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Minimizing the risk of blood-borne virus infection amongst PWID

Project ECHO®
St.Vincent's Hospital, Melbourne
Australia

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Opioid Agonist Therapy

- Central concept to opioid agonist therapy is risk minimisation
- Well established that adherence to opioid agonist therapy associated with decreased mortality
  - One retrospective study reviewing 55,347 individuals with opioid use disorder from 1996 to 2018 who underwent OAT – standardised all-cause mortality risk ratio was 4.6 on OAT compared with 9.7 off OAT [1]
- [1] https://pubmed.ncbi.nlm.nih.gov/32234712/

Risk of Transmission

- Which viruses do we worry about?

- HCV, HBV, HIV

- Risk of transmission after exposure depends on the source's status and specific exposures

- HCV – Predominantly acquired via exposure from injecting drug use (Odds ratio 49.6), accounts for approx. 60%.

- HIV – Modes of transmission varies from country to country. Risk of per-act acquisition via needle-sharing injecting drug use 67/10,000 (1/150)

- HBV – Varies between countries. Most sexual/maternal-foetal in endemic areas

HCV Epidemiology

- Acute infection progresses to chronic disease in 75% of cases
- 20-30% of patients with chronic HCV will develop cirrhosis (20-30 years)
- Incidence of new HCV diagnoses declined since 2000 – multifactorial
- Treatment uptake in Australia prior to DAA was low (4000 patients/year, 1-2%)
- HCV antibody prevalence amongst PWID – 51% in 2016 -> 39% 2020
- Estimated active HCV prevalence amongst PWID – 33% in 2016 -> 16% in 2020

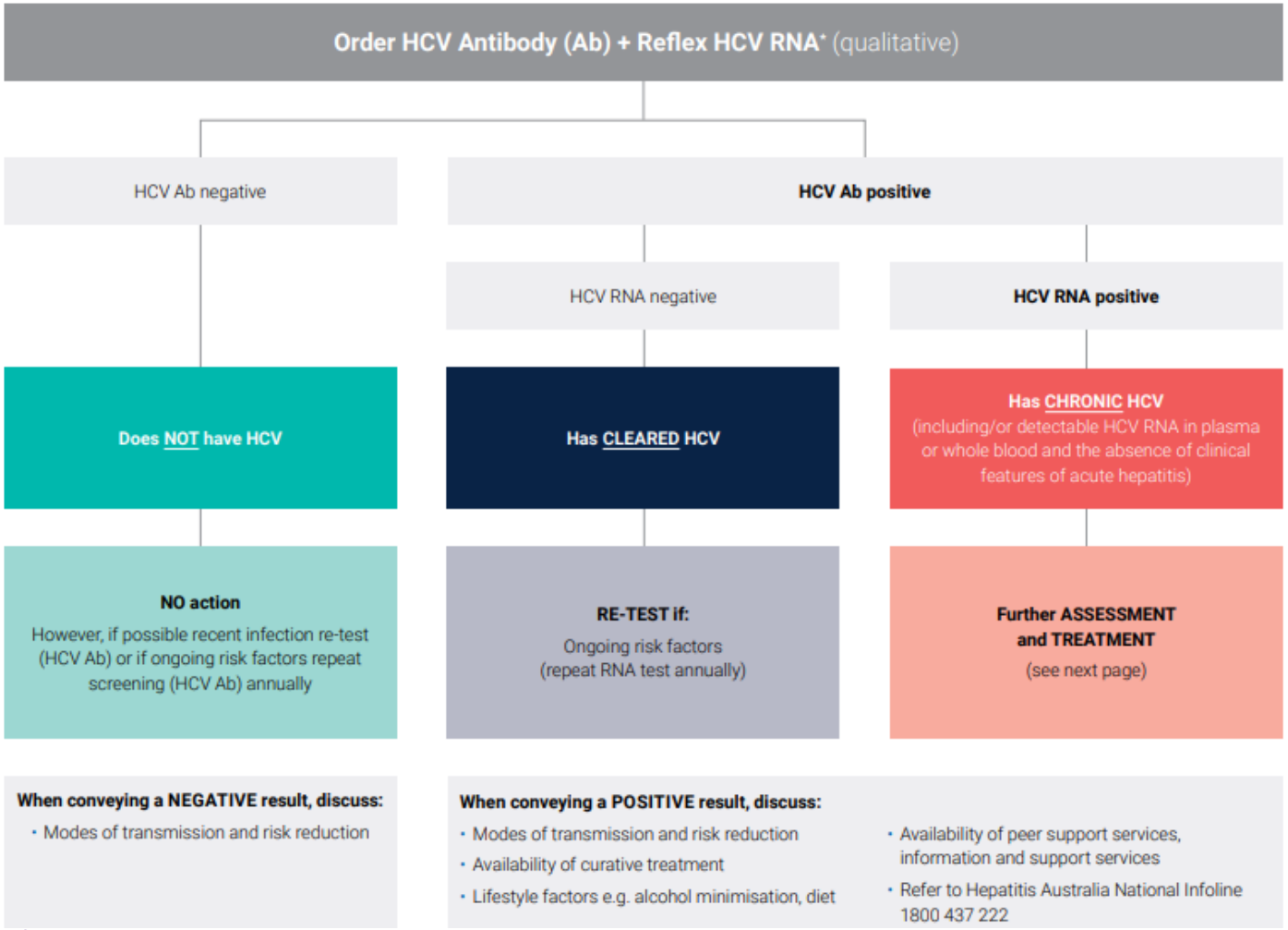
Testing of Blood-borne Viruses

- HCV testing – HCV antibody (if exposed, will remain positive), HCV viral load/RNA PCR. Antibody does not confer any immunity.

- HIV testing – rapid antigen/antibody assay for HIB p24 antigen + HIV antibodies. Determine HIV status of source (?undetectable viral load)

- HBV testing – Complicated. HBsAg, Anti-HBsAb, AntiHBcAb

Interpretation of Hepatitis C Testing



Follow-up of HCV Testing

Baseline screening after positive HCV PCR

- ☐ LFTs (including AST) and INR
- ☐ Full Blood Count
- ☐ Urea, electrolytes, creatinine

Assess liver fibrosis: cirrhotic status

- ☐ Signs of chronic liver disease (spider naevi, palmar erythema, jaundice, encephalopathy, hepatomegaly, splenomegaly, ascites, peripheral oedema)
- ☐ Non-invasive assessment of fibrosis:
  - Serum biomarkers such as APRI (<1.0 means cirrhosis unlikely). Calculator available hepatitisc.uw.edu/page/clinical-calculators/apri
  - Elastography assessment e.g. Fibroscan® (>12.5 kPa consistent with cirrhosis)

Check for other causes of liver disease

- ☐ Check for viral coinfection:
  - HIV Ab/Ag
  - Hepatitis A – check hep A IgG; vaccinate if negative
  - Hepatitis B – check HBsAg, anti-HBc and anti-HBs; vaccinate if all negative
- ☐ Heavy alcohol intake
- ☐ Fatty liver disease - check weight, BMI

Check for other major co-morbidities

- ☐ Renal impairment (eGFR < 50)

Review previous HCV treatment

- Choice/length of treatment may be influenced by prior HCV treatment experience/response

Consider pregnancy and contraception

- HCV treatment not recommended for use in pregnant or lactating women

Recommendation for treatment now includes all people with a risk factor for hepatitis C transmission who are found to have detectable HCV RNA in plasma or whole blood, regardless of the duration of infection.

Is your patient likely to have cirrhosis?
(APRI ≥ 1.0 or Fibroscan® > 12.5 kPa)

- ☐ Yes → Discuss with or refer to a specialist#
- ☐ No

Has your patient received previous treatment for HCV?

- ☐ Yes → Discuss with or refer to a specialist#
- ☐ No

Treatment	Dosage	Duration if no cirrhosis present	Duration if compensated cirrhosis (Child Pugh A) present
SOF/VEL~ (Epclusa®)	400/100mg Once-daily (1 pill)	12 weeks	12 weeks
GLE/PIB~ (Maviret®)	100/40mg per pill Once-daily (3 pills)	8 weeks	8 weeks†

- ☐ Check for drug-drug interactions at hep-druginteractions.org
- ☐ Call the PBS Authority Script Line (1800 020 613) for approval

Consult with your local specialist or complete the online remote consultation form at reach-C.ashm.org.au (turn-around time <24 hours).

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Interpretation of Hepatitis B testing

To determine hepatitis B status, order 3 tests.

Request:

- **HBsAg** (hepatitis B surface antigen)
- **anti-HBc** (hepatitis B core antibody)
- **anti-HBs** (hepatitis B surface antibody)

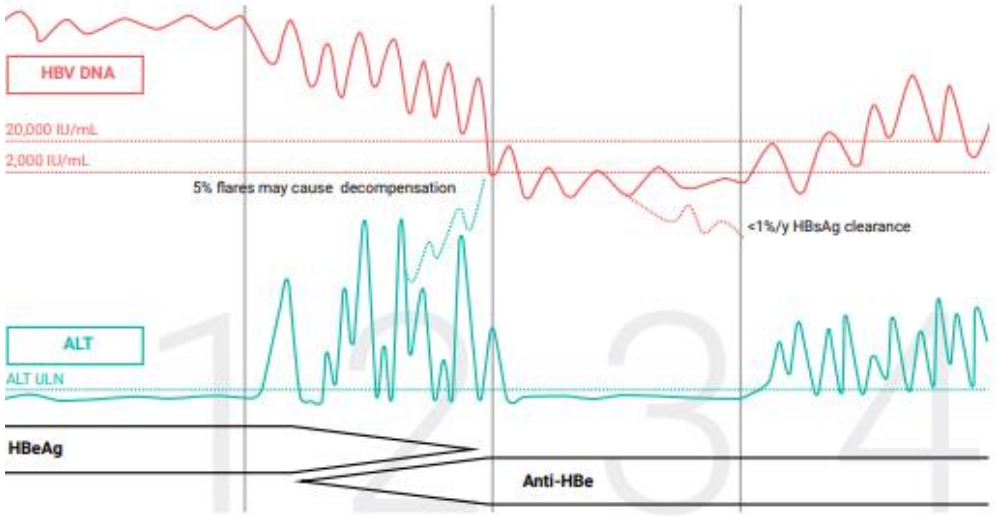
If acute HBV is suspected (through recent risk, presentation, or both), anti-HBc IgM can also be ordered.

By ordering all 3 tests you can determine **susceptibility, immunity** through vaccination or past infection, or **current infection**.

All 3 tests are Medicare rebatable simultaneously. Write '? chronic hepatitis B' or similar on the request slip.

HBsAg **anti-HBc** **anti-HBs**	**positive** **positive** **negative**	**Chronic HBV Infection** Progress to step 4
HBsAg **anti-HBc** **anti-HBc IgM*** **anti-HBs**	**positive** **positive** **positive** **negative**	**Acute HBV Infection** * (high titre) Progress to step 4
HBsAg **anti-HBc** **anti-HBs**	**negative** **negative** **negative**	**Susceptible or non-immune** When there is no documented history of completed vaccination, then vaccination is recommended†
HBsAg **anti-HBc** **anti-HBs**	**negative** **positive** **positive**	**Immune due to resolved infection** Record result and consider family screening
HBsAg **anti-HBc** **anti-HBs**	**negative** **negative** **positive**	**Immune due to hepatitis B vaccination** No action required
HBsAg **anti-HBc** **anti-HBs**	**negative** **positive** **negative**	**Various possibilities, including: distant resolved infection, recovering from acute HBV, false positive, 'occult' HBV** Refer to bpositive.org.au for more details

Patients with CHB must be **regularly re-evaluated** to determine which phase they are in and managed accordingly.



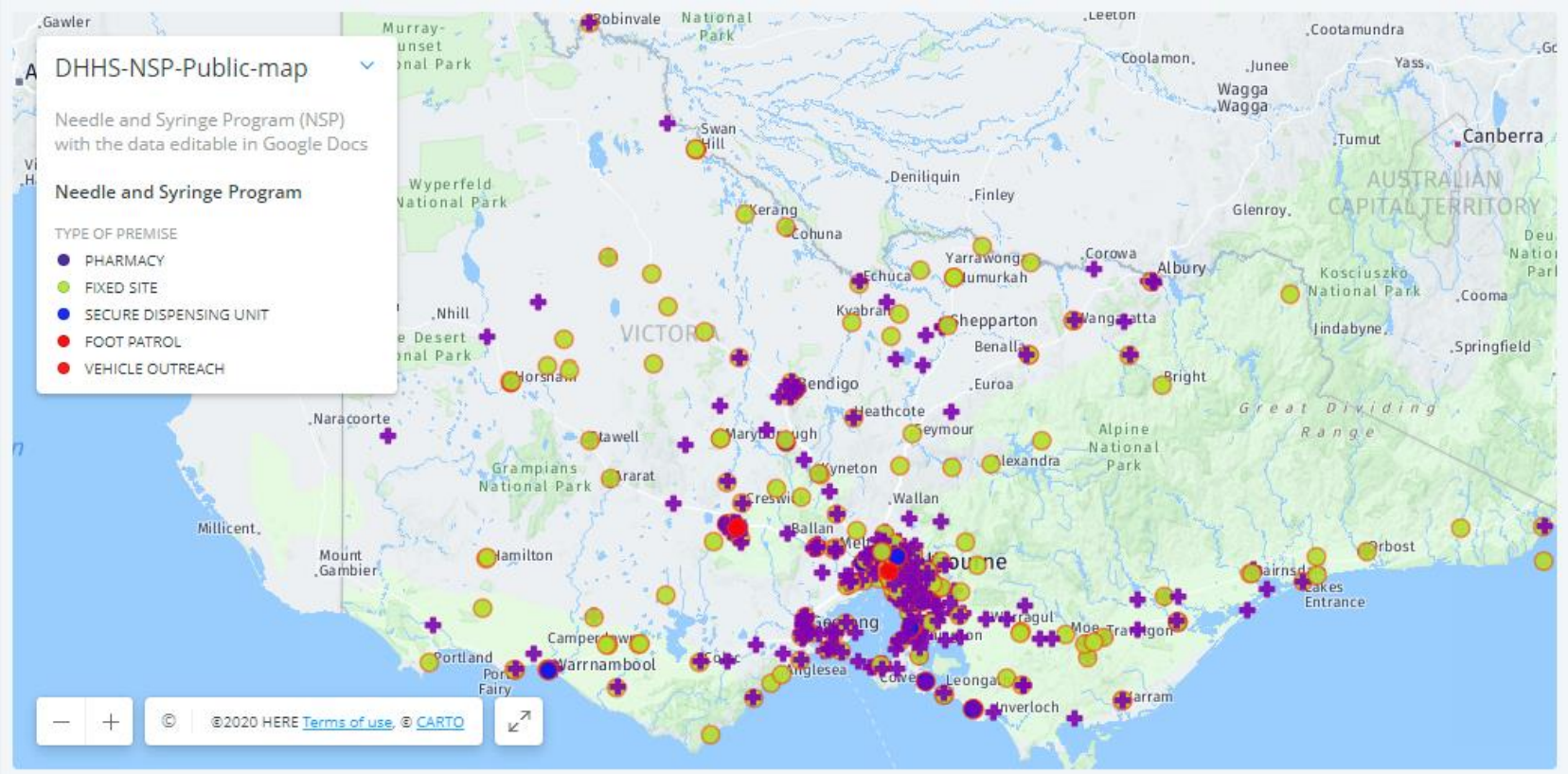
HBeAg-positive chronic infection (Immune tolerance)	HBeAg-positive chronic hepatitis (Immune clearance)	HBeAg-negative chronic infection (Immune control)	HBeAg-negative chronic hepatitis (Immune escape)
· **HBV DNA: high†** $>10^7$ IU/mL · **ALT: normal** · **HBeAg positive**	· **HBV DNA: high†** >20 000 IU/mL · **ALT: elevated** Elevated is >30 IU/L men; >19 IU/L women · **HBeAg positive**	· **HBV DNA: low†** <2000 IU/mL · **ALT: normal** · **HBeAg negative** · **anti-HBe positive**	· **HBV DNA high†** >2000 IU/mL · **ALT: elevated** Elevated is >30 IU/L men; >19 IU/L women · **HBeAg negative** · **anti-HBe positive**
Treatment not required	**Refer to s100 community prescriber or specialist for consideration of treatment** Risk of progression to cirrhosis and HCC	**Treatment not required**	**Refer to s100 community prescriber or specialist for consideration of treatment** Risk of progression to cirrhosis and HCC

† Medicare covers HBV DNA testing once per year for patients not on treatment and 4 times per year for patient on treatment

Needle and Syringe Program

- Public health initiative aimed to minimise spread of BBV
- Program began in 1987 through range of services
  - Funded NSPs
  - Community health services
  - ED services
  - Youth organisations
  - Participating pharmacies
- Goal is to increase accessibility of new injecting equipment and safe disposal services – encouraging single use (needles, syringes, tourniquets, filters etc.)
- Improved referral systems to enhance access to other health and welfare services

Needle and syringe program



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Medically supervised injecting room

- Goal of harm reduction by providing supervised space for injecting
  - Reduce rate of community overdose and harm
  - Reduce incidence of public injecting and number of discarded needles in public areas
  - Mitigate risk of transmission of BBV through availability of needle syringe program
  - Improve pathways for healthcare engagement
    - Novel point-of-care testing for hepatitis C -> test & treat HCV all within time of attendance
- June 2018 first Victorian MSIR opened at North Richmond Community Health

POCT

- Our SVHM experience – Kirby POCT
- Recruiting from March 2024
- Essentially trying to test every patient attending our Opioid clinic – ensuring patients are up to date with HCV screening
- Combined HCV Ab testing +/- PCR
- Amongst our cohort – 4 cases identified from 46 tests
- All identified cases have gone on to receive treatment – DoAM, MSIR, Gastroenterology unit

Treatment of HCV

- Treatment has significantly improved (no longer interferon-based)
- HCV treatment – pan-genotypic, 95% cure rate (in patients without cirrhosis), typically well tolerated
- 5 key questions – viral load/previous treatment experience, cirrhosis, co-infection, drug-drug interactions, renal function
- First line treatments – Epclusa (1 tablet daily for 12 weeks or Maviret (3 tablets per day for 8 weeks)

Treatment

Treatment criteria:
Must be treated by a medical practitioner or an authorised nurse practitioner experienced in the treatment of chronic hepatitis C infection; or in consultation with a gastroenterologist, hepatologist or infectious diseases physician experienced in the treatment of chronic hepatitis C infection.

The following information must be provided at the time of application:

- the patient's cirrhotic status (non-cirrhotic or cirrhotic)
- details of the previous treatment regimen (**only** for requests for sofosbuvir + velpatasvir + voxilaprevir (Vosevi®) or glecaprevir + pibrentasvir (Maviret®) for treatment in patients who have previously failed a treatment with a regimen containing an NS5A inhibitor).

The following information must be documented in the patient's medical records:

- evidence of chronic hepatitis C infection (repeatedly antibody to hepatitis C virus (anti-HCV) positive and hepatitis C virus ribonucleic acid (HCV RNA) positive); and
- where possible, evidence of the hepatitis C virus genotype

Resources

- ASHM Guidelines
- Hepcguidelines.org
- Harm Reduction Victoria
- Victorian Department of Health

Questions or comments?

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