Liver Cancer

**What is the liver?**
The liver is the largest internal organ in the body and is important in digesting food. The liver performs many other functions, including collecting and filtering blood from the intestines, removing toxic wastes from the body, storing energy and making proteins. No one survives without a liver.

**What is liver cancer?**
Cancer begins when normal cells change and grow uncontrollably, forming a mass called a tumor. A tumor can be cancerous or benign. A cancerous tumor is malignant, meaning it can spread to other parts of the body. A benign tumor will not spread.
Types of liver cancer
Primary liver cancer is cancer that begins in the liver. It is more common for the liver to be the site of metastasis (spread) of a cancer that started in another place. However, these are not primary liver cancer.

- **Hepatocellular Carcinoma (HCC)** also called a Hepatoma- Approximately 80% of adult primary liver cancers are HCC. HCC can have different growth patterns. Some spread tentacle-like through the liver. Some start out as a single tumor that spreads to other parts of the liver. Others develop nodules at several different places in the liver.
- **Cholangiocarcinoma (also called bile duct cancer)**- Approximately 10-20% of adult primary cancers are cholangiocarcinomas. Cholangiocarcinomas grow from cells in the bile duct of the liver to the small intestine. The bile duct starts inside the liver as several smaller tubes that join together like the branches to a trunk of a tree.

Is this a common cancer?
In the United States, about 33,000 adult cases per year are diagnosed. Liver cancer is much more common in developing countries within Africa and Asia.

What are the risk factors for Hepatocellular Carcinoma?
- Excessive alcohol use/cirrhosis of the liver- Liver cells are damaged and replaced by scar tissue.
- Non-alcoholic fatty liver disease (NAFLD)- Fat is deposited in the liver. It may be caused by obesity or diabetes.
- Viral Hepatitis- Hepatitis viruses are viruses that infect the liver. The 2 most common types are Hepatitis B and Hepatitis C.
- Age- Occurs most often in people older than 60.
- Gender- Men are more likely than women to develop HCC.
- Environmental factors- Certain chemical exposures may increase risk.
- Race and ethnicity- Rates are highest in Asian Americans and Pacific Islanders.

What are the risk factors for Bile Duct Cancer?
- Age: Occurs most often in people older than 65
- Obesity
- Excessive alcohol use/cirrhosis
- Exposure to hazardous chemical
- Chronic irritation of the bile duct
- Liver or bile duct disease
What are the symptoms of liver cancer?
Symptoms may not appear in early stages.
- Pain: Especially at the top right abdominal area or near the right shoulder blade or back
- Unexplained weight loss
- Weakness or fatigue
- Decrease in appetite
- Nausea and vomiting
- Jaundice: Yellowing of the skin and eyes. Occurs when the liver is not working properly.
- Abdominal swelling (ascites) or bloating
- **For Bile Duct Cancer**: Changes in stool or urine color- Stool may look lighter or chalky in color. Urine may look dark (like cola).

What is the prognosis?
The *prognosis* (chance of recovery) depends on:
- The stage at detection
- Whether the cancer has spread to other surrounding areas or other parts of the body
- Whether the cancer is a new diagnosis or has come back

How is it diagnosed?
- **History and physical exam**- review of symptoms, health habits, past illnesses and treatments
- **Blood tests**- Blood chemistries including tests to check liver function. A hepatitis panel may also be done. For **HCC**, a test for **alpha-fetoprotein (AFP)** is done. AFP is elevated in 50-70% of people with HCC.
- **Ultrasound**- Uses sound waves to create a picture of the liver.
- **CT scan**- a series of computerized pictures of the inside of the body taken after drinking or injecting into a vein special dye.
- **MRI**- magnetic resonance imaging uses a magnet, radio waves and a computer to take pictures of the inside of the body.
- **Angiogram**- X-ray picture of the blood vessels. A dye is injected into the bloodstream so the blood vessels of the liver show up on x-ray.
- **Laparoscopy**- a surgery done with a scope that lets the surgeon check the abdominal cavity of signs of cancer.
- **Biopsy**- Checking tissue under a microscope to learn if it is cancer and where it came from. Biopsies may be done during surgery or during another procedure with the help of a CT scan or ultrasound.
How is liver cancer staged?
Staging describes where the cancer is located, if or where it has spread and whether it is affecting other parts of the body. Knowing the stage helps to decide on treatment options and can help predict prognosis.

One tool doctors use to describe the stage is the TNM system.
- **Tumor (T)** - How large is the tumor and where is it located?
- **Node (N)** - Has the tumor spread to lymph nodes
- **Metastasis (M)** - Has the cancer spread to other organs in the body?

For **Hepatocellular Carcinoma (HCC):**
- **Localized Resectable** - The cancer is only in one place in the liver and the other part of the liver is healthy. Resectable means it can be removed with surgery.
- **Localized Unresectable** - The cancer is found in only one part of the liver, but it cannot be removed surgically.
- **Advanced** - Cancer has spread throughout the liver and/or to other parts of the body, such as the lungs or bones.
- **Recurrent** - This is a cancer that has come back after treatment.

For **Cholangiocarcinoma (Bile Duct Cancer):**
- **Stage I** - Still contained in the bile duct, the cancer extends into the deep layers of the bile duct wall. It has not spread to lymph nodes or other distant sites.
- **Stage II** - Cancer has now spread through the wall of the bile duct into nearby fat or liver tissue.
- **Stage IIIA** - Cancer has spread to the major blood vessels of the liver, duodenum (first part of the small intestine), colon, stomach wall, but not beyond. The cancer has not spread to the lymph nodes.
- **Stage IIIB** - Cancer cells are found in nearby lymph nodes, but have not spread to distant sites.
- **Stage IVA** - Cancer has spread to the main vessels and lymph nodes but not to distant sites.
- **Stage IVB** - Cancer has spread to lymph nodes away from the tumor or has spread to distant site.
How is Hepatocellular Carcinoma treated?
Treatment options depend on:

- Whether the cancer is only in the liver
- Whether the cancer is only in the area where it started or spread widely throughout the liver
- Patient’s preferences and overall health
- The damage to the remaining cancer-free area of the liver

- **Surgery**- Removal of the tumor and surrounding tissue during an operation
  - **Hepatectomy**- This is when a portion of the liver is removed. This is done when the cancer is in one part of the liver and the liver is working well.
  - **Liver Transplantation**- This is done only when the cancer has not spread out of the liver, a suitable donor is found and very specific criteria are met.

- **Thermal Ablation**- Radiofrequency ablation (RFA) and microwave therapy both use heat to destroy cancer cells. It may be given through the skin, through laparoscopy or during a surgical operation while a patient is sedated.

- **Chemoembolization**- This is a type of chemotherapy treatment in which drugs are injected into the artery that enters the liver (hepatic artery) and the flow of the blood through the artery is blocked for a short time so the chemotherapy stays in the tumor longer. This also decreases the blood supply to the tumor.

- **Radiation Therapy**- A treatment that uses high energy x-rays or other types of radiation to kills cancer cells, or slow their growth. Radiation treats a very specific area. This is called **regional** therapy.

- **Targeted Therapy**- This is usually given in a pill form. The treatment targets a specific function of the cancer cell. In HCC, this therapy stops the process of forming new blood vessels thus blocking the growth and spread of cancer cells.

- **Chemotherapy**- Drugs are used to kill cancer cells or stop them from dividing. When chemotherapy medicine is injected **intravenously (IV)** or taken **orally** in the pill form, it enters the bloodstream and can reach cancer cells throughout the body. This is called **systemic** therapy.

How is Cholangiocarcinoma (Bile Duct Cancer) treated?
Treatment options depend on:

- Stage of the cancer at diagnosis
- Location of the cancer
- Overall health of the patient
• **Surgery**- The surgeon will remove the area with cancer and possibly some of the surrounding tissue.

Liver transplantation may be considered in very specific circumstances. The location, underlying health condition, and very specific transplant criteria are taken into account.

• **Gastroenterology (GI) Procedures**- Endoscopic Retrograde Cholangiopancreatography (ERCP) is when a scope is inserted through the mouth into the intestines and then to the ducts of the liver. This is done under sedation. Biopsies may be done and small tubes (stents) can be placed to relieve **obstructions** (blockage of the bile duct).

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• **Radiation Therapy**- is a treatment that uses high energy x-rays or other types of radiation to kill cancer cells, or slow down their growth. Radiation treats a very specific area. Chemotherapy and radiation are sometimes used together. This makes the radiation more effective. When used this way, the chemotherapy is called a **radiosensitizer**.

**Clinical Trials**

You may have the chance to take part in a **clinical trial**. Clinical trials are controlled research studies done to find out if new cancer treatments are safe and effective, or better than the standard treatments. Clinical trials are voluntary and help find better treatments for cancer.

**Follow-up Tests**

During your treatments you will need blood tests and scans to see how well the treatment is working. These tests help guide decisions to keep going, stop, or change treatments.

Blood tests and scans will be done from time to time after you have finished your treatments. They can show if your condition has changed or the cancer has **recurred**, or come back.