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2019

Mantle Cell Lymphoma

NON-HODGKIN'S LYMPHOMA SERIES

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These guidelines are based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for B-Cell Lymphomas (Version 4.2019, June 18, 2019).

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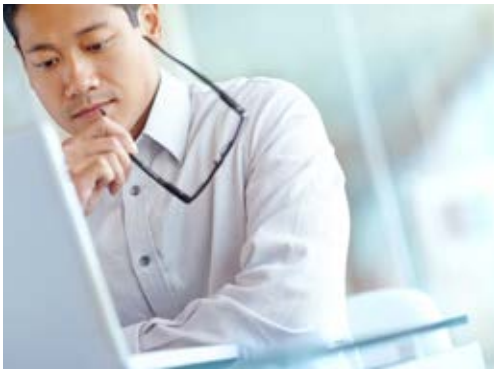
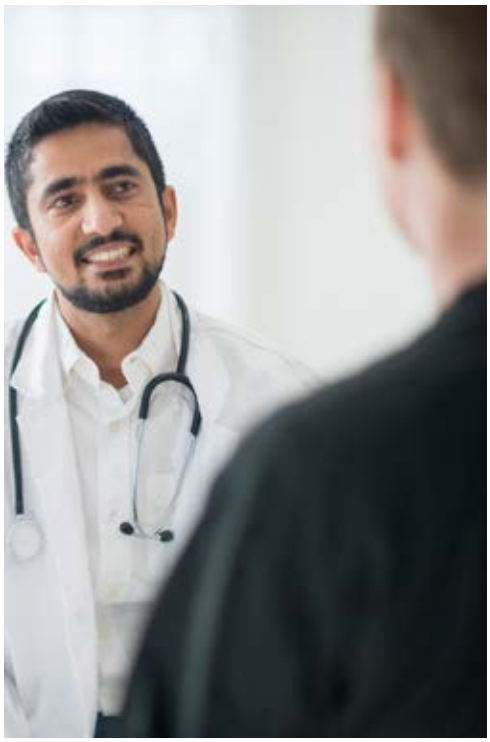
The Leukemia & Lymphoma Society (LLS)
LLS is dedicated to developing better outcomes for blood cancer patients through research, education and patient services and is happy to have this comprehensive resource available to patients. LLS.org/PatientSupport

The National Bone Marrow Transplant Link (nbmtLINK)
Educating and informing people about their cancer diagnosis as well as the transplant process is an important part of the National Bone Marrow Transplant Link's mission and contributes to the psychosocial support of bone marrow/stem cell transplant patients and their caregivers. For information and resources, please visit nbmtlink.org, call toll free at 800-LINK-BMT or e-mail, info@nbmtlink.org. The nbmtLINK is supportive of resources like the NCCN Guidelines for Patients. nbmtlink.org





Contents

1
MCL basics

You've learned that you have or may have lymphoma. It's common to feel shocked and confused. This chapter reviews some basics that may help you learn about mantle cell lymphoma.

Lymph system

Before learning about mantle cell lymphoma (MCL), it is helpful to know about the lymph (or lymphatic) system. It is one of 13 systems of the human body. It transports fluids to the bloodstream and fights germs. It supports your blood-flowing (cardiovascular) and disease-fighting (immune) systems.

Lymph

Cells are the building blocks of tissue in the body. The spaces between cells are filled with fluid. This fluid is called interstitial or tissue fluid. Most tissue fluid comes from parts of blood plasma that have passed out of blood vessels. Cells also release waste and other products into tissue fluid.

When tissue fluid increases, it drains into vessels. Almost all of tissue fluid drains back into blood vessels. The rest of it drains into lymph vessels. Once inside of lymph vessels, tissue fluid is called lymph. Lymph travels in lymph vessels back to the bloodstream.

The lymph system also collects fat and some vitamins from your gastrointestinal (GI) tract. After you eat, your stomach turns food into a liquid. Then, the liquid drains into your small intestine. Within your small intestine, fat and some vitamins are absorbed into lymph vessels. This fatty lymph, called chyle, travels in lymph vessels to the bloodstream.

Lymphoid tissues

Lymph and lymphoid tissue have high numbers of lymphocytes. Lymphocytes are a type of white blood cell. They are part of the immune system and help to fight germs. The three types of lymphocytes are B cells, T cells, and natural killer cells.

Lymph nodes are organized masses of lymphoid tissue. As lymph travels, it will pass through and be filtered by lymph nodes. There are hundreds of

lymph nodes throughout your body. **See Figure 1**. High numbers of lymph nodes exist in the middle of your chest, neck, armpit, groin, pelvis, and along your gut.

Other lymphoid tissues include the spleen, tonsils, and thymus. The spleen filters and kills germs in blood. Tonsils kill germs in lymph that enter through your mouth and nose. In children, the thymus stores T cells until they are able to fight germs. There are also small clumps of lymphoid tissue in your gut, thyroid, breasts, lungs, eyes, and skin.

A disease of cells

Your body is made of trillions of cells. Cancer is a disease of cells. There are many types of cells, so there are many types of cancers. Despite many types, all cancers share some common features. More research is needed to learn how cancers begin and worsen over time.

Lymphoma

Each type of cancer is named after the normal cell from which it formed. Lymphoma is a cancer of lymphocytes within the lymph system. There are two main types of lymphomas. Hodgkin lymphoma is defined by the presence of Reed-Sternberg or related cells. Non-Hodgkin's lymphomas include all the other types of lymphomas.

Mantle cell lymphoma

MCL is a type of non-Hodgkin's lymphoma. It is a cancer of B cells. There are many types of B cells and, thus, many B-cell cancers. MCL is named for the B cells from mantle zones within lymph nodes. Most cases of MCL form from these B cells.

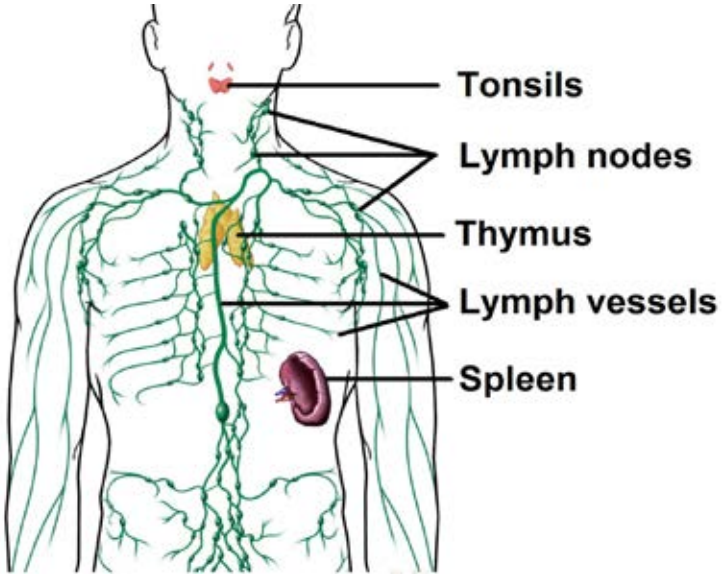
Cancer cells

When needed, normal cells grow and then divide to make new cells. When old or damaged, they die. Normal cells also stay in place.

Cancer cells don't behave like normal cells. They make new cells that aren't needed. They die slowly

Figure 1
Lymph system

The lymph (or lymphatic) system kills germs in the body and collects and transports lymph to the bloodstream.



when old or damaged. They can spread far through blood or lymph.

With lymphoma, cancer cells often build up in lymph nodes. They can grow through the lymph node and into nearby structures. Lymphoma can spread within and outside of the lymph system. Besides lymph nodes, it common for MCL to be found in the spleen, GI tract, and bone marrow.

Genetic changes

Many abnormal changes are needed for a cancer cell to form. These changes often include damage to the genetic information in a cell. Genetic information is passed down from parents to a child. It tells cells what to do. It is found within a part of a cell called the nucleus as shown in **Figure 2**.

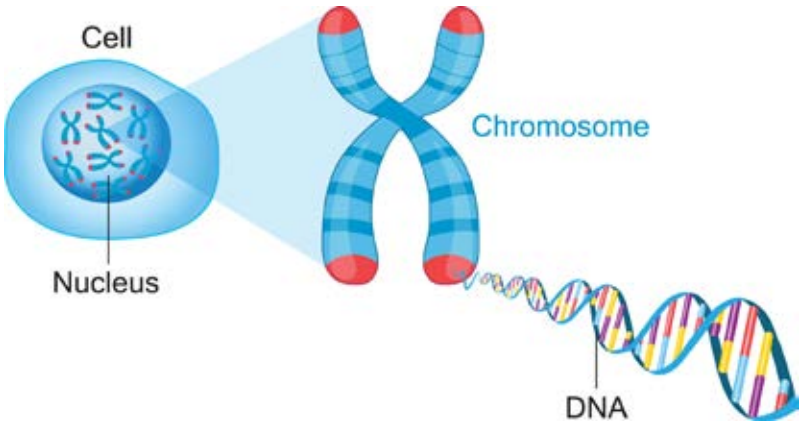
Genetic information is stored in DNA (or deoxyribonucleic acid). A gene is a small segment of DNA with complex instructions. Forty-six chromosomes carry and protect a long strand of DNA. In other words, DNA is like a how-to book that contains many complex paragraphs in its 46 chapters.

For most people, genetic changes that start cancer occur after birth. These changes are found only in the cancer cells. Much less often, people are born with genetic errors that promote cancer. These errors are present in all cells.

Cancer can cause genetic changes that support its growth. These changes occur only in the cancer cells. There can be abnormal changes to the DNA structure, genes, and chromosomes. Sometimes, the genetic changes produce an abnormal protein that drives cancer growth.

Figure 2
Genetic information

Most human cells contain genetic information. The information tells cells how to build your body and make it work. It is stored in DNA. A gene is a small segment of DNA that contains complex instructions. DNA is not one long strand but a set of 46 strands. Each strand is carried and protected in a chromosome.



Tests for MCL

One of the first signs of MCL may be a swelling of lymph nodes. These nodes may be in your neck, armpit, or groin area. The cancer may also affect your GI tract and bone marrow. GI symptoms include pain in your gut, diarrhea, and bloody stools. MCL can also cause abnormal blood counts. Tests needed to confirm (diagnose) MCL are described next.

Biopsy

The only way to know if you have cancer is to test tissue or fluid. A biopsy is a procedure that removes samples of fluid or tissue for testing. There are many types of biopsies.

For B-cell lymphomas, NCCN experts advise getting an incisional or excisional biopsy. These biopsies remove tissue through a cut into your skin. An incisional biopsy removes only a part of the tumor. An excisional biopsy removes the whole tumor and not much else.

Other biopsy methods remove very small samples with a needle. FNA (fine-needle aspiration) removes a small group of cells. A core needle biopsy removes a solid tissue sample.

Needle biopsies are not the best method for diagnosing lymphoma. Only in certain cases, a core needle biopsy may be used to obtain samples. For hard-to-reach lymph nodes, FNA and core needle biopsies may be used to obtain samples.

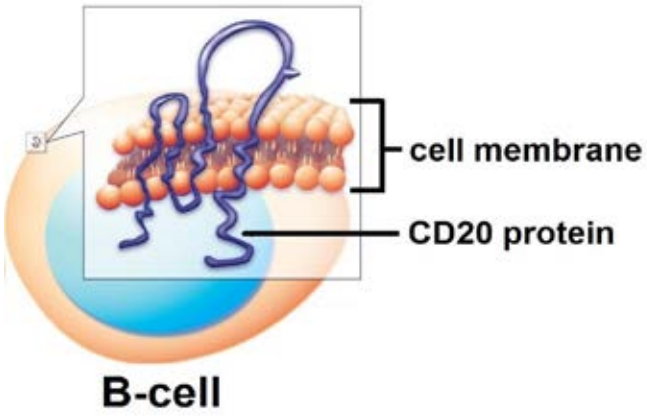
Blood and tissue samples will be sent to a doctor called a hematopathologist. These doctors are experts at diagnosing cancers of blood and immune cells. They spend much of their time working with samples of blood, bone marrow, and lymph nodes.

Protein tests

The hematopathologist will study the proteins on the surface and inside of cancer cells. **See Figure 3**. This is called immunophenotyping. It is done to assess the type of cancer.

Figure 3
Protein tests

Mantle cell lymphoma has common patterns of proteins in its cells. Immunophenotyping is the process of identifying the proteins in cells.



An immunohistochemistry (IHC) panel can be used to assess for BCL2, BCL6, CD3, CD5, CD10, CD20, CD21, CD23, cyclin D1, Ki-67, and TP53. Sometimes, it is helpful to include LEF1 and SOX11 in the panel. Flow cytometry may be done, too. If done, it should test for CD5, CD10, CD19, CD20, CD23, and kappa and lambda light chain proteins. It may be helpful to also test for CD200.

Genetic tests

MCL has common abnormal changes in chromosomes and genes. At times, it may help to test for certain changes. The results can be used for diagnosis and prognosis. Prognosis is the expected outcome of the cancer.

A translocation is a switching of parts between two chromosomes. Your doctor may want to test for a translocation between chromosomes 11 and 14. **See Figure 4**. Karyotype and fluorescence in situ hybridization (FISH) are lab tests used to assess chromosomes.

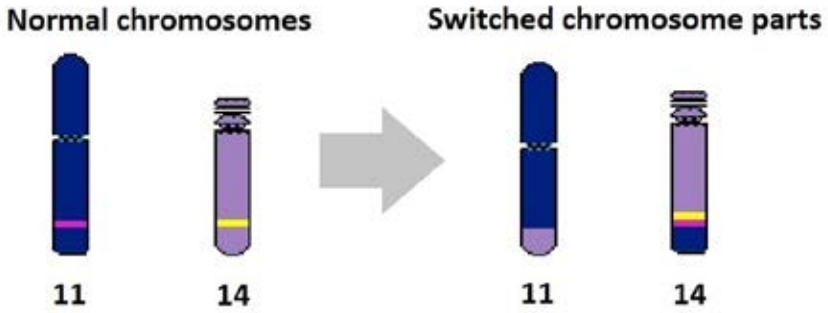
Mutations are abnormal changes in genes. Certain mutations are known to affect prognosis. At times, it may be useful to test for *IGHV* or *TP53* mutations. DNA sequencing is the name of the lab test used to assess for mutations in genes.

Pathology report

Lab results used for diagnosis are included in a pathology report. This report will be sent to your doctor. Ask for a copy. Your doctor will review the results with you. Take notes and ask questions.

Figure 4
Translocation

A translocation is a switching of parts between chromosomes. In mantle cell lymphoma cells, a translocation between chromosomes 11 and 14 is often present. The result is too much cyclin D1 on the surface of cancer cells.



IN DEPTH:

Diagnostic tests

There are many cancers of B cells. Knowing which type you have is very important so you get the right treatment. Mantle cell lymphoma (MCL) has common patterns or a "signature" of proteins. A hematopathologist will look for these patterns. If needed, he or she will also perform genetic tests.

Protein tests

To get the right diagnosis, a hematopathologist tests for many cell proteins. MCL cells often have CD5, CD20, CD43, and high levels of cyclin D1. CD10 and CD23 are found on most but not all the cells.

Sometimes the type of cancer is unclear, so more protein tests are done. MCL does not have LEF1 or CD200. If either protein is found, the cancer is likely chronic lymphocytic leukemia.

Rarely, MCL has normal cyclin D1 levels. If cyclin D1 is normal, testing for SOX11 can help guide diagnosis. SOX11 is found in almost every case of MCL. It can also help decide the prognosis. A low or absent SOX11 level is a good marker of slow-growing MCL.

Genetic tests

Translocations often occur in lymphomas. But, the chromosomes involved differ between the types of lymphomas. Testing for a translocation may help guide diagnosis.

In MCL, a translocation between chromosomes 11 and 14 is often found. It is referred to as t(11;14). This translocation can cause too much cyclin D1. If cyclin D1 is normal, it may be useful to test for t(11;14).

Certain test results can rule out MCL. If the translocation called t(14;18) is found, you likely have follicular lymphoma or maybe diffuse large B-cell lymphoma. Likewise, the cancer is likely to be chronic lymphocytic leukemia if errors are found in chromosomes 11, 12, 13, or 17.

To decide the prognosis, your doctor may want to test for gene mutations. MCL with *IGHV* mutations grows slowly. It often has low or absent SOX11 levels. *TP53* mutations are linked to a faster-growing MCL and poor outcomes with certain treatments.

Treatment types

This section briefly describes treatments for MCL. Not everyone receives the same treatment. Your doctor will tailor treatment to you based on tests described in this chapter and in **Part 2**. Treatment options based on the extent of cancer and other factors are listed in **Part 3**.

Clinical trial

One treatment choice may be a clinical trial. Joining a clinical trial is strongly supported by NCCN. NCCN believes that you will receive the best management if treated in a clinical trial.

A clinical trial is a type of research that studies a promising test or treatment in people. It gives people access to health care that otherwise couldn't usually be received. Ask your treatment team if there is an open clinical trial that you can join.

Chemotherapy

Chemotherapy works by damaging and killing cancer cells. It can also cause cells to destroy themselves. Chemotherapy is often used with rituximab to treat MCL. This combined treatment is called chemoimmunotherapy.

There are many types of chemotherapy used to treat MCL. Vincristine belongs in a class of drugs called vinca alkaloids. Doxorubicin belongs in the class of drugs called anthracyclines. Bendamustine, carboplatin, cisplatin, cyclophosphamide, and oxaliplatin belong to a class of drugs called alkylating agents. Methotrexate and cytarabine belong to a class of drugs called antimetabolites.

Corticosteroids

Corticosteroids are a class of drugs that are often used to relieve inflammation. They also are toxic to MCL cells. Prednisone and dexamethasone are the two main corticosteroids used for treatment. They are part of some chemoimmunotherapy regimens.

Antibody treatment

Antibodies are proteins of the immune system. They help your body fight germs and other threats. Monoclonal antibodies can be made in a lab to treat certain types of cancer.

Rituximab is an antibody treatment for MCL. It attaches to a surface protein on cells called CD20. It marks the cells so that your immune system can find and destroy them. It may directly kill cells, too.

Targeted therapy

Targeted therapy is a class of drugs. It impedes the growth process that is specific to cancer cells. It harms normal cells less than chemotherapy.

Kinase inhibitors

Within cells, kinases are part of many chemical pathways, some of which control cell growth. They change the action of proteins by attaching phosphates to them. Kinase inhibitors are drugs that stop kinases within cancer cells. Ibrutinib and acalabrutinib are drugs that stop a kinase called Bruton's tyrosine kinase. This lowers the number of new MCL cells being made.

BCL-2 inhibitors

BCL-2 is a protein inside of B cells that helps prevent cell death. BCL-2 may build up in cancer cells and stop them from dying. Venetoclax is a BCL-2 inhibitor that allows the cancer cells to self-destruct.

Immunomodulators

Immunomodulators are drugs that modify some parts of the immune system. Lenalidomide is an immunomodulator that is used to treat MCL. Rituximab, ibrutinib, or both may be received with lenalidomide.

Radiation therapy

Radiation therapy uses high-energy x-rays to treat MCL. The x-rays damage DNA in cancer cells. This either kills the cancer cells or stops new cancer cells

from being made. MCL that is limited in extent may be treated with involved-site radiation therapy (ISRT). For MCL that returns after treatment (relapse), radiation may be also be used.

Stem cell transplant

This treatment is also called a hematopoietic cell transplant. It replaces damaged or destroyed stem cells with healthy stem cells. The healthy stem cells form new bone marrow and blood cells. There are two types of transplants.

An autologous transplant is also called high-dose therapy with autologous stem cell rescue (HDT/ASCR). First, your healthy stem cells will be removed. You will then receive chemotherapy to kill the cancer cells. It will also kill the blood-producing cells in the bone marrow. Your healthy stem cells will then be returned to "rescue" your bone marrow.

An allogeneic transplant uses healthy stem cells from a donor. You'll first receive treatment called conditioning to kill your bone marrow cells. Next, you'll receive the donor cells. These cells will form new, healthy bone marrow. They will also attack cancer cells that weren't killed by prior treatment.

Review

- The lymph system consists of lymph and a network of vessels and organs. It helps kill germs in the body and transports fluids to the bloodstream.
- Lymphomas are cancers of lymphocytes within the lymph system. MCL is a cancer of lymphocytes called B cells. It often forms in B cells from the mantle zones of lymph nodes.
- An incisional or excisional biopsy is needed to diagnose B-cell lymphoma.
- Biopsy samples should be tested by a hematopathologist. The hematopathologist will perform a number of tests that assess for cell type, surface proteins, and maybe genetics.
- Clinical trials give people access to new tests and treatments that they otherwise couldn't have received.
- There are many types of treatments for MCL, including chemotherapy, corticosteroids, antibody treatment, targeted therapy, immunomodulators, radiation therapy, and stem cell transplant.

"Maintaining a positive attitude is important. Reach out to your family and friends for support."

– Scott
Husband and survivor

2
Treatment planning

Your doctors want to learn all about the type of lymphoma you have. This chapter describes who should receive which tests before cancer treatment. It also describes other types of care needed before treatment.

Doctors plan treatment using many sources of information. These sources include the health care listed in Guide 1. Another source is you. Tell your doctor your concerns and goals for treatment. Together, you can share in the decision-making process. Read **Part 4** to learn more about making treatment decisions.

Medical history

Your doctor will ask about any health problems and their treatment during your lifetime. Be prepared to tell what illnesses, injuries, and health conditions you have had. It may help to bring a list of old and new medicines to your doctor's office.

Symptoms are a part of your medical history. Some symptoms of MCL are tiredness, a feeling of fullness in your belly, and getting sick. This cancer may also cause "B symptoms." It's important that your doctor knows if you have them. These symptoms include fevers, chills, night sweats, and weight loss without dieting.

Some cancers and other health conditions can run in families. Thus, your doctor will ask about the medical history of your close blood relatives. Such family includes your siblings, parents, and grandparents. Be prepared to tell who has had what diseases and at what ages.

Guide 1. Health care before cancer treatment

Must haves
• Medical history
• Physical exam with performance status
• CBC with differential
• Comprehensive metabolic panel
• LDH
• Hepatitis B tests
• Diagnostic CT with contrast, whole-body PET/CT, or both
• Bone marrow biopsy ± aspiration
• Echocardiogram or MUGA scan if certain chemotherapy is planned
• Pregnancy test if you can have babies

Sometimes useful
• Uric acid
• Beta-2 microglobulin
• Hepatitis C tests
• Endoscopy and colonoscopy
• Lumbar puncture
• Fertility support if wanted

Physical exam

A physical exam is a study of your body. It is done to look for signs of disease. It is also used to help assess what treatments may be options.

To start, your basic body functions will be measured. These functions include your temperature, blood pressure, and pulse and breathing rate. Your weight will also be checked.

Your doctor will listen to your lungs, heart, and gut. He or she will also assess your eyes, skin, nose, ears, and mouth. Your doctor will feel parts of your body. This is done to see if organs are of normal size, are soft or hard, or cause pain when touched. Cancer and other health conditions can cause organs to become enlarged and hard.

Enlarged structures

The size of certain parts of your body should be checked. MCL is often found in lymph nodes. Thus, areas with lots of lymph nodes should be examined. High numbers of lymph nodes exist in the middle of your chest, neck, throat, armpit, groin, pelvis, and along your gut. Other parts of your body that should be checked include your spleen and liver.

Performance status

Your doctor will also rate your performance status. Performance status is your ability to do daily activities. It is used by doctors to assess if you can have certain treatments.

Blood tests

Doctors test blood to look for signs of disease. Blood tests are also used to learn if cancer treatment is needed now. Blood tests require a sample of your blood. Blood samples can be removed with a blood draw.

Blood draw

Some blood draws require no eating and drinking for hours. Your doctor will say if you can eat or drink. Blood samples will be removed from a vein with a needle.

CBC with differential

A CBC (complete blood count) measures parts of the blood. Test results include counts of white blood cells, red blood cells, and platelets. Cancer and other health problems can cause low or high counts.

There are several types of white blood cells. A differential counts the number of each type of cell. It also checks if the counts are in balance with each other.

Comprehensive metabolic panel

Chemicals in your blood come from your liver, bone, and other organs. A comprehensive metabolic panel often includes tests for up to 14 chemicals. The tests show if the levels of chemicals are too low or high. Abnormal levels can be caused by cancer or other health problems.

LDH

LDH (lactate dehydrogenase) is a protein that is in most cells. It gets into your blood when a cell is damaged. Thus, a high level of LDH is a sign of cell damage. High levels can be caused by a fast-growing cancer or other health problems.

Beta-2 microglobulin

Beta-2 microglobulin is a small protein found on most cells. It is released by cells into the blood, especially

by B cells. High levels can be caused by a fast-growing cancer or other health problems.

Uric acid

Uric acid is released by cells when DNA breaks down. Too much uric acid in the body is called hyperuricemia. You may have a high level of uric acid before starting treatment. Levels can be high due to fast-growing cancer, kidney disease, or other health problems.

Hepatitis tests

Hepatitis B and hepatitis C can become active again while taking chemoimmunotherapy. These infections often need treatment even if they are causing few symptoms. Tell your treatment team if you have hepatitis. If you're unsure, testing is advised.
A sample of your blood is needed for testing.

Imaging

Imaging makes pictures of the insides of your body. It can show which body parts have cancer. A radiologist is a doctor who is an expert in reading images. He or she will convey the test results to your doctor.

Diagnostic CT

Computed tomography (CT) takes many pictures of a body part from different angles using x-rays. **See Figure 5**. A computer combines the x-rays to make detailed pictures. A contrast dye should be used. It makes the pictures clearer.

A CT scan of your chest, belly area, and between your hip bones is needed. A CT of your neck is sometimes useful to learn if cancer is present.

Figure 5
CT machine

Pictures of the insides of your body can be made with imaging. During the scan, you will lie on a table that will move into the tunnel of the machine. The pictures will be viewed by a doctor who will look for signs of cancer.

Whole-body PET/CT

CT can be combined with PET (positron emission tomography). This imaging is called a PET/CT scan. PET shows how your cells are using a simple form of sugar (glucose). Contrast should be used with CT.

Whole-body PET/CT may be given in addition to or instead of CT. It can show the presence of cancer when other tests do not. PET/CT is also used to assess if treatment is working.

Biopsies

MCL can spread outside the lymph system. It is often but not always found in bone marrow at diagnosis. It commonly spreads to the gut (GI tract). Rarely, it spreads into spinal (or cerebrospinal) fluid. As such, you may have one or more of the following procedures.

Bone marrow biopsies

A bone marrow biopsy removes a core of bone. The bone sample will be sent a lab for cancer testing. You may also have a bone marrow aspiration, which removes liquid bone marrow. Both procedures may be done at the same time.

GI biopsies

Endoscopy and colonoscopy are procedures that allow doctors to see inside the GI tract. Samples of tissue that may have cancer will be removed and tested. A device called an endoscope is used in the upper GI tract. A device called a colonoscope is used in the lower GI tract. These procedures are needed to confirm early-stage cancer.

Lumbar puncture

A lumbar puncture is a procedure that removes spinal fluid. It is also called a spinal tap. Your doctor may suspect that the cancer is in spinal fluid based on symptoms or the cancer type.

Heart tests

Some cancer treatments can damage your heart. To plan treatment, your doctor may test how well your heart pumps blood. You may get an echocardiogram or multigated acquisition (MUGA) scan. An echocardiogram uses sound waves to make pictures of your heart. A MUGA scan makes pictures using a radiotracer and special camera.

“My initial symptom was an enlarged spleen. A bone marrow biopsy determined I had mantle cell lymphoma. It is a good thing my primary care doctor found the enlarged spleen because I did not have any of the usual symptoms.”

– Scott
Survivor, diagnosed at age 54

Fertility and pregnancy

Some cancer treatments can limit your ability to have a baby. If you want the choice of having babies after treatment or are unsure, tell your doctors. It may also help to talk with a fertility specialist before you begin cancer treatment.

A fertility specialist is an expert in helping men and women have babies. The fertility specialist can discuss with you how to have a baby after treatment. Some methods of fertility preservation are discussed next. If you are of childbearing age, important information on pregnancy is also addressed.

Sperm banking

Men who want to have children after cancer treatment can use sperm banking. Sperm banking stores semen for later use. This is done by freezing semen with sperm in liquid nitrogen. Talk to your treatment team about the costs of and how well sperm banking works.

Egg freezing

Like sperm banking, a woman's eggs can be removed, frozen, and stored for later use. Your frozen eggs can be fertilized with sperm beforehand. Also, a part of your ovary that contains eggs can be frozen and stored.

Pregnancy test

Some cancer treatments can harm an unborn baby. Get a pregnancy test before treatment if you may be pregnant now. Your treatment options will depend on the results.

Birth control

During treatment, take steps to avoid getting pregnant. Your doctors can tell you which birth control methods are best to use.

Review

- Your doctor will ask you about any health problems and treatments you've had in your lifetime. Tell your doctor if you have recently had fevers, night sweats, and weight loss without dieting. These can be symptoms of MCL.
- Your doctor will study your body to assess your health. He or she will check the size of your lymph nodes and organs. Your doctor will also rate your ability to do everyday activities.
- Blood tests will be done to look for signs of a fast-growing cancer and other health problems.
- Testing for hepatitis B or C may be needed in order to safely receive strong cancer treatments.
- Imaging tests allow your doctors to see inside your body without cutting into it. CT, whole-body PET/CT, or both are needed. Contrast should be used with CT.
- Cancer tests on bone marrow are needed. Cancer tests may also be done on tissue from your GI tract and spinal fluid.
- You may undergo heart tests to see if you are healthy enough to have certain cancer treatments.
- Talk to a fertility specialist to learn about ways to have babies after cancer treatment. If you may be pregnant, get a pregnancy test now. Some cancer treatments can harm unborn babies.

3
Treatment guide

This chapter presents the treatment options for MCL. It also reviews supportive care. Discuss with your doctor which options are right for you.

Overview

Treatment of MCL includes treatment of the cancer and support for you. At this time, MCL is not cured. Instead, the aim of treatment is to reduce symptoms, control the cancer, and extend life.

Initial treatment

Options for initial treatment depend on many factors. These factors include your age and level of fitness. Your doctor will also plan treatment based on the cancer. A very important factor is the cancer stage.

Cancer stage

The cancer stage describes the extent of cancer in the body. It is often based on blood tests, imaging, and biopsy results. The Lugano modification of the Ann Arbor Staging System is used for most lymphomas. In this system, there are five stages, which are:

- Stage I
- Stage II
- Stage II bulky
- Stage III
- Stage IV

Rarely, MCL is stage I or II at diagnosis. The extent of these cancers is limited. They involve lymph nodes or an organ on one side of the diaphragm. Stage II bulky is stage II with a large tumor.

Almost always, MCL is stage III or IV at diagnosis. The extent of these cancers is advanced. Stage III cancers involve 1) lymph nodes on both sides of the diaphragm or 2) lymph nodes above the diaphragm and the spleen. Stage IV cancers have widely spread outside of the lymph system.

Treatment approach

Your doctor will prescribe treatments that are safe and most likely to work. For MCL, chemoimmunotherapy is often used. This combined treatment uses both chemotherapy and rituximab.

For chemoimmunotherapy, there are regimens that are intense and less intense. Good results are often achieved with either intense or less intense regimens. More research is needed to learn if one regimen is better than another. Intense regimens have more risk of harm, so they aren't often given to older adults.

A stem cell transplant is an intense treatment. So, it may not be part of your plan. If it is, get a referral from your doctor to the transplant center early on. Switching from chemoimmunotherapy to the transplant may go more smoothly.

Treatment response

Testing will be done to assess treatment outcomes. These tests include PET/CT. Contrast should be used with the CT scan. Tests done after treatment will be compared to those done before treatment. In the Lugano system, there are 4 types of treatment response.

- **Complete response** is the best result. Tests detect less cancer to the extent that suggests a good outlook (prognosis). Organs are of normal size. Bone marrow is normal.
- **Partial response** is a decrease in cancer but less so than a complete response.

- **Stable disease** is no clear change in the cancer.
- **Progressive disease** is a worsening of the cancer.

Follow-up care

If there's a complete response, you may start follow-up care when initial treatment ends. This care may include a medical history, physical exam, imaging, and blood tests. See your doctor every 3 to 6 months for 5 years or when needed. After 5 years of normal results, see your doctor every year or as needed.

Second-line treatment

Doctors give second-line treatment for a few reasons. It is sometimes used to achieve a complete response if a partial response was attained. Likewise, it may also be given if the cancer is stable or progresses during initial treatment (also called refractory disease). A third reason for second-line treatment is to treat cancer that returns after a complete response. The return of cancer is called a relapse.

Supportive care

Cancer and its treatment may cause health problems. You may be treated to prevent or control these health problems. This treatment is a part of supportive care. Work with your doctor to create a supportive care plan that is best for you.

My first chemo was rather harsh. The second chemo was so much easier. That is the progress of newer, better chemo drugs."

– Scott
Survivor, relapsed at age 60

Initial treatment

The options for initial treatment are listed in Guide 2. Initial treatment is often given in phases. The first phase is called induction treatment. The goal is to greatly reduce the amount of cancer.

The second phase of treatment is started after a complete response is achieved. You may receive either consolidation or maintenance treatment. The goal of consolidation is to enhance the results of induction treatment. The goal of maintenance is to increase the amount of time until the cancer comes back. If you receive consolidation treatment, you will likely receive maintenance treatment as a third phase of treatment.

Guide 2. Initial treatment

Stages I and II

What are the options?
• ISRT
• Chemoimmunotherapy with ISRT
• Chemoimmunotherapy
• Watch and wait in certain cases

Stages II bulky, III, IV

What are the options?
• Clinical trial
• Chemoimmunotherapy followed by autologous transplant and maintenance rituximab
• Chemoimmunotherapy ± maintenance rituximab
• Watch and wait for slow-growing cancers

Stages I and II

Research on treatment for stages I and II is very limited. Involved-site radiation therapy (ISRT), less intense chemoimmunotherapy, or both may control cancer growth. If ISRT doesn't achieve a complete response, you may receive chemoimmunotherapy.

In rare cases, treatment may not be needed right away. Instead, a watch-and-wait approach is used to decide when to start treatment. This approach is also called observation.

Stages II bulky, III, IV

The best treatment for advanced disease is unknown. More research comparing treatments is needed. Currently used treatments are discussed in this section.

Treatment options are partly based on how fast the cancer is growing. Advanced MCL is described as either fast growing (aggressive) or slow growing (indolent). Most people have fast-growing MCL.

Fast growing

A clinical trial may be an option. Ask your doctor if there's a clinical trial that is right for you. NCCN experts strongly advise a clinical trial for cancers with *TP53* mutations.

Outside of a clinical trial, your treatment will depend on if you can have an autologous stem cell transplant. Not everyone can have a transplant. It is an intense treatment, so it may be harmful to some people.

If an autologous transplant is planned, you will first receive intense chemoimmunotherapy. After a complete response, you may get a transplant for consolidation treatment. After the transplant, rituximab will be re-started for maintenance treatment. You'll receive it every 8 weeks for 3 years.

If an autologous transplant is not planned, you will receive less intense chemoimmunotherapy. After a

complete response, rituximab may be re-started for maintenance treatment. It improves results of some induction regimens.

Slow growing

Doctors have found some markers of slow growth. The most common marker is an *IGHV* mutation that is linked to low or absent SOX11 levels. Other slow-growing cancers have normal SOX11 levels and may be present only in the gut, bone, or blood.

Some people with slow-growing MCL do not need treatment right away. Instead, a watch-and-wait approach is used to decide when to start treatment. One reason to begin treatment is when cancer symptoms start.

When treatment is needed, your doctor may reassess certain cancer features. He or she may assess if the cancer is now growing faster. The cancer may be biopsied again and tested for *TP53* mutations.

For *TP53*-mutated MCL, the best treatment is unknown. NCCN experts recommend a clinical trial. Other options are intense or less intense chemoimmunotherapy. After intense chemoimmunotherapy, you may receive an autologous transplant and rituximab maintenance. Some people receive rituximab maintenance after less intense chemoimmunotherapy.

IN DEPTH: Induction chemoimmunotherapy

Chemoimmunotherapy consists of multiple drugs. The regimens can be very complex. Ask your doctor about the details of your treatment. Which drugs will be given and at what doses? On which days will treatment be given? How many weeks will treatment last?

Intense regimens are used to treat stage II bulky, III, and IV if 1) a transplant is an option or 2) the cancer is slow growing and *TP53* negative.

Preferred regimens

- RDHA + (carboplatin, cisplatin, or oxaliplatin)
- RCHOP + RDHAP
- NORDIC regimen
- HyperCVAD

Other regimens

- Bendamustine + rituximab

Less intense regimens are used to treat 1) stage I and II, or 2) stage II bulky, III, and IV if a transplant is not an option.

Preferred regimens

- Bendamustine + rituximab
- VR-CAP
- RCHOP
- Lenalidomide + rituximab
- Modified rituximab-HyperCVAD if 66 years of age and older

Other regimens

- RBAC

Second-line treatment

Options for second-line treatment are listed in Guide 3. A clinical trial may be an option. Ask your doctor if there's a clinical trial that is right for you. Radiation therapy may be used to treat a cancer within a lymph node or other small area. Otherwise, second-line regimens are used. They may consist of one or more of these drugs: kinase inhibitor, immunomodulator, chemotherapy, or rituximab.

Your doctor may advise getting an allogeneic transplant for consolidation. It may extend how long the cancer stays in remission. Good results are more likely if prior chemotherapy worked well. An allogeneic transplant is an intense treatment, but you may be able to have reduced-intensity conditioning.

Guide 3. Second-line treatment

What are the options?
• Clinical trial
• Radiation therapy ◦ For stages I and II, ISRT may be used
• Second-line regimens

IN DEPTH:

Second-line regimens

Doctors plan treatment partly based on how long it takes for the cancer to relapse after induction treatment. A short response is shorter than the average time. A long response is longer than the average time. Ask your doctor what the average response time is for your induction treatment.

Short response

Preferred regimens

- Acalabrutinib
- Ibrutinib ± rituximab
- Lenalidomide ± rituximab
- Venetoclax

Other regimens

- Ibrutinib, lenalidomide, rituximab
- Venetoclax + ibrutinib

Long response

Preferred regimens

- Bendamustine ± rituximab
- Bortezomib ± rituximab

Other regimens

- Kinase inhibitors used for short responses
- Bendamustine, bortezomib, rituximab
- PEPC ± rituximab
- RCHOP
- VRCAP
- Second-line treatment for diffuse large B-cell lymphoma

Supportive care

Supportive care aims to improve your quality of life. It includes care for health issues caused by cancer or cancer treatment. It is also sometimes called palliative care. Palliative care is important for everyone, not just people at the end of life.

Treatment side effects

All cancer treatments can cause unwanted health issues. Such health issues are called side effects. Some side effects may be harmful to your health. Others may just be unpleasant.

Side effects differ between people. Some people have side effects while others have none. Some people have mild side effects while others have severe effects. Side effects depend on the treatment type, length or dose of treatment, and the person.

Most side effects appear shortly after treatment starts and will stop after treatment. However, other side effects are long-term or may appear years later. Ask your treatment team for a complete list of side effects of your treatments.

Tell your treatment team about any new or worse symptoms you get. There may be ways to help you feel better. There are also ways to prevent some side effects.

Review

- The goal of treatment is to achieve a complete response and to stop MCL from growing.
- Initial treatment is often given in phases. The first phase is induction treatment. You may or may not have consolidation treatment, maintenance treatment, or both.
- Chemoimmunotherapy is a common induction treatment. Consolidation with an autologous stem cell transplant may be received. Rituximab is used for maintenance.
- If initial therapy doesn't work or the cancer relapses, you may receive the same or a different type of treatment. Options for second-line treatment include kinase inhibitors and immunomodulators.
- Supportive care is an important part of your cancer care. It can help prevent or reduce side effects of treatment.

4
Making treatment decisions

Having cancer is very stressful. While absorbing the fact that you have cancer, you have to learn about tests and treatments. In addition, the time you have to accept a treatment plan feels short. Parts 1 through 3 described the cancer and treatment options. Part 4 aims to help you make decisions that are in line with your beliefs, wishes, and values.

It's your choice

The role each person wants in choosing his or her treatment differs. You may feel uneasy about making treatment decisions. This may be due to a high level of stress. It may be hard to hear or know what others are saying. Stress, pain, and drugs can limit your ability to make good decisions. You may feel uneasy because you don't know much about cancer. You've never heard the words used to describe cancer, tests, or treatments. Likewise, you may think that your judgment isn't any better than your doctors'.

Letting others decide which option is best may make you feel more at ease. But, whom do you want to make the decisions? You may rely on your doctors alone to make the right decisions. However, your doctors may not tell you which option to choose if you have multiple good options. You can also have loved ones help. They can gather information, speak on your behalf, and share in decision-making with your doctors. Even if others decide which treatment you will receive, you still have to agree by signing a consent form.

On the other hand, you may want to take the lead or share in decision-making. Most patients do. In shared decision-making, you and your doctors share information, weigh the options, and agree on a treatment plan. Your doctors know the science behind your plan but you know your concerns and goals. By working together, you are likely to get a higher quality of care and be more satisfied. You'll likely get the treatment you want, at the place you want, and by the doctors you want.

Questions to ask your doctors

You may meet with experts from different fields of medicine. Strive to have helpful talks with each person. Prepare questions before your visit and ask questions if the person isn't clear. You can also take notes and get copies of your medical records.

It may be helpful to have your spouse, partner, family member, or a friend with you at these visits. A patient advocate or navigator might also be able to come. They can help to ask questions and remember what was said. Suggested questions to ask are listed on the following pages.

What's my diagnosis and prognosis?

It's important to know that there are different types of cancer. Cancers with the same name can even greatly differ. Based on your test results, your doctor can tell you which type of cancer you have. Your doctor can also give a prognosis. A prognosis is a prediction of the pattern and outcome of a disease. Knowing the prognosis may affect what you decide about treatment.

1. What type of cancer do I have? From what type of cell did it form? Is this cancer common?
2. What is the cancer stage? Does this stage mean the cancer is advanced?
3. Is this a fast- or slow-growing lymphoma?
4. What tests do you recommend for me?
5. Where will the tests take place? How long will the tests take and will any test hurt?
6. What if I am pregnant?
7. How do I prepare for testing?
8. Should I bring a list of my medications?
9. Should I bring someone with me?
10. How often are these tests wrong?
11. Would you give me a copy of the pathology report and other test results?
12. Who will talk with me about the next steps? When?

What are my options?

There is no single treatment practice that is best for all people. There is often more than one treatment option along with clinical trial options. Your doctor will review your test results and recommend treatment options.

1. What will happen if I do nothing?
2. Can I just carefully monitor the cancer?
3. Do you consult NCCN recommendations when considering options?
4. Are you suggesting options other than what NCCN recommends? If yes, why?
5. Do your suggested options include clinical trials? Please explain why.
6. How do my age, health, and other factors affect my options? What if I am pregnant?
7. Which option is proven to work best?
8. Which options lack scientific proof?
9. What are the benefits of each option? Does any option offer a cure or long-term cancer control? Are my chances any better for one option than another? Less time-consuming? Less expensive?
10. What are the risks of each option? What are possible complications? What are the rare and common side effects? Short-lived and long-lasting side effects? Serious or mild side effects? Other risks?
11. How do you know if treatment is working?
12. What are my options if treatment isn't working?
13. What can be done to prevent or relieve the side effects of treatment?
14. What are my chances that the cancer will relapse?

What does each option require of me?

Many patients consider how each option will practically affect their lives. This information may be important because you have family, jobs, and other duties to take care of. You also may be concerned about getting the help you need. If you have more than one option, choosing the option that is the least taxing may be important to you:

1. Will I have to go to the hospital or elsewhere? How often? How long is each visit?
2. What do I need to think about if I will travel for treatment?
3. Do I have a choice of when to begin treatment? Can I choose the days and times of treatment?
4. How do I prepare for treatment? Do I have to stop taking any of my medicines? Are there foods I will have to avoid?
5. Should I bring someone with me when I get treated?
6. Will the treatment hurt?
7. How much will the treatment cost me? What does my insurance cover?
8. Will I miss work or school? Will I be able to drive?
9. Is home care after treatment needed? If yes, what type?
10. How soon will I be able to manage my own health?
11. When will I be able to return to my normal activities?

What is your experience?

More and more research is finding that patients treated by more experienced doctors have better results. It is important to learn if a doctor is an expert in the cancer treatment he or she is offering.

1. Are you board-certified? If yes, in what area?
2. How many patients like me have you treated?
3. How many procedures like the one you're suggesting have you done?
4. Is this treatment a major part of your practice?
5. How many of your patients have had complications?

Deciding between options

Deciding which option is best can be hard. Doctors from different fields of medicine may have different opinions on which option is best for you. This can be very confusing. Your spouse or partner may disagree with which option you want. This can be stressful. In some cases, one option hasn't been shown to work better than another. Some ways to decide on treatment are discussed next.

Second opinion

The time around deciding a treatment is very stressful. People with cancer often want to get treated as soon as possible. They want to make their cancer go away before it spreads farther. While cancer can't be ignored, usually there is time to think about and choose which option is best for you.

You may wish to have another doctor review your test results and suggest a treatment plan. This is called getting a second opinion. You may completely trust your doctor, but a second opinion about which option is best can help.

Copies of the pathology report, imaging, and other test results need to be sent to the doctor giving the second opinion. Some people feel uneasy asking for copies from their doctors. However, a second opinion is a normal part of cancer care.

When doctors have cancer, most will talk with more than one doctor before choosing their treatment. What's more, some health plans require a second opinion. If your health plan doesn't cover the cost of a second opinion, you have the choice of paying for it yourself.

If the two opinions are the same, you may feel more at peace about treatment. If the two opinions differ, think about getting a third opinion. A third opinion may help you decide between your options.

Choosing your cancer treatment is a very important decision. It can affect your length and quality of life.

Support groups

Support groups often include people at different stages of treatment. Some may be in the process of deciding while others may be finished with treatment. At support groups, you can ask questions and hear about the experiences of other people with MCL. If your hospital or community doesn't have support groups for people with MCL, check out the websites on the next page.

Compare benefits and downsides

Every option has benefits and downsides. Consider these when deciding which option is best for you. Talking to others can help identify benefits and downsides you haven't thought of. Scoring each factor from 0 to 10 can also help since some factors may be more important to you than others.

Websites

American Cancer Society
cancer.org/cancer/non-hodgkin-lymphoma.html

Be The Match
bethematch.org

BMT InfoNet
bmtinfonet.org

The Leukemia & Lymphoma Society (LLS)
LLS.org/PatientSupport

National Cancer Institute
www.cancer.gov/types/lymphoma

National Coalition for Cancer Survivorship
canceradvocacy.org/toolbox

nbmtLINK
nbmtlink.org

NCCN for Patients®
nccn.org/patients

Review

- Shared decision-making is a process in which you and your doctors plan treatment together.
- Asking your doctors questions is vital to getting the information you need to make informed decisions.
- Getting a second opinion, attending support groups, and comparing benefits and risks may help you decide which treatment is best for you.

LLS provides a number of ways to assist newly diagnosed patients from peer to peer counseling to financial assistance to family support groups."

– Scott
Survivor, age 68

Words to know

allogeneic stem cell transplant
A cancer treatment that replaces abnormal blood stem cells with healthy donor cells. Also called allogeneic hematopoietic cell transplant.

autologous blood stem cell transplant
A cancer treatment that destroys cancer cells with intense treatment then rebuilds destroyed bone marrow with your own healthy blood stem cells. Also called an HDT/ASCR (high-dose therapy with autologous stem cell rescue).

B cell
A type of a white blood cell called a lymphocyte. Also called B-lymphocyte.

B symptoms
Fevers, heavy night sweats, and weight loss without dieting caused by B-cell cancers.

beta-2 microglobulin
A small protein made by many types of cells.

biopsy
A procedure that removes fluid or tissue samples to be tested for a disease.

bone marrow
The sponge-like tissue in the center of most bones.

bone marrow aspiration
A procedure that removes a liquid bone marrow sample to test for a disease.

bone marrow biopsy
A procedure that removes bone and solid bone marrow samples to test for a disease.

cancer stage
A rating of the outlook of a cancer based on its growth and spread.

chemotherapy
Cancer drugs that stop the cell life cycle so cells don't increase in number.

chromosome
The structures within cells that contain coded instructions for cell behavior (genes).

clinical trial
A type of research that assesses how well health tests or treatments work in people.

colonoscopy
A procedure to look inside the colon with a device that is guided through the anus.

complete blood count (CBC)
A lab test that measures the number of red blood cells, white blood cells, and platelets.

complete response
An absence of all signs and symptoms of cancer after treatment.

computed tomography (CT)
A test that uses x-rays from many angles to make a picture of the insides of the body.

consolidation
A treatment phase to further reduce the number of cancer cells.

contrast
A dye put into your body to make clearer pictures during imaging tests.

corticosteroid
A drug used to reduce redness, swelling, and pain, but also to kill cancer cells.

deoxyribonucleic acid (DNA)
A chain of chemicals in cells that contains coded instructions for making and controlling cells.

diagnosis
An identification of an illness based on tests.

differential
A lab test of the number of white blood cells for each type.

echocardiogram
A test that uses sound waves to make pictures of the heart.

endoscopy
A procedure to work inside the digestive tract with a device that is guided through natural openings.

fertility specialist
An expert who helps people to have babies.

flow cytometry
A lab test of substances on the surface of cells to identify the type of cells present.

fluorescence in situ hybridization (FISH)
A lab test that uses special dyes to look for abnormal chromosomes and genes.

FNA
fine-needle aspiration

gastrointestinal (GI) tract
The group of organs through which food passes after being eaten. Also called digestive tract.

gene
Coded instructions in cells for making new cells and controlling how cells behave.

HDT-ASCR
high-dose therapy-autologous stem cell rescue

imaging
A test that makes pictures (images) of the insides of the body.

immune system
The body's natural defense against infection and disease.

immunohistochemistry (IHC)
A lab test of cancer cells to find specific cell traits involved in abnormal cell growth.

immunomodulator
A cancer drug that modifies some parts of the body's disease-fighting system.

immunotherapy
A treatment with drugs that may help the body find and destroy cancer cells.

induction
The first treatment that is given to greatly reduce the extent of cancer.

involved-site radiation therapy (ISRT)
Treatment with radiation that is delivered to lymph nodes and nearby sites with cancer.

karyotype
A lab test that makes a map of chromosomes to find defects.

kinase inhibitor
A drug that blocks the transfer of phosphate.

lactate dehydrogenase (LDH)
A protein that helps to make energy in cells.

lumbar puncture
A procedure that removes spinal fluid with a needle.

lymph
A clear fluid containing white blood cells.

lymph node
A small, bean-shaped, disease-fighting structure.

lymph system
A network of organs and vessels that collects and transports a fluid called lymph.

lymphocyte
One of three main types of white blood cells that help protect the body from illness.

lymphoma
A cancer of white blood cells called lymphocytes that are within the lymph system.

maintenance
A treatment phase that is given to prolong good treatment results.

mantle zone
A ring of resting B-cells within disease-fighting structures called lymph nodes.

MCL
mantle cell lymphoma

medical history
A report of all your health events and medications.

monoclonal antibody
A type of cancer drug that stops growth signals.

multigated acquisition (MUGA) scan
A test that uses radiation to make pictures of the heart.

mutation
An abnormal change.

physical exam
A study of the body by a health expert for signs of disease.

positron emission tomography (PET)
A test that uses radioactive material to see the shape and function of body parts.

prognosis
The likely course and outcome of a disease based on tests.

radiation therapy
A treatment that uses intense energy to kill cancer cells.

relapse
The return of cancer after a period of improvement.

side effect
An unhealthy or unpleasant physical or emotional response to treatment.

spleen
An organ to the left of the stomach that helps protect the body from disease.

supportive care
Health care that includes symptom relief but not cancer treatment. Also called palliative care.

T cell
A type of a white blood cell called a lymphocyte.

translocation
The switching of parts between chromosomes.

white blood cell
A type of blood cell that fights disease and infection.

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NCCN Cancer Centers

Abramson Cancer Center
at the University of Pennsylvania
Philadelphia, Pennsylvania
800.789.7366
pennmedicine.org/cancer

Fred & Pamela Buffett Cancer Center
Omaha, Nebraska
800.999.5465
nebraskamed.com/cancer

Case Comprehensive Cancer Center/
University Hospitals Seidman Cancer
Center and Cleveland Clinic Taussig
Cancer Institute
Cleveland, Ohio
800.641.2422 • UH Seidman Cancer Center
uhhospitals.org/seidman
866.223.8100 • CC Taussig Cancer Institute
my.clevelandclinic.org/services/cancer
216.844.8797 • Case CCC
case.edu/cancer

City of Hope National Medical Center
Los Angeles, California
800.826.4673
cityofhope.org

Dana-Farber/Brigham and
Women's Cancer Center
Massachusetts General Hospital
Cancer Center
Boston, Massachusetts
877.332.4294
dfbwcc.org
massgeneral.org/cancer

Duke Cancer Institute
Durham, North Carolina
888.275.3853
dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427
foxchase.org

Huntsman Cancer Institute
at the University of Utah
Salt Lake City, Utah
877.585.0303
huntsmancancer.org

Fred Hutchinson Cancer
Research Center/Seattle
Cancer Care Alliance
Seattle, Washington
206.288.7222 • seattlecca.org
206.667.5000 • fredhutch.org

The Sidney Kimmel Comprehensive
Cancer Center at Johns Hopkins
Baltimore, Maryland
410.955.8964
hopkinskimmelcancercenter.org

Robert H. Lurie Comprehensive
Cancer Center of Northwestern
University
Chicago, Illinois
866.587.4322
cancer.northwestern.edu

Mayo Clinic Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
800.446.2279 • Arizona
904.953.0853 • Florida
507.538.3270 • Minnesota
www.mayoclinic.org/cancercenter

Memorial Sloan Kettering
Cancer Center
New York, New York
800.525.2225
mskcc.org

Moffitt Cancer Center
Tampa, Florida
800.456.3434
moffitt.org

The Ohio State University
Comprehensive Cancer Center -
James Cancer Hospital and
Solove Research Institute
Columbus, Ohio
800.293.5066
cancer.osu.edu

O'Neal Comprehensive
Cancer Center at UAB
Birmingham, Alabama
800.822.0933
uab.edu/onealcancercenter/

Roswell Park Comprehensive
Cancer Center
Buffalo, New York
877.275.7724
roswellpark.org

Siteman Cancer Center at Barnes-
Jewish Hospital and Washington
University School of Medicine
St. Louis, Missouri
800.600.3606
siteman.wustl.edu

St. Jude Children's
Research Hospital
The University of Tennessee
Health Science Center
Memphis, Tennessee
888.226.4343 • stjude.org
901.683.0055 • westclinic.com

Stanford Cancer Institute
Stanford, California
877.668.7535
cancer.stanford.edu

UC San Diego Moores Cancer Center
La Jolla, California
858.657.7000
cancer.ucsd.edu

UCSF Helen Diller Family
Comprehensive Cancer Center
San Francisco, California
800.689.8273
cancer.ucsf.edu

University of Colorado Cancer Center
Aurora, Colorado
720.848.0300
coloradocancercenter.org

University of Michigan
Rogel Cancer Center
Ann Arbor, Michigan
800.865.1125
mcancer.org

The University of Texas
MD Anderson Cancer Center
Houston, Texas
800.392.1611
mdanderson.org

University of Wisconsin
Carbone Cancer Center
Madison, Wisconsin
608.265.1700
uwhealth.org/cancer

Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
800.811.8480
vicc.org

Yale Cancer Center/
Smilow Cancer Hospital
New Haven, Connecticut
855.4.SMILOW
yalecancercenter.org

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NCCN GUIDELINES FOR PATIENTS®

Mantle Cell Lymphoma

2019

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