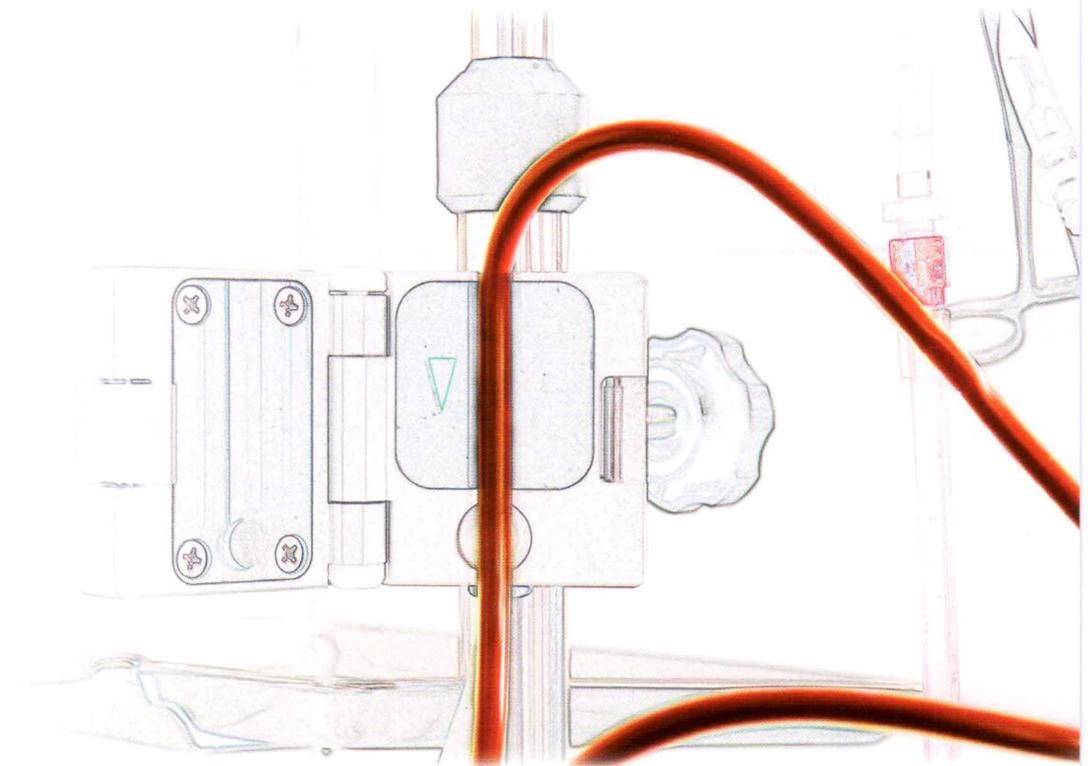




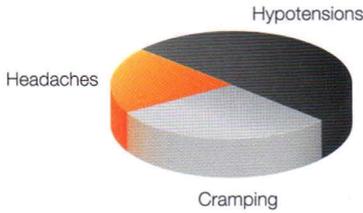
Fewer complications

Haemo-Master



Haemo-Master option

Complications during dialysis treatments



Complications during dialysis treatment

Various complications can occur during a dialysis treatment. Incidents during dialysis sessions occur in approximately 30 % of all treatments.

Roughly half of all episodes during dialysis treatments are caused by hypotensions. The majority of these problems are caused by the seemingly necessary fluid extraction.

The balancing of body fluid is an essential requirement during dialysis

Excessive fluids are ultra-filtered from the intravascular area (plasma) via the dialyzer. Only approximately 7 % of the total body fluid, however, is found in this area. The ultra-filtration volume is chosen so that a defined "dry weight" is reached. Natural fluctuations in the dry weight and in the patient refilling rate can lead to undesired reductions in plasma volume and therefore in a blood pressure drop.



Plasma
approx. 7 %

Interstitial fluids
approx. 31 %

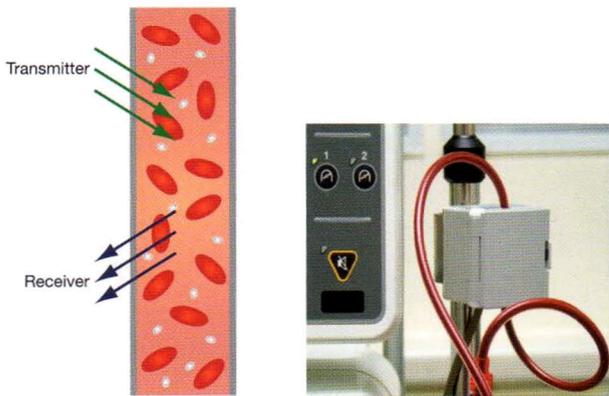
Intracellular
area
approx. 60 %

Distribution of fluids in the human body

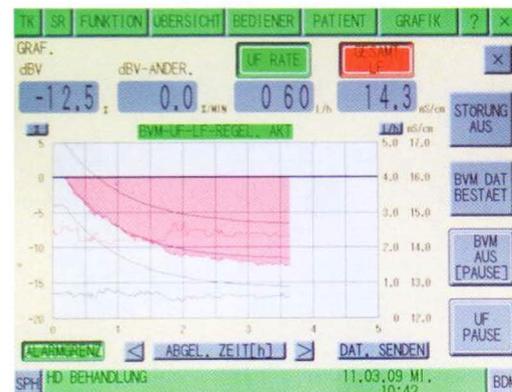
The Haemo-Master option reduces complications during treatments

Measuring principle of the Haemo-Master

The relative blood volume is measured via an infrared measuring section during the dialysis treatment, and is displayed graphically on the screen.



The Haemo-Master measuring principle and measuring chamber



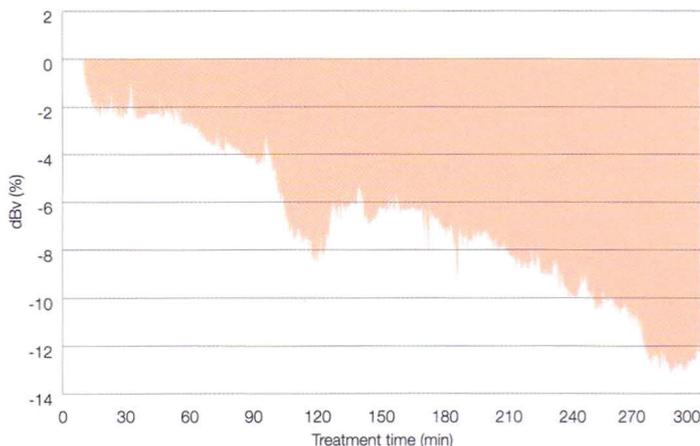
DBB-05 screen with the trend in the blood volume average (dBV) with the Haemo-Master option

Treatment without Haemo-Master

Blood volume trends without regulation

If the patient takes nourishment during the treatment, changes position or if the refill rate is too low, then this can lead to massive undesired reductions in the blood volume.

The dialysis patient's body often reacts to this with a drop in blood pressure. For the patient, this can result in headaches, cramping or hypotension, amongst other problems.

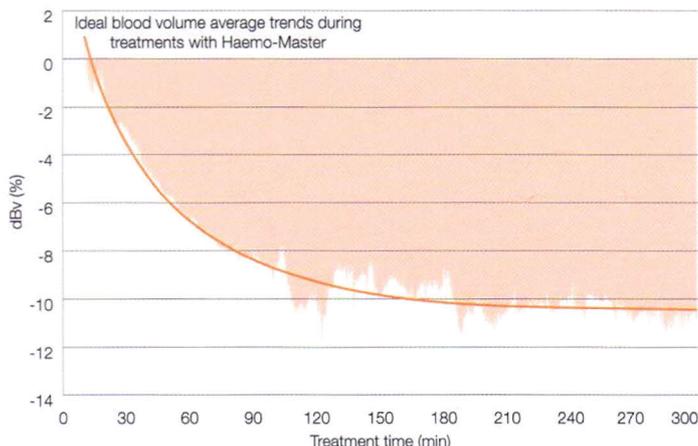


Treatment with Haemo-Master

Blood volume trend with dynamic regulation

For each patient an individual chart for the ideal blood volume changes is established. The Haemo-Master continually measures the relative blood-volume during the dialysis treatment. This is the basis for the automatic regulation of the conductivity and ultra-filtration rate (UF rate).

The intelligent interplay of the regulation of the conductivity and UF rate adapts the blood-volume-changes to the ideal trend. This means it is possible to prevent drops in blood pressure from occurring during the dialysis treatment.



Literature

Daugirdas JT:

Pathophysiology of Dialysis hypotension: An Update
Am. J. Kidney Dis.; 2001; 38: S11-S17

Lopot F, Kotyk P, Blaha J, et al.:

Use of continuous blood volume monitoring to detect inadequately high dry weight
Int. J. Artif. Org.; 1996; 19: 411-414

Steuer R, Bell D, Conis J:

Incidence of high prescribed dry weights and intradialytic-morbidity as detected by continuous volume monitoring
Nephrol. Dial. Transpl.; 1996; 11: 197

Steuer RR, Conis JM:

The incidence of hypovolemic morbidity in hemodialysis
Dial. & Transplant.; 1996; 25: 272-281

Leypoldt J, Cheung A, Delmez J, et al.:

Relationship between volume status and blood pressure during chronic hemodialysis
Kidney Int.; 2002; 61: 266-275

Krämer M:

Anwendung von Feedbacksystemen zur Kreislaufstabilisierung in der Nierenersatztherapie
J. nephrol. Team; 2000; 3: 145-156

Wojke R, Baldamus G, Ries W, et al.:

Is symptomatic Hypotension predictable by changes in blood volume?
Blood Purif.; 1999; 17: 218

Barth C, Boer W, Garzoni D, et al.:

Symptomatic Hypotension and blood volume
Blood Purif.; 2001; 19: 84

Schneditz D, Roob J, Oswald M, et al.:

Nature and rate of vascular refilling during hemodialysis and ultrafiltration
Kidney Int.; 1992; 42: 1425-1433

Koomans H:

Improving blood pressure stability by blood volume-regulated ultrafiltration, a lecture in session clinical support through technical devices in HD
EDTA; 2001

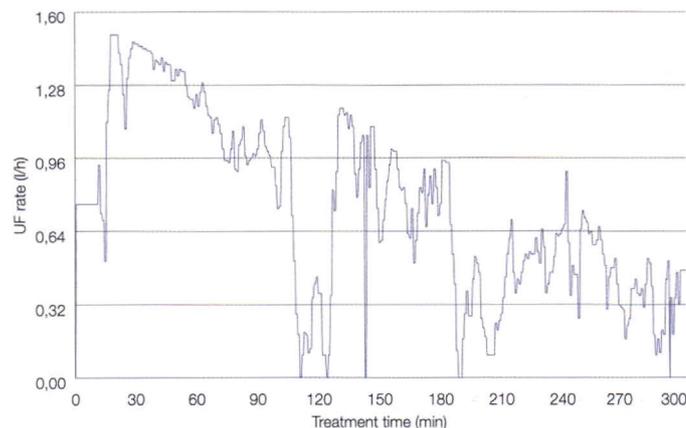
Ronco G, Bellomo R, Ricci Z:

Hemodynamic response to fluid withdrawal in overhydrated patients treated with intermittent ultrafiltration and slow continuous ultrafiltration: Role of blood volume monitoring
Cardiology; 2001; 96: 196-201

Regulation of the UF rate

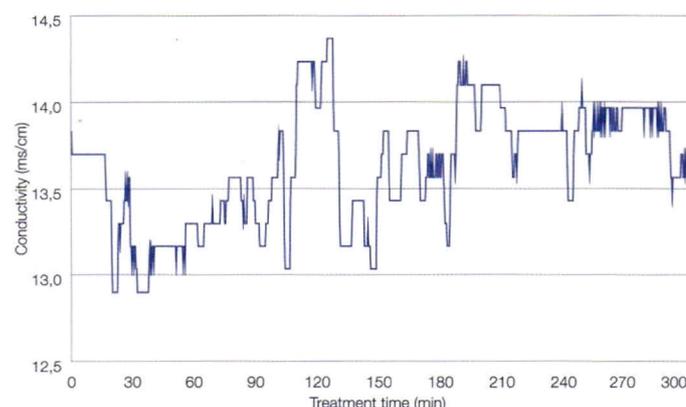
If the blood volume changes vary from the prior established ideal trend, then the UF rate is altered correspondingly.

This change in the UF rate has an immediate stabilising effect on the blood volume changes.



Regulation of conductivity

The blood volume changes during the haemodialysis are determined by the difference between the UF rate and refilling rate. Manipulation of the refilling rate can be achieved directly, to a limited extent, via a dynamic conductivity control.



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