

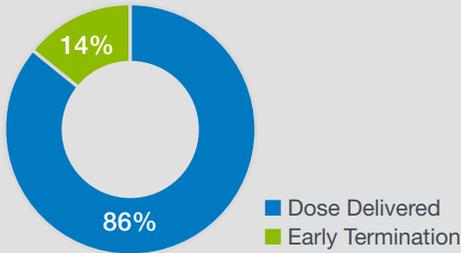
Prolonged Intermittent Renal Replacement Therapy (“PIRRT”), a 6-12 hour renal replacement therapy, with the NxStage® System One™ provides adequate volume and solute control, while allowing for flexibility for staffing.¹

Accelerated Venovenous Hemofiltration: Early Technical and Clinical Experience

American Journal of Kidney Diseases, Vol 51, No 5 (May), 2008: pp804–810

Gashti CN, Rodby RA, et al. – In this retrospective case series of 100 patients (457 treatments), physicians at Rush University Medical Center demonstrated that an accelerated venovenous hemofiltration therapy may be a practical alternative to CRRT.

Dose Delivered in 86% of Treatments



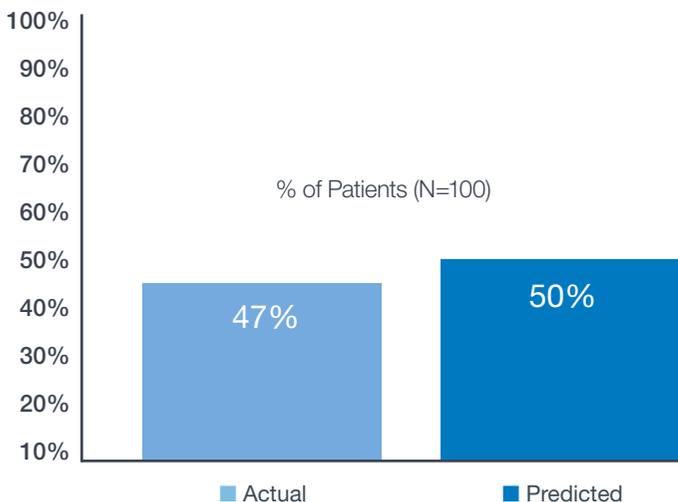
With hemofiltration therapy, 4 L/h were prescribed for 9 hours at a BFR of 400 mL/min (as catheter access permitted). Actual delivery of the prescribed dose during a continuous therapy can be challenging due to interruptions in therapy and clotting of the system. In this study, the prescribed dose was delivered in 86% of treatments; thus, the shorter treatment time and low filter clotting (3.3%) afforded by PIRRT with the NxStage System One allowed for improved delivery of the prescribed dose.

Clinical and Lab Data

Using the NxStage System One for 9 hours, adequate volume and solute control were demonstrated.

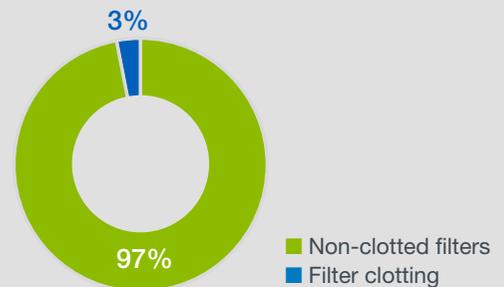
| | Pre-treatment | Post-treatment | P-value |
|-----------------------|---------------|----------------|---------|
| Sodium (mEq/L) | 138.6 ± 5.1 | 136.4 ± 3.9 | <0.001 |
| Potassium (mEq/L) | 4.3 ± 0.7 | 3.9 ± 0.6 | <0.001 |
| Bicarbonate (mEq/L) | 22.1 ± 4.8 | 22.7 ± 3.9 | 0.1 |
| Calcium (mg/dL) | 8.0 ± 1.1 | 8.1 ± 0.9 | 0.3 |
| Phosphate (mg/dL) | 5.5 ± 2.2 | 4.3 ± 1.6 | <0.001 |
| Albumin (g/dL) | 2.3 ± 0.6 | 2.3 ± 0.6 | 0.5 |
| Urea nitrogen (mg/dL) | 69.6 ± 24.8 | 50.7 ± 22.0 | <0.001 |
| Creatinine (mg/dL) | 4.3 ± 2.0 | 2.9 ± 1.3 | <0.001 |
| Weight (kg) | 98.8 ± 26.4 | 93.4 ± 23.1 | <0.001 |
| MAP (mm Hg)* | 72.8 ± 13.6 | 74.4 ± 15.2 | 0.02 |

Actual v Predicted Mortality Rates*



*Based on APACHE II Scores

Filter Clotting was Limited to 3.3% of 457 Total Treatments



With higher BFR, shorter therapy times and use of hemofiltration in predilution mode, the use of anticoagulation was avoided, which may translate into a decreased risk of bleeding, fewer treatment interruptions and cost savings.

Improved Resource Utilization

Shorter treatments times allowed more flexibility with scheduling. In this case, patients were placed on renal replacement therapy during the day when the dialysis staff was available.

- Treatments were started and finished by the dialysis staff and monitored by a critical care nurse.
- ICU nurses were trained to handle simple alarms, and dialysis staff was available during treatments for troubleshooting.
- The nurse-to-patient staffing ratio was patient and not therapy dependent.

Study Design: Retrospective case series of 100 consecutive hemodynamically unstable patients in the ICU with either AKI from all causes (n=89) or ESRD (n=11) to determine the practicality of an accelerated venovenous hemofiltration renal replacement therapy using increased blood flow and hourly hemofiltration rates as an alternative to conventional CRRT or SLEDD therapies. Outcomes and measurements included achieved dose, blood flow rate, mean arterial pressure, serum chemistry test results, patient weight, filter clotting and patient survival.

Study Limitations: This was a retrospective analysis, absence of a comparison group; therefore, survival comparisons were limited to data from other studies.

Important Safety Information: The use of anticoagulation is at the discretion of the prescribing physician. Renal replacement therapy, as with any medical therapy, is not without risks. The decision of which therapy to use should be made by the physician, based on previous experience and on the individual facts and circumstances of the patient. There is no literature demonstrating that one therapy is clinically better than the other.

References:

1. Gashti CN, MD, Rodby RA, et al. Accelerated Venovenous Hemofiltration: Early Technical and Clinical Experience. *American Journal of Kidney Diseases*, 2008.