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LIVER CANCER

Overview

Primary liver cancer occurs when cancerous (malignant) cells begin to grow in the tissues of your liver. Although many cancers are on the decline, the incidence of primary liver cancer in the United States increased more than 70 percent between 1975 and 1995. The increase is linked to rising rates of hepatitis B and C infection — the leading causes of liver cancer.

Far more common than primary liver cancer, however, is cancer that occurs when tumors from other parts of the body spread (metastasize) to the liver. The liver is especially vulnerable to invasion by tumor cells and with the exception of the lymph nodes, is the most common site of metastasis.

Because liver cancer is rarely discovered early, the prognosis is often poor. Yet even in advanced cases, treatment can help relieve symptoms and improve quality of life. In addition to standard treatments such as surgery, chemotherapy and radiation, new and less invasive therapies may be an option for some people.

But the most encouraging news about liver cancer is that you can greatly reduce your risk by receiving a vaccine that protects you from the hepatitis B virus (HBV). Lifestyle changes can help prevent other major causes of liver cancer, such as hepatitis C and cirrhosis.

Signs and symptoms

Most people don't have signs and symptoms in the early stages of liver cancer, which means the disease may not be detected until it's quite advanced. When symptoms do appear, they may include some or all of the following:

- Loss of appetite and weight.
- Abdominal pain, especially in the upper right part of your abdomen, which may extend into your back and shoulder.
- Nausea and vomiting.
- General weakness and fatigue.
- An enlarged liver.
- Abdominal swelling (ascites).

- Yellowing of your skin and the whites of your eyes (jaundice) due to a buildup of bilirubin — the residue from the breakdown of red blood cells.

Normally, the liver processes bilirubin so that it can be eliminated from your body. But liver disease can cause this substance to accumulate in your blood, turning your skin and the whites of your eyes yellow and your urine dark brown.

Causes

Weighing between 3 and 4 pounds and about the size of a football, your liver is the largest internal organ in your body. It's located in the upper right portion of your abdomen, beneath your diaphragm and above your stomach. Your liver is divided into two main sections (lobes). Each lobe is made up of thousands of smaller lobes (lobules), which are connected to a network of ducts. The lobules are the functioning parts of your liver and perform hundreds of tasks essential for your health and well-being.

Your liver processes most of the nutrients absorbed from your small intestine and determines how much sugar (glucose), protein and fat enter your bloodstream. It also manufactures blood-clotting substances and certain proteins and every day produces nearly a quart of bile — a fluid that helps your body digest fats.

Your liver also performs a vital detoxifying function by removing drugs, alcohol and other harmful substances from your bloodstream. At any one time your liver holds about 13 percent of your body's total blood, which enters the liver through two vascular systems: the hepatic artery and portal vein.

Because of the complexity of the liver and its exposure to so many potentially toxic substances, it would seem especially vulnerable to disease. But the liver has an amazing capacity for regeneration — it can heal itself by replacing or repairing injured tissue. In addition, healthy cells will take over the function of damaged cells, either indefinitely or until the damage has been repaired. Yet in spite of this, your liver is prone to a number of diseases that can cause serious or irreversible damage. One of these diseases is primary liver cancer.

In liver cancer some cells begin to grow abnormally. It's not completely understood why this happens, but researchers believe that cancer starts with damage to DNA — the material that contains the instructions for every chemical process in your body, including the rate of cellular growth. DNA damage causes changes in these instructions. One result is that cells may begin to grow out of control and eventually form a tumor — a mass of malignant cells.

Factors known to damage DNA in liver cells include:

Hepatitis B and C. Worldwide, chronic infection with the hepatitis B virus (HBV) or hepatitis C virus (HCV) is the most common cause of liver cancer. Both types of hepatitis are highly contagious. HBV spreads through unprotected sexual contact and

shared contaminated needles. In addition, a mother who has the virus can transmit it to her baby.

HCV is transmitted primarily through transfusions with blood that hasn't been screened for HCV, through contaminated needles used to inject drugs or, less commonly, through needles used in tattooing or body piercing. In some cases, HCV may be transmitted sexually.

Cirrhosis. In the United States, alcohol abuse is the most common cause of cirrhosis — a process of scarring in the liver that may result from several different conditions. Hereditary hemochromatosis — which causes excess iron to accumulate in your liver and other tissues — or chronic infection with HBV or HCV also can lead to cirrhosis.

Long-term exposure to aflatoxins. These highly toxic carcinogens are formed when certain crops or foods are contaminated with the fungus *Aspergillus flavus*. Aflatoxins can damage the p53 gene, which normally works to prevent excessive cell growth. Although the risk from aflatoxins in the United States is slight, the toxins have been found in corn and corn products, peanuts and peanut products, cottonseed, milk, Brazil nuts, pecans, pistachios and walnuts. As a result, the Food and Drug Administration has instituted a number of procedures to identify and measure aflatoxins in the food supply.

Vinyl chloride and thorium dioxide (Thorotrast). Vinyl chloride is a chemical used to manufacture plastics. Thorotrast was at one time given to people undergoing X-ray tests. Both chemicals are known to play a role in the development of rare cancers that begin in the liver's blood vessels (angiosarcomas or hemangiosarcomas).

Arsenic. Drinking water contaminated with arsenic, a known carcinogen, increases your risk of liver cancer.

Types of primary liver cancer

The various kinds of primary liver cancer and their causes include:

Hepatocellular carcinoma. This is the most common form of primary liver cancer in both children and adults. It starts in the hepatocytes, the main type of liver cell, but can spread in different ways — as a single tumor that slowly invades the rest of the liver or as cancer that immediately spreads throughout the entire organ. The most common causes of hepatocellular carcinoma include cirrhosis, hepatitis B or C infection and ingestion of aflatoxin-contaminated food.

Cholangiocarcinoma. This type of cancer begins in the small bile ducts within the liver. You're at increased risk of developing cholangiocarcinoma if you have gallstones or ulcerative colitis. Certain liver parasites commonly found in parts of Southeast Asia also may contribute to this type of cancer.

Hepatoblastoma. This rare type of liver cancer affects children younger than 4 years of age and may be caused by an abnormal gene. Fortunately, most children with hepatoblastoma can be successfully treated.

Angiosarcoma or hemangiosarcoma. These rare cancers begin in the blood vessels of the liver and are associated with exposure to industrial chemicals such as vinyl chloride or the drug thorium dioxide (Thorotrast). They are much less likely to occur today. Medical use of Thorotrast was discontinued nearly 50 years ago, and workers are now better protected from exposure to carcinogenic chemicals.

Metastatic cancer

In the United States, most cancer found in the liver has spread there from another part of the body. Rather than being referred to as liver cancer, this type of cancer is usually named after the organ where it originated and is further described as "metastatic." For instance, cancer that has spread to the liver from the colon is referred to as metastatic colon cancer.

Metastatic cancers form when malignant cells detach from the primary cancer and travel through the body in the circulatory or lymphatic system. Because the liver is close to a number of significant organs — including the pancreas, gall bladder, stomach, colon, breasts and lungs — and because the liver is richly supplied with blood, it's especially vulnerable to metastatic tumors. Secondary liver cancer occurs in more than 75 percent of all people with advanced cancer in other organs.

Types of benign tumors

Noncancerous (benign) tumors also can develop in the liver. They include:

Hemangioma. This is the most common type of benign liver tumor. It affects the liver's blood vessels and usually results from a malformation of tissue during fetal development. Most hemangiomas of the liver don't cause signs or symptoms and don't need treatment.

Hepatic adenoma. This benign tumor originates in the hepatocytes — the main type of liver cell. In most cases, hepatic adenomas don't cause signs or symptoms, but occasionally you may experience abdominal pain, a mass in the abdomen or blood loss. You're more likely to develop this type of benign tumor if you use birth control pills, but simply stopping the pill often causes the tumor to shrink.

Focal nodular hyperplasia. This tumor is a combination of several types of cells, including hepatocytes, bile duct cells and connective tissue. Like other benign tumors, it's more common in women than in men and usually doesn't cause signs or symptoms.

Risk factors

Liver cancer can affect people of all ages and races, but certain factors may increase your risk, including:

Sex. Men are two to three times as likely to develop liver cancer as are women.

Race. Overall, Asian-Americans have the highest rate of liver cancer in the United States. Black and Hispanic-Americans also have higher rates than do whites.

Chronic infection with HBV or HCV. Infection with hepatitis B or C is by far the most important risk factor for liver cancer. Worldwide, HBV infection causes 80 percent of cases of hepatocellular carcinoma. In the United States, hepatitis C infection is a greater risk factor.

Having cirrhosis. This progressive and irreversible condition causes scar tissue to form in your liver and increases your chances of developing liver cancer.

Exposure to aflatoxins. For people living in Africa and parts of Asia, consuming foods contaminated with aflatoxins greatly increases the risk of liver cancer.

Excessive alcohol consumption. Consuming more than a moderate amount of alcohol can lead to irreversible liver damage and increase your risk of liver cancer. Moderate consumption is defined as no more than two drinks a day for men and one for women. A drink is one 4- to 5-ounce glass of wine, 12 ounces of beer or a 1.5-ounce shot of liquor.

Smoking. Smoking tobacco of any kind makes it more likely that you'll develop liver cancer.

Exposure to vinyl chloride, thorium dioxide (Thorotrast) and arsenic. Exposure to any of these chemicals can contribute to liver cancer.

Screening and diagnosis

No completely accurate screening test for liver cancer exists. Doctors sometimes use a blood test that checks for the presence of alpha-fetoprotein (AFP) — a type of protein not normally found in adults — to screen people at high risk of the disease. Unfortunately, the test isn't perfect. Not all malignant liver tumors produce AFP, and those that do may be advanced by the time protein levels become elevated. In addition, other types of cancer and even some noncancerous liver diseases can raise AFP levels.

Although AFP screening can detect small tumors in some people, most liver cancer isn't diagnosed early. That's because symptoms usually don't appear until late in the disease and because liver cancers grow quickly. The most common type of liver cancer, hepatocellular carcinoma, doubles in size every four months. Diagnosis is also difficult because the effects of some liver tumors may resemble those of other medical conditions.

If you experience any of the symptoms of liver cancer, such as unexplained weight loss, persistent abdominal pain or swelling or jaundice, see your doctor as soon as possible. He or she will interview you about your medical history and perform a physical exam. Your doctor will also likely recommend one or more of the following tests:

Ultrasound (ultrasonography). This noninvasive test uses sound waves to produce a picture of internal organs, including the liver. Ultrasound is painless and usually takes less than 30 minutes. While you lie on a bed or examining table, a wand-shaped device (transducer) is placed on your body. It emits sound waves that are reflected from your liver and transformed into a computer image. Ultrasound is

especially good at providing information about the shape, texture and makeup of tumors.

Computerized tomography (CT) scan. This test uses X-rays to produce cross-sectional images of your body. You may also have a variation of the test — known as a CT angiogram — in which contrast dye is injected into one of your liver's arteries. X-rays then track the dye as it flows through the blood vessels in your liver. A CT angiogram, which may take up to an hour to perform, can provide detailed information on the number and location of liver tumors. The test's greatest risk is a possible allergic reaction to the contrast dye. It can also be uncomfortable because a tiny catheter is inserted into an artery in your groin and threaded into an artery leading to your liver.

Magnetic resonance imaging (MRI). Instead of X-rays, MRI creates images using a magnetic field and radio waves. Sometimes a contrast dye also may be used. The test can take from 15 minutes to an hour. You may find an MRI more uncomfortable than a CT scan. That's because you will likely be enclosed in a tube that is quite confining and because the machine generates a thumping noise many people find disturbing. Headphones or earphones can help with the noise, and a more open scan may be an option if you have claustrophobia.

Liver scan. In this imaging test, small amounts of radioactive tracers (radioisotopes) are attached to various substances and injected into a vein in your arm. A special camera (gamma camera) then records images of the radioisotopes that have been taken up by your liver. A liver scan can reveal damage caused by cirrhosis or hepatitis as well as the presence of primary or secondary cancer.

Liver biopsy. In this procedure, a sample of tissue is removed from your tumor and examined under a microscope. It's the only way to learn whether a tumor is malignant. Your doctor may use a thin needle or a tiny, lighted instrument (laparoscope) to obtain the sample. If the tumor is small, an ultrasound or CT scan is often used to help pinpoint the area to be biopsied. Needle or laparoscopic biopsies are relatively simple procedures requiring only local anesthesia. Risks include bruising, bleeding and infection.

Blood tests. If tests reveal that you have liver cancer, your doctor may perform additional blood tests to check the condition of the liver tissue not affected by cancer. This information may play a role in determining the best treatment for you.

Staging tests

Staging tests help determine the size and location of cancer and whether it has spread. They are the most important factor in determining your treatment options. Liver cancer may be staged in different ways. One method uses the numbers I through IV, with higher numbers indicating cancers that are more advanced. A stage I tumor is small and confined to one lobe of the liver. By stage IV, several tumors may exist in different lobes, or malignant cells may have spread to other parts of the body.

Doctors may also use the following stages to describe primary liver cancer in adults:

Localized resectable. At this stage, the tumor is confined to one lobe of your liver and can be completely removed in an operation. The term *resectable* refers to a tumor that can be surgically removed.

Localized unresectable. The cancer is found in only one part of your liver, but can't be completely removed because either the noncancerous portion of your liver isn't healthy or the cancer is located near your liver's main arteries, veins and bile ducts.

Advanced. This stage of cancer has spread throughout the liver or to other parts of your body, particularly the bones or lungs. You're more likely to have advanced cancer if you also have cirrhosis or chronic hepatitis.

Recurrent. This means the cancer has returned to your liver or to another part of your body after it has been treated.

Stages of primary cancer in children

Doctors use the following stages to describe childhood liver cancer:

Stage I. At this stage, the cancer can be removed with surgery.

Stage II. Most stage II liver cancers can be removed with an operation, but microscopic amounts of cancer remain in the liver following surgery.

Stage III. At this stage, some of the cancer may be surgically removed, but some will remain in the lymph nodes or abdomen.

Stage IV. This stage cancer has spread to other parts of the body.

Recurrent. This means the cancer has returned after it has been treated. It may recur in the liver or in another part of the body.

Complications

People with liver cancer may sometimes experience liver failure, which occurs when the liver is no longer able to function adequately. It usually develops when there is extensive damage to liver cells. The kidneys may also fail, losing their ability to filter fluids and waste and causing dangerous levels of these substances to accumulate in the body. Perhaps the most serious complication, however, is the spread of cancer to other organs.

Treatment

Treatments for primary liver cancer depend on the extent (stage) of the disease as well as your age, overall health, feelings and personal preferences. Discuss all of your options carefully with your treatment team. Choosing a treatment plan is a major decision, and it's important to take time to weigh your choices.

You may also want to seek a second opinion, especially with doctors experienced in treating liver cancer. A second opinion can provide additional information and help you feel more certain about the options you're considering.

In addition, the National Library of Medicine's Health Services-Technology Assessment Text database provides access to the full text of certain documents that may help you make treatment decisions. You can search the database at <http://text.nlm.nih.gov>.

The goal of any treatment is always to eliminate the cancer completely. When that isn't possible, the focus may be on preventing the tumor from growing or spreading. In some cases palliative care only is appropriate. Palliative care refers to treatment aimed not at removing or slowing the disease but at helping relieve symptoms and making you as comfortable as possible.

Treatments for primary liver cancer in adults

Standard therapies for adult liver cancer primarily include surgery, chemotherapy and radiation. Your doctor may also use other treatments — including alcohol injections, surgery to freeze the tumor (cryosurgery) or electric current therapy.

Surgery. The best treatment for localized resectable cancer is usually an operation known as surgical resection. In many cases the area of the liver where the cancer is found can be completely removed. Surgical resection may also be an option if you have localized unresectable cancer. You aren't a candidate for surgical removal of liver tumors if you have severe liver disease or only a small amount of healthy liver tissue.

Radiation therapy. This treatment uses high-dose X-rays to destroy cancer cells and shrink tumors. Radiation may come from a machine outside your body or from radiation-containing materials inserted into your liver. In an experimental technique, radiation is delivered to specific liver cells by attaching radioactive substances to antibodies — molecules produced by your immune system in response to invading organisms. Radiation may be used on its own to treat localized unresectable cancer. Or you may have radiation therapy following surgical removal of a tumor to help destroy any remaining malignant cells. Radiation can affect healthy tissue as well as tumors and may cause side effects such as tiredness, nausea and vomiting.

Chemotherapy. This treatment uses powerful drugs to kill cancer cells. Chemotherapy may be systemic — meaning it travels throughout your body in your bloodstream — or regional.

In regional treatment, a small pump temporarily placed in your abdomen sends medications directly into the blood vessels leading to the tumor. You may have chemotherapy on its own or after an operation to help kill any remaining cancer cells.

Systemic chemotherapy is generally not effective in treating liver cancer, but another type of chemotherapy — known as chemoembolization — is an important part of treatment for hepatocellular carcinoma. In this procedure, the hepatic artery — the major artery supplying blood to your liver — is blocked and chemotherapy drugs are injected between the blockage and the liver. Chemoembolization can improve survival rates in people with unresectable liver tumors. As with other forms of chemotherapy,

chemoembolization can cause side effects such as abdominal pain, nausea and vomiting.

In fact for many people, side effects from chemotherapy are the most disturbing aspect of cancer treatment. Side effects occur because chemotherapy damages healthy cells along with malignant ones. Fast-growing cells such as those in your digestive tract, bone marrow and bone are especially affected. But although side effects are common, their severity depends on the drugs used and your response to them. Sometimes you may have few reactions. On the other hand, you may experience symptoms such as nausea and vomiting, fatigue, infection and hair loss. It may help to know that a new class of anti-nausea medications can reduce the most severe intestinal symptoms. Acupuncture and relaxation techniques, such as guided imagery, meditation and deep breathing, also can help reduce nausea and vomiting. Ask your treatment team about the side effects of any treatment you're considering and the best ways to minimize those effects.

Alcohol injection. In this procedure, pure alcohol is injected directly into tumors, either through the skin or during an operation. Alcohol dries out the cells of the tumor and eventually the cells die. Each treatment consists of one injection, although you may need a series of injections for the best results. Alcohol injection is a simple and safe procedure that has been shown to improve survival in people with small hepatocellular tumors. It may also be used to help reduce symptoms in cases of metastatic liver cancer. Side effects are usually minor.

Radiofrequency ablation. In this procedure, electric current in the radio-frequency range is used to destroy malignant cells. Using an ultrasound or CT scan as a guide, your surgeon inserts several thin needles into small incisions in your abdomen. When the needles reach the tumor, they're heated with an electric current, destroying the malignant cells. Radiofrequency ablation is an option for people with small, nonresectable hepatocellular tumors and for some types of metastatic liver cancers. The procedure has relatively few side effects, and you can usually go home within two to three hours after being treated. Radiofrequency ablation is effective in about 65 percent of cases and is usually successful only with smaller tumors.

Cryosurgery (cryotherapy). This treatment uses extreme cold to destroy cancer cells. Traditionally used to treat early-stage skin cancers, cryosurgery may now be an option for people with inoperable primary and metastatic liver cancers. It may also be used in addition to surgery, chemotherapy or other standard treatments.

During the procedure, your doctor places an instrument (cryoprobe) containing liquid nitrogen directly onto liver tumors. Liquid nitrogen has a temperature of minus 320 F. Ultrasound images are used to guide the cryoprobe and monitor the freezing of the cells. Cryosurgery is less invasive than regular surgery and requires only a small incision. As a result you're likely to heal more quickly and have fewer complications.

Side effects — which tend to be less severe than those associated with surgery, chemotherapy or radiation — include damage to the bile ducts and major blood vessels,

leading to bleeding or infection. But the major drawback of cryosurgery is uncertainty about its long-term effectiveness.

Liver transplantation. In this surgical procedure, a diseased liver is removed and replaced with a healthy, donated organ. Liver transplantation may be an option for some people with small, early-stage liver tumors and for certain people with bile duct tumors. In other cases, however, a transplant may not improve long-term outlook because the cancer may recur outside the new liver.

Treatments for primary liver cancer in children

Liver cancer in young people is rare. As a result most children with the disease are treated at centers that specialize in childhood cancers. In general, the treatments available for children are the same as for adults, and the best approach depends on the stage and type of cancer as well as the child's age and overall health.

Clinical trials

Because standard treatments often aren't effective in treating liver cancer, you may want to consider participating in a clinical trial — a research study that tries to improve current treatments or find new treatments for specific diseases. This can give you access to experimental therapies that might not otherwise be available. There are no guarantees with clinical trials, however, and you should fully understand the potential risks as well as possible benefits before undertaking this step.

Children also may be eligible to participate in clinical trials. In the United States, two groups — the Children's Cancer Group and the Pediatric Oncology Group — organize clinical trials for childhood cancers.

You can learn more about clinical trials by calling the National Cancer Institute's Cancer Information Service at (800)4-CANCER, or (800) 422-6237.

Prevention

In many cases it's not possible to prevent the spread of cancer from another site to the liver. And it may not always be possible to prevent primary liver cancer. But you can greatly reduce your risk by taking steps to protect yourself from hepatitis B and C, cirrhosis and other liver diseases.

The single most effective way to prevent hepatitis B is to receive the hepatitis B vaccine, which provides more than 90 percent protection for both adults and children. Protection lasts years and may even be lifelong. The vaccine can be given to almost anyone, including infants, older adults and those with compromised immune systems. Infants often receive the vaccine in the first year of life — typically at 2, 4, and 9 months of age.

Because no vaccine for hepatitis C exists, the following measures can also play a key role in protecting your health:

Educate yourself and others. Make sure you understand what viral hepatitis is and how it's transmitted.

Know the health status of any sexual partner. Don't engage in unprotected sex unless you're absolutely certain your partner isn't infected with HBV, HCV or any other sexually transmitted disease. If you don't know the health status of your partner, use a new latex condom every time you have vaginal or anal sex. If you don't have a male condom, use a female condom.

Use a clean needle if you inject drugs. The best way to protect yourself from HCV is not to inject drugs. But if that isn't an option for you, make sure any needle you use is sterile, and don't share it. Contaminated drug paraphernalia is responsible for about half of all new hepatitis C cases. Take advantage of needle exchange programs in your community and consider seeking help for your drug use.

Avoid body piercing and tattooing. Needles that may not be properly sterilized can spread the virus.

Be cautious about blood products in certain countries. Most Americans with HCV became infected through blood transfusions received before 1992 — the year improved blood-screening tests became available. Although the blood supply is now well screened in the United States, this isn't always the case in other countries. If an emergency requires that you receive blood or blood products in another country, get tested for HCV and HBV as soon as you return home.

Drink alcohol in moderation. Alcohol speeds the progression of any liver disease you may have and is the leading cause of cirrhosis — a key factor in primary liver cancer.

Avoid medications that may cause liver damage. Your doctor can advise you about these medications, which may include over-the-counter medications as well as prescription drugs. Avoid mixing alcohol and acetaminophen (Tylenol, others) — a combination known to cause liver damage.

Avoid exposure to environmental toxins. They can damage your liver.

Self-care

One of the most challenging aspects of living with liver cancer may be eating enough of the right kinds of foods. Right now your nutritional needs are extremely high. That's because surgery, radiation and chemotherapy — as well as illness itself — dramatically increase your need for nutrients. Yet you may not always feel like eating.

Cancer treatments can cause nausea and vomiting, as can liver cancer itself. Some medications and therapies can also affect the way food tastes. At times you simply may be too tired to eat or have no appetite because you're anxious or depressed. But eating well plays a key role in your ability to heal. The following suggestions may help:

Try eating small meals throughout the day instead of two or three larger ones. If you're nauseous, choose foods that are soothing and easy-to-digest, such as soups, rice or a plain baked potato.

Many people feel better in the morning. For that reason, you may want to try eating a larger meal early in the day and supplementing with liquid or powdered meal replacements later on.

When you can, emphasize high-calorie, high-protein foods. Unless you're lactose intolerant, milkshakes offer a good way to increase calories and protein. Try adding fresh fruits or protein powder.

Talk to your doctor about vitamin and mineral supplements.

Have nourishing snacks within easy reach. That way, you're more likely to eat. Cheese and crackers, fresh fruit, yogurt or raisins are all good choices.

Make the atmosphere as pleasant as possible when you eat. Some people use candles, flowers and music; others arrange the food beautifully or use special china.

Don't worry if you have days when you can't eat at all. In the meantime, do whatever you can to make yourself feel better. Let your doctor know if you don't feel better in a couple of days.

Try to drink plenty of fluids, especially on days you don't feel like eating. Water is essential for your body's proper functioning.

If you continue to have trouble eating or are losing weight, talk to a registered dietitian. He or she can help you find ways to get the nutrition you need.

Coping skills

Learning you have any life-threatening illness can be devastating. But coping with a diagnosis of liver cancer can be especially difficult. The more advanced the disease when it's discovered, the less likely the chance of real recovery. As a result you may feel especially overwhelmed just when you need to make crucial decisions. You're also likely to be even more concerned about others than yourself. How will you tell your children? Will your partner be able to cope? Who will take care of all of the things you normally do if you can't?

Although there are no easy answers for people dealing with liver cancer, some of the following suggestions may be of help:

Learn all you can about your illness. Learn everything you can about liver cancer — how the disease progresses, your prognosis and your treatment options, including both experimental and standard treatments and their side effects. Be sure you understand whether a particular approach is used to treat cancer or provide palliative care. Don't be afraid to seek a second opinion and to explore treatments available through clinical trials. You will have many decisions to make in the weeks and months

ahead. The more you know, the more active a role you can take in the decision-making process.

In addition to talking to your medical team, look for information in books and reputable sources on the Internet. Some reliable sites are listed at the end of this article. In addition, the National Cancer Institute offers a toll-free information line called the Cancer Information Service. It provides access to trained counselors and accurate, up-to-date information on all aspects of living with cancer. You can reach the Cancer Information Service 24 hours a day at (800)4-CANCER, or (800) 422-6237.

Maintain a strong support system. More and more studies show that strong relationships are crucial in dealing with life-threatening illnesses. Although friends and family can be your best allies, in some cases they may have trouble dealing with your illness. Or you may not have a large social network. If so, the concern and understanding of a counselor, medical social worker or even a formal support group can be helpful. Although support groups aren't for everyone, they can sometimes be a good resource for practical information about your disease. You may also find strength and encouragement in being with people who are facing the same challenges you are.

If you're interested in learning more about support groups, talk to a doctor, nurse, social worker or psychologist. They may be able to put you in touch with a group in your area. Or check your local phone book, library or a cancer organization. The National Cancer Institute also can provide a list of support groups. After deciding to participate in a group, try it out a few times. If it doesn't seem useful or comfortable, you don't have to continue.

Come to terms with your illness. Coming to terms with your illness may be the hardest thing you've ever done. For some people, having a strong faith or a sense of something greater than themselves makes this process easier. Others seek counseling from someone who understands life-threatening illnesses, such as a medical social worker, psychologist or chaplain. Many people also take steps to ensure that their end-of-life wishes are known and respected.

In fact, the greatest fear of many people with a life-threatening illness is being subjected to treatments they don't want or spending their last weeks or months in a hospital away from loved ones and familiar surroundings. The welcome news is that many more choices now exist for people with a terminal illness.

Hospice care, for example, provides a special course of treatment to terminally ill people. This allows family and friends — with the aid of nurses, social workers and trained volunteers — to care for and comfort a loved one at home or in hospice residences. It also provides emotional, social and spiritual support for patients and those closest to them. Although most people under hospice care remain in their own homes, the program is available anywhere — including nursing homes and assisted-living centers. For those who stay in a hospital, palliative care specialists can provide comfort, compassionate care and dignity.

Although it can be extremely difficult, discuss end-of-life issues with your family and medical team. Part of this discussion will likely involve advance directives — a general term for oral and written instructions you give concerning your medical care should you become unable to speak for yourself.

One type of advance directive is known as a durable power of attorney (POA) for health care. In this case, you sign a legal document authorizing a person you respect and trust to make legally binding medical decisions for you if you're unable to do so. A POA is often recommended because the appointed person can make decisions in situations not covered in a regular advance directive. Whatever you decide, it's important to put your wishes in writing. Laws regarding advance directives and POAs vary from state to state, but a written document is more likely to be respected.