BEAUMONT HOSPITAL

Beaumont Hospital
Department of Nephrology and Renal Nursing

Guideline Name: Management of Arteriovenous Fistula & Grafts

Guideline Number: ___________ 4 ___________

Guideline Version: ___________ D ___________

<table>
<thead>
<tr>
<th>Developed By:</th>
<th>Prof. Peter Conlon, Consultant Nephrologist. Aisling Courtney Consultant Nephrologist. Betty McDonnell CMN 2 St. Martins Chrissy Martyn CNM 1 St. Martins. Paula Collins CPSN</th>
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Introduction

This guideline on the management of arteriovenous fistula and grafts outlines the placement sites, cannulation techniques, observation during dialysis and the management of complications.

The aim of this guideline is to maximise the efficiency and safety of a renal patient’s Arteriovenous Fistula (AVF)/ Arteriovenous Gortex Graft (AVG). Multidisciplinary care will be directed towards patient education, maximising the life of the access and providing psychological and emotional support for the patient.
1.0  Aim / Purpose of Guideline.
To provide guidelines & assist the multidisciplinary team in improving the cannulation techniques and managing complications effectively to maintain the patency of the patients AV Fistula and AV graft.

2.0  Review History

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<td>Jan 2009</td>
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3.0  Scope
This guideline applies to all staff working within the Dialysis unit within Beaumont Hospital. It is intended as a guide towards best practice for all members of the multidisciplinary team involved in the care of patients receiving haemodialysis via an arteriovenous fistula/arteriovenous graft.

4.0 Guideline
The objectives of this guideline are;
- To highlight the responsibilities and accountability of members of the multidisciplinary team involved managing the AVF/AVG
- To ensure patient safety

5.0  Definitions

Arteriovenous Fistula
The surgical creation of an anastamosis between an artery and a vein thus allowing arterial blood to flow through the vein. This causes venous engorgement and enlargement, allowing large bore needles to be inserted for haemodialysis. AVF is indicated when the patient is in chronic renal failure and there is a plan to initiate maintenance haemodialysis.

Arteriovenous Graft
A synthetic graft implanted subcutaneously and interposed between an artery and a vein allowing needles to be inserted in order to remove and return blood during haemodialysis. It is an alternative form
of access for patients with inadequate vessels for the creation and maturation of an arteriovenous fistula.

6.0 Responsibilities

The nurse must:

- Partake in cannulation education and be deemed competent in AVF/AVG care by their nurse mentor.
- Assess the access prior to each cannulation.
- Maximise patient comfort and safety.
- Determine when the AVF/AVG is suitable to cannulate.
- Maximise the life of the AVF / Graft.
- Observe and record complications arising from all aspects of AVF / Graft management.

The renal medical team must:

- Maximise patient comfort and safety.
- Liaise with the renal nursing team in the prevention of complications.
- Effectively manage complications that may occur as per the guidelines.

The health care assistant must:

- Maximise patient comfort and safety.
- Observe the AVF/AVG for any signs of redness or infection.
- Participate in the care of the fistula post needle removal.
7.0 **PROCEDURE**

7.1 **MATURATION**

- Sutures to be removed 7-10 days post AV Fistula Formation.
- Allow the arteriovenous fistula to mature for 3-4 months after formation and before cannulation.
- Allow AVG 3-6 weeks after placement before cannulation, this will allow swelling to subside.
- Ensure the patient information leaflet has been given to the patient. Educate the patient on exercises which will enhance maturation of arteriovenous fistula. These exercises will increase the rate of AVF maturation by increasing blood flow causing the vein to engorge and arterialise.

**Assessing If the AVF Is Mature and Ready for the Initial Cannulation?**

- Vein looks mature enough
- Vein feels prominent and straight
- Vein has a strong thrill and good bruit

**Maturing Fistula Physical Exam**

- Firm
- Vessel wall thickening
- Vessel diameter enlargement (to 4–6 mm)

7.2 **PLACEMENT SITES**

*Preferred Placement Sites for Arteriovenous Fistula / Graft*

- A wrist (radial-cephalic) primary arteriovenous fistula. Easiest to create, has a lower blood flow, its use as the first access, preserves the upper arm vessels for later attempts.

- An elbow (brachial-cephalic) primary arteriovenous fistula. Easy to cannulate, presents a long length of vein for cannulation, higher blood flow.

- A transposed brachial-basilic vein fistula. Requires more surgical skill, vein must be elevated and transposed to make useable, less area for cannulation, Steal syndrome more common.

- An arteriovenous graft of synthetic material.
<table>
<thead>
<tr>
<th>Radial-Cephalic Arteriovenous Fistula</th>
<th>Brachiocephalic Arteriovenous Fistula</th>
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<tr>
<td><img src="image1" alt="Diagram of Radial-Cephalic Fistula" /></td>
<td><img src="image2" alt="Diagram of Brachiocephalic Fistula" /></td>
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<table>
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<tr>
<th>Transposed Basilic vein Arteriovenous Fistula</th>
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<tbody>
<tr>
<td><img src="image3" alt="Diagram of Transposed Basilic Fistula" /></td>
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</table>

**Key Points**
- **Radial-Cephalic Fistula**:
  - Begins with the radial artery and cephalic vein.
  - Anastomosis is formed at the radial artery and cephalic vein.

- **Brachiocephalic Fistula**:
  - Begins with the brachial artery and median cubital branch of the cephalic vein.
  - Anastomosis is formed at the brachial artery and cephalic vein.

- **Transposed Basilic Fistula**:
  - Begins with the basilic vein and brachial artery.
  - Anastomosis is formed at the basilic vein and brachial artery.
TYPE & LOCATION OF GRAFT PLACEMENT

- Polytetraflouroethylene (PTFE) material is preferred over other synthetic materials.
- Grafts may be placed in straight, looped or curved configurations.

7.3 ASSESSING THE ACCESS:

- **Observation**
  - Redness/Odema/bruising
  - Infection/abscess/drainage
  - Previous needle sites
  - Choose new needle sites or buttonhole technique (include patient)

- **Palpation**
  - Track of the access
  - Thrill
  - Pulse

- **Auscultation**
  - Bruit: Listen to entire access with stethoscope every treatment, until the cannulation regime is established. Note changes in sound characteristics (bruit):
  - A well-functioning fistula should have a continuous, machinery-like bruit on auscultation.
  - An obstructed (stenotic) fistula may have a discontinuous and pulse-like bruit rather than a continuous one—and also may be louder and high-pitched or “whistling”
• Direction of flow

7.4 CANNULATION

7.4.1: Skin Preparation

• Patient should wash their hands & access with anti-bacterial soap and water before coming to their dialysis bed.
• Using an aseptic technique cleanse the skin by applying Chlorhexidine Gluconate 2% using a circular rubbing motion, allow to dry.

7.4.2: Local Anaesthetic

• Elma cream should be applied to the access and covered with an opsite dressing by the patient 30-40 minutes prior to dialysis. (Optional)

7.4.3: Needle site selection

• It is the direction of the blood flow that determines the needle placement. This is why the venous needle must always point toward the venous return. The arterial needle, on the other hand, may point in either direction.
• Antegrade - arterial needle pointing in the direction of the blood flow
• Retrograde - arterial needle pointing toward the arterial anastomosis.
• Ultrasound mapping for depth and size, maybe considered prior to cannulation.

7.4.4: Securing/Supporting the Access:

• Use the “three point technique” – Stabilize the access with the thumb and forefinger. Pull the skin taut towards the cannulator while compressing the dermis and epidermis. This allows for easier cannulation and temporary pain interruption.
7.4.5: Angles of entry

20-35° for AV Fistulas

45° angle for graft

7.4.6: Blood flow rate to match needle gauge

<table>
<thead>
<tr>
<th>Blood Flow Rate</th>
<th>Recommended Needle Gauge</th>
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<tbody>
<tr>
<td>&lt;300 mls/min</td>
<td>17 Gauge</td>
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<tr>
<td>300-350 mls/min</td>
<td>16 Gauge</td>
</tr>
<tr>
<td>350-450 mls/min</td>
<td>15 Gauge</td>
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Note: These are the minimum recommended gauges for the stated blood flow rates. Larger needles, when feasible will reduce (make less negative) pre pump arterial pressure and increase delivered blood flow.
7.5: CANNULATION TECHNIQUES:

7.5.1: Using the Buttonhole Cannulation technique:

- What is the Buttonhole Technique?
- Buttonhole technique is when we cannulate the patient’s AV Fistula in the exact same spot using the exact same angle and dept every time the needles are inserted

Before Cannulation

- Ensure the patient has washed their hands.
- Ensure the patient has also washed their access with antibacterial soap.
- Disinfect & prepare your trolley for the insertion of the AV fistula needles, pack, solution for cleansing the skin, AVF needles (Sharp), Tourniquet, Gauge, 10ml syringes x2, saline solution for priming needle tubing, bare cannula, adapter if blood samples are required. Tape to secure the needles.

Establish the track

- Same cannulator for approx 8 cannulations for non-diabetic patients and 12 sessions for diabetic patients. (during this period sharp needles are used)
- Always cannulate using the exact same spot, same angle and dept for each cannulation.
- When the track is established, change to blunt needles – then other staff can cannulate.

Procedure

- Wash your hands.
- Assess the access completely – inspect, palpate and auscultate prior to each cannulation. For the first cannulation choose your arterial and venous site.
- Scab removal: Ensure scabs are removed prior to cannulation
1. If the patient uses Elma cream as their local anaesthetic this will soften the scab and make it easier to remove.
2. Soak the patient’s scab, by soaking gauge in saline and leave for 2 minutes, gently rub the patient’s skin to remove the scab.
3. Encourage the patient to tape an alcohol swab to their scab prior to arrival into the dialysis unit and remove on arrival.

- Disinfect your hands using Hibiscrub or using the alcohol gel.
- Put on sterile gloves.
- Cleanse the patient’s arterial and venous sites with the solution used as per hospital policy, and allow to dry.
- Prime the AVF needles with the saline solution.
- *Always use a tourniquet.*
- Using the 3 point technique, stabilize the access: pull the skin taut towards the cannulator while compressing the dermis and epidermis. This allows for easier cannulation and temporary pain interruption.
- **For the first cannulation:** Insert the needles into the arterial and venous sites you have chosen, using an angle of 20 – 35 degrees, noting the dept. when flashback is observed, level out your needle and advance into the centre of the vessel.
- **On each alternative cannulation:** Insert the needles into the exact same spot, using the exact same angle and dept. When flashback is observed, level out your needle and advance into the centre of the vessel.
- Never flip needles; this may lead to enlargement of the track causing blood to seep out around the needle.
- Secure needles: Place tape over the wings and insertion site. Ensure Bloodlines are taped to the patient’s wrist or arm. **AV Fistula needles must be visible throughout dialysis**
- Confirm good flows with a syringe.
- Continue “connection” procedure as per hospital policy.
- When removing the needle, apply minimum pressure- this is to prevent damage to the forming track.

**Changing to blunt needles**

- This should happen after the 8th session in a non – diabetic patient and after the 12th session in a diabetic patient.
- This will be specific to each patient, but ask yourself these questions:
  1. Can you visualize a round hole?
  2. Does it look well healed?
  3. Has there been decreasing resistance with the sharp needle.
- In a developing buttonhole, a ridge is starting to develop (approx day 5). When the buttonhole is healed/ready for blunt needles we should be able to visualise a round hole.
- When changing to blunt needles do not use excessive force.
- You may need to rotate the needle back and forth with gentle pressure while advancing down the track.

**Troubleshooting**
- If the sites you have chosen are not working, abandon the site and chose a new site.
- If, after the weekend, you have trouble with blunt needles, switch back to sharp needles for a couple of treatments being careful you stay in the track.
- If you have to use a different site (other than buttonhole) stay at least ¾” away from the buttonhole site to prevent damage to the buttonhole track (If the patient is hospitalized in a different hospital)
- Bleeding around the needles during dialysis could be caused by stretching the track or by cutting the track with sharp needles during cannulation.

**Advantages to the patient**
- Less painful for the patient.
- Fewer infections
- Fewer infiltrations
- Fewer missed cannulations.
- No aneurysms.
- Decreasing these problems can extend the life of the AVF.

**7.5.2: Using the rope ladder Technique:**
Cannulation sites are rotated up and down the AVF to use its entire length
Classic technique used in most dialysis centers
Look for straight areas of at least 1” for each cannulation site
Avoid aneurysms and flat or thinned-out areas

Before Cannulation
- Ensure the patient has washed their hands.
- Ensure the patient has also washed their access with antibacterial soap.
- Disinfect & prepare your trolley for the insertion of the AV fistula needles, pack, solution for cleansing the skin, AVF needles (Sharp), Tourniquet, Gauge, 10ml syringes x2, saline solution for priming needle tubing, bare cannula, adapter if blood samples are required. Tape to secure the needles.

Procedure
- Wash your hands.
- *Each treatment requires two new sites.*
- Assess the access completely
- Disinfect your hands using antibacterial soap or using the alcohol gel.
- Put on sterile gloves.
- Cleanse the patient’s arterial and venous sites with the solution used as per hospital policy, allow to dry.
- Prime the AVF needles with the saline solution.
- *Always use a tourniquet.*
- Using the 3 point technique, stabilize the access.
- Insert the needles into the arterial and venous sites you have chosen, using an angle of 20 – 35 degrees. When flashback is observed, level out your needle and advance into the centre of the vessel.
- Never flip needles; this may lead to enlargement of the entrance site.
- Secure needles: Place tape over the wings and insertion site. Ensure Bloodlines are taped to the patient’s wrist or arm. **AV Fistula needles must be visible throughout dialysis.**
Confirm good flows with a syringe.
Continue “Connection” procedure as per hospital policy.
Map the fistula and cannulation sites used, report any problems to CNM.
Remove needles at the same angle as the angle of insertion. Never apply pressure before the needle is completely out.

7.5.3: Needling the new AVF

Before Cannulation
- Ensure the patient has washed their hands & access with antibacterial soap.
- Prepare your trolley for the insertion of the AV fistula needles.
- Check the most recent INR result, if none available send a blood sample (stat) to check the patients INR.

Procedure
- Wash your hands.
- Assess the access completely – refer to 6.3
- New fistulas should be cannulated by experienced staff who demonstrate best practice techniques.

Patient that has no other access:

For the first week:
- Use two 17g needles. Always stay at least 1.5-2” from the anastomosis.
- Ensure arterial and venous sites are 1.5” apart.
- Keep the blood flow between 200-250mls/min as tolerated.
- Remove needles at the same angle as insertion.

Week two:
- If the first week is successful, cannulate with a 16g needles.
- Try to achieve blood flow between 250-300 mls/min

Week three:
- Continue with 16g needles.
- Insert two needles selecting new arterial and venous sites.
- Follow the procedure for the Buttonhole technique.

**Patient that has a CVC line:**

**For the first week:**
- Always stay at least 1.5-2” from the anastomosis.
- Use a 17g needle as the arterial, and use the CVC for the venous return.
- Keep the blood flow between 200-250mls/min as tolerated.
- Remove needle at the same angle as insertion.

**Week two:**
- Using a 17g venous needle insert near the arterial spot in an antegrade direction. Use the CVC as the arterial flow.
- Try to achieve blood flow between 250-300 mls/min

**Week three:**
- Cannulate with 16g needles.
- Insert two needles selecting new arterial and venous sites.
- Ensure arterial and venous sites are 1.5” apart.
- Follow the procedure for the Buttonhole technique.
- Report any problems to the CNM/Renal team.

**7.5.4: Needling the mature AVF**
- Follow the instructions for the buttonhole technique.
- If the patient does not have new sites that can be select away from an aneurysm, follow the procedure for the rope ladder.

**7.5.5: Needling the AVG**
- Cannulate at a 45% angle, bevel up.
- All patients who have an AV graft **must be cannulated with the rope ladder technique.**
- Utilise the entire length of the access for cannulation.
- **Do not use a tourniquet.**

**7.5.6: Accepted attempts at needling a patient’s fistula.**
- Refer to step 6.3 in assessing the patient’s access.
- It is each nurse’s responsibility to ascertain their ability in cannulating each patient’s fistula.
- The patient should not have more than two needle attempts by the same nurse at the one site.
- It is each nurse’s responsibility to seek support from an experienced nurse/nurse in charge.

7.5.7: Anticoagulation management.
- Heparin & Clexane should be administered as prescribed.
- Patients on warfarin should have their INR results monitored weekly or more frequently as required.
- Document any clotting of the dialyser and venous chamber post dialysis, liaise with the nurse in charge/medical team in altering the anticoagulation dosage.
- Document any side effects the patient may experience while having the anticoagulation on dialysis and notify the medical team.
- Heparin free dialysis may be initiated pre and post surgery & as directed by the medical team. Flush the circuit hourly with a 100mls of normal saline, observing the dialyser and venous chamber for signs of clotting. Allow for this extra fluid in the ultrafiltration calculations.

7.5.8: Post angioplasty
- Observe the area for swelling, pain, & infection.
- AVF should be cannulated as soon as possible post angioplasty.
- Once the AV Fistula site has been deemed free of swelling, cannulation should be as normal on the next dialysis session. (Using the same needle gauge and BFR)

7.6: POST CANNULATION OBSERVATION & OBSERVATION DURING DIALYSIS

7.6.1: Managing infiltration
- Educate patient on understanding that infiltration & haematoma could occur most likely during the first two week of using the access

Infiltration of a new AVF:
- If the fistula infiltrates let it rest for 1 week then go back to smaller gauge needles. Notify CNM /Nephrologist
If it infiltrates a second time rest for 2 weeks and then reduce needle size. To prevent further damage to fistula, and allow healing. Notify CNM/Nephrologist

If infiltration occurs a third time, notify CNM, Nephrologist & Surgeon. Consecutive infiltration could signify a problem with the fistula which requires radiological or surgical intervention

Apply a poultice dressing post dialysis.

**Infiltration of the mature AVF:**

- If infiltration occurs before dialysis remove the needle
- If Infiltration occurs after heparinisation, leave the needle in place and place another needle above the infiltrate site.
- Place ice on the site while patient is on haemodialysis.
- Apply a poultice dressing post dialysis.

**7.6.2: Needle dislodgement**

- Stop the blood pump.
- Direct the patient to apply pressure to the needle dislodgement site with gauge.
- Use the PPE as per Standard precautions.
- Dispose of the needle in the sharps bin.
- Assess the blood loss.
- Check the patient’s vital signs.
- Put the dialysis blood lines into recirculation.
- Ask for assistance if required.
- Resite a needle into same spot if possible, if not hold needle site until bleeding has stopped and insert a needle into a new site.
- Send a stat CBC to the lab and type & screen depending on blood loss. Inform the patient’s medical team.
- Re-Educate patient on the dangers of needle dislodgment and not moving their arm during dialysis.
- Dispose of soiled linen in alginate bags and place in appropriate linen bag.
- Complete a risk management form. Include the machine number & station number.
- Complete documentation of the incident in the nursing notes & the blood spillage book.
- Use precept to clean any blood spills, as per infection control guidelines.

**7.6.3: Poor flows**

- Defined as arterial pressure <250mmhg.
Poor flows may be as a result of blood volume depletion, outrule hypotension. Check the patient’s vital signs.

May be due to location or position of needle(s). May need to change direction of arterial needle.

Stop blood pump, manipulate arterial needle.

Establish cause of poor blood flow.

Assess, auscultate and palpate AVF.

Determine a new site which will give good blood flows, insert an AV F needle.

If unable to establish a new site, contact the medical team & obtain a U&E.

Liase with the medical team in organising the patient for a doppler ultrasound and temporary access if required.

7.6.4: Blood leak around the needle.

May be caused by Flipping of the needles post insertion, this should be avoided.

Note the amount of blood loss, place gauge around the needle to absorb the soakage.

Select new needle sites on the next dialysis.

7.7: POST CANNULATION COMPLICATIONS

7.7.1: CVC removal instructions

CVC can be removed 6-8 weeks post successful needling of AVF.

Liase with the medical team in organising an appointment in the renal day care unit for removal of the CVC.

Should removal of the CVC coincide with the patient’s dialysis day, ensure the patient has a heparin free dialysis. Take pre procedure bloods, CBC, U&E, INR, Type & Screen.

Liase with the patient’s transport

7.7.2: Monitoring for stenosis

Stenoses should be treated if the diameter is reduced by >50% and is accompanied with a reduction in access flow or in measured dialysis dose. (EBPG, 2007)

Signs of stenosis

Clotting of the extracorporeal circuit 2 or more times/month

Persistently swollen access extremity

Changes in bruit or thrill (ie, becomes pulse-like)

Difficult needle placement

Elevated venous pressures

Decreased blood pump speeds
Changes in Kt/V and URR
- Recirculation
- Prolonged post dialysis bleeding
- Frequent episodes of access thrombosis

**Causes of Stenosis**
- Turbulence
- Pseudoaneurysm formation
- Needle stick injury to vessel wall

**Perform a physical exam for AVF stenosis**

- Squeeze the exercise ball with your arm hanging down by your side and observe vein filling.
- Raise arm overhead and observe vein for collapse.
- The entire AVF should collapse if no stenosis; if entire vein is not flat, indicative of stenosis.
- If a segment of the AVF has not collapsed, stenosis is located at junction between collapsed and noncollapsed segment

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<th>Parameter</th>
<th>Normal</th>
<th>Stenosis</th>
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<td>Thrill</td>
<td>Only at the arterial anastamosis</td>
<td>At site of stenotic lesion</td>
</tr>
<tr>
<td>Pulse</td>
<td>Soft, easily compressible</td>
<td>Water-hammer</td>
</tr>
<tr>
<td>Bruit</td>
<td>Low pitch, Continuous</td>
<td>High pitch, Discontinuous</td>
</tr>
<tr>
<td></td>
<td>Diastolic &amp; systolic</td>
<td>Systolic only</td>
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Diagnosis of stenosis

- Physical examination and/or flow measurement should be performed as soon as possible.
- Liase with the medical team in organising a duplex scan/fistulagram.
- If the complete arterial inflow and venous outflow vessels need to be visualised. MRA should be performed.

Management of stenosis

- Liase with team in arranging the patient for corrective treatment:
  - Percutaneous trans-luminal angioplasty is the first treatment option for venous outflow stenosis.
  - Radiological intervention.
  - Surgical revision.
  - Temporary access

7.7.3: Monitoring for Steal syndrome

What is steal syndrome?

- Decreased blood supply to the hand. Causes hypoxia (lack of oxygen) to the tissues of the hand resulting in severe pain. Neurologic damage to the hand can occur.
- In steal syndrome, the extremity will be cold, capillary refill will decrease, and the radial artery will not be palpable.

Perform the Allen test

Compressing both the radial and ulnar arteries simultaneously while having the patient open and close the hand, allowing the blood to drain via the venous system, causing the hand to blanch.

Have the patient open the hand, palm up, and release one of the
arteries, evaluating how fast refill occurs to the hand.

- Repeat the procedure again, this time releasing the other artery while timing the refill.
- Refilling of less than 3 seconds is considered a negative test and indicates there is adequate blood flow in the palmer

### Diagnosis of Steal Syndrome

- Clinical investigation – Allen test.
- Non invasive imaging tests: measurement of digital pressures, access flow measurements, Ultrasonography of forearm arteries.
- Angiography

### Management of Steal Syndrome

- Early referral to the medical team.
- Enhancement of arterial inflow, access flow reduction and/or distal revascularization procedures are the therapeutic options.
- Liase with the team in conducting surgical revision of access.
- When all above methods fail, access ligation should be considered.
- Liase with the team in effective patient pain control.
- Encourage patient to wear a glove on affected extremity.

#### 7.7.4: Monitoring for infection

- Staphylococcus aureus the most common pathogen.
- Hand washing before, after, and between patients is critical.

### Pre & post dialysis assessments should include:

Checking for signs/symptoms of infection:

- Redness
- Pyrexia
- Swelling
Exudate
Tenderness / pain

Management of an infection
- Identify the cause of the infection
- Maintain a strict aseptic technique and avoid cannulating inflamed areas to reduce the entry of bacteria into the bloodstream.
- Take a swab for culture and sensitivity of any drainage noted.
- Notify the patient’s nephrology team.
- Take a CBC & monitor the white cell count and report any change.
- Re-educate the patient on the importance of hygiene and access care. Encourage the patient to report any signs & symptoms immediately.

The symptomatic patient
- Take blood cultures if patient is symptomatic of systemic infection.
- Administer antibiotics as prescribed intravenously for 2 weeks.
- Excision of the AVF is required if infected thrombi and/or septic emboli.
- Patients with infected AVG should be admitted and treated by appropriate antibiotics given intravenously for 2 weeks and continued orally for 4 weeks

The asymptomatic patient
- Observe the patient’s AVF on each dialysis session for improvements/deterioration.
- Infection of the AV fistulae without fever or bacteraemia should be treated by appropriate antibiotics for at least 2 weeks. (EPBG, 2007)

7.7.5: Thrombosis

Early cause:
- Surgical
- Technical issues

Late causes:
- Poor blood flow
- Hypotension
- Hypercoagulability
- Patient compressing while sleeping

**Signs and Symptoms:**
- Absence of pulse/thrill on palpation
- Absence of bruit on auscultation.

**Management of thrombosis**
- Inform the nephrology team immediately.
- Liase with the medical team in arranging the patient for corrective treatment:
  - Interventional thrombolysis
  - Surgical thrombectomy.
  - Surgical revision.
  - Prophylactic surveillance.

### 7.7.6: Aneurysms & Pseudoaneurysm

**What is an Aneurysm?**
- An aneurysm is a weak spot in the wall of the access. Aneurysms can occur if needles are inserted too often into the same area of a fistula.

**What is a pseudoaneurysm?**
- Pseudoaneurysm is a collection of blood in the tissue surrounding an access. Can occur if improper control of bleeding after the dialysis needles are removed or access damaged by repeated cannulations in the same area.

**Management of an Aneurysm & Pseudoaneurysm:**
- Avoid cannulating the patient near an aneurysm or pseudoaneurysm.
- Liase with the nephrology team in arranging a doppler ultrasound.
- Liase with the surgical team if surgical revision is deemed necessary.
8.0 Distribution

The Divisional Nurse Manager will circulate a copy of the policy to the relevant areas. The Clinical Nurse Manager in each area is responsible to ensure all staff access and read the policy. The policy will also be available on a designated computer in each of the renal clinical areas under *Renal Policy Folder June 2008* and on the nursing policy page of the intranet.

9.0 Filing

A copy will be filed in the policy and procedure book folder in each unit. The master copy will be filed in the Divisional Nurse Managers office along with a copy of the Jan 2006 Policy 4C.

10.0 Review

This policy will be reviewed in two years, Jan 2011.
11.0 Superseded/ Obsolete Documents

This is an updated version of GUIDELINES FOR THE MANAGEMENT OF ARTERIOVENOUS FISTULA & GRAFTS dated Jan 2006.

12.0 Recommended Reading


