These materials have been developed to provide information on hepatitis C infection and treatment. They aim to provide easy-to-understand information on hepatitis C, its modes of transmission, the liver disease that it may cause, and ways to treat and prevent infection.

This information can be used to help those who are candidates for hepatitis C treatment make an informed decision about whether treatment is appropriate for them.

Disclaimer: These materials are not designed to guide individual patient management. Individual patients should consult their personal physicians.

For more information, please contact: .................................................................
1. What is the liver?

The liver is the body’s largest internal organ. It is located on the right side of the abdomen under the ribs. It plays many key functions to help stay alive and healthy. The liver cleans up the blood by removing toxins. It changes food into energy, and helps with blood clotting, which is what helps stop bleeding after a cut.
"what is the liver?"
2. What is hepatitis, and what can cause hepatitis?

“Hepatitis” means inflammation of the liver. Inflammation is a natural reaction of the body to an injury or an infection. For example, hepatitis can be caused by an infection, or by drinking too much alcohol. Some medicines can also cause hepatitis.
"What is hepatitis, and what can cause hepatitis?"
When hepatitis is caused by a virus, it’s called viral hepatitis. The viruses that cause hepatitis include the hepatitis A, B, C, D and E viruses.

- Hepatitis A is transmitted through contaminated food and water. It is usually not a dangerous infection, and there is a vaccine to prevent it.

- Hepatitis B is transmitted by infected blood, through sex, and sharing unclean needles or other medical equipment. It can also be passed from an infected mother to her baby. Hepatitis B can be a serious infection in some people, but there is a vaccine to prevent it.

- Hepatitis D and E are not as common, and there are no vaccines against them.
"viral hepatitis"
What is hepatitis C and how is it transmitted?

The hepatitis C virus (also called HCV, or Hep C) is one the most serious hepatitis virus. Around 130-180 million people are infected with Hep C around the world.

Hepatitis C is mostly transmitted through blood-to-blood contact, for example through:

- Exposure to blood and blood products that are contaminated with hepatitis C, if the blood has not been tested first;
- Sharing equipment for injecting drugs;
- Unclean tattooing and piercing;
- Use of unclean or reused medical equipment, like syringes and needles that are used for injecting medicines;
- Sharing razors, which could have tiny amounts of blood on them;
- Having unprotected sex; and
- From a mother to her baby, during pregnancy or delivery.
"What is hepatitis C and how is it transmitted?"
What happens when someone is infected with hepatitis C?

When the hepatitis C virus enters the body, it is carried by the blood to the liver. It multiplies in the liver and causes inflammation. Only around 20%, or one out of five people, have signs of infection such as jaundice, fever, nausea, vomiting, and abdominal pain after they are initially infected.

The liver cells die, and over time in chronic infection, the liver cells are replaced by scarring, something that doctors call “fibrosis.”
"What happens when someone is infected with hepatitis C?"
6. stages of liver fibrosis

There are 4 stages of liver fibrosis:
F1: minimal fibrosis
F2: moderate fibrosis
F3: severe fibrosis
F4: cirrhosis

When it reaches the cirrhosis stage, it means that there are a lot of dead cells and scarring in the liver. It can reach the point where the liver stops working. This is called liver failure, and it can lead to death. Some people with liver cirrhosis can also develop liver cancer.
"stages of liver fibrosis"
What are the risks of disease progression?

One out of every four people with hepatitis C infection manages to get rid of it by themselves within 2-6 months. Those who do not get rid of the virus by 6 months have what is called chronic hepatitis C infection.

Out of 100 people who have chronic hepatitis C infection,
- About 30 people may never actually develop liver problems, but they can still transmit their infection to others if there is blood-to-blood contact.
- The other 70 people may develop some liver damage, but they could have no symptoms or only just mild symptoms, like being tired or having occasional abdominal pain. After about 20 years, 10 or 15 of these people will have developed cirrhosis, and 5-7 people will develop liver failure or liver cancer.

Not everyone with hepatitis C will have problems with their livers, but the risk is still high. People who also have HIV are at risk for more frequent and faster progression of liver disease than people who only have hepatitis C.
"What are the risks of disease progression?"
How can someone be tested for hepatitis C infection?

There are three different tests that can be used to diagnose hepatitis C infection.

**Hepatitis C antibody test:**
- If a person is infected with hepatitis C, the body develops something called antibodies to try to fight against the virus. They can be detected with a blood test. That’s the first test that is done to check for hepatitis C infection.
- But a positive antibody test only means that someone has been infected in the past.
- In people who get rid of the infection on their own, the antibody test will remain positive for life.
- People with positive antibody tests need another test to check if they are still infected.

**Hepatitis C viral load test**
- An hepatitis C viral load test is what can detect the virus itself, and it can even count how much of the virus is in the blood.
- Without treatment, the amount of hepatitis C virus in the blood is usually high, especially in people who also have HIV.
- If the test is negative, it usually means that the person does not have the virus anymore.

**Hepatitis C genotype test:**
- An hepatitis C genotype test is a test that can detect what type of hepatitis C virus a person has. There are 6 different types of hepatitis C: 1, 2, 3, 4, 5, and 6. The main difference between these types of hepatitis C is that some are easier to cure than others. For example, genotype 2 and 3 are easier to treat, but genotypes 1, 4, and 6 usually respond less well to treatment.
"How can someone be tested for hepatitis C infection?"

- **Antibody test**
- **Viral load test**
- **Genotype test**
How can the amount of liver damage from hepatitis C be assessed?

There are different tests that can be used to measure the amount of inflammation or scarring in the liver, and how well the liver functions.

**Liver inflammation tests**
These are blood tests that can estimate the amount of inflammation in the liver. As liver cells are inflamed and die, some particles are released in the blood, and they can be detected in the blood. These are called “AST” and “ALT” tests.

**Tests for fibrosis**
There are 2 ways to find out how much liver scarring is present.
- **Fibroscan®**
  The Fibroscan® is a special type of ultrasound that can tell how stiff the liver is, which is a way to find out how much fibrosis is present. The test takes about 5 minutes and does not cause any pain.
  However, it may not work in about 5-10% of patients.
- **Liver biopsy**
  Another way to check for fibrosis is to take a small piece of the liver out of the body with a special needle to look at it under a microscope. This is called a liver biopsy.

**Liver function tests**
These are blood tests that measure how well the liver is still functioning to make important proteins such as “albumin” and other proteins that prevent bleeding (“clotting factors”). They become abnormal in cases of advanced liver cirrhosis.
"How can the amount of liver damage from hepatitis C be assessed?"
Hepatitis C can be treated, and even cured. The standard treatment is a combination of medicines called pegylated interferon (PEG-interferon or PEG-IFN) and ribavirin (RBV). The treatment is given for either 6 or 12 months. PEG-interferon is given once a week as an injection, and ribavirin pills are taken twice a day.

Hepatitis C infection can be cured in 30-90% of people who start treatment. Whether or not someone can be cured depends on many factors, including:

- **The hepatitis C genotype.** Those with genotype 2 and 3 respond better to treatment.
- **The HIV status and status of the immune system.** People who have HIV, especially if they have low CD4 counts, have a lower chance of being cured of hepatitis C.
- **The hepatitis C viral load.** People who have high hepatitis C viral loads have a lower chance of being cured.
- **The level of fibrosis.** People who have more advanced fibrosis have a lower chance of being cured.
- **A person’s age.** Older patients have a lower chance of being cured.
- **How consistently the treatment is taken.** People who take their all their doses of medicines, on time, throughout their treatment are more likely to be cured.
"Can hepatitis C be treated?"
Who should be treated, and are there side effects from hepatitis C treatment?

The need for treatment depends a lot on the stage of the liver disease. Patients should not start treatment if their liver shows no or only minimal signs of liver fibrosis.

Those who already have severe cirrhosis should not be started on hepatitis C treatment. As hepatitis C treatment can cause birth defects, women who are pregnant, or male partners of females who are pregnant, cannot receive hepatitis C treatment.

Patients who have conditions such as anemia also cannot receive hepatitis C treatment.

The treatment can often cause side effects such as fatigue, depression, sleep disturbance, anemia, and problems with the thyroid.
"Who should be treated, and are there side effects from hepatitis C treatment?"
What people need to do before starting hepatitis C treatment?

A careful physical examination and blood and liver tests need to be done before deciding if treatment should be started. These tests include:

- Liver inflammation and function tests (AST, ALT, albumin, clotting tests);
- A hepatitis C genotype;
- A Fibroscan® or a liver biopsy;
- A complete blood count to measure red and white blood cells;
- A pregnancy test.
"What people need to do before starting hepatitis C treatment?"

A careful physical examination
Whether or not a person can start treatment, there are things people with chronic hepatitis C infection can do to support the health of their liver including:

- Avoid alcohol use or heavy alcohol drinking. Drinking alcohol, especially large amounts, can cause liver inflammation, which can make hepatitis C infection worse. For people who have cirrhosis, it is strongly recommended not to drink alcohol at all.
- Avoid taking medicines that might cause further harm to the liver. Many medicines are known to be harmful for the liver, and patients should review all of their medicines with their doctor to consider if some of them may need to be changed. This includes alternative therapies like herbal medicines and vitamins.
- Maintain a healthy lifestyle, with a balanced diet, exercise, plenty of rest and relaxation. Drinking at least 2-3 liters of water a day.
"staying healthy"
Preventing transmission of hepatitis C infection to others and re-infection to yourself

Hepatitis C is not transmitted through social contact so it is safe to touch, hug, and kiss family members and friends, and to share cups, plates, and utensils.

- If you have hepatitis C, there is a chance that you could transmit it to others. There are also cases where someone can be infected a second time with a different hepatitis C genotype, or be re-infected after treatment. To help prevent infection to others or yourself, it is important to be careful with exposures to blood. If you have a bleeding cut or other injury, cover your wound and avoid allowing others to touch the wound unless they have gloves. Carefully clean up any blood spills using latex gloves, soap, water and bleach.
- When women have their period, tampons and sanitary napkins can be put into a plastic bag before putting them in the bin.
- If you inject drugs, do not share needles, syringes, cottons, cookers, rinse water, or other equipment with others.
- Also watch out for cocaine straws and crack pipes. There may be enough blood on them to spread hepatitis C.
- Do not share razors with others.
- Use condoms when having sex.
"Preventing transmission of hepatitis C infection to others and re-infection to yourself."
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