Flexible and efficient dialysis treatment

Hemodialysis
B. Braun Avitum: A trusted partner

B. Braun Avitum, a division of B. Braun Melsungen AG, has been one of the leading providers of dialysis technology for over 30 years. In our role as a global full-spectrum provider for extracorporeal blood treatment, we provide dialysis facilities with products and services for all aspects of blood purification processes. Our integrated approach to research, production, and therapy ensures outstanding dialysis treatment in line with the latest medical advances. This not only boosts the efficiency of the treatment processes used in our global network of over 250 dialysis centers but also improves quality of life for our more than 19,000 chronic dialysis patients.

Every new product has to face – and meet – these high standards. The Dialog® dialysis system far exceeds the minimum requirements in terms of many of its technical features – and impresses users with its versatile configuration range, extensive selection of accessories, and intelligent options.
For the highest standards

Dialog⁺ dialysis system – a perfect balance

The balancing act is getting trickier: nowadays, every dialysis clinic faces the challenge of providing patients with the most individualized level of care possible while at the same time operating cost effectively. Striking the right balance between medical efficacy and cost-effective treatment is the key.

This situation calls for innovative technologies to meet individual needs, so that dialysis services can continue to be provided with coverage for costs and without compromising on patient care. B. Braun Avitum is breaking new ground in this area. Innovative technologies such as the Dialog⁺ dialysis system help nephrologists and physicians employ the best possible treatments for their patients.

Dialog⁺ is part of a completely new generation of dialysis systems aimed at delivering optimum care with highest efficiency. Innovations such as Adimea® to monitor and control dialysis dose, bioLogic RR® to prevent hypotensive episodes, and the data-management system Nexadia consistently meet today’s economic and medical requirements. The result: balance between patients’ legitimate requirements and the need for cost optimization, between effective dialysis and efficient treatment.

Find the right balance – find your way to B. Braun.
Innovative technology for the highest standards

Adimea® – precision real-time measurement of dialysis dose

The Adimea® feature is a precision measurement procedure for reliable and continuous dialysis dose control (Kt/V) throughout the entire treatment. This innovative system uses the principles of spectroscopy to determine the reduction in the molar concentration of urinary excreted substances in the dialysate drain. This pioneering technology enables measurement in the used dialysate. In order to continuously analyze change in the molar concentration, Adimea® is directly connected to the patient. This offers the advantage that physicians and nursing staff can adjust the treatment parameters for the patient’s benefit even before treatment is complete. This allows the unit to provide valuable support for achieving treatment objectives. Clinical tests show a very close correlation between the blood Kt/V determined in a lab and that calculated by Adimea®.

Usable at no extra cost in all current modes of dialysis treatment (HD, HDF, SN-CO).

User Benefits with Adimea®:
- Real-time Kt/V monitoring in every dialysis session
- Online adaptation of treatment parameters for better outcome
- No determination of V - only predialytic weight needed
- Applicable for all HD treatment modes in URR, spKt/V, and eKt/V mode

High accuracy: Proven to be highly precise

High accuracy, scientifically proven: This sample display for the UV absorption signal’s treatment progress and the serum urea values at 20-minute measurement intervals reveals the strong correlation.

You can also get detailed information from the separate brochure on Adimea® or on the website www.adimea-bbraun.com.

Reduction of treatments with hypotensive episodes (HE) by 52%

Reduction of treatments with at least one HE symptom by 82%

Reduction of treatments with at least one HE-induced therapeutic measure by 64%

The bioLogic RR® Comfort biofeedback system regulates the ultrafiltration rate automatically and predictively, preventing hypotensive episodes successfully during treatment. It is the only biofeedback system on the market that measures the patient’s blood pressure directly. It also uses intelligent guideline technology, taking into account blood pressure profiles stored from previous treatment sessions. This makes the system highly safe and reliable. In addition, with only two main settings via touchscreen, it is very easy to use. This not only gives healthcare staff added peace of mind but also frees up more time for the patient.

User Benefits with bioLogic RR® Comfort:

- Considerable reduction in hypotensive episodes
- Continuous improvement in treatment quality
- Easy to use, without follow-up costs

Proven in studies: Excellent results with bioLogic RR® Comfort

Reduction of treatments with hypotensive episodes (HE) by 52%

Reduction of treatments with at least one HE symptom by 82%

Reduction of treatments with at least one HE-induced therapeutic measure by 64%


Innovative technology for the highest standards

bioLogic RR® Comfort – intelligent blood pressure stabilization

You can also get detailed information from the separate brochure.
The impact of convective therapies on patient’s outcome is still under debate, although recent studies show survival advantages for patients treated with high post-dilution substitution volumes.¹,²

Depending on the dialysis mode, substitution volumes, and dialyzers used, the right balance between middle-molecule elimination and albumin retention can patient individually be chosen.³

To choose the right therapy for your patient, the Dialog+ system offers all needed modalities:
- Online Hemodiafiltration (HDF)
- Online Hemofiltration (HF)
- High-Flux Hemodialysis

**HDF treatments**
The Dialog+ HDF online device offers all of the standard current substitution methods: HDF pre- and post-dilution, as well as pure hemofiltration (HF).

Our target-oriented system enables you to achieve high substitution volumes in HDF post-dilution based on efficiently monitoring the correct blood flow in relation to the ultrafiltration rate. In combination with xevonta Hi23 substitution volumes >24 l can be realized under routine conditions, accompanied by a loss of albumin of only 1.2 g/session.³ Additionally, the system monitors the formation of clottings or cloggings by measuring the inlet blood pressure at the dialyzer.

**HD high flux – the alternative**
Achievement of high substitution volumes depends on high blood flow rates. Due to various vascular access limitations or other patient-dependent restrictions, an adequate blood flow cannot be realized for every dialysis patient. In consequence, high substitution volumes cannot be reached for such cases.

High-flux HD treatment can offer an alternative. The use of dialyzers with high permeability (e.g., xevonta Hi23; KUF 124 ml/h/mmHg) is linked to an increased internal convection, resulting in an effective removal of middle molecules. Albumin is nearly untouched (<150 mg albumin loss/session)⁴ using this treatment option.

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**User Benefits with HDF online machines:**
- Fluid prepared online for priming, reinfusion, and infusion bolus during treatment session
- No extra disposable needed for priming in HD standard therapy
- Lifetime of Diacap Ultra up to 150 treatments

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**Sources:**
¹ Maduell et al.: High-efficiency postdilution online hemodiafiltration reduces all-cause mortality in hemodialysis patients. JASN 2013 Feb; 24(3)
² Grooteman et al.: Effect of online hemodiafiltration on all-cause mortality and cardiovascular outcomes. JASN 2012 June; 23(6)
⁴ Ficheux et al.: The use of SDS-PAGE scanning of spent dialysate to assess uraemic toxin removal by dialysis. NDT 2011 July; 26(7)
The term "single needle-cross over" (SN-CO) derives from its unique control technology. During SN-CO therapy, both blood pumps run continuously, with regularly alternating arterial and venous phases. During an arterial phase, the blood fills the arterial expansion chamber until the venous control pressure closes the arterial clamp. During a venous phase, the blood is returned to the patient until low arterial underpressure closes the arterial clamp. The blocking clamps are thus controlled via a "crossover" function.

Patient’s Benefits with single needle-cross over:

- High volumes of treated blood thanks to a constant flow of blood in the dialyzer
- Protection of the vascular access due to indirect blood transportation
- Excellent Kt/V results monitored by Adimea® due to undisrupted diffusion process in the dialyzer

![The single needle-cross over system](image)

Innovative technology for the highest standards

Clotting management – preventive pressure monitoring

Measuring the blood inflow pressure in the dialyzer via PBE sensor serves as an effective method of hemolysis prophylaxis, as possible kinks in the blood line are detected early on and indicated via the alarm system. In addition, the development of a secondary membrane in the dialyzer is monitored and displayed by the PBE, so the user can keep an eye specifically on the dialyzer status at all times during treatment. The user can then use this valuable information to take action early to prevent excessive blood clotting in the dialyzer. This not only significantly reduces the time and effort needed by the user but also eliminates the costs of unnecessary filter exchange.

User Benefits with Clotting Management:
- Hemolysis prophylaxis through early detection of kinks in the blood tube
- Clotting management through monitoring the secondary membrane pressure in the dialyzer
- Prevention of replacement of excessively clotted filters, saving time, effort, and expense
Every patient is unique. With this in mind, advanced dialysis equipment items feature optimum flexibility, which allows to deliver individualized care for every patient. The Dialog+ dialysis system uses six different treatment profiles, so dialysis processes can be adjusted and optimized to accommodate important treatment settings – entirely in line with patients’ individual needs.

Ultrafiltration profile:
Adjusts fluid removal in the patient individually and variably

Sodium profile:
Stabilizes the patient’s circulation and electrolyte levels

Bicarbonate profile:
Adjustment for acid-base balance

Heparin profile:
Individually adjusted for the coagulation and bleeding situation

DF flow profile:
Reduces use of concentrate, water, and energy with undiminished dialysis quality

Temperature profile:
Prevents hypotensive episodes by stabilizing body temperature

User Benefits with treatment profiles:

- Flexible combination of treatment profiles for successful therapeutic outcome
- Individual adjustment to various therapy conditions
- Convenient patient management and time savings by simply downloading patient data from Nexadia or patient therapy card
Intelligent solutions for optimized processes

Nexadia – intelligent data management

With an eye to the medical quality of treatment and the efficiency of workflows within the dialysis facility, data that arise must be collected, processed, and archived effectively. Our Nexadia data-management system with the Nexadia Monitor software and the Nexadia Expert database can help you do just that, automating routine processes and considerably simplifying documentation for quality assurance (QA) purposes.

**Nexadia Monitor: Interactive software**
Nexadia Monitor is a clearly structured and user-friendly software which provides a transparent view and control of a wide range of processes in dialysis treatment.

The data generated in connected dialysis machines, analyzers (e.g., blood gas analysis), and patient scales are automatically transferred and saved to Nexadia Monitor, which enables clear visualization and convenient editing of the data. Thanks to the bidirectional data transfer between Nexadia Monitor and the connected dialysis machines, consistent and up-to-the-minute data records can be called up at any time, even during treatment.

**Nexadia Expert: Flexible database**
Nexadia Expert is a powerful and user-friendly database for dialysis-center therapy management. Operation of Nexadia Expert is intuitive. Functions include the editing and archiving of all treatment- and patient-related data and preparation of the documentation required for quality assurance.

Data from other medical information systems can also be imported and managed, e.g., patient master data, laboratory results, and findings and diagnoses from external physicians. Nexadia Expert is perfectly co-ordinated with the Nexadia monitoring software and automatically initiates bidirectional data transfer to and from Nexadia Monitor and any other equipment connected to the system.

Together, Nexadia Monitor and Nexadia Expert provide a highly efficient and easy to use system.

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1. Treatment example with a scientifically proven time saving of over 21 minutes of nursing activities per treatment. Time which nursing staff can instead devote to the patient.
Nexadia creates connections
The Nexadia system adapts to its mode of operation – not vice versa. The entire dialysis station is intelligently integrated, so that all connected dialysis and analysis devices and patient scales can communicate via Nexadia with external information systems. The software interfaces of the system make possible numerous combinations and connections, for example with hospital information systems. By means of standardized hardware interfaces, our Dialog+ dialysis devices, as well as peripheral devices such as patient scales, can be easily integrated into the network.

The Nexadia system and the Dialog+ dialysis system intelligently integrate data collection and data management. Dialog+ possesses an excellent networking capability. So, for example, the touchscreen is used as the input terminal for Nexadia.

Nexadia and Dialog+ create the best prerequisites for high-value dialysis with optimized processes.

User Benefits with Nexadia:
- Easy operation through bidirectional connection
- Increased cost efficiency
- Automation of complex tasks
- Fewer administrative activities and more time for the patient
- Consistent documentation for optimized quality assurance
- Easy operation meeting practical requirements
- Automated saving and filing of relevant data

Ecoprime is the innovative system for easy and safe implementation of pre/post processing for dialysis treatment. Instead of the usual two NaCl containers, only one container is now needed for the complete dialysis session.

1,000 ml of NaCl solution is sufficient for filling and rinsing the extracorporeal system, as well as returning the blood. Moreover, the user can decide which of the common filling and rinsing procedures is best suited.
A combination of proven components eliminates the need for a second NaCl container. One of these components is the Discofix C three-way stopcock. It enables the desired amount of NaCl solution to be measured out reliably and accurately from only one container – from filling through to infusion.

And it does so without restricting patient safety or treatment quality.

In addition, the bloodline system is immediately ready and easy to operate.

User Benefits with Ecoprime System:
- Cost-effective: only one 1,000 ml container of NaCl solution for the entire dialysis treatment
- Ecological: thanks to waste prevention and resource conservation
- Qualified process for optimized patient safety and hygiene
- Easy-to-use: convenient and safe handling thanks to pre-connected bloodline system
- Ergonomic: reduced workload thanks to the elimination of a second NaCl container
More than repair and maintenance

Excellent service – perfectly streamlined

With the decision to use the Dialog® dialysis machine, our customers benefit also from our highly qualified and experienced support teams and the mutually adapted service modules.

Our seven service modules at a glance

Excellent technical support
Quick and precise fault diagnosis, certified maintenance and repair, technical safety testing, and diagnostic tools – our technical support personnel increase the total lifespan and operating time of your devices.

Local presence
Certified technicians of B. Braun work in more than 100 countries worldwide. Supported by very-well-trained experts on all continents, they not only ensure the smooth operation of your machines but are always close to you.

Modern communication
Our intelligent communication and diagnostic tools, comprehensive knowledge of dialysis, and close contact with our customers are important success factors. With the digital platforms, training center, Service Portal, and Service Wiki, we provide comprehensive information round the clock for our service organizations around the world.

Tailored training courses
Service partners can select among more than 30 training modules – worldwide, in the corresponding languages. With our mobile learning concept, we offer certified trainings that have been developed based on customer needs.

Innovative diagnosis tools
Our Trend-Viewer program automatically stores device data for a long period of time. In this way, temperatures, pressures, valve functions, and other parameters can be analyzed by our support teams worldwide. Thus, the service performance can be significantly enhanced.

Original spare parts
All Dialog® machines worldwide are maintained with our certified original spare parts in order to ensure the quality that you expect: highest operating safety and reliability. In addition, we guarantee delivery of our original spare parts for at least 10 years.

Comprehensive service contracts
A tailored service contract helps to increase machine reliability and simplify budget planning.
More than repair and maintenance

Dialog+ – pioneering technology

Fit to your needs

Reliable
MTBF up to two years\(^1\)
Recognized in many specialized online forums

Service-friendly
Easy to maintain
Spare parts are available at any time
Preventive maintenance program
Simplified fault search
Modular design, simple and easy access to the hydraulic and electronic facilities

Environmentally-friendly
Optimized use of resources
Quick savings results in the consumption of water, energy, saline, and concentrate

\(^{1}\) Achieved under best practice service conditions
Flexibility

Individual configuration – from one source

Available in three basic configurations:

- Single pump
- Double pump
- HDF online
Dialog® is distinguished by a high level of flexibility. This gives our clients maximum configuration possibilities for equipping their dialysis machines. Each dialysis device can be configured individually from three modules with many options and accessories.

1 Multifunctional Tray

2 Card Reader or Nexadia BSL

3 ABPM: Automatic blood pressure measurement

4 bioLogic RR Comfort

5 Universal Front Tray

6 DF Filter Holder

7 BIC Cartridge Holder

8 Central Concentrate Supply

9 Adimea®
These diverse options, accessories, and consumables from a single source offer a perfectly adapted therapy system. At B. Braun Avitum, all fits together. Our modular dialysis systems offer you all the components for a successful therapy from just one supply source – perfectly adapted to each other in their details.

The Dialog⁺ system forms the center of the dialysis process. With various configuration possibilities, a wide scope of accessories, and intelligent options, you receive the solution that corresponds to your demand for optimized medical care and cost-effectiveness.
Important information at a glance

### General data
- **Nominal voltage:** 230 V (option: 120/240 V)
- **Nominal frequency:** 50 Hz / 60 Hz
- **Nominal current (max.):** max. 11 A for 230 V or 16 A for 120 V
- **Dimensions (W x D x H):** approx. 510 x 637 x 1678 mm
- **Weight (empty):** approx. 85 kg in the basic design

### Water intake
- **Pressure range:** 0.5 to 6 bar
- **Temperature range:** +10 to +30 °C

### Concentrate supply
- **Pressure range:** 0 to +1 bar
- **Standards:**
  - EN 60601–1: (IEC 601–1)
  - EN 60601–2–16: (IEC 601–2–16)
  - EN 60601–1–2: (IEC 601–1–2)

### Produced in conformity with directive 93/42/EEC

### Dialysis fluid system
- **Temperature working range:** selectable between +33 and +40 °C
- **Conductivity processing:** conductivity regulated
- **Working range:** - conductivity of bicarbonate 2 to 4 mS/cm or 4 to 7 mS/cm - total conductivity 12.5 to 16 mS/cm

### Measurement tolerance:
- ±0.2 mS/cm
- Flow: 300 to 800 ml/min
- Tolerance: ±5%
- Blood leak detector: optical, color-specific
- Alarm limit value: > 0.50 ml/min (HCT 45%) > 0.35 ml/min (HCT 25%)
- Ultrafiltration: - volume regulated through the balance chamber, ultrafiltration through ultrafiltration pump - sequential ultrafiltration (Bergström)
- Working range: 0 to +4000 ml/h
- Measurement tolerance: 0.2 ml per chamber cycle, UF-pump tolerance <1%
- Degassing device: mechanical, through regulated degassing low pressure

### Extracorporeal circulation
- **Blood pump:** 2-roller pump
- **Transportation rate:** 50 to 600 ml/min
- **Transportation tolerance:** < 10% with pressure up to ~150 mmHg
- **Heparin pump:** injection pump for 10-, 20-, and 30-ml syringes
- **Transportation rate:** 0.1 to 10 ml/h
- **Transportation tolerance:** < 10%
- **Safety air detector:** ultrasound measurement in the tube
- **Protection system:** ultrasound detector, automatic cyclical testing during the entire operating phase

### Pressure measurement at the arterial feed into the dialyzer
- (PBE) working area: 0 to +700 mmHg
- Measurement tolerance: ±10 mmHg
- Arterial input pressure measurement
- (PA) working area: -400 to +400 mmHg
- Measurement tolerance: ±10 mmHg
- Venous backflow pressure measurement
- (PV) working area: 20 to +390 mmHg
- Measurement tolerance: ±10 mmHg

### Machine
- **Dialog (Single pump)**
  - Item number: 7102005
- **Dialog (Double pump)**
  - Item number: 7102013
- **Dialog* HDF online**
  - Item number: 7102072

### Option
- **Adimea®**
  - Item number: 7102233
- **biologic RR® Comfort**
  - Item number: 7105324
- **ABPM**
  - Item number: 7102226
- **Battery**
  - Item number: 7102244

### Option Item number
- **Dialog computer interface**
  - Item number: 7107218
- **Nexadis BSL**
  - Item number: 7102230
- **Card reader (includes 5 cards)**
  - Item number: 7105230
- **Patient therapy card (5 pieces)**
  - Item number: 7105232
- **Bicarbonate cartridge holder**
  - Item number: 7105171
- **Central concentrate supply**
  - Item number: 7105196
- **Dialysate flow filter**
  - Item number: 7102102
- **Staff call**
  - Item number: 7102315
- **Blood pump roller 7x10**
  - Item number: 7102340

### Accessories
- **Universal front tray**
  - Item number: 7105239
- **Multifunctional tray**
  - Item number: 7105238
- **Box comfort**
  - Item number: 7107322
- **Monitor mini-shelf**
  - Item number: 7102872
- **Record holder**
  - Item number: 7102873
- **Combi shelf holder**
  - Item number: 7102890
- **Universal storage tray**
  - Item number: 7105500

### More configurations possible under different item numbers.