

Water Safety and Usage Group

Renal Update

Report period May to August 2023 (inclusive).

All water testing was carried out in accordance to the guidelines set out in the: Clinical Practice Guidelines by the UK Renal Association and Association of Renal Technologists 2016.

CWPs

Chemical/trace metal analysis

Every 6 months the chemical contaminants and trace metals in the water used for the preparation of dialysis fluids are tested according to **BS ISO 23500-3; 2019: Water for haemodialysis and related therapies**.

These tests were carried out by the Renal Technical Department during June 2023 on the raw water supplies to and product water supplies from all of our CWPs. All the results returned back from the Labs within the required limits.

Microbiological quality of the dialysis water

Every month the microbiological contaminants in the product water used for the preparation of dialysis fluids are tested according to **BS ISO 23500-3; 2019: Water for haemodialysis and related therapies**. This states that dialysis water shall contain a total viable microbial count (T.V.C.) of less than **100 CFU/ml** and an endotoxin concentration of less than **0.25 EU/ml**.

These tests were carried out by the Renal Technical Department during the reporting period on all the CWPs within the Trust. The 3 areas are the Dialysis Unit BCH, Dialysis Wards Level 11 BCH, and Children's Dialysis Ward RBHSC. In the Dialysis Unit 56 samples were taken out of which there were 3 failures. During May, s/n 2100207 failed on 2/5/23 and again on 10/5/23 with a high TVC. This CWP was taken off-line and resampled on 18/5/23. This result returned within limits and the CWP was put back on line supplying water to the dialysis ward. In level 11 32 samples were taken with no reported failures. In Children's 24 samples were taken with no reported failures. **Total 112 samples with 3 failures.**

WRO300H

Chemical/trace metal analysis

Every 6 months the chemical contaminants and trace metals in the water used for the preparation of dialysis fluids are tested according to **BS ISO 23500-3; 2019: Water for haemodialysis and related therapies**. These tests were carried out by the Renal Technical Department during June 2023 on the raw water supplies and all the product water supplies from our portable WRO 300Hs. All the results returned back from the Labs within the required limits.

WROs (Water Quality testing)

We currently have 21 portable WRO300Hs for use with our [REDACTED] dialysis machines within the Belfast Trust. The water produced by these WROs is used for on-line priming and HDF treatments. Dialysis water containing a total viable microbial count of less than 100 CFU/ml and an endotoxin concentration of less than 0.25 EU/ml is a starting point in the production of ultrapure dialysis fluid or for on-line infusion fluid used in haemodiafiltration (HDF). To meet the appropriate requirements, the dialysis fluid requires further filtration by ultrafilters [REDACTED] incorporated in the [REDACTED] dialysis machine. Testing of replacement fluid for on-line HDF is difficult and it is more important to check that the quality assurance procedures are in place for monitoring filter integrity.

All 21 portable WROs were tested during the reporting period (May.-August 2023) to ensure they met the minimum requirement of a total viable microbial count of less than 100 CFU/ml and an endotoxin concentration of less than 0.25 EU/ml. During May we took 22 samples with no failures. During June we carried out 24 samples with 3 failures on s/n 7330, s/n 7357 and s/n 32865. All were given a heat disinfection and resampled and came back within limits. During July we took 22 samples with no failures. During August we carried out 28 samples with 3 failures all on s/n 7330 this was taken out of use and has still not returned to the pool of WROs used for dialysis. **Total of 96 samples with 6 failures.** Currently 20 of our 21 WROs are providing water that meets the required standards. Also all the [REDACTED] filters on the [REDACTED] dialysis machines have been exchanged at the correct time intervals.

Pre treatment of the raw water supply

The maximum allowable concentration for total chlorine in dialysis water is 0.1 mg/L. If the level exceeds this, clinical problems affecting the dialysis patients can arise e.g. (Haemolysis).

Pre-treatment water plant rooms

██████ the company who manufacture the CWP's that we currently use in the dialysis areas within Belfast Trust state that the RO membranes will not remove chlorine from the inlet water. Therefore in order to ensure the total chlorine does not exceed 0.1 mg/L, carbon filtration (GAC) is used to pre-treat the water prior to it reaching the RO. The Renal Technical department monitors the levels of total chlorine in both the raw water supply and the post GAC treated water in all the dialysis areas within the BCH and in RBHSC. During the reporting period the total chlorine post GAC treated water in the Level 11 BCH was no higher than 0.02 mg/L. In the BCH Dialysis Unit the total chlorine post GAC was no higher than 0.06 mg/L. ██████ replaced the carbon media on GAC 3. Currently the total chlorine post GAC in the BCH dialysis Unit is <0.02 mg/L. In Children's Dialysis RVH the total chlorine post GAC was no higher than 0.04. Currently the level for total chlorine in Children's dialysis RVH is <0.02 mg/L. Currently all levels of Total chlorine in all Belfast Trust dialysis areas are within limits. The total chlorine in the raw water supplies to the Belfast trust dialysis areas during the reporting period was on average approx. 0.4 ppm.

Pre-treatment service

████████████████████ carried out services in all pre-treatment water plants within the Belfast Trust dialysis areas. In Level 11 BCH and in the dialysis unit BCH they were both carried out on 02-07-23. In the RVH children's dialysis unit it was carried out on 20-07-23. Currently all pre-treatment water plants in the Belfast Trust are working well with no issues to report.

Pre-treatment GAC media exchange

██████████ carried out a GAC exchange on the GAC 3 vessel in Dialysis Unit BCH pre-treatment plant room. (02-07-23).

Pre-treatment portable ROs

██████████ the company who manufacture the WRO 300s that we currently use to provide dialysis within Belfast Trust state that the RO membranes will not remove chlorine from the inlet water. Therefore in order to ensure the total chlorine does not exceed 0.1 mg/L carbon filtration is used to pre-treat the water prior to it reaching the RO membrane. The Renal Technical department currently have two carbon filters fitted on the water inlet to the 21 portable WROs, (a ██████████ 5 micron and a ██████████ CBC10 0.5 micron). These filters are currently tested and exchanged after one month in use. During the reporting period all the filters have been exchanged on time and no levels of total chlorine were detected above 0.1 mg/L. The level of total chlorine in the product water was <0.02 ppm.

The Renal Technical Department has also implemented as an extra safe guard the use of an extra portable carbon filter (a ██████████ 25 micron) to be used in all dialysis treatments during which the portable WRO300Hs are used. 8 of these Filters were replaced during the reporting period and all others were within date and removing total chlorine to <0.10 ppm.

Training

Nothing to report.

Adverse incident

No adverse incidents to report.

A.O.B.

Estates

Currently Belfast Trust Estates and the Renal Technical Department are having discussions about using Monochloramine and its implications for Nephrology, when used for disinfecting the water supply to the Hospital wards.

Children's CWP replacement.

██████ the supplier of the CWPs in Childrens have given this response when discussing the need to replace the current CWPs. I understand the CWP Heat & Slave in the Royal Belfast Children's Hospital could be listed on your risk register due to age & lack of support on parts. The equipment from our records is now over 17 years old & now well over the 10 year advisory replacement.

The parts that are now obsolete on this equipment are:

- HMI Operator Panel
- PLC FX2U Type
- CHEM PUMP
- Membrane Manifold

Report for May. 2023 to August 2023 inc. compiled by:

[REDACTED]

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Dialysis Unit

BCH

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