| **Title of document** | Department of Podiatry/MAC Service  
Diagnostic Imaging Protocol |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of document</strong></td>
<td>Protocol Prov 17</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>This policy applies to registered Podiatrists and members of the Musculo-Skeletal Assessment Clinic (MAC) service employed by Northampton PCT who are working outside their basic training and undertaking extended roles that require the use of Diagnostic Imaging (DI) modalities to support their clinical practice. The aim of this document is to provide guidance for the referrer on their responsibilities when requesting diagnostic and interventional procedures involving use of ionising radiation.</td>
</tr>
<tr>
<td><strong>Target audience</strong></td>
<td>Podiatry and MAC Teams</td>
</tr>
<tr>
<td><strong>Author</strong></td>
<td>Ian Reilly</td>
</tr>
<tr>
<td><strong>Department</strong></td>
<td>Podiatry</td>
</tr>
<tr>
<td><strong>Directorate</strong></td>
<td>Provider Services</td>
</tr>
<tr>
<td><strong>Approved by</strong></td>
<td>Clinical and Effectiveness Group</td>
</tr>
<tr>
<td><strong>Date of approval</strong></td>
<td>18 November 2008</td>
</tr>
<tr>
<td><strong>Version Number</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Next review date</strong></td>
<td>2010</td>
</tr>
<tr>
<td><strong>Related documents</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **Superseded documents** | Department of Podiatry/MAC Service  
Diagnostic Imaging Protocol v 1.3 |
| **Internal distribution** |                                                                                   |
| **External distribution** |                                                                                |
| **Availability**      | All ratified policies, strategies, procedures and protocols are published on the Trust Intranet and Public Website. |
| **Contact details (of main contact for this document)** | Name: Ian Reilly  
Address: Dept. of Podiatry, Battle House  
Tel: 01604 545422  
E-mail: ian.reilly@northants.nhs.uk |
Contents

1. Introduction and Background ................................................................. 4
2. Expanding the Scope of Professional Practice ........................................ 4
3. General Principles ................................................................................. 5
4. Scope of the Protocol ........................................................................... 5
5. Referrals and Reporting ........................................................................ 7
6. Accountability ....................................................................................... 7
7. Code of Conduct .................................................................................. 8
8. Training .................................................................................................. 8
9. Supporting Documentation ...................................................................... 9
10. Audit ..................................................................................................... 9
11. Protocol Management .......................................................................... 9

References ............................................................................................... 10

Bibliography ............................................................................................. 11

APPENDIX 1: AUTHORISATION .................................................................. 12

APPENDIX 2: FCPodS – DI SYLLABUS ......................................................... 13
  Diagnostic Imaging Part A ...................................................................... 13
  Diagnostic Imaging Part B ...................................................................... 13

APPENDIX 3: Interpretation of Plain X-Rays for Podiatric Surgery .......... 14
  1. Assessment of normal/abnormal skeletal ontogeny and deformity using plain X-rays ........................................................................ 14
  2. Identification of bone and joint pathology ........................................... 14
  3. Pre- and post-operative charting ......................................................... 14
  4. Trauma and suspected foreign bodies ............................................... 15
  5. Investigation for deep infection ......................................................... 15

APPENDIX 4: Podiatric Surgery X-Ray Report ........................................... 16

APPENDIX 5: Policy Impact Assessment – Screening Tool ......................... 17
1. Introduction and Background

The Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R)\(^1\) provide for the health protection of individuals undergoing medical exposures involving ionising radiation, including requirements regarding requests for X-ray examinations. A protocol for the Podiatric Surgery service was developed by Professor Tony Denman, Head of Medical Physics, and Ian Reilly, Podiatric Surgeon, in 2001.

Northampton PCT Policy no. 26\(^2\) (Validation and Ongoing Monitoring of Registration Policy and Procedure) set out the requirement for staff to ensure that they identify and receive appropriate training on a regular basis to continually develop the skills and competencies they require to carry out all tasks, interventions and procedures required of them in their role. Northampton General Hospital (NGH) produced a Scope document\(^3\) to identify the process by which non-medically qualified professionals can be supported in working outside their basic training and undertaking extended roles. As part of NGH policy and protocol development, Northampton PCT Podiatrists were required to update the 2001 IR(ME)R protocol used to order plain X-rays.

This protocol applies to HPC registered members of the Podiatric Surgery and Diabetes Specialist Podiatry team, and members (Podiatrists and Physiotherapists) of the Musculoskeletal Assessment Service (see Scope of the Protocol) employed by Northamptonshire tPCT who are working outside their basic training and undertaking extended roles that require the use of Diagnostic Imaging (DI) modalities to support their clinical practice. The content of this protocol is based on the NGH Scope document\(^3\) and the requirements of Protocol for Radiology Referrals from Non-Medically Qualified Staff\(^4\).

2. Expanding the Scope of Professional Practice

*Meeting the Challenge: a Strategy for Allied Health Professionals*\(^5\) recognised the key contribution that Allied Health Professionals make in improving the patient experience and delivering better outcomes in a wide range of specialities. The Ten Key Roles show that Allied Health Professionals are working in flexible ways, actively promote change and are carrying out new roles that lead to improved care for patients. The Ten Key Roles support Allied Health Professions in taking forward initiatives to overcome barriers to effective health and social care.

1. *To be a first point of contact for patient care, including single assessment*
2. *To diagnose, request and assess diagnostic tests, and prescribe, working with protocols where appropriate*
3. *To discharge and/or refer patients to other services, working with protocols where appropriate*
4. *To train and develop, teach and mentor, educate and inform Allied Health Professionals, other health and care professionals, students, patients and carers, including the provision of consultancy support to other roles and services in respect of patient independence and functioning*
5. To develop extended clinical and practitioner roles which cross professional and organisational boundaries
6. To manage and lead teams, projects, services and case loads, providing clinical leadership
7. To develop and apply the best available research evidence and evaluative thinking in all areas of practice
8. To play a central role in the promotion of health and well being
9. To take an active role in strategic planning and policy development for local organisations and services
10. To extend and improve collaboration with other professions and services, including shared working practices and tools

An extended role is determined as a procedure that is not part of the healthcare professional’s pre-registration basic training and competence.

3. General Principles

All diagnostic examination or interventional procedures involving the use of ionising radiation are to be justified. The basis of justification is that the procedure must have an impact on the clinical decision making process. Any examination that does not affect the clinical decision-making is not justifiable.

The general principles that apply are:
1. The individual that initiates the original investigation is responsible and accountable for tracking, validating, documenting, acting upon and informing the patient and/or General Practitioner or responsible hospital consultant of the results.
2. There must be a systematic Trustwide approach to the validation of results
3. All staff must be involved in developing explicit local clinical diagnostic testing policies for those elements of the process that they are involved in.
4. There must be staff training about the clinical diagnostic testing process so that each member of staff understands how his or her role contributes to the overall process.
5. Local working practices must not be allowed to diverge from local policies
6. All cases of non-conformance with the local policy should be recorded and brought to the attention of the line manager and a NtPCT incident form completed.

4. Scope of the Protocol

This Protocol is written to support the access to DI plain X-rays for 3 extended role teams:
1. The Podiatric Surgery team
2. Musculoskeletal Assessment Service
3. The Diabetes Specialist Podiatry team
An IR(ME)R protocol has been in place since 2001 (updated in 2005 [v 1.3] and ratified by the PEC) to support the Podiatric Surgery team in accessing DI services. DI training requirements in the Podiatric Surgery training syllabus are listed at Appendix 2. Interpretation for Podiatric Surgery is outlined at Appendix 3.

In 2003 the Musculoskeletal Assessment Service (formerly the NOAh service) developed a protocol for access to X-rays as part of their patient assessment process. The Musculoskeletal Assessment Service identifies patients needing further investigation and treatment and triages referral down an appropriate pathway. The MAC service request X-rays of the cervical spine and the upper and lower extremities in line with the Royal College of Radiology IR(ME)R guidelines. In 2005 their DI protocol was incorporated into Department of Podiatry/MAC Service: Diagnostic Imaging Protocol v 1.3.

This protocol also covers the Diabetes Specialist Podiatry teams who request X-rays. Previously, X-rays of the diabetic foot were ordered by the Consultant Physician leading the Acute Trust teams. This protocol will allow those senior and consultant Podiatrists in the Diabetes Specialist Podiatry teams to request their own X-Rays. There is no expectation that referrals from the DM team will increase from the existing workload.

The clinical use of X-rays for each team is as follows:

- **The Podiatric Surgery team:**
  a. To assess and diagnoses musculo-skeletal, degenerative and traumatic foot pathology (e.g. hallux abducto valgus)
  b. To further identify pathology that would benefit from surgical intervention
  c. To chart radiographs so that the appropriate surgical technique may be selected
  d. To monitor the post-operative progress of surgical patients
  e. To identify problems with internal fixation and bone healing
  f. To identify bone and soft tissue infection
  g. As part of a clinical management plan (CMP)

- **The Musculoskeletal Assessment Service:**
  a. To identify musculo-skeletal, degenerative and traumatic pathology (e.g. hallux abducto valgus)
  b. To identify problems with internal fixation
  c. To identify bone and soft tissue infection
  d. As part of a clinical management plan (CMP)

- **The Diabetes Specialist Podiatry team:**
  a. To identify musculo-skeletal, degenerative and traumatic foot pathology (e.g. Charcot neuroarthropathy)
  b. To identify bone and soft tissue infection
  c. To monitor response to therapy
  d. As part of a clinical management plan (CMP)
5. Referrals and Reporting

The referral form should be completed as per Radiography guidelines (see Audit). For the Podiatric Surgery team, the film should be reported on by the requesting practitioner and information detailed in the patient record. For the Musculoskeletal Assessment Service and Diabetes Specialist Podiatry teams, reporting will be via the Acute Trust Radiology Departments. A report will be requested on the referral form.

6. Accountability

The development of extended roles is to enhance the patient journey and to deliver a holistic patient centred approach to care. All practitioners must comply with Trust and SoCaP/CSP guidance on expanding roles. The PCT recognises that every healthcare professional is accountable for their practice and that it is their professional judgement that can provide innovative solutions to meeting the needs of patients and clients in a health service that is constantly changing. Extending the role of the practitioner is encouraged and supported for the improvement in patient care and the development of healthcare services. The principles that must underpin a practitioner’s approach to taking on the responsibilities beyond the traditional boundaries of practice are that the clinician must:

- Be satisfied that patient and client needs are uppermost in line with Trust policy and service developments.
- Keep up to date and develop knowledge, skills and competence
- Recognise the limits to personal knowledge and skill and remedy deficiencies
- Ensure that existing care is not compromised by new developments and responsibilities
- Acknowledge personal and professional accountability
- Avoid inappropriate delegation

The original referrer remains responsible for acting on the investigation and is responsible for tracking the results if the patient has been moved from one clinical setting to another. If there is to be a delay in reporting the referrer must pass on responsibility to an appropriate colleague. The referrer is also responsible for:

1. Informing the patient of the results of the investigations and agreeing treatment if necessary
2. Recording the actions taken in the patient’s health record
3. Highlighting any changes in care plans

Results must be acted upon as soon as possible. Any incidents or near misses will be subject to the Incident and Near Miss Policy and may be necessitate re-training.
7. Code of Conduct

Any extended roles that are undertaken should comply with any current legislation relating to the clinician’s profession. Each clinician is personally accountable for their own practice. They are responsible for their actions and omissions, regardless of advice or directions from another professional. In addition, each clinician must:

- Maintain their professional knowledge and competence
- Keep their knowledge and skills up-to-date throughout, taking part in activities that develop their competence and performance
- Practice competently, possessing the knowledge, skills and abilities required for lawful, safe and effective practice without direct supervision
- Acknowledge the limits of their professional competence and only undertake practice and accept responsibilities for those activities in which they are competent

If any aspect of clinical practice is beyond the practitioner’s level of competence or outside their area of registration, they must obtain help and supervision from a competent practitioner.

8. Training

To perform the extended role safely and competently the clinician must have knowledge of the following:

- Relevant anatomy and physiology
- Knowledge of equipment needed for the procedure
- Safety of the healthcare professional and the patient
- Risk issues in line with Clinical Governance in the event of something going wrong
- Methods for gaining informed consent
- Knowledge of the approved Trust/SoCaP/CSP Guidance protocols/guidelines that underpin the extended role
- Knowledge of the care pathway that the role is contributing to

The training and development for access to DI services must comply with associated regulations, legislation and professional guidance.

Requirements for inclusion on this protocol:
1. Attendance of an IR(ME)R seminar
2. Clinical training undertaken (led by the lead Podiatric Surgeon)
3. Attendance at the Radiology Department to follow the patient pathway

Each new DI referrer must have an accredited mentor/assessor to support and assess their skills in clinical practice. A period of supervised practice with an accredited mentor/assessor will follow in the clinical environment. Evidence of competence, course content and assessment criteria will be kept by the individual practitioner in their professional portfolio and documented. The practitioner and assessor sign this as verification of the individual’s competence/willingness to take on the role and identified in the practitioner’s portfolio. Maintenance of competence is the healthcare
professionals’ responsibility and should be discussed at annual appraisal, Re-approval if necessary should be gained through the recognised processes.

For HCPs joining from another Trust, the transferability and accreditation of training and evidence of the development of expanding roles will be taken into consideration by the individual’s manager. If the evidence is credible and current then re-training is not necessary: they will only need to follow a period of supervised practice to confirm their competence.

9. Supporting Documentation

Each applicant will sign a copy of the authorisation produced in Appendix 1, sponsored by the Senior Clinician with the Department of Podiatry (lead Podiatric Surgeon) and authorised by a senior manager. This will be accompanied by:

1. Evidence of attendance of an IR(ME)R seminar
2. Evidence of clinical training undertaken
3. Evidence of attendance at the Radiology Department to follow the patient pathway

10. Audit

Annual audits will be carried out by the lead clinician for each specialist team. Audit results will be circulated to the PCT and NGH Radiology department\textsuperscript{11-13}.

11. Protocol Management

Protocol v 1.1 (draft) to 1.3 (final) written in 2005 by: Ian Reilly
\textit{Podiatric Surgeon}
Ann Exton
\textit{Principal Therapist}
Maria Mousley
\textit{Consultant Podiatrist}

PCT Ratification in 2005: Dr Richard Willows
\textit{Clinical Governor}

Updated December (v 1.5) 2008 in line with Policy for Policies: Policy GOV 04\textsuperscript{14} and Clinical Diagnostic Testing – Minimum Requirements for the Development of Specific Diagnostic Testing Policies\textsuperscript{15}.
References


2. Validation and Ongoing Monitoring of Registration Policy and Procedure Policy No 26
   Author: Carol Woodham and Louise Perkins
   Date of Revised issue: February 2005
   Version: 1.4
   Approved by: Clinical Governance and Risk Management

3. NGH Policy: Expanding the Scope of Professional Practice
   Clinical Guideline No: 014
   Group: NMCTB
   Review: Maggie Coe
   Date of first issue: August 2004


Bibliography


8. Tocci SL, Madom IA, Bradley MP, Langer PR, Digiovanni CW. The diagnostic value of MRI in foot and ankle surgery. Foot Ankle Int. 2007 Feb;28(2):166-8


APPENDIX 1: AUTHORISATION

Podiatric Surgery, Diabetes Specialist Podiatry and Musculoskeletal Assessment Service: Diagnostic Imaging Protocol v 1.5

Each individual authorised to refer under this protocol must receive a copy and sign it.

Name: …………………………………………………………………
Directorate: Provider Services

Activity:
I declare that I am willing to take on this activity, being fully aware of the scope of professional practice and the accountability associated with this, and the relevant Trust policy, protocol and standards.

Signed: …………………………………………………………………
(Practitioner)

Date: ………………………

I have ratified the collection of evidence relating to this activity and deem this practitioner as competent to undertake this duty.

Signed: …………………………………………………………………
(Named Senior Practitioner)

Name: Ian Reilly, Consultant Podiatric Surgeon

Date: ………………………

Approved: …………………………………………………………………
(Senior Manager)

Name:

Date: ………………………

Trust register notified (date): …………………………………………

Copy to personal file (date): …………………………………………

APPENDIX 2: FCPodS – DI SYLLABUS

Diagnostic Imaging Part A

A foundation in DI will provide students with a comprehensive understanding of the safe and effective use of radiographic and nuclear imaging techniques in the practice of podiatry. The following areas will be covered:

- Health and Safety Regulations governing the use of ionising radiation (IR); requirements of the Ionising Radiation Regulations
- The effects of IR upon human tissue
- The physics of IR, monitoring, exposure levels and times, radiographic production, film types and processing
- The equipment used and the indications for taking and directing radiographs, MRI, ultrasound, radio-isotope and CT scans
- Patient positioning, common foot and ankle views to include both weight-bearing and non-weightbearing
- Changes in osseous structure to include density and structural variations, periosteal activity and articular changes
- Fracture and bone healing
- The effects of infection and neoplasia, metabolic and neurotrophic bone disease

A 20 hour DI Foundation Course must be attended to include workshops and interactive seminars.

Diagnostic Imaging Part B

The Part B module will provide in-depth knowledge of interpretation and diagnosis of plain X-rays, bone scans, CT, MRI and ultrasound. On completion of this module the candidate will understand the investigative techniques and be able to request the appropriate modality and interpret the findings in a systematic manner. The candidate will have an in-depth knowledge of the imaging characteristics of the following conditions:

- Arthropathy
- Infection
- Trauma
- Metabolic and endocrine disease
- Neoplasia
- Blood disorders
- Disorders of bone mineral density
- Soft tissue conditions

A 15 hour DI Course must be attended to include workshops and interactive seminars.
APPENDIX 3: Interpretation of Plain X-Rays for Podiatric Surgery

1. Assessment of normal/abnormal skeletal ontogeny and deformity using plain X-rays

When studying radiographs, first identify the type of examination and view taken. Any changes observed should be described in objective terms and correlated with clinical findings. List the differential that fits with the clinical and radiological data, starting with the most likely diagnosis. The standard sequence in which to interpret the detail of the film is:

- Alignment
- Bone
- Cartilage
- Soft tissue

2. Identification of bone and joint pathology

Radiological examination allows two types of assessment:

- The pattern of distribution in the body
- The characteristics of the pathology as reflected within the joint

The articular cartilage joint space appears as an area of radiolucency and should be of uniform width showing a smooth, defined cartilage line. The area of lucency may be uneven or narrowed if the cartilage is destroyed, underdeveloped, overossified or displaced. The area of lucency may be widened if the cartilage is hypertrophied, overdeveloped, underossified or if effusion exists. Effusion is seen on X ray as an increase in soft tissue density adjacent to joint margin. The increased area of lucency being smooth in outline and uniform. The effusion may contain blood, pus, synovia, tumours, foreign bodies, hypertrophied villi or chondromatosis. Loose bodies are usually calcareous deposits about the joints attached to strands of fibrous tissue. They are multiple and occur with the degeneration of peri-articular connective tissue. Osteochondromatosis results from degenerative changes in the cartilage with fibrosis, resorption and calcification. These may be noted at the articulating margins of a joint as osteophytes, lipping and spurs. Osteophytes are larger and develop from a blood base, usually projecting at right angles to the bone axis.

3. Pre- and post-operative charting

Proper radiographic evaluation of deformity requires standard preoperative weight-bearing views taken in the angle and base of gait. Foot pathologies represent dynamic deformities on which ground active forces exert a direct pronounced effect. Standard preoperative forefoot views should consist of weight-bearing dorso-plantar, lateral, medial oblique and axial sesamoid projections.

The AP/DP projection allows an accurate representation of the phalanges, metatarsals, navicular, cuboid and medial cuneiform, and to a lesser extent the middle and lateral cuneiforms. The distal portion of the talus and calcaneus may also be observed.

The lateral projection adequately depicts the talus, calcaneus, cuboid, and to a lesser extent the navicular and medial cuneiform. The metatarsals and phalanges overlap to varying degrees.

The medial oblique projection gives a magnified and distorted presentation of the bones of the foot. Variations from the 450 angle may be more useful for observing one bone over another bone:

- a 15 deg oblique projection shows the medial cuneiform
- a 30 deg oblique projection shows the lateral cuneiform
- a 60 deg oblique projection shows the cuboid and anterior facet of the talo-calcaneal joint
The axial sesamoid projection will aid in evaluating degenerative changes noted within the sesamoid apparatus. The plantar crista of the first metatarsal head may also be viewed and evaluated for erosive changes that may accelerate the deformity. It is vital in surgical planning for lesser metatarsal sagittal position

Dorso-plantar and lateral views together will allow the practitioner to accurately measure traditional relationships and identify positional and structural components of the deformity.

4. Trauma and suspected foreign bodies

Likely items include nails, sewing needles, coarse sand/gravel, glass, metal wire, plastic, thorns and splinters. Although most puncture wounds heal uneventfully, 10% lead to complications because of a lack of consistency in the therapeutic approach to this injury. Retained foreign bodies can cause any type of soft tissue infection and/or inflammation.

Radiographic Considerations of Hardware
Expose a minimum of two orthogonal views of each body part. If hardware is present, the entire device should be included on the film, preferably with several centimeters of normal bone on either end. A slight overexposure may be helpful for looking at metal fixation devices. Comparison with old films is mandatory.

5. Investigation for deep infection

Gas in the tissues is seen as black bubbles and indicative of gangrene and/or infection. Ulceration/sinus formation (seen as a black hole) is useful to determine the size of an ulcer and if infection is spreading to the bone (osteomyelitis). Soft tissue changes adjacent to bone are indicative of pathology.
# APPENDIX 4: Podiatric Surgery X-Ray Report

**Podiatric Surgery X-Ray Report**

| SURNAME:   |   |
| FORENAME(S): |   |
| DOB:         |   |
| DATE:        |   |
| X-RAY NO:    |   |
| HOSPITAL NO: |   |

**OBSERVATIONS:**

L / R / B Feet weight-bearing AP View(s):

........................................................................................................................................................................
........................................................................................................................................................................

L / R / B Feet weight-bearing Lateral View(s):

........................................................................................................................................................................
........................................................................................................................................................................

L / R / B Feet MO View(s):

........................................................................................................................................................................
........................................................................................................................................................................

L / R / B Feet Sesamoid View(s):

........................................................................................................................................................................
........................................................................................................................................................................

**Additional info?**  
........................................................................................................................................................................

**Signature / date**

...............................................................       ........../........./.........
**APPENDIX 5: Policy Impact Assessment – Screening Tool**

**Name of Directorate:**
Provider Services

**Policy being assessed:**
Department of Podiatry/MAC Service Diagnostic Imaging Protocol v 1.4

<table>
<thead>
<tr>
<th>Policy Title</th>
<th>Who is affected</th>
<th>Statutory requirements</th>
<th>Full Assessment Needed</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Podiatry/MAC Service Diagnostic Imaging Protocol v 1.4</td>
<td>All Podiatry and MAC patients requiring plain X-rays</td>
<td>The Ionising Radiation (Medical Exposure) Regulations 2000 (together with notes on good practice), Department of Health. London: DH. 2000. <a href="http://www.dh.gov.uk">www.dh.gov.uk</a></td>
<td>No</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Date of Assessment:**
08.07.08

**Assessment Carried out by:**
Ian Reilly