GUIDELINE 4. DETECTION OF ACCESS DYSFUNCTION: MONITORING, SURVEILLANCE, AND DIAGNOSTIC TESTING

Prospective surveillance of fistulae and grafts for hemodynamically significant stenosis, when combined with correction of the anatomic stenosis, may improve patency rates and may decrease the incidence of thrombosis.

The Work Group recommends an organized monitoring/surveillance approach with regular assessment of clinical parameters of the AV access and HD adequacy. Data from the clinical assessment and HD adequacy measurements should be collected and maintained for each patient's access and made available to all staff. The data should be tabulated and tracked within each HD center as part of a Quality Assurance (QA)/CQI program.

- **4.1 Physical examination (monitoring):**
  Physical examination should be used to detect dysfunction in fistulae and grafts at least monthly by a qualified individual. (B)
- **4.2 Surveillance of grafts:**
  Techniques, not mutually exclusive, that may be used in surveillance for stenosis in grafts include:
  - **4.2.1 Preferred:**
    - **4.2.1.1 Intra-access flow by using 1 of several methods that are outlined in Table 7 using sequential measurements with trend analysis. (A)**
    - **4.2.1.2 Directly measured or derived static venous dialysis pressure by 1 of several methods. (A) (Protocol provided in Table 8 for using transducers on HD machines to measure directly; criteria in Table 9 for derived methods.)**
    - **4.2.1.3 Duplex ultrasound. (A)**
  - **4.2.2 Acceptable:**
    - **4.2.2.1 Physical findings of persistent swelling of the arm, presence of collateral veins, prolonged bleeding after needle withdrawal, or altered characteristics of pulse or thrill in a graft. (B)**
  - **4.2.3 Unacceptable:**
    - **4.2.3.1 Unstandardized dynamic venous pressures (DVPs) should not be used. (A)**
- **4.3 Surveillance in fistulae:**
  Techniques, not mutually exclusive, that may be used in surveillance for stenosis in AVFs include:
  - **4.3.1 Preferred:**
    - **4.3.1.1 Direct flow measurements. (A)**
    - **4.3.1.2 Physical findings of persistent swelling of the arm, presence of collateral veins, prolonged bleeding after needle withdrawal, or altered characteristics of pulse or thrill in the outflow vein. (B)**
    - **4.3.1.3 Duplex ultrasound. (A)**
  - **4.3.2 Acceptable:**
    - **4.3.2.1 Recirculation using a non–urea-based dilutional method. (B)**
    - **4.3.2.2 Static pressures (B), direct or derived. (B)**
- **4.4 When to refer for evaluation (diagnosis) and treatment:**
  - **4.4.1 One should not respond to a single isolated abnormal value. With all techniques, prospective trend analysis of the test parameter has greater power to detect dysfunction than isolated values alone. (A)**
  - **4.4.2 Persistent abnormalities in any of the monitoring or surveillance parameters should prompt referral for access imaging. (A)**
  - **4.4.3 An access flow rate less than 600 mL/min in grafts and less than 400 to 500 mL/min in fistulae. (A)**
  - **4.4.4 A venous segment static pressure (mean pressures) ratio greater than 0.5 in grafts or fistulae. (A)**