Acute Renal Replacement Therapy

Ultraflux®

AV 400S / AV 600S / AV 1000S

Steam-sterilised Haemofilter

Fresenius Medical Care

Continuous Renal Replacement Therapy

Continuous Renal Replacement Treatment (CRRT) serves for the therapy of acute renal failure and is a well-tolerated and effective method. CRRT is used to correct hydrate-, electrolyte-, acid/base metabolism and for the removal of urea and creatinine [1, 2, 3, 4, 5, 6].

In comparison with discontinuous therapies like intermittent hemodialysis, continuous renal replacement therapies have the decisive advantage of greater cardiovascular stability of the patient through a constant and slow elimination of fluids and substances usually eliminated with the urine. Therefore CRRT is indicated especially for cardiovascular unstable patients. CRRT furthermore allows a generous fluid supply within the scope of the parenteral nutrition.

Depending on the clinical condition of the patient, various continuous treatment modes are available:

- CAVH, continuous arterio-venous haemofiltration
- CVVH /HV-CVVH, continuous veno-venous haemofiltration/high-volume haemofiltration[7]
- CVVHDF, continuous veno-venous haemodiafiltration
- CVVHD, continuous veno-venous haemodialysis
- SCUF, slow continuous ultrafiltration

The Ultraflux®-series

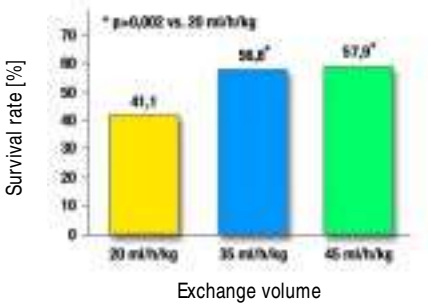
The Ultraflux®-filters contain a Fresenius Polysulfone® membrane specially developed for continuous renal replacement therapy. With this membrane, substances with a molecular weight of up to approximately 30,000 Dalton can be eliminated, but plasma proteins like albumin, bigger molecules and cellular blood constituents are retained. The filtration characteristics of this membrane comes close to the natural human kidney's glomeruli.

Due to their high mechanical stability and excellent filter lifetimes, the Ultraflux®-filters AV 400S, AV 600S and AV 1000S are tailormade for use in all continuous renal replacement treatments.

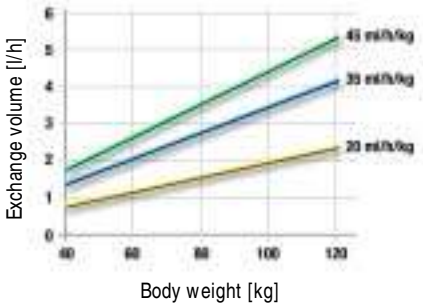
The large inner lumen and thin wall thickness of the capillaries in the Ultraflux®-filters improve the flow geometry and give the following advantages:

- high fluid exchange possible
- unimpeded ultrafiltrate flow
- low flow resistance in the capillaries reduces friction and shear forces
- excellent filter lifetime

Mortality

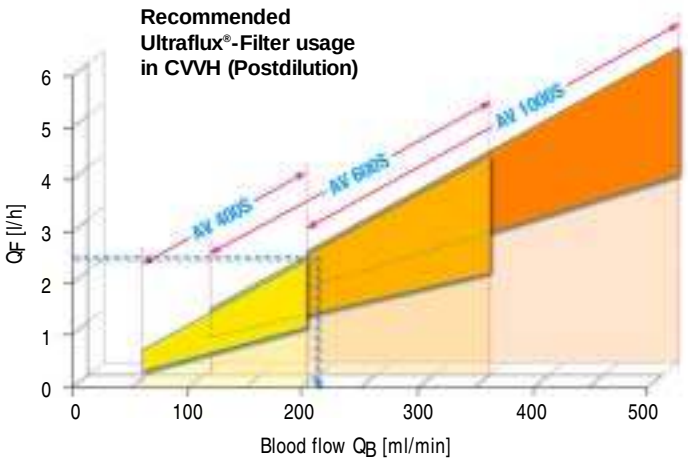


CVVH (Postdilution)



Dosage at CVVH: latest studies show a reduced mortality with an increase of the exchange volume over 20 ml/h/kg body weight. For a patient who weighs e.h. 70 kg an exchange volume of at least 2l/h is currently recommended. (adapted after Ronco et al., 2000)

Recommended filter usage



Example: corresponding to the findings of Ronco et al. (2000), for a 70 kg patient an exchange volume of approximately 2.5 l/h is recommended. For the realisation of this, an effective blood flow of at least 210 ml/min is necessary.

**The Ultraflux AV 1000S is suitable especially for HV-CVVH(7), where higher filtrate flows are normally reached by combination of pre- and postdilution.*

Steam-sterilised

Fresenius Polysulfone® Filter for Continuous Renal Replacement Therapy

In the course of the INLINE-steam sterili-sation, the blood- and filtrate/dialysate-compartments of the filter are continuously rinsed with 121 °C hot, sterile steam for 15 minutes and dried thereafter. This process ensures a sterile and pyrogen-free product with convincing advantages:

- residues of toxic sterilisation agents like e.g. ethyleneoxide are not present and cannot affect the patient
- dry delivery (reduced weight)
- no time-consuming rinsing of the filter after filling
- cost reduction through reduced saline consumption

Haemo-compatibility

The Fresenius Polysulfone® Membrane

The excellent blood compatibility of the Fresenius Polysulfone® membrane has been demonstrated in numerous publications. The following advantages have been found next to others:

- no interaction with drugs (ACE-inhibitors)
- neglegible activation of the complement system
- no increased cytokine synthesis
- low activation of the coagulation system

The use of anticoagulants can be minimised which is of particular importance for patients with coagulation disorders or postoperative respectively polytraumatised patients.

An important safety aspect is the 100 % leakage testing of all filters, possible only because of the special structure of the Fresenius Polysulfone® membrane and the absence of pore filling agents like glycerine.

All production steps from the manufacturing of the membrane up to the finished dialyser are adjusted to each other resulting in constant highest quality, proven by the CE-mark.

Performance data/Technical data

	AV 400S	AV 600S	AV 1000S
Effective surface area (m^2) Wall thickness/inner diameter (µm) Blood filling volume (ml)	0.75 35/220 52	1.4 35/220 100	1.8 35/220 130
Recommended blood flow (ml/min)	50 – 200	100 – 350	200 – 500
Recommended filtrate flow (postdilution)	maximum 20 % of effective blood flow		
Membrane material Housing material Potting compound Sterilisation method	Fresenius Polysulfone® Polycarbonate Polyurethane INLINE-Steam		
Art.-No.	**5007341**	**5007361**	**5008981**

CE 0123

Literature

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