

**Baxter**



# CWP800

**DESIGNED FOR WATER PURITY**





## THE HYGIENIC CHAIN CONCEPT – EVERY LINK MATTERS

Maintaining fluid purity means attending to the entire chain of components and processes involved in HD – especially from water treatment to fluid distribution.<sup>11-14</sup> We call this entire chain: the Hygienic Chain concept, a series of links made to ensure that HD systems deliver high-quality water.

Water quality must be maintained across the fluid chain to allow for quality-assured dialysis treatments to reduce the impact of potential risk factors and improve patient outcomes.<sup>1-9</sup>

## THE IMPORTANCE OF FLUID PURITY

Water Purity of the highest quality is essential for efficient and effective dialysis.<sup>1-9</sup> However, water has the ability to dissolve almost every chemical compound as well as supporting almost all forms of life which can make obtaining purity difficult. This may result in biofilm growth<sup>10</sup> that can have many adverse effects for your hemodialysis (HD) system and patients.

Bacterial contamination of dialysis fluid is a major factor in HD bioincompatibility. With an increasing shift in treatment modalities, patients can be exposed to large volumes of fluid (≈400 L/week), increasing their vulnerability to such contamination and inflammation.<sup>1-9</sup>

Dialysis-associated inflammation is caused by monocyte activation and cytokine production initiated by the transfer of bacterial by-products into the blood during HD treatment.<sup>1-9</sup> As a result, obtaining and maintaining fluid purity is essential for any dialysis system.



## THE GAMBRO CWP 800 SYSTEM YOUR WATER DELIVERY SOLUTION

The CWP 800 system is Gambro's most advanced water option to date and is a key component of the Hygienic Chain concept. This reverse osmosis water production system helps you deliver liquid purity through automated thermal disinfection technology.<sup>15-17</sup>

The CWP 800 system builds on Gambro's decades of experience in delivering purified water, with combined expertise in both HD and purification systems. A systems approach provides clarity across the whole process with the unit being designed for long-term clinical use.<sup>11-12</sup>



## PROTECTING YOUR PATIENTS AND SYSTEM THROUGH DISINFECTION

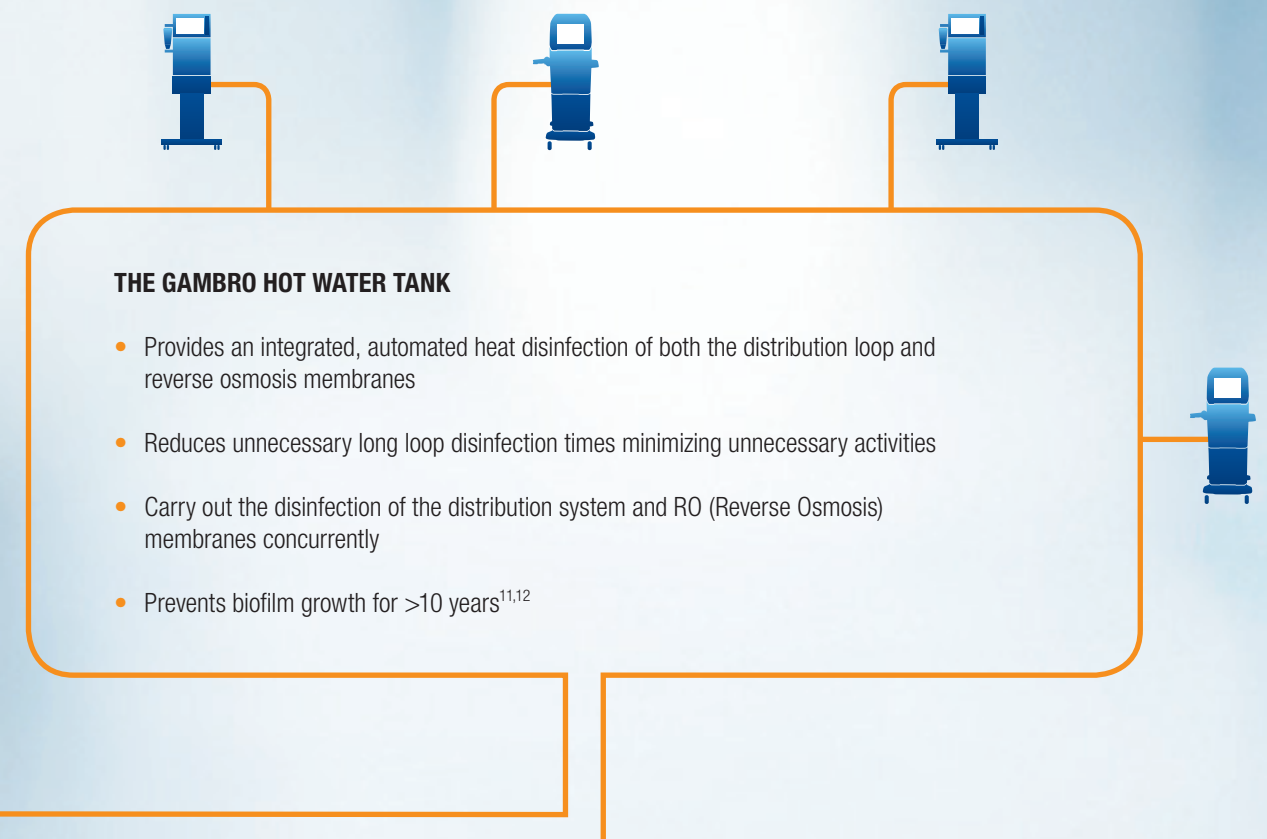
The CWP 800 system has been designed to protect your entire purification system and your patients from long-term associated health factors of waterborne contaminants. Monocyte and cytokine production initiated by the transfer of bacterial by-products into the blood during HD treatment may induce malnutrition,<sup>2,4,6</sup> atherosclerotic cardiovascular disease,<sup>4,5,8</sup> and erythropoietin resistance<sup>4,6,19,20</sup> which may lead to poor outcomes and higher mortality rates.<sup>22</sup>

High quality fluid has been shown to improve clinical markers of inflammation, nutrition and anemia control. This will refer to:

- Hemoglobin erythropoietin dose<sup>4,8,19-20</sup>
- Interleukin 6 levels<sup>2,6,7,19</sup>
- Serum albumin levels<sup>2,19</sup>
- C-reactive protein levels<sup>2,3,5-7,19</sup>

## PURITY FROM TAP TO NEEDLE

The CWP 800 system uses an effective protocol for measuring a dose of heat during disinfection leading to proactive water purification.<sup>16,17,18</sup> Adoption of this methodology will provide clinics a baseline for comparing disinfection and microbial testing results from the fluid phase and ultimately a means of optimizing the regimen. The CWP 800 system has also been designed to operate through time channels if clinics prefer. This proactive regime will assist in limiting the formation of biofilm or bacterial growth.<sup>11,12</sup>





# BUILT TO LAST AND MEET YOUR GROWING NEEDS

For over 30 years Gambro has been providing clinics around the world with water treatment solutions. We've learned that it is not only important that each link in the Hygienic Chain philosophy is strong, but also that the chain remains flexible enough to meet the evolving demands within a clinic.

This is why the Gambro CWP 800 system has been designed to be a modular offering. This flexibility means it can be easily expanded to increase its output capacity while limiting the increase in its footprint. This can ensure that the supply of high quality water can meet your growing clinic needs.

The CWP 800 system has been built with the same care and specifications as current Gambro water systems, which have been proven to be successful in delivering microbiological and chemical water quality control for up to 19 years.<sup>11,12,21</sup> And with careful component choice you can further enhance its durability.

This gives you a water supply solution when complemented with a proactive disinfection philosophy that has the potential to deliver efficiently and economically high-quality water throughout the Hygienic Chain concept and may provide improved health outcomes<sup>1-9</sup> with greater cost-effectiveness.<sup>14</sup>



## MODULARITY HELPS THE CWP 800 SYSTEM GROW WITH YOU

The modular design allows for easy post-installation system upgrades over long-term clinical use, with simple plug and play concept installation times will be at a minimum.

- RO module can house 2 RO membranes
- Extension unit can be employed to increase capacity with a further 2 membranes
- Multiple Hot Water tanks can be used



## CONSISTENT DISINFECTION RATE AND TIME<sup>15</sup>

$A_0$  is a physical parameter denoting the inactivation of microorganisms. The concept of  $A_0$  is intended to allow equivalent disinfection efficiencies to a reference time/temperature to occur at other disinfection temperatures.<sup>16-18</sup>

- Optimal disinfection regimes with  $A_0$
- Provides a measure of disinfection
- Time channels can be utilised for automation



## RELIABLE OPERATION

Advanced electronics and quality components has the potential to provide quiet and reliable operation with in-built system redundancy in serial configuration.<sup>15</sup>

- Noise level below 55 dB
- High MTTF (mean time to failure) of chosen components
- Standard off the shelf components
- No moving parts in the flow path



## COST-SAVING POTENTIAL<sup>23</sup>

The CWP 800 system can potentially minimize maintenance and reduce the expenditure required to maintain the system.

- Water saving functions in all modes of operation
- Optimal disinfection based upon  $A_0$  and optimal distribution in the RO device
- Optimized water production based upon clinic use
- Capability to service during normal working hours



## ADAPTABLE TO MEET ANY CHALLENGE

The CWP 800 system provides a water supply which is adaptable to clinical needs (5-82 L/min). By implementing a system approach mind set with proactive heat disinfection you have the potential to meet future water quality standards.

- Modular, an expandable design
- Transition time from disinfection mode to water production
- Automation with time channel functions
- RO and loop can be disinfected simultaneously

## References

1. Hoenich NA, et al. The importance of water quality and Haemodialysis fluid composition. *Blood Purification*, 2006; 24:11-18
2. Susantitaphong P, et al. Effect of ultrapure dialysate on markers of inflammation, oxidative stress, nutrition and anemia parameters: a meta-analysis. *Nephrol Dial Transplant*, 2013; 28:438-446
3. Zimmerman J, et al. Inflammation enhances cardiovascular risk and mortality in hemodialysis patients. *Kidney Int*, 1999; 55:648-658
4. Yao Q, et al. Inflammation as a cause of malnutrition, atherosclerotic cardiovascular disease, and poor outcome in hemodialysis patients. *Hemodial Int*, 2004; 8:118-129
5. Lederer S, et al. Ultrapure Dialysis fluid lowers the cardiovascular morbidity in patients on maintenance Hemodialysis by reducing continuous microinflammation. *Nephron*, 2002; 91:452-455
6. Schiffli H, et al. Effects of ultrapure dialysis fluid on nutritional status and inflammatory parameters. *Nephrol Dial Transplant*, 2001; 16:1863-1869
7. Schiffli H, et al. Ultrapure dialysis fluid slows loss of residual renal function in new dialysis patients. *Nephrol Dial Transplant*, 2002a; 17:1814-1818
8. Oka Y, et al. Lowering of oxidative stress in hemodialysis patients by dialysate cleaning: in relation to arteriosclerosis. *Ther Apher Dial*, 2004; 8:313-319
9. Pontoriero G, et al. The quality of dialysis water. *Nephrol Dial Transplant*, 2003; 18:vii21-5; discussion vii56
10. Capelli G, et al. Biofilms invade nephrology: Effects in hemodialysis. *Blood Purif*, 2000; 18: 224-230
11. Nystrand R. Water system information document 130501 Gambro ver short.pdf Water Systems for Production of Water for Dilution of Haemodialysis Concentrates: Long time follow-up of Microbiological Quality in Gambro CWP 100 WRO H Systems Microbiologist, Bio-TeQ Nystrand Consulting, 2011
12. Nystrand R. Water system total heat disinfection 130502 Gambro ver short.pdf Water Systems for Production of Water for Dilution of Haemodialysis Concentrates: Long time follow-up of Microbiological Quality in Gambro CWP 100 WRO ROHH Systems with total heat disinfection. Bio-TeQ Nystrand Consulting, 2011
13. Bolasco P, et al. The evolution of technological strategies in the prevention of dialysis water pollution: sixteen years' experience. *Blood Purif*, 2012; 34:238-245
14. Bolasco P, et al. Microbiological Surveillance and State of the Art Technological Strategies for the Prevention of Dialysis Water Pollution. *Int. J. Environ. Res. Public Health*, 2012, 9, 2758-2771
15. User manual CWP 800, 2014
16. EN ISO 15883, 2012
17. Röhm-Rodowald E, et al. RECOMMENDATIONS FOR THERMAL DISINFECTION BASED ON THE A<sub>0</sub> CONCEPT ACCORDING TO EN ISO 15883. *PRZEGL EPIDEMIOL*, 2013; 67: 687-690
18. Rosenberg U. Thermal disinfection – The A<sub>0</sub> concept and the biological background. *Central S*, 2003; 11:118-120
19. Gunnel J, et al. Acute-phase response predicts erythropoietin resistance in hemodialysis and peritoneal dialysis patients. *Am J Kidney Dis*, 1999; 33:63-72
20. Rahmati MA, et al. The role of improved water quality on inflammatory markers in patients undergoing regular dialysis. *Int J Artif Organs*, 2004; 27:723-727
21. Ragon A. MICROBIOLOGICAL EVALUATION OF THE EFFICIENCY OF HOT RO WATER ONLY USED TO DISINFECT HEMODIALYSIS WATER DISTRIBUTION LOOP IN OPERATION FOR 5 YEARS – era EDTA 2011 Jun 23-26
22. Hasegawa T, et al. Dialysis Fluid Endotoxin Level and Mortality in Maintenance Hemodialysis: A Nationwide Cohort Study. *AM J Kidney Dis*, 2015; 65(6):899-904
23. Data on file

Gambro Lundia AB  
PO Box 10101  
SE-22010 Lund  
Sweden  
Phone + 46 46 16 90 00

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