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2026 SYMPOSIUM

AV Access Surveillance- Optimal Methods

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Disclosures

None

Objectives

- Discuss current surveillance methods
- Discuss current KDOQI guidelines
- Discuss future directions

Clinical Importance

- Access dysfunction is costly and morbid
- Goal of surveillance
  - **Reduce poor dialysis clearance**
  - **Reduce rate of thrombosis**
  - **Improve overall access function**



Physical Exam

- Inspection
- Palpation
- Auscultation



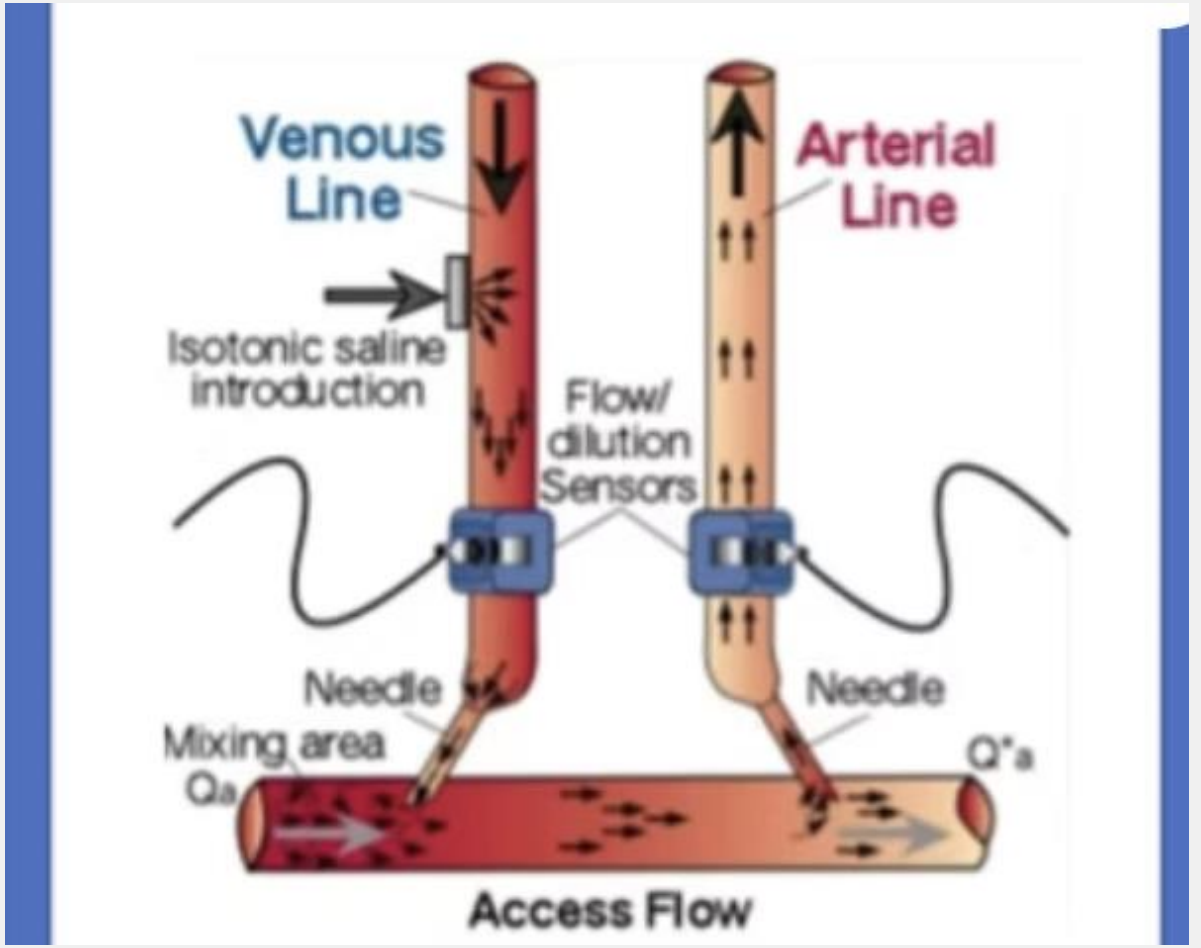


Physical Exam

Study	Design	Results
Coentrao et al (2012)	Compared physical exam done by 11 nephrologists and 1 nephrology resident to angiogram	- Moderate agreement beyond chance with nephrologists - Near perfect agreement with special training.
Asif et al (2007)	Physical exams compared to angiogram	- PE good for outflow stenosis - Moderate for inflow stenosis and coexisting inflow and outflow stenosis - Poor for central vein and AVF body stenosis
Leon et al (2008)	Pre procedural physical exam on patients referred for AVG dysfunction Blinded angiogram interpreters to PE results	- Strong agreement beyond chance for vein graft anastomotic stenosis - Moderate for inflow stenosis

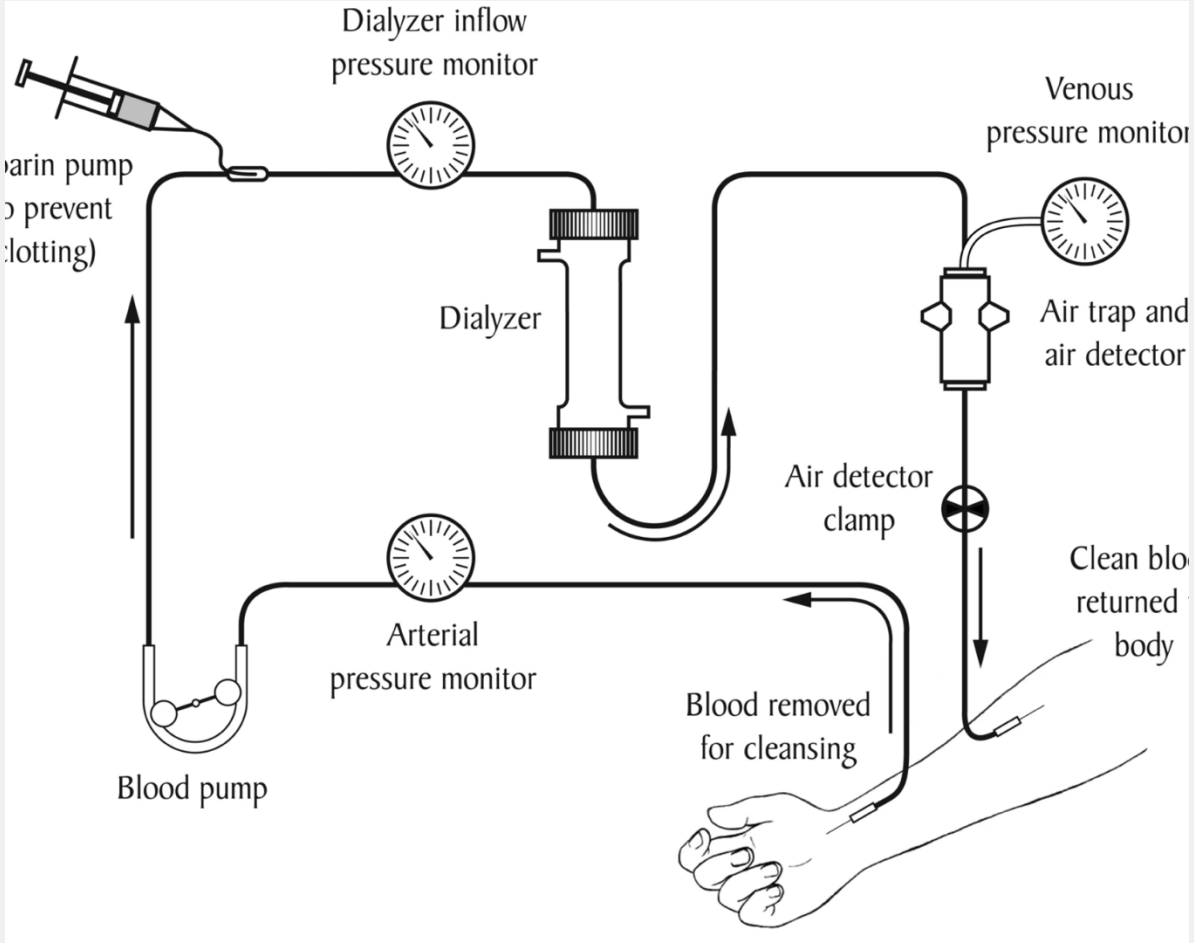
Access Flow (Qa)

- Multiple methods of measurement
- Varies based on mean arterial pressure, central venous pressure and circuit resistance
- Abnormal
  - AVG: ≤ 600 ml/min
  - AVF: ≤ 400-500 ml/min
  - >25% decrease with baseline of >1000 ml/min



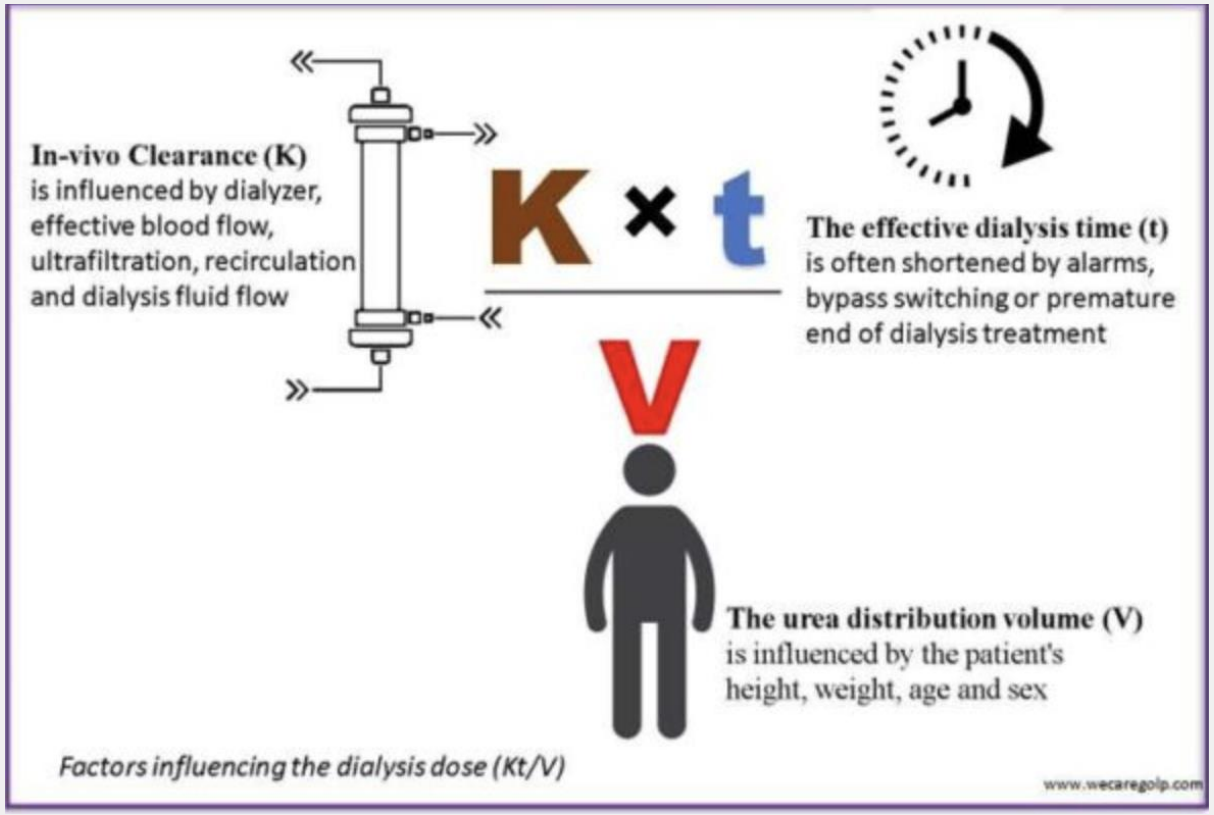
Dynamic Venous Pressure

- Pressure needed to infuse blood back in access via venous tubing
- Highly variable
- Abnormal:
  - 3 consecutive pressures > 150 ml/min
  - Consistent rise over time



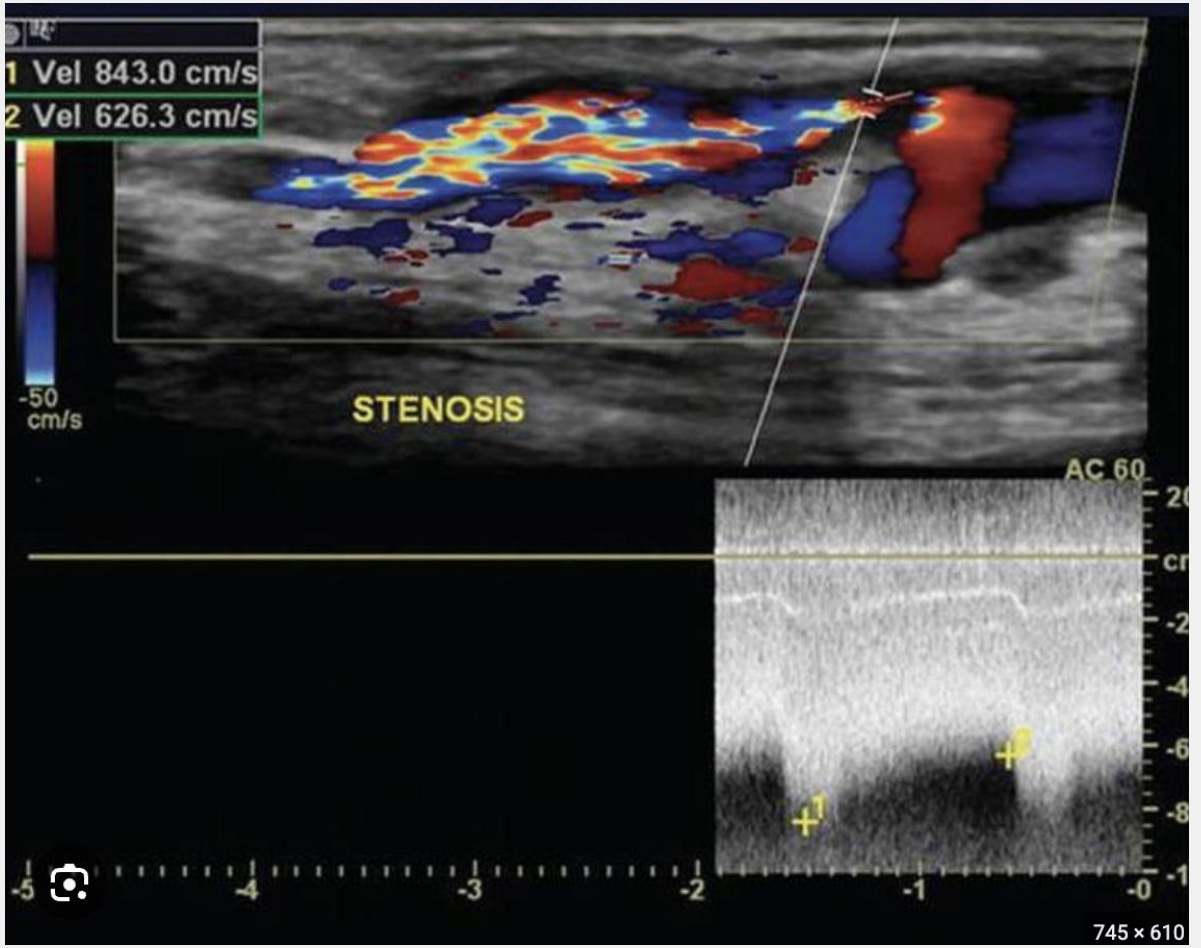
Kt/V and Urea reduction ratio

- Kt/V
  - Minimum 1.2 or higher
  - Can be affected by multiple factors
  - Abnormal: decrease by >0.2 U
- URR
  - Goal is greater than or equal to 65%
  - Not as accurate



Duplex Ultrasound

- Can measure flow, peak systolic velocity (PSV) and view anatomy
- Abnormal:
  - Qa
    - Distal fistula < 400 ml/min
    - Proximal fistula <500 ml/min
  - PSV
    - PSV ratio >2→ venous stenosis
    - PSV > 500 cm/s + PSV ratio >4 → significant venous stenosis
    - PSV >400 + PSV ratio >3 → arterial stenosis



Clinical Trials

Study	Study Design	Result
Polkinghorne KR et al (2006)	Single center RCT 137 patients Clinical monitoring of AVF vs. monitoring + Qa	- Clinical monitoring + Qa twice as likely to have stenosis detected, trend toward earlier detection - Time to detection of stenosis- no different
Moist LM et al (2003)	Blinded RCT 112 patients Qa + standard surveillance (DVP and PE) vs. standard surveillance alone (control)	- More interventions in the treatment group - No difference in time to graft loss

Clinical Trials

Study	Study Design	Result
Schuman et al (2007)	Cohort analysis of 2 dialysis units 1 with clinical assessment 1 with ultrasound	- Clinical cohort with similar patency to the ultrasound cohort - Angiographic procedures were similar - Mean procedures 0.56 for ultrasound cohort, 0.48 for standard monitoring
Aragoncillo et al (2017)	3 year follow up randomized control Compared Qa surveillance and pre-emptive repair of subclinical stenosis to standard monitoring	- Qa group had significant reduction in thrombosis rate, thrombosis free patency and secondary patency - No difference in primary patency rates

Current Guidelines

- Recommended: Regular physical exam of AVF and AVG
- Inadequate evidence for routine surveillance of **AVF** by measuring Qa, pressures or duplex ultrasound
- Recommends **AGAINST** routine surveillance of **AVG** by measuring Qa, pressures or duplex ultrasound

Future Directions

- Enhanced training for all disciplines on PE
- Standardized surveillance thresholds
- Identifying patients that will benefit from early intervention
- Multidisciplinary collaboration
- New technology

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