HEPATITIS B: AN INTRODUCTION TO THE VIRUS IN NEW ZEALAND

Brought to you by the Hepatitis Foundation of New Zealand

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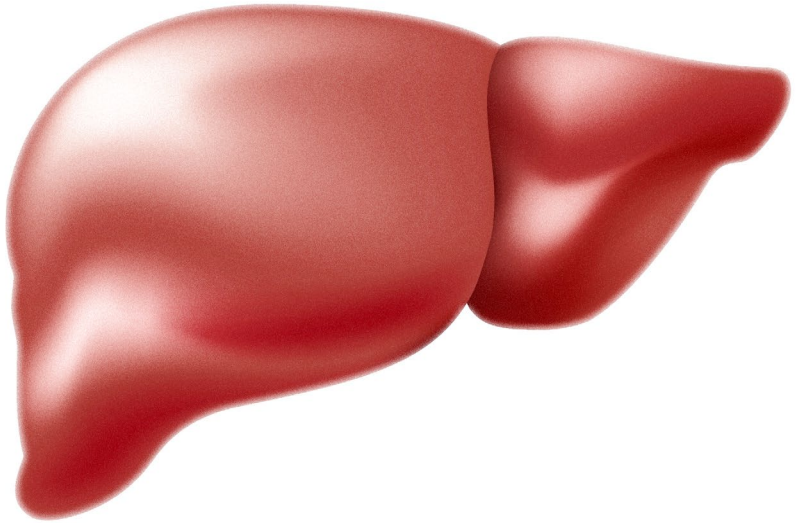
Learning objectives

Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
Gain a basic understanding of the hepatitis B virus, how it is transmitted, its history and prevalence, and who is at risk of contracting it.	**Build understanding of hepatitis B blood tests and how they can be used to diagnose and monitor people with hepatitis B.**	**Learn what information is required to guide patient management decision-making in chronic hepatitis B.**	**Gain an understanding of the different virus and disease phases a person can be in with chronic hepatitis B.**	**Gain an understanding of the rationale for anti-viral treatment in people with hepatitis B.**

There is currently no cure, but the virus can be controlled with medications for people who need it.

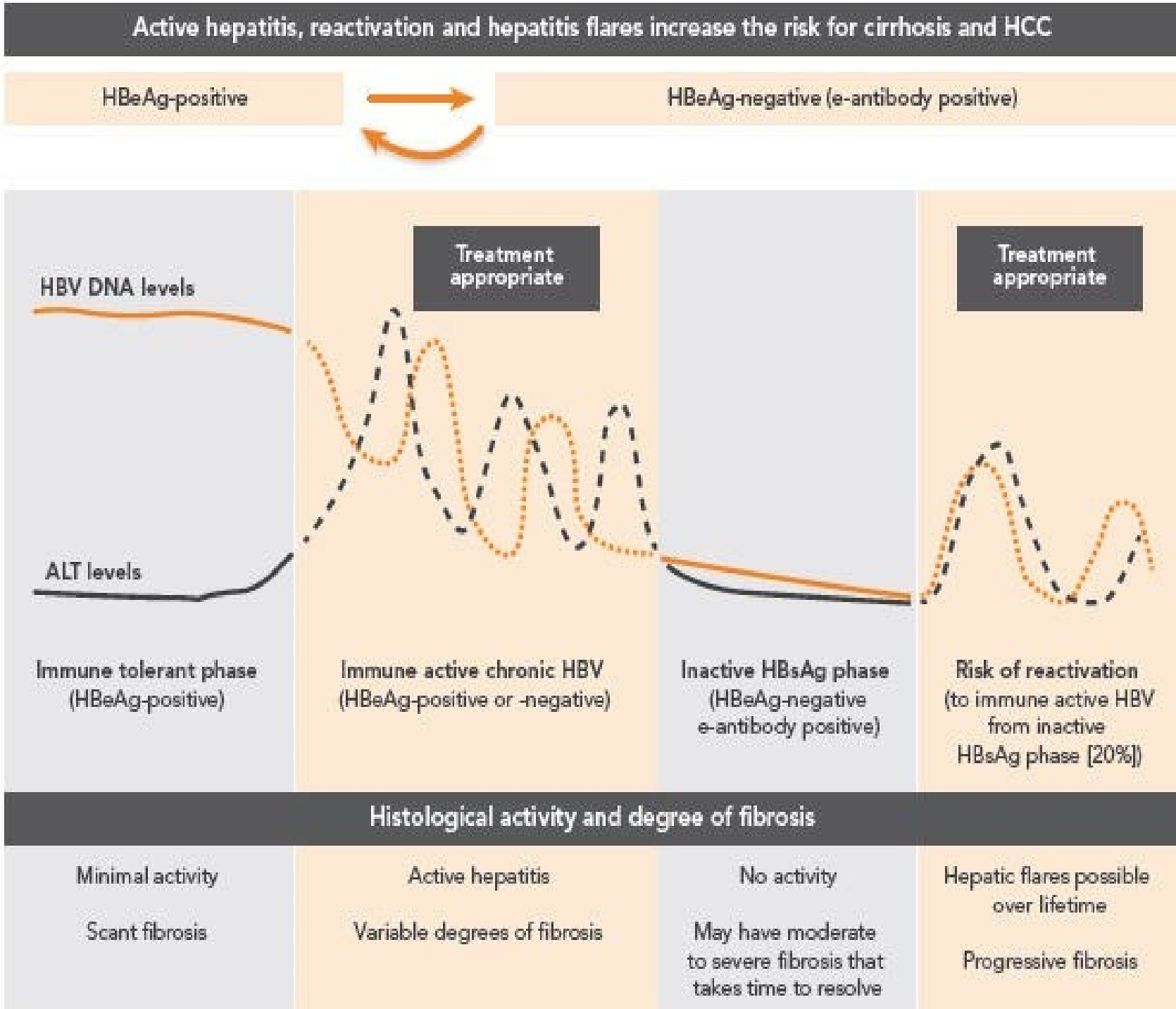
What is hepatitis B?

Chronic hepatitis B can be hard to detect as many people with the virus have no symptoms until the liver is damaged. This is why regular blood tests are so important, even for patients who feel well.



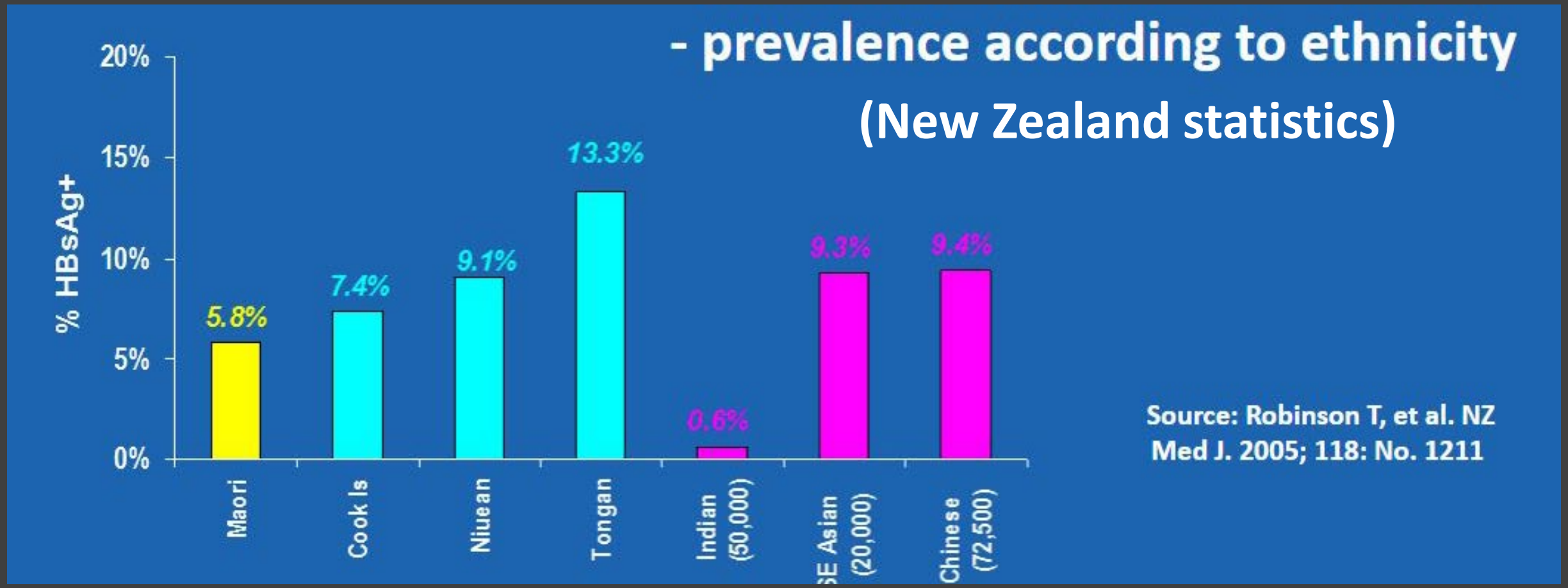
Hepatitis B affects the liver. It is highly contagious and spreads through blood and/or other bodily fluids.

Natural history of hepatitis B



Biological characteristics of the virus

- DNA virus – much more resilient than RNA viruses such as HCV and HIV, and survives drying
- Produces vast excess surface antigen to suppress hosts immune system
- Once chronic, the virus can last for many years
- Integrates its own DNA into host's
- Has resistant dormant cccDNA, which makes it very hard to eliminate.

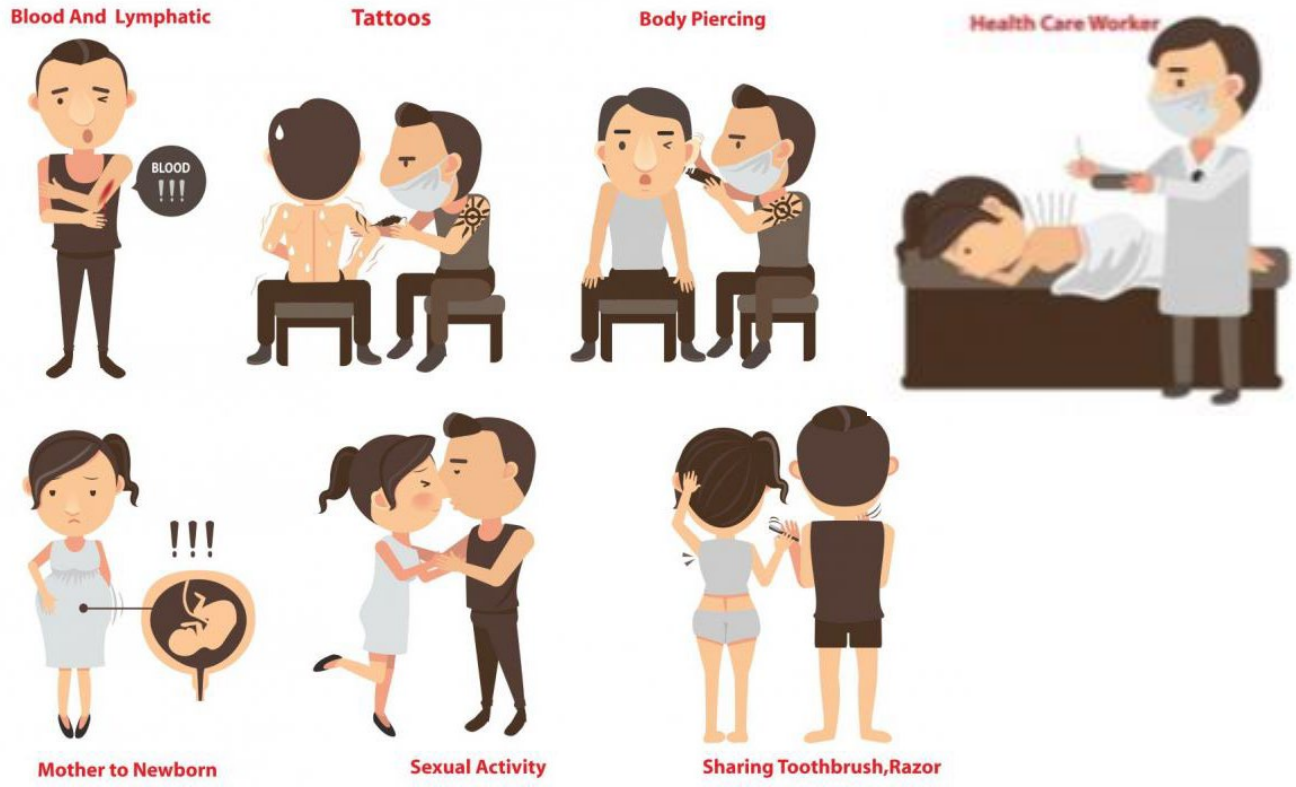


Prevalence of hepatitis B

Hepatitis B is one of the world's most common infectious diseases. About 350 million people have the virus. Every year 500,000 to one million people die of HBV-related chronic hepatitis, cirrhosis or liver cancer.

About 100,000 people in NZ have hepatitis B in NZ

Who is at risk of infection?



High-risk groups include:

- People born in NZ and of Māori, Pacific or Asian ethnicity
- Anyone born in a country of high hepatitis B endemicity
- People living with someone who has hepatitis B
- Anyone who has ever had unprotected sex with someone with hepatitis B
- People who have had tattoos using unsterile equipment.

Chronic infection

The groups most at risk of developing chronic hepatitis B are:

- Infants <3 years old
- Those who contracted the virus through neonatal vertical transmission
- Immuno-compromised individuals.

How is hepatitis B spread?

Hepatitis B is spread through contact with blood or body fluids. The age of infection is important in determining whether the person gets sick and can clear the infection.

Infected serum has a huge infectious load of virus – even a tiny drop of microscopic blood will infect. Trans-placental spread is also possible during labour.

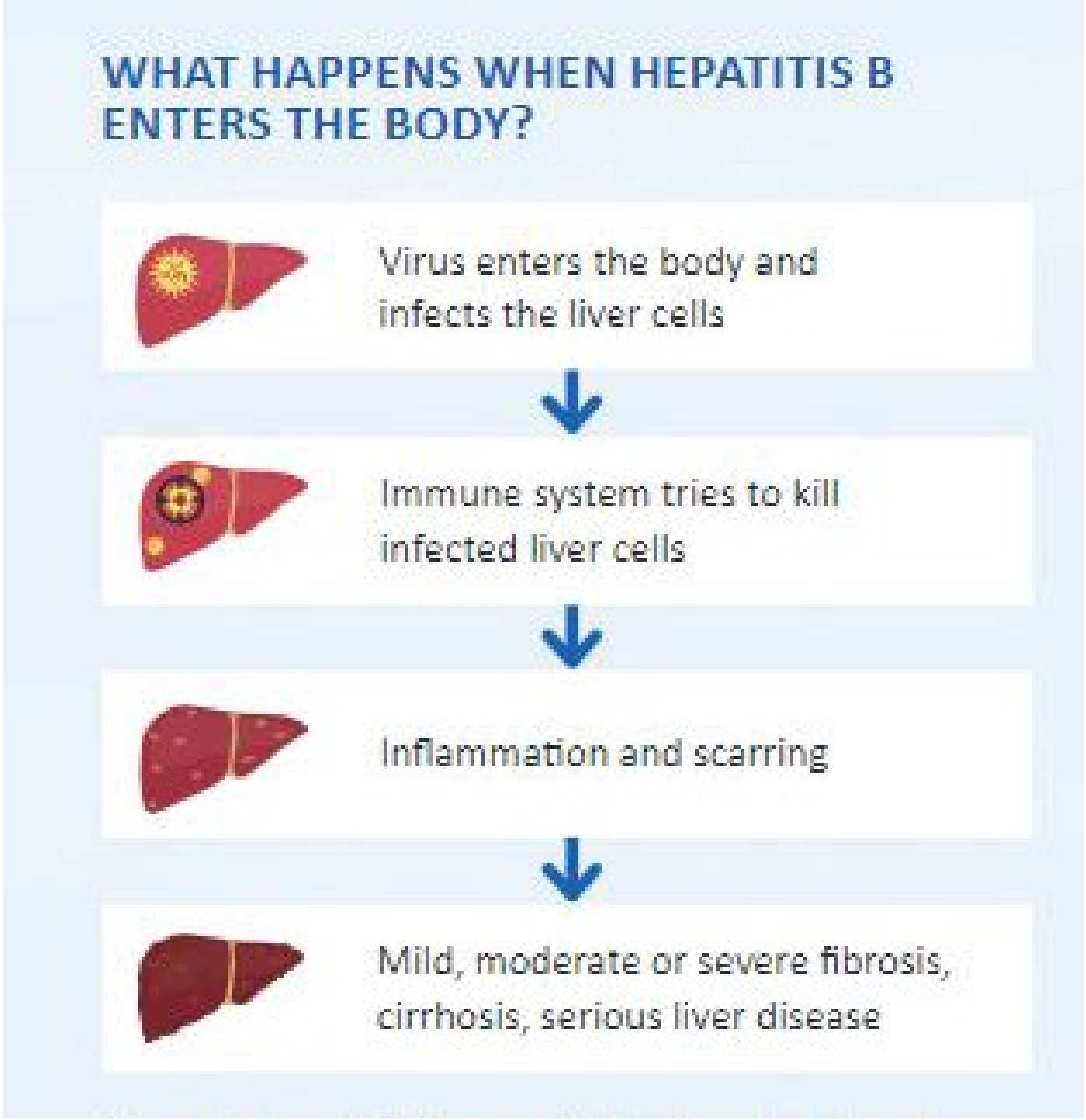
Adults are most commonly infected by having unprotected sexual contact with someone who has hepatitis B.

The hepatitis B virus is resistant to drying. For example dried blood or dust from crusts of sores that is present in a playground even in minute amounts can then enter abrasions. Horizontal infection in childhood occurs through this mechanism.

The virus can also be transmitted by semen.

Hepatitis B is not effectively transmitted through faeces, saliva, or by ingestion.

The effects of hepatitis B



The effects of hepatitis B

Following exposure in early childhood chronic infection is common, with associated lifelong risks of cirrhosis, liver failure and liver cancer. Lifelong monitoring is needed in these cases, as offered by the Hepatitis Foundation of New Zealand.

Six-monthly blood tests pick up early signs of liver disease such as cirrhosis and liver cancer. Up to 70 percent of the liver can be damaged by the time a person with hepatitis B starts to feel ill. This is why regular blood tests are very important.

Chronic hepatitis B occurs if the virus has been in the body for more than six months.

Effective vaccines are available to prevent hepatitis B transmission. The vaccine is free to anyone under 18 and some contacts of a person with the virus.

Acute hepatitis B

- When adults are infected, they can become sick with acute hepatitis (jaundice, abdominal pain and vomiting)
- Symptoms include dark urine and malaise starting 1-3 months after infection
- Liver damage can be caused by vigorous immune response, with destruction of infected liver cells
- Followed by loss of HBsAg and immunity in 95-99 percent of adults infected
- Acute hepatitis B can be mimicked by a flare of chronic hepatitis.

Hepatitis B in pregnancy (protecting the mother)

Interaction with the healthcare professionals during pregnancy provides an opportunity for chronic diseases to be assessed.

While checking for hepatitis B and the viral load to determine protection required for the baby the needs of the mother for her own sake can also be considered. Elevated viral load (>20,000) and elevated liver enzymes may be indicative of chronic active hepatitis causing inflammation and damage in the liver. Such women should be referred for specialist assessment, as they may be at increased risk of the long-term complications of hepatitis B and may warrant commencement of anti-viral therapy in their own right, not just for reduction in perinatal transmission risk. In such situations the treatment should be continued long term.

Tenofovir suppresses hepatitis B virus multiplication, thereby stopping the virus crossing the placenta to infect the baby. Tenofovir is safe for mother and baby. Women can breastfeed while taking it.

Breastfeeding not contra-indicated.

Hepatitis B in pregnancy (protecting the baby)

Hepatitis B doesn’t usually cause problems for pregnant women and their unborn babies. However, babies can acquire the virus via perinatal or vertical transmission from the mother during birth.

All babies born to mothers affected by hepatitis B will need two injections soon after delivery: the first dose of the hepatitis B vaccine and a dose of hepatitis B immunoglobulin. If these two injections are given within the first 12 hours of birth, babies have a greater-than-95 percent chance of being protected from hepatitis B. However, it's vital babies receive the additional doses of hepatitis B vaccine at three and five months of age to ensure long-term protection. These babies should also have a blood test at nine months to check they are fully protected from infection.

The risk of perinatal transmission is greatest for mothers with high viral load. All pregnant women affected with hepatitis B should have their viral load (HBV DNA blood test) checked. Women with levels >200,000 IU/ml should be offered tenofovir for the last trimester and until eight weeks post-partum to reduce the risk of perinatal transmission – in addition to the HBIg and vaccination for the baby after birth.

Treatment objectives for adults affected by hepatitis B

- **HBeAg loss**
  - Seroconversion to less active form of chronic infection
- **Suppress virus**
  - Reduces risk of future complications, including liver cancer, progressive liver fibrosis, cirrhosis and decompensated liver failure
- **Eradicate infection**
  - HBsAg seroconversion
  - Undetectable HBV DNA off treatment

High-risk groups: who to treat?

- Not everyone with chronic hepatitis B needs treatment. The decision to treat depends on several factors including age, virus level (HBVDNA), ALT and severity of liver disease (degree of fibrosis).

- Patients with persistent active hepatitis (e.g. raised ALT with high viral load) should be offered treatment, as well as all cases with cirrhosis. The degree of fibrosis (scar tissue) present is also an important factor in making treatment decisions in some scenarios.

- The decision to treat is rarely urgent, therefore a persistent pattern of elevated LFTs (at least three measurements three months apart) should be established before starting treatment. If there are no features of advanced fibrosis or cirrhosis monitoring should continue six-monthly.

Treatment decision: active hepatitis

TREAT

- All cases with cirrhosis or severe liver disease with any detectable HBV DNA
- HBeAg positive patients with persistent ALT>2x upper limit normal*
- HBeAg negative patients with persistent ALT>2x upper limit normal* and HBVDNA>2000 IU/ml.

MONITOR

- HBeAg-positive <35yrs with normal ALT
- HBeAg-negative with normal ALT and HBVDNA<2000 IU/ml

FURTHER ASSESS**

- HBeAg-positive patients >35yrs
- HBeAg-negative with ALT<2x upper limit normal and HBVDNA>2000 IU/ml
- HBeAg-negative with raised ALT and HBVDNA<2000 IU/ml.

* 70 U/L males, 50 U/L females

** Should consider other possible causes of liver damage, fibrosis staging and risk factors such as age and family history.

Treatment decision: risk of liver cancer

- Increasingly used in addition to existing guidelines
- Can use REACH-B score to estimate risk of liver cancer *
- If 10-year risk of HCC is above two percent, consider treatment
- If 10-year risk of HCC is above five percent, recommend treatment and consider six-monthly ultrasounds in addition to AFP for liver cancer surveillance.

* Available on MD Calc app. Uses gender/age/ALT/HBeAg/HBVDNA.

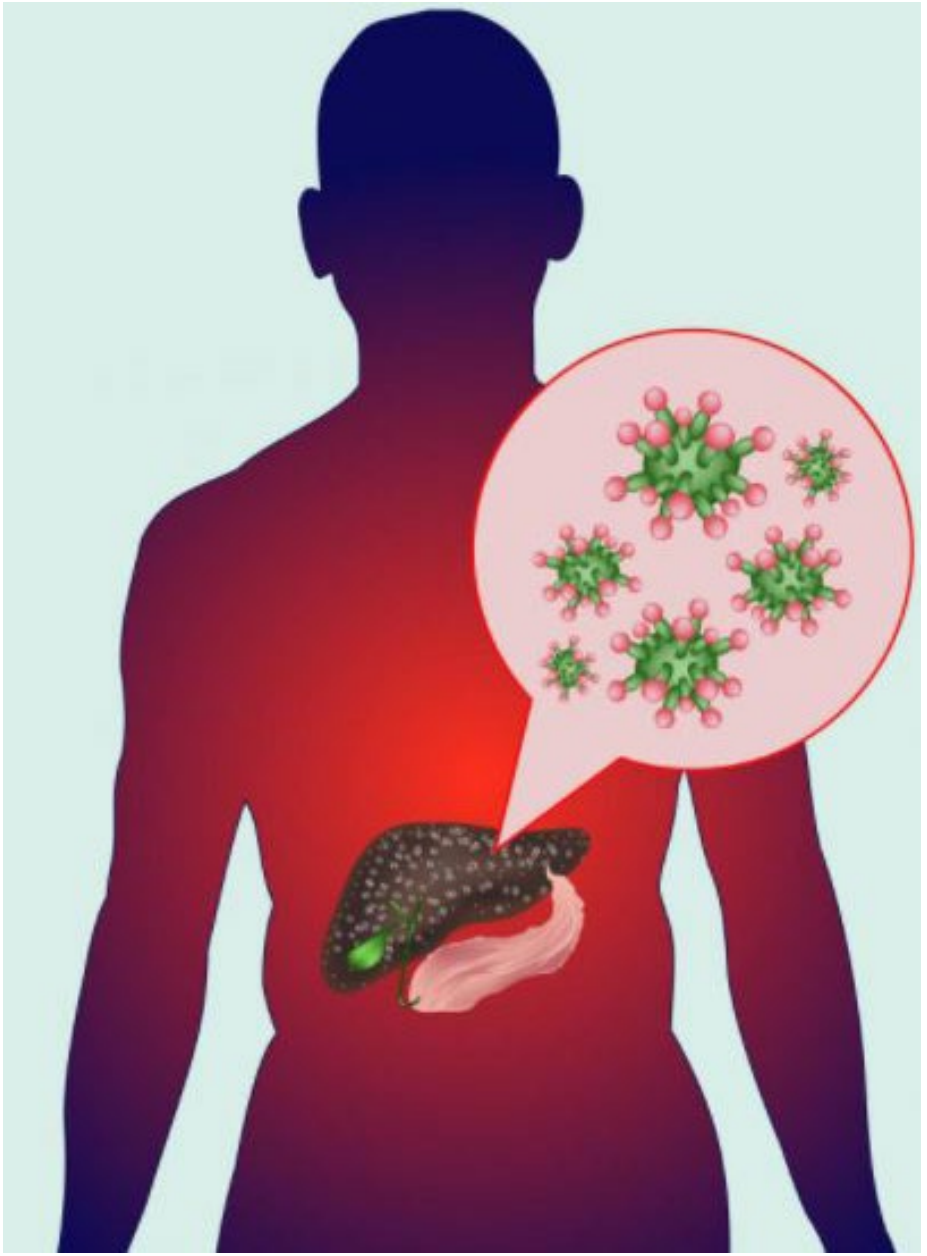
How is chronic hepatitis B treated?

- Entecavir and tenofovir are the main medications used to treat CHB. They reduce the amount of virus in the body. Both medications are successful in most patients who take them as prescribed. They have been used around the world for more than 10 years and have a very good safety profile
- These are both single, daily-dose tablets
- These medications are fully subsidised for NZ residents, so the cost is $15 for a three-month supply ($5 with a community service card).
- Both are renally excreted and require dose reduction in renal failure. Both effectively suppress viral replication but do not eliminate the virus, therefore duration of therapy is usually long-term.

Virus reactivation

Immunosuppression may be followed by a flare of hepatitis B in people with chronic hepatitis. This can occasionally be fatal. Even past infection (HBsAg- & HBcAb+) may reactivate with potent immunosuppression such as with rituximab.

Prophylactic antiviral treatment during and, for up to 12 months after, immunosuppression can prevent reactivation.



A collaborative approach to HBV patient management

The successful elimination of hepatitis B requires a holistic healthcare approach. In partnership with you and your practice, the Hepatitis Foundation of NZ will monitor your patients' hepatitis B, ensuring they are offered regular tests.

Protocols are in place to handle abnormal results including review by specialist nurses and clinicians.They are also on hand to advise GPs on patient management and provide other clinical liver disease support as needed. GPs can refer patients to the foundation through its website: http://bit.ly/hepatitisreferrals

Course activity

Answer the following questions to demonstrate your understanding of hepatitis B. You may need to refer to the Hepatitis Foundation website for information: www.hepatitisfoundation.org.nz.

- How is hepatitis B transmitted?
- Who is most at risk?
- What are the biological characteristics of the virus?
- What blood tests should GPs request for people with hepatitis B?
- How can reactivation of the virus be prevented?
- What are the universal recommendations for who to treat?
- How should pregnant women with hepatitis B be managed?

Thank you for completing this introduction to hepatitis B course. Any questions or feedback about the content should be directed to Justine McLeary, Hepatitis Foundation of NZ communications manager, phone 027 650 2605 or Justine.mcleary@hfnz.nz

Hepatitis B help, care and support

Hepatitis B āwhina tiaki me te tautoko

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