or she has already been over, that it might come across as a criticism, or anything like that. If you are struggling with something, or concerned about something, or uncertain of something, then that means more communication is needed.

Our Offices

Farmington Hills Cancer Center
27900 Grand River Avenue, Suite 220
Farmington Hills, MI 48336
TEL: (248) 477-0552

Madison Heights Cancer Center
27301 Dequindre Road, Suite 314
Madison Heights, MI 48071
TEL: (248) 399-4400

Northwestern Highway Cancer Center
32255 Northwestern Highway, Suite 150
Farmington Hills, MI 48334
TEL: (248) 419-3456

Rochester Hills Cancer Center
3950 S. Rochester Road, Suite 1300
Rochester Hills, MI 48307
TEL: (248) 551-2446

Royal Oak Cancer Center
3577 West 13 Mile Road, Suite 204
Royal Oak, MI 48073
TEL: (248) 551-2446

Dear Guests,

The Oakland Medical Group is dedicated to providing the highest quality hematology and oncology services possible. We are committed to providing excellent care individualized for your needs. It is our intention to provide to our patients and their loved ones this care with the most compassionate attention and extraordinary service possible. In my role as office manager, I understand that the journey through any illness can be a stressful time for our patients and their loved ones. I am personally committed to making sure we provide our patients with personal, compassionate, and professional care.

If at any time you would like to share with me any information about your experience in our office please do not hesitate. I appreciate and welcome your perception of our care and service. I believe that patients and their families are able to provide us with information that will help guide and direct improvements in service and quality.

The entire Oakland Medical Group family appreciates your confidence in our organization. Thank you for allowing us the opportunity to care for you.

Sincerely,

Stacy Lattin

Stacy Lattin

Oakland Medical Group Introduces No More Clipboard

No More Clipboard is a secure, online system that enables you to manage your own health records electronically.

As a courtesy to our patients, Oakland Medical Group can facilitate your creating and populating your own No More Clipboard Personal Health Record (PHR).

A PHR can help you manage your health. Benefits include:

- Enter and update your health information.
- Print a summary of your health record.
- Send your PHR to Oakland Medical Group, or any physician in the United States.
- Print an NMC911.com emergency access wallet card.
- Store and share documents and images.

To create your No More Clipboard PHR:

1. Go to our website at www.newmedicalweb.com/OMG.

2. Click on the No More Clipboard icon.

3. Follow the instructions there for creating a new account. Choose a username and password, and enter an e-mail address. Review and accept the terms and conditions.

4. On the following page, complete any required fields. If a Member Activation Code is required, this can be obtained from Oakland Medical Group. Click the Submit button.

Note that Oakland Medical Group will not have any access to information entered into your PHR. All information entered is secure and confidential, and will not be shared or accessed by anyone without your consent. The information in your account can only be accessed with the username and password that you selected when your account was created. So treat your username and password as confidential information so that your privacy is protected.

If you have any questions regarding your PHR, No More Clipboard can be reached at 877-643-3463 or support@nomoreclipboard.com.

Oakland Medical Group Phone Call Policy

When you call our office to report a side effect of treatment, the call will be classified according to urgency. For the most important things, you may get a call back almost immediately, even if it means pulling one of our physicians temporarily away from his or her other duties. If it is not something of that level of urgency, it may be a few hours before you get a call back, perhaps at the end of the work day when the physicians have seen all the patients they're going to see that day. But either way, we want you to keep us informed, and we want to communicate with you about the best course of action.

When you call our office, and when someone from our office calls you back, you'll often be speaking with a nurse or a staff member other than a physician. Some patients are concerned about this, as they want only a trained physician making decisions about their case.

Rest assured that 100% of what you're told on the phone ultimately comes from a physician. Anyone else you speak with isn't making the decisions; they are messengers relaying the decisions made by one of the physicians. If you report a treatment side effect, you will not get a call back until a physician has reviewed the information you provided, and has come up with a recommended course of action, regardless of whether it's that physician or someone else who conveys that recommendation to you.

On rare occasions when you report a side effect you might not get a call back as soon as you should. We have an excellent team, but we're still human and we still make mistakes. So if you haven't heard back from us, and you're concerned that you may be experiencing a side effect that requires immediate attention, don't be shy about calling again. It may be that there was a miscommunication with the person you spoke to, and they classified your information as having a lower level of urgency than they should have. Don't let an error like that adversely affect your treatment; speak up and let us know that you're concerned your situation needs to be addressed more quickly.

Note that your calling earlier in the day gives us more options. The later you call, the more pharmacies and other businesses are closed, the more members of our team have gone home, etc. You will always get help whenever you call, but it's wise to call early if you're experiencing a side effect.

Oakland Medical Group

I Need Urgent Care: *Where Do I Go?*

Most doctors are available by telephone after hours or they provide coverage if they are unavailable in order to discuss your medical needs that need attention or arise unexpectedly. Call your doctor first before heading to the Urgent Care or Emergency Room unless the condition is life threatening.

If you need immediate after hours medical attention, where do you go? Understanding the differences between **urgent** and **emergency care** situations may help to make your decision a little easier and offer you peace of mind.

Urgent Care

Urgent Care Centers are conveniently located and provide cost efficient, professional care. Normally urgent care centers are open for extended hours and are available on a first-come, first-serve basis. **Urgent care centers** focus on diagnosis and treating **conditions** that are **not life threatening.**

Local Urgent Care Facilities:

Oakland Family Practice-Urgent Care
1385 E 12 Mile Road Suite 100
Madison Heights, MI 48071
(248) 399-6090

Meadowbrook Urgent Care
33722 Woodward Avenue
Birmingham, Michigan 48009
(248) 919-4900

Clarkston Urgent Care
5701 Bow Pointe Drive Suite 120
Clarkston, MI 48346
(248) 625-2273

Healing Hands Urgent Care
2157 Orchard Lake Road
Sylvan Lake, MI 48320
(248) 857-7878

Rochester Medical Group-Urgent Care
3950 S Rochester Road Suite 1200
Rochester Hills, MI 48307
(248) 844-6000

Lakes Urgent Care
2300 Haggerty Road Suite 1010
West Bloomfield, MI 48323
(248) 926-9111

Emergency Care

Emergency rooms treat severe and life-threatening conditions. You should call 911 or go to the nearest emergency room if you are having:

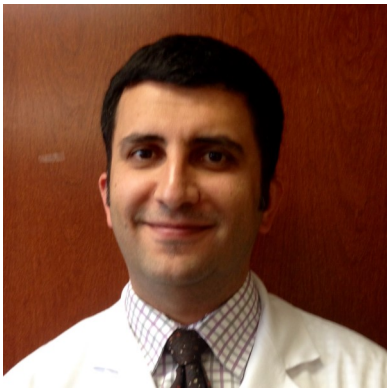
- Chest pain
- Sudden or severe pain
- Difficulty breathing
- Sudden severe headache/loss of function
- Severe bleeding
- A head injury
- Loss of consciousness
- Other major trauma

REMEMBER!

Your oncologist is your best source for obtaining the most appropriate type of care when a medical need arises. He or she will either schedule an appointment or direct you to a specialist, hospital or type of care that best fits your need.

The Physicians of The Division of Clinical Hematology and Medical Oncology of Oakland Medical Group

Ayham Ashkar, M.D.



Dr. Ashkar earned his medical degree from Faculty of Medicine of Damascus University in Syria, completed an internal medicine residency and a fellowship in geriatric medicine at William Beaumont Hospital in Royal Oak, and completed a fellowship in hematology and oncology at St. John Providence Hospital in Southfield.

Dr. Ashkar is board certified in medical oncology.

Savitha Balaraman, M.D.

Dr. Balaraman earned her medical degree from Madras Medical College in India, completed an internal medicine residency at Sinai-Grace Hospital at Wayne State University in Detroit, and completed a fellowship in medical oncology at William Beaumont Hospital in Royal Oak.

Dr. Balaraman is board certified in medical oncology and internal medicine.

She is an associate clinical professor at Oakland University William Beaumont Medical School, and is on the faculty at Botsford Hospital.

Dr. Balaraman's honors and awards include being named one of *Hour Detroit*'s "Top Docs" every year since 2008, and a Best Teacher award from Botsford Hospital.

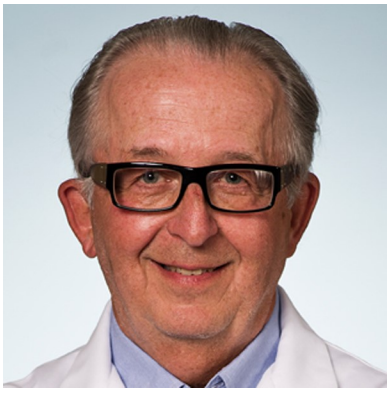
Samer Ballouz, M.D.

Dr. Ballouz earned his medical degree from Damascus University in Syria, completed an internal medicine and pediatrics internship and an internal medicine and pediatrics residency at Henry Ford Hospital in Detroit, and completed a fellowship in hematology and oncology at Simmons Cancer Center at the University of Texas Southwestern Medical Center in Dallas.

Dr. Ballouz is board certified in medical oncology, internal medicine, pediatrics, and hospice and palliative care.

He is a professor at Oakland University William Beaumont Medical School.

Michael Berkovic, D.O.



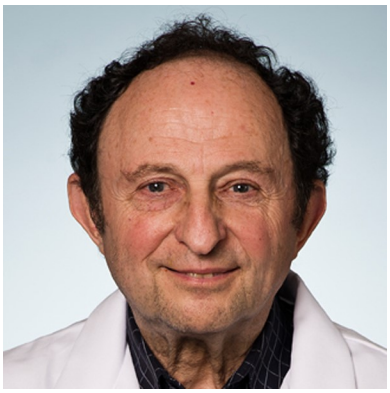
Dr. Berkovic earned his medical degree from the College of Osteopathic Medicine and Surgery in Des Moines, completed an internship and internal medicine residency at Botsford Hospital in Farmington Hills, and completed a fellowship in medical oncology at the Wayne State University School of Medicine in Detroit.

Dr. Berkovic is board certified in medical oncology and internal medicine.

He is a professor at Michigan State University College of Osteopathic Medicine, and holds faculty positions at St. John Oakland Hospital and Botsford Hospital.

Dr. Berkovic's honors and awards include being named an American Cancer Society Fellow and an American College of Osteopathic Internists Fellow, and multiple teaching awards from both Botsford Hospital and St. John Oakland Hospital.

Harold Margolis, D.O.



Dr. Margolis earned his medical degree from the Kansas City College of Osteopathic Medicine, completed an internship and residency at Martin Place Hospital in Madison Heights, and completed a fellowship at the Wayne State University School of Medicine in Detroit.

Dr. Margolis is board certified in oncology.

He holds faculty positions at Botsford Hospital and St. John Oakland Hospital.

Dr. Margolis's honors and awards include being named an American College of Osteopathic Internists Fellow; multiple teaching awards from Botsford Hospital, the American College of Osteopathic Internists and Oakland General Hospital; a Distinguished Service Award from Botsford Hospital; and a State of Israel Bonds Maimonides Award.

Jeffrey Margolis, M.D.

Dr. Margolis earned his medical degree from the Case Western Reserve School of Medicine in Cleveland, completed an internship and residency in internal medicine at the University of Colorado School of Medicine in Denver, and completed a fellowship in hematology and oncology at the Johns Hopkins University School of Medicine in Baltimore.

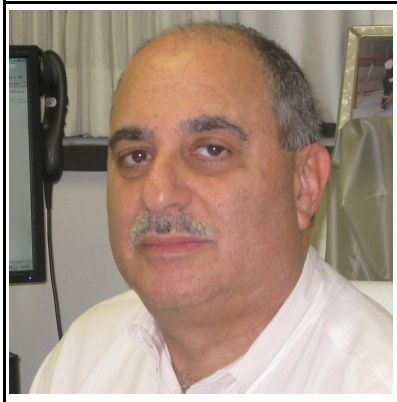
Dr. Margolis is board certified in medical oncology and internal medicine.

He is a professor at Oakland University William Beaumont Medical School, and a clinical assistant professor at Michigan State University and Wayne State University.

Dr. Margolis's honors and awards include being named one of *Hour Detroit*'s "Top Docs" every year since 2005, and having published dozens of articles in prestigious medical journals.

Dr. Margolis is the President of MHP.

Sheldon Weiner, M.D.



Dr. Weiner earned his medical degree from the Wayne State University School of Medicine, completed a residency in obstetrics and gynecology at William Beaumont Hospital in Royal Oak, and completed a fellowship in gynecologic oncology at Barnes Hospital and the Washington University School of Medicine in St. Louis.

Dr. Weiner is board certified in obstetrics and gynecology, and gynecologic oncology.

Dr. Weiner's honors and awards include being named one of *Hour Detroit*'s "Top Docs," being selected as one of the "Best Doctors in America," and being chosen for the advisory board of the patient-run Michigan Ovarian Cancer Alliance.

Richard Zekman, D.O.

Dr. Zekman earned his medical degree from the Kansas City University of Medicine and Biosciences College of Osteopathic Medicine, completed an internal medicine internship and internal medicine residency at Botsford Hospital in Farmington Hills, and completed a fellowship in medical oncology at William Beaumont Hospital in Royal Oak.

Dr. Zekman is board certified in medical oncology and internal medicine.

He holds a faculty position at Oakland University William Beaumont Medical School.

Dr. Zekman's honors and awards include being named an American College of Osteopathic Internists Fellow and medical research awards from Botsford Hospital and the American College of Osteopathic Internists.

HEMATOLOGY ONCOLOGY CONSULTANTS

Hematology Oncology Consultants, P.C. is a team of board-certified doctors and caring medical support staff. Our practice, founded by Dr. Freeman Wilner, is the oldest private practice in Michigan specializing in hematology and oncology. All of our physicians are skilled in the diagnosis, treatment, and long-term care of patients with blood disorders, cancer, and related chronic illnesses.

We offer the latest technology and most advanced treatments available. We are committed to offering the best personalized, cutting-edge care possible.

Hematology Oncology Consultants is a group practice. This means that the responsibility for patient care is shared by all of the physicians in the practice. Our physicians rotate their weekly, and weekend shifts with each other. If you are hospitalized, you may see different physicians during your hospital stay. Please be assured that we communicate daily concerning patient matters and we all share a common philosophy of patient care.

What really sets us apart is the dedication of our physicians and professional staff. Our personal commitment to compassionate cancer care means patients have a partner they can turn to during a difficult time in their lives.

Our Locations

Clarkston Office
6770 Dixie Highway, Suite 106-A
Clarkston, MI 48346
TEL: (248) 922-9175

Royal Oak Office
3577 West 13 Mile Road, Suite 103
Royal Oak, MI 48073
TEL: (248) 288-4500

Troy Office
4550 Investment Drive, Suite B120
Troy, MI 48098
TEL: (248) 267-6569

Hematology Oncology Consultants

Patient care is our first priority at Hematology Oncology Consultants. Here is some information and helpful hints to make your time here more comfortable.

- Your treatment will take _____ hours.

- You will be here for _____ day(s) a week.

- You WILL/WILL NOT need a driver for your treatment.

- You may take all your regular medication as scheduled unless otherwise told. Please bring your pain medications with you, as we do not have pain medications in the office.

- **This is an ambulatory center.** If you are unable to walk back and forth to use the restroom, you will need someone here at all times to assist you.

- Due to the lack of space in our infusion center there can only be one family member with you at a time.

- You may bring a lunch or have someone bring you lunch. We do have a refrigerator you can put your food in. We do not have a microwave.

- You may eat before your treatment.

- Before you come to the office, please check to see if you need any refills on your medication that were prescribed by our staff. There is a 48 hour policy for all medication refills when requested by phone.

- Please read our phone policy.

Hematology Oncology Consultants Phone Call Policy

In an effort to provide the most efficient and competent care possible to all of our patients, please refer to the guidelines below regarding telephone calls that come into our office:

1. If problems or changes in your condition arise between your scheduled appointments, please feel free to call and discuss your problems with our trained medical staff.

2. Upon calling the office, a message will be taken by the receptionist and directed to a telephone triage nurse. Because of the multiple phone calls that are received each day, the nurse will prioritize the various messages based on level of severity and make return phone calls accordingly.

3. Some messages may require a physician's review or perhaps a return call from the physician. In this case, it is possible that you may not receive a call back that same day.

4. For calls concerning medications, please have the labeled medicine and your pharmacy's phone number and fax number available. All prescriptions will be faxed to your pharmacy, except narcotics, which you must pick up at the office. There is a 48-hour prescription policy in our office. If you call the office for a prescription refill, the medicine will be called in within 48 hours. Please refrain from requesting refills on the weekends to our on-call physician. The most appropriate and efficient time for prescription refill requests is at your scheduled appointment time. If you have other specialty physicians (cardiologists, endocrinologists, and/or internists) who provide you with medications, please continue to have those refilled by those specialty physicians.

5. To reduce the number of phone calls that you have to make to our office, we recommend that you attempt to compile all of your questions and have them available to us at your next scheduled appointment.

** It is our goal to tend to our patient's needs as proficiently as possible. By attempting to follow the practices above, we feel that this goal can be achieved.

The Physicians of Hematology Oncology Consultants

Iqbal Boxwala, M.D.

Dr. Boxwala earned his medical degree from the University of Bombay School of Medicine in India, and completed an internal medicine residency, and a fellowship in hematology and oncology at William Beaumont Hospital in Royal Oak.

Dr. Boxwala is board certified in medical oncology and internal medicine.

He is an assistant professor at Oakland University William Beaumont Medical School.

Matthew Cotant, M.D., FACP

Dr. Cotant earned his medical degree from the Wayne State University School of Medicine in Detroit, completed an internal medicine residency, and a fellowship in oncology and hematology at Henry Ford Hospital in Detroit.

Dr. Cotant is board certified in hematology, medical oncology and internal medicine.

He is an assistant professor at Oakland University William Beaumont Medical School.

Deepa Jagtap, M.D.

Dr. Jagtap earned her medical degree from the Bangalore Medical College in India, completed an internal medicine residency at Michigan State University, and completed her fellowship in Hematology and Oncology through Wayne State University at Karmanos Cancer Institute.

Dr. Jagtap is board certified in hematology, medical oncology, and internal medicine.

Laura Nadeau, M.D., FACP

Dr. Nadeau earned her medical degree from the Case Western Reserve School of Medicine in Cleveland, completed an internal medicine residency at University Hospitals of Cleveland, and completed a fellowship in hematology and oncology at the Ireland Cancer Center in Cleveland.

Dr. Nadeau is board certified in hematology, oncology, and internal medicine.

She is an assistant professor at Oakland University William Beaumont Medical School.

Dr. Nadeau's honors and awards include the Alfred S. Maschke Award for Excellence in the Art and Practice of Medicine.

Martin Tapia-Postigo, M.D.

Dr. Tapia earned his medical degree from Cayetano Heredia University School of Medicine in Lima, Peru, held clerkships at Johns Hopkins University School of Medicine in Baltimore, and the University of North Carolina School of Medicine in Chapel Hill, and completed an Internal Medicine residency as well as a hematology and oncology fellowship at Henry Ford Hospital in Detroit.

Dr. Tapia is board certified in medical oncology and internal medicine.

Padmaja Venuturumilli, M.D.

Dr. Venuturumilli earned her medical degree from Osmania Medical College in India, and also completed a residency in anesthesiology and worked as an anesthesiologist in India before coming to the United States, where she completed an internal medicine-pediatrics residency and a fellowship in medical oncology at William Beaumont Hospital in Royal Oak.

Dr. Venuturumilli is board certified in medical oncology and internal medicine.

She is an assistant professor at Oakland University William Beaumont Medical School.

SOUTH MACOMB INTERNISTS

South Macomb Internists is a multi-specialty group of seven physicians that includes two hematologists/ oncologists.

South Macomb Internists is located at:

11900 E. 12 Mile Road, Suite 300
Warren, MI 48093
TEL: (586) 751-7515

The Physicians of South Macomb Internists

Allen N. Stawis, M.D.

Dr. Stawis earned his medical degree from the College of Human Medicine at Michigan State University in East Lansing, completed an internal medicine residency at Hurley Medical Center in Flint, and obtained fellowship training in hematology and medical oncology at the University of Michigan in Ann Arbor.

Dr. Stawis is board certified in hematology, medical oncology and internal medicine.

Dr. Stawis has served as head of the departments of Hematology and Oncology at St. John Macomb Hospital and Riverview Hospital, Director of the Webber Cancer Center at St. John Macomb Hospital, principal investigator for clinical research at St. John Macomb Hospital and clinical associate professor at Michigan State University during his career.

Kenneth Tucker, M.D., FACP

Dr. Tucker earned his medical degree from the University of Michigan in Ann Arbor, and completed an internal medicine internship at Henry Ford Hospital in Detroit, an internal medicine residency at the University of Kentucky in Lexington, and a fellowship in hematology at Ohio State University in Columbus.

Dr. Tucker is board certified in hematology, medical oncology and internal medicine.

He is a clinical associate professor at Michigan State College of Osteopathic Medicine.

Dr. Tucker has been Chief of Medicine, Vice-Chief of Medicine, and Chief of Hematology and Medical Oncology at St. John Macomb Hospital.

RADIATION ONCOLOGY

MHP RADIATION ONCOLOGY INSTITUTE
(Management services provided by 21st Century Oncology)

MHP Radiation Oncology Institute
Management services provided by 21st Century Oncology

MHP Radiation Oncology Institute benefits from the management services of 21st Century Oncology, a leading developer and operator of radiation therapy centers. These centers, which are freestanding and hospital -based, provide a full spectrum of radiation therapy services to cancer patients. In its over 20 years of operation, 21st Century Oncology has developed an operating model which enables its centers to deliver high quality, cost effective patient care. Currently, 21st Century Oncology operates 98 centers clustered into regional networks in Alabama, Arizona, California, Delaware, Florida, Kentucky, Massachusetts, Maryland, Michigan, New Jersey, New York, Nevada, North Carolina, Rhode Island, and West Virginia.

21st Century Oncology believes its centers are differentiated from competitors by their high standard of quality patient care and service, their ability to provide a full spectrum of advanced treatments and their efficient operations. Additionally, 21st Century Oncology's senior radiation oncologists are nationally recognized for excellence and leadership in the field of radiation oncology. For example, one of the oncologists is a past President of the American College of Radiation Oncology. These attributes have enabled 21st Century Oncology to increase its referrals from physicians, as well as to continue to recruit highly regarded radiation oncologists. This allows further expansion of 21st Century Oncology's regional networks of radiation therapy centers.

The Company has developed an operating model based on standardized operating procedures. Its radiation oncologists have developed proprietary clinical pathways that enable its centers to deliver cost effective, high quality patient care. This standardized operating model, which includes manuals, policies and documented procedures, ensures uniformity and efficiency of operation among the centers. The Company's cancer registry of over 30,000 treated patients (one of the largest domestic cancer patient databases) and its ability to conduct real-time peer review over a proprietary wide area network, are key components to developing of clinical pathways by the radiation oncologists. The Company believes its systems have been proven over time which enables it to operate efficiently its existing centers, develop successfully its new centers and integrate acquisitions.

Local Offices

Clarkston Cancer Center
6770 Dixie Highway
Clarkston, MI 48346
TEL: (248) 625-0300

Farmington Hills Cancer Center
28595 Orchard Lake Road
Farmington Hills, MI 48334
TEL: (248) 553-0606

Macomb Cancer Center
17435 Hall Road
Macomb, MI 48044
TEL: (586) 228-0299

Madison Heights Cancer Center
30365 Dequindre Road
Madison Heights, MI 48071
TEL: (248) 589-5000

Oakland Cancer Center
70 Fulton Street
Pontiac, MI 48341
TEL: (248) 338-0300

Troy Cancer Center
4550 Investment Drive, Suite B111
Troy, MI 48098
TEL: (248) 952-5019

MHP Radiation Oncology Institute
Management services provided by 21st Century Oncology

We at MHP Radiation Oncology Institute are dedicated to providing the best care possible to our patients. We feel we can better accomplish this goal by obtaining your opinion on how we are doing. Only through our patients' comments can we truly understand how we are performing. We want to know if we are performing up to your standards or if we have areas we can improve.

A few weeks after you have completed your radiation treatment you will receive a Patient Satisfaction Survey in the mail. Please take a few minutes to fill out the questionnaire and return it to us in the postage-paid envelope. **Your responses are completely confidential.**

Thank you for your time and cooperation.

The Physicians of MHP Radiation Oncology Institute

J. Vito Antonucci, M.D.

Dr. Antonucci earned his medical degree from the Tufts University School of Medicine in Boston, and completed an internship and radiation oncology residency at William Beaumont Hospital in Royal Oak.

Dr. Antonucci is board certified in radiation oncology.

Dr. Antonucci's honors and awards include serving as the Noonan Scholar for research performed in the field of hematologic malignancies.

Ahmed Ezz, M.D.; M.B., B.Ch.; F.R.C.P.-C.

Dr. Ezz earned his medical degree from Cairo University, Egypt, where he also obtained his masters and doctorate degree in radiation oncology, and completed a residency and fellowship at the London Regional Cancer Center, Ontario.

Dr. Ezz is board certified in radiation oncology.

Dr. Ezz is a fellow of the Royal College of Physicians and Surgeons of Canada, and has been named a "Top Doc" by *Hour Detroit*.

Michael Ghilezan, M.D., Ph.D.

Dr. Ghilezan earned his medical degree from the University of Medicine and Pharmacy "Iuliu Hatieganu," in Cluj-Napoca, Romania. While in his internship, he won a College de France Fellowship allowing him to enroll in Residency training in Radiation Oncology between 1990-1994 at the University of Paris V, "René Descartes." He obtained a doctorate in Clinical Research and Radiation Physics from the European Institute of Oncology in Milan.

Dr. Ghilezan is board certified in therapeutic radiology.

Dr. Ghilezan's honors and awards include the Nucletron award for Best Oral Presentation at the World Congress of Brachytherapy Meeting, and 1st Prize for the Best Poster Presentation at the European School of Oncology Educational Convention.

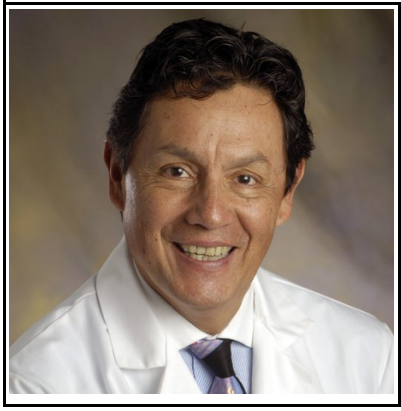
Larry Kestin, M.D.

Dr. Kestin earned his medical degree from the University of Kansas School of Medicine, and completed an internship and radiation oncology residency at William Beaumont Hospital in Royal Oak.

Dr. Kestin is board certified in radiation oncology.

Dr. Kestin's honors and awards include being selected to "Best Doctors in America" and "Consumer's Research Council: America's Best Radiologists/ Oncologists" annually since 2005.

Alvaro Martinez, M.D.



Dr. Martinez earned his medical degree from Universidad Javeriana in Bogota, Colombia, and completed a radiation oncology residency at Memorial Sloan-Kettering Cancer Center.

Dr. Martinez is board certified in radiation oncology.

Dr. Martinez's honors and awards include a fellowship in the American College of Radiology, and a Lifetime Achievement Award from the World Congress of Brachytherapy.

Kay Miller, M.D.

Dr. Miller earned her medical degree from the University of New Mexico School of Medicine, and completed an internship and radiation oncology residency at William Beaumont Hospital in Royal Oak.

Dr. Miller is board certified in therapeutic radiology.

Madhubala Patel, M.D.

Dr. Patel earned her medical degree from the University of Indore in India, completed an internship at Children's Hospital of Michigan in Detroit, and was trained in radiation oncology at Henry Ford Hospital in Detroit.

Frank Vicini, M.D.

Dr. Vicini earned his medical degree from the Wayne State University School of Medicine in Detroit, completed an internship and residency in radiation oncology at William Beaumont Hospital in Royal Oak, and completed a fellowship in breast cancer at the Joint Center for Radiation Therapy of Harvard Medical School.

Dr. Vicini is board certified in therapeutic radiology.

He is a clinical associate professor at University of Michigan Medical School, and a clinical professor at Oakland University School of Health Sciences.

Dr. Vicini's honors and awards include being selected to "Best Doctors in America," "Top Doctors in America," *Hour Detroit*'s "Top Docs," and *Good Housekeeping*'s list of top cancer specialists for women.

JAMES FONTANESI, M.D.

Dr. Fontanesi's radiation oncology practice is located at:

27900 Grand River Avenue, Suite 220,
Farmington Hills, MI 48336
TEL: (248) 477-0552

James Fontanesi, M.D.	
	Dr. Fontanesi earned his medical degree from the American University of the Caribbean School of Medicine on the island of St. Martin, completed an internship at Ellis Fischel Cancer Center in Columbia, Missouri, completed a therapeutic radiology residency at St. Mary's Hospital and Medical Center/ West Coast Cancer Foundation in San Francisco, and completed a fellowship in brachytherapy at University of California Davis/Veterans Administration Hospital in Mather, CA. Dr. Fontanesi is board certified in radiation oncology.

SURGICAL ONCOLOGY

RICHARD D. KEIDAN, M.D.

Dr. Keidan's surgical practice is located at:

3577 West 13 Mile Road, Suite 401
Royal Oak, MI 48073-6769
TEL: (248) 551-2414

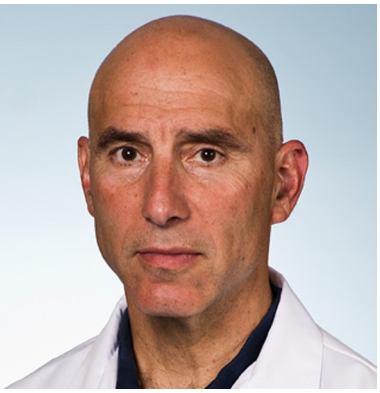
Richard D. Keidan, M.D.

Dr. Keidan earned his medical degree from the University of Michigan Medical School, completed an internship and general surgery residency at William Beaumont Hospital in Royal Oak, and completed a fellowship in surgical oncology at Fox Chase Cancer Center in Philadelphia.

Dr. Keidan is board certified in general surgery.

He is an associate professor at Oakland University William Beaumont Medical School and a clinical professor at Wayne State University School of Medicine.

Dr. Keidan's honors and awards include serving at William Beaumont Hospital as the Chairman of the Cancer Committee, Chairman of the General Tumor Board, Director of the Breast Care Center, Chairman of the Melanoma Clinic Tumor Board, and Director of the Melanoma Multidisciplinary Clinic, as well as being named a "Top Doc" by *Hour Detroit*.



KESTENBERG BREAST CARE CENTER

We specialize in breast, endocrine and laparoscopic surgery. We offer state of the art treatment for benign and malignant breast disease with in-office ultrasound biopsies that circumvent the need for hospital-based operative procedures. We are located at:

32255 Northwestern Highway, Suite 145
Farmington Hills, MI 48334
TEL: (248) 539-3027

William Kestenberg, M.D.

Dr. Kestenberg earned his medical degree from the University of Michigan Medical School, completed a surgical internship at Butterworth Hospital in Grand Rapids, and completed a general surgery residency at Mount Carmel Mercy Hospital in Detroit.

Dr. Kestenberg is board certified in general surgery.

Dr. Kestenberg's honors and awards include receiving the Charles B. Johnston Award for Outstanding Research, serving as president of the Detroit Surgical Association, and being named one of *Hour Magazine*'s "Top Docs."

MICHIGAN THORACIC INSTITUTE

Michigan Thoracic Institute has locations at:

27900 Grand River Avenue, Suite 120
Farmington Hills, MI 48336
TEL: (248) 473-4828

1435 N. Milford Road, Suite 201
Milford, MI 48381
TEL: (248) 676-2582

3950 S. Rochester Road, Suite 1200
Rochester Hills, MI 48307
TEL: 248-844-6000

David Sternberg, M.D.

Dr. Sternberg earned his medical degree with honors from New York University School of Medicine, completed a general surgery residency and NIH-sponsored research fellowship at Columbia University in New York, and completed a fellowship in cardiothoracic surgery at Cornell University and Memorial Sloan Kettering Cancer Center.

Dr. Sternberg is board certified in general surgery and cardiothoracic surgery.

Dr. Sternberg's honors and awards include receiving a Jonas Salk Research Fellowship, receiving a Wow! Award for distinguished service above and beyond, and being named one of *Hour Magazine*'s "Top Docs."

Who is Your Doctor?

The preceding pages have introduced to you the physicians from the MHP practices that deal all or mostly with cancer. But it's important to understand that the actual team that will be delivering your care goes far beyond just those physicians.

In the days of Marcus Welby (though even back then reality differed from its TV depiction), you had an identifiable doctor and he took care of you from start to finish. When you needed your doctor, regardless of the time of day or even if you were at home, it was Dr. Welby who was there for you. If there were other auxiliary personnel involved in your medical care, they stayed largely in the background, and their insignificance was made manifest by the fact that they were played by extras.

A little thought shows that such a system is impossible, and that even if something vaguely like it were possible, it would be an undesirable system anyway.

Why impossible? A doctor isn't a robot who can be available any time and any place her patient needs medical attention. Whether she works 40, 60, or 80 hours a week, there will be times outside those hours when she's not the one delivering your care.

Why undesirable? Like most skilled professionals, physicians specialize, and their doing so is very much to patients' benefit. If your doctor is an oncologist, say, it's best that he spend his 40, 60, 80 or however many hours a week focused as much as possible on the elements of his patients' care that call for the specialized skills and knowledge of an oncologist. He ought not be taking a lot of time away from that to perform or observe procedures that other doctors, nurses, physician assistants, etc. specialize in and can probably handle at a higher level of competence anyway.

When you are an MHP cancer patient, you have a specific physician who is overseeing your care, someone who is indeed "your doctor." But the actual delivery of your care comes from a wide array of health professionals, affiliated with us to varying degrees and in different ways.

So you have a doctor, but you also have a whole "team" working on your case. Let's take a closer look at this team.

At the center of your case is indeed your cancer doctor. You can expect to interact with your doctor a significant amount, but when you are not with him face-to-face but are instead receiving care from other team members, he is still the one who is overseeing your care. He is being kept apprised of all developments and is the one making the decisions.

Beyond your cancer doctor, the team includes other doctors. During the course of your care your doctor may consult with various of our other physicians about your case. The doctors work together, and assist each other.

Our medical oncologists will provide you with chemotherapy if needed. If radiation is called for, the radiation oncologists will be part of the team providing your care. Or if surgery is required, the team working on your case will include a suitable surgical oncologist.

One formal way in which multiple types of oncologists work as a team on your case is through our use of *tumor boards*. Tumor boards are forums where patient cases are presented to multiple of each type of oncologist—medical, radiation, and surgical. The physicians then discuss the case and what care is appropriate, with each able to provide the perspective that comes from their particular specialty.

MHP recently implemented an innovative *nurse navigator* program. The intent is that ultimately each cancer patient of ours will have assigned to them a specific nurse who will stay on top of their case and make sure that they are getting everything they are supposed to get, and that they are understanding the process. Communication is an often overlooked value in the delivery of health care, and the nurse navigator program is another way we are addressing this. Patients have questions, concerns, and uncertainties, and it can make a big

difference to have a specific nurse assigned to their case who will communicate with them regularly about these matters.

Broadening further, the team providing your care includes radiologists and pathologists to examine and interpret the results of biopsies, X-rays, CT scans, and other tests and procedures. Note that this includes those who work directly for us, those who work for local hospitals, and others located all over the nation. Because MHP is independent of any specific hospital system or any other institution, we have the luxury of utilizing resources from anywhere—"in house" or not. If we have a tough case where we think it could help to obtain the opinion of a top pathologist a thousand miles away, we can do that.

Genetics can play a role in some cancers, and we recommend genetic testing for some of our patients. Genetic testing involves examining the DNA in a patient's cells, to look for certain inherited mutations that have been linked to several types of cancer. The presence of one of these mutations indicates a certain risk of developing cancer in the future, even if no cancer is yet present. Not only will your doctor go over the results of your genetic tests with you, but we will also arrange for you to discuss the tests' implications with a genetic counselor—another specialist that when called upon can be a member of the team providing your care.

Let's not forget the nurses who will provide you with care, including nurses who specialize in chemotherapy, radiation nurses, and surgical nurses. Plus there are the numerous lab personnel who perform such functions as drawing blood, giving shots, and maintaining the equipment used to deliver chemotherapy.

It is important not to overlook the office staff as members of the team. A highly valuable person in the delivery of your care is the *scheduler*. Think of a scheduler as being like a hotel concierge. The scheduler works with you to arrange your appointments and tests.

The team for your case will also likely include various other specialists, not only from MHP, but often others we can recommend to you. You may, for example, be referred to a dietician to help you make sound dietary decisions while you're on chemotherapy. Or you may be referred to one of our ophthalmologist colleagues if chemotherapy is affecting your vision. Perhaps a cardiologist or pulmonologist will be a member of the team providing your care if your cancer affects your heart or lungs. Certainly your primary care physician remains a member of the team providing your care, even after you are referred to one of our oncologists. There are social workers available, professionals who provide home health care, pharmacy personnel, financial counselors and more.

Financial counselors can be especially valuable for many patients. Patients can be reluctant to ask about financial counseling, or even react with wounded pride if the subject is brought up, but that's truly unfortunate. Cancer is generally a major, major expense, but when a family is dealing with cancer they can't be expected to focus on making the wisest, most informed choices about the money side of it. Financial counseling can help you to understand what your insurance will pay and what it will not, how to possibly reduce some of the expenses associated with your care, which assets it makes the most sense to tap into or leave untouched, possible sources of financial assistance to avoid being ruined by major medical expenses, and more.

If you are admitted to the hospital, much of your care will come from MHP hospitalists (doctors who specialize in providing hospital care) and hospital employees. The hospital itself is a separate entity from us, but we will coordinate with them to provide you the best possible care. So the hospital personnel also constitute part of the team working on your case.

Often hospitalization is not necessary and you can be treated at an urgent care clinic, which means the staff at that clinic becomes part of the team delivering your care. Some of the urgent care clinics that MHP physicians have worked with and have confidence in include:

Clarkston Urgent Care
5701 Bow Pointe Drive Suite 120
Clarkston, MI 48346
(248) 625-2273

Healing Hands Urgent Care
2157 Orchard Lake Road
Sylvan Lake, MI 48320
(248) 857-7878

Lakes Urgent Care
2300 Haggerty Road Suite 1010
West Bloomfield, MI 48323
(248) 926-9111

Meadowbrook Urgent Care
33722 Woodward Avenue
Birmingham, Michigan 48009
(248) 919-4900

Oakland Family Practice-Urgent Care
1385 E 12 Mile Road Suite 100
Madison Heights, MI 48071
(248) 399-6090

Rochester Medical Group-Urgent Care
3950 S Rochester Road Suite 1200
Rochester Hills, MI 48307
(248) 844-6000

Certainly another very important part of the team providing your cancer care is your pharmacist.

In an even broader sense you can think of resources such as the American Cancer Society or Gilda's Club (a non-profit support group for cancer patients, named in honor of comedian Gilda Radner) as part of the team. We will connect you with third party resources such as these, so that you don't have to navigate them all by yourself.

Sometimes a patient might be disappointed that her doctor doesn't meet her at the emergency room if she needs to go to the hospital on short notice, or another patient might be unhappy that his doctor was not present during his surgery. But if you think of it in terms of a team, and not an individual, delivering your care, you'll see that it makes the most sense for each member of your team to do what they are most qualified to do. In the emergency room you will be treated by ER doctors whose specialty, unlike an oncologist, is precisely dealing with the delivery of emergency medicine. A surgical oncologist, not a medical oncologist or other specialist, is the team member you want in the operating room with you.

So the bad news is your doctor won't be at your beck and call 24 hours a day, but the good news is someone from MHP, or others we work with that may not be directly under our umbrella, will be there for you at all times to provide you with the best care possible. And your doctor will always be aware of all that is happening with you, and will always be in charge of your case, sometimes in person and sometimes behind the scenes.

On the one hand, you do indeed have "your doctor," but it's also accurate to say that your care will be delivered by a potentially quite large team of health professionals.

To summarize, the team delivering your care may include, in addition to your cancer doctor, any combination of the following (some of whom are MHP personnel and some of whom are not):

- Other cancer doctors.
- Other physicians, including a primary care physician, urologist, cardiologist, endocrinologist, ophthalmologist, hospitalist, radiologist, pathologist, and so on.
- A nurse navigator.
- A genetic counselor.
- Nurses.
- Other lab personnel.
- Medical office personnel, such as an office manager or scheduler.
- A dietician.
- A social worker.
- A home health care provider.
- Pharmacy personnel.
- A financial counselor.
- Hospital employees.
- Urgent care clinic staff.
- Support groups and other third party resources.

This is but a partial list. Every case is different; your care might include other types of health care professionals.

ADDITIONAL RESOURCES

In this section you will find various forms, schedules, reminders, etc. that some of our patients have found helpful. They are optional for you to use if they happen to help you stay organized, keep good records, and so on. You will find several pages of support groups and other third parties we are aware of that may have something to offer you. Always feel free to ask us for more information or recommendations about the kind of resources you are interested in.

Medications* You Are Currently Taking

* "Medications" includes both prescription and over-the-counter medications, as well as supplements, vitamins, herbs, antioxidants, complementary therapy, etc.

Medication	Dose	Frequency Taken	Special Instructions

Do You Have Any Allergies?

Common Questions Patients Discuss With Their Oncologist

What type of cancer do I have?

What stage is my cancer?

Are there any clinical trials that would be appropriate for me?

What types of cancer do you specialize in?

How long will I have to be treated?

What is the success rate of this treatment for my type of cancer?

What are the possible side effects of this treatment?

How will the treatment affect my life? Will I be able to work during my treatment?

Other Questions You Want to Remember to Ask Your Oncologist

Progress and Treatment Record

It is a good idea to keep track of what tests or treatments you have for your cancer as you go along. You can record here when you have a blood test, x-ray, CT scan, chemotherapy treatment, trip to an urgent care clinic, hospital stay, etc., as well as the results or any notes you wish to record.

Date	**Event**	**Notes**

Appointment Calendar

Month _____

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

BREAST CANCER INFORMATION, SUPPORT GROUPS

Breast Cancer Information

Angel Care Breast Cancer Foundation	www.angelcarefoundation.org
Avon Foundation	www.avonfoundation.org
Brainmetsbc.org	www.brainmetsbc.org
Breast Cancer Alliance	www.breastcanceralliance.org
Breast Cancer Research Foundation	www.bcrfcure.org
Casting for Recovery	www.castingforrecovery.org
Circle Of Hope, Inc.	www.circleofhopeinc.org
Dr. Susan Love Research Foundation	www.dslrf.org
Expedition Inspiration	www.expeditioninspiration.org
FORCE: Facing Our Risk of Cancer Empowered	www.facingourrisk.org
Health & Human Services	www.hhs.gov/breastcancer
HER2Support	www.her2support.org
Imaginis: The Breast Cancer Resource	www.imaginis.com
Inflammatory Breast Cancer Research Foundation	www.ibcresearch.org
Inflammatory Breast Cancer Support	www.ibcsupport.org
JACOB (Jews Against Cancer Of the Breast) International	www.jacobintl.org
Men Against Breast Cancer	www.menagainstbreastcancer.org
Metastatic Breast Cancer Network	www.mbcnetwork.org
Mothers Supporting Daughters with Breast Cancer (MSDBC)	www.mothersdaughters.org
My Pink Planner	www.mypinkplanner.com
Myself: Together Again	www.myselftogetheragain.org
National Breast Cancer & Cervical Cancer Early Detection Program	www.cdc.gov/cancer/nbccedp
National Breast Cancer Coalition	www.breastcancerdeadline2020.org
National Breast Cancer Foundation	www.nationalbreastcancer.org
Pink-Link	www.pink-link.org
Ribbons of Pink Foundation	www.ribbonsofpink.org

SHARE: Self Help for Women with Breast Cancer	www.sharecancersupport.org
Sharsheret	www.sharsheret.org
Sister Study	www.sisterstudy.org
Sisters Network, Inc.	www.sistersnetworkinc.org
Triple Negative Breast Cancer Foundation	www.tnbcfoundation.org
Y-ME National Breast Cancer Organization	www.y-me.org
Young Survival Coalition	www.youngsurvival.org

Cancer Education

American Cancer Society	www.cancer.org
Cancer 101	www.cancer101.org
Cancer 411	www.cancer411.org
Cancer Guide	www.cancerguide.org
Cancer Quest	http://cancerquest.org
Caring 4 Cancer	www.caring4cancer.com
Center for Cancer Support & Education	www.centerforcancer.org
Centers for Disease Control and Prevention (CDC)	www.cdc.gov/cancer
National Cancer Institute	www.cancer.gov
National Comprehensive Cancer Network	www.nccn.com
National Library of Medicine	www.nlm.nih.gov
Navigating Cancer	www.navigatingcancer.com
WebMD Cancer Health Center	www.webmd.com/cancer

Caregivers & Support

American Self-Help Group Clearinghouse	www.mentalhelp.net/selfhelp
Bloch Cancer Hotline	www.blochcancer.org
Buddy Kemp Caring House (Charlotte)	www.presbyterian.org/buddykemp
Cancer & Careers	www.cancerandcareers.org

Cancer Action (Kansas City)	www.canceractionkc.org
Cancer Hope Network	www.cancerhopenetwork.org
Cancer Information and Counseling Line	http://amc.org/programs.html 1-800-525-3777
Cancer Really Sucks	www.cancerreallysucks.org
Cancer Survivors On Line	www.cancersurvivors.org
Fighting Chance	www.fightingchance.org
Hope Light Project	www.hopelightproject.com
Imerman Angels	www.imermanangels.org
National Respite Locator Service	www.respitelocator.org
Strike Out Cancer	www.strikeoutcancer.com
Well Spouse Association	www.wellspouse.org
Wonders & Worries	www.wondersandworries.org

Chemotherapy

American Cancer Society: Tender Loving Care	www.tlcdirect.org
Chemocare	http://chemocare.com
Penguin Cold Cap	www.msc-worldwide.com

Complementary Medicine

Annie Apple Seed Project	www.annieappleseedproject.org
Cancer Project	www.cancerproject.org
Center for Mind-Body Medicine	www.cmbm.org
Exceptional Cancer Patients	www.ecap-online.org
National Center for Complementary and Alternative Medicine (NCCAM)	www.nccam.nih.gov
Office of Cancer Complementary & Alternative Medicine	www.cancer.gov/cam

Directories of Resources

Association of Cancer Online Resources	www.acor.org
Cancer Index	www.cancerindex.org
Healthfinder	www.healthfinder.gov

Drug Research Updates

FDA Cancer Liaison Program
www.fda.gov/ForConsumers/ByAudience/ForPatientAdvocates/CancerLiaisonProgram

Marti Nelson Cancer Foundation	www.canceractionnow.org
Pharmaceutical Research & Manufacturers of America	www.phrma.org

Early Detection

Cancer Research and Prevention Foundation	www.preventcancer.org
Cancer Symptoms	www.cancersymptoms.org
Prevention Works	www.preventionworkskansas.com
Your Disease Risk	www.yourdiseaserisk.wustl.edu

Elderly

Eldercare Locator	www.eldercare.gov
National Council on the Aging	www.benefitscheckup.org

Ethnic & Religious

Asian & Pacific Islander American Health Forum	www.apiahf.org
Asian Pacific Islander Cancer Education Materials Tool	www.cancer.org/apicem
Association of Jewish Family & Children's Agencies	www.ajfca.org
Catholic Charities USA	www.catholiccharitiesusa.org
Intercultural Cancer Council (ICG)	http://iccnetwork.org
Native American Cancer Research (NACR)	www.natamcancer.org
Nueva Vida, Inc.	www.nueva-vida.org

Office of Minority Health (OMH)	http://minorityhealth.hhs.gov
Prevención	www.prevencion.org

Hospice & Home Care

American Hospice Foundation	www.americanhospice.org
Hospice Education Institute	www.hospiceworld.org
Hospice Foundation of America	www.hospicefoundation.org
International Association for Hospice and Palliative Care (IAHPG)	www.hospicecare.com
National Association for Home Care	www.nahc.org
National Hospice and Palliative Care Organization (NHPCO)	www.nhpco.org
Oley Foundation	www.oley.org
United Ostomy Associations of America, Inc.	www.uoa.org
Visiting Nurse Associations of America	www.vnaa.org

Mastectomy

American Cancer Society: Tender Loving Care	www.tlcdirect.org

Pain Management

Alliance of State Pain Initiatives	http://trc.wisc.edu

Patient Advocacy

American Cancer Society Cancer Action Network, Inc.	www.acscan.org
Caring Bridge	www.caringbridge.org
Dream Foundation	www.dreamfoundation.org
Living Well Cancer Resource Center	www.livingwellcrc.org
National Coalition for Cancer Survivorship	www.canceradvocacy.org
National Patient Advocate Foundation	www.npaf.org
Office of Cancer Survivorship	http://dccps.nci.nih.gov/ocs

Research Advocacy Network	www.researchadvocacy.org

Radiology

Radiology Info	www.radiologyinfo.org

Research

American Institute for Cancer Research	www.aicr.org
Cancer Research Institute	www.cancerresearch.org
Chemotherapy Foundation	www.chemotherapyfoundation.org
International Cancer Alliance for Research and Education	www.icare.org
National Cancer Institute—Clinical Trials	www.cancer.gov/clinicaltrials
National Coalition for Cancer Research	www.cancercoalition.org
Pine Street Foundation	http://pinestreetfoundation.org
Stand Up to Cancer	www.standup2cancer.org

Women's Health

Cancer Boutique—Reflections	www.saintlukesgiving.org/page.aspx?pid=276
Foundation for Women's Cancer	www.foundationforwomenscancer.org
Hope for Two: The Pregnant with Cancer Network	www.pregnantwithcancer.org
Look Good Feel Better (LGFB)	http://lookgoodfeelbetter.org
Mautner Project	www.mautnerproject.org
REACH Global	www.reachglobal.org
Team Survivor	www.teamsurvivor.org
Women 4 Women	www.women-4-women.org

Young Adults

National Collegiate Cancer Foundation	www.collegiatecancer.org
Planet Cancer	www.planetcancer.org

Stupid Cancer: The I'm Too Young for This! Foundation	http://stupidcancer.org
Ulman Cancer Fund for Young Adults	www.ulmanfund.org
Young Adult Cancer Canada (YACC)	www.youngadultcancer.ca

LOCAL RESOURCES

Support Groups and Education

Beaumont Royal Oak Cancer Resource Center

3577 West 13 Mile Road
Royal Oak, MI 48072
248-551-1339

Support group meetings and a wide range of information related to cancer prevention, detection, treatment and rehabilitation.

Breast Cancer Support Group

Alice Gustafson Center at St. Joseph Mercy Oakland Hospital
44405 Woodward Avenue
Pontiac, MI 48341
248-858-3962

Meets the third Thursday of each month, 6:00 PM to 8:00 PM. Registration is preferred; drop-ins are welcome.

Breast Cancer Survivor Group

6770 Dixie Highway, Suite 106
Clarkston, MI 48346
248-625-3841

Meets the second Tuesday of each month except July and August, 7:00 PM to 9:00 PM.

Gilda's Club Metro Detroit

3517 Rochester Road
Royal Oak, MI 48073
248-577-0800

A social and emotional support program for men, women, teens and children living with cancer, their families and friends in a nonresidential, home-like setting. Hosts multiple support groups, including Parenting with Cancer for parents who have a child diagnosed with cancer, and Rack Pack for adults in their 20s and 30s with breast cancer.

Look Good Feel Better

Various locations
248-858-3962

Provides information and cosmetic and grooming advice to help deal with some of the side effects of cancer and cancer treatment. Programs for women, men, and teens. Meets the fourth Monday of each month. Attendees receive a beautiful bag of department store line skin care products and cosmetics. Registration is required.

Parenting With Cancer (See **Gilda's Club**)

Positively Empowered

Rose Cancer Center
3577 W. 13 Mile Road
Royal Oak, MI 48073
248-551-3388

Support group for people who have tested positive for the BRCA mutation. Meets monthly from 7:00 PM-8:30 PM. Call for dates and room location.

Rack Pack (See **Gilda's Club**)

Sharing and Caring Support Group

Wilson Cancer Resource Center
44344 Dequindre Road
Troy, MI 48085
248-551-8585
http://cancer.beaumont.edu/sharingandcaring

Provides information and emotional support to individuals who have breast cancer. In addition, they have support groups designed to meet the specific needs of women who have advanced or metastatic breast cancer, or have been diagnosed with a recurrence of breast cancer. They also have the "I'm Too Young for Breast Cancer" support group geared towards younger women, which includes guest speakers addressing topics such as fertility, intimacy, and discussing your diagnosis with young children.

Van Elslander Breast Cancer Support Group

Van Elslander Cancer Center at St. John Hospital and Medical Center
19229 Mack Ave.
Grosse Pointe Woods, MI 48236
313-647-3000

For any woman currently diagnosed with breast cancer. Focus is on issues related to treatment and recovery, both physical and emotional. Meets the first Wednesday of each month, 6:00 PM-8:00 PM.

Wilson Cancer Resource Center

44344 Dequindre Road
Troy, MI 48085
248-964-3430

Support group meetings and a wide range of information related to cancer prevention, detection, treatment and rehabilitation.

Young Survival Coalition

Van Elslander Cancer Center at St. John Hospital and Medical Center
19229 Mack Ave.
Grosse Pointe Woods, MI 48236
248-592-9664

Young Survival Coalition is an international nonprofit network of breast cancer survivors and supporters dedicated to the concerns and issues of young women dealing with breast cancer. The focus is on the issues most relevant to young women diagnosed with breast cancer, such as early menopause, fertility, etc. Meets the second Tuesday of each month, starting at 7:00 PM.

Local Counseling

Counseling Associates: Sidney Grossberg, Ph.D

6960 Orchard Lake Road, Suite 100
West Bloomfield, MI 48322
248-626-1500

Cancer counseling for individuals and families.

J. Bruce Hillenberg, Ph.D, ABPP

3577 W 13 Mile Rd
Suite 142
Royal Oak, MI 48073
248-892-4364

Board certified clinical health psychologist.

Jeffrey R. Kertes, Ph.D

7001 Orchard Lake Road, Suite 424
West Bloomfield, MI 48322
248-626-4600

Clinical psychologist.

Sabiha Omar, M.D.

28592 Orchard Lake Rd
Farmington Hills, MI 48334
248-865-7271

Board-certified psychiatrist.

Igor Paris, M.D.

6555 West Maple Road, Suite 144
West Bloomfield, MI 48322
248-592-2656

Board-certified psychiatrist.

Theodore J. Ruza, D.O.

21440 Archwood Circle
Farmington Hills, MI 48336
248-426-6930

Psychiatrist specializing in geriatric psychiatry.

Kate K. Smith, MA, LLP

2075 West Big Beaver Road, Suite 520
Troy, MI 48084
248-646-6659

Cancer counseling for individuals and families.

Free Counseling

Oakland University SEHS Counseling Center

Pawly Hall, Room 250A
Rochester, MI 48309
248-625-5231

Free counseling services provided by graduate students of the School of Education and Human Services. Open Monday-Thursday 9:00 AM-9:00 PM, Friday 9:00 AM-5:00 PM, and Saturday 9:00 AM-3:00 PM.

Complementary Medicine

We generally prefer the term "complementary medicine" to "alternative medicine" in that the latter implies you are using it in addition to—rather than instead of—the best science-based medical treatment. If you are considering any unconventional treatment, we urge you to discuss it with your doctor to make sure it is not something that would conflict with your current treatment, or harm you in any other way.

Acupuncture

Acupuncture is a technique in which very thin needles are inserted through the skin to treat a variety of conditions. Clinical studies have found it may help treat nausea caused by chemotherapy. More information about acupuncture can be found at www.medicalacupuncture.org. Locally it is available from:

Dr. Brenda Donaldson
Royal Oak: 248-551-0456
Troy: 248-964-9111

Practice is targeted towards the treatment of cancer patients, patients with musculoskeletal disorders and patients in chronic pain.

Integrative Medicine
Medical Center
44250 Dequindre Road
Sterling Heights, MI 48314
248-964-9200

Offers community acupuncture, which is acupuncture therapy performed within an open group of people. Tuesday evenings 7:00 PM-9:00 PM.

Acupuncture Health Care Associates
7001 Orchard Lake Rd Ste 120
248-737-7126
www.acupunctureinmichigan.com

Holistic Cancer Counseling

Holistic cancer counseling is intended to enhance the function of your immune system by holistically addressing all areas of your life, improving the beneficial effects of treatments such as radiation and chemotherapy. Follow up appointments may include: visualization and imagery training, nutritional guidance, and development of tools to assist you in healing, acupuncture to support your system during treatment, hypnosis or Yuen therapy. Locally it is available from:

Henry Ford Medical Center—Novi
40000 W. 8 Mile Road
Northville, MI 48167
248-380-6201

Naturopathic Physicians

Naturopathic doctors are the general practitioners of complementary medicine. They are trained in conventional pathology and diagnosis, as well as a number of therapies that support the body's innate ability to

heal itself. Such therapies include nutrition, homeopathy, herbal medicine, traditional Chinese medicine (acupuncture, herbs, diet), lifestyle counseling, and mind-body medicine. Locally it is available from:

Dr. Jen Greene
Integrative Medicine
Rose Cancer Center, Ste 304
Royal Oak, MI 48073
248-551-9990

Acupuncture Health Care Associates
7001 Orchard Lake Rd Ste 120
248-737-7126
www.acupunctureinmichigan.com

Oncology Massage

Oncology massage refers to massage tailored to the needs of individuals with cancer. This specialized practice requires therapists to be fully educated in and pay close attention to the physical, emotional, and psychological needs of clients in all stages of cancer: diagnosis, treatment, recovery, survivor, or terminal. Training in oncology massage covers appropriate bodywork modalities for cancer clients, includes precautions for radiation, chemotherapy, and surgery, and covers physiology and pathology. Locally it is available from:

Center for Health Improvement
39750 Grand River Avenue
Novi, MI 48375
248-473-3100

Gail Evo
248-551-9990 or 248-964-9200

Reiki Therapy

Reiki is a therapeutic practice done through light touch and is an easy addition to most medical treatments to help patients handle the stress of cancer treatment. Locally it is available from:

Center for Health Improvement
39750 Grand River Avenue
Novi, MI 48375
248-473-3100

Gail Evo
248-551-9990 or 248-964-9200

T'ai Chi

T'ai chi is a Chinese exercise system that uses slow, smooth body movements to achieve a state of relaxation of both body and mind. Locally it is available from:

Center for Health Improvement
39750 Grand River Avenue
Novi, MI 48375
248-473-3100

Yoga

Yoga can help relieve some symptoms of cancer and can lead to increased relaxation and physical fitness. In studies of women with breast cancer, yoga has been shown to reduce fatigue and improve quality of sleep, physical vitality, and overall quality of life. It is available locally from:

Center for Health Improvement
39750 Grand River Avenue
Novi, MI 48375
248-473-3100

Gail Evo
248-551-9990 or 248-964-9200

Gilda's Club at Botsford
Botsford Cancer Center
27900 Grand River Avenue
Farmington Hills, MI 48336
248-442-0482

Tuesday 4:30 PM-5:30 PM yoga workshop. No previous yoga experience is required, and the instructor can help modify moves for varying physical capacities. All men and women impacted by cancer are welcome. There is no charge.

Rose Cancer Center
3577 W. 13 Mile Road
Royal Oak, MI 48073
248-551-9990

Yoga is offered for a drop-in rate of $10 per class, every Monday, 12:00 PM-1:00 PM, and Thursday 11:00 AM-12:00 PM.

Genetic Counseling

The goal of genetic counseling is to educate patients about hereditary cancer risk, and to enable them to learn if they and their family have a hereditary susceptibility to cancer so that they may take steps to reduce that risk or prevent cancer from occurring.

Some cancers are hereditary, or caused by a damaged or mutant gene that is passed down from a parent to a child. A medical family history can help determine one's likelihood of having such a hereditary predisposition toward cancer. People at high risk can then be tested for the presence of certain genes.

About one-third of patients with newly diagnosed breast cancer have a family history of cancer. About 5%-10% of all breast cancers are believed to be not only hereditary, but caused by specific known genetic mutations. Two of these suspect genes are the BRCA1 gene and the BRCA2 gene.

Individuals from certain ethnic groups have been found to have a higher likelihood of having one of the BRCA mutations. People of Ashkenazi Jewish descent are especially prone to the mutation. To a lesser extent, Icelandic and French Canadian people have the mutation more than the general population.

Genetic testing involves a blood draw, with the sample then being sent to a laboratory for DNA analysis. Genetic testing is covered by most health insurance plans. You should know that federal law prohibits discrimination based on genetic information.

Women who are not of Ashkenazi Jewish descent should consider genetic testing for BRCA1 and BRCA2 mutations if any of the following apply to them:

- Two first-degree relatives (mother, daughter, or sister) diagnosed with breast cancer, one of whom was diagnosed at age 50 or younger.
- Three or more first-degree or second-degree (grandmother or aunt) relatives diagnosed with breast cancer regardless of their age at diagnosis.
- A combination of first- and second-degree relatives diagnosed with breast cancer and ovarian cancer (one cancer type per person).
- A first-degree relative with cancer diagnosed in both breasts (bilateral breast cancer).
- A combination of two or more first- or second-degree relatives diagnosed with ovarian cancer regardless of age at diagnosis.
- A first- or second-degree relative diagnosed with both breast and ovarian cancer regardless of age at diagnosis.
- Breast cancer diagnosed in a male relative.

Women who are of Ashkenazi Jewish descent should consider genetic testing for BRCA1 and BRCA2 mutations if either of the following apply to them:

- Any first-degree relative diagnosed with breast or ovarian cancer.
- Two second-degree relatives on the same side of the family diagnosed with breast or ovarian cancer.

These family history patterns apply to about 2 percent of adult women in the general population. Women who have none of these family history patterns have a low probability of having a harmful BRCA1 or BRCA2 mutation.

For more information please visit www.cancer.gov/cancertopics/factsheet/Risk/BRCA. For counseling by phone or e-mail, contact Informed Medical Decisions at 800-975-4819 or visit www.informeddna.com.

To obtain testing locally:

Ann Arbor

University of Michigan Cancer Genetics Clinic	www.umich.edu/~mmgmed/clinic/cancer 734-647-8906

Dearborn

Oakwood Hospital & Medical Center Genetic Counseling	www.oakwood.org/genetic-counseling 313-593-8483

Detroit

Children's Hospital of Michigan Genetic and Metabolic Disorders	www.childrensdmc.org/geneticandmetabolicdisorders 313-745-4513
Henry Ford Health System Cancer Genetics	www.henryford.com/body.cfm?id=39549 313-916-3188
Karmanos Cancer Institute Genetic Counseling	www.karmanos.org/genetics 313-576-8748

Farmington Hills

Dr. Savitha Balaraman and Dr. Richard Zekman	248-477-0558
Dr. Craig Gordon	248-522-0222

Grand Rapids

Spectrum Health	www.spectrumhealth.org/cancer-genetic-testing 616-486-6217

Pontiac

St. Joseph Mercy Oakland Hospital Genetic Testing	www.stjoesoakland.org/genetictestingcounseling 248-858-3796

Royal Oak

Beaumont Children's Hospital Pediatric Genetics Clinic
www.beaumontchildrenshospital.com/clinicalgenetics
248-551-0487

Beaumont Hospital Cancer Genetics Program
http://cancer.beaumont.edu/genetics
248-551-3388

Beaumont Hospital Reproductive Genetics Clinic
http://womenshealth.beaumont.edu/reproductive-genetics-program
248-551-0395

Lymphedema Specialists and Programs

Beaumont Lymphedema Clinic

Enhancing and providing optimal care for patients with breast cancer and the side effects associated with treatment is the mission of the Beaumont Lymphedemic Clinic at Beaumont, Royal Oak. There will also soon be a lymphedema clinic available for patients at Beaumont, Troy. Patients are seen on the second and fourth Thursdays of each month. Dr. Justin Riutta, the director of the clinic and a specialist in lymphedema, evaluates each patient in person.

The clinic's hours are 8:00 AM-11:30 AM. Patients are referred, as needed, to the Royal Oak and Troy physical therapy departments for lymphedema management.

Also offered are four educational sessions per year at the Rose Cancer Center. These sessions provide in-depth lymphedema information to patients regarding pathophysiology, prevention, and treatment. Topics specific to breast cancer are also discussed. These include post-mastectomy pain syndrome, shoulder dysfunction, and axillary syndromes.

For more information or to schedule a consultation, contact the Beaumont Breast Center at 248-551-3300.

Beaumont Hospital Royal Oak
3601 W. 13 Mile Road
Royal Oak, MI 48073
248-898-5000

Beaumont Hospital Troy
44201 Dequindre Road
Troy, MI 48085
248-964-5000

Rose Cancer Center
3577 W. 13 Mile Road
Royal Oak, MI 48073
248-551-8588

Botsford Rehabilitation Program

The Comprehensive Lymphedema Management Program at Botsford Hospital is designed to help those with lymphedema or venous insufficiency gain control of their lives. This program is designed to restore movement and strength to promote a return to a normal lifestyle through education, exercise, self-massage techniques, and compression garments.

Free lymphedema screening is offered to all breast cancer patients at the Botsford Cancer Center on the fourth Tuesday of every month. This class provides education on risk factors and the prevention and management of lymphedema. Please call 248-471-8648 to register.

Botsford Hospital
28050 Grand River Avenue
Farmington Hills, MI 48336
248-471-8648

Botsford Cancer Center
27900 Grand River Avenue
Farmington Hills, MI 48336

248-473-4830

Botsford Center for Rehabilitation—Infinity
28455 Haggerty Road
Novi, MI 48375
248-553-9550

Total Rehabilitation and Athletic Conditioning Center (TRACC)
Botsford Wellness Complex
39830 Grand River Avenue
Novi, MI 48375
248-473-5600

Henry Ford Health System

The certified lymphedema therapists at Henry Ford teach patients the self-care skills needed to control the condition, which include exercise, compression and skin and wound care focused on preventing infection. Patients also receive gentle, therapeutic massage and learn how to effectively bandage and manually drain fluid built up in the affected area.

Henry Ford Macomb Hospital
15855 19 Mile Road
Clinton Township, MI 48038
586-263-2480

Henry Ford Novi Medical Center
39450 W. 12 Mile Road
Novi, MI 48377
248-344-2300

Henry Ford Detroit Northwest Medical Center
7800 W. Outer Drive
Detroit, MI 48235
313-543-6295

Henry Ford Allen Park Rehabilitation
7445 Allen Rd., #102
Allen Park, MI 48101
313-389-5600

Henry Ford Wyandotte Physical Rehabilitation
3323 Biddle Avenue
Wyandotte, MI 48192
734-284-4499

Karmanos Cancer Institute

There are four components to comprehensive lymphedema therapy (CLT):

- Specialized manual techniques.
- Bandaging.
- Skin care.
- Exercise.

In 1995, the Karmanos Cancer Institute established the first comprehensive lymphedema therapy center in Michigan. It continues to be a leader in the field.

Today the Institute's collaboration with experts at the Detroit Medical Center's Rehabilitation Institute offers:

- Collaboration and patient focus of oncology and rehabilitation specialists.
- Use of rehabilitation specialists, physical therapists and occupational therapists for joint mobility and musculoskeletal problems.
- Largest team of trained lymphedema therapists working together in Michigan.
- Multiple therapy sites throughout southeastern Michigan.

Commerce Medical Center
8391 East Commerce Road, Suite 108
Commerce Township, MI 48302
248-360-8700

Hutzel Women's Hospital
3980 John R Street
Detroit, MI 48201
313-745-7020

Milford Center
219 E. Commerce Road, Suite 201
Milford, MI 48381
248-684-9751

Novi Center
42005 W. 12 Mile Road
Novi, MI 48377
248-305-7575

Rehabilitation Institute of Michigan
261 Mack Avenue
Detroit, MI 48201
313-745-1160

Warren Center
30713 Schoenherr Road
Warren, MI 48093
810-751-5670

West Bloomfield Center
Jewish Community Center
6600 W. Maple Road
West Bloomfield, MI 48322
248-360-8797

Westland Center
36301 Warren Road
Westland, MI 48185
734-722-5535

St. John Hospital & Medical Center

Lymphedema treatment is offered at St. John Detroit Hospital & Medical Center, as well as two outpatient centers.

St. John Detroit Hospital & Medical Center
22101 Moross Road
Detroit, MI 48236
313-343-3744

St. John St. Clair Shores Medical Center
21000 12 Mile Road
St. Clair Shores, MI 48081
586-498-5300

St. John Romeo Plank Diagnostic Center
46591 Romeo Plank
Macomb, MI 48044
586-226-6500

St. Joseph Mercy Oakland Hospital

Lymphedema treatment by certified lymphedema therapists is offered at the St. Joseph Mercy Oakland Hospital main campus as well as their White Lake outpatient clinic.

St. Joseph Mercy Oakland Hospital Rehabilitation
44428 Woodward Avenue
Pontiac MI 48341
248-758-7720

White Lake Rehabilitation Center
320 Town Center Boulevard
White Lake, MI 48386
248-758-7790

Exercise and Nutrition

Exercise Classes

Beaumont Cancer Survivorship and Wellness Program

Offers supervised exercise programs, individual wellness, and physical therapy.

Beaumont Sterling Heights Medical Center
Rehabilitation & Dialysis Center
44300 Dequindre Road
Sterling Heights, MI 48314
248-964-0700

Botsford Center for Health Improvement

Offers numerous group and individual exercise and wellness programs.

39705 Grand River Avenue
Novi, MI 48375
248-473-3100

Exercise and Cancer Integrative Therapy Education Program (ExCITE)

This is a two week program for those with a history of cancer (i.e., before, during, or after treatment) who receive approval from their physician. The object is to enable maintenance of a structured and individualized exercise program with goals of: maintaining or improving functional capacity; mitigating adverse short-term side effects of cancer treatments (e.g., fatigue, nausea); learning about the benefits of exercise during and after cancer care and the proper exercises to perform; and reducing the risk of other long-term health problems associated with cancer and its treatments, such as cardiovascular disease, weight gain, and bone/muscle loss.

Henry Ford Health System
313-972-1919

Nutritionists

Beaumont Royal Oak Cancer Resource Center
248-551-1339

Beaumont Troy Cancer Resource Center
248-964-3430

Botsford Cancer Center
248-471-8120

St. Joseph Mercy Oakland Hospital Food & Nutritional Services
248-858-3661

Wigs, Hats, Turbans, and Mastectomy Products

Oakland County

Alternative Hair Care Center
2245 Ortonville Road
Ortonville, MI 48462
248-625-6560
www.thealternativehair.com

Antonino Salon & Spa
191 Townsend Street
Birmingham, MI 48009
248-258-5990
www.antoninosalon.com

Changez Salon
3210 Crooks Road
Royal Oak, MI 48073
248-288-3434
www.changezsalon.net

Denny's Hair Studio
6780 Highland Road
Waterford, MI 48327
248-666-4770

Hair Team Salon
32732 Grand River Avenue
Farmington, MI 48336
248-478-3511

Les Cheveux
33255 Woodward Avenue
Birmingham, MI 48009
248-644-9447
www.lescheveux.com

Prideaux's Salon
1103 North Campbell Road
Royal Oak, MI 48067
248-547-8725
http://prideauxssalon.com

Shear Pointe Medical Hair Restoration Center
1971 East 14 Mile Road
Birmingham, MI 48009
248-645-1310
www.shearpointe.com

Susan's Special Needs
24052 Woodward Avenue
Pleasant Ridge, MI 48069
248-544-4287
www.susansspecialneeds.com

Todd's Room
259 Pierce Street
Birmingham, MI 48009
248-594-0003
www.toddsroombirmingham.com

The Ultimate Image
7091 Orchard Lake Road, Suite 250
West Bloomfield, MI 48322
248-855-9600

Wayne County

Féké Wigs and Breast Prostheses
213 West Main Street, Suite 8-9
Brighton, MI 48116
810-220-2785
www.fekewigs.biz

The Front Room
32788 5 Mile Road
Livonia, MI 48154
734-525-3161
www.synergy-dance.com/The-Front-Room-Hair-Replacement

Hana Wig
32596 Warren Road
Westland, MI 48185
734-458-3975

Hair By Heck, Inc.
15791 Penn Drive
Livonia, MI 48154
313-582-1100

Jean's Boutique and Wigs
20733 Mack Avenue
Grosse Pointe Woods, MI 48236
313-882-4559
www.jeansboutiqueandwigs.com

Joyce's Salon & Day Spa
17912 Mack Avenue
Grosse Pointe, MI 48230
313-886-4130
www.coloursbyjoyce.com

Main Street Hair Company
772 South Main Street
Plymouth, MI 48170
734-455-3377

Margo's of Northville
141 East Cody Street
Northville, MI 48167
248-348-9130
www.margossalon.com

Soho Twelve Oaks
27500 Novi Road
Novi, MI 48377
248-305-8811

Wendy's Wigs
29465 5 Mile Road
Livonia, MI 48154
734-522-9420
http://wendyswigs.com

Macomb County

Faces Etc
23750 Gratiot Avenue
Eastpointe, MI 48021
586-776-4030

House of Beauty
27911 Harper Avenue
St. Clair Shores, MI 48081
586-771-5723

Soho Lakeside
14000 Lakeside Circle
Sterling Heights, MI 48313
586-566-4301

A Woman's Image
43205 Garfield Road
Clinton Township, MI 48038
586-286-1277
www.awomansimage.net

GLOSSARY

If you have any questions related to the terms and definitions in this glossary, please feel free to ask us.

3-dimensional conformal radiotherapy (3DCRT)
A type of radiation therapy that uses multiple radiation treatment fields to improve the precision with which the radiation is delivered, so as to avoid damaging the surrounding healthy tissue.

A

abnormal cells
Cells that do not look or act like healthy cells.

acquired immune deficiency syndrome (AIDS)
A viral disease that destroys the body's ability to fight infections, leaving the body susceptible to many other diseases.

active breathing control (ABC)
Also called *respiratory gating*, a technique for delivering radiation in a way that adjusts for the way the chest moves when the patient breathes, to avoid cardiac irradiation.

acute
A sudden onset of symptoms or disease.

adenocarcinoma
See **carcinoma**.

adenoma
A benign tumor made up of glandular tissue. For example, an adenoma of the pituitary gland may cause it to produce abnormal amounts of hormones.

adjuvant chemotherapy
See **chemotherapy**.

adrenal glands
Two small organs near the kidneys that release hormones.

AFP (alpha fetoprotein)
A tumor marker.

aggressive cancer cells
Cancer cells that are especially fast-growing and can spread beyond the area where they started.

allogeneic transplant
A transplant from a donor other than oneself or one's identical twin.

alopecia
The loss of hair, which may include all body hair and not only scalp hair.

analgesic
Any drug that relieves pain. Aspirin and acetaminophen are mild analgesics.

anemia
The condition of having a decreased number of red blood cells. May cause symptoms including tiredness, shortness of breath, and weakness.

anorexia
The loss of appetite.

antibody
A substance formed by the body to help defend it against infection.

antiemetic
A drug that prevents or controls nausea and vomiting. Also called antinausea.

antifungal agent
A drug used to treat fungal infections.

antigen
Any substance that causes the body to produce natural antibodies.

anti-HER2 antibody therapy
A medicine used to treat breast cancer with abnormal HER2 genes.

antineoplastic agent
A drug that prevents, kills or blocks the growth and spread of cancer cells.

aromatase inhibitor
A drug taken to either block the production of estrogen or block the action of estrogen on receptors. Sometimes prescribed as treatment for breast cancer to post-menopausal women.

arrhythmia
An irregular heartbeat.

aspiration
The process of removing fluid or tissue, or both, from a specific area.

autoimmunity
A condition in which the body's immune system mistakenly fights and rejects the body's own tissues.

autologous tissue reconstruction
Surgery that makes use of tissue from other parts of the body to create a new breast mound. It most often uses the muscles and fat of the abdominal wall or the back.

autologous transplant
A transplant from oneself.

axilla
The underarm.

axillary lymph node dissection
An operation to remove the lymph nodes in the fat pad of the underarm. The number of lymph nodes removed varies, but is usually ten to thirty.

axillary lymph nodes
The lymph nodes that are found in the underarms.

B

barium enema
The use of a milky solution (barium sulfate) as an enema to allow X-ray examination of the lower intestinal tract.

barium swallow
The use of a milky solution (barium sulfate) given orally to allow X-ray examination of the upper intestinal tract.

benign
Not cancerous.

bilateral mastectomy
Surgical removal of both breasts.

biological therapy
A type of cancer treatment that uses pills, shots, or IVs to cause the body's immune system to more effectively fight the cancer. Also called *immunotherapy*.

biopsy
The surgical removal of tissue for microscopic examination to aid in diagnosis.

blocks
Shielding blocks that shape the radiation field to completely conform to the tumor shape, thereby protecting healthy, normal tissue.

blood cell count
The number of red blood cells, white blood cells, and platelets in a sample of blood. This is also called a complete blood count (CBC).

blood cells
Minute structures produced in the bone marrow consisting of red blood cells, white blood cells, and platelets.

blood count
The number of red blood cells, white blood cells and platelets in a sample of blood.

bolus
Material (wet towel or gauze) that is applied to the treatment area to enhance the radiation dose to the skin surface.

bone marrow
The soft, spongy material found inside the bones. Blood cells are made in the bone marrow.

bone marrow biopsy and aspiration
A procedure in which a needle is inserted into a bone to withdraw a sample of bone marrow.

bone marrow suppression
A decrease in the production of blood cells.

bone marrow transplant
The infusion of bone marrow into a patient who has been treated with high-dose chemotherapy or radiation therapy. Patients may use their own marrow, which in some cases has been frozen.

- allogeneic
The infusion of bone marrow from one individual into another individual who is not an identical twin.

- autologous
The infusion of a patient's own bone marrow previously removed and stored.

- syngeneic

The infusion of bone marrow from one identical twin into another.

bone scan
A picture of the bones using a radioactive dye that shows any injury, disease or healing. This is a valuable test to determine if cancer has spread to the bones, if anticancer therapy has been successful, and if affected bony areas are healing.

brachytherapy
A method of delivering radiation therapy by introducing radioactive material into a needle or balloon implant that has been placed inside the body.

breast reconstruction
Additional surgery to rebuild a breast removed by a mastectomy. It is usually done by a plastic surgeon. It may be done at the same time as the mastectomy, called *immediate reconstruction*, or it may be done at a later time, called *delayed reconstruction*.

breast self-examination (BSE)
A manual self-examination of the breasts.

bronchoscopy
The insertion of a flexible, lighted tube through the mouth into the lungs to examine the lungs and airways.

C

cancer
A group of diseases in which malignant cells grow out of control and spread to other parts of the body.

cancer in situ
The stage where the cancer is still confined to the tissue in which it started.

candidiasis
A common fungal infection.

carcinogen
A substance that causes cancer. For example, nicotine in cigarettes is a carcinogen that causes lung cancer.

carcinoma
A type of cancer that starts in the skin or the lining of organs.

- **adenocarcinoma**
  A malignant tumor arising from glandular tissue.

- **basal cell carcinoma**
  The most common type of skin cancer.

- **bronchogenic carcinoma**
  A cancer originating in the lungs or airways.

- **cervical carcinoma**
  A cancer of the cervix (the neck of the uterus).

- **endometrial carcinoma**
  A cancer of the lining of the uterus.

- **squamous cell carcinoma**

A cancer arising from the skin or the surfaces of other structures, such as the mouth, cervix or lungs.

cardiomegaly
An enlargement of the heart.

CAT scan or CT scan (computed tomography scan)
A test using computers and X-rays to create images of various parts of the body.

catheter
A flexible tube through which fluids enter or leave the body.

CEA (carcinoembryonic antigen)
A blood tumor marker.

cellulitis
The inflammation of an area of the skin (epithelial layer).

central venous catheter
A special intravenous tubing that is surgically inserted into a large vein near the heart and exits from the chest or abdomen. The catheter allows medications, fluids, or blood products to be given and blood samples to be taken.

cervical nodes
Lymph nodes in the neck.

chemotherapy
The treatment of cancer with drugs.

- adjuvant chemotherapy
Chemotherapy given to kill any remaining cancer cells, usually after all detectable tumor is removed by surgery or radiotherapy.

- combination chemotherapy
The use of more than one drug during cancer treatment.

- neo-adjuvant chemotherapy
Chemotherapy that is used to shrink a tumor before surgery or radiation therapy.

chondrosarcoma
See **sarcoma**.

chronic
Persisting over a long period of time.

clean margins
When the area of normal tissue around the tumor is free of cancer cells.

close margins
When the cancer cells come near to the outer edge of the tissue around the tumor.

colonoscopy
A procedure to look at the colon or large bowel through a lighted, flexible tube.

colony-stimulating factor (CSF)
An injectable substance used to stimulate the bone marrow to produce more cells.

colostomy
A surgical procedure by which an opening is created between the colon and the outside of the abdomen to allow stool to be emptied into a collection bag.

colposcopy
Examination of the vagina and cervix with an instrument called a colposcope.

combination chemotherapy
See **chemotherapy**.

cone down/boost
Reduction of the size of the radiation field(s).

congestive heart failure
An inability of the heart to provide sufficient pump action to distribute blood throughout the body. Often accompanied by a buildup of fluid in the lungs or extremities or both, especially the legs.

cyst
An accumulation of fluid or semisolid material within a sac.

cystitis
An inflammation of the bladder.

D

diagnostic x-rays
Low energy X-rays used for diagnostic purposes (e.g., chest X-ray, CT scan, mammogram, etc.).

dosimetrist
A medical specialist who works with the radiation oncologists to determine the proper dose and method of delivery of radiation.

drain
A device attached near the incision temporarily after breast cancer surgery that collects blood and lymphatic fluid.

drug resistance
The result of cells' ability to evolve to resist the effects of a specific drug.

ductal carcinoma in situ (DCIS)
A non-invasive cancer that stays inside the milk ducts of the breast and usually does not spread.

dysphagia
Difficulty in swallowing.

dyspnea
Difficult or painful breathing; shortness of breath.

dysuria
Difficult or painful urination.

E

edema
The accumulation of fluid in part of the body.

effusion
A collection of fluid in a body cavity, usually between two adjoining tissues. For example, a pleural effusion is the collection of fluid between two layers of the pleura (the lung's covering).

electrocardiogram (EKG or ECG)
A test that takes recordings of the electrical activity of the heart.

electron beam radiation
A form of external radiation from a treatment machine (linear accelerator) that is used to treat tumor localized to superficial areas.

endoscopy
A procedure looking at the inside of body cavities, such as the esophagus (food pipe) or stomach.

ER negative
A cancer that does not have estrogen receptors.

ER positive
A cancer that does have estrogen receptors.

erythema
Redness of the skin.

erythrocyte
The red blood cell that carries oxygen to body cells and carbon dioxide away from body cells.

esophagitis
Inflammation of the esophagus (food pipe).

estrogen
A female hormone produced primarily by the ovaries.

estrogen receptor assay (ER assay)
A test that determines if breast cancer is stimulated by the hormone estrogen.

ewing's sarcoma
See **sarcoma**.

excision
Surgical removal.

external beam radiation therapy (EBRT)
A form of radiation therapy whereby the radiation is delivered via a beam from a linear accelerator.

extravasation
The leaking of intravenous fluids or medications into tissue surrounding the infusion site. Extravasation can cause tissue damage.

F

fine-needle aspirate

A procedure in which a needle is inserted, under local anesthesia, to obtain a sample for the evaluation of suspicious tissue.

FISH (Flourescence In Situ Hybridization) test
A test for the presence of additional copies of the HER2 gene.

fistula
An abnormal opening between two areas of the body.

fraction
The daily dose of radiation.

frozen section
A technique in which tissue is removed and then quick-frozen and examined under a microscope by a pathologist.

G

gene
Part of the body's code for making new cells and controlling the growth and repair of cells.

grade
A measure of how much the tumor cells look different from normal cells.

graft-versus-host disease
A condition whereby the body's immune system attacks part of the body itself as if it were foreign and a threat. This problem can arise as a result of a transplant.

granulocyte
A type of white blood cell that kills bacteria.

gray
The international unit of measurement of radiation dose.

groshong catheter
See **central venous catheter.**

guaiac test
A test that checks for hidden blood in the stool.

H

hematocrit (Hct)
The percentage of red blood cells in the blood. A low hematocrit measurement indicates anemia.

hematologist
A doctor who specializes in the problems of blood and bone marrow.

hematology
The science that studies the blood.

hematuria
Blood in the urine.

hemoccult (guaiac) test
A test that checks for hidden blood in the stool.

HER2/neu
A gene that helps control the growth and repair of cells.

herpes simplex
The most common virus that causes sores often seen around the mouth, commonly called cold sores.

herpes zoster
A virus that settles around certain nerves causing blisters, swelling and pain. This condition is also called shingles.

Hodgkin's disease
A cancer that affects the lymph nodes. See **lymphoma**.

hormonal therapy
A cancer treatment that uses drugs, synthetic hormones, or surgery to add, block, or remove hormones. Also called *endocrine therapy*.

hormone receptor test
A test to measure the amount of certain proteins, called *hormone receptors*, in cancerous tissue to determine if hormonal therapy would be an effective treatment.

hormone receptors
Tiny areas on cells that listen and respond to signals from hormones.

hormones
Substances secreted by various organs of the body that regulate growth, metabolism and reproduction.

hospice
A concept of supportive care to meet the special needs of patients and family during the terminal stages of illness. The care may be delivered in the home or hospital by a specially trained team of professionals.

human immunodeficiency virus (HIV)
The virus that causes AIDS.

human leukocyte antigen test (HLA)
A special blood test used to match a blood or bone marrow donor to a recipient for transfusion or transplant.

hyperalimentation
The intravenous administration of a highly nutritious solution.

I

IHC (Immunohistochemistry) test
A test for the presence of the HER2/neu protein.

ileostomy
A surgical opening in the abdomen connected to the small intestine to allow stool to be emptied into a collection bag.

immune system
The body's defensive system that fights against disease by attacking invaders such as germs and viruses.

Includes the spleen, lymph nodes, tonsils, bone marrow, and white blood cells.

immunity
The body's ability to fight infection and disease.

immunosuppression
Weakening of the immune system that causes a lowered ability to fight infection and disease.

immunotherapy
The artificial stimulation of the body's immune system to treat or fight disease.

in situ
A cancer that stays where it started instead of spreading.

infiltration
The leaking of fluid or medicines into tissues, which can cause swelling.

infusion
Delivering fluids or medications into the bloodstream over a period of time.

infusion pump
A device that delivers measured amounts of fluids or medications into the bloodstream over a period of time.

injection
The pushing of a medication into the body with the use of a syringe and needle.

- intramuscular (IM) injection
An injection into the muscle.

- intravenous (IV) injection
An injection into the vein.

- subcutaneous injection
An injection into the fatty tissue under the skin.

intensity modulated radiation therapy (IMRT)
A form of 3-dimensional conformal radiotherapy that modifies the radiation beam to vary the intensity of radiation.

interferon
A naturally produced chemical released by the body in response to viral infections. Interferon can be artificially produced and used as a form of immunotherapy.

interleukin
A naturally produced chemical released by the body.

interstitial breast implant
A series of needles or catheters that are placed through the breast into the lumpectomy cavity to deliver partial breast irradiation via high-dose rate *brachytherapy*.

intra-arterial (IA)
Within an artery.

intravenous (IV)
Within a blood vessel.

invasive
A cancer that spreads beyond the place where it started.

invasive ductal carcinoma (IDC)
A cancer that begins in the milk duct but grows into the normal breast tissue around it.

invasive lobular carcinoma (ILC)
A cancer that begins inside the milk-making gland, but grows into the normal breast tissue around it.

irregular cells
Cells that do not look like the healthy cells of the body.

L

laryngectomy
The surgical removal of the larynx.

lesion
A lump or abscess that may be caused by injury or disease, such as cancer.

leukemia
Cancer of the blood. White blood cells may be produced in excessive amounts and are unable to work properly.

leukocyte
See **white blood cell.**

leukopenia
A low number of white blood cells.

linear accelerator
A treatment machine that delivers X-rays or electrons. The machine is powered by an electrical source. It does not contain radioactive elements. When the electrical power on this machine is turned off, there is no remaining radiation in the room.

lobular carcinoma in situ (LCIS)
Cancer that started in, and has not spread from, inside the milk-making gland of the breast.

local therapy
Treatments that are used to destroy or control cancer cells in one part of the body rather than throughout the body.

lumpectomy
Removal of the cancerous lump and a rim of normal tissue around it called the *margins*; the breast is preserved. Also called *partial mastectomy* or *breast-conserving surgery*.

lymph nodes
Hundreds of small oval bodies that contain lymph. Lymph nodes act as our first line of defense against infections and cancer.

lymphatic invasion
The presence of cancer cells in the lymph vessels.

lymphangiogram
A test to look at the lymph nodes.

lymphatic system
A network that includes lymph nodes, lymph and lymph vessels that serves as a filtering system for the blood.

lymphedema
Swelling and discomfort in the breast or in the arm, either from obstructed cancerous lymph nodes or from surgically removed lymph nodes. A possible side effect of lymph node surgery or radiation.

lymphocytes
White blood cells that kill viruses and defend against the invasion of foreign material.

lymphoma
A cancer of the lymphatic system. Doctors differentiate the different lymphomas by the type of cell that is involved in the makeup of the tumor. Treatments depend on the type of cell that is seen.

M

malignant
Cancerous.

mammogram (mammography)
A low-dose X-ray/picture of the breasts to determine whether abnormal growths or cysts are present.

MammoSite RTS®
A radiation therapy system consisting of a balloon catheter that is used to deliver partial breast radiation using high-dose brachytherapy.

margins
The edge of the tissue sample that was removed when the tumor was removed.

mastectomy
The surgical removal of the breast.

- mastectomy – nipple-sparing
Removal of the breast that spares the nipple, areola, and the majority of the breast skin.

- mastectomy – radical
Removal of the entire breast along with underlying muscle and lymph nodes of the underarm.

- mastectomy – segmental (lumpectomy)
Removal of the lump and a small amount of surrounding breast tissue.

- mastectomy – simple (modified radical mastectomy)
Removal of the entire breast including the nipple and areola, and axillary lymph nodes.

- mastectomy – skin-sparing
Removal of the breast including the nipple and areola, but that spares the majority of the breast skin.

melanoma
A cancer of the pigment-forming cells of the skin or the retina of the eye.

metastasize

To spread from the first cancer site, for example, breast cancer that spreads to the bone.

milk ducts
Tiny tubes in the breast through which milk flows to the nipple.

milk lobules
The milk-making glands in the breast.

modified radical mastectomy
See **mastectomy**.

moist desquamation
Peeling and weeping of the skin occasionally seen as a side effect of radiation therapy.

monoclonal antibodies
Artificially manufactured antibodies specifically designed to find targets on cancer cells for diagnostic or treatment purposes.

MRI (magnetic resonance imaging)
A sophisticated test that provides in-depth images of organs and structures in the body.

mucosa (mucous membranes)
The lining of the mouth and gastrointestinal tract.

mucositis
Inflammation of the lining of the mouth or gastrointestinal tract.

myelogram
An X-ray procedure by which a dye is injected into the spinal column to show any pathology of the spinal cord.

myeloma
A malignant tumor of the bone marrow associated with the production of abnormal proteins.

myelosuppression
A decrease in the production of red blood cells, platelets and some white blood cells by the bone marrow.

N

negative margins
Absence of cancer cells in the tissue around the tumor.

neo-adjuvant chemotherapy
See **chemotherapy**.

neoplasm
A new growth of tissue or cells; a tumor that is generally malignant.

neutropenia
A decreased number of neutrophils, a type of white blood cell.

neutrophil
A type of white blood cell.

nipple-sparing mastectomy
See **mastectomy**.

non-hodgkin's lymphoma
A cancer of the lymphatic system. Non-Hodgkin's lymphoma is related to Hodgkin's disease but is made up of different cell types. See **lymphoma.**

non-invasive
A cancer that stays where it started without spreading to other areas of the body.

O

OCN (oncology certified nurse)
A registered nurse who has met the requirements and successfully completed a certification examination in oncology.

oncologist
A doctor who specializes in oncology.

oncology
The study and treatment of cancer. Doctors who specialize in oncology are called oncologists.

oncology clinical nurse specialist
A registered nurse with a master's degree who specializes in the education and treatment of cancer patients.

P

palliative treatment
Treatment aimed at the relief of pain and symptoms of disease but not intended to cure the disease.

Pap (Papanicolaou) smear
A test to detect cancer of the cervix.

paracentesis
Removing fluid from the abdomen using local anesthesia, a needle and syringe.

partial breast irradiation
Radiation treatment delivered only to the portion of the breast at the highest risk of recurrence—the lumpectomy cavity or tumor bed.

pathological fracture
A break in a bone usually caused by cancer or some disease condition.

pathologist
A doctor who specializes in studying tissue under a microscope to see if it is normal or affected by disease

pathology
The study of disease by the examination of tissues and body fluids under the microscope. A doctor who specializes in pathology is called a pathologist.

petechiae
Tiny areas of bleeding under the skin, usually caused by a low platelet count.

phlebitis

A painful inflammation of the veins.

photon beam radiation
A form of external radiation from a linear accelerator capable of treating tumors localized at deep sites in the body.

photosensitivity
Extreme sensitivity to the sun, leaving the patient prone to sunburns. This can be a side effect of some cancer drugs and radiation.

placebo
An inert substance often used in clinical trials for comparison.

platelet (Plt)
Cells in the blood that are responsible for clotting.

platelet count
The number of platelets in a blood sample.

polyp
A growth of tissue protruding into a body cavity, such as a nasal or rectal polyp. Polyps may be benign or malignant.

port—implanted
A catheter connected to a quarter sized disc that is surgically placed just below the skin in the chest or abdomen. The tube is inserted into a large vein or artery directly into the bloodstream. Fluids, drugs or blood products can be infused, and blood can be drawn through a needle that is stuck into the disc. Examples: **Port-o-cath, Infusaport, Lifeport**.

port—peritoneal
A catheter connected to a quarter-sized disc that is surgically placed in the abdomen. The catheter is inserted to deliver chemotherapy to the peritoneum (abdominal cavity).

port films
X-rays taken to verify that a patient is in the correct treatment position prescribed by the radiation oncologist, not to evaluate the response to treatment. The films may be taken electronically using a specialized imaging device. The port films or *electronic portal images* are checked by the radiation oncologist, radiation therapists, and quality assurance team to ensure that the radiation is being properly delivered.

positive margins
Presence of cancer cells right up to the edge of the tissue around the tumor.

PR negative
A cancer that does not have progesterone receptors.

PR positive
A cancer that has progesterone receptors.

pre-cancerous
A tumor that is not cancerous, but is a warning sign that you may get cancer in the future.

primary tumor
The original cancer site. For example, breast cancer that has spread to the bone is still called breast cancer.

progesterone

One of the female hormones produced by the ovaries.

progesterone-receptor assay
A test that determines if breast cancer is stimulated by the hormone progesterone.

prognosis
The projected outcome of a disease; the life expectancy.

PSA (prostate-specific antigen)
A marker used to determine prostate disease; it may be benign or malignant.

prosthesis
Artificial replacement of a missing body part.

protocol
A treatment plan.

purging
A process that bone marrow harvested from a patient is put through to attempt to eliminate cancer from it in preparation for an autologous transplant.

R

radiation field/portal
The area to which the radiation is being delivered.

radiation oncologist
A physician who specializes in radiation oncology.

radiation oncology registered nurse (RN)
A nurse who specializes in radiation oncology, helping the patient through the process from providing education before the procedure to coordinating support services after.

radiation physicist
A medical professional responsible for maintaining the treatment machines that deliver radiation and ensuring they are calibrated in accordance with quality standards.

radiation therapist
A medical professional who assists in the radiation oncology process by taking care of such tasks as positioning the patient for treatment and keeping records of all treatments given.

radiation therapy
Radiation treatment that damages or kills cancer cells.

radiation therapy implant(s)
Encapsulated radioactive sources which are inserted directly into the tumor.

radical mastectomy
See **mastectomy**.

radiologist
A doctor who specializes in the use of X-rays to diagnose and treat disease.

recurrence

The reappearance of a disease after a period of remission.

red blood cells (erythrocytes)
Cells in the blood that deliver oxygen to tissues and take carbon dioxide from them.

red blood count (RBC)
The number of red blood cells seen in a blood sample.

re-excision
Additional surgery to attempt to remove cancer that remained after a prior surgery.

regression
A decrease in the size of a tumor or in the extent of cancer in the body.

relapse
The reappearance of a disease after its apparent cessation.

remission
Complete or partial disappearance of the signs and symptoms of disease.

risk factor
Anything that increases a person's chances of developing cancer. For example, smoking is a risk factor for developing lung cancer.

S

sarcoma
A malignant tumor of muscles or connective tissue such as bone and cartilage.

- chondrosarcoma
A malignant tumor of cartilage that usually occurs near the ends of the long bones.

- Ewing's sarcoma
A malignant tumor starting in bone, affecting the bones of extremities. It often appears before the age of 20.

segmental mastectomy
See **mastectomy**.

sentinel lymph node biopsy
The removal of the lymph nodes that are first to receive drainage from the breast.

sentinel lymph node mapping
A procedure that uses dye to determine which of the lymph nodes are the first into which the breast drains.

seroma
A collection of fluid in a place where surgery has been performed.

shingles
See **herpes zoster.**

side effects
Secondary effects of drugs used for disease treatment.

sigmoidoscopy
The visual examination of the rectum and lower colon using a tubular instrument called a sigmoidoscope.

simulation
A diagnostic procedure that determines the exact location of the tumor area to be treated and its relationship to other normal tissues.

simulator
A machine that is used for **simulation**.

skin-sparing mastectomy
See **mastectomy**.

sputum
Secretions produced by the lungs.

staging
Determination of extent of the cancer in the body.

stem cell
A cell that can generate specialized cell types. Stem cells in bone marrow produce red blood cells, white blood cells, and platelets.

stem cell transplant
A cancer treatment where stem cells are transplanted into a patient to replace those killed off by high doses of chemotherapy or radiation.

syngeneic transplant
A transplant from an identical twin.

steroids
A type of hormone.

stoma
An artificial opening between two cavities or between a cavity and the surface of the body.

stomatitis
Temporary inflammation and soreness of the mouth.

surgical oncologist
A surgeon who provides cancer care.

systemic disease
A disease that affects the entire body instead of a specific organ.

systemic therapy
Treatments that are used to destroy or control cancer cells throughout the body rather than locally.

T

taste alteration
A temporary change in taste perception.

testicular self-examination (TSE)

A simple manual self-examination of the testes.

thoracentesis (pleural tap)
A procedure to remove fluids from the area between the two layers (pleura) covering the lung.

thrombocytopenia
An abnormally low number of platelets (thrombocytes). If the platelet count is too low, bleeding could occur.

tissue expander
A silicone balloon implanted beneath the muscles of the chest wall, used to stretch the skin for breast reconstruction surgery. Over a period of several weeks, the expander is gradually filled with salt water through a valve. When the tissue has grown a sufficient amount, it is removed, and a permanent breast implant is inserted.

tracheostomy
A surgical opening through the trachea in the neck to provide an artificial airway.

tumor
An abnormal overgrowth of cells. Tumors can be either benign or malignant.

U

ultrasound examination
The use of high frequency sound waves to aid in diagnosis.

ureterostomy
A surgical procedure consisting of cutting the ureters from the bladder and connecting them to an opening (see **stoma**) on the abdomen allowing urine to flow into a collection bag.

V

venipuncture
Puncturing a vein in order to obtain blood samples, to start an intravenous drip, or to give medication.

vesicant
A medication or agent that may cause blistering.

virus
A tiny infectious agent that is smaller than a bacterium. The common cold is caused by a virus, and the herpes simplex virus causes cold sores.

W

white blood cells (WBC)
General term for a variety of cells responsible for fighting invading germs, infection, and allergy-causing agents. Specific white blood cells include granulocytes and lymphocytes.

white blood count (WBC)
The actual number of white blood cells seen in a blood sample.

whole breast irradiation
Radiation delivered to the entire breast, rather than to only a portion of the breast.

X

x-ray
High-energy electromagnetic radiation used to diagnose and treat disease. Diagnostic test using high energy to visualize internal body organs. See **radiation therapy.**