

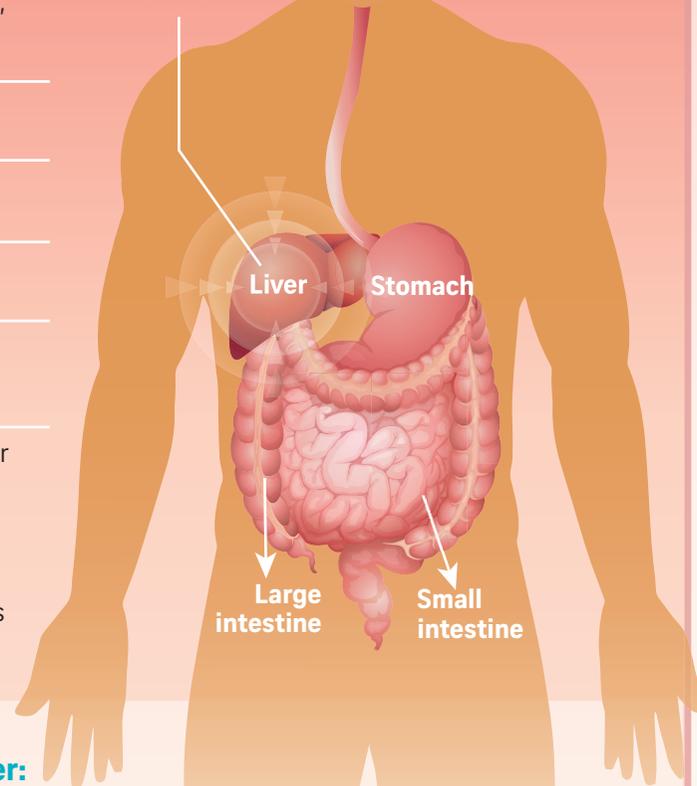
Protecting the liver

War has been declared on a top cancer killer in Singapore – primary liver cancer. Though it is curable in the initial stages, just one in five such patients is diagnosed early. **Clara Chong** looks at what this enemy is.

WHAT IS PRIMARY LIVER CANCER?

- The liver performs many important functions, such as blood glucose regulation and detoxification.
- Gene mutations in liver cells can result in cancer.
- Mutated cells grow and divide out of control, producing extra tissue that forms a tumour.
- Malignant tumours have the potential to spread to other parts of the body.
- Primary liver cancer, otherwise known as hepatocellular carcinoma (HCC), occurs mainly in those in their 50s and 60s.
- An increasingly common cause of liver cancer is non-alcoholic fatty liver disease. This rise in incidence of non-alcoholic fatty liver disease has been attributed to a number of causes, including the adoption of a more Western diet. Some experts believe that the increased consumption of fructose (such as in soft drinks and cookies) has contributed significantly to this condition.

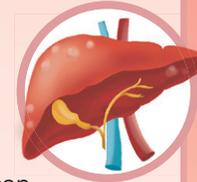
Location of the liver



MAIN RISK FACTORS IN SINGAPORE:

Non-alcoholic fatty liver disease

- Almost half the adult population here may have this and it can eventually progress to primary liver cancer.
- The disease is linked to diabetes mellitus and obesity, though many patients are not obese.



Cirrhosis or hardening of the liver

- An irreversible condition where healthy liver cells are replaced by scar tissue.
- Cirrhosis can occur due to hepatitis B or C infection, fatty liver and excessive alcohol consumption.



Chronic hepatitis B and C

- Hepatitis is a viral infection that causes liver inflammation.
- Hepatitis C is more likely than B to become chronic and to lead to liver cirrhosis.
- Treatment of both types of hepatitis reduces the chances of developing the cancer.



Early detection of primary liver cancer is hence critical. A nationwide study has been launched to allow for more accurate early diagnosis and to predict an individual's likelihood of developing the cancer.

A participant's journey in the study:

Visit 1: Collection of biosamples (blood, urine and stool) as well as blood tests

1,000 patients will be selected to undergo an MRI scan without contrast

Visits 2-7 (every six months)

- Collection of biosamples, ultrasound and blood tests. Data will be collected until the end of the study (a total of seven visits).
- If test results at any point are suggestive of HCC, patients will be scheduled to do a diagnostic scan (CT scan, MRI or MRI LiverMultiScan).
- If patients are diagnosed with HCC, they will be treated accordingly and can continue contributing data to this study.

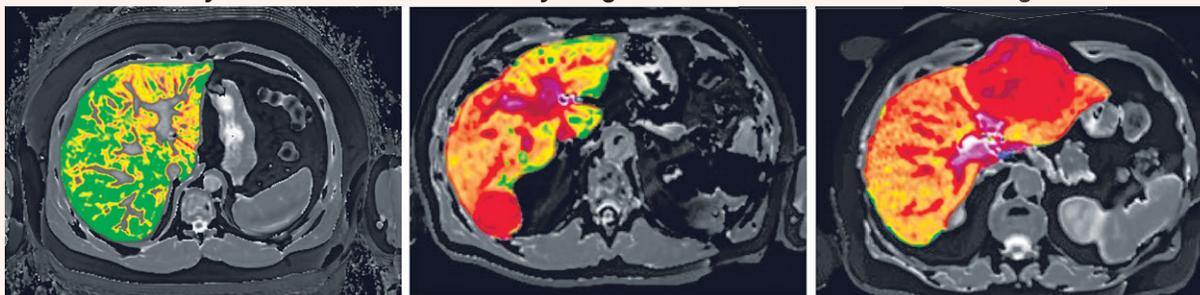
Magnetic resonance imaging (MRI) scans of a healthy and cancerous liver:

- Each image shows a cross-sectional slice through the liver.
- The liver scans are viewed as if they are looking from the feet upwards (the right side of the image is the left side of the patient).
- The different colours represent the amount of fibrosis and inflammation in the liver tissue.

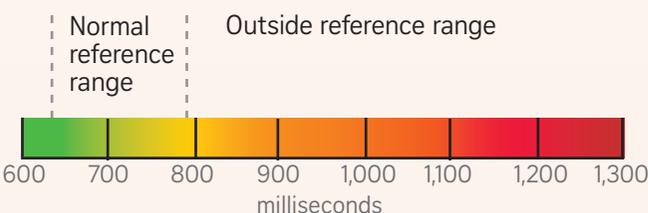
Healthy liver

Early-stage HCC

Late-stage HCC



What the colours mean:



- Green to yellow: Normal healthy range of fibrosis and inflammation levels – low.
- Yellow to red: Outside the normal healthy range. These represent moderate (yellow to orange) to more severe (orange to red) levels of fibrosis and inflammation.

TREATMENT:

Early stage:

- If the liver function is good, surgically removing the tumour(s) gives the best chances of long-term survival. Otherwise, radiofrequency ablation – the use of heat to destroy tumour cells in the liver – is used.

Locally advanced:

- The cancer has gone beyond the early stage but has no distant spread.
- Targeted treatment is given, such as using therapies like trans-arterial chemoembolisation or selective internal radiation therapy with yttrium-90.
- Liver resection and transplantation are options in a small number of carefully selected cases. Examples are when the cancer is located on only one side of the liver and there are just one or two tumour lesions.
- Drugs are used when the above fails.

Advanced

- For patients with good liver function, drugs are given.
- Otherwise, treatment options are limited to palliative care to ease the symptoms.