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Monitoring and Surveillance in Hemodialysis Access

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The vascular access is critically important for patients with end-stage renal disease undergoing hemodialysis treatment, as it is essentially their lifeline. Therefore, maintaining the vascular access patency in the dialysis unit should be a primary concern. To keep the vascular access in dialysis patients patent, appropriate monitoring and surveillance of access are essential. If a access dysfunction is detected during this process, timely referral for interventional procedures is necessary. The KDOQI 2019 guidelines recommend regular physical examinations for vascular access. Additionally, auxiliary surveillance techniques, such as blood flow and pressure measurements and imaging studies, can be utilized. If physical examinations and surveillance suggest a access dysfunction, accompanied by clinical indicators, referral for interventional procedures to correct the disturbance is advised. This lecture will focus on the proper monitoring and surveillance of vascular access. Effective monitoring and surveillance of vascular access patency in the dialysis unit, timely referrals for interventional procedures when dysfunction occur, successful execution of these procedures, and subsequent appropriate evaluation and surveillance all require close communication and collaboration between the interventional suite and dialysis unit medical staff. Through this collaborative effort, vascular access in dialysis patients can be maintained in a better state.

Keywords: Hemodialysis, Vascular Access, Monitoring, Surveillance, Ultrasound

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Procedure	Clinical Indicators
Physical examination or check	● Ipsilateral extremity edema ● Alterations in the pulse, with a weak or resistant pulse, difficult to compress, in the area of stenosis ● Abnormal thrill (weak and/or discontinuous) with only a systolic component in the region of stenosis ● Abnormal bruit (high pitched with a systolic component in the area of stenosis) ● Failure of the fistula to collapse when the arm is elevated (outflow stenosis) and lack of pulse augmentation (inflow stenosis) ● Excessive collapse of the venous segment upon arm elevation
Dialysis	● New difficulty with cannulation when previously not a problem ● Aspiration of clots ● Inability to achieve the target dialysis blood flow ● Prolonged bleeding beyond usual for that patient from the needle puncture sites for 3 consecutive dialysis sessions ● Unexplained (>0.2 units) decrease in the delivered dialysis dose (Kt/V) on a constant dialysis prescription without prolongation of dialysis duration