

CANNULATION and CARE of the AV FISTULA

POLICY

All clinical staff will care for the permanent AV Fistula to prevent infection, monitor development, and promote long-term survival of the access.

PURPOSE

To define levels of skills with regard to needle placement and troubleshooting.
To provide guidelines for assessment of the developing and mature fistula.

GENERAL INFORMATION

- **FISTULA:** The surgical connection of the patient's own artery and vein. With maturation over several weeks to months, the fistula gets large enough to maintain adequate blood flow for dialysis; both needles are placed in a vein.

- A fistula as a first access should be created in at least 50% of all new patients electing to receive hemodialysis. At least 50% of all patients receiving hemodialysis should have a fistula.

- Personal Protective Equipment is to be worn for **all** of the cannulation procedures.

- A fistula is considered to be mature when the vein's diameter is sufficient to allow for successful cannulation. A fistula that is not able to be consistently cannulated and give at least a 300 blood flow by 8 weeks after placement has failed to mature. **Report to Vascular Access Coordinator.**

- Staff will be designated by the unit manager according to their skills level for access cannulation using the following definitions and completion of a cannulation and care of the fistula test. Advancement to a higher skill level will be determined by the unit manager based on observation of competency of skills. Higher skills level staff members will act as mentors for other staff to facilitate development of skills and advancement to a higher level. The unit manager will communicate with the charge nurse to ensure that staff members are assigned to patients appropriately.
 - **TRAINEE:** staff member under observation of a preceptor. Trainees will cannulate and troubleshoot only well-developed, mature fistulas. Preceptor will evaluate the assessment, cannulation, and troubleshooting skills and progress of the trainee during the orientation period and give assistance and feedback to

the orientee. After a **minimum** of three months following orientation, the trainee may be evaluated for movement to the Skilled level.

- **SKILLED:** staff member who independently, consistently, and successfully assesses, cannulates, and performs basic needle troubleshooting for well-developed, mature fistulas.
 - **ADVANCED:** staff member who exceeds the Skilled level. Independently, consistently, and successfully assesses, cannulates, and troubleshoots needles of well-developed, mature fistulas. Peers seek out this individual for fistula assessment, cannulations, and troubleshooting of well-developed, mature fistulas.
 - **MASTER:** staff member who exceeds Advanced level. Independently, consistently, and successfully assesses, cannulates, and troubleshoots fistulas that are considered to be difficult to cannulate. Peers seek out this individual for assessment of fistula, cannulating and troubleshooting fistulas of all stages of development, for **initial cannulation**, and for fistulas that are considered to be difficult to cannulate.
- A new primary fistula should be allowed to mature a **MINIMUM** of 8 weeks prior to initial cannulation.
 - Assessment of a developing fistula should be completed at each dialysis treatment. This should be documented each time in the progress notes.
 - Abnormal findings with fistula assessment should be reported to the Charge Nurse who will notify the Vascular Access Coordinator.
 - Notify Vascular Access Coordinator if fistula is not ready for cannulation after two months of development.

INITIAL CANNULATION

- A fistula is considered mature and ready for use when the vein's diameter is sufficient to allow successful cannulation.
- **INITIAL CANNULATION SHOULD BE DONE NO SOONER THAN A MINIMUM OF 8 WEEKS FROM CREATION OF THE FISTULA.** If order is received to do initial cannulation prior to 8 weeks, inform Vascular Access Coordinator.

- It is best to perform the initial cannulation of the fistula at the patient's mid-week hemodialysis treatment. This helps to avoid such complications as fluid overload and elevated chemistries associated with the weekend.
- Initial cannulation at a non-changeover time, or allowing the patient to come in early when approved, may provide more time for the cannulation procedure.
- Pain control should be addressed by using Emla Cream or Acetaminophen prior to cannulation as prescribed by a Nephrologist. Use of Lidocaine should be avoided with all fistulas.
- Repeated cannulation of a fistula is to be avoided. **NO MORE THAN A TOTAL OF THREE NEEDLE ATTEMPTS AT ANY ONE SESSION WITHOUT NEPHROLOGIST ORDER.** If order is received to cannulate more than three times total, notify Vascular Access Coordinator.

NEEDLE INTERVENTIONS

- Inability to maintain adequate blood flow due to arterial or venous pressure low or high alarms, infiltration, leaking at needle insertion site, or discomfort may require intervention.
- Repositioning of needles for well-developed, mature fistulas should be done only by Skilled, Advanced, and Master skills level staff members. Interventions for fistulas that are considered new, not fully mature, or difficult to cannulate should be done only by Master skill level staff members.
- Repeated cannulation of a fistula is to be avoided. **NO MORE THAN A TOTAL OF THREE NEEDLE ATTEMPTS AT ANY ONE SESSION WITHOUT NEPHROLOGIST ORDER.** If order is received to cannulate more than a total of three times, notify Vascular Access Coordinator.
- A fistula that is not able to be consistently cannulated and give at least a 300 blood flow by 8 weeks after placement has failed to mature. **Report to the Vascular Access Coordinator.**
- Use caution when taping, and avoid lifting the needle once it is in place in the vein. Improper taping or flipping of the needle may cause an infiltrate. **DO NOT FLIP NEEDLES OVER.**
- Do not allow patient to cover access site; should be visible at all times.
- Circulate blood in system if problem cannot be fixed **within two minutes** to minimize risk of chemical rebound or clotting.

- A 16 gauge or 17 gauge needle should be used and a **maximum** blood flow of 300 for a minimum of two weeks following any major cannulation problem. The master skill level staff member will complete initial cannulation following any major cannulation problem. After two weeks, the master skill level staff member will determine advancement to a 15 gauge needle and increase in blood flow based on assessment of the fistula and prior treatment information.

Venous Pressure High Alarm: may indicate infiltration of venous needle as evidenced by raised, swollen, painful venous site; needle dislodgement; kinks in tubing; lines reversed; needle up against wall of access.

Venous Pressure Low Alarm: may indicate tubing separation; **ALARMS MAY NOT ALWAYS OCCUR WITH VENOUS NEEDLE DISLODGMET. KEEP ACCESS SITE VISIBLE AT ALL TIMES.**

Arterial Pressure Low Alarm: may indicate inadequate blood flow from arterial access caused by collapse of immature fistula vein; low blood pressure; needle up against wall of vein; clotted or infiltrated needle; kinks in line.

Arterial Pressure High Alarm: may indicate tubing separation; needle dislodgement.