University Hospitals Birmingham MHS

## Standard Operating Procedure (SOP) for Home Patient Water Treatment Installation and Ongoing Validation

CATEGORY:	Procedural Document
CLASSIFICATION:	Clinical
PURPOSE	These clinical guidelines provide standard operating procedure for Band 5 & 6 renal technicians working both within the Trust and in patients' homes.
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Information for:	All renal nursing staff

## Introduction

The aim of this document is to lay out the criteria for installation of any water treatment or pre-treatment equipment within the home of a dialysis patient, and the monitoring of the equipment's function and performance. This monitoring includes both the initial installation checks and ongoing validation checks/tests and aims to ensure safe satisfactory performance of equipment into the future.

Where stated these tests/checks meet the minimum standards as laid out within the Renal Association (RA) Guidelines (2012) for the monitoring of water quality.

The process is illustrated in a flow chart in Appendix 1.

## **Initial Installation Criteria**

Prior to commencing installation of the reverse osmosis (RO) unit, the commissioning technician is responsible for ascertaining that there are current satisfactory results available (microbiological and suspended contaminants) for the RO unit and that the following equipment is installed in the room;

- Mains water isolation valve.
- Leak detector.
- Pressure reducing valve.
- Duplex filter housing with gauges and hose tails.

Under <u>**no**</u> circumstances must an RO unit, without current valid microbiological or suspended contaminant results, be installed in the home.

## Procedure for installation

Step 1

Ensure filter housing contains 10-micron carbon filter and 5-micron particle filter. Using the chlorosense apparatus perform and record initial chlorine level (following the SOP for Carbon filter sop)

## Step 2

If measured levels meet the RA guidelines of <0.1ppm, connect the RO unit and place into manual flush.

Step 3 Check installation is watertight.

Step 4

Place RO into operation and check operational settings and readings (conductivity and temperature), record patient and equipment details for completing electronic records on return to the Trust workshop.

## Step 5

Connect RO to dialysis machine and run machine through test and disinfection.

## Step 6

Perform electrical safety test to all trust owned electrical equipment; attach relevant stickers and complete required paperwork.

Step 7

Leave a copy of the brief RO operating instructions with the patient/equipment.

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## **Ongoing System Validation**

## Quarterly Quality/Performance Checks

The process of ensuring the continued compliance with the Renal Association Guidelines (2012) is performed on a quarterly basis. These tests/checks aim to remove the likelihood of any patient being exposed to high Chlorine levels due to exhausted carbon filters and to ensure the accuracy of equipment monitoring systems.

## Incoming Water Validation

To reduce the possibility of chlorine or sediment break through, the cartridge carbon and rolled felt filters must be replaced on a quarterly basis regardless of their measured operational effectiveness.

When installing new filters it is essential that the top and bottom "O" rings MUST be lubricated with silicon lubricant, the output flushed to drain for 10 minutes and a residual chlorine test performed. This test aims to confirm that the new carbon filters are performing/functioning correctly and that the internal "O" rings are seated correctly. It is imperative that any failure or unexplained readings at this stage <u>MUST</u> in the first instance be reported to the renal technical manager and that the filter set be replaced or remain out of service until the issues are identified and proper operation confirmed and documented. On completion of the installation an electronic service report must be completed and filed in the relevant folder within the electronic Renal Folder, on return to the Trust.

## Permeate Quality Validation

Although the RO is equipped with a display of conductivity/quality it should at all times be considered for "*indication only.*" No adjustments must be carried out without the use of a calibrated external conductivity meter. Any displayed conductivity reading above  $30\mu$ S **MUST** result in the checking of the value with a calibrated external conductivity meter. Should this measurement confirm the raised conductivity level (above  $30\mu$ S) a membrane **CLEAN** (Warm Citric) must be performed and the value rechecked. Should measured values remain above  $30\mu$ S post clean, the renal technical manager must be informed and the RO removed from service pending further investigation.

Document index no: 913 Version 1 Standard Operating Procedure (SOP) for Home Patient Water Treatment Installation and On-going Validation Bi annually a sample of permeate water must be obtained and tested at an external laboratory for the testing of suspended contaminants as recommended by the RA (mandatory list). Should any of these elements fail to meet the RA limits a resample must be collected as soon as practically possible, any further failures must result in the immediate removal of the equipment.

## **Bi-Annual Microbiological Quality Tests**

Following the aseptic non touch technique sampling procedure as laid out in the UHB "**Standard operating procedure for the taking and monitoring of water samples from single patient Reverse Osmosis and Dialysis Machines**" a sample of permeate must be taken and sent to the laboratory for the testing of TVC (Total viable counts), Endotoxins and Pseudomonas.

All work must be documented on the relevant electronic documentation and forwarded to the renal technical manager for processing.

## **References**

Renal Association and Association of Renal Technologists (2012) **Guideline** on water treatment facilities, dialysis water and dialysis fluid quality for haemodialysis and related therapies

http://www.renal.org/guidelines/clinical-practice-guidelines-committee#stha 2012sh.alOszLez.dpbs [accessed 20/11/14]

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# **Installation Flow Chart**

