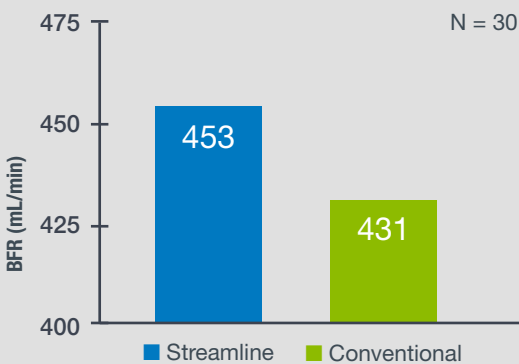


Streamline® improved adequacy, reduced heparin utilization and made more efficient use of dialyzers when compared to conventional bloodlines.<sup>1</sup>

**Improving Adequacy, Heparin Anticoagulation and Dialyzer Efficiency with New Bloodline Technology**

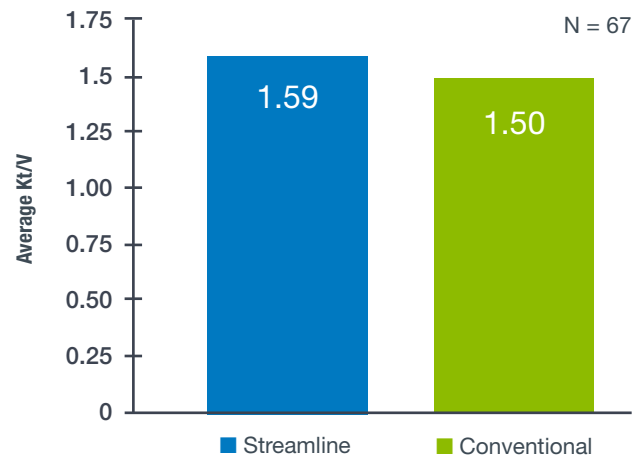
Haas S, Ahuja M. – In this study of 67 patients at Milwaukee Nephrology, Streamline improved average Kt/V while making more efficient use of dialyzers and heparin.

**With Streamline, average blood flow rates increased by 22 mL/min (p=0.003)**



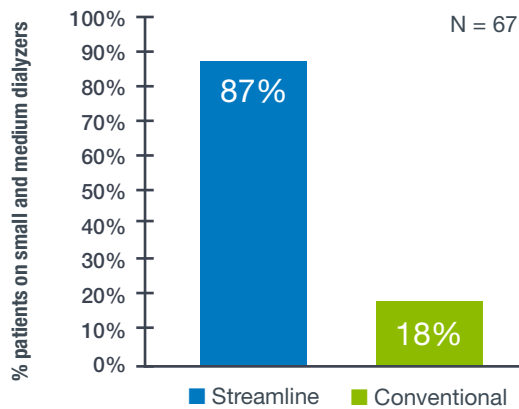
When compared to conventional bloodlines higher blood flow rates were achievable with Streamline due to 16% (-176 for Streamline vs. -209 for conventional) lower arterial pressure readings. This study recorded a 5% increase in average blood flow rates with Streamline.

**With Streamline, average Kt/V increased by 0.09 (p=0.024)**



Average Kt/V improved 6% with Streamline. Streamline enabled a 5%, 10%, and 14% improvement in patients achieving greater than or equal to Kt/V of 1.2, 1.4, and 1.6 respectively.

**69% improvement in patients using small and medium sized dialyzers**



Reduction in dialyzer sizes resulted in per-treatment dialyzer cost savings of \$2.52.

**With Streamline, per-treatment heparin costs reduced by \$0.94\***

Heparin costs per treatment	
Conventional bloodline	\$1.64
Streamline	\$0.70

N = 67

As a result of reduced blood-air contact with Streamline, heparin costs decreased by 57%, saving \$0.94 per treatment.

\* 3-month rolling average cost based on total heparin purchased.

## Improved Dialyzer Efficiency and Heparin Usage

Higher average blood flow rates with Streamline were achieved due to lower average arterial pressures. Increasing blood flow rates enabled more efficient use of dialyzers, which resulted in \$2.52 in per-treatment dialyzer cost reductions. This study also reported a 57% reduction in heparin usage with Streamline, which resulted in \$0.94 cost savings per treatment.

**Study Design:** Cross-over study of 67 patients to determine the clinical and economic benefits of Streamline bloodlines in the outpatient setting. Outcomes and measurements include average blood flow rate, average arterial pressure, average Kt/V, average heparin usage, average dialysate flow rate, and dialyzer type.

**Study Limitations:** This was a cross-over study. Limitations of cross-over studies may include confounding due to issues of order, carry-over and learning.

**Important Information:** The Streamline blood tubing sets are prescription devices and, like all medical devices, involve some risks. Failure to observe all warnings and precautions noted in the Streamline Instructions for Use may result in serious complications, including blood loss due to clotting or air entering the bloodstream. Each patient's care plan should be determined by the physician, based on the individual facts and circumstances of the patient. The use of anticoagulation is at the discretion of the prescribing physician.

### References:

1. Haas S, Ahuja M. Improving adequacy, heparin anticoagulation and dialyzer efficiency with new bloodline technology. Poster presented at American Society Nephrology Conference, 2010.