University Hospitals Birmingham NHS
NHS Foundation Trust

Expanded Practice Protocol For The Performance and Reporting Of Ultrasound Scanning Of Arm Vasculature Of Pre-Dialysis and Dialysis Patients By Registered Practitioners and referral for further radiological investigation +/- treatment (as defined by IR(ME)R 2000(06))

CONTROLLED DOCUMENT

CATEGORY:	**Procedural Document**
CLASSIFICATION:	**Clinical**
PURPOSE	**This expanded practice protocol supports registered practitioners to undertake and report on ultrasound scanning of vessels and arterio-venous fistulae (AVF). Where necessary, it also supports referral for further radiological investigation +/- treatment.**
Controlled Document Number:	**784 (Formerly CP 179)**
Version Number:	**2**
Controlled Document Sponsor:	**Executive Chief Nurse**
Controlled Document Lead:	**Lead Haemodialysis Access Nurse Specialist Specialist Radiographer**
Approved By:	**Executive Chief Nurse Executive Medical Director Associate Director for AHPs Associate Director of Nursing, Div. B Group Manager Imaging Clinical Service Lead, Interventional Radiology Clinical Service Lead, Nephrology Clinical Service Lead, Renal Surgery Matron, Established Renal Failure Trust IRMER Lead**
On:	**December 2014**
Review Date:	**November 2017**
Distribution: • **Essential Reading for:** • **Information for:**	**All registered practitioners who currently undertake this expanded practice and all registered practitioners who wish to expand their practice to include these skills. Specialist radiographers and associated clinical staff and all registered renal clinical staff.**

EVIDENCE FOR PRACTICE

For the purpose of this expanded practice protocol, the term registered practitioner applies to both specialist radiographers and haemodialysis access nurse specialists. The term "registered practitioner" will be used, where practice is applicable to both specialist radiographers and haemodialysis access nurse specialists; however, where practice is different the individual job title will be used.' When the term 'further radiological investigation +/- treatment' is used within this expanded practice protocol, it refers only to fistulogram +/-fistuloplasty, venogram +/- venoplasty, central venogram, linogram or graftogram.

In established renal failure patients undergoing haemodialysis, dysfunction of vascular access is the primary cause of morbidity. Maintaining this vascular access is a priority for dialysis units. Arterio-Venous Fistulae (AVF) are the most reliable method of vascular access; however complications remain frequent (Shetty and Whittier, 2012). Arterio-venous grafts (AVGs) are an alternative option when a patient's own vessels are not appropriate for fistula formation.

Duplex ultrasound can be used to detect an asymptomatic venous stenosis and identify problems relating to inadequate dialysis (Kerr et al, 2010). Ultrasound diagnosis of a venous stenosis has a high sensitivity and is a valuable alternative to fistulography for appropriate patient groups (Pichot, 2011).

In pre-dialysis patients, assessment of arteries and veins using an ultrasound scanner is used to identify suitable vessels for AVF formation. Early referral for assessment, investigation and timely surgery will enable the patient to commence haemodialysis with a native and functioning AVF (National Service Framework, 2004). An accurate assessment of the vasculature will enable the surgeon to anastomose renal vascular access with fewer complications (which would require further surgery), and promote greater longevity of the AVF.

Ultrasound is noninvasive, inexpensive and widely available, it is therefore, the ideal choice for the first examination. Ultrasound surveillance of AVF and AVG could negate the risk of patients developing contrast induced nephropathy, and an accelerated decline in renal function.

Following the ultrasound scanning, the findings are reported by the registered practitioner, who has undertaken the scan: the haemodialysis access nurse specialist provides an 'initial report' or the specialist radiographer provides a 'clinical report' (as defined by the Society of Radiographers, 2012). Depending on the results of the scan, the patient will be referred on for a further radiological investigation +/- treatment. Pre-dialysis patients without a fistula may be referred by the haemodialysis access nurse specialist for fistula formation, in accordance with expanded practice protocol for referral of patients for formation of simple arteriovenous fistula, formation of 2 stage fistula or ligation of fistula by Haemodialysis Access Nurse Specialists CD 868 (current version).

Pre-dialysis patients and patients undergoing haemodialysis require continual risk

assessment with regards to their planned treatment. Registered practitioners who have been assessed as competent to undertake this expanded practice will be able to assess patients in a timely manner, referring when necessary to medical staff.

A review of the expanded practice protocol has been undertaken to ensure the practice covered by this document remains up to date. As part of this review, an audit was performed by the haemodialysis access nurse specialist (Tullett, 2014). The expanded practice protocol has been broadened to include referrals for graftograms and amendments have been made to the indications. Currently, there are no specialist radiographers working against this protocol, so it has not been possible to audit their expanded practice. However, it is probable that Specialist Radiographers will undertake this expanded practice again in the future.

CONSENT

Although formal written consent is not required for minor procedures, verbal consent for the ultrasound scan and (if required) referral for further radiological investigation +/- treatment must be obtained where possible, and this must be documented in the patient's records. For further information regarding consent and mental capacity please refer to the following documents:

- Department of Health Reference Guide to Consent for Examination or Treatment (2009).
- The Trust's Policy and Procedural document for consent to examination or treatment (current version).
- *Mental Capacity Act (2005).*

INDICATIONS

In order for the specialist radiographer or haemodialysis vascular access nurse specialist to undertake ultrasound scanning or referral for further radiological investigation +/- treatment, the profession specific criteria set out in Appendix 1 must be met.

Haemodialysis vascular access nurse specialists must manage patients according to the flowchart in Appendix 2.

CONTRAINDICATIONS

The registered practitioner must not perform the ultrasound scanning procedure and/or refer on for further radiological investigation +/- treatment and the patient must be referred to the medical team when:

1. The patient has capacity but does not give consent for ultrasound scanning and/or referral further radiological investigation +/- treatment to take place. In this instance the medical team/ radiologist in charge of the patient's care must be informed.

2. The patient is under 16 years of age.

In addition, the specialist radiographer must not undertake ultrasound scanning of blood vessels prior to formation of AVF.

LIMITATIONS TO PRACTICE

1. Patients' conditions can deteriorate suddenly and ongoing assessments of their condition and associated risk must be made. If the registered practitioner is concerned about a patient's condition they must immediately refer the patient to the appropriate medical practitioner for advice on any further action to be taken, and this must be recorded.

2. Patients who have had a transplant, are pre dialysis, or have had a previous reaction to contrast but who require radiological imaging / intervention, must be discussed with the patient's consultant prior to a referral for further radiological investigation +/- treatment being made (Appendix 2).

3. If there is documented evidence that the patient has previously been assessed as not suitable for surgery or interventional radiology, the patient must have been referred by or discussed with the appropriate medical practitioner, prior to ultrasound scanning and/or referral for further radiological investigation +/- treatment.

The appropriate Health and Safety risk assessments must have been completed for the clinical area

CRITERIA FOR COMPETENCE

1. Registered practitioners must have undertaken education and training recognised by the group manager for imaging and either the matron for established renal failure *or* the lead radiographer.

2. Evidence of satisfactory supervised practice must be provided by the registered practitioner as witnessed by a consultant interventional radiologist. (Appendix 3)

3. The number of supervised practices required will reflect the individual registered practitioner's learning needs as determined by the consultant interventional radiologist.

4. Evidence of competence must be provided and a copy kept in the registered practitioner's personal file and in the department where the skill is practised (Appendix 4). Following each review and update of the protocol the registered practitioner has a responsibility to ensure that their evidence of competence is against the current version of the protocol. A copy of completed Appendices 1 and 4 must be given to the group manager for imaging.

5. The registered practitioner must be familiar with the Trust Ionising Radiation (Medical Exposure) Regulations (IRMER) Procedures (2013).

6. The specialist radiographer must attend a minimum of twenty Vascular Access Multidisciplinary meetings a year. In addition, they must maintain their continual professional development (CPD).

7. The specialist radiographer must keep a record of examinations undertaken for audit purposes.

8. In order to refer for further radiological investigation +/- treatment, the haemodialysis vascular access nurse must attend in-service IRMER education lecture organised by the Imaging Department.

9. The haemodialysis vascular access nurse must provide ten scanning reports annually for review by an identified consultant interventional radiologist.

10. Registered practitioners new to the Trust, who have been performing the skill elsewhere, must read, understand and be signed off against this protocol. Evidence of appropriate education and competence must be provided and checked by group manager for imaging, the consultant interventional radiologist and either the lead radiographer or the matron for established renal failure, and competence assessed before undertaking this expanded practice at the Trust. The decision whether the registered practitioner needs to complete any further Trust training will be at the discretion of the registered practitioner's assessor. All haemodialysis access nurse specialists new to the Trust must attend the in-service IRMER lecture.

11. In accordance with codes of professional practice, the registered practitioner has a responsibility to recognise, and to work within, the limits of their competence. In addition, the registered practitioner has a responsibility to practise within the boundaries of the current evidence based practice and in line with up to date Trust and national policies and procedural documents. Evidence of continuing professional development and maintenance of skill level will be required and confirmed at the registered practitioner's annual appraisal by the registered practitioner's line manager.

A list of registered practitioners competent to perform this expanded practice must be kept by the relevant line manager. A list of all registered practitioners competent to refer for further radiological investigation +/- treatment must also be kept by the Trust IRMER lead.

PROTOCOL AND SKILLS AUDIT

Identified registered practitioners within imaging and the renal vascular access team will perform an audit of this protocol with support from the Practice Development Team. The protocol will be audited in accordance with the review date and will include:

- The number of staff assessed as competent against this expanded practice protocol.
- Adherence of staff to the protocol.
- Any untoward incidents or complaints.
- Review of patient experience feedback.

In addition, audit of each examination performed by the specialist radiographer will take place. The patient details, procedural details, and where applicable, reports for each patient will be audited (Appendix 4).

The audits must be logged with the Risk and Compliance Unit.

CLINICAL INCIDENT REPORTING AND MANAGEMENT

Any untoward incidents and near misses must be dealt with by the appropriate management team. An incident form must be completed and in addition the Risk and Compliance Unit must be notified by telephone of any Serious Incidents Requiring Investigation (SIRI). Any incidents involving ionising radiation must be managed to ensure compliance with Trust Imaging Procedure (No. 11).

REFERENCES

Department of Health (2009) **Reference Guide to Consent for Examination or Treatment** 2nd edn. HMSO London

Kelly, S. (2012) **Reporting** [online] The Society and College of Radiographers, London. Availablefrom http://www.sor.org/practice/reporting [accessed 02.05.14].

Kerr, S. F., Krishan, S., Lapham, R. C. and Weston, M. J. (2010) Duplex sonography in the planning and evaluation of arteriovenous fistulae for haemodialysis. **Clinical Radiology**, 65 (9), pp.744-749

Mental Capacity Act 2005, http://www.legislation.gov.uk/ukpga/2005/9/contents Accessed [02/05/2014]

Pichot, O. (2011) **Ultrasound monitoring of arteriovenous fistula for dialysis** [Online] Grenoble, France: Veinews. Available from: http://www.veinews.com/2011/01/11/ultrasound-monitoring-of-arteriovenous-fistula-for-dialysis/ Accessed [02/05/2014]

Shetty, A. and Whittier, W. L. (2012) Does regular surveillance improve the long-term survival of arteriovenous fistulas? **International Journal Of Nephrology,** 2012, pp.539608-539608

Tullett, K. and Wadwell, B. (2014) **Audit of Controlled Document 784: Expanded Practice Protocol For The Performance and Reporting Of Ultrasound Scanning Of Arm Vasculature Of Pre-Dialysis and Dialysis Patients By Registered Practitioners and referral for fistulogram +/- fistuloplasty, venogram +/- venoplasty or central venogram (as defined by IR(ME)R 2000(06)) Ref: CARMS-00171.** University Hospitals Birmingham NHS Foundation Trust (unpublished).

University Hospitals Birmingham NHS Foundation Trust (current version) **Policy for**

consent to examination or treatment, University Hospitals Birmingham NHS Foundation Trust

University Hospitals Birmingham NHS Foundation Trust (current version) **Procedure for consent to examination or treatment**. University Hospitals Birmingham NHS Foundation Trust

University Hospitals Birmingham NHS Foundation Trust Risk Assessment Documentation http://uhbhome/Resources/RiskAssessmentDocs/Home.aspx [accessed 02.05.14]

University Hospitals Birmingham NHS Foundation Trust (current version) **Imaging Procedure No.11 The procedure to ensure that the probability and magnitude of accidental and unintended doses to the patient are reduced as far as is reasonable practicable**. University Hospitals Birmingham NHS Foundation Trust, Birmingham. http://uhbpolicies/assets/IrmerProcedure11.pdf [accessed 02.05.14]

University Hospitals Birmingham NHS Foundation Trust (current versions) **Ionising Radiation (Medical Exposure) Regulations (IRMER) Procedures**. University Hospitals Birmingham NHS Foundation Trust, Birmingham. http://uhbpolicies/irmer-procedures.htm [accessed 18.07.14]

University Hospitals Birmingham NHS Foundation Trust (current version) **Expanded Practice Protocol for referral of patients for formation of simple arteriovenous fistula, formation of 2 stage fistula or ligation of fistula by Haemodialysis Access Nurse Specialists**. University Hospitals Birmingham NHS Foundation Trust

PROTOCOL SUBMISSION DETAILS

Protocol reviewed by:

Karen Tullett	Haemodialysis Vascular Access Nurse Specialist
Robert Jones	Consultant Interventional Radiologist
Belinda Wadwell	Practice Development Nurse
Tina Jones	Trust IRMER Lead
Nicholas Inston	Consultant, Renal Surgery

Protocol submitted to and approved by:

Executive Chief Nurse .....

Date: 12/12/2014

Executive Medical Director .....

Date: 18/12/14

Associate Director for Allied Health Professionals .....

Date: 12/12/2014

Associate Director of Nursing, Division B .....

Date: 6/12/14

Group Manager Imaging .....

Date: 3/10/14

Clinical Service Lead (Interventional Radiology) .....

Date: 23/10/14.

Trust IRMER Lead .....

Date: 02.10.14

Clinical Service Lead (Renal Surgery) .....

Date: 20/10/14

Clinical Service Lead (Nephrology) .....

Date: 24th Nov 2014.

Matron, Established Renal Failure .....

Date: 10/12/2014

CRITERIA FOR SPECIALIST RADIOGRAPHER PERFORMING AND REPORTING ULTRASOUND SCANNING	
Request	**Criteria for Scanning**
Ultrasound Scanning	Patient must either be referred by renal services or scan arranged by radiology department as a follow up examination. Patient must be an inpatient, day case or attending outpatients for assessment and/or treatment of a failing/non-functioning fistula.

A Specialist Radiographer may undertake the above examinations.

Specialist Radiographer ……..

Clinical Service Lead …….

Date: …….

CRITERIA FOR RENAL VASCULAR ACCESS NURSE SPECIALIST PERFORMING AND REPORTING ULTRASOUND SCANNING	
Request	**Criteria for Scanning**
Ultrasound Scanning	Patient must have been referred to the Renal Vascular Access Team's Clinic. Scanning required for one of the following: • Pre fistula or vascular access formation assessment • Post fistula or vascular access formation follow up • Assessment of possible Steal Syndrome • Assessment of failed fistula • Assessment due to needling issues, when dialysis clearance satisfactory.

A Renal Vascular Access Nurse Specialist may undertake the above examinations.

Renal Vascular Access Nurse Specialist ……..

Clinical Service Lead …….

Date: …….

CRITERIA FOR REFERRAL BY SPECIALIST RADIOGRAPHER FOR FISTULOGRAM +/- FISTULOPLASTY, VENOGRAM +/- VENOPLASTY, CENTRAL VENOGRAM.	
Request	**Referral Criteria**
Fistulogram	Specialist Radiographer has undertaken ultrasound scanning. Patient has: • Reduced flow readings at fistula on ultrasound scanning No previous reaction to contrast No indication for possible fistuloplasty
Fistulogram+/- fistuloplasty	Specialist Radiographer has undertaken ultrasound scanning. Patient has: • Reduced flow readings on ultrasound scanning No previous reaction to contrast Fistuloplasty potentially required Management plan has been confirmed with medical staff
Venogram	Specialist Radiographer has undertaken ultrasound scanning. Patient has: • Reduced flow readings at fistula on ultrasound scanning No previous reaction to contrast No indication for possible venoplasty
Venogram +/- venoplasty	Specialist Radiographer has undertaken ultrasound scanning. Patient has: • Reduced flow readings on ultrasound scanning No previous reaction to contrast Venoplasty potentially required Management plan has been confirmed with medical staff
Central venogram	Specialist Radiographer has undertaken ultrasound scanning. Patient has: • Reduced flow readings at fistula on ultrasound scanning No previous reaction to contrast Had a line in the past

A Specialist Radiographer may request the above examinations.

Specialist Radiographer ……..

Clinical Service Lead …….

Date: …….

CRITERIA FOR REFERRAL BY RENAL VASCULAR ACCESS NURSE SPECIALIST FOR FISTULOGRAM +/- FISTULOPLASTY, VENOGRAM +/- VENOPLASTY, CENTRAL VENOGRAM, GRAFTOGRAM.	
Request	**Referral Criteria**
Fistulogram	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings at fistula on ultrasound scanning, undertaken by Renal Vascular Access Nurse Specialist • Swollen arm • Visible narrowing of fistula • Poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast No indication for possible fistuloplasty
Fistulogram+/- fistuloplasty	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings on ultrasound scanning by Renal Vascular Access Nurse Specialist • Patient has swollen arm • Visible narrowing of fistula • Patient has poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast Fistuloplasty potentially required Management plan has been confirmed with medical staff
Venogram	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings at fistula on ultrasound scanning by Renal Vascular Access Nurse Specialist • Swollen arm • Visible narrowing of fistula • Poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast No indication for possible venoplasty
Venogram +/- venoplasty	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings on ultrasound scanning by Renal Vascular Access Nurse Specialist

	• Patient has swollen arm, visible narrowing • Patient has poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast Venoplasty potentially required Management plan has been confirmed with medical staff
Central venogram	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings at fistula on ultrasound scanning by Renal Vascular Access Nurse Specialist • Swollen arm • Visible narrowing of fistula • Poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast Had a line in the past
Graftogram	Patient has been referred to the Renal Vascular Access Team's Clinic Patient has one of the following: • Reduced flow readings at graft on ultrasound scanning by Renal Vascular Access Nurse Specialist • Swollen arm • Swelling on graft • Visible narrowing in graft • Poor dialysis clearance but clinical observations are satisfactory No previous reaction to contrast

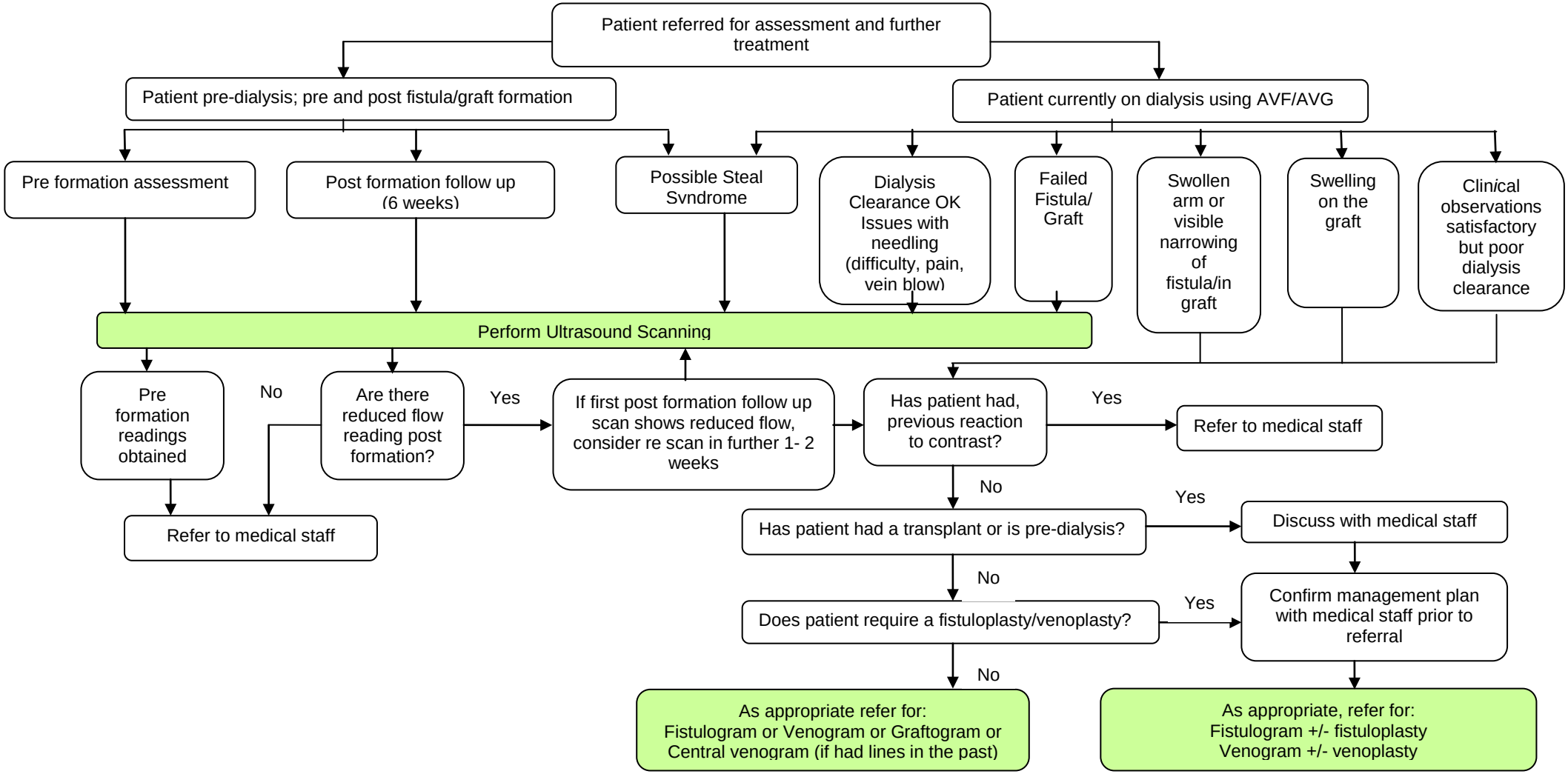
A Renal Vascular Access Nurse Specialist may request the above examinations.

Renal Vascular Access Nurse Specialist ……..

Clinical Service Lead …….

Date: …….

Flow Chart for Management of Patients seen by Haemodialysis Vascular Access Nurses



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EVIDENCE OF SUPERVISED PRACTICE

To become a competent practitioner, it is the responsibility of each registered practitioner to undertake supervised practice in order to perform ultrasound scanning of arm vasculature and referral for further radiological investigation +/- treatment in a safe and skilled manner.

Name of Registered Practitioner:……

DATE	DETAILS OF PROCEDURE	SATISFACTORY STANDARD MET	COMMENTS	PRINT NAME, SIGNATURE & DESIGNATION
		Yes / No		
		Yes / No		
		Yes / No		
		Yes / No		
		Yes / No		
		Yes / No		

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CRITERIA FOR COMPETENCE

END COMPETENCE: Expanded Practice Protocol for the Performance and Reporting of Ultrasound Scanning of Arm Vasculature of Pre-Dialysis and Dialysis Patients by Registered Practitioners, including reporting and referral for further radiological investigation +/- treatment

Date(s) of Education and supervised practice: ……

Name of Registered Practitioner (print): …… Clinical Area / Department: ……..

Registration Number*: …… Name of Supervisor (print): ……

Element of Competence To Be Achieved	Date Achieved	Registered Practitioner Sign	Supervisor Sign
Discuss and identify • indications, • contraindications • limitations for ultrasound scanning of: • arm vasculature prior to AVF/AVG formation (if applicable) • formed AVF/AVG and referral for: • fistulogram +/- fistuloplasty • venogram +/- venoplasty • central venogram • graftogram			
Discuss why ongoing assessment of the patient is required.			

Element of Competence To Be Achieved	Date Achieved	Registered Practitioner Sign	Supervisor Sign
Demonstrate maintenance of the patient's privacy and dignity throughout the procedure and referral process.			
Demonstrate a working knowledge of the Trust's policy for consent to examination or treatment.			
Demonstrate a working knowledge of the anatomy and physiology of the vasculature of the upper limb			
Provide information to the patient prior to, during and following the procedure and during the referral process in a way the patient understands.			
Demonstrate involvement of the patient and their families/carers, in decision making about their care and treatment.			
Demonstrate ability to carry out ultrasound scan of arm vasculature prior to AVF/AVG formation (if applicable) and formed AVF/AVG.			
Report competently on diagnostic fistula/graft ultrasound scans or pre fistula/graft formation ultrasound scans (if applicable)			
Identify if lesions that are suitable for venoplasty and / or fistuloplasty.			
Demonstrate an understanding of the investigations/procedures, for which the patient may be referred, criteria for referral and any contraindications			
Demonstrate the ability to assess the findings of the ultrasound scanning to refer appropriately for further investigation if necessary.			
Demonstrate accurate completion of request for further radiological investigation +/- treatment.			

Element of Competence To Be Achieved	Date Achieved	Registered Practitioner Sign	Supervisor Sign
Provide evidence of an annual update in the scanning procedure of vessels for renal access surgery by using an ultrasound scanner.			
Demonstrate an understanding of the operation of the ultrasound scanning machine and the underpinning rationale for its use.			
Demonstrate knowledge of how to troubleshoot any issues with the ultrasound scanning machine and who to report to if the machine is faulty			
Demonstrate correct cleaning and storage of the ultrasound scanning machine			
Discuss issues surrounding informed verbal patient consent and demonstrate a current working knowledge of the: • Trust policy and procedural document for consent to examination or treatment. • *The Mental Capacity Act* (2005).			
Demonstrate understanding of the Trust **Ionising Radiation (Medical Exposure) Regulations (IRMER) Procedures** (2013)			
Demonstrate accurate record keeping.			
Demonstrate an understanding of the incident reporting process.			
Demonstrate a working knowledge of the relevant professional accountability.			
Discuss any health and safety issues in relation to this expanded practice.			

Element of Competence To Be Achieved	Date Achieved	Registered Practitioner Sign	Supervisor Sign
Demonstrate safe infection control practices throughout the procedure. To include: • Standard precautions • Aseptic non touch technique (where applicable) • Isolation procedures (where applicable)			

I declare that I have expanded my knowledge and skills and undertake to practice with accountability for my decisions and actions. I have read and understood the protocol for **the Performance and Reporting of Ultrasound Scanning of Arm Vasculature of Pre-Dialysis and Dialysis Patients by Registered Practitioners and referral for further radiological investigation +/- treatment.**

Signature of Registered Practitioner: ……Print name:……..

Date: ……Designation:…….

I declare that I have supervised this **Registered Practitioner** and found him to be competent as judged by the above criteria.

Signature of Supervisor: …….. Print name:……..

Date: …….. Designation:…….

A copy of this record should be placed in the Registered Practitioner's personal file, a copy must be stored in the clinical area by the line manager, and a copy can be retained by the individual for their Professional Portfolio. In addition, a copy must be taken to the IR(ME)R lead, Imaging Department.

REQUIREMENTS FOR SECIALIST RADIOGRAPHER LED FISTULA ULTRASOUND

Suitable patients

Suitable patients are those attending as in-patients or day cases for assessment and/or treatment of disfunctioning fistulae or for pre-operative work up.

Audit (Part 1: Performance)
Audit of the first 30 cases must be assessed and presented at the imaging monthly clinical governance meeting. The following parameters must be audited:

Outcomes 3/12

Image quality

Audit (Part 2: Reporting)
Audit of the first 30 cases must be assessed and presented at the imaging monthly clinical governance meeting. The following parameters must be audited:

Diagnostic accuracy

This will allow formal assessment of the radiographer.

Medicolegal aspects:
Medico-legal responsibility for complications arising from the procedure rests with the Trust, providing the Radiographer has complied with the procedure protocol.

Others:
A radiologist must give full support at all times and be available in the department to answer queries and help with procedural problems.