



The quality of the water
A fundamental parameter



The importance of fluid purity

With regards to dialysis hospitals and clinics, the water quality is a critical factor in the overall treatments given to Dialysis Patients . When it comes to dialysis, purified water is recognized as a necessity to ensure effective treatments. Impurities in dialysis water are increasingly considered as risk factors in dialysis, affecting the patient's well-being and quality of life. Maintaining fluid purity means that we are acting on the entire chain of components and processes involved in Haemodialysis. (HD)

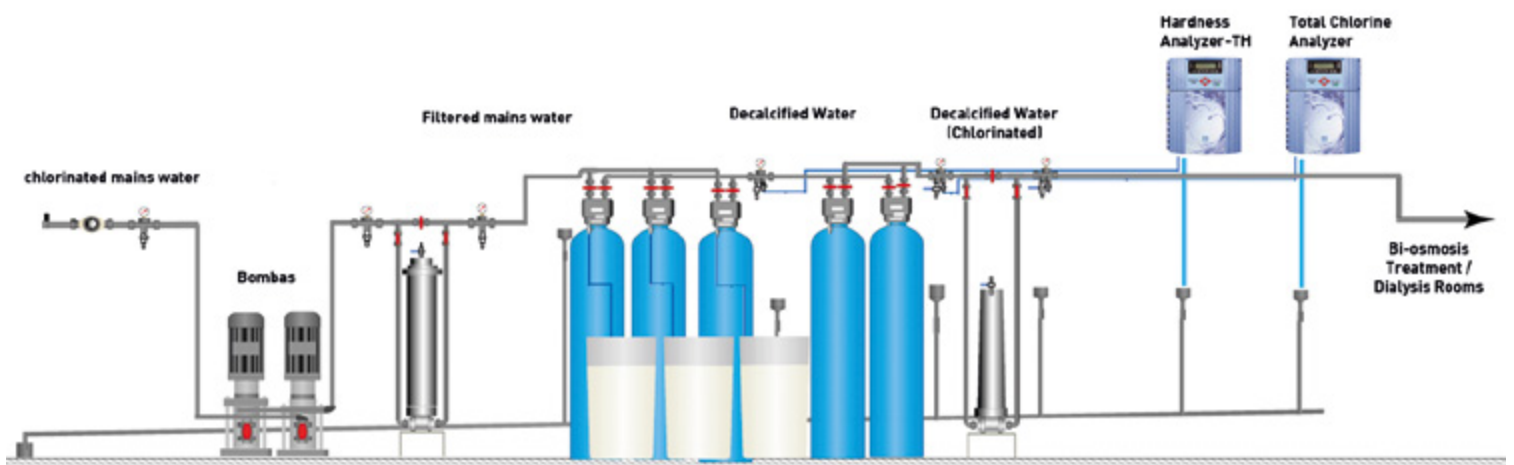
Fluid Purity is maintained by utilizing a complete water treatment equipment, an operational mind-set that can help to provide pure fluids maximizing the dialysis treatment and patient well-being.

Water is the only element that has the ability to dissolve most chemical components and sustain all life forms. This means that there are many contaminants that may exist in water and that must be eliminated if it is to be used for dialysis treatments. Not only this, but further complications can exist as the incoming water supply may vary considerably due to seasonal and climatic changes.

Therefore, one single technology is not sufficient to achieve the desirable purification qualities for dialysis water and ultimately dialysis fluid.

The importance of water pre-treatment

It is of vital importance to understand well the importance of pre-treatment and the role it plays in the water quality ultimately produced by facilities and used for treatment therapies.



Above all, pre-treatment protects the membranes of the downstream processing usually reverse osmosis equipment. But not only this, it also protects non-removable particles, which are potentially dangerous to dialysis patients (eg chlorine).



Responsibility for water quality and Dialysis Fluid

The selection and approval of the selected and installed equipment, generally falls under the responsibility of the clinical director of the hemodialysis unit. The definition of equipment maintenance protocols, the quality control of the produced water and Dialysis Fluid. As well as the quality control of the produced water and dialysis fluid. Finally, it is important to ensure that the procedures and regulations required by the pharmacopoeia, and integrated into the good practice guides, are correctly applied.

So how do you choose the correct water Pre-treatment ?

1. Correctly dimension pretreatment

Firstly, one needs to be informed with regards to the source of drinking water available for the facilities to be fitted. Especially by studying different water analyzes carried out over a period of time. After that, evaluate the required flow rates in order to size the components according to the associated criteria,

related to the number of dialysis stations, including emergency or technical, according to the therapies used (HD / HDF).

Other criteria may also have an impact on this.

2. Know well what has impact on Pre-treatment

Certain physical and chemical parameters in water have a direct impact on pre-treatment.

(max. 50 mg / l).

This is the case of water hardness (mineralization due to calcium and magnesium ions), which can be expressed in °dH or °Fh, water temperature and its variations, thus creating a bacterial risk and, finally, the presence iron (max. 200 µg / l) or nitrates

Other elements, such as Total Chlorine, whose content must be <0.1 mg / l, the TOC (Total Organic carbon - max. 2 mg / l), which highlights the biological instability of water and the Turbidity of Water (max. 2 NFU) also have a significant impact on pretreatment.

3. Control risks and performance

For this, risk analysis for drinking water is necessary but not sufficient.

pressures, but above all continuously measuring the water quality upstream of the osmosis system (water hardness and total chlorine).

- Design and control systems are also of the utmost importance.
- Design is choosing quality and durable materials. Also the arrangement of the different components and the readable breakdown of the complete water treatment plant.

It is especially on this last point that we keep in touch daily with our partners, hospitals, clinics and dialysis centers we have worked with for several decades. Using our TESTOMAT 2000 analyzers enables the possibility to meet all of these requirements.

Surveillance (control) is controlling of inter-device

4. Define pre-treatment well

In order to define good pretreatment, we need to pay particular attention to certain key points:

In the end, the complete Hemodialysis Water Treatment system ensures:

- Respect the recommendations (circulars, standards and best practice guides)
- Take into account the risks in drinking water analysis and size accordingly.
- Provide maximum safety by applying procedures and monitoring devices.

- The purity of water required for the preparation of the dialysis solution, under conditions that comply with the regulations set out below.
- Guaranteed to provide hemodialysis water that meets the pressure and flow conditions necessary for the correct operation of dialysis generators.
- The prevention of acute accidents resulting from equipment malfunction, through means of fault detection, quality control and maintenance actions.

Choosing the pre-treatment correctly is about finding the perfect balance between water risk analysis (hardness, chlorine, turbidity etc...), duration of use of the different components, safety and controls, perfect ergonomics, installation costs, controlled operational and maintenance, but above all the optimal operation of your Dialysis unit.