# In-vivo Dialysis Kinetics of 300 ml/min and 500 ml/min Dialysate Flows

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## Background

Dialysate flow rates (QD) are typically 500-800 ml/min with the intent to maximize urea removal during hemodialysis. We previously conducted kinetic modeling of 300 ml/min compared to 500 ml/min QD and concluded that lower QD would be expected to provide adequate hemodialysis in the majority of patients.

Tablo® Hemodialysis System is a newer dialysis technology that operates at 300 ml/min QD making understanding fine in-vivo urea kinetics relevant. This study presents in vivo kinetic data in patients undergoing hemodialysis using the Tablo® Hemodialysis System with a dialysis flow rate of 300 ml/min.

## Results

During hemodialysis, mean kinetic curves for serum beta2 microglobulin, phosphate, sodium, potassium, carbon dioxide, osmolality, and urea during QD 300 ml/min and 500 ml/min mirrored each other in all 6 patients. These patients completed treatment at 240 minutes, two patients completed treatment at 225 minutes, and one patient completed treatment at 210 minutes. The recovery phase at one hour for solutes displayed a rebound phase.

## Objectives / Aims

- The Tablo® HD system, which provides 300 ml/min QD, has a similar kinetic profile to other HD systems which provide 500 ml/min QD.
- In-vivo measurements indicate that 300 ml/min QD would be expected to provide similar clearances to traditional flow rates.

## Conclusion

- The study group included 6 patients undergoing chronic hemodialysis via a fistula (n=4) or graft (n=2).
- Mean age was 58 years; mean weight was 85kg.
- The study was conducted as a prospective, open-label, randomized cross-over evaluation of in-vivo kinetics of serum urea, phosphorus, and other solutes at variable QD.

All patients participated in 2 complete dialysis sessions in each of 3 treatment conditions:

1. 500 ml/min QD (Phoenix® System)
2. 300 ml/min QD (Tablo® System)
3. 300 ml/min QD (Tablo® System) with Revaclear™ Max dialyzer, and 15 minutes extended time

All patient treatments maintained an otherwise fixed prescription (blood flow rate, dialysate potassium, treatment duration, and dialyzer type).

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