

Document Control

Title EXETER VIRTUAL KNEE CLINIC – PROTOCOL FOR NORTH DEVON RADIOLOGY DEPTS Standard Operating Procedure			
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Policy categories for Trust's internal website (Bob)

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1. Background

- 1.1. Due to the increase in the number of total knee replacements being performed, coupled with a diverse catchment area for the Royal Devon & Exeter Hospital orthopaedic department, it became necessary to investigate alternative means of reviewing patients. The aims of this were to reduce pressure on the RD&E's orthopaedic outpatient / X-ray department and car parking capacity, and also to provide timely patient review (with x-rays) at the recommended intervals, closer to the patient's home address.
- 1.2. The Virtual Knee Clinic has been running for patients in the Exeter and East Devon locality (from Okehampton to Axminster), with high levels of success and patient satisfaction, for over two years.
- 1.3. However there are a number of patients who have travelled in for surgery at the RD&E from outside its traditional catchment area, some of whom reside in the North Devon locality. Until recently we were only able to offer North Devon locality patients a review at Tiverton or Okehampton X-ray departments, which still represents a significant travel distance for some patients. It is therefore very helpful to utilise the facilities in north Devon for this small number of patients.

2. Purpose

- 2.1. The Standard Operating Procedure (SOP) has been written to:
 - Identify the procedure for the routine radiographic review of Total Hip Replacements (for the Virtual Hip Clinic) and Knee Implants (for the Virtual Knee Clinic) by Surgical Care Practitioners based at the Royal Devon and Exeter Hospital (RD&E)

3. Scope

3.1. This Standard Operating Procedure (SOP) relates to the following staff groups who may be involved in the assessment and delivery of imaging:

- Registered radiographers
- (Trainee) Assistant Practitioners
- Support workers

4. Location

4.1. This Standard Operating Procedure can be implemented in X-ray Departments in Barnstaple and Bideford where competent staff are available to perform the required imaging procedures, but NOT Ilfracombe due to the limitations of current X-ray equipment.

4.2. Staff undertaking this procedure must be able to demonstrate continued competence as per the organisations policy on assessing and maintaining competence.

5. Equipment

- Surgical Practitioner signed Imaging Request forms (Exeter request forms)
- X-ray imaging equipment
- Heel support pads

6. Procedure

Patient reported outcome measures (questionnaire forms):

6.1. Patients will receive copies of these in the post prior to their appointment. They will be directed to complete them and bring them into the department to hand in to reception on arrival. We would be grateful if you would return completed forms via the internal mail system to Laurence Sinclair, PEN017, PEOC, RD&E Wonford, Barrack Road, Exeter EX2 5DW. 20 spare copies of the questionnaire will be supplied to each X-ray department in case a patient forgets to bring their own copy in.

X-ray:

6.2. X-rays are used in the usual fashion to monitor implant position, detect radiolucency or fracture. In Virtual Knee Clinic they are also used to measure range of motion. The process for this is straightforward, with a routine weight-bearing AP of the affected knee, followed by two unloaded lateral views – one in full active knee extension, and one in full active knee flexion. A step-by-step work flow is included in Appendix 1. From this the clinician will use the Cobb angle feature of PACS to measure knee extension and flexion, and therefore arrive at a range of motion. This process has been validated and published.

7. References

- Reference: Phillips A et al. (2012) Reliability of Radiographic Measurements of Knee Range of Motion Following Knee Arthroplasty: Use in a Virtual Knee Clinic Setting Annals of the Royal College of Surgeons of England 2012 94 p 1-7

8. Associated Documentation

8.1. Northern Devon Healthcare NHS Trust Policies for :

- [NDHT Radiation Policy](#)
- NDHT Radiology Patient Identification Policy

Appendix 1 – Exeter Virtual Knee Clinic (VKC) Workflow

Exeter VKC X-ray request received by the patient's nearest X-ray department – request will be marked "AS PER VIRTUAL KNEE CLINIC PROTOCOL PLEASE"

X-ray dept. to book appointment for patient to attend and send appointment letter / phone call

Patient attends for X-ray appointment

Patient to hand in knee questionnaire

X-ray performed as per following guidelines:

- Weight-bearing antero-posterior view of the specified knee, with views including the tips of stemmed components where indicated;
- Unloaded **true lateral horizontal beam** view of the specified knee with the patient positioned in the supine or semi-supine position and the knee **extended** as far as the patient can manage actively (without any external influence). The heel should be supported by a bolster. Enough tibia /fibula and femur should be visible to allow accurate positioning of a Cobb angle marker of approx. 5cm to be placed along the cortex of the posterior femur and the anterior tibia (see image below).
- Unloaded **true lateral horizontal beam** view of the specified knee with the patient positioned in the supine or semi-supine position and the knee **flexed** as far as the patient can manage actively (without any external influence). Enough tibia, fibula and femur should be visible to allow accurate positioning of a Cobb angle marker of approx. 5cm to be placed along the cortex of the posterior femur and the anterior fibula (see image below).

Patient will then complete and hand in their "What Went Well...Even Better If?" satisfaction survey.

Knee questionnaire and satisfaction survey to be posted to Laurence Sinclair, PEN017, PEOC, RD&E Hospital (Wonford), Barrack Road, Exeter EX2 5DW via internal mail. (Feel free to keep a copy of the satisfaction survey responses if it helps with personal development reviews or service evaluation locally).

Radiology positioning protocols




Example of extension view (with Cobb angle markers)
(This example may not be quite as true lateral as we'd prefer!)



Example of flexion view (with markers)

Appendix 2 – Radiographic Examination Protocol

Northern Devon Healthcare NHS NHS Trust		Radiology Department			
RADIOGRAPHIC EXAMINATION PROTOCOL					
VIRTUAL HIP CLINIC					
Common Clinical Indication	<ul style="list-style-type: none"> All requests will be written by RD&E Surgical Care Practitioner Sabrina Sokolowski on RD&E request forms 'Due to routine review of THR (or bilateral THR)' 				
Invalid Reasons	<ul style="list-style-type: none"> Requests not written by the designated referrer Non recognised referral forms (i.e not on RD&E or NDHT forms) Request not for routine follow-up of Total Hip Replacement (THR) 				
Standard Projections		kVp	mAs		FFD(cm)
			Gridded	Non-gridded	
	AP PELVIS Turned lateral hip	70	20	-	115
		70	15	-	115
Additional Projections		kVp	mAs		FFD(cm)
			Gridded	Non-gridded	
	FEMUR (Long THR)	70	-	4	100
Comments	<ul style="list-style-type: none"> All requests will require a low-centred pelvis and a turned lateral of the specified hip (both hips if both hips are specified). Patients will bring a questionnaire to their appointment, radiographer or receptionist must ensure that the questionnaire is returned to the Virtual Hip Clinic in PEOC at the RD&E. 				
Protocol Written by Scott Burnett East and Mid Devon Community Radiographer / Viv Easton Clinical Practice Facilitator NDDH				
Protocol Verified by Dr Mark Meller Consultant Radiologist				
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