The liver's role in your health, and how to protect it

On World Hepatitis Day, we're reminded of the many crucial functions that the organ performs

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The body's largest organ, the liver, weighs about 1.5kg in a healthy adult. And if we take good care of it, the liver can be extraordinarily resilient, says Dr Paul Ng, a specialist in gastroenterology and hepatology in Hong Kong.

That resilience is key given the liver is the big old factory of the body. Consider the following:
it acts as energy storage when we sleep (or fast);
it's an effective detox unit; it manufactures bile which helps break down fats; it supports our immune system;
a recent study suggests it might even help the brain understand when our stomachs are full.
The liver manages this great range of functions through a slew of different cells which perform different roles.
Under onslaught from illness or injury, they are galvanised into action and prompted to change and divide until normality is restored.
This makes the liver the only organ in the human body that can regrow – or regenerate itself. If, for example, half of liver cells are damaged on account of a Tylenol overdose, the liver could repair itself completely after 30 days providing there were no further complications.
What makes the liver so resilient? Its two lobes are made up of thousands of hexagonal lobules, each of which has three zones.
Zone 1 is closest to where the liver's generous blood supply enters the lobule. Zone 3 is near where it drains back out. Zone 2 is sandwiched in the middle – and that's where it is thought the cells involved in regeneration live, sheltered from injury and the toxins that damage the liver.
To safeguard the liver, we must eat well and drink wisely. A poor diet and excess alcohol are not the only risks, though. Some diseases can wreak havoc on it, too, primarily hepatitis – literally, inflammation of the liver.
According to the World Health Organization, a million deaths a year are caused by hepatitis B and C and there more than 9 million people receiving treatment for chronic hepatitis C infection.
World Hepatitis Day, which falls today, was created to raise awareness of viral hepatitis.
Of the five known types of hepatitis virus – A, B, C, D and E – hepatitis A and E are the commonest forms.
Ng says: "They usually don't cause long-term problems and patients usually recover completely. Hepatitis A is now preventable with a very effective vaccine; a vaccine against hepatitis E is in development."
He says there have been significant breakthroughs in the development of a cure for hepatitis C and near-cure for hepatitis B, the two most common forms of chronic hepatitis infections that lead to cirrhosis or fibrosis.

Both hepatitis B and C are now considered treatable, with complications including cirrhosis and liver cancer largely preventable. The treatments are safe and effective in most patients, Ng says. Hepatitis B is preventable with an effective vaccine, which is given to newborns in most countries with a high rate of hepatitis B, including China.

This is encouraging, but there is no time for complacency. Ng notes that doctors in developed countries are seeing lifestyle liver diseases emerging as more common causes of liver failure.

These include fatty liver disease and alcoholic liver disease, "and sadly there's no effective cure for these conditions", he warns.

"A lot lies in how well the patients change their lifestyles," he adds.

Liver transplant is a last resort when a liver fails and it is not foolproof – it depends on donor availability. However, even last-resort options are improving.

An artificial liver support system called MARS (molecular absorbent recirculation system) has been in use since early this century, in a way that's similar to dialysis to support the kidneys.

Its usefulness, Ng says, is in "bridging" the worst period. Either the disease is self-limiting and will pass, or the patient gets a more permanent fix through a transplant. Until then, MARS removes toxins bound to albumin, which tend to accumulate quickly in liver-failure patients.

So our livers are forgiving but they will not endure long-term abuse. They will support you if you support them.