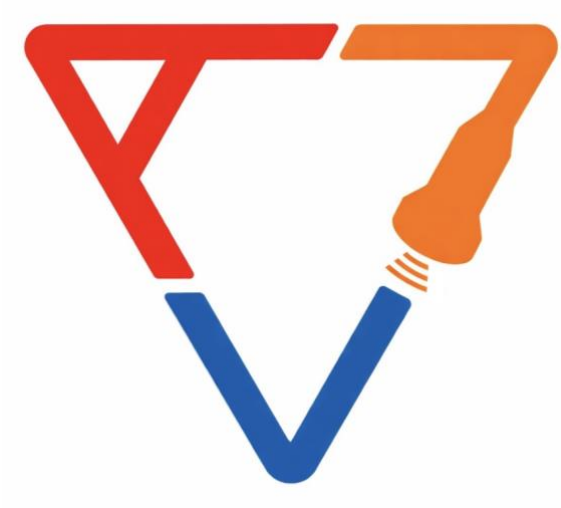
Haemodialysis AVF Ultrasound Scan



ARTERY AND VEIN DIAGNOSTICS

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Patient Information

1. Understanding Haemodialysis Access and AV Fistulas

Patients requiring long-term haemodialysis need a reliable way for blood to be removed, filtered, and returned to the body. The preferred method is an **arteriovenous fistula (AVF)** — a surgical connection between an artery and a vein, usually in the arm.

An AVF provides:

- High blood flow for effective dialysis
- A durable, long-lasting access site
- Lower infection risk compared with catheters
- Better long-term outcomes for dialysis patients

Before an AVF is created, an **ultrasound mapping scan** is performed to assess the arteries and veins and determine the best site for surgery. After the fistula is created, **regular surveillance scans** help ensure it is maturing well and functioning properly.

1.1 What Is AVF Mapping?

AVF mapping is a detailed ultrasound assessment of the arteries and veins in the arm. It helps the vascular surgeon decide:

- Which arm is most suitable
- Which artery and vein should be connected
- Whether the vessels are large enough for a successful fistula
- Whether there are blockages, narrowing, or previous damage

Mapping improves the likelihood of creating a fistula that matures well and provides reliable dialysis access.

1.2 What Is AVF Surveillance?

After surgery, the fistula needs time to **mature** — usually 6–12 weeks. Surveillance ultrasound checks:

- Blood flow through the fistula
- Whether the vein is enlarging appropriately
- Whether the fistula is ready for dialysis
- Early signs of narrowing (stenosis)
- Aneurysm formation
- Thrombosis or reduced flow

Early detection of problems allows timely intervention and helps prevent fistula failure.

2. Why You Have Been Referred for This Scan

Your doctor or dialysis team may recommend AVF mapping or surveillance if you:

- Are preparing for haemodialysis
- Need assessment before AVF surgery
- Have a new fistula that needs maturation checks
- Have difficulty with dialysis needle insertion
- Have reduced dialysis efficiency
- Have swelling, pain, or changes in the fistula
- Have suspected narrowing or thrombosis
- Have a fistula that is not maturing as expected
- Require routine annual surveillance

Ultrasound provides essential information to guide both surgical planning and ongoing care.

3. What the Scan Examines

A haemodialysis access ultrasound assesses the arteries, veins, and fistula using B-mode imaging**,** colour Doppler, and spectral Doppler.

Your scan will evaluate:

3.1 Arteries (Pre-operative Mapping)

- Radial, ulnar, and brachial arteries
- Arterial diameter
- Blood flow velocities
- Presence of plaque or narrowing
- Vessel wall quality
- Suitability for fistula creation

3.2 Veins (Pre-operative Mapping)

- Cephalic, basilic, and median cubital veins
- Vein diameter and depth
- Compressibility
- Continuity and patency
- Presence of thrombosis or scarring
- Central venous outflow (where possible)

Veins may be assessed with and without a tourniquet to determine their true size.

3.3 AV Fistula (Post-operative Surveillance)

Assessment includes:

- Fistula diameter and depth
- Blood flow volume (ml/min)
- Anastomosis site
- Swing vein
- Inflow and outflow segments
- Presence of stenosis
- Aneurysmal changes
- Thrombus or reduced flow

- Branch veins that may steal flow
- Maturation progress

3.4 Central Veins (When indicated)

Where possible, the scan assesses:

- Subclavian vein
- Axillary vein
- Internal jugular vein

This is important for patients with previous catheters or suspected central venous obstruction.

4. How to Prepare for Your Scan

Most patients do not need special preparation. However:

- **Your scan is typically booked on a non-dialysis day.** This helps reduce the risk of infection and avoids difficulties related to post-dialysis bleeding or recent needling sites.
- Wear loose, comfortable clothing, or tops that allow easy access to the arm and shoulder.
- Avoid applying moisturisers or oils to your arms on the day of the scan.
- Drink water beforehand unless your doctor has advised fluid restriction — hydration can help veins expand.
- **If you have wound dressings or surgical sites, the sonographer will advise whether they should remain in place or be adjusted.**
- If you have difficulty raising or rotating your arm, please inform the sonographer so we can adjust your positioning.
- Continue taking your usual medications unless your doctor advises otherwise.

If your doctor has requested an **urgent fistula scan**, please attend as soon as possible.

5. What to Expect During the Scan

An AVF mapping or surveillance ultrasound is safe, painless, and performed by a highly trained vascular sonographer with expertise in dialysis access assessment.

5.1 Duration

The scan typically takes:

- **30–45 minutes** for pre-operative mapping
- **20–30 minutes** for surveillance

5.2 Positioning

You may be examined:

- Sitting upright

- With your arm supported comfortably
- With a tourniquet applied (for vein mapping)

Your comfort is always prioritised.

5.3 The Procedure

- Warm gel is applied to your arm.
- The sonographer gently moves a handheld probe along the arteries and veins.
- You may hear whooshing sounds from the Doppler — this is normal sound of AVF flow.
- For mapping, a tourniquet may be used to assess vein size.
- For surveillance, the fistula is assessed from the anastomosis to the outflow veins.
- If you prefer a male or female sonographer, please let the practice know when booking.

5.4 Safety

Ultrasound uses sound waves — not radiation — making it safe for all patients, including those with kidney disease, pacemakers, or vascular grafts.

6. How the Scan Helps Guide Treatment

Your scan results help determine the most appropriate management, which may include:

6.1 Before Fistula Surgery

- Choosing the best arm and vessel combination
- Avoiding unsuitable or damaged veins
- Improving surgical success rates
- Planning for alternative access if needed

6.2 After Fistula Creation

- Monitoring maturation
- Detecting early stenosis
- Identifying low flow or high-flow fistulas
- Assessing aneurysmal changes
- Guiding interventions such as angioplasty

6.3 Long-Term Surveillance

Regular scans help:

- Maintain fistula function
- Reduce dialysis complications
- Prevent fistula failure
- Support long-term dialysis planning

7. After the Scan

7.1 Review of Images

Your scan images and measurements are reviewed by a vascular specialist or reporting sonographer trained in dialysis access assessment.

7.2 Report Delivery

A detailed report is sent to your referring doctor, surgeon, or dialysis team, usually within **24–48 hours**, and includes:

- Arterial and venous diameters
- Fistula flow volume
- Presence of stenosis or thrombus
- Maturation status
- Suitability for cannulation
- Summary of clinical significance

7.3 Next Steps

Your doctor or dialysis team will discuss the results with you and outline any recommended treatment or follow-up.

8. Frequently Asked Questions

Is the scan painful? No. You may feel mild pressure, but the scan is not painful.

Do I need to stop medications? No. Continue your usual medications unless your doctor advises otherwise.

Is ultrasound safe? Yes. Ultrasound is completely safe and does not use radiation.

Why do I need mapping before surgery? Mapping helps identify the best vessels for creating a fistula, improving the chance of long-term success.

Can I choose to have only one arm scanned because I have a preference? Yes, you may choose to have only one arm scanned if you prefer. However, it's important to understand that we cannot assume the arm you select has the best arteries and veins for fistula creation due to the factors such as congenital abnormalities and previous needle injury. Mapping both arms provides the most accurate assessment and helps ensure the best long-term outcome for your dialysis access.

Why does my fistula need regular surveillance? Early detection of narrowing or reduced flow helps prevent fistula failure and ensures effective dialysis.

9. Why Choose Our Vascular Lab

Vascular sonographer experts, trained at Australia's largest renal access and dialysis services unit under Dr John Swinnen — a highly respected retired vascular surgeon.

Examinations performed in accordance with international haemodialysis access standards, ensuring accuracy and consistency.

State-of-the-art ultrasound technology for high-resolution imaging and precise haemodynamic assessment.

Comprehensive, clinically focused reporting to support surgical planning and long-term access management.

Patient-centred care, with an emphasis on comfort, clear communication, and a supportive experience throughout your visit.