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1. Introduction

Blood-borne viruses are, following a number of documented outbreaks, a recognised hazard for dialysis patients and staff. The viruses that present an infection hazard in renal units include hepatitis B (HBV), hepatitis C (HCV) and human immunodeficiency virus (HIV). The aim of the guidance is to prevent the transmission of blood-borne viruses within renal haemodialysis units; these may also apply to other units where haemodialysis is undertaken. These guidelines are based on the Department of Health Good Practice Guidelines for Renal Dialysis/Transplantation Units (2002).

2. General Information

- 2.1 HBV is caused by a hepadnavirus. Most infections are mild, but in a few cases result in liver damage that may be fatal. Between 2 and 10% of those infected do not completely eliminate the virus and become chronic carriers. Virus is detected by testing the blood for surface antigens (HBsAg). Infectivity is closely associated with the presence of the e-antigen (HBeAg), which indicates that active viral replication is occurring.
- 2.2 HCV is caused by a flavivirus. Primary infection is mild, often asymptomatic and rarely associated with jaundice. About 80% of those infected become chronic carriers of the virus and a significant proportion develop liver disease and cirrhosis. Diagnosis relies on the detection of the specific antibody (IgG).
- 2.3 HIV is a retrovirus. The virus contains an enzyme called 'reverse transcriptase' two distinctive forms of HIV have been identified: HIV-1 occurs throughout the world, while HIV-2 has been found primarily in West Africa. HIV infection is diagnosed by detecting viral antigens and antibodies.

3. Transmission

Blood-borne viruses are transmitted through infected body fluids; transmission occurs by inoculation, via sharps, broken skin or through contact with mucous membranes. The risk of transmission of BBVs following a single percutaneous exposure is estimated to be:

- HBV 1 in 3
- HCV 1 in 30
- HIV 1 in 300

4. Incubation period

- 4.1 HBV Between 2 and 3 months, although it may be as long as 6 months
- 4.2 HCV Up to 3 months
- 4.3 HIV 3 months

5. Testing for BBV

- 5.1 Patients undergoing renal dialysis should be tested for BBV as soon as it is anticipated that dialysis may be required. The patient's informed consent to testing must be obtained; any patients who withhold consent should be managed as though they are BBV positive. The RD&E Trust Policy regime for BBV testing is identified below;
- 5.2 New patients or re-admissions to the dialysis program should be tested for HbsAg, HCV antibody and HIV antibody unless they have been tested in the month before admission.
- 5.3 Regular Patient testing for those receiving on-going dialysis are tested monthly for HBsAg and HCV; HIV antibody testing should be based on risk assessment.
- 5.4 Holiday dialysis includes patients who have dialysed outside the UK and those who are holidaying in the UK from abroad. Consideration should be given to testing patients for HBsAg and HCV antibody. The decision to HIV test should be based on risk assessment; undertaken by a senior member of the medical team.

If testing is required, patients should be treated as having unknown status, until the results are known.

6. Immunisation of Patients against HBV

Immunisation against HBV is recommended for all renal dialysis patients. Patients with chronic renal failure should be immunised as soon as it is anticipated that dialysis may be required, guidance on the immunisation process is provided in appendix 1.

7. Multi-use vials

There is a potential for cross infection with the use of multi use vials, therefore these should not be used.

8. Standard Infection Control Precautions

Standard infection control precautions (refer to Trust policy Standard Infection Control Precautions), should be used in the care of all patients. Additionally, for dialysis patients other precautions need to be undertaken.

9. Personal Protective Equipment

In addition to the use of gloves and apron, eye protection (visors) is required when splashing or aerosols of blood or body fluids are possible. Eye protection must be cleaned after use by washing in liquid detergent solution, followed by thorough drying or using a detergent wipe.

10. Decontamination

10.1 In addition to the Trust decontamination policy and procedures; the cleaning of dialysis machines will depend on the patients BBV status, each dialysis machine must be decontaminated after individual patient use, using the following protocol;

10.2 Machines should be rinse-drained.

- 10.3 The outer surface of the machine should be wiped over thoroughly using detergent wipes.
- 10.4 In addition once each day, the haemodialysis machines outer surface and the entire haemodialysis station (chair and table) should also be wiped over thoroughly using a disposable cloth impregnated with a chlorine releasing agent (1000ppm). Suitable products include Chlor–Clean which combines the detergent action and chlorine releasing agent.
- 10.5 At the end of each day all haemodialysis machines must be heat-disinfected using internal citrate disinfection (clean cart C). In addition all haemodialysis machines must be heat disinfected once a week using internal hypochlorite disinfection (clean cart A).

NB clean cart C should always precede Clean cart A when performed together

- 10.6 Single use disposable equipment used for the dialysis machines is disposed of as clinical waste.
- 10.7 In the event of rupture of a dialyser, the machine components that may have become contaminated with blood should be replaced or decontaminated by heat disinfection methods, in accordance with the manufacturers recommendations.

11. Management of Patients with known BBV and Patients of unknown status

- 11.1 In addition to standard infection control precautions, the following additional precautions must be undertaken for patients who are; HBsAg, HCV or HIV positive, or have no documented evidence of a negative test in the last month (or in the last 3 months if the patient is dialysed at Taunton or Yeovil). Refer to appendix 2 for further guidance.
- 11.2 A haemodialysis machine should be dedicated for the patient. If used on an in-patient this should be kept in the patient's room. Otherwise, it must be clearly

labelled for that patient use only and after each use be returned to the storage area after surface and internal heat disinfection (Clean Cart C & A).

Hepatitis B surface antigen (HBsAg) positive patients must always use a single patient dedicated machine.

Hepatitis C positive (HCV) patients require a dedicated machine. Where there is more than one hepatitis C positive patient in the same unit, the dedicated haemodialysis machine may be used for more than one hepatitis C positive patient, subject to a risk assessment by Senior Nursing staff (Band 6 or above) and after surface and internal disinfection (run clean cart C and A – refer to appendix 2).

HIV positive patient require a dedicated machine. In a units where there is more than one HIV positive patient, the dedicated machine may be used for more than one HIV positive patient, subject to a risk assessment by Senior Nursing staff (Band 6 or above) and after surface and internal disinfection (run clean cart C and A – refer to appendix 2).

- 11.3 A dedicated haemodialysis machine can be returned back to general service use when no longer required (e.g. following transplantation, death of a patient), or required urgently, after surface disinfection (detergent and chlorine 1000ppm) and internal disinfection procedures have been carried out (run clean cart C and A).

12. Isolation

- 12.1 Patients with HBsAg, HCV or HIV positive result, or no documented evidence of a negative test in the last month (or in the last 3 months if the patient is dialysed at Taunton or Yeovil), should be dialysed in a single room, (refer to appendix 2 for further guidance). The room may be used for other patients after thorough disinfection (terminal cleaning).

- 12.2 For Patient's HBV positive or unknown status, during dialysis restrict Staff movement from the single room to a minimum, by allocating a dedicated nurse.

13. Staff Health

- 13.1 Staff taking up employment with the Trust will have their Hepatitis B immune status checked. Non immune staff will be immunised.
- 13.2 Infectious carriers of hepatitis B, i.e. those who are either HBeAg (hepatitis B e antigen) positive or HBeAg negative with DNA levels exceeding 10^3 genome equivalents per ml, should not undertake clinical duties on renal dialysis units.
- 13.3 Such restrictions do not apply to staff having no close patient contact e.g. secretarial or laboratory staff.
- 13.4 Routine activities undertaken by staff in renal dialysis units would not normally fall within the definition of exposure prone procedures. Therefore staff who are HCV or HIV infected would not necessarily be excluded from working within renal units.

14. References

Department of Health (2002) Good Practice Guidelines for Renal Dialysis / Transplantation Units; Prevention and Control of Blood-borne Virus Infection.

http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4059511.pdf

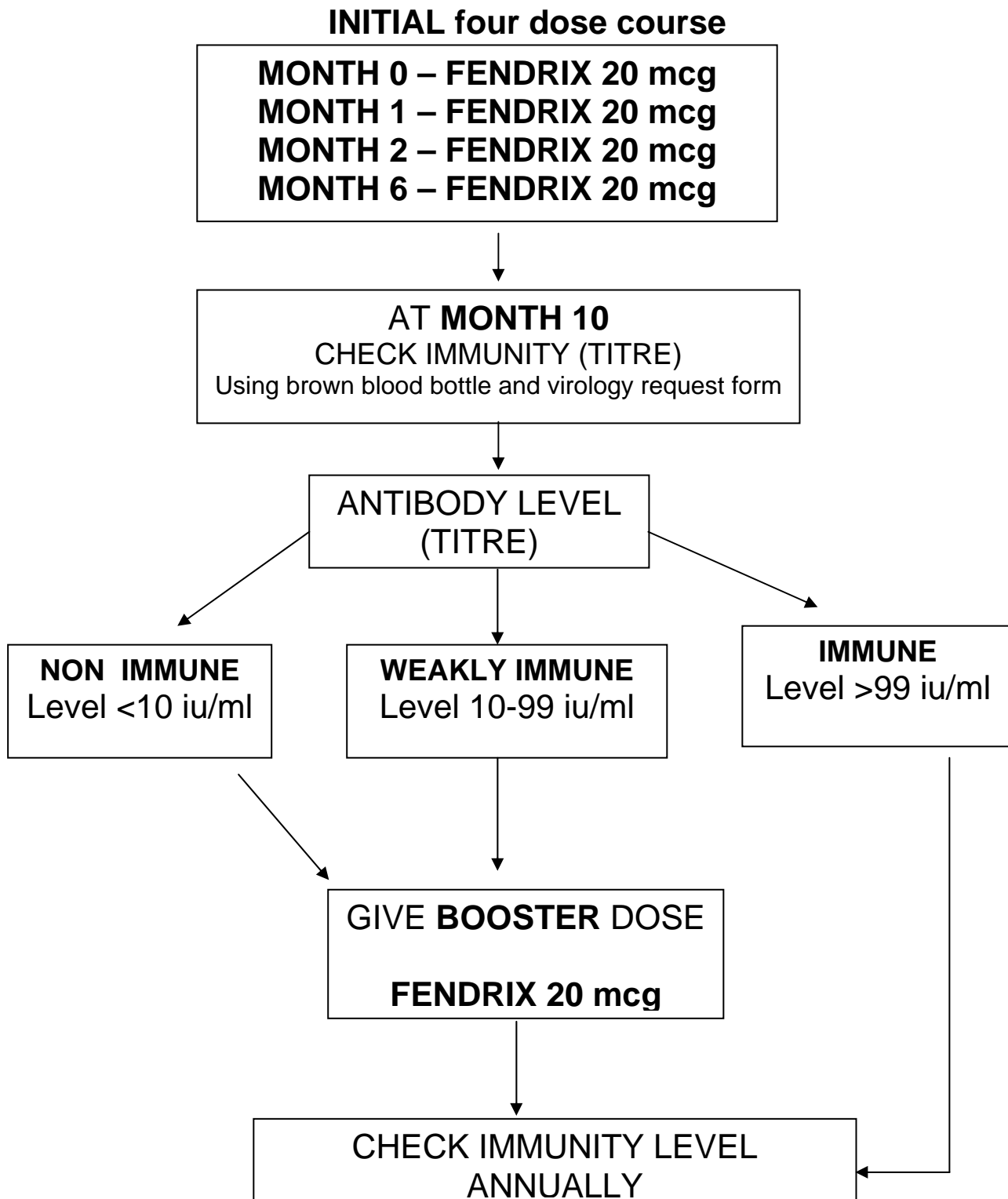
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EXETER & SATELLITE KIDNEY UNIT
PATIENT HEPATITIS B IMMUNISATION GUIDELINES



INFECTION CONTROL PROTOCOL FOR CONTROLLING BLOOD-BORNE VIRUS INFECTIONS IN HAEMODIALYSIS UNITS

MONTHLY CHECK OF HEPATITIS B AND C RESULTS

APPENDIX 2

