# SESLHD PROCEDURE COVER SHEET

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| **KEY TERMS** | Hepatitis, dialysis, blood-borne viruses, HIV, haemodialysis |
| **SUMMARY** | ESKD patients have a higher risk than the general population to Hepatitis C as with Hepatitis B due to their deficient immune response and exposure to blood transfusions and haemodialysis equipment, therefore these patients require routine screening and vaccination where appropriate. All patients must be screened for Hepatitis B, C and HIV pre dialysis commencement. Standard precautions apply. Isolation of haemodialysis patients with Hepatitis B is required which includes the use of a dedicated haemodialysis machine. |

# Hepatitis B, C and HIV detection and management in patients requiring dialysis

**SESLHDPR/226**

## 1. POLICY STATEMENT

This document is underpinned by the following policies and documents:

- SESLHDPR/343 Hand hygiene, hand care and bare below the elbows
- SESLHDPR/305 HIV Testing Procedure
- SESLHDPR/357 Standard and Transmission Based (Additional) Precautions with Infectious Diseases
- NSW Health PD2007 036 Infection Control Policy
- SESLHDPR/253 Hepatitis B Vaccination – HARP funded services
- NSW Health PD2005_162 HIV, Hepatitis or Hepatitis C – Health Care Workers Infected
- NSW Health PD2011_005 Occupational Assessment, Screening and Vaccination Against Specified Infectious Diseases
- NSW Health PD2005_311 HIV, Hepatitis B and Hepatitis C – Management of Health Care Workers Potentially Exposed

## 2. BACKGROUND

End stage kidney disease (ESKD) patients have a deficient immune response and a higher prevalence of blood-borne viruses (BBV) like Hepatitis B and C virus' (HBV & HCV) with resultant risk of outbreaks. The higher prevalence, and nature of haemodialysis, increases the risk of acquiring BBVs on haemodialysis through risk factors such as shared machines and prolonged vascular access. Seroconversion rates with vaccination are lower and antibody titres and the duration of immunity are also reduced in the ESKD population. It is advised that vaccination occurs early in the disease process with a double vaccine dose. The most frequent BBVs encountered in worldwide dialysis units are Hepatitis B, Hepatitis C and less frequently HIV.

ESKD patients have a higher risk than the general population to Hepatitis B and C due to their deficient immune response and exposure to blood transfusions and haemodialysis equipment.

HIV is less common in the dialysis setting, but patients are at risk due to blood exposure in dialysis. There are currently no vaccines for HIV.

### Definitions

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| HBsAg: | Hepatitis B surface antigen |
| anti-HBs: | Hepatitis B surface antibody |
| anti-HBc: | Hepatitis B core antibody |
| anti-HCV | Hepatitis C antibody |
| HBeAg: | Hepatitis B 'e' antigen |
| HBV: | Hepatitis B Virus |
| HCV: | Hepatitis C Virus |
| HIV: | Human Immunodeficiency Virus |
| BBV: | Blood borne virus |
| ESKD: | End stage kidney disease |
| HBV Susceptible: | anti-HBc negative, anti-HBs negative and HBsAg negative. |
| HCW: | Health Care Worker |

## 3. RESPONSIBILITIES TO PATIENTS

- Staff must ensure all dialysis patients have a baseline screening for HCV, HBV and HIV.
- Staff must ensure the patient consents to testing as part of local procedure guidelines SESLHDPR/305 HIV Testing Procedure.
- Staff must ensure all consenting haemodialysis patients receive the Hepatitis B vaccination unless they are HBsAg or anti-HBc positive.
- Prompt notification of any seroconversion post dialysis to the Renal Director and patient nephrologist so that further investigations can be carried out to confirm this.
- Cases of acute viral hepatitis are to be notified on clinical suspicion by the attending doctor to the Public Health Unit (Ph: 9382 8333) see Section 4.5.
- Spouses and carers of BBV positive patients must have information available to manage their own exposure and Hepatitis B vaccination.

### 3.1 Employee responsibilities regarding own BBV status:

- It is a requirement under NSW Health PD2011_005 Occupational Assessment, Screening and Vaccination Against Specified Infectious Diseases that all staff are screened and vaccinated against infectious diseases such as Hepatitis B. Management plans must be put in place for non responders and vaccine decliners.
- NSW Health PD2005_162 HIV, Hepatitis or Hepatitis C – Health Care Workers Infected states that voluntary disclosure of BBV status by staff is encouraged where appropriate. Any self disclosure to the employer will be treated with confidentiality.
- Infectious staff must not perform 'Exposure Prone Procedures' (EPPs), see NSW Health PD2005_162 HIV, Hepatitis or Hepatitis C – Health Care Workers Infected glossary for full definition. The employer can advise the staff member regarding EPPs to avoid.
- If a HCW is exposed to blood or other body substances NSW Health PD2005_311 HIV, Hepatitis B and Hepatitis C – Management of Health Care Workers Potentially Exposed must be followed.

## 4. PROCEDURE

### 4.1 Universal Screening pre dialysis or at the start of dialysis or on transfer from another unit

1. Screening includes Hepatitis B surface antigen (HBsAg), Hepatitis B surface antibody (Anti-HBs), Hepatitis B core antibody (Anti-HBc), Hepatitis C antibody (Anti-HCV), and HIV Antibody. Add PCR for HCV positive patients to see if they have active HCV.
2. Anti-HBc positive patients should be tested for HBV DNA to establish their infectious status.
3. HCV antibody positive patients need their infectious status established with further testing such as RNA. If the result is unequivocal test for RNA.

### 4.2 Routine Screening for prevalent dialysis patients

1. All dialysis patients should be screened regularly (6 monthly) for HBsAg, and serum transaminases monitored (6 monthly), unless 'Natural immunity' confirmed at baseline testing i.e. anti-HBc, anti-HBs positive and HBsAg negative, then test yearly only for HBsAg thereafter.
2. Routine screening of HIV is not required unless susceptible.

### 4.3 Initiation of Hepatitis B Vaccination

- If Hepatitis B surface Antibody (anti-HBs) is negative or < 10 International units/L, and anti-HBc and HBsAg negative then vaccination should be initiated –'Susceptible immunity'.
- If a patient has 'natural immunity' (HBsAg negative, anti-HBc positive, anti-HBs positive), vaccination is not required, but routine screening is required.
- If a patient has 'vaccinated immunity' (HBsAg negative, anti-HBc negative, anti-HBs ≥10 International units/L), monitor and give boosters where required following routine screening.

### 4.4 Hepatitis B Vaccination in end stage kidney disease

Higher doses of Hepatitis B vaccination (double dose) are required in ESKD related to immunodeficiency.

The Australian Immunisation Handbook *10th edition (2014)* recommends the following for this group of patients:

- Adults should be given either:
  i. 1mL of adult formulation in each arm at each schedule point (double dose) at sero, one and six months, **or**
  ii. 1mL of dialysis formulation vaccine at each schedule point (single dose of double strength), at zero, one and six months.
- Initial post-vaccination serology should be taken four to eight weeks after completion of the primary course.
- If adequate anti-HBs levels (≥10 mIU/mL) are not reached on serological testing four to eight weeks after the third dose, the possibility of HBV infection, including chronic HBV infection, should be investigated by testing for serological markers, including HBsAg and anti-HBc antibodies. In select cases in which Hepatitis B infection is suspected, HBV nucleic acid testing may also be indicated, and expert advice regarding further management should be sought. If there are no markers of HBV infection, the individual should be managed as a non-responder to Hepatitis B vaccination.
- **Non-Responder**: A non-responder is a person without HBV infection who has a documented history of an age-appropriate primary course of Hepatitis B vaccine, but with a current anti-HBs level <10 mIU/mL.
- A single **booster** dose (fourth dose) of vaccine can be given to confirm non responder status. Persons who are non-responders after being given the booster/fourth dose (and in whom HBV infection has been excluded) should have two further doses of Hepatitis B vaccine at monthly intervals, and be retested for anti-HBs levels at least

four weeks after the last dose. The booster/fourth dose that was received could be counted as the first of the three repeat doses, as recommended for non-responders. .

- Regular re-testing (every six to 12 months) is recommended and booster doses given if anti-HBs < 10 International units/L.
- Non responders should be informed that they are not protected.

### 4.5 Notification of Hepatitis

- Any case of acute viral hepatitis, diagnosed on a clinical basis supported by acute elevation of liver enzymes, and/or diagnosed on evidence of seroconversion to markers of Hepatitis B, C or D, are to be notified on clinical suspicion by the attending doctor (or delegate) to the Public Health Unit (Tel: 9382 8333). The laboratory will notify positive markers for Hepatitis B, C or D independently but clinical notification by the attending doctor is also required in accordance with the *Public Health Act 2010 (NSW)*.

## 5.0 ISOLATION

Standard Precautions must be applied at all times.

**Hepatitis B**: Infected patients (HBsAg positive) must be isolated for haemodialysis and use a dedicated machine. Where there is no separate room available, patients should be separated from the mainstream haemodialysis activity on dedicated machines.

- Patients (anti-HBs titre ≥10 International units/L) may undergo haemodialysis in the same area as a HBsAg positive patient or may serve as a geographic barrier between HBsAg pos and susceptible patients. When BBV positive patients are not being dialysed, the room/area may be used for uninfected patients after cleaning and disinfection. Haemodialysis is considered a 'very high risk area' (NSW Health PD2007 036 Infection Control Policy) meaning the functional areas require the highest level of intensity and frequency of cleaning.

Sharing of haemodialysis machines can be considered where the patients using that machine are immune to Hepatitis B (anti-HBc positive or anti-HBs ≥10 International units/L) and are clear of any other BBV infection.

**Hepatitis C**: Isolation of haemodialysis patients and machines is not required (Rahnavardi, M., Hosseini Moghaddam, S. M et al 2008) but should be considered in a high prevalence area (Kociuba and Suranyi 2001). High prevalence classified as units where prevalence of HCV positive patients is >30%.

**HIV**: No haemodialysis isolation required.

### 5.1 Allocation of HCW to BBV positive patients

Dialysis staff caring for BBV infected patients should not care for susceptible patients at the same time. If staff have to care for both BBV infected and susceptible patients rigorous attention to infection control precautions is required.

A HCW who is susceptible to HBV should not care for HBsAg positive patients.

## 6. DOCUMENTATION

Dialysis Patient Screening and Hepatitis B Vaccination Procedure
Haemodialysis Serology Monitoring Chart

## 7. AUDIT

The Haemodialysis Group under the guidance of Dr Ivor Katz will be responsible for the review and update of the Hepatitis B, C and HIV detection and management in patients requiring dialysis protocol - due for review in 2018, or as new evidence becomes available.

## 8. REFERENCES

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## 8. REVISION AND APPROVAL HISTORY

| Date | Revision No. | Author and Approval |
|---|---|---|
| 17/6/2010 | draft | E Josland- Renal and Renal Supportive Care CNC |
| Oct 2011 | 1 | Hyperlinks fixed E Josland |
| Oct 2011 | 1 | Rebadged in SESLHD Template Michelle Bonner Acting Policy Officer |
| Jan 2012 | 2 | Feedback changes incorporated by Elisabeth Josland |
| Feb 2012 | 2 | Approval by SESLHD Drugs and Quality Use in Management Committee |
| Feb 2012 | 2 | Approval by SESLHD Clinical and Quality Council |
| May 2012 | 3 | Change at 5.1 from to HBsAB to HBsAg - E Josland- Renal and Renal Supportive Care CNC |
| November 2012 | 4 | Addition of words to 4.1 number 3 If the result is unequivocal test for RNA by E. Josland Renal and Renal Supportive Care CNC |
| March 2013 | 5 | Change of wording in 4.3 second point from negative to positive E. Josland Renal and Renal Supportive Care CNC |
| July 2015 | 6 | Hyperlinks fixed. E Josland |
| July 2015 | 6 | Additional words to Background 2.0. I Katz |
| July 2015 | 6 | Addition of words to 4.4 to reflect updated Australian Vaccination Handbook 10th edition. New additional step added prior to confirming non-responder status. E Josland |
| July 2015 | 6 | References updated. E Josland |
| April 2016 | 7 | Minor updates – endorsed by Executive Sponsor |
| May 2016 | 7 | Updates endorsed by Quality Use of Medicines Committee |