Expanding the Role of Nurses in Hepatitis B Testing and Management

Tracey Cabrié¹, Emily Wheeler¹,²

¹Hepatitis B Clinical Nurse Consultant
Victorian Infectious Diseases Service
Melbourne Health

¹,²Manager – Nursing Program ASHM
Disclosure statement

• Nothing to disclose
Presentation overview

• How many people have chronic hepatitis B?
• Why is hepatitis B an important public health issue?
  • Prevalence of hepatitis B
  • Natural history
  • Vaccine preventable
  • Link with liver cancer
• Hepatitis B testing
• Hepatitis B treatment
• Nursing role in hepatitis B
Why is chronic hepatitis B an important public health issue?

- 240-350 million people worldwide living with chronic hepatitis B (CHB)\(^1,2\)
  - 75% of people with CHB were born in the Asia Pacific region

- 218,000 Australians are living with CHB\(^3\)
  - 44% of people with CHB remain undiagnosed

- CHB is the 10th leading cause of death (globally)

- One in four people will die from liver cancer
  - CHB is the cause of 60-80% of the world’s liver cancer

1. Lavanchy 2004
218,567 Living with Chronic Hepatitis B infection

Diagnosed (57%)  Undiagnosed (43%)

28,354 (13%) receiving yearly HBV DNA or treatment

Not in care 190,213 (87%)

10,987 (5%) on treatment  21,798 not receiving treatment of 15% of total (32,785) estimated to need treatment

Nicole Allard, VIDRL
The global burden of hepatitis B

- 75% of people with CHB were born in the Asia Pacific region
- Most people with chronic hepatitis B were infected at birth or in early childhood

1. Lavanchy 2004  
2. Ott 2012  
MAP: Centers for Disease Control 2012
Estimates of CHB in Australia

• 218,000 people with CHB in Australia (1.02% population prevalence)
  – Majority were born overseas, particularly in the Asia Pacific region and in Sub-Saharan Africa

• Australian-born priority populations include:
  – Aboriginal and Torres Strait Islander people (9.3%)
  – people who inject or have injected drugs (5.7%)
  – men who have sex with men (4.4%)

¹MacLachlan et al. 2013.
Top countries of birth for CHB in Australia

- China: 26,000
- Vietnam: 16,000
- Philippines: 6,000
- Italy: 4,400
- Malaysia: 3,500
- Greece: 3,100
- Afghanistan: 3,000
- Cambodia: 2,700
- Taiwan: 2,600
- Sri Lanka: 2,100
- Fiji: 1,900
- Korea: 1,800
- India: 1,800

Proportion of people with CHB in Australia, 2011 (%)
Hepatocellular carcinoma (HCC)

- HCC is the 3rd most common cause of cancer death
  - CHB causes 60-80% of these cancers
- In Australia, death due to HCC is increasing faster than any other internal cancer
- Prognosis for patients diagnosed with HCC in Australia is poor: median survival 15 months
Cancer mortality in Australia, 1991-2009

Per cent change in mortality rate

Liver*
Thyroid
Melanoma
Pancreas
Myeloma
Oesophagus
Brain
Uterus
All cancers*
Bladder*
Ovary*
Lung*
HL
Kidney*
Prostate*
Tongue
Breast (females)*
UPS*
NHL*
Larynx*
Bowel*
Stomach*
Testis
Cervix*
Gallbladder*

Cancer in Australia: an overview, 2012
Age-standardized HCC rate ratio by country of birth, males, Victoria, 1998-2007

Vietnam: 9.94
China: 8.69
Philippines: 5.38
Malaysia: 3.63
Egypt: 3.17
Hong Kong: 3.06
Italy: 2.70
India: 2.48
Greece: 2.00
Sri Lanka: 1.94
Malta: 1.73
Croatia: 1.56
UK & Ireland: 1.16
New Zealand: 1.06
Germany: 0.73
Poland: 0.53
Netherlands: 0.46
Australia: 1.00

Adapted from Carville et al, Liver Cancer in Victoria 1982-2007; VIDRL, 2012
Indicators of CHB in Melbourne

HCC Prevalence (Census)

Notifications

Prevalence (serosurvey)
Policy responses: treatment and care  
2nd National Hepatitis B Strategy 2014 - 2017

• Continued emphasis on partnerships; culturally competent community engagement; workforce development; shift focus to primary care

• **Targets** as well as indicators:
  – Childhood vaccination coverage: **95%**
  – *Increase* priority populations vaccination
  – Proportion diagnosed: **80%** (from 57%)
  – Antiviral treatment: **15%** (from 5%)
Hepatitis B transmission & risk factors

• Virus is transmitted through blood and bodily fluids

• Most people living with CHB in Australia acquired through *mother to child transmission*

• Adults at increased risk:
  – People who inject drugs
  – Men who have sex with men
  – People in custodial settings
  – Health care workers (if not vaccinated)
Acquisition of Hepatitis B

Mother with current hepatitis B infection (HBsAg+)

Vertical transmission

Infant

Infected

90%

5%

Recovered

10%

95%

Adult

Sexual or percutaneous transmission
How is hepatitis B prevented?

Pregnancy

• HBV vaccination and immunoglobulin given to baby within 12 hours of birth to help prevent mother-to-child transmission

This reduces the risk of transmission to the baby from 90% to 10%!

• Antiviral treatment for elevated HBV DNA (10 million IU/ml)
• Infants should then receive all doses of the HBV immunisation on the immunisation schedule – then be tested 3 months after the last dose.
Eligibility for free HBV vaccination

- Household contacts of people living with Hepatitis B
- Sexual partners of people living with Hepatitis B
- People who inject drugs or are on opioid substitution therapy
- People living with Hepatitis C (hepatitis C antibody positive)
- Men who have sex with men
- People living with HIV
- Prisoners and remandees
- People no longer in a custodial setting but who commenced but did not complete the vaccine course while in custody

Or... A vulnerable citizen - one who has experienced socioeconomic disadvantage, which compromised their equitable access to the vaccine during their period of eligibility.

If...
- Medicare eligible
- Permanent visa or have applied for a permanent visa
- Asylum seekers
DECISION-MAKING IN HBV

STEP 1 Should I test for HBV?
Who to offer testing to:
- People born in intermediate and high prevalence countries (offer interpreter)
- Aboriginal & Torres Strait Islander peoples
- Patients undergoing chemotherapy or immunosuppressive therapy (due to risk of reactivation)
- Pregnant women
- Infants and children born to mothers who have HBV (>9mths)
- People with clinical presentation of liver disease &/or elevated Alanine transaminase (ALT)/Alpha fetoprotein (AFP) of unknown aetiology
- Health professionals who perform exposure prone procedures
- Partner/household/sexual contacts of people with acute or chronic HBV
- People who have ever injected drugs
- Men who have sex with men
- People with multiple sex partners
- People in custodial settings or who have ever been in custodial settings
- People with HIV or hepatitis C, or both
- Patients undergoing dialysis
- Sex workers

STEP 2 To determine hepatitis B status, order 3 tests
Order HBsAg, anti-HBs and anti-HBc to determine susceptibility; immunity through vaccination or past infection; or current infection (acute or chronic).
All 3 tests are Medicare rebateable simultaneously.
Write ? chronic hepatitis B or similar on the request slip.
If acute HBV is suspected (through recent risk, presentation, or both) IgM anti-HBc can also be ordered to support clinical suspicion.

STEP 3 Interpreting serology

<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>Chronic HBV infection</td>
</tr>
<tr>
<td>positive</td>
<td>negative</td>
<td>positive</td>
<td>Acute HBV infection</td>
</tr>
<tr>
<td>negative</td>
<td>negative</td>
<td>positive</td>
<td>Susceptible to infection (vaccination should be recommended)</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>Immune due to resolved infection</td>
</tr>
<tr>
<td>negative</td>
<td>negative</td>
<td>positive</td>
<td>Immune due to hepatitis B vaccination</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>Various possibilities including distant resolved infection, recovering from acute HBV, false positive, occult HBV</td>
</tr>
</tbody>
</table>

STEP 4 Initial assessment if HBsAg positive
It is essential to assess the phase of disease (see graph for more information) by determining:
- Hepatitis B e antigen status (HBeAg and anti-HBe)
- HBV DNA level
- LFT, FBC, INR and alpha fetoprotein (AFP)
- Physical examination
- Liver ultrasound

IN ADDITION:
- Test for HAV, HCV, HDV and HIV to check for co-infection.
- Discuss vaccination if susceptible to HAV. Discuss transmission and prevention of BBVs.
- Screen household contacts and sexual partners for HBsAg, anti-HBs and anti-HBc, then vaccinate if susceptible to infection.
- Vaccination is recommended for all high risk groups, and is provided free in many cases. Contact your local Health Department for details.

STEP 5 Follow up and monitoring for chronic HBV
Patients with CHB must be regularly re-evaluated to determine which phase they are in and managed accordingly. See graph over page for more information. Also refer patient if evidence of chronic liver disease, suspicion of immune-suppression, pregnancy, <16 years or possible HCC on surveillance.

Hepatocellular carcinoma (HCC) surveillance (6 monthly ultrasound & AFP) is recommended in these HBsAg + groups:
- Asian men > 40
- Asian women > 50
- Africans > 20
- Patients with cirrhosis
- HCC family history

BEWARE ‘normal’ ALT
Elevated ALT levels are: >30 U/L MEN >19 U/L WOMEN


www.ashm.org.au
Australia’s first National Hepatitis B Testing Policy

www.testingportal.ashm.org.au/hbv
Who to offer testing to?

- People from priority CALD communities
- Aboriginal and Torres Strait Islander peoples
- All patients undergoing chemotherapy or immunosuppressive therapy (due to risk of reactivation).
- Pregnant women
- Infants and children born to mothers who have HBV
- People with clinical presentation of liver disease
- Partner /household /sexual contacts of people with acute or chronic HBV
- People who have ever injected drugs
- Men who have sex with men
- People with multiple sex partners
- People in custodial settings or who have ever been in custodial settings
- People with HIV or hepatitis C, or both
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- Sex workers
Hepatitis B testing

- Order 3 tests:
  - HBsAg – surface antigen
  - anti-HBc – core antibody
  - anti-HBs – surface antibody

- Do not order ‘Hepatitis B serology’
  - may only get HBsAg and/or anti-HBs
### Hepatitis B tests

<table>
<thead>
<tr>
<th>Test</th>
<th>What it shows</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HBsAg</strong> (surface antigen)</td>
<td>Hepatitis B infection</td>
</tr>
<tr>
<td><strong>HBsAb / Anti-HBs</strong> (surface antibody)</td>
<td>Immunity to hepatitis B via vaccination or natural clearance of infection</td>
</tr>
<tr>
<td><strong>HBcAb / Anti-HBc</strong> (core antibody)</td>
<td>Indicates current or past infection</td>
</tr>
<tr>
<td><strong>HBeAg</strong></td>
<td>Active viral replication and infectivity</td>
</tr>
<tr>
<td><strong>HBeAb / Anti-HBe</strong></td>
<td>Low or no viral replication</td>
</tr>
<tr>
<td><strong>HBV DNA</strong> (Hepatitis B DNA or viral load)</td>
<td>Measures amount of virus in the blood, used to monitor treatment response, especially development of resistance</td>
</tr>
</tbody>
</table>
Once CHB is diagnosed

Order the following tests to check phase of disease and co-infection:

- HBeAg and anti-HBe
- HBV DNA (viral load)
- LFTs, FBE, INR, AFP
- Abdominal ultrasound
- Hepatitis A, C and D serology
- HIV serology
Natural History of Chronic HBV: The 4 Phases and Relevance to Treatment Decisions

- **HBV DNA**
- **ALT**
- **HBeAg**
- **Anti-HBe**

**Immune Tolerance**
- High HBV DNA, Normal LFTs, HBeAg positive
- Monitor every 6-12 months

**Immune Clearance**
- High HBV DNA, Abnormal LFTs, HBeAg positive
- At risk of progression to cirrhosis and HCC: therefore should be referred for consideration of treatment

**Immune Control**
- Low HBV DNA, Normal LFTs, HBeAg neg; anti-HBe pos
- Monitor every 6-12 months

**Immune Escape**
- High HBV DNA, Abnormal LFTs, HBeAg neg; anti-HBe pos
- At risk of progression to cirrhosis and HCC: therefore should be referred for consideration of treatment
Hepatitis B and HCC screening

6 monthly ultrasound +/- alpha fetoprotein (AFP) blood test:

- African-born people >20
- Asian-born males >40
- Asian-born females >50
- Aboriginal and Torres Strait Islander >50
- Patients with cirrhosis
- Family history of primary liver cancer
Treatment

• Straight forward if patients meet the criteria
  - Phase 2/immune clearance
  - Phase 4/immune escape

• Two main antivirals:
  - Entecavir
  - Tenofovir
Goal of antiviral treatment

- Sustained suppression of hepatitis B virus replication
  - reduce damage to the liver
  - prevents the progression of liver disease to cirrhosis
  - reduces (or eliminates) the risk of liver failure and the development of hepatocellular carcinoma

- Generally considered as control of disease, rather than cure (similar to blood pressure or diabetes management)
## Role of nurses

<table>
<thead>
<tr>
<th>ROLE</th>
<th>HOW</th>
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</thead>
<tbody>
<tr>
<td>Increase CHB diagnosis</td>
<td>• Encourage clients to know their status:</td>
</tr>
<tr>
<td></td>
<td>- susceptible, vaccinated, past infection or current infection</td>
</tr>
<tr>
<td></td>
<td>• Have a conversation - use interpreters</td>
</tr>
<tr>
<td></td>
<td>• Nurse initiated or referral to doctor</td>
</tr>
<tr>
<td></td>
<td>• Gain informed consent</td>
</tr>
<tr>
<td>Contact tracing</td>
<td>• Encourage family members, sexual contacts and household contacts to</td>
</tr>
<tr>
<td></td>
<td>be tested</td>
</tr>
<tr>
<td></td>
<td>• Give patients a written letter to give to their contacts to assist</td>
</tr>
<tr>
<td></td>
<td>with this</td>
</tr>
<tr>
<td></td>
<td>• Document process and results of this in patient's file</td>
</tr>
<tr>
<td>HBV vaccination</td>
<td>• Encourage and promote if susceptible – for many people it is now</td>
</tr>
<tr>
<td></td>
<td>free</td>
</tr>
<tr>
<td></td>
<td>• Test HBV immunity after final dose</td>
</tr>
<tr>
<td>Improve health literacy</td>
<td>• Assess level of CHB understanding and address gaps – health</td>
</tr>
<tr>
<td></td>
<td>literacy</td>
</tr>
<tr>
<td></td>
<td>• Use health literacy tools such as “Hepatitis B story”</td>
</tr>
</tbody>
</table>
## Role of nurses

<table>
<thead>
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<th>ROLE</th>
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</table>
| Care and support for people with CHB     | • Consider cultural background and different health beliefs  
• Understand the affects of and address any stigma and discrimination – use support networks  
• Ensure they are engaged in regular monitoring and liver cancer surveillance – blood tests and ultrasounds  
• **If they aren’t in care organise a referral!**  
• Advocate and negotiate on behalf of clients with CHB to improve access to care |
| Promote health and wellbeing              | • Liver health messages – refer to Allied Health if necessary  
• Avoid alcohol and smoking  
• Healthy diet and healthy body weight  
• Exercise and keep active                                                                                               |
| Nursing management plans                  | • Ensure monitoring requirements are in all nursing care plans  
• Develop a chronic disease management plan – in primary care eligible for MBS 721/723                                                                                     |
### Role of midwives

<table>
<thead>
<tr>
<th>ROLE</th>
<th>HOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informed consent of birth dose of HBV vaccination</td>
<td>• When providing advice to any mother on whether to have birth dose – need to understand the risks of a potential exposure at home</td>
</tr>
</tbody>
</table>
| Timely specialist consultation before week 28 | • Women should be fast tracked – establish referral pathways with hepatologist  
• May need HBV treatment |
| Timeliness of HBV vaccination and HBIG | • Have it flagged in the woman’s history  
• Ensure mother has consented, understands the importance and why it is required  
• Ensure it is always given within 12 hours of birth  
• Encourage woman’s husband/partner/support person to make this their job to advocate |
| Discharge summaries and follow up | • Record immunoglobulin on discharge summary  
• Record when next monitoring is due and mother is aware  
• If not linked into any care make a referral! |
“The hepatitis B story……..”

…. a resource to use in discussion with clients who have low health literacy.

Gabrielle Bennett, Victorian Viral Hepatitis Educator, St Vincent’s Hospital, Melbourne
Summary

• 218,000 Australians are living with CHB
• Over 100,000 people with CHB are unaware of their infection
• Liver cancer rates are increasing faster than any other cause of cancer
• Nurses have an incredibly important role to play in addressing this neglected chronic disease to:
  – increase the diagnosis of people with CHB
  – increase the number of people with CHB receiving adequate care and support
References


