

The UltraPureFluid System (UPF)



Hemodialysis

For manufacturing ultra pure dialysis fluid and substitution solution for Online treatment with Dialog

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Microbiological risks in dialysis

UPF – for safe and reliable therapy

Inherent to their illness, dialysis patients are susceptible to greater risk factors. In the presence of underlying diseases, microbiological contamination in dialysis treatment systems* has been shown to induce serious and costly complications.

Treatment with the UltraPureFluid system (UPF) successfully reduces the risks of contaminated dialysis fluid in a significant way. UPF stands for economical, safe and reliable dialysis therapy.

Biological mechanisms and clinical consequences

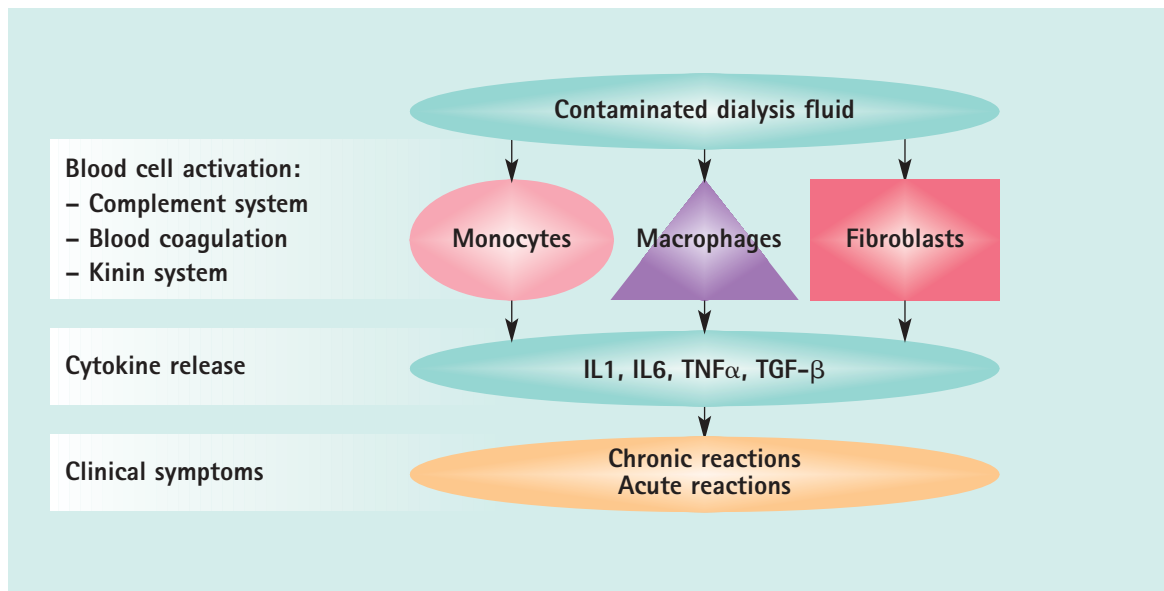


Fig. 1: Risk factors for dialysis patients

Contaminated dialysis fluid is a risk factor

A dialysis patient is exposed to approx. 20,000 liters of dialysis fluid every year with only a semipermeable membrane separating the dialysis fluid from the blood. Fluid purity is prerequisite to treatment quality.

Even minor bacterial impurities can lead to degradation products or toxins. Depending on their size, these toxins are capable of passing through dialysis membranes and triggering reactions in the patient's blood (Fig. 1). Using ultra pure dialysis fluid with our UltraPureFluid system prevents contamination and its associated complications.

Biofilm formation is a risk factor

Biofilms are formed by colonies of microorganisms (protein networks) that can build up on surfaces in bacterially contaminated fluid systems and release toxins, e.g. endotoxins, into the dialysis fluid. They are resistant to routine disinfection.

Treatment with our UltraPureFluid system prevents biofilm formation by eliminating a potential source of microbiological impurities.

*Water processing system (osmosis water), circulation line, concentrates, and dialysis machine

Our Solution

A plus for your quality management

UPF is a closed system for manufacturing ultra pure dialysis fluid and infusion solutions for Online therapy that will help you effectively enhance the quality of your dialysis treatments.

Dialog Advanced and Dialog⁺ hemodialysis machines

- Options for dialysis fluid filter (1 filter) or Online (2 filters)
- Automatic filter integrity testing and check of filter service life before every treatment
- Citrothermal routine disinfection after every treatment

Diacap[®] Ultra dialysis fluid filters / Online filters

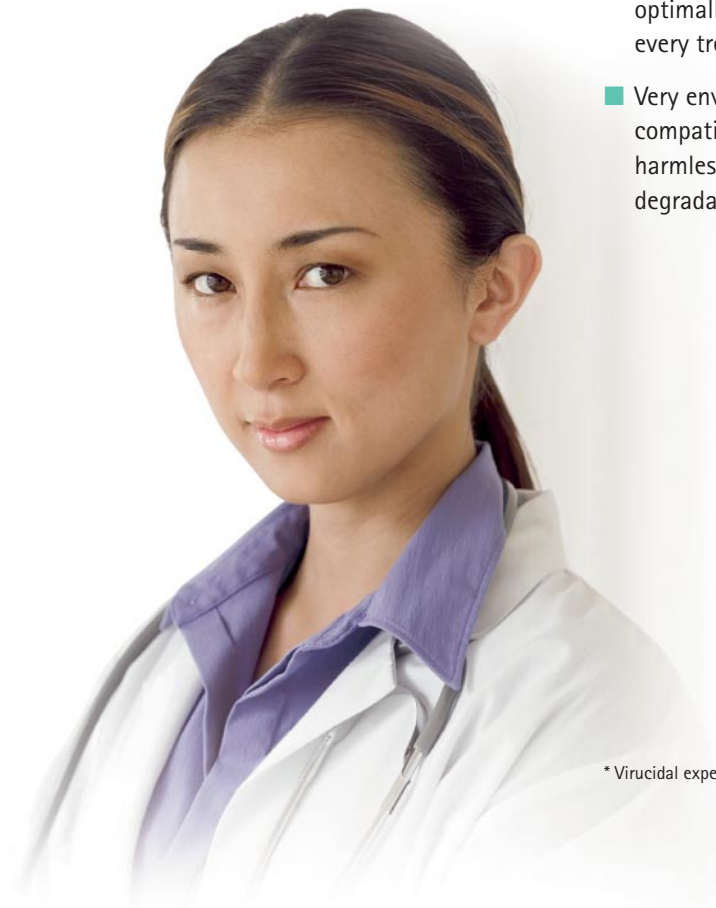
- Above-average filter service life / hours of operation: 150 treatments / approx. 900 h
- Highly adsorptive polysulfone membrane: bacteria and endotoxin retention rating $\geq 10^6$

Disinfection, cleaning and decalcification with citric acid 50% solution

- Outstanding disinfectant and virucidal properties*; bactericidal, fungicidal, tuberculocidal, anti-viral (incl. HBV, HCV, HIV)
- Efficient decalcification after every treatment prevents biofilms
- Low consumption and minimum time expenditure: optimally safe for use after every treatment
- Very environmentally compatible, toxicologically harmless and biologically degradable

Disinfection and cleaning with Tiutol[®] KF (Hypochlorite, 4.1%, 60°C)

- Outstanding disinfectant and virucidal properties
- Excellent cleaning performance. Reliably removes tough biofilms
- Onetime use before a filter change is sufficient
- Max. 3-time use per filter lifetime (2 times + once before a filter change)



* Virucidal expertise on parvovirus, Dr. Thränhart, University Lecturer, 2003.

Our UltraPureFluid system (UPF)

Hemodialysis

Advantages of the UPF system

- Significantly improves dialysis treatment quality
- Demonstrably extends life expectancy in long-term dialysis patients
- Great savings potential by preventively protecting against complications and interrelated consequential costs
- Ultra-high microbiological system performance
- Gentle, reliable disinfection and cleaning
- Easy handling
- Automatic test routines maximize safety of overall system



Diacap® Ultra
Dialysis fluid filter

Diacap® Ultra
Online filter



Dialog Advanced and
Dialog+ hemodialysis
machines



Citric acid 50% solution



Tiutol® KF

What does ultra pure dialysis fluid mean?

UPF – Means maximum reduction of microbiological impurities

- Germ-free (sterile as defined by PhEur: only for batch-wise sterility testing)
- Endotoxin levels < 0.03 IU/ml

Clinical Benefits

- Markedly reduces chronic inflammatory processes (1)
- Lowers the rate of dialysis-induced amyloidosis (2)
- Positively promotes patient's general nutritional state (3)
- Reduces oxidative stress (4)
- Delays loss of residual renal function (5)
- Reduces cardiovascular morbidity (6)
- Prevents biofilm formation (7)
- Extends life expectancy in long-term dialysis patients (8)



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