FACULTY OF HEALTH SCIENCES

UNIVERSITY OF CAPE TOWN

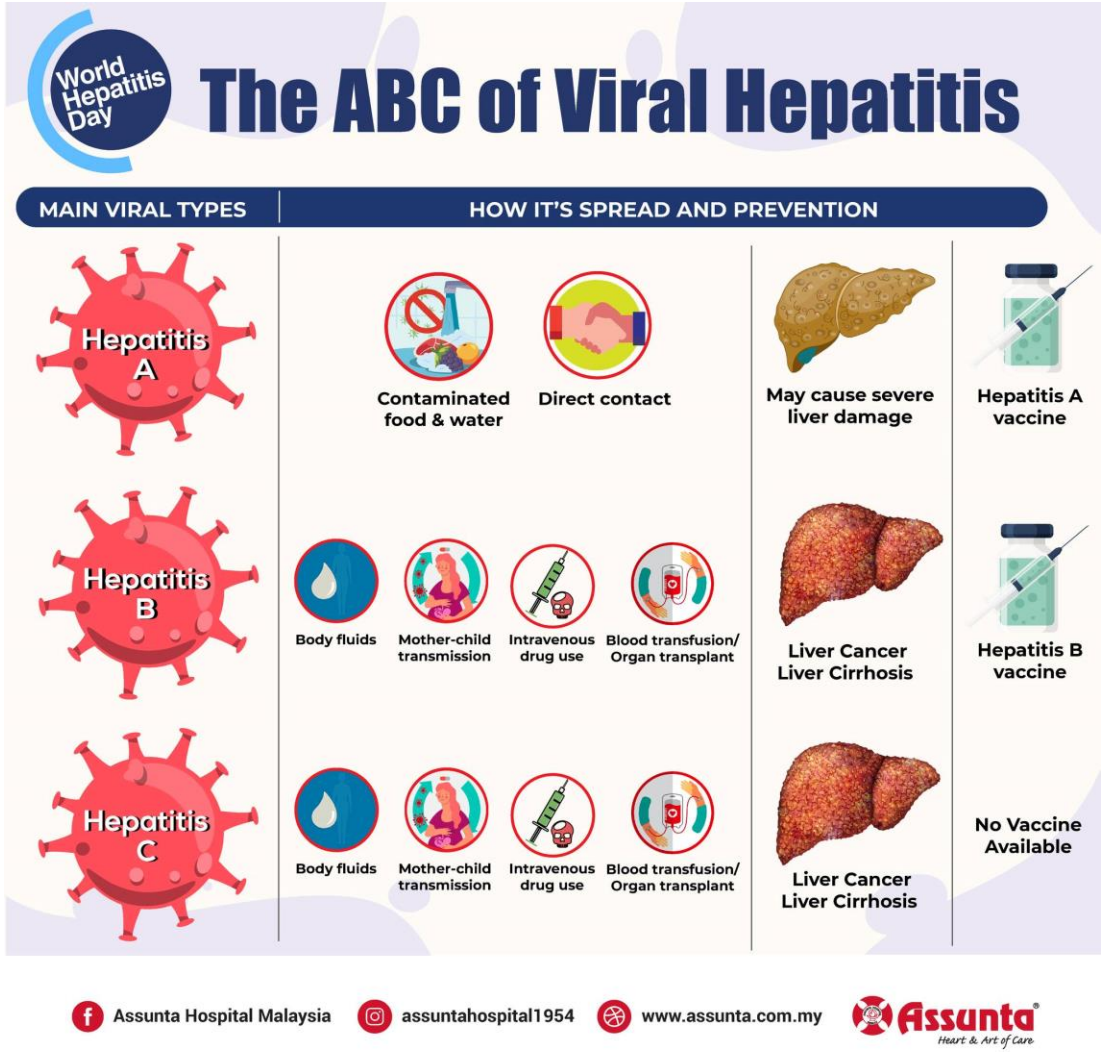
Pertinent Vaccines for the Workplace:

Hepatitis A and Hepatitis B vaccines in the workplace, do I need one?

Dr Zahida Sonday
Occupational Medicine Specialist

Occupational Medicine Division
School of Public Health, University of Cape Town

Viral Hepatitis

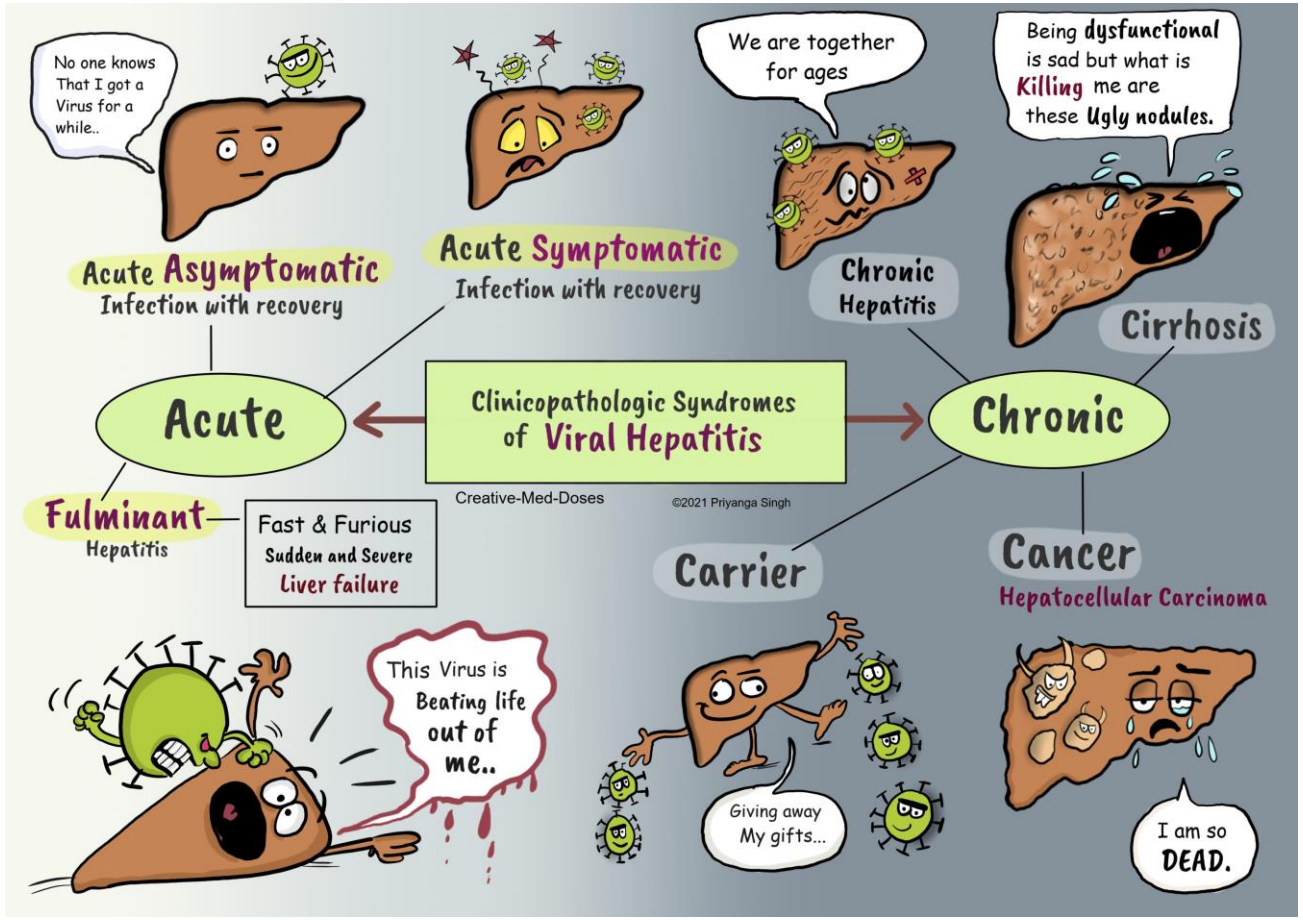


**All blood in SA is now screened for Hepatitis B and C*

Other viral types:

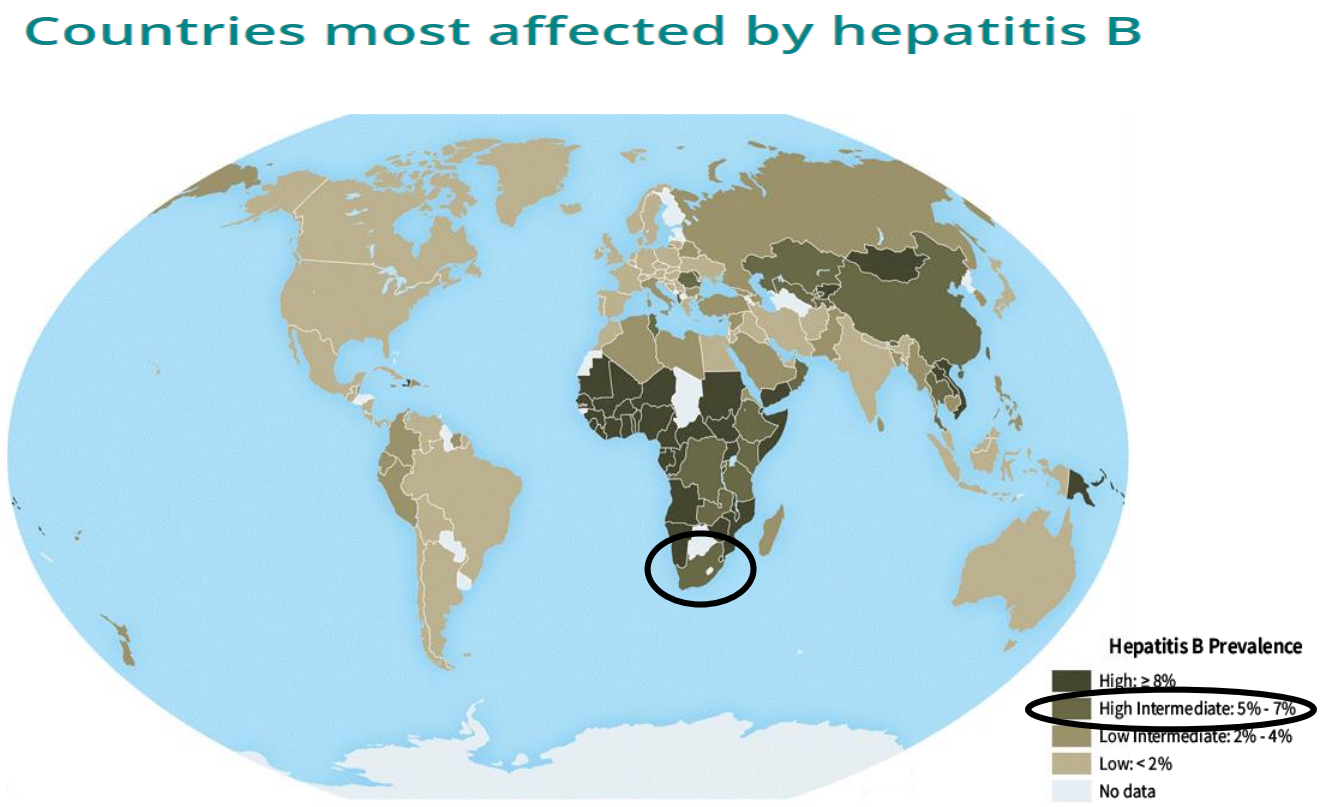
- **Hepatitis D**
  - Transmitted by contaminated blood / body fluids
  - Can only be contracted if you have hepatitis B / are co-infected with hepatitis B
- **Hepatitis E**
  - Transmitted by contaminated water and food (faeco-oral)

Hepatitis B virus (HBV)



HBV: Context

- HBV infection is the 7th leading cause of mortality in the world
- HBV infection in SA is endemic
  - Estimated 6.7% HBsAg seroprevalence *(Schweitzer, 2015)*; more recent studies suggest up to 25% *(SA National Guidelines for Viral Hepatitis 2019)*
  - Underestimated due to inadequate disease surveillance
  - Many are coinfected with HIV/HBV



Source: Centers for Disease Control and Prevention. CDC Yellow Book 2020: Health Information for International Travel. New York: Oxford University Press; 2019.

HBV: Transmission risk

- Which body fluids transmit HBV?
  - Infected blood/blood products, sexual fluids
  - **present in saliva but not readily transmitted – risk exists with bites, sharing toothbrushes*
- Risk of transmission

Injury type	Transmission risk		
	HIV	HBV	HCV
Hollowbore needlestick injury	0.23% *(WHO, 2014)*	30-60% from exposure to eAg-positive blood* 10-30% with eAg-negative blood*	0 to 7%* (average 1.8%)
Splash injury	0.09% *(Kuhar, 2014)*	Variable, depending on source eAg status	Rare

**SA Viral Hepatitis Guidelines, 2019*

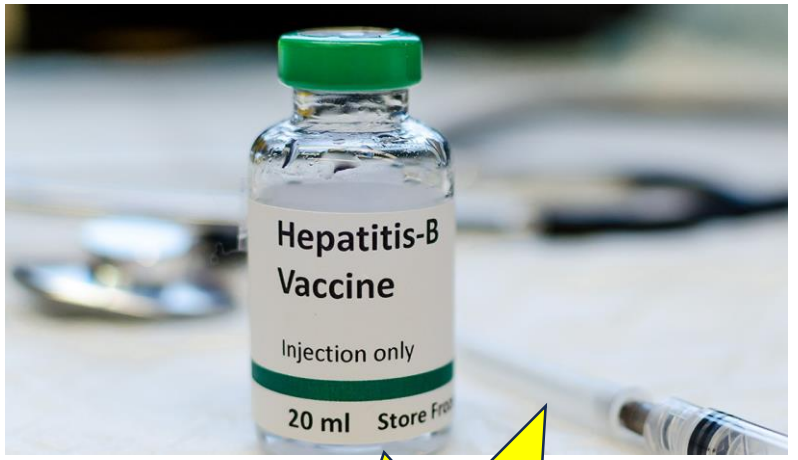
- Virus is viable for 7 days on surfaces

Which workers are at high risk?

Occupational group	How?
Health workers (clinical and non-clinical e.g. cleaners, work in clinical areas) including students	Sharps (percutaneous) or splash (mucous membranes) injuries
Laboratory workers	Work with clinical specimens
Police, firefighters, members of the armed forces, security	Emergency care provision, risk of violence
Workers in **facilities for disabled / correctional service facilities**	Risk of violence / human bites
Accommodation staff (e.g. cleaners, laundry), **waste/recycling industry staff, parks and garden employees**	Accidental contact with infected blood / body fluids (e.g. soiled linen)
Sex workers	Unprotected intercourse

Vulnerable : HIV-infected workers

HBV prevention: Vaccination



- HBV (and its complications) is a **vaccine preventable** disease
- Available formulations are **safe** and do not transmit HBV
- Vaccine stored at **2-8^{o}C** but is somewhat thermostable
- Usual HBV vaccine dosage: 20µg (1 ml) IMI into deltoid muscle in adults
- **Dosing schedules** depend on:
  - type of vaccine
  - age of administration (child / adult)
  - need for rapid immunisation
  - previous non-response to HBV immunisation
- **Response rates**:
  - Decline when given to older individuals
    - <90% in persons older than 40 years
    - 75% in those older than 60 years
  - Host factors (e.g. age, smoking, obesity, cirrhosis, genetic factors, immune suppression, renal failure, etc.) result in a decreased vaccine response
- **Immunity is at least 20 years, probably lifelong**
  - No longer recommend 5-yearly boosters, except for certain immunocompromised individuals

- **Health risk assessments and control**
- **Information, education and training**

HBV vaccination continued

- **Available HBV vaccines**:
  - Public sector: children (EPI since 1995); adults – health workers
  - Private: **Engerix-B, Euvax-B, Heberbiovac HB** (cost: ~R110-150)

- **Adult dosing schedule**:
  - 3-dose primary vaccine series: **0, 1 and 6 months**
  - Alternative schedules: 0, 1-2 and 4-6 months; or 0, 1, 2, and 12 months
  - Recommend: Immunity measured by **antibody (anti-HBs) response**
    - ~10% non-responders → require revaccination (75% remain susceptible)

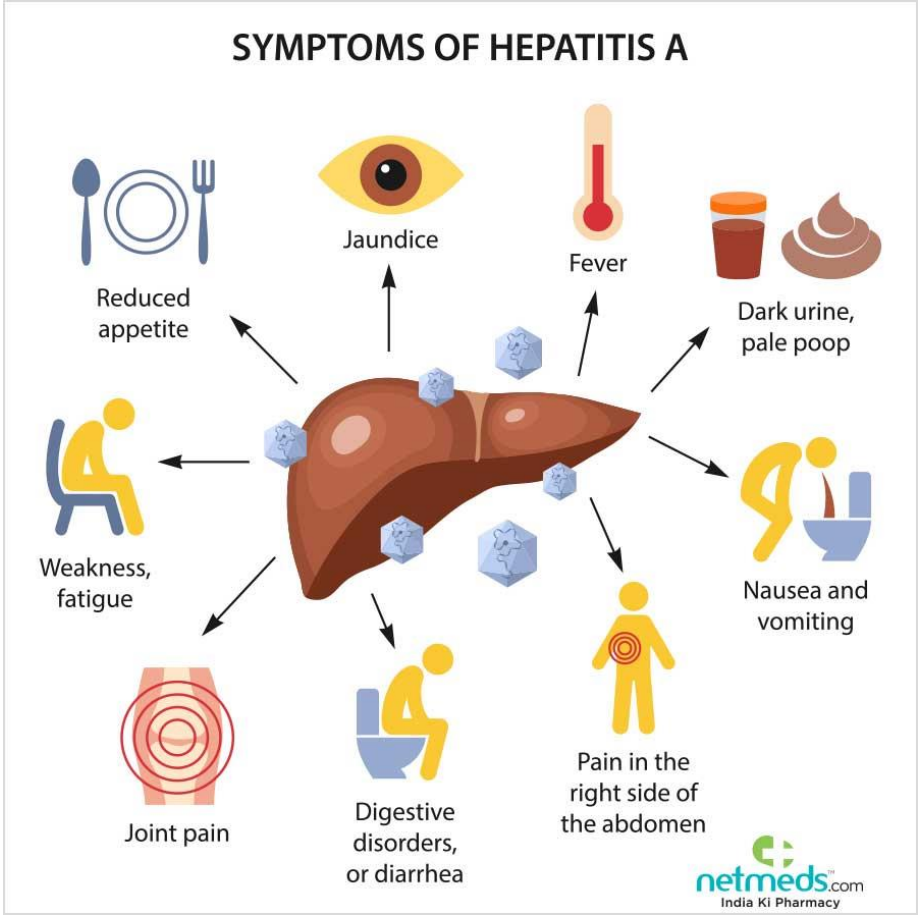
- **Hepatitis B immunoglobulin (HBIG)** available for non-immune individuals / non-responders

Hepatitis A (HAV)

- Commonest cause of **acute viral hepatitis** in SA
- Endemic in southern Africa, but true burden of disease unknown
  - HAV infection is a **notifiable disease** in SA

- Transmission is predominantly **faeco-oral**
  - Anal-oral sexual transmission also occurs
  - Transmission via blood products has been described

- Infection is usually **self-limiting**, but complications (e.g. fulminant hepatitis and liver failure) can occur



HAV: Which workers are at risk?

- **Health workers**
- **Raw sewage workers**
- Those **working with children** e.g. employees of day care centres
- **Employees of closed communities (institutions)** where personal hygiene of residents is compromised, residents are incontinent or wear nappies e.g. frail care, rehabilitation centres
- **International travel for work** from non-endemic to endemic regions

- **Food handlers**: Not at higher risk for infection, but pose a high risk of transmission

HAV prevention: Vaccination

- **Available vaccines**
  - Not freely available in the public sector
  - Private: Avaxim; Havrix (cost ~R315-350)
- **Adult dosing schedule**
  - Single dose with a booster at 6-12 months
  - 95% efficacy after two doses; lifelong immunity
  - Another booster may need to be considered in immunocompromised individuals
- Vaccine effective for **pre- and post-exposure prophylaxis** (PrEP and PEP)

- PEP with **HAV immunoglobulin** (human normal immunoglobulin HNIG)
  - 0.02 to 0.04 ml/kg IMI, preferably within 72 hours of exposure
  - can be administered up to 14 days post-exposure
  - administration up to 4 weeks post-exposure may reduce disease severity in high-risk contacts and immunocompromised individuals

- Many adults in SA have **natural HAV immunity**

Combined vaccines

- Combined HAV and HBV vaccines are available for adults, in private sector
  - **Twinrix** (Cost ~R370)
  - Dosing schedule
    - Standard : 3 doses (1-mL each), given intramuscularly at 0, 1, and 6 months
    - Accelerated : 4 doses (1-mL each), given intramuscularly on days 0, 7, and 21 to 30 followed by a booster dose at month 12

Take home points