

Cleaning and Disinfection Procedure for Dialysis Machines

Key Points

- Prevention of transmission of blood borne virus via haemodialysis equipment and staff
- Best practice guidelines to follow disinfection process and adapting manufacturer's recommendation
- Robust checking of disinfection compliance and virology screening of dialysis patients

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Abbreviations

HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immuno-Deficiency Virus
PPE	Personal Protective Equipment
HD	Haemodialysis

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Introduction

Blood contaminated surfaces of haemodialysis machines or pieces of internal haemodialysis machine equipment that are not routinely cleaned and disinfected represent a reservoir for HBV, HCV and HIV transmission. Dialysis staff members can transfer viruses from contaminated surfaces to patients by their hands or gloves, or through use of contaminated equipment and supplies.

The clinical course of any viral infection is variable and incubation periods can range from one to nine months, with symptoms taking months to manifest. Hence, a range of cleaning and disinfectant strategies are needed to maintain the cleanliness of haemodialysis machines.

GUIDELINE

Hot-Citric Acid clean - Is performed after each dialysis session on the Fresenius 5008 machines.

General Clean of Machine surfaces– Follows each completed haemodialysis session to prevent cross infection.

Weekly Cold disinfection/degreasing - Is performed weekly on the Fresenius 5008 machines.

Hot Citric Acid Clean

Check that the dialysis fluid tubes are connected to the safety couplings, and that the concentrate connectors are placed onto the dialysate ports.

Wear protective visor, gloves and apron as citric acid causes skin irritation and burning.

1. Select the heat disinfection programme and then select start cleaning program.
2. The haemodialysis machine will now complete the program cycle automatically.
3. Clean the external parts of the probes and dialysis machine with Clear surf wipes.

Starting Cold Disinfection/Degreasing

Check that the dialysis fluid tubes are connected to the safety couplings, and that the concentrate connectors are placed onto the dialysate ports.

Wear protective visor, gloves and apron as citric acid causes skin irritation and burning.

1. Select the heat disinfection programme and then select start cleaning program.
2. The haemodialysis machine will now complete the program cycle automatically.
3. Clean the external parts of the probes and dialysis machine with Clear surf wipes
4. Machine will automatically check for the residual disinfectant at the end of the cleaning cycle
5. Check for residual disinfectant manually if not set up for automatic check at the end of the degreasing cycle using a potassium iodide starch test strip.

General Cleaning of Machine

1. All disposables should be “double bagged” in clinical waste bags.
2. All surfaces of the machine should be cleaned with Clear surf wipes once dialysis station is empty.

Staff to ensure ‘I am Clean’ label is attached to the machine after external disinfection.

Guidelines for care of machines used for patients known (or suspected) to have blood-borne viruses, or for patients returning from holiday outside the UK

Hep B

Dedicated room.

Dedicated machine (ESSENTIAL).

Patient to be placed on dialysis last and taken off last for the shift.

Hot citric clean for the machine after each use and document.

Machine surfaces to be cleaned with ClearSurf

Hep C

Routine infection control precautions apply.

Patient to be dialysed in an isolated area.

Hot citric clean for the machine after each use and document.

Dedicated machines if possible, but not essential.

Machine surfaces to be cleaned with ClearSurf

HIV

Routine infection control precautions apply.

Patient to be dialysed in an isolated area.

Hot citric clean for the machine after each use and document.

Machine surfaces to be cleaned with ClearSurf

Holiday Patients

Isolate patient for 1-3 months as dictated by Nephrologist.

Hot citric clean for the machine after each use and document.

Machine surfaces to be cleaned with ClearSurf

Restrict machine of those returned from a high risk country for 3 months even if patient tests negative for the above pathogens

Process or bringing dialysis machines back into general use if they have been used for a Hep B patient.

- After use, sterilise and clean the machine as stated above for Hepatitis B.
- The machine should then be stripped, cleaned and both on-line filters replaced for new by the dialysis technicians.
- Repeat sterilisation methods as described above.
- Following this, the machine can be returned to the general pool for dialysing patients.

Cleaning of Dialysis Machines in Ward Area After Each Use

Action	Member of Staff	PPE	Rationale
1.-Strip dialysis machine of all lines, commence cleaning program – select appropriate program depending on machine and infection status	Trained Nurse / Healthcare assistant	- Gloves - Apron - Visor	To remove used lines whilst adhering to infection control standards and to ensure turn around of dialysis machine in a timely fashion. <i>N.B:- gloves and apron are removed after each task and hands are washed.</i>
2.-Cleaning of Dialysis machine and table, using appropriate cleaning agent – varies depending on infection status of the patient last on dialysis, please refer to the policy 'Cleaning and Disinfection Procedure for Dialysis Machines 2010)	Trained Nurse/ Healthcare assistant	- Gloves - Apron - Visor	To clean dialysis machine and table using correct agents and prevent cross contamination of infection. Ensure all probes are cleaned thoroughly and BP cuff is cleaned. <i>N.B:- gloves and apron are removed after each task and hands are washed.</i>
3- Remove machine from bed space after cleaning program completed and place in holding/storage area.	Trained Nurse/ Healthcare assistant	No PPE required,	To assist ward staff in maintaining clean and clutter free bed space.
4. - Machine <u>is not to be lined</u> until required. Once need identified the dialysis machine will be moved to appropriate bed space and cleaned with 'sani-wipes' prior to lining of machine	Trained Nurse/ Healthcare assistant	Gloves and apron are only required if there is visible soiling on machine	To prevent cross infection and to have assurance that machine is clean prior to use.
6.-Lining of Dialysis Machine	Trained Nurse/ Healthcare assistant	No PPE required, however use alcohol gel appropriately i.e.- prior to opening any connections	To prepare machine for next patient whilst adhering to infection control procedures
7.- Test and Priming of dialysis machine	Trained Nurse/ Healthcare assistant	No PPE required, however use alcohol gel appropriately i.e.- prior to opening any connections	To prepare machine for next patient whilst adhering to infection control procedures
8. IF all of the above steps have been	Trained Nurse/ Healthcare	- Gloves - Apron	To prevent cross infection and to have

followed and the identified patient no longer requires dialysis then steps 1 to 2 should be followed. Under <u>NO</u> circumstances should the machine be moved to another bed space for use without following steps 1 & 2.	assistant	- Visor	assurance that machine is clean prior to use.
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Guide to the Use of Ppe In Hd

PERSONAL PROTECTIVE EQUIPMENT (PPE):	NON-STERILE GLOVES?	STERILE GLOVES?	APRON?	VISOR?
<u>ACTIVITY:</u>				
Lining, testing and Priming of dialysis machine	✗	✗	✗	✗
Connecting and Disconnecting patient to/from HD machine	✗	✓	✓	✓
Stripping lines from dialysis machine	✓	✗	✓	✓
Cleaning of dialysis machine	✓	✗	✓	✓
Touching patient on hd with <u>no</u> risk of body fluid contact	✗	✗	✓	✗
Touching patient on hd <u>with</u> risk of body fluid contact	✓	✗	✓	✓
Stripping of soiled bed linen from hd station	✓	✗	✓	✗
Cleaning of bed/dialysis chair	✓	✗	✓	✗
Moving hd machine from one AREA to another	✗	✗	✗	✗
Cleaning body fluid from the floor	✓	✗	✓	✓

**Gloves & aprons are single patient use;
Thorough handwashing is mandatory.**

References

Lister, S., Holland, J. and Grafton, H. (eds) (2020) *The Royal Marsden manual of clinical nursing procedures: professional edition*. 10th edn. Chichester: Wiley-Blackwell.

Epsom and St Helier University Hospitals NHS Trust (2021) *Guidelines for the prevention and control of blood-borne viruses within the renal unit*. Epsom and St Helier University Hospitals NHS Trust.

Fresenius Medical Care 5008/5008S Haemodialysis System, Instruction for use, edn 13 A-20

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Full version control record

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Version History

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1	October 2017	Sijo Stephen	Final	Review
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Related Documents

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Guideline	Guidelines for Prevention and Control of Blood Borne Virus