



Flow Methods in Dialysis Access (STENOSIS MONITORING)

“The basic tenet for vascular access monitoring and surveillance is that stenoses develop over variable intervals in the great majority of vascular accesses and, if detected and corrected, under-dialysis can be minimized or avoided (dialysis dose protection) and the rate of thrombosis can be reduced.” (K/DOQI 2006 Updates)

FLOW METHOD	DESCRIPTION
DUPLEX DOPPLER ULTRASOUND (Quantitative color velocity imaging): <ul style="list-style-type: none"> • COLOR-FLOW DOPPLER 	Uses the standard ultrasound methods to produce a picture of a blood vessel. A computer converts the Doppler sounds into colors that are overlaid on the image of the blood vessel and that represent the speed and direction of blood flow through the vessel. It is useful to estimate the diameter of a blood vessel as well as the amount of obstruction, if any, in the blood vessel. (VascularWeb) This is an outpatient radiological procedure.
ULTRASOUND DILUTION (Transonics):	Measurement of ultrasound velocity in blood. Access flow is measured from the induced recirculation when the needles are reversed. The software calculates the area under the curves (the area under the venous curve to the area under the arterial curve) as a measure of recirculation. Recirculation is a late indicator of a failing access and generally occurs when access flow is less than the dialysis pump flow. This procedure is done in-center at the dialysis facility.
CRIT-LINE III DIRECT TRANSCUTANEOUS	Crit-Line III-TQA is a fluid management and access monitoring tool incorporating photo-optical technology to non-invasively measure absolute hematocrit, percent blood volume change, continuous oxygen saturation and access recirculation. (HemaMetrics) This is done in-center at the dialysis facility.
ON LINE CLEARANCE (Fresenius):	On-line clearance conducted for access flow purposes is done monthly on all grafts and fistulas (Fresenius technology). OLC test results (Kecn's) on the Fresenius H and K machines are used to determine blood flow. A special "twister line" is used to obtain the results. OLC measures Kecn. - K access 1 (lines connected normally) - K access 2 (lines are reversed-causing recirculation) - Access Flow is the change in conductivity - $(Kecn1 \times Kecn2) / (Kecn1 - Kecn2) = \text{access flow}$
VASC-ALERT	A method to prospectively monitor AVGs that uses an algorithm to calculate venous access pressure (VAP) during HD from the venous drip chamber pressure (VDP). (AJKD abstract: Volume 40, Issue 4) Vasc-Alert provides proactive surveillance of hemodialysis patients' access sites by evaluating the intra-access pressures. The program analyzes the hemodialysis machine blood flow and pressure data to determine the intra-access pressure. When it determines that the patient's access site may be at risk, it issues an alert report. An analysis is performed for each dialysis session and trends established for each patient. This unique trending can indicate when a patient's pressure is increasing. An Alert is provided once increased pressure is detected for 3 consecutive treatments. (Vasc-Alert.com)

Mission Statement

To provide leadership and assistance to renal dialysis and transplant facilities in a manner that supports continuous improvement in patient care, outcomes, safety and satisfaction.