Adimea™

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.

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

For complete operating instructions, see Dialog® Instructions for Use, version 9.xx.
Real-time monitoring of the dialysis dose for optimizing the treatment quality

Progressive UV measurement

Urine/serum UV absorption measurements can be used to determine a dosis close to the close linear correlation between the measured UV absorption signal and urea concentration in the dialysate. For this reason, the measurement of UV-absorption can be used as a replacement parameter 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 readily corresponds to the reduction of UV-absorption over time. During therapy, the system - at the option of the user - generates a warning message if the target will not be achieved. This enables the user to carry out target-oriented adjustments to the treatment parameters at any time during the ongoing dialysis.

The latest version of the Dialog® also offers an overview of the UV absorption curve which provides easy analysis of individual patient Kt/V curves. The ability to store and clearly display up to twelve curves from previous treatments is also included in the Adimea functions. This makes it easy to compare different treatment conditions and their influence on Kt/V.

Long-term analysis of daily Kt/V values allows for the detection of increasing efficiency values which might be related to acute problems.

Advanced dialysis technology

This innovative Adimea® system utilizes the principles of spectroscopy for determining the reduction in the molar concentration of urinary excreted substances in the dialysate dose. A light source (1) transmits ultraviolet (UV) light through the dialysate. The particles contained in the dialysate, which were removed from the plasma during dialysis, absorb the light. This absorption is measured using a sensitive UV detector which is placed next to the light source. The absorption signal provides information on the dialysis efficiency in terms of the reduction of UV-absorption over time. This makes it easy to compare different treatment conditions and their influence on Kt/V.

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Various treatment indices - from the simple urea reduction ratio of the urea concentration in the plasma to the advanced dialysis technology - allow for an optimum control of the ongoing dialysis.

Easy and flexible operation

Precise, innovative real-time measurement method

Non-deterministic determination of Kt/V – merely requires the pre-dialysis weight.

Configurable and clear display of URR, spKt/V, eKt/V and other results.

Changes to treatment parameters are possible at any time.

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.

No determination of V – merely requires the patient’s weight before dialysis.

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 area distribution volume V.

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Easy and flexible operation

Precise, innovative real-time measurement method

Precise, innovative determination of the reduction of urinary excreted substances in the dialysate dose using ultraviolet technology.

Real-time monitoring during the entire treatment period via continual effectiveness measurement.

Changes to treatment parameters are possible at any time.

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.

No determination of V – merely requires the patient’s weight before dialysis.

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 area distribution volume V.

Various treatment indices - from the simple urea reduction ratio of the urea concentration in the plasma to the advanced dialysis technology - allow for an optimum control of the ongoing dialysis.

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.

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Real-time monitoring of the dialysis dose for optimizing the treatment quality

**Advantages of Adimea™**

- **Easy and flexible operation**
- **Progressive UV measurement**
  - for optimizing the treatment quality
  - Real-time monitoring of the dialysis dose
  - through spKt/V, or alternatively, eKt/V are available for continuous monitoring.
  - Various treatment indices – from the simple urea reduction ratio to the complex urea distribution volume (V).
  - This means there is no time-consuming determination and entry of the patient’s weight before dialysis.
  - Adimea is an accurate online measure of Kt/V during the dialysis treatment.
  - 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 provides an accurate online measure of the Kt/V during the dialysis treatment.
- **Adimea is not only a reliable tool in terms of its technology but also with regards to its simple and clear operation.**
- The user can intuitively understand the displayed data and adjust the treatment parameters accordingly.

**Adimea Technology**

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

### Changes in the Treatment’s Progress over Time

#### Beginning of Treatment
- **High molar concentration in the dialysate**
- The urinary excreted substances in the dialysate absorb a majority of UV light (high UV absorption).

#### Middle of the Treatment
- **Reduced molar concentration in the dialysate**
- The urinary excreted substances in the dialysate absorb less UV light (low UV absorption). This enables the user to carry out target-oriented therapy.

#### End of the Treatment
- **Low UV light is absorbed**
- The few remaining molecules... entail high UV absorption.

### Easy to Understand Display

- The graph displays the treatment’s progress graphically.
- Changes in the treatment’s progress can be viewed at any time by displaying the real-time data on a target value curve (red) and an optical orientation line (dashed green).
- Easy to understand display shows the actual dialysis efficiency at the end of the treatment, the user instantly knows whether intended treatment objectives have been achieved. The relevant treatment data can be used on the Patient Therapy Card.

### 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 patient’s 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**

### Ultraviolet (UV) Absorption Measurements

- Ultraviolet (UV) absorption measurements can be used to determine a dialysis dose because of the close linear correlation between the measured UV absorption signal and urea concentration in the dialysate. For this reason, the measured UV absorption signal can be used as a replacement parameter 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 of 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 of...
Real-time monitoring of the dialysis dose for optimizing the treatment quality

Progressive UV measurement

Ultrafiltration (UV) absorption measurements can be used to determine a 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 of UV absorption in the spent dialysate can be used as a replacement parameter 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 easily corresponds to the reduction of a substance in the dialysate.

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 targeted adjustments to the treatment parameters – at any time during the ongoing dialysis.

The latest version of the Diolys® also offers an overview of the UV absorbance curve which provides easy analysis of individual patient Kt/V curves. The ability to store and graphically display up to twelve curves facilitates the trend examination of different treatment conditions and their influence on Kt/V.

Long-term analysis of daily Kt/V values allows for the detection of decreasing efficiency values which might be related to access problems.

Changes to treatment parameters are possible at any time.

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 stored via the Patient Therapy Card.

Easy and flexible operation

Preciso, innovative real-time measurement method

Preciso, 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

Changes to treatment parameters are possible at any time.

Advanced dialysis technology

This innovative Adimea® system utilizes the principles of spectroscopy for determining the reduction in the molar concentration of urinary excreted substances in the dialysate dose. A light source (1) transmits ultraviolet (UV) light through the dialysate. The particles contained in the dialysate, which were removed from the plasma during dialysis, absorb the light. This absorption is measured using 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 on-line 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 area under the curve (AUC).

Various treatment indices - from the simple urea reaction ratio through spKt/V, or alternatively, eKt/V are available for continuous real-time control.

The user can see all parameters from the outset:

- Kt/V and URR
- Selected treatment index (spKt/V example)
- dialysate flow
- Urea concentration in the plasma
- UV absorbance curve
- UV absorbance in the dialyzer
- non-measured substances
- UV-absorption
- blood flow
- effective dialysate flow
- measured and calculated patient Kt/V curves.

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

The absorption signal provides information on the dialysis effectiveness. The user can see all parameters from the outset:

- Selected treatment index (eKt/V example)
- UV and URR
- Actual value achieved
- Dwell time of and access to: Treatment time / blood flow / dialysate flow.

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 measurement of the desired 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.
Adimea™
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.

Innovative technology – precise results

Clinical trials 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 accurately 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 once recorded in these trials for the overall determination of the Kt/V is merely 7%.

Adimea – the technical innovation in Kt/V monitoring.

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