

## 4. Role of nurses and staff in access management

Guideline 4.1. Nurses and medical staff should be involved in vein preservation and monitoring of the vascular access. Every patient with chronic kidney disease should have a declared plan for preserving the vascular access and potential access sites (Evidence level IV).

Guideline 4.2. Any staff involved in handling vascular access or cannulating veins in renal patients should be adequately trained and be in a continuous training scheme for access management (Evidence level IV).

Guideline 4.3. An autogenous fistula should be cannulated when adequate maturation has occurred (Evidence level III).

Guideline 4.4. The rope ladder technique should be used for cannulation of grafts (Evidence level III).

### Rationale

A substantial part of the pre-dialysis care is the preservation of veins in both arms, favouring the use of the veins of the dorsum of the hand for blood sampling, infusions and transfusions [1]. After placement of the initial vascular access, preferably an autogenous AVF, the correct needling technique has a favourable influence on maturation and fistula lifespan. Nurses play a pivotal role in the care for vascular access: they see the patient every dialysis, perform cannulation and assess function of the vascular access [2]. The vascular access should be checked before each cannulation by inspection and palpation. Nurses train patients and partners to perform home haemodialysis. This includes teaching about vascular access and (self-) cannulation [3].

Nurses generally have more practical experience and skills for cannulating and managing vascular access than physicians. Written protocols for cannulation, handling central venous catheters and physical examination of the vascular access prior to cannulation should be provided. The nephrologist bears ultimate responsibility to ensure adequate standards and training in the delivery of care for the vascular access. While this care is almost always delivered by others, the nephrologist should be involved in the training and monitoring of standards. Training courses in vascular access have been initiated for residents, vascular surgeons and nephrologists in the Netherlands and for nurses in France and Turkey [4]. Examinations and qualifications should be mandatory in the future. Societies like the EDNA/ERCA and the European Vascular Access Society or other dedicated initiatives should implement new structural approaches in the care for vascular access.

### Technique and Timing of cannulation

While few scientific data concerning access handling and the outcome of specific cannulation techniques have been reported, the rope ladder technique is advised for the cannulation of AV grafts [5], to avoid graft disintegration and the formation of pseudo-aneurysms. In autogenous fistulae, particularly those with only a short vein segment available for needling, the buttonhole method is preferred over area puncture. The timing of access cannulation has been reported from the DOPPS study [6]. For grafts, first cannulation occurred within 2–4 weeks at 62% of USA, 61% of European and 42% of Japanese facilities. For fistulae, first cannulation occurred <2 months after placement in 36% of USA, 79% of European and 98% of Japanese facilities. Earlier cannulation of a newly placed fistula may be associated with impaired AVF survival. Cannulation after <2 weeks should be avoided while usually the minimum maturation period should be ideally >4 weeks. Adequate fistula flow (>600 cc/min) and diameter (>5 mm) measured by ultrasonography can improve the documentation of matured fistulas [7–9].

### Recommendations for future research

Studies on cannulation complications and techniques are needed.

### References

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