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# Hepatitis B Protocol

14 July 2020

## 1. Background

### 1.1 Acronyms

| | | |
|---|---|---|
| HBV | - | Hepatitis B virus |
| HIV | - | Human immunodeficiency virus |
| HBsAG | - | Hepatitis B surface antigen |
| anti-HBS | - | Antibody to hepatitis B surface antigen |
| HBIG | - | hepatitis B immune globulin |
| Anti-HBc | - | Total hepatitis B core antibody |

### 1.2 Why vaccinate against hepatitis B?

Hepatitis B and its complications is a vaccine preventable disease. People with chronic HBV infection have an increased risk (15 to 40%) of developing cirrhosis, liver failure and hepatocellular cancer. (1)

HBV is a blood borne virus, therefore workers who work with blood and body fluids are at high risk of occupationally acquired hepatitis B. A study amongst healthcare workers in Gauteng and Mpumalanga by Sondlane et al, found high rates of active HBV infection and inadequate protection against HBV in health care workers. (2) There is therefore a need to formalise the vaccination programmes through written protocols that assists in protection for healthcare workers and their patients.

### 1.3 Groups at risk of HBV exposure

Hepatitis B vaccination is recommended for the following groups who are considered at increased risk: (1,3,4)

- **Healthcare workers (including students and trainees):** all healthcare workers who may have direct contact with patients' blood, blood-stained body fluids or tissues, require vaccination. This includes any staff who are at risk of injury from blood-contaminated sharp instruments, or of being deliberately injured or bitten by patients. Advice should be obtained from the appropriate occupational health department.
- **Laboratory staff:** any laboratory staff who handle material that may contain the virus require

vaccination.

- **Workers who handle human effluent or biosolids**
- **Other occupational risk groups:** in some occupational groups, such as morticians and embalmers, there is an established risk of hepatitis B, and immunisation is recommended.(3)

## 1.3 Hepatitis B vaccine schedule

Generally the primary schedule consists of 3 doses at zero, 1 and 6 month intervals. A fourth dose may be given as a booster. (1,3,5)

### 1.3.1 Administration

Intramuscularly in the upper arm or anterolateral thigh – not in the buttocks.

### 1.3.2 Confirmation

Antibody titres should be checked one to four months after the completion of the primary course.

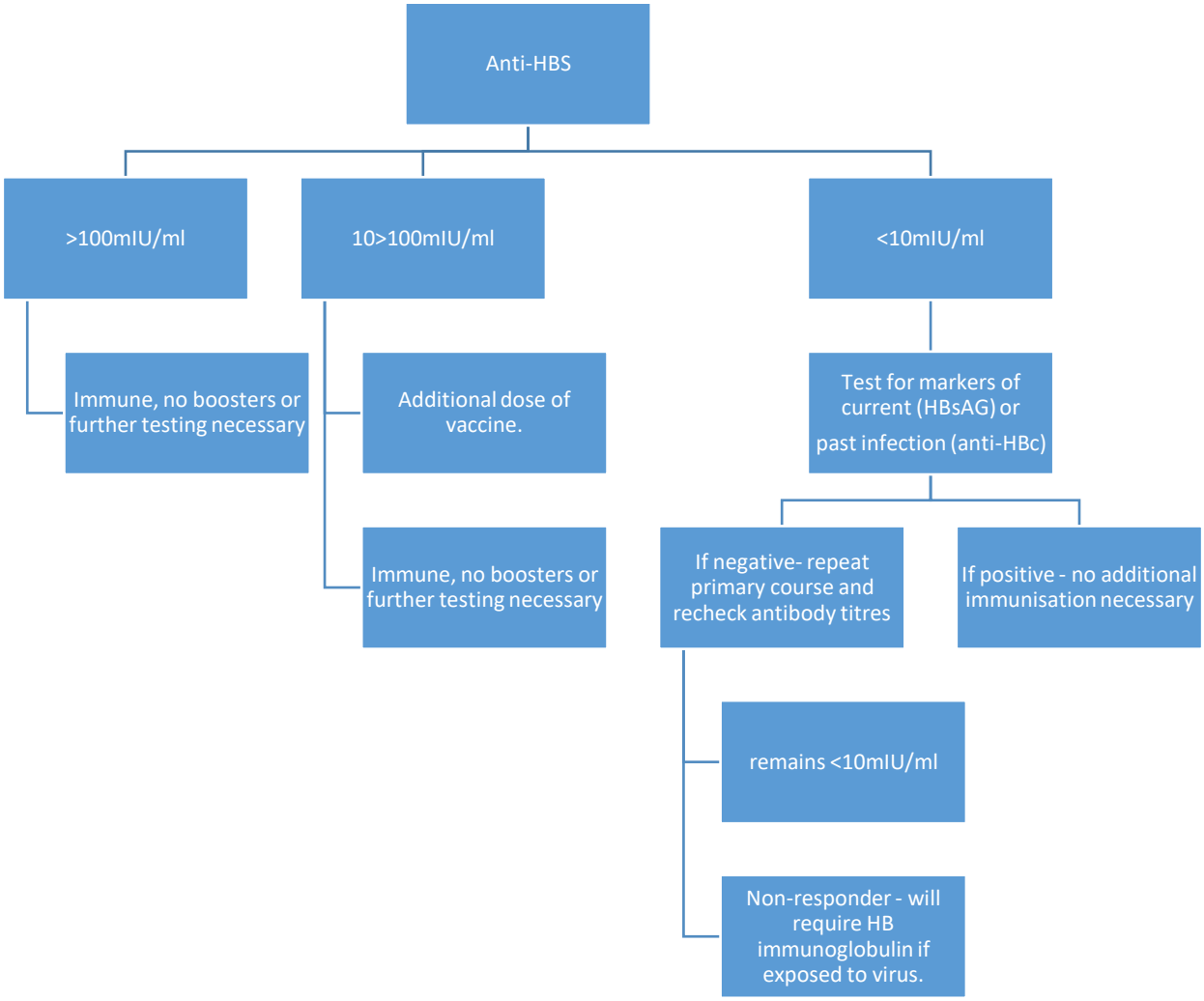


*Figure 1 Response to hepatitis B antibody titre after primary vaccination*(3)

## 1.4 Precautions

### 1.4.1 Pregnancy and breastfeeding

Immunization should be given if there is a definite risk of infection. (3)

### 1.4.2 HIV and immunosuppressed individuals (1)

Vaccine should be given. Response rates are usually lower, and it may be necessary to increase the number of doses. Evidence to support a specific dosing regimen or schedule is limited.

## 1.5 Hepatitis B Tests Results Interpretation

*Table 1 Aide Memoire: Hepatitis B serology interpretation (3)*

| Serology | Result | Interpretation |
|---|---|---|
| HBsAG<br>anti-HBc<br>anti-HBs | Negative<br>Negative<br>Negative | Susceptible |
| HBsAG<br>anti-HBc<br>anti-HBs | Negative<br>Positive<br>Positive | Immune due to natural infection |
| HBsAG<br>anti-HBc<br>anti-HBs | Negative<br>Negative<br>Positive | Immune due to hepatitis B vaccination |
| HBsAG<br>anti-HBc<br>IgM anti-HBc<br>anti-HBs | Positive<br>Positive<br>Positive<br>Negative | Acutely infected |
| HBsAG<br>anti-HBc<br>IgM anti-HBc<br>anti-HBs | Positive<br>Positive<br>Negative<br>Negative | Chronically infected |
| HBsAG<br>anti-HBc<br>anti-HBs | Negative<br>Positive<br>Negative | Interpretation unclear; four possibilities:<br>1. Resolved infection (most common)<br>2. False-positive anti-HBc, thus susceptible<br>3. "Low level" chronic infection<br>4. Resolving acute infection |

# 2. Procedure

## 2.1 Process

### New employee or new project.

- Determine if the employee has previously had the full hepatitis B vaccination series (documented proof of full vaccination series should be provided)
- If unvaccinated, incompletely vaccinated or uncertain, initiate the primary schedule as detailed in section 1.3.
- If the employee has documentary evidence of having been previously immunised, arrange for a blood test to determine HBs antibody titres (anti-HBS) and manage results as illustrated in figure 2.
- Submit the result of the HBs antibody titre to Stellenbosch University Occupational Health.

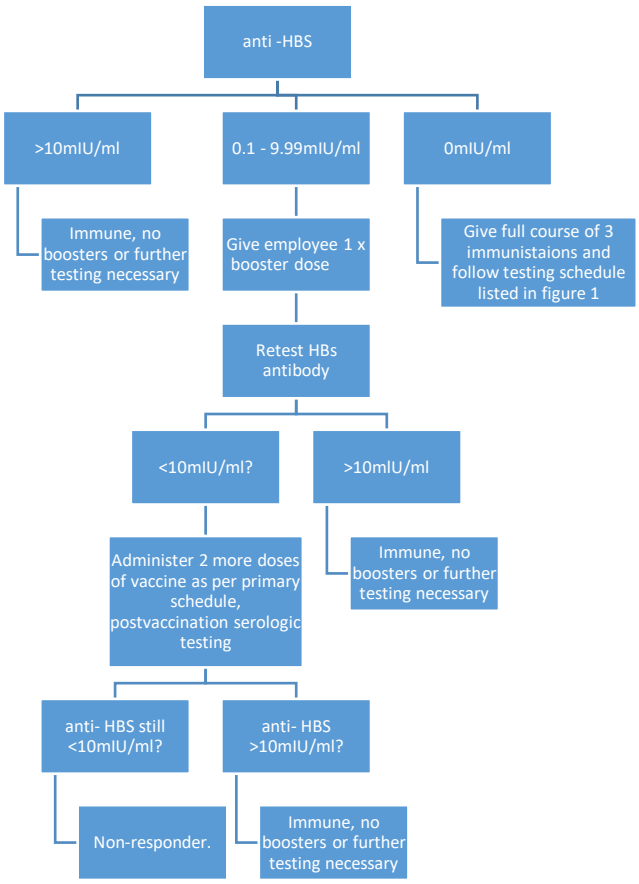


*Figure 2 Response to titre levels in previously immunised (2)*

Immunocompromised employees: "For other immunocompromised persons (e.g., HIV-infected persons, hematopoietic stem-cell transplant recipients, and persons receiving chemotherapy), the need for booster doses has not been determined."(5) Annual anti-HBs testing is recommended with booster doses administered when the anti-HBs level drop below 10mIU/mL. (5,6)

## 3. Recommended action for exposure to hepatitis B virus

- The options for management of an exposed employee are detailed in Table 2.

*Table 2 Post exposure management of healthcare workers after occupational percutaneous or mucosal exposure to blood or high risk body fluids.*(4–6)

| **HCW status** | **Post-exposure testing** | | **Post-exposure prophylaxis** | | **Post-vaccination serologic testing** |
|---|---|---|---|---|---|
| | **Source patient (HBsAg)** | **HCW testing (anti-HBs)** | **HBIG** | **Vaccination** | |
| Documented responder after complete series | No action necessary | | | | |
| Documented nonresponder after two complete series | Positive or unknown | Known | HBIG x2 one month apart | | NA |
| | Negative | No action necessary | | | |
| Response unknown after complete series | Positive or unknown | <10mIU/ml | HBIG x1 | Initiate revaccination (full course) | Yes |
| | Negative | <10mIU/ml | None | Initiate revaccination (full course) | Yes |
| | Any result | >10mIU/ml | No action necessary | | |
| Unvaccinated/incompletely vaccinated or vaccine refusers | Positive or unknown | NA | HBIG x1 | Initiate vaccination (full course) | Yes |
| | Negative | NA | None | Initiate vaccination (full course) | Yes |

*Important points to keep in mind*

- If the exposed employee has had prior HBV infection or has been vaccinated and is a known responder, then no investigation or post-exposure therapeutic intervention for HBV is required.

- The source patients' details should be documented, and informed consent obtained for HBsAG testing.

- If required, HBV PEP should be initiated immediately (preferably within 24 hours but within 7 days)

- Refusal of HBV testing and/or PEP by the exposed staff member should be clearly documented and signed by both the employee and treating healthcare worker.

- Should hepatitis B infection occur as a result of occupational exposure it should be reported as an occupational disease to the Compensation Commissioner

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## Reference:


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