A Unique Technology for Monitoring Dialysis Dose

Continual monitoring and display of the dialysis effectiveness (Kt/V or URR) during the patient’s hemodialysis treatment.
Various treatment indices – from the simple urea reduction ratio through spKt/V, or alternatively, eKt/V are available for continuous real-time control. During therapy, the system - at the option of the user - generates a warning message in the event that the planned target value is not reached. This enables the user to carry out target-oriented adjustments to the treatment parameters – at any time during the ongoing dialysis.

Advanced dialysis technology
The innovative Adimea™ system utilizes the principles of spectroscopy for determining the reduction in the molar concentration of urinary excreted substances in the dialysate drain. A light source 1 transmits ultraviolet (UV) light 2 through the dialysate. The particles contained in the dialysate, which were removed from the plasma during dialysis, absorb the light. This absorption is measured by a sensor 3.

The pioneering technology enables measurement of the UV absorption in the spent dialysate over time. Because there is a close correlation between the change in the molar concentration of urea and the UV absorption curve in the spent dialysate, Adimea is an accurate online measure of Kt/V during the dialysis treatment.

Adimea is not only convincing in terms of its technology, but also with regards to its simple and clear operation: The application merely requires the entry of one patient-specific parameter – the patient’s weight before dialysis.

This means there is no time-consuming determination and entry of the urea distribution volume (V).

Precise, innovative real-time measurement method
- Precise, innovative determination of the reduction of urinary excreted substances in the spent dialysate using ultraviolet technology
- Real-time monitoring during the entire treatment period via continual effectiveness measurement

Easy and flexible operation
- No determination of V – merely requires the pre-dialysis weight
- Configurable and clear display of URR, spKt/V, eKt/V as well as result prognosis
- Changes to treatment parameters are possible at any time

Real-time monitoring of the dialysis dose for optimizing the treatment quality
Innovative technology – precise results

Clinical trials\(^2\) conducted in Germany reveal a very close correlation between the laboratory-determined blood spKt/V and the spKt/V determined by Adimea.

During a total of 64 treatments, blood was serially taken for urea testing to acquire a determination of the spKt/V from the blood as accurate as possible. The spKt/V value determined by Adimea was recorded at the same time.

The comparison of the data reveals, with \( r = 0.93 \) – an excellent correlation between the blood Kt/V and the Adimea Kt/V and hence a high degree of accuracy for the method. The measurement error recorded in these trials for the overall determination of the Kt/V is merely 7%.

Adimea – the technical innovation in Kt/V monitoring,

\(^2\) Werner, Günthner et al., [B. Braun Avitum AG, Melsungen], 2009.
Progressive UV measurement

Ultraviolet (UV) absorption measurements can be used to determine dialysis dose because of the close linear correlation between the measured UV absorption signal and urea concentration in the dialysate. For this reason, the measurement values recorded by Adimea can be used as replacement parameters for the urea.

The progress of the measured substance reduction provides a true overview of the administered dialysis dose. Depending on the effectiveness of the dialysis treatment, the concentration of urinary excreted substances, and hence also the UV light absorption, decreases over the course of the treatment. As graphically shown below, the continual measurements result in a patient-specific curve that nearly corresponds to the reduction in urea.

Adimea processes this acquired information to determine, and clearly display, the Kt/V during treatment. (See treatment progress graphs.)

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The molar concentration decreases ... After 120 minutes of dialysis, the volume of urinary excreted substances is considerably reduced.

... and less UV light is absorbed

Middle of the treatment

The few remaining molecules ... The low number of molecules still remaining in the dialysate drain barely absorb the UV light.

... hardly any UV light is absorbed

End of the treatment

Dialysis progress becomes apparent quickly and easily

The graphic display of the treatment's progress enables optimum user support at all times. Changes in the treatment's progress can be viewed at any time by displaying the real time value curve (blue) / the target value curve (red) and an optical orientation line (dashed green). A warning message that can be optionally activated alerts the user if the target will not be achieved.

Easy to understand display shows the actual dialysis efficiency

At the end of the treatment, the user instantly sees whether the intended treatment objectives have been achieved. The relevant treatment data can be saved on the Patient Therapy Card.
Rx only. For full prescribing information. see Dialog® Plus Operations Manual, version 8-2x.

For more information, please contact your B. Braun Renal Therapies Division sales representative, or call Customer Support at 1-800-848-2066. You can email us at rtd.us@bbraun.com.