Vascular Access for Hemodialysis
Temporary Access

• A temporary access catheter is necessary if dialysis is required and a permanent device is not available. Temporary access is achieved by placing a catheter into a large vein in the groin, under the collarbone, or in the neck. These catheters actually contain two separate tubes; one carries blood from the patient to the dialysis machine, and the other returns blood to the circulation.

• These temporary catheters can be inserted in two different ways. Percutaneous placement can be performed in the dialysis unit or a hospital bed. The catheter is placed into a large vein and secured with a stitch.

• The second technique uses a slightly larger catheter and is performed in the operating room. The surgeon inserts the catheter directly into the internal jugular vein. The catheter is tunneled under the skin and exits the body on the upper portion of the chest. Catheters inserted in this fashion are preferred if longer use is anticipated. They are less likely to become infected and can therefore be used for longer periods of time (weeks or even months).
Arteriovenous (AV) Fistula

• A surgeon creates an AV fistula by connecting an artery directly to a vein, frequently in the forearm. Connecting the artery to the vein causes more blood to flow into the vein. As a result, the vein grows larger and stronger, making repeated needle insertions for hemodialysis treatments easy. A local anesthetic is used, and in most cases, the procedure can be performed on an outpatient basis. A fistula will take on average 4–6 weeks to mature.
Synthetic Graft

- Operators can implant a synthetic tube under the skin of the arm to connect an artery to a vein and provide vascular access. The graft becomes an artificial vein that can be used repeatedly for needle placement and blood access during hemodialysis. A graft doesn’t need to develop as a fistula does, so it can be used sooner after placement, often within 2 or 3 weeks. A well-cared-for graft can last several years.
Some Advantages of an AV Fistula

• Has a lower risk of infection than a graft
• Has a lower tendency to clot than a graft
• Allows for greater blood flow, increasing the effectiveness of hemodialysis as well as reducing treatment time
• Stays functional longer; in some cases a well-formed fistula can last for decades
Some Advantages of a Synthetic Graft

• Nearly always an option, even in patients with compromised vascular systems who cannot have a fistula
• Available for use sooner
• More reliable at the beginning than a fistula, which may never mature
• More cosmetically attractive
The Question

For patients who will need hemodialysis eventually but can delay starting for several months, should they receive an AV fistula or a synthetic graft, assuming they are suitable candidates for both?