

Discover individualized and
easy to handle anticoagulation
management



360° tailor-made

Citrate anticoagulation with
the PrismafleX eXeed™ system

 **GAMBRO®**

Unlimited options to achieve the prescribed target dose

Dose matters

Landmark studies have demonstrated that improved survival is related to higher CRRT doses. Among them, two randomized controlled trials established a threshold dose of 35 mL/kg/h. Both these studies implemented convective modalities.^{1,2}

Optimal anticoagulation is key to successful CRRT dose delivery. Longer circuit patency yields reduced treatment downtime, higher cumulative dose and thus improved treatment quality.

Regional citrate anticoagulation is one alternative for CRRT anticoagulation. Although citrate anticoagulation may be complex to handle, the PrismafleX® system, which was the first CRRT device initially designed with a fifth pump to allow safe citrate delivery, is now enhanced with the PrismafleX eXeed software which facilitates the implementation of citrate protocols.

Flexibility and safety

Treatment dose and modality are considered the most important parameters of a CRRT prescription.

The flexibility of citrate anticoagulation with PrismafleX eXeed software offers unlimited options to meet patient needs.

PrismafleX eXeed software is compatible with various types of citrate-based anticoagulant.

Gambro recommends the use of diluted citrate solution with physiological sodium concentration, such as Prismocitrate® solution, to reduce the risk of the metabolic disorders (metabolic alkalosis, hyponatremia).^{3, 4, 5, 6, 7}

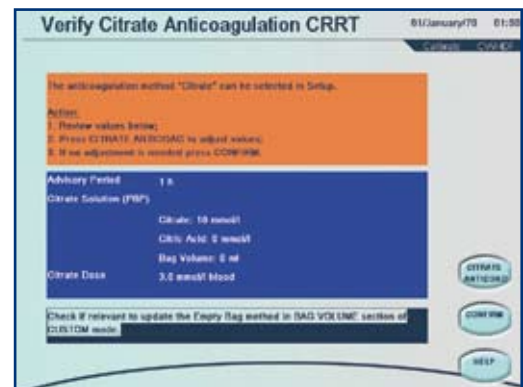
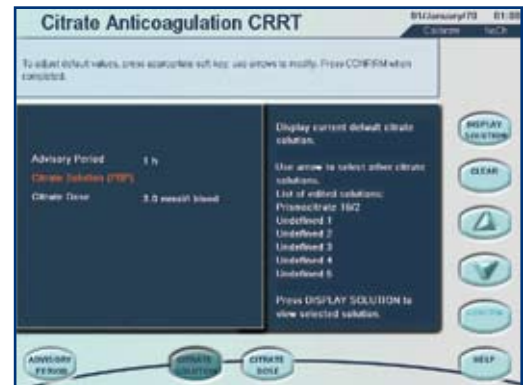




Safety and simplicity of citrate anticoagulation with the Prismaflex eXeed™ system

Safe choice of citrate fluids

- Prismocitrate® 10/2 diluted citrate anticoagulant and Prism0cal® calcium-free dialysate maintain the patient within safe physiological limits without compromising the prescribed target dose. Other commercially available citrate solutions can be added in the Prismaflex service mode.

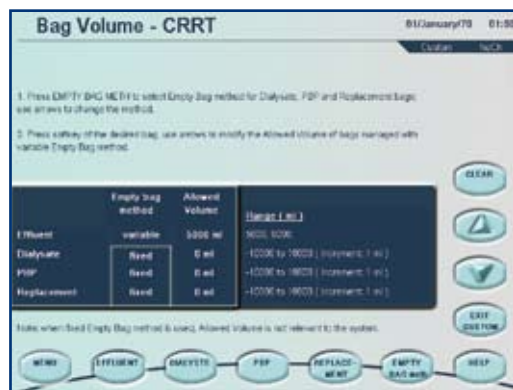


Prismocitrate® 10/2 solution



Safe choice of limits

To ensure the safe management of customized citrate anticoagulation protocol, additional “safety limits” can be activated in “Custom mode” (e.g. to prevent incorrect bag placement on the scales).



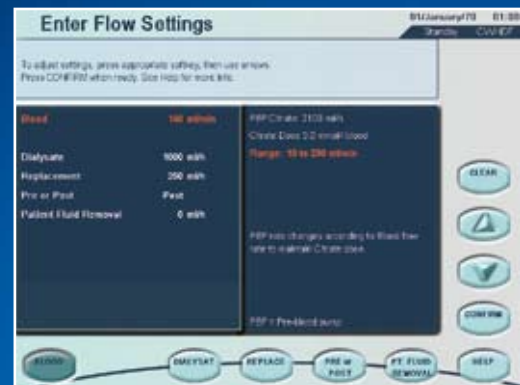
Custom mode

Ease of use

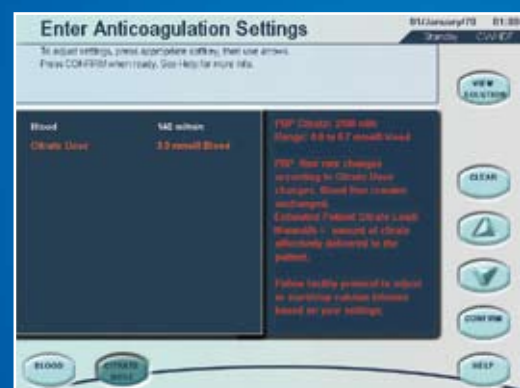
- Once the blood flow rate and target citrate dose have been set, the PrismafleX eXeed system proceeds with the treatment and ensures the appropriate delivery of anticoagulation in the circuit
- The medical staff can then focus on patient care and make sure that the treatment goals are met

Intuitive user interface

The intuitive user interface guides the user in the prescription and application of the therapy and safety features.



Blood flow rate



Citrate dose target

Coupled citrate and blood pumps for reliable control of regional anticoagulation.

At any time during treatment, the anticoagulation settings can be modified by changing either the “Citrate dose” or the “Blood flow rate”.

- Changing one of these parameters will automatically change the pre-blood pump flow rate to keep
 - the blood flow rate stable (if the citrate dose has been changed),
 - the citrate dose stable (if the blood flow rate has been changed).

New intuitive user interface for easy set-up and therapy monitoring

The citrate anticoagulation option of the Prismaflex eXeed system guides the user in the application of the medical prescription for safe and simple therapy implementation and monitoring.

Prescription modifications can be reviewed during treatment on the "View Prescription Changes" screen.

As the prescriber may wish to closely follow up the implementation of citrate anticoagulation, the advisory period for "Check points" can be modified.



Prismaflex eXeed software supports calcium management

Citrate anticoagulation requires frequent checks of calcium replacement rates according to the patient's laboratory values.

Prismaflex eXeed software reminds the user of when to check the patient's calcium level and to adjust the calcium flow rate accordingly.

Information screen for 'Patient calcium' verification

Moreover, Prismaflex eXeed software displays a percentage change of calcium lost via the effluent once flow rates have been changed to facilitate needed calcium adjustments.*

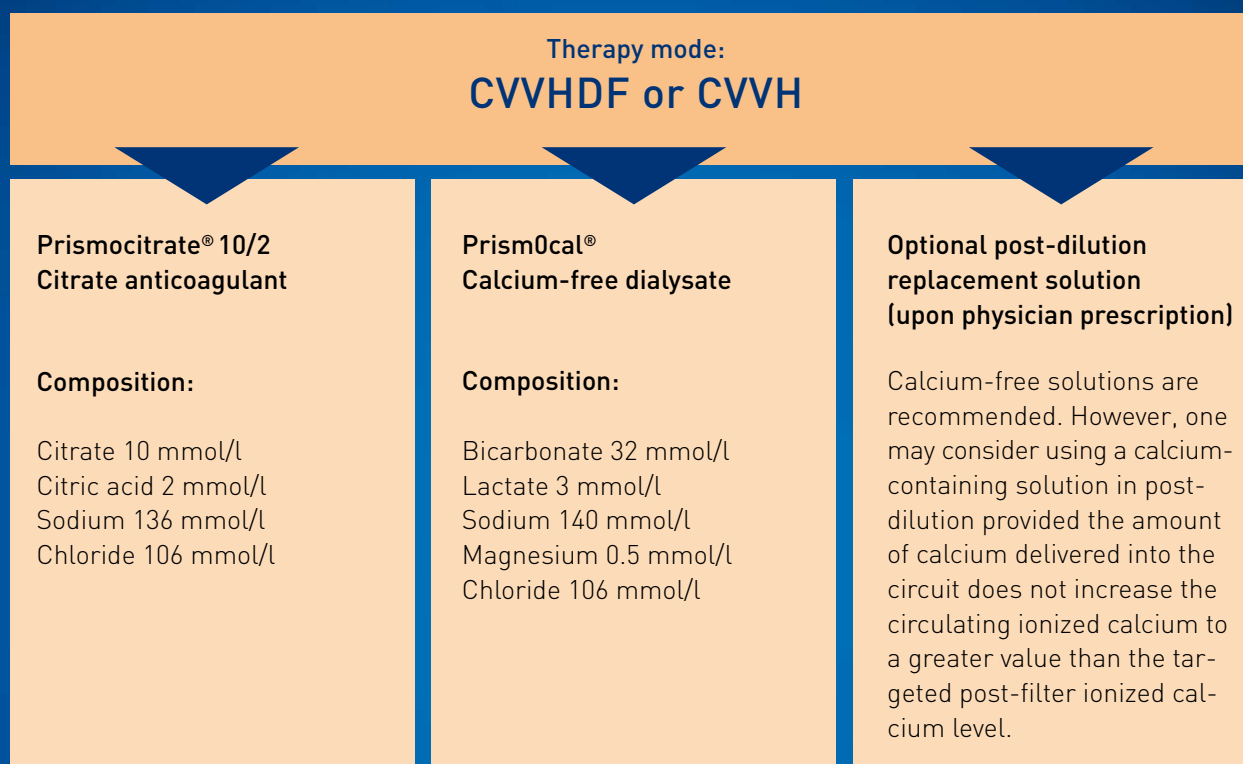
* This includes a reminder to stop calcium infusion when the blood pump has stopped.

Estimated change in calcium loss in effluent



Additional information is provided on the screen to support the physician in his/her prescription.

Citrate anticoagulation guidelines for the PrismafleX eXeed™ system



Citrate anticoagulation with the PrismafleX eXeed system enables safe CRRT

Once the treatment modality (e.g. CVVHDF) and citrate anticoagulation method have been selected, the machine automatically sets the limits related to the anticoagulation solution pre-defined in Service mode (e.g. Prismocitrate® 10/2 solution).

The complementary solutions to prepare for the therapy selected are a calcium-free solution (e.g. Prism0cal® dialysate) and, possibly, a replacement fluid for post-dilution infusion (preferably calcium-free).

When the blood flow rate has been adjusted to the prescription and the target citrate dose has been set for regional anticoagulation (i.e. to reach a post-filter ionized calcium level between 0.25 and 0.5 mmol/l)³, the machine activates the citrate anticoagulation flow rate to reach the citrate dose.

The dialysate and replacement post-dilution flow rates are adjusted to reach the prescribed CRRT dose.

1

Citrate dose

Adjustable in **set-up** and **run mode** from 1.5 to 6 mmol/liter of blood

2

Blood flow rate available**

Up to 400 ml/min for a citrate dose of 1.5 mmol/liter of blood

Up to 260 ml/min for a citrate dose of 3.0 mmol/liter of blood

Up to 130 ml/min for a citrate dose of 6.0 mmol/liter of blood

Available **pre-blood pump flow rate*** (citrate flow rate) from 0 to 4000 ml/h automatically adjusted by the Prismaflex machine applying the formula:

Citrate dose = (citrate flow rate x citrate concentration) / blood flow rate

3

Dialysate flow rate*

0 to 8000 ml/h

4

Replacement post-dilution flow rate*

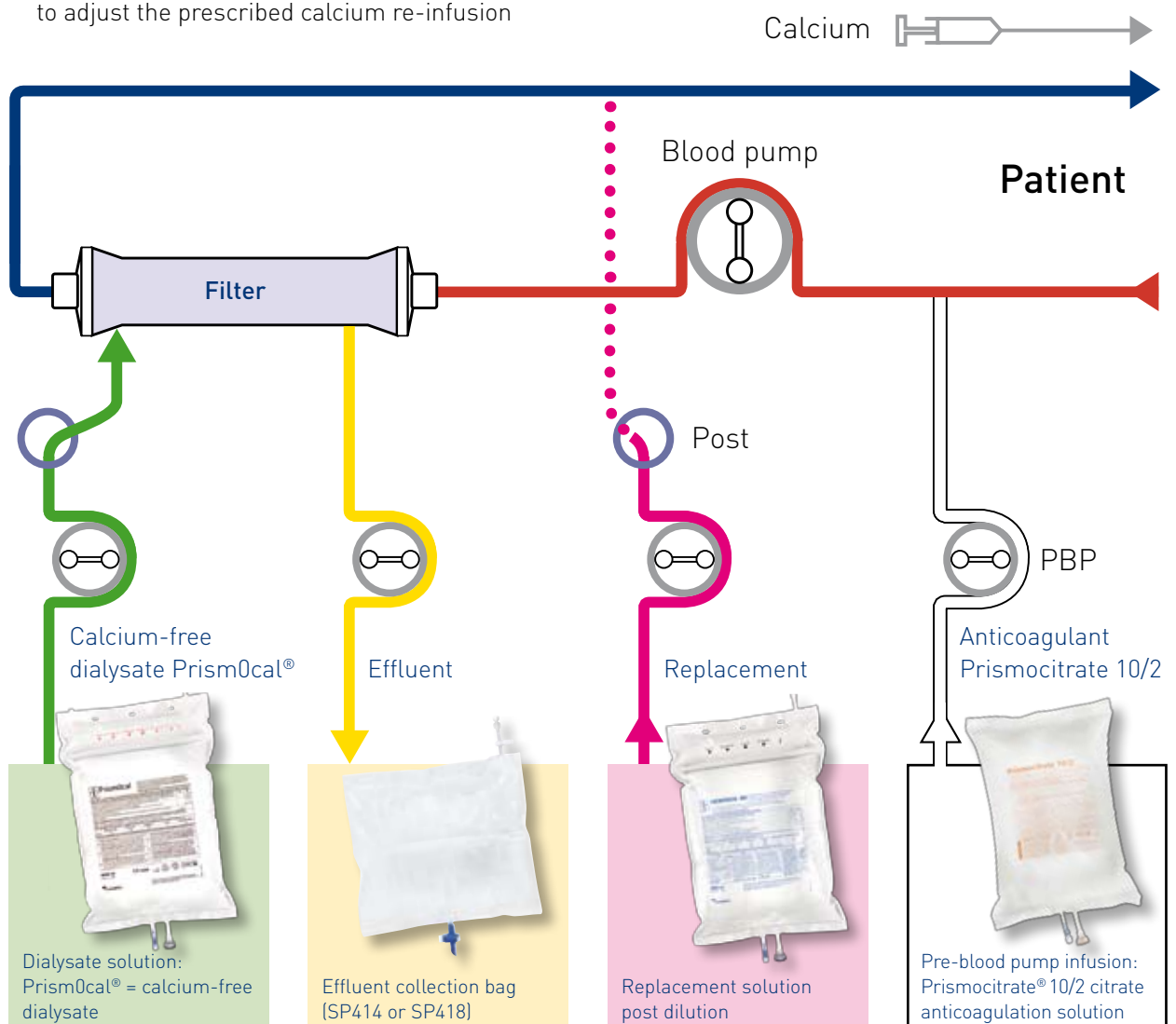
0 to 8000 ml/h

* Maximum possible flow rate (dialysate + replacement + pre-blood pump) = 8000 ml/h

** When using Prismocitrate 10/2 solution

Optimal citrate anticoagulation protocol

- The anticoagulant dose is defined in such a manner as to ensure adequate anticoagulation in the circuit
- Both “replacement post-dilution” (for convective clearance) and “dialysate” (for diffusive clearance) flow rates have to be adjusted to reach the CRRT dose required
- Should the citrate dose or blood flow rate be modified, according to the physician’s prescription, the machine will display the estimated change in calcium loss in the effluent. This information may be useful for the physician to adjust the prescribed calcium re-infusion
- Calcium substitution through the central line is required to compensate for calcium loss in the effluent
- To ensure patient safety, regular check-point reminders are given by the PrismafleX eXeed system
- Additional safety limits, can be customized, if needed



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