ADVITOS
Bridging Life

Open a New Chapter in Advanced Blood Purification

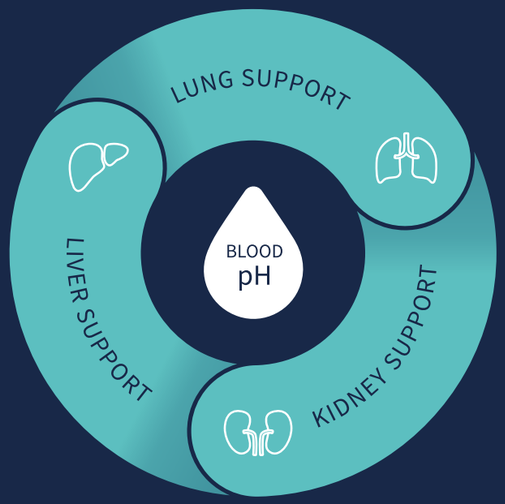
PRELIMINARY TECHNICAL INFORMATION

The product is not authorised for sale or clinical use.

CE marking in accordance with MDR 2017/745 for the ADVOS BK300 system and treatment units is pending.

ADVOS multi Therapy

Individually Tailored Therapy for Patients with an Indication for Multi-Organ Support



Liver
Removal of protein-bound toxins

Lungs
Fluid-based CO_2 removal in a low-invasive setting

Kidney
Removal of water-soluble and protein-bound nephrotoxins

Blood pH
Correction of metabolic and respiratory acidosis

In patients with multiple organ failure, the mortality rate rises in line with the number of failing organs. Despite significant advances in intensive care medicine, the mortality rate 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 Therapy for Individualised Multi-Organ Support

The ADVOS therapy system is a single extra-corporeal 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.

Clinical data suggest a link between the ADVOS multi therapy and improved survival rates[1,2,3]

The ADVOS multi therapy is based on a proven, minimally invasive treatment approach. It is compatible with standard dialysis catheters and requires only low blood flow rates and volumes. At the same time, users benefit from intuitive operation and efficient workflows in everyday clinical practice.

Clinical Outcome

- Correction of acid-base imbalances by direct removal of acids
- Treatment of severe metabolic and respiratory acidosis (fluid-based CO_2 removal)
- Blood pH is physiologically balanced as in the kidneys
- High and long-lasting efficacy in supporting the main detoxification organs

User Benefits

- One of the world's leading 4-in-1 therapy systems to provide multi-organ support for liver, lung, kidney and acid-base balance
- A user-friendly interface and intuitive operation can reduce the risk of errors
- Ergonomic and efficient processes in the intensive care unit thanks to the integrated 80-litre permeate container
- Allows the use of Regional Citrate Anticoagulation throughout dialysis

reddot winner 2025

reddot winner 2025
innovative design

GOLD AWARD 2026

The Next Generation ADVOS BK300

A New Era in the Extracorporeal Blood Purification

The new generation ADVOS BK300 is an innovative 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.

Find out more about the ADVOS BK300 here

The innovative ADVOS BK300 offers:

- A 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
- Innovative acidosis therapy for targeted correction of acid-base disorders
- Innovative 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

*in development

Innovative Fluid-Based Acidosis Correction

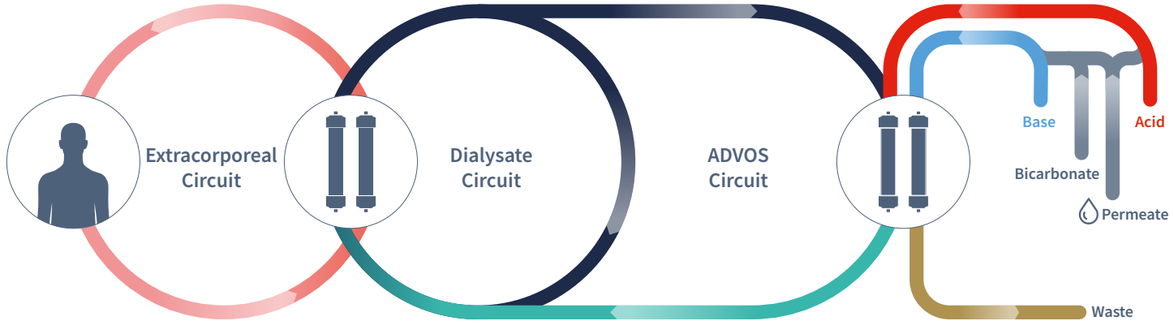
The ADVOS multi therapy enables physiological and fluid-based removal of H^+ ions and CO_2 as well as correction of bicarbonate levels for the treatment of metabolic and respiratory acidosis.

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

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.

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

- 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
- Innovative recirculation of the dialysate allows a steady state detoxification in contrast to a complete removal of substances through adsorption or single pass dialysis
- Effective myoglobin removal at low blood flow rates demonstrated in vitro

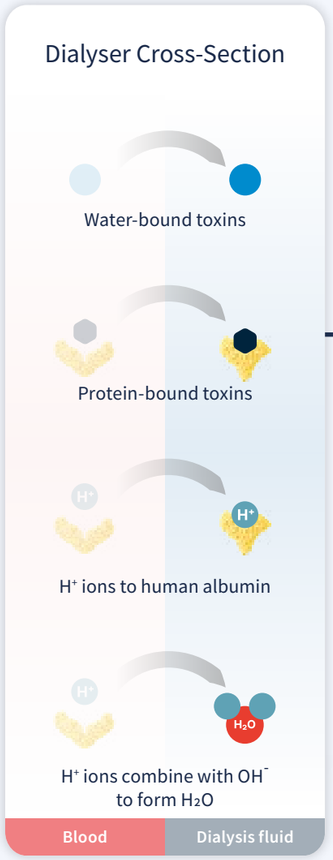
Acidosis Correction via Human Albumin

Diffusion gradient blood → dialysate

- Direct diffusion of H^+ ions:
  blood pH <7.35 → dialysate pH up to 9.5
- H^+ binding to human albumin and phosphate
- Direct diffusion of HCO_3^-:
  erythrocytes excrete CO_2

Dialysate

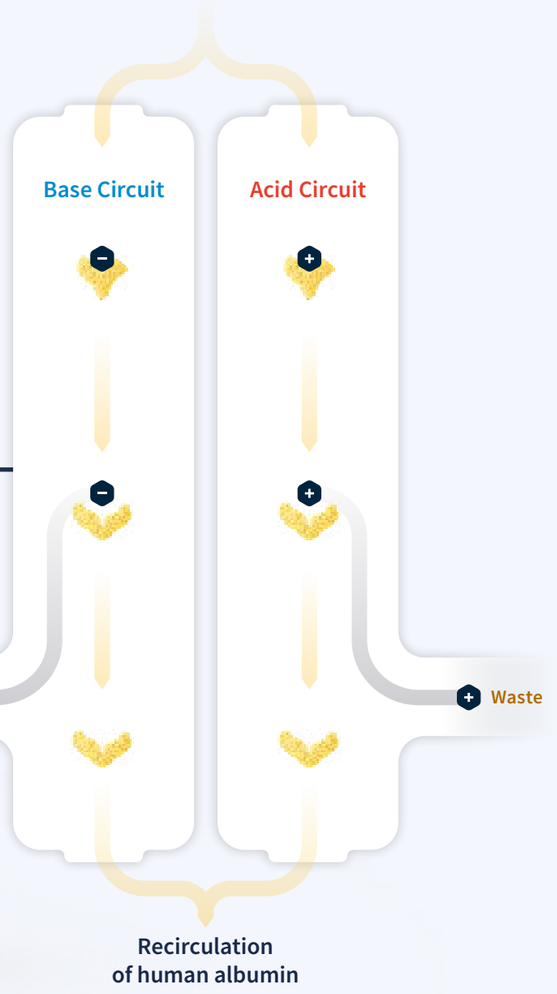
- Setting dialysate HCO_3^- (bicarbonate)
  - during metabolic acidosis - increasing HCO_3^- ↑
  - during respiratory acidosis - lowering HCO_3^- ↓



$$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons HCO_3^- + H^+$$

ADVOS Circuit - Filter Operation

The stabilisation of the pH value is achieved through a buffering system based on H^+ and OH^- ions. The OH^- ions, originating from the added base (NaOH), are used to neutralize free protons (H^+), thereby reducing fluctuations in pH levels.



Acid Circuit (Na^+OH^-)

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

Base Circuit (H^+Cl^-)

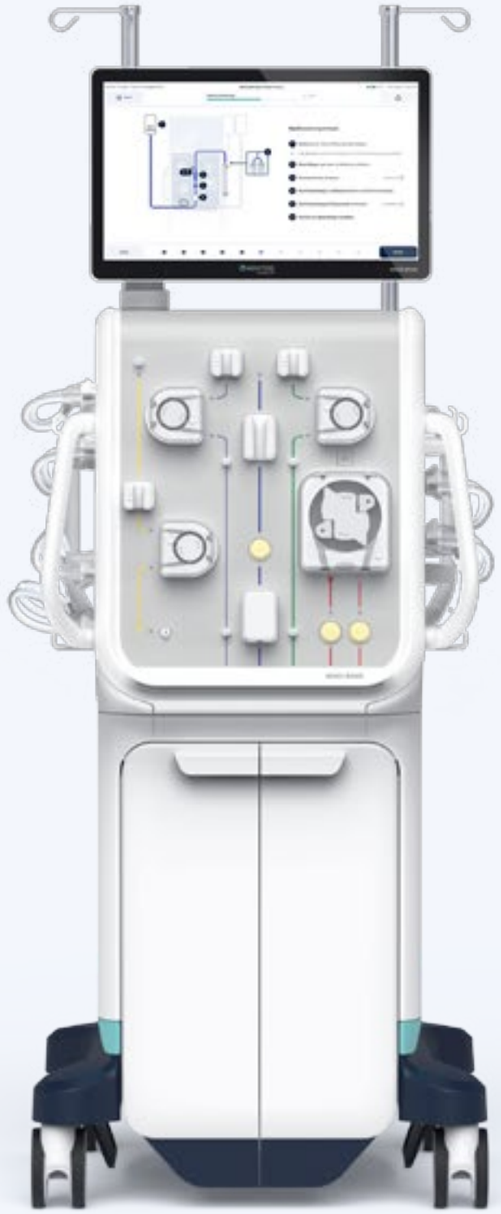
- Removal of anionic protein-bound substances, e.g. bilirubin
- Removal of water-soluble substances
- Removal or addition of HCO_3^-
- H^+ removal

Enhanced Usability

Device Interactions Minimised to Maximise Workflow Efficiency in the ICU

Clearly Structured User Interface
Traffic light system for quick status checks

Structured Workflows
Colour-coded tubing system for quick identification and to minimise connection errors



Quick Set-Up and Intuitive Operation
Seamless device operation with the help of integrated graphic instructions

Ergonomic Handling
Streamlined fluid container and device management

High-Quality 24 h Treatment Kits

24 h

Integrated Regional Citrate Anticoagulation lasting **up to 24 h**

High-quality OEM products
Dedicated ADVOS blood circuit set of tubing, filters and connectors

Patented and self-produced
ADVOS dialysate concentrates (acid and base)

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
with dedicated ADVOS Citrate 35.3%

Ultrafiltration Rate
0 - 1000 mL/h

Optimised Permeate and Filtrate Management

1 Fill

80 L filling volume osmosis water

Efficient water supply: The fluid container is filled in under 3 minutes using the ADVOS Aqua reverse osmosis system, ensuring top water quality.

2 Load

Even possible during the treatment

Compact design: Integrated 80 litre container saves storage space and eliminates the need to change fluid bags during treatment.

3 Treat

Treatment duration up to 24 h

Maximum flexibility: Suitable for use in all hospital units.

4 Drain

Pumping out the filtrate in only 3 min

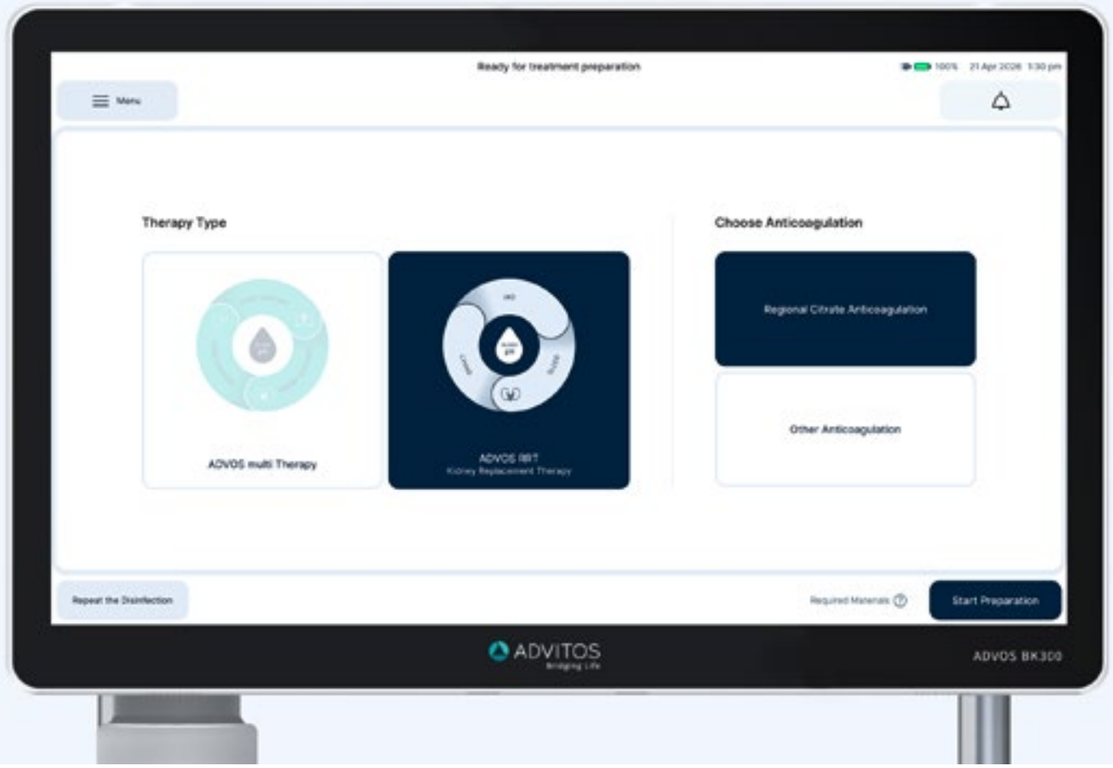
The ADVOS Aqua

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

Advantages at a glance:

- **Efficient water supply:**
  ADVOS Aqua reliably supplies the ADVOS therapy 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.



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 as well as individualised bicarbonate adjustments, the ADVOS BK300 offers optimal flexibility for every patient.

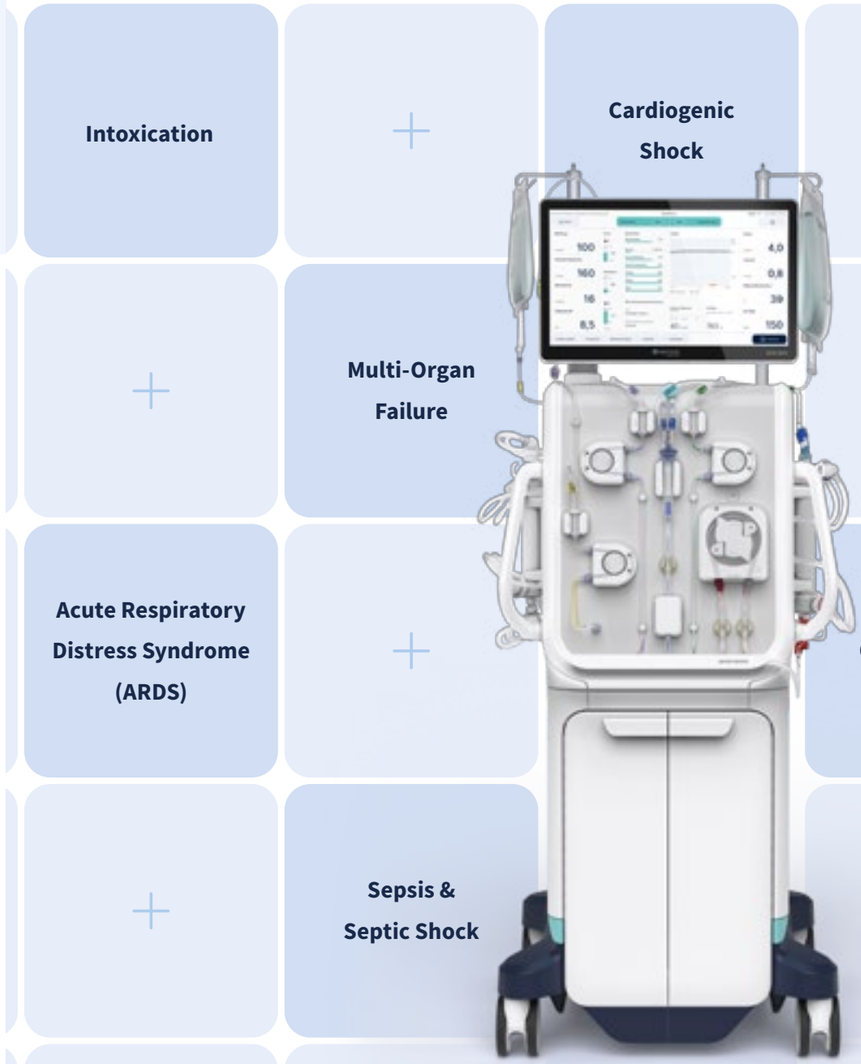
ADVOS RRT advantages:

- 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 without fluid exchange – made possible by optimised configuration of all dialysis fluids
- Sustainable water supply with optimised fluid management based on 80 litre container concept

*in development

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.

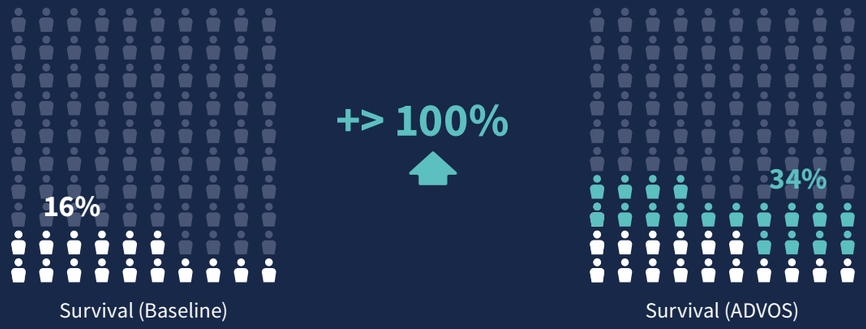


ADVOS Can Save Lives

Clinical Trials Suggest a Significant Improvement in Survival Rates*

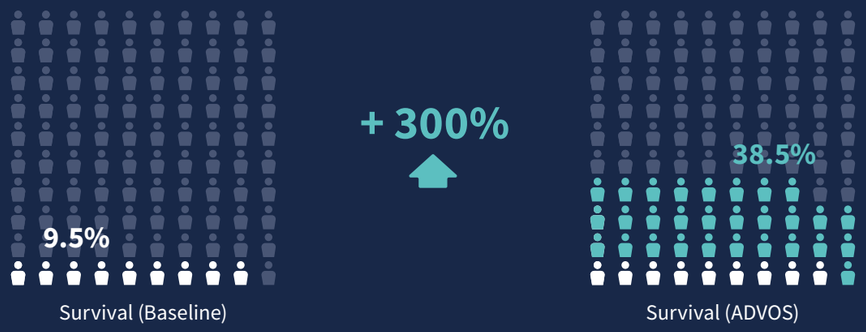
Patient Registry[2]

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



Cardiac Surgery[3]

Patients with postoperative cardiogenic shock and multiple organ failure.



*based on standardised mortality rate

Dose-Dependent Reduction Confirmed in Clinical Studies During ADVOS multi Therapy[4]

Driving Pressure mbar · Effect of ADVOS Treatments Across Baseline Severity Levels

Before Treatment	Relative Variation for each ADVOS Treatment		Treatments with Reduction	Number of ADVOS Treatments
< 15	0.0%	(-1.40; 8.33)	27.6%	29
15-20	-6.3%	(-17.10; 0.00)	57.1%	35
≥ 20	-17.7%	(-31.80; -6.80)	75.0%	8

Norepinephrine µg/kg/min · Effect of ADVOS Treatments Across Baseline Severity Levels

Before Treatment	Relative Variation for each ADVOS Treatment		Reduction during Treatment	No Requirement Post-ADVOS
≥ 0.001 - 0.100	-95%	(-100.0; -41.0)	100%	43%
≥ 0.100 - 0.500	-25%	(-48.0; 0.0)	68%	3%
≥ 0.500	-20%	(-53.0; 0.0)	73%	6%

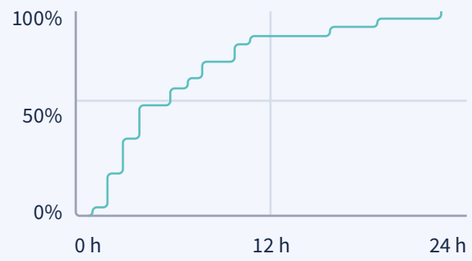
Bilirubin mg/dL · Effect of ADVOS Treatments Across Baseline Severity Levels

Before Treatment	Relative 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%

Clinically Validated Acidosis Correction[5]

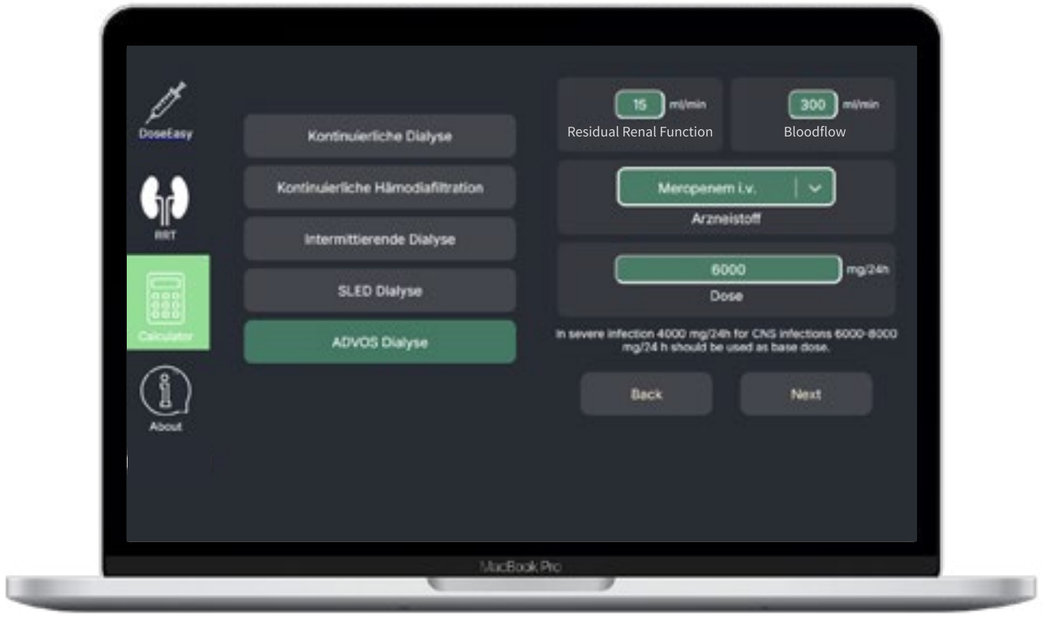
ADVOS multi restores hypercapnic acidosis to blood pH ≥ 7.35 in patients within a median of 4.3 h.

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



Safe Blood Purification

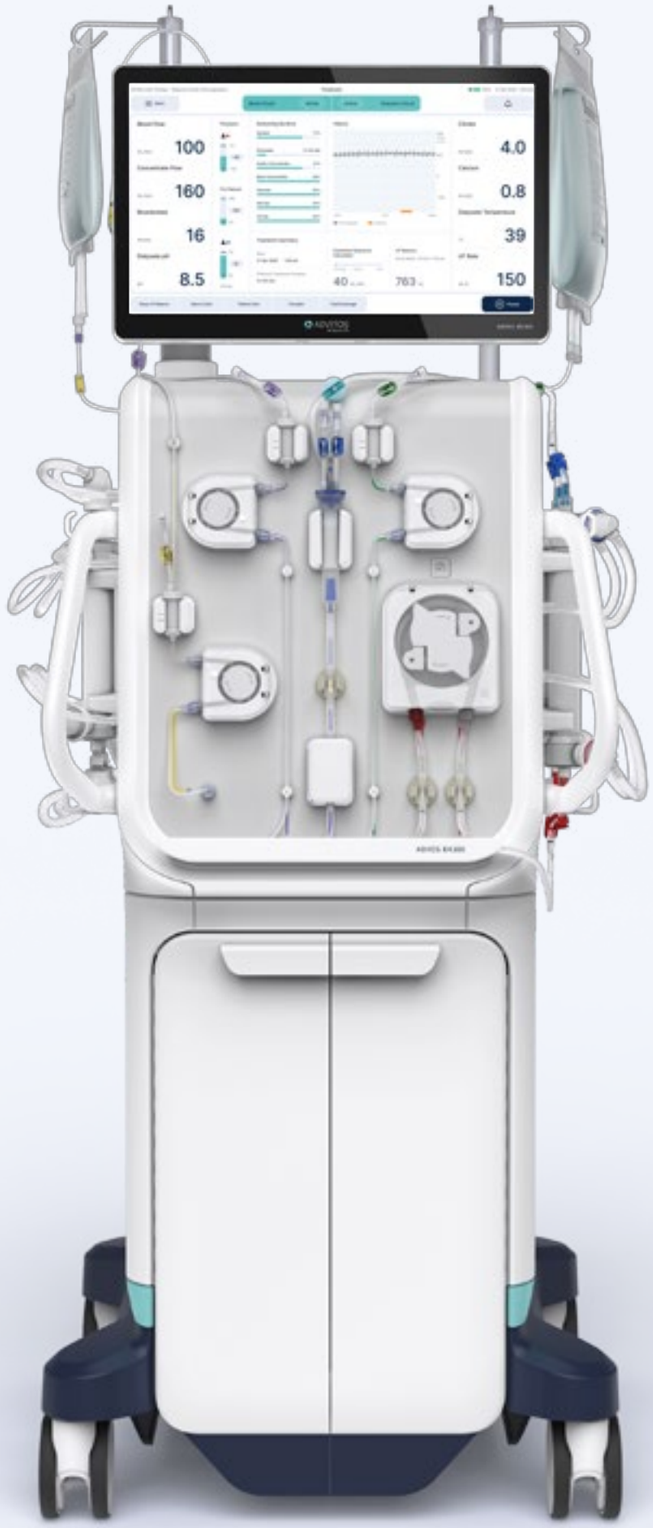
Safe medication dosing with digital support during ADVOS multi therapy



The CADDy calculator helps to calculate medication dosages during ADVOS multi therapy, thereby supporting well-informed, transparent dosing decisions.

Calculator to Approximate Drug-Dosing in Dialysis (CADDy)

www.doseeasy.de/caddy



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Literature and References

1. Huber et al., BMC Gastroenterology, 2017
   Fuhrmann et al., Annals of Intensive Care, 2020
   Kaps et al., PLOS ONE, 2021
   Allescher et al., Artificial Organs, 2021
2. Fuhrmann et al., Critical Care, 2023
3. Walter et al., Critical Care, 2024
4. Table adapted from Fuhrmann et al., Annals of Intensive Care, 2020
5. Dibos et al., Intensive Care Medicine Experimental, 2025

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The product is currently undergoing a conformity assessment acc. to the Medical Device Regulation (MDR) 2017/745 (EU) and is pending CE-marking prior market introduction.