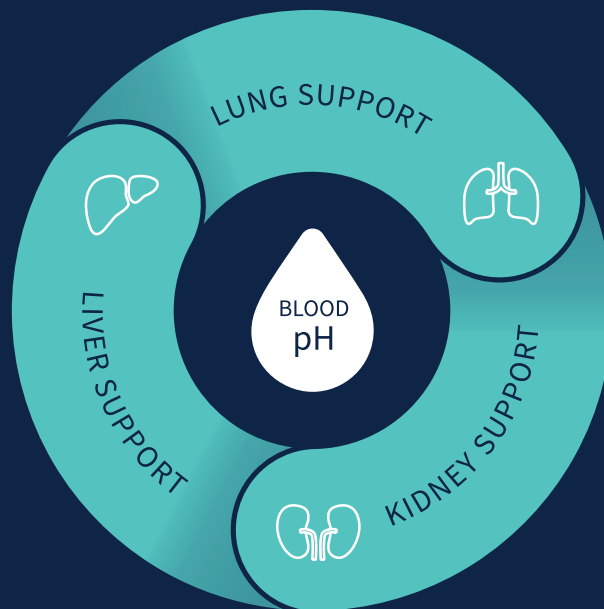


Open a New Chapter in Advanced Blood Purification



ADVOS multi Therapy

Individually Tailored Therapy For Patients With an Indication For Multi-Organ Support



Liver

Removal of protein-bound toxins

Lungs

Fluid-based CO₂ removal in a low-invasive setting

Kidney

Removal of water-soluble and protein-bound nephrotoxins

Blood pH

Correction of metabolic and respiratory acidosis

The mortality rate of patients in multi-organ failure rises with the number of failing organs and still remains alarmingly high.

These critically ill patients require extensive extracorporeal organ support. The management of such therapies in the ICU is highly complex and results in a significant operational workload.



ADVOS multi is the world's first therapy for individualised multi-organ support

ADVOS multi is a single extracorporeal system that can individually support the detoxification functions of the kidneys, liver, and lungs, while effectively correcting acid-base disorders. The ADVOS multi therapy uses a dialysate enriched with human albumin, which is permanently processed in a recirculation circuit.

The preparation of the dialysate ensures a consistently high detoxification performance of protein-bound and water-soluble substances. Individualised blood detoxification is made possible by the unique option to adjust the pH value and control the bicarbonate levels of the dialysate during the therapy.



ADVITOS
Bridging Life

ADVOS multi Therapy Suggests Improved Survival Chances Through Unique Multi-Organ Support^{1,4,5}

User Benefits

- Worldwide only 4-in-1 device to provide multi-organ support for liver, lung, kidney and acid-base balance
- Reduced user effort and lower risk of human error
- Integrated container with 80 litre dialysate volume for reduced workload in the ICU

Clinical Outcome

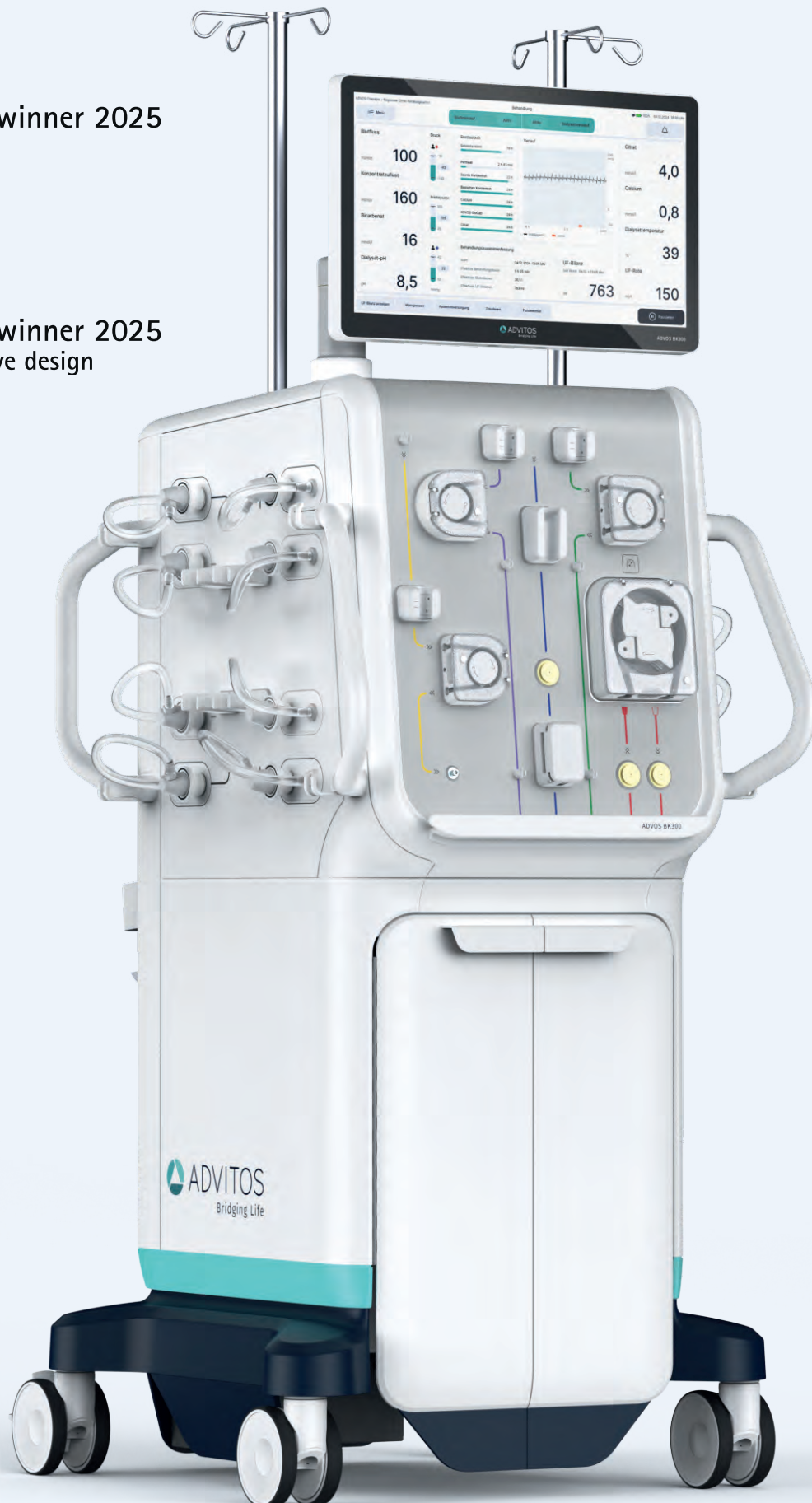
- Correction of acid-base imbalances by direct removal of acids; treatment of severe metabolic and respiratory acidosis (fluid-based CO₂ removal); blood pH is physiologically balanced as in the kidneys
- High and long-lasting efficacy of detoxification of all main detoxification organs
- Low-invasive and safe method: no large-lumen catheter necessary, low blood flow and volume needed



red**dot** winner 2025



red**dot** winner 2025
innovative design



The Next Generation **ADVOS BK300**

A New Era in the Extracorporeal Blood Purification

The new generation ADVOS BK300 is a unique platform that enables a comprehensive range of fully integrated extracorporeal blood purification therapies with a treatment duration of up to 72 hours (RRT - Renal Replacement Therapy).

The therapy can be flexibly adjusted: Depending on the parameter settings and the disposable set used, it can be targeted at one or more lead organs or adapted to one or more therapy goals.

The user can choose between two therapy modes:

1

ADVOS multi Therapy

for the removal of protein-bound and/or water-soluble substances and/or acidosis correction, e.g., in patients with liver failure, kidney failure, acidosis, multi-organ failure, intoxication or severe shock.

2

ADVOS RRT

for the standard renal replacement therapy.

The Innovative ADVOS BK300 offers:

- Holistic therapeutic approach in the extracorporeal blood purification
- Individually adjustable settings for targeted removal of water-soluble and protein-bound substances
- Flexible anticoagulation options: regional citrate anticoagulation (RCA) available in all the therapy modes
- Unique acidosis therapy for targeted correction of acid-base disorders
- One-of-a-kind recirculation circuit: effective blood detoxification during the entire treatment period through continuous regeneration of the recirculating dialysate
- Low invasive procedure: blood access using conventional dialysis catheter and low blood flow rates

Unique Fluid-Based Acidosis Correction

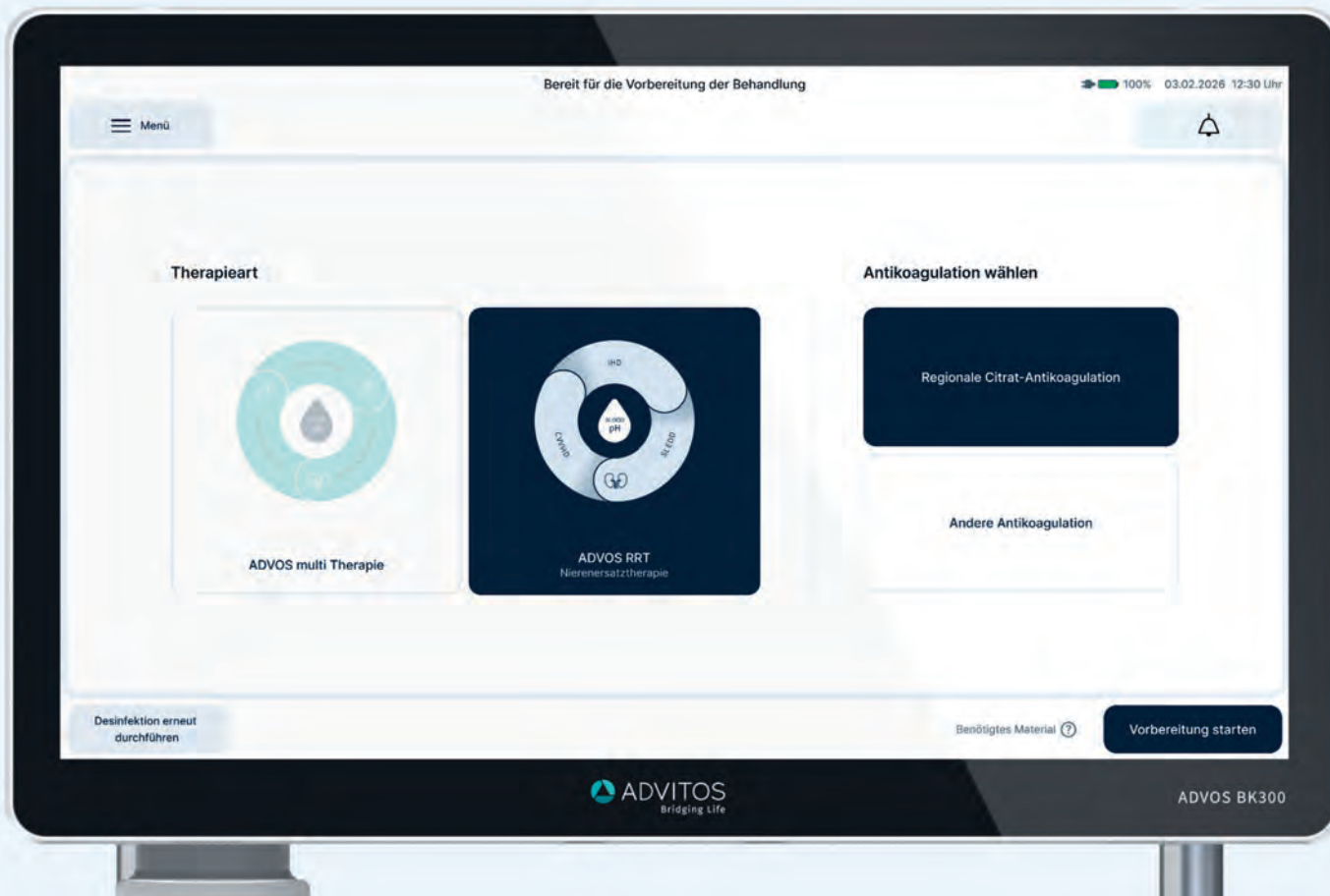
The ADVOS multi therapy enables physiological and fluid-based removal of H^+ ions and CO_2 for the treatment of metabolic and respiratory acidosis.

Acidosis therapy is effectively tailored to each patient's needs by precisely adjusting the pH value and bicarbonate content of the dialysate.

ADVOS BK300 enables a scalable acidosis correction through:

- pH management using dedicated ADVOS concentrates (acid and base)
- Variably adjustable bicarbonate levels of the dialysate during the therapy





ADVOS RRT: Renal Replacement Therapy in the ICU **Redefined**

Individual clearance depending on each patient's needs and course of treatment

The ADVOS BK300 provides a comprehensive solution in the treatment of acute kidney injury (AKI). From intermittent dialysis (iHD, SLED) to continuous renal replacement therapy (CRRT), it covers the entire spectrum of dialysis procedures in a single device and setup. Thanks to the adjustable settings for blood, dialysate, and concentrate flow rates, the ADVOS BK300 offers optimal flexibility for every patient.



Find out more about the
ADVOS BK300 here

ADVOS RRT advantages:

- Regional citrate anticoagulation (RCA) possible throughout the entire dialysis spectrum
- Metabolic alkalosis can be prevented by flexible bicarbonate adjustment
- Treatment duration up to 72 hours possible
- Treatment possible for up to 24 hours with fluid exchange - made possible by optimised configuration of all dialysis fluids
- Sustainable water supply with optimised fluid management based on 80 litre container concept

Enhanced Usability

Device Interactions Minimised to Maximise Workflow Efficiency in the ICU

Structured Workflows

Flawless arrangement of tubing lines by colour-coded system

Quick Set-Up and Intuitive Operation

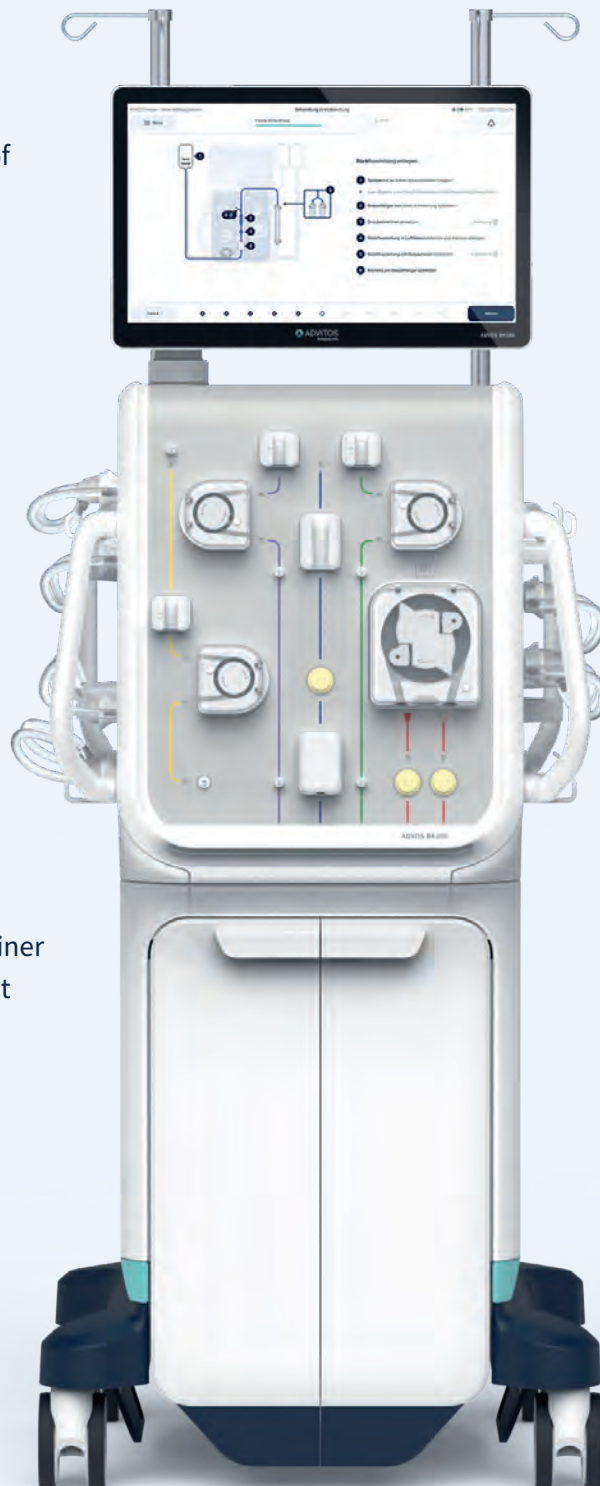
Seamless device operation with the help of integrated graphic instructions

Ergonomic Handling

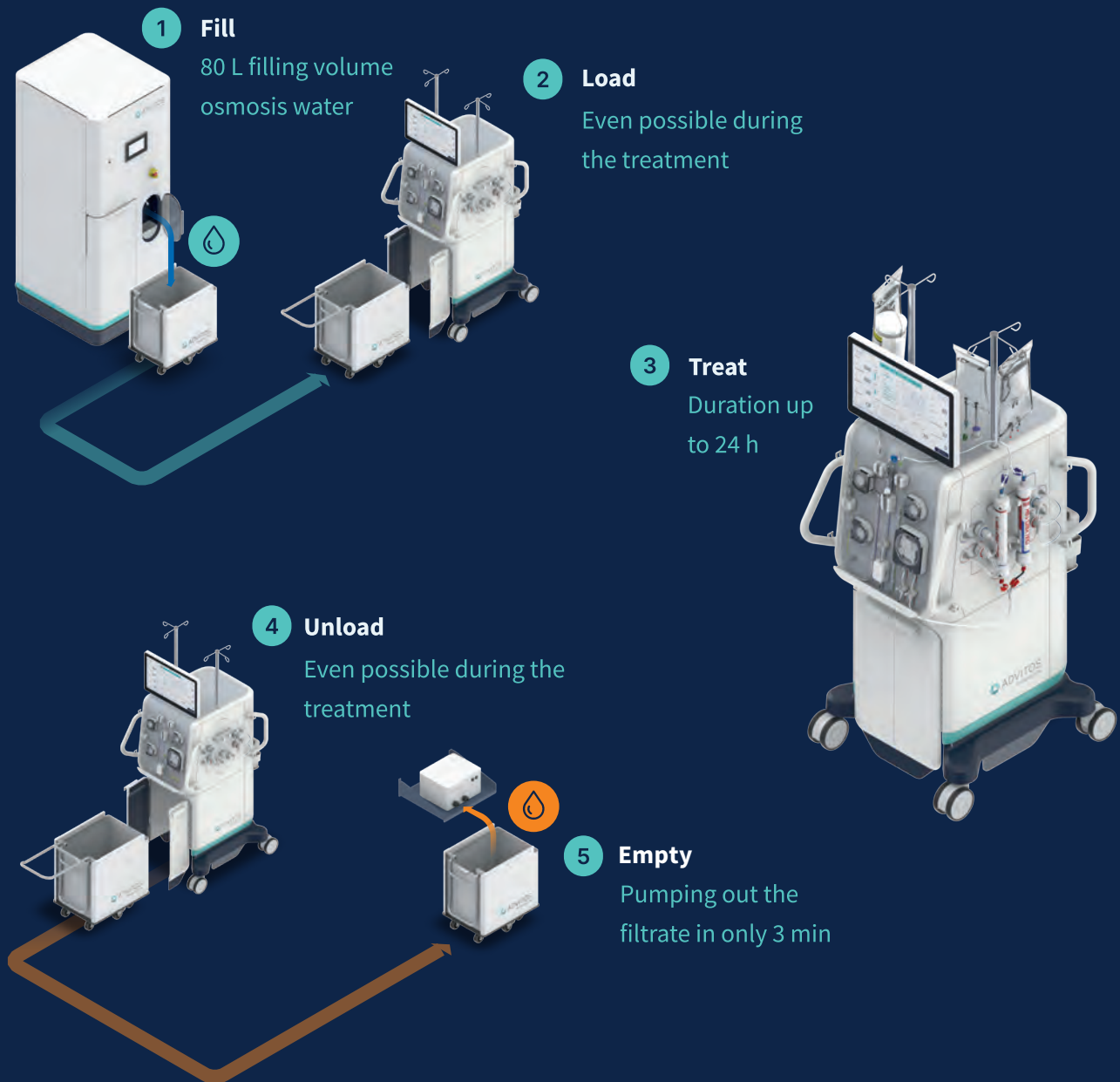
Streamlined fluid container and device management

Simply Structured Monitoring of the User Interface

Traffic light system for quick status checks



Optimised Permeate and Filtrate Management



- **Compact Design:** Integrated 80 litre container saves storage space and eliminates the need to change fluid bags during treatment.
- **Efficient Water Supply:** It takes less than 3 minutes to fill the fluid container using a dedicated reverse osmosis system ADVOS Aqua ensuring the highest standard of water quality.
- **Maximum Flexibility:** Application in any hospital unit possible.

Individually Adjustable Settings for Targeted 24 h Therapy

Blood Flow

100 - 600 mL/min

Concentrate Flow (9.6 - 19.2 L/h)

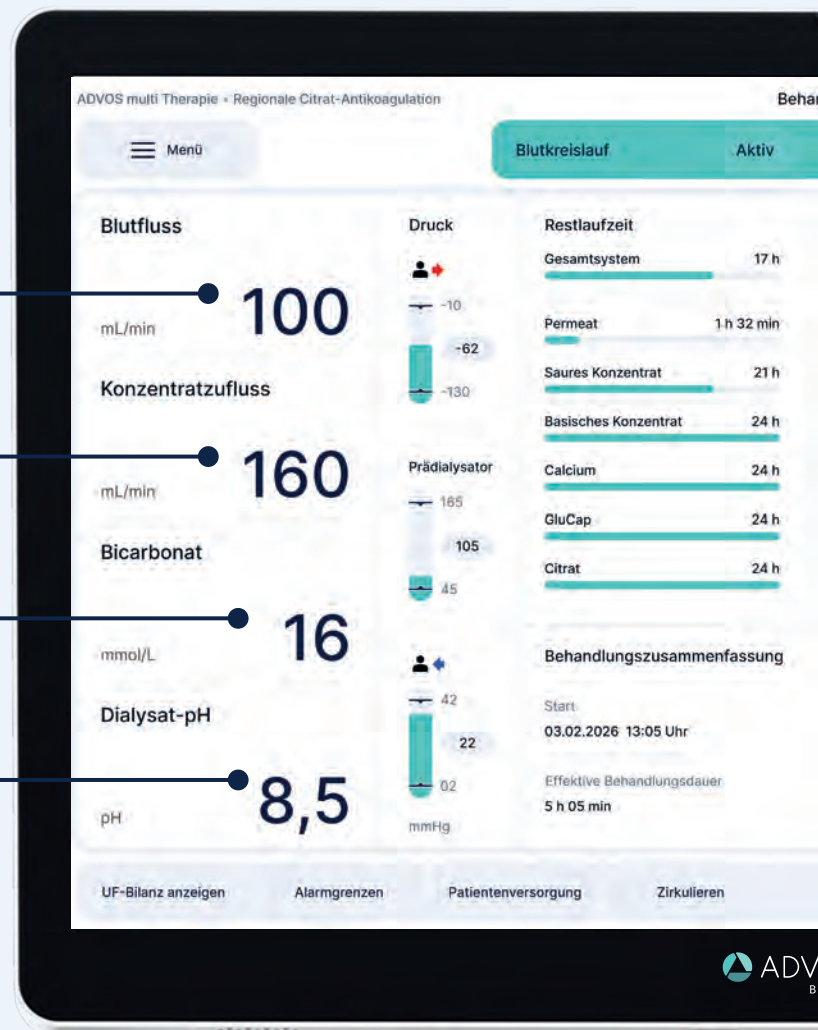
160 - 320 mL/min

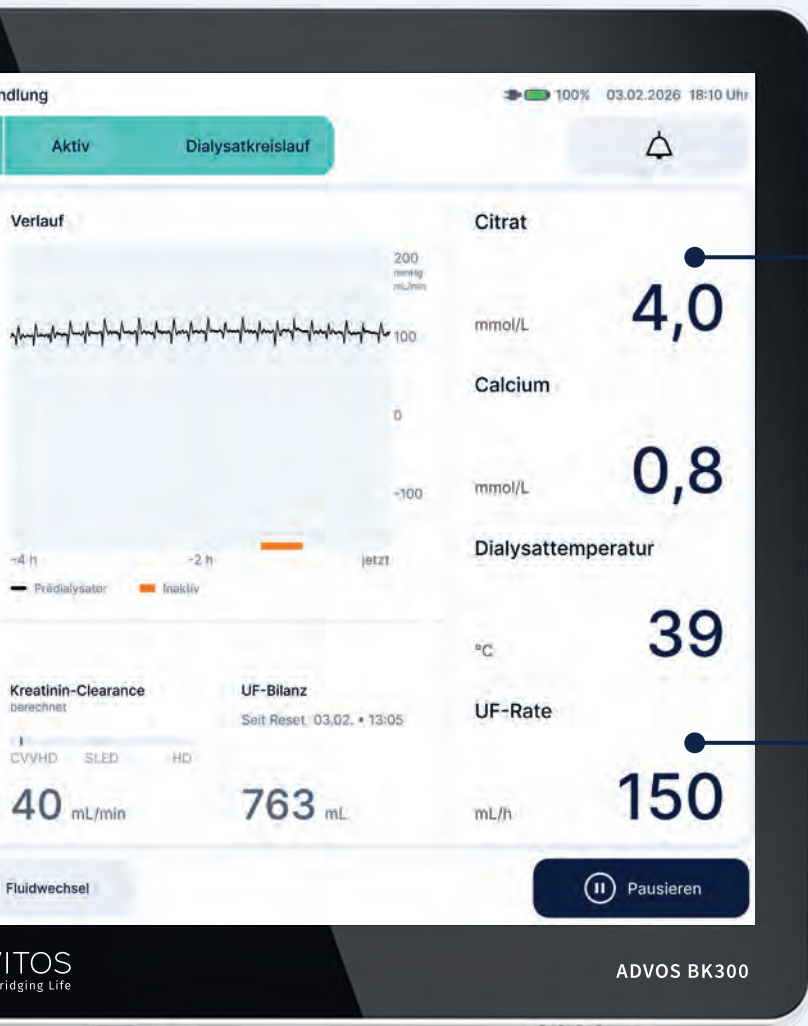
Patient Individualised

Bicarbonate 6 - 30 mmol/L

Patient Individualised

Dialysate pH 7.4 - 9.5





Regional Citrate Anticoagulation
35.3%

Ultrafiltration Rate
0 - 1000 mL/h

ITOS
bridging Life

ADVOS BK300

The new ADVOS Aqua

Dedicated Water Supply for ADVOS multi Therapy

The ADVOS Aqua works on the proven principle of reverse osmosis and has been specifically designed for the use with the ADVOS system.

It provides a reliable and high-quality solution for water supply, thereby supporting the efficiency and excellent compatibility of the ADVOS multi therapy.



Advantages at a glance:

- **Efficient water supply:**

ADVOS Aqua reliably supplies the ADVOS system with high-purity permeate and meets the microbiological quality standards for dialysis as well as all technical safety requirements in accordance with DIN EN ISO 23500-3:2024

- **Easy to use:**

The intuitive user interface reduces staff involvement – a clear advantage.

- **Fast filling – less waiting time:**

The combination of a reverse osmosis system and an integrated filling unit enables the ADVOS containers to be filled in under 3 minutes – while maintaining the highest hygiene standards.

- **Modern, technical design:**

Function meets aesthetics: ADVOS Aqua impresses with its contemporary appearance and design compatible with the hospital environment.

Our High-Quality Single-Use Treatment Sets



24 h

Single use per patient
per session.



High-quality products.

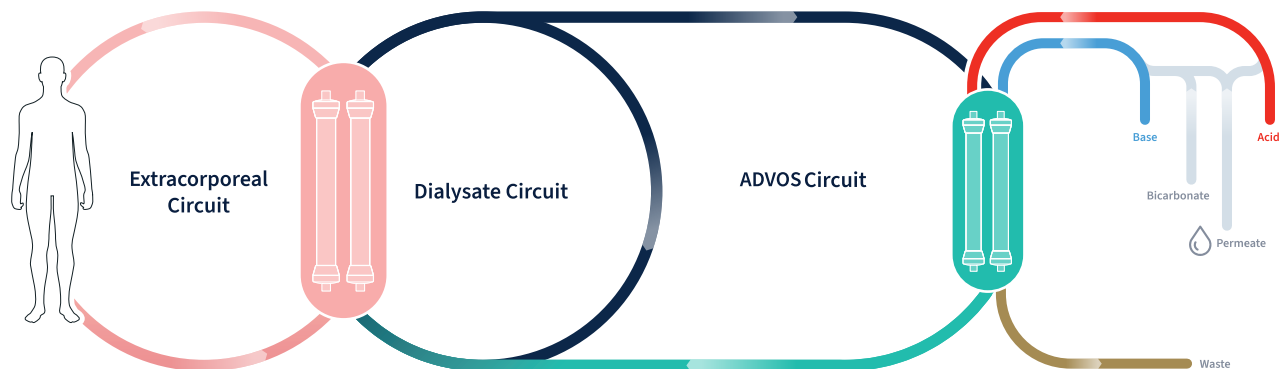
Dedicated ADVOS blood circuit set of tubing, bags, filters and connectors.



Patented and self-produced.

Dedicated ADVOS dialysate concentrates (acid and base).

Core Principle of the ADVOS multi Therapy



The ADVOS multi therapy is based on the principle of albumin dialysis with the advantages of high dialysate flow, low albumin consumption and enhanced toxin removal. The core processes involve the regeneration of toxin-loaded albumin dialysate through controlled pH and temperature changes within the unique purification circuit (ADVOS circuit), followed by its subsequent reuse.

- Albumin dialysate flows at a rate of up to 96 L/h due to rapid purification in both sub circuits
- High detoxification capacity due to simultaneous removal of toxins in both sub circuits (base and acid circuit)
- H^+ and CO_2 removal for treatment of metabolic and respiratory acidosis through individualised pH adjustment of the albumin dialysate
- Protein-bound uraemic toxin removal (e.g. indoxyl sulphate)
- Cytokine removal (e.g. interleukin-6)
- Reduction of ammonia levels
- Unique recirculation of the dialysate allows a steady state detoxification in contrast to a complete removal of substances through adsorption or single pass dialysis

Base Circuit

Increase of pH eliminates negatively charged toxins (e.g. bilirubin and bile acids) from the albumin dialysate

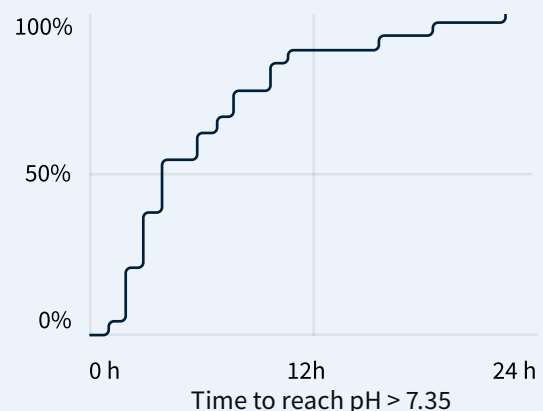
Acid Circuit

Reduction of pH eliminates positively charged toxins (e.g. copper and CO_2) from the albumin dialysate

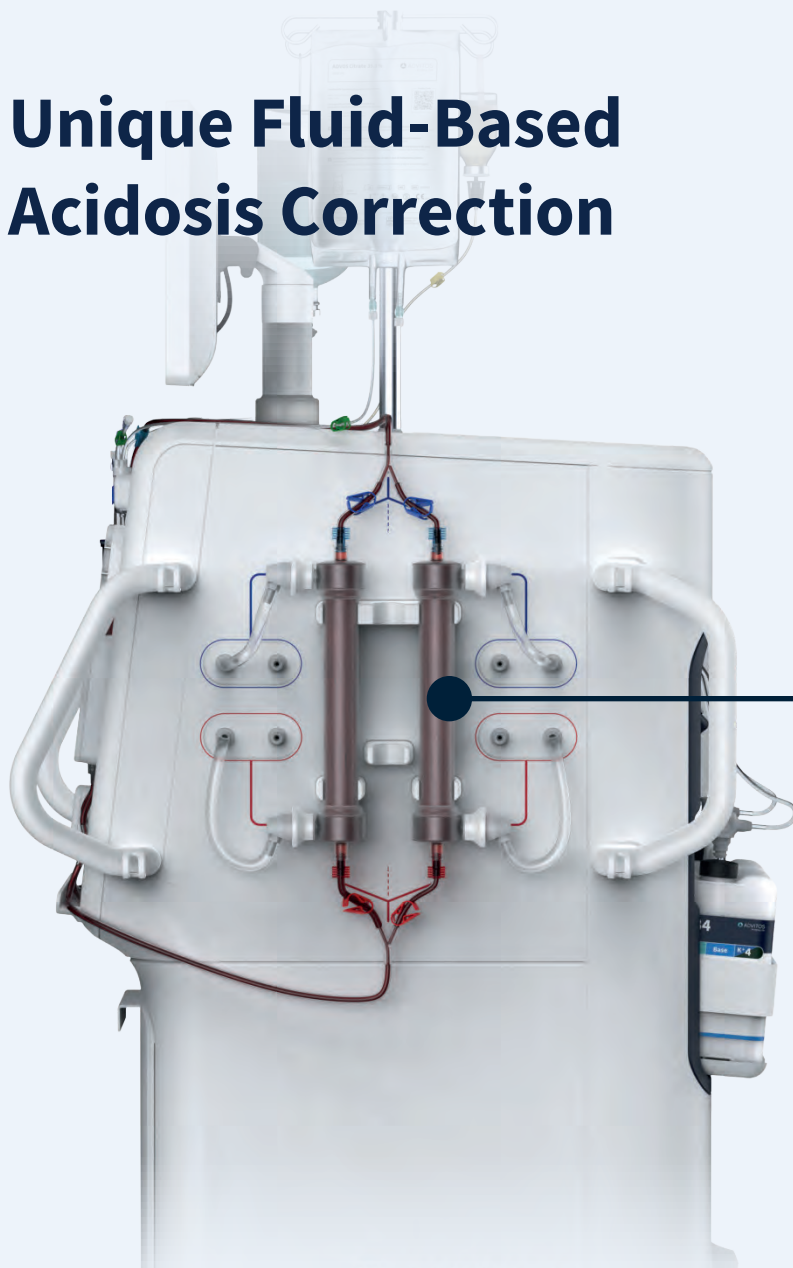
Acidosis Correction²

ADVOS multi restores hypercapnic acidosis to blood pH ≥ 7.35 in patients within a median of 4.3 h.

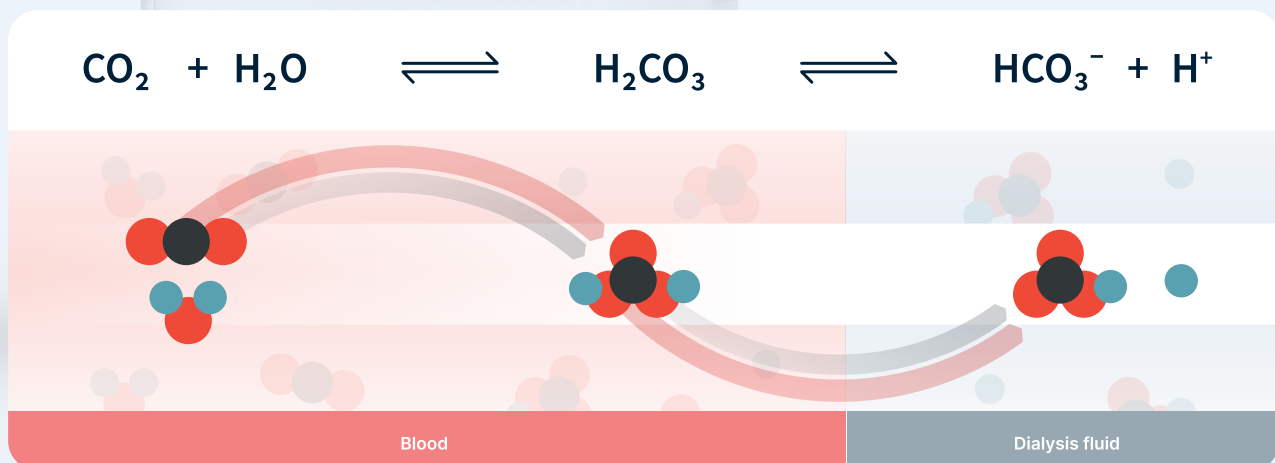
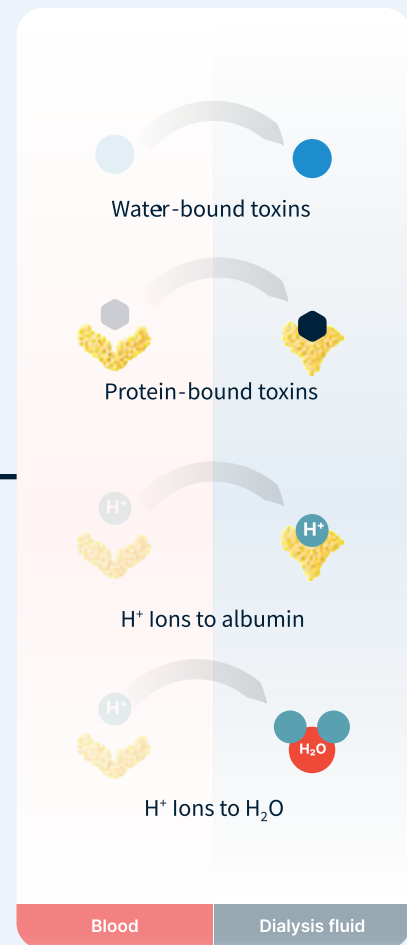
Cumulative % of patients reaching a blood pH > 7.35 for the first time during the first 24 h of ADVOS treatment



Unique Fluid-Based Acidosis Correction



Dialyser Cross-Section



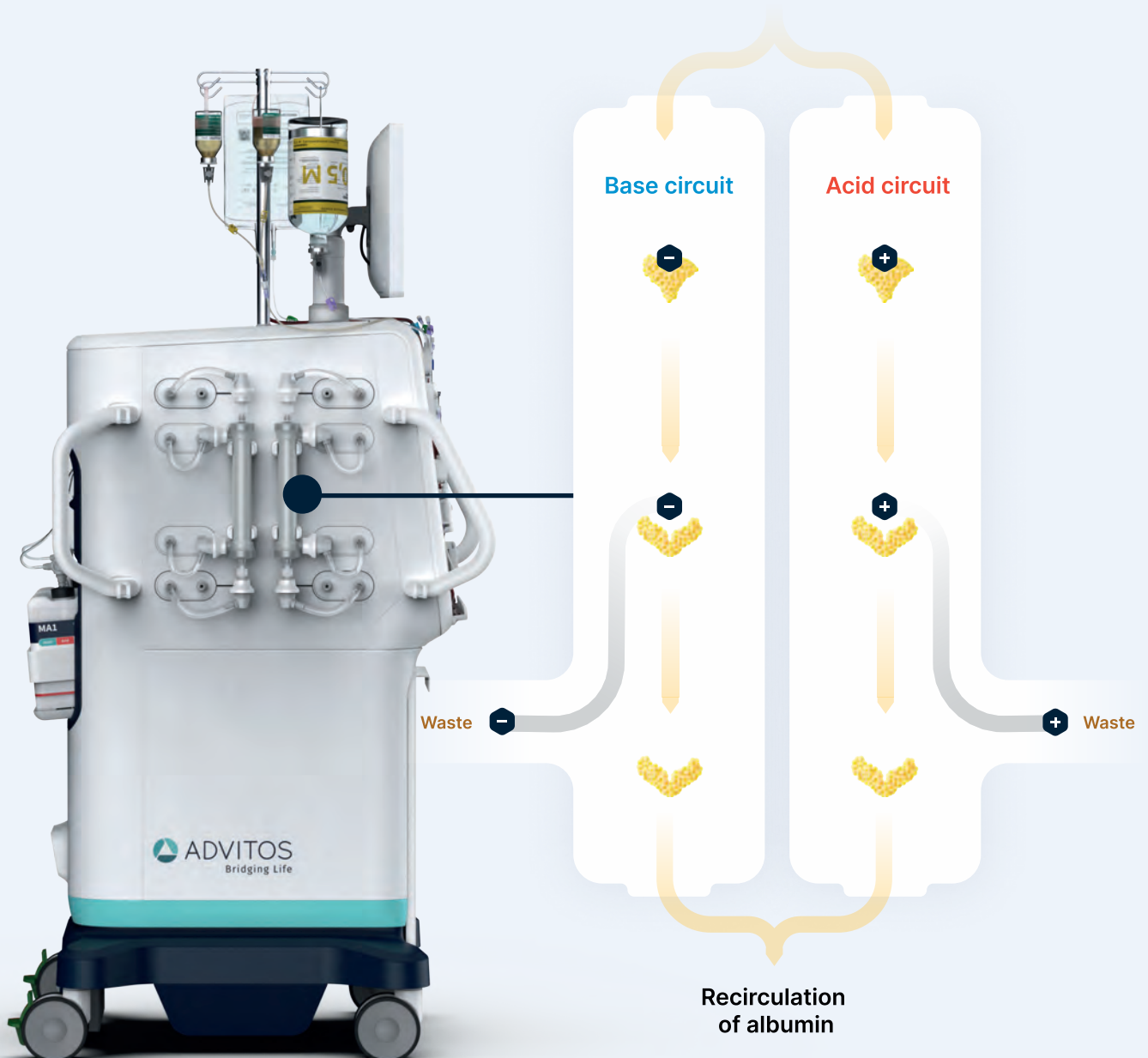
Diffusion gradient blood → dialysate

- Direct diffusion of H⁺ ions
blood pH < 7.35 → dialysate pH up to 9.5
- H⁺ binding to albumin and phosphate
- Erythrocytes excrete CO₂

Dialysate

- Setting dialysate HCO₃⁻ (bicarbonate)
 - during metabolic acidosis - increasing HCO₃⁻ ↑
 - during respiratory acidosis - lowering HCO₃⁻ ↓

ADVOS Circuit - Filter Operation



Base Circuit

- Removal of anionic protein-bound substances, e.g. bilirubin
- Removal of water-soluble substances
- Removal or addition of HCO_3^-
- H^+ removal

Acid Circuit

- Removal of cationic protein-bound substances, e.g. copper
- Removal of water-soluble substances
- Removal of CO_2 and HCO_3^-

Dose Dependent Reduction of Driving Pressure, Norepinephrine (NE) and Bilirubin³

Driving Pressure

Driving pressure before ADVOS treatment (mbar)	Relative driving pressure variation for each ADVOS treatment (%)	Number of ADVOS treatments	Treatments with reduction of driving pressure (%)
<15	0.0 (-1.4; 8.33)	29	27.6%
15-20	-6.3 (-17.1; 0.0)	35	57.1%
≥20	-17.7 (-31.8; -6.8)	8	75.0%

Norepinephrine (NE)

NE dose before ADVOS treatment (µg/kg/min)	Relative NE dose variation for each ADVOS treatment (%)	NE dose reduction during ADVOS treatment (%)	No NE requirement following ADVOS treatment (%)
≥ 0.001 - 0.100	-95 (-100; -41)	100	43%
≥ 0.100 - 0.500	-25 (-48; 0.0)	68	3%
≥ 0.500	-20 (-53; 0.0)	73	6%

Bilirubin

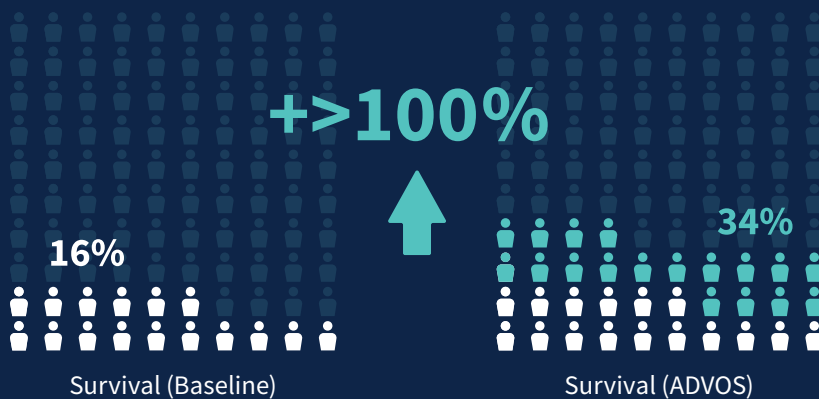
Bilirubin before ADVOS treatment (mg/dL)	Relative bilirubin elimination for each ADVOS treatment (%)	Treatments with level reduction (%)
<6	0.0 (-20.0; 28.8)	38%
6-12	-10.8 (-19.7; -4.7)	86%
>12	-23.0 (-30.5; -17.4)	97%

ADVOS Saves Lives

Clinical Trials Suggest a Significant Improvement in Survival Rates

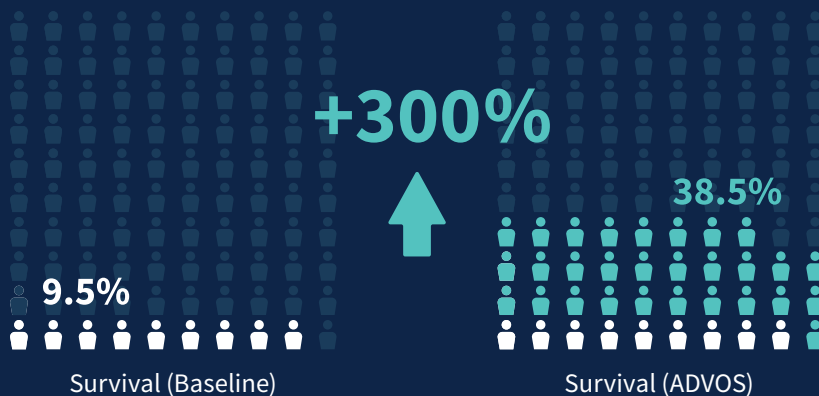
Patient Registry⁴

Large, heterogenous, severely ill ICU population across 5 hospitals.



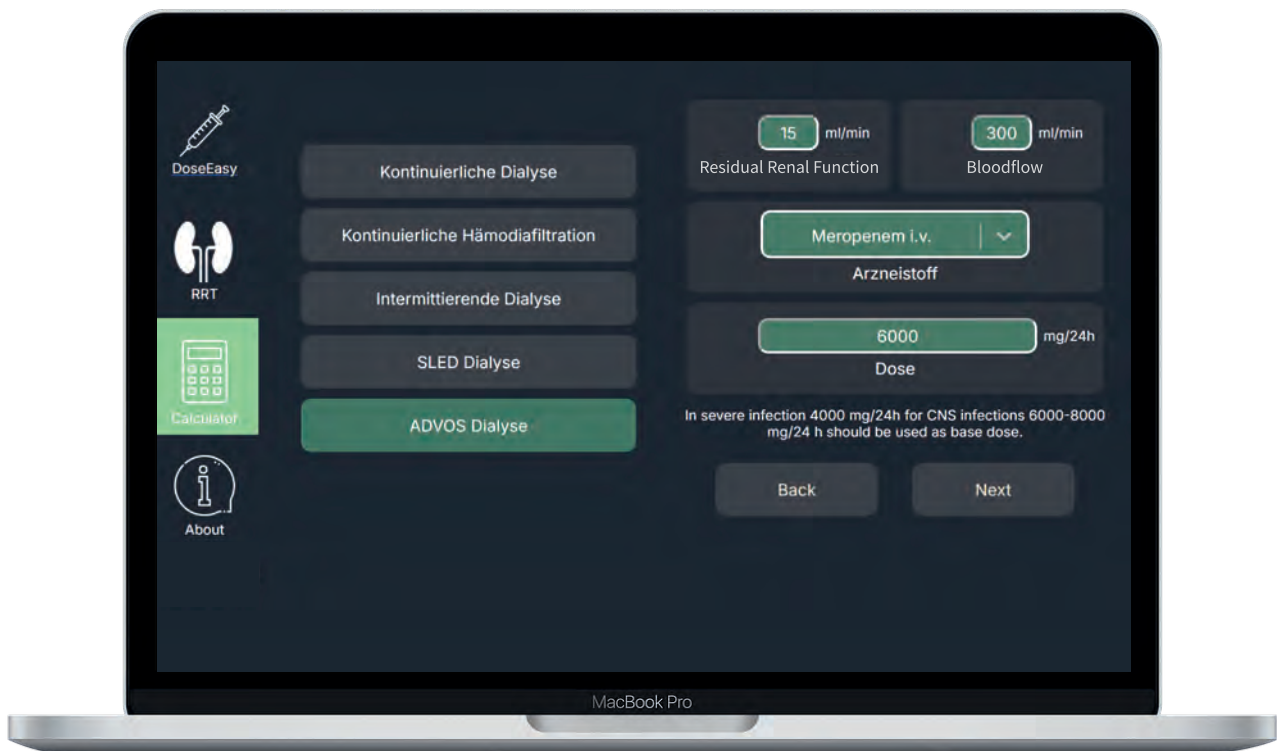
Cardiac Surgery⁵

Patients with postoperative cardiogenic shock and multiple organ failure.



Safe Blood Purification

Safe Medication Dosing Guaranteed Under the Extracorporeal Therapy



Calculation of drug dosing under ADVOS multi therapy
now available in the CADDy calculator



Calculator to Approximate
Drug-Dosing in Dialysis (CADDy)

www.doseeasy.de

ADVOS BK300 Can Be Used For a Wide Range of Indications in Intensive Care Medicine

Further applications are already in development and many more are in the pipeline

Acute
Respiratory
Distress
Syndrome
(ARDS)

Acidosis

Multi-Organ
Failure

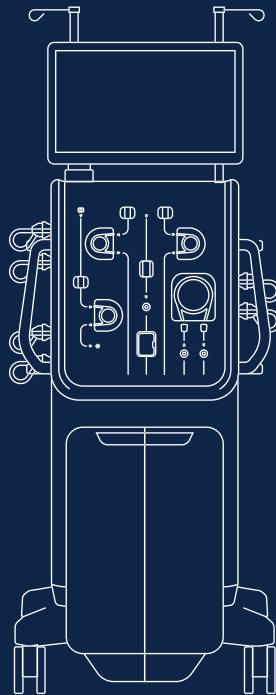
Cardiogenic
Shock



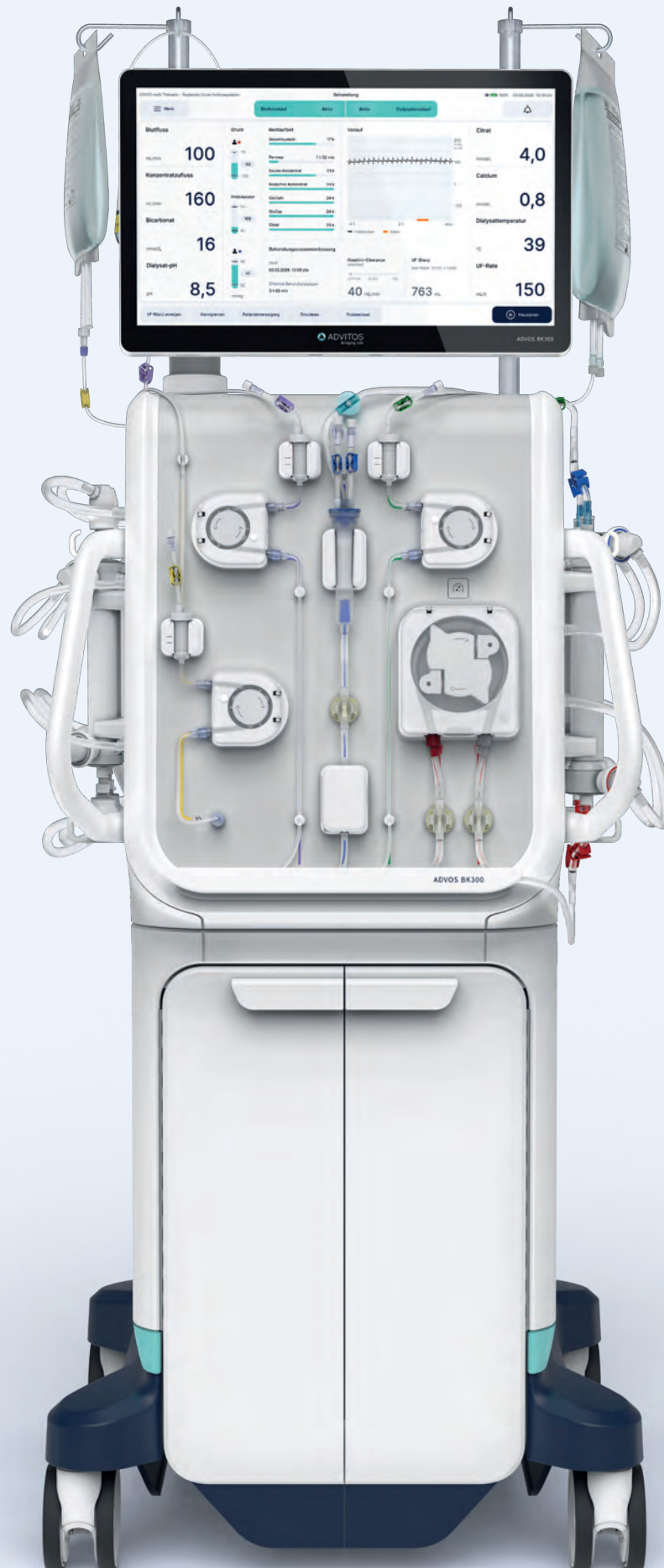
Sepsis &
Septic Shock

Oxygenation*

Chronic
Obstructive
Pulmonary
Disease*



* in development



Kontakt

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3. Table adapted from: Fuhrmann et al. 2020. Advanced organ support (ADVOS) in the critically ill: first clinical experience in patients with multiple organ failure. *Ann. Intensive Care* 10:96
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