

## Clinical governance in action

# Making the best use of a radiology department: an example of implementation of a referral guideline within a primary care organisation

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### ABSTRACT

This paper reports the experience of developing and implementing a guideline to improve ordering of x-rays by general practitioners (GPs). The guideline was developed by the North East Lincolnshire Primary Care Trust (PCT), in conjunction with the local radiology department at Diana, Princess of Wales Hospital. The aim of the guideline was to facilitate more effective working between the radiology department and GPs by promoting an evidence-based use of radiology services and fulfilling the *Ionisation and Radiation (Medical Exposures) Regulations 2000*. This paper

reports the method followed to develop and implement the guideline and reflects a common framework utilised by the Directorate of Clinical Governance within North East Lincolnshire PCT. The outcome of the implementation of the guideline is reviewed together with an assessment of the implications for future service development. The characteristics of what makes a guideline successful are considered. Within this, the role and current challenges experienced by the PCT are highlighted.

**Keywords:** guideline, radiology, referral

## Introduction

In the summer of 2000, an opportunity arose to develop locality guidelines aimed at making the best use of local radiology services, utilising an evidence-based approach. There were three reasons for doing this project. Firstly we wanted to introduce a framework that would allow closer and more effective working between our local radiology department and GPs. Secondly we wanted to implement the Royal College of Radiologists' guidelines: *Making the Best Use of a Department of Clinical Radiology, Guidelines for Doctors*.<sup>1</sup> Finally we wanted to ensure that the requirements of the *Ionisation and Radiation (Medical Exposures) Regulations 2000 IR (ME) R* were met.<sup>a</sup>

<sup>a</sup>*Ionisation and Radiation (Medical Exposures) Regulations 2000 – IR (ME) R* place a legal responsibility on all clinicians to ensure that any exposure to radiation is clinically justified.

## Method

In the North East Lincolnshire Primary Care Group (NEL PCG), established in 1999, the Clinical Governance Directorate had established a procedure for the development of care pathways (including clinical practice guidelines) for a wide range of clinical areas including cancer, ophthalmology, cardiology, gastroenterology and the management of osteoporosis. This procedure consisted of a framework for considering evidence and engaging a wide range of stakeholders (see Box 1). This framework was followed for the development of a local guideline that we called *Making the Best Use of Our Local Radiology Department* (see Appendix 1).

### Step 1

A small project team from the Directorate of Clinical Governance and the local radiology department was

### Box 1 Framework for service review meeting

A joint meeting of local primary and secondary care health professionals, incorporating a mixture of clinical, administrative and audit experience and skills, supported by input from other groups including the health authority and the community health council. Local secondary care clinicians in the service areas to act as the specialist resource within the meeting.

#### Format of the meeting

- Overview of guidance
- Current situation
- Draft proposals (developed by project team)
- Group work
- Feedback from above
- Achieve consensus view
- Action plan
- Agreed review date

#### Objectives of the meeting

- Communication of guidance/draft proposals
- Ownership of initiative
- Communication and implementation of action plan

established. The proposed locality guideline *Making Best the Use of Our Local Radiology Department* considered the appropriate utilisation of plain radiography within a number of diagnostic areas. The proposed guideline considered specific clinical indications where a plain x-ray would no longer be routinely available, as current evidence demonstrated that undertaking such an x-ray routinely did not support the appropriate clinical management of the patient. At that time this aspect of the guideline reflected a small number of referrals instigated by primary care. The second element of the guideline focused on relatively large volume areas, primary care referral for plain radiography including cervical spine, lumbar spine, shoulder, hip and knee x-rays. The rationale of this element of the guideline was to facilitate an evidence-based approach to diagnostic use of plain radiography by local GPs with the anticipated reduction in overall number of requests and practical implementation of *IR (ME) R*. As with the development of other guidelines, the opportunity for the development of an updated referral proforma, in this case a request form was considered. At this stage it was felt appropriate to continue with the historic form.

## Step 2

The proposal was discussed at the PCG Clinical Governance Committee that has wide membership from across primary care, including GP and nurse leads, public health, and audit and prescribing leads. In addition, the draft guideline was shared with rheumatology and orthopaedic consultants.

## Step 3

A joint meeting of local primary and secondary care health professionals, administrative and audit support staff was held. This was supported by input from the Community Health Council (CHC). Local secondary care clinicians from radiology, orthopaedics and rheumatology acted as a specialist resource within the meeting.

The proposed guidelines (see Appendix 1) were circulated to all GPs within North East Lincolnshire PCT to be utilised for future referrals within clinical areas specifically identified. The consultant radiologists implemented a deferment process for x-ray requests which did not clearly fulfil the criteria. In such a case, the GP was invited to contact the designated radiologist to discuss the request further.

In addition, we attempted to raise the profile of what was felt to be a potentially significant but appropriate shift in patient expectation by asking our local evening paper to become involved. Previously they had kindly run an article highlighting the modern management of upper respiratory tract infections and the historic shift from patients' anticipation that they would receive an antibiotic, to an appropriate assessment and in many cases advice alone. We felt that similar gains may be made with regard to requests for x-rays.

## Results

### Impact on referral behaviour within the focus areas of the guideline

An audit of GP referral for plain x-rays in the following areas – hip, knee, cervical spine, and lumbar spine – was undertaken for the calendar years 2000 and 2001. Table 1 provides a summary of the number of x-rays requested by GPs and undertaken by Diana, Princess of Wales Hospital Radiology Department.

### Deferment process

When considering the reduction in the number of plain radiographs requested by GPs in the areas

**Table 1** GP referrals to radiology department for plain radiography

Diagnostic area	Knee <i>n</i>	Hip <i>n</i>	Cervical spine <i>n</i>	Lumbar spine <i>n</i>	Total <i>n</i>
Year 2000*	560	453	562	790	2365
Year 2001	282	435	136	224	1077
Reduction:					
Total	278	18	426	566	1288
%	49.6	4	75.8	71.6	54

\*For clinical indications where plain x-rays would no longer be routinely available few requests for such investigations were received from primary care within 2001

**Table 2** Deferments of GP referrals by radiologists for plain radiography

Diagnostic area	Knee <i>n</i>	Hip <i>n</i>	Cervical spine <i>n</i>	Lumbar spine <i>n</i>	Total <i>n</i>
Year 2000*	95	97	99	72	363
Year 2001	58	88	62	55	263

NB Guideline adopted and circulated to all local GPs following the service review meeting of 28 September 2000

considered by the locality guidelines, it was felt appropriate to review the number of deferments highlighted by the radiology department.

Table 2 provides information on the absolute number of instances where further clarification of the indication for the x-ray by the GP was requested by the radiology department. Following this clarification, a number of the deferred requests were undertaken and included in the figures compiled within Table 1. During 2001 this element was not collated by the radiology department. However, following further discussion, this is now part of the reporting framework. The table demonstrates a reduction in the absolute number of deferments across all of the focus areas in 2001 compared with 2000. Although the locality guidelines were not adopted until September 2000 the deferment process had been implemented earlier that year by the radiology department as part of their local approach to the *IR (ME) R* guidance.

### Review of all primary care referrals for plain radiography

Table 3 demonstrates the total number of plain x-ray requests made by GPs to the Diana, Princess of Wales

Hospital radiology department. Review of the table demonstrates a significant reduction in requests.

The audit demonstrates a significant reduction in referrals across all diagnostic areas reviewed.

### Orthopaedic referrals

A parallel initiative undertaken within primary care to the implementation of the locality radiology guidelines has been the surgical referral guidelines.<sup>b</sup> Two elements of the referral workups included within the guideline are those for patients who are to be considered for hip and knee replacements. In both cases the workup undertaken by primary care includes plain x-rays of the appropriate hip and knee. There is therefore the potential that this initiative may increase the demand on the radiology department by primary care investigations that historically may have been instigated once the patient had been seen in the orthopaedic outpatient clinic.

The initiative was developed within the year 2000

<sup>b</sup>Surgical referral guidelines – an element of the local quality development programme which is the co-ordinating development programme focused on individual health professionals but utilising practice and primary healthcare team structure within North East Lincolnshire PCT to facilitate its effective and sustainable implementation.

**Table 3** Total number of plain x-ray requests

Year	Plain x-ray requests <i>n</i>
Year 2000	6650
Year 2001	4291
Reduction:	
Total	2359
%	35.5

**Table 4** Total number of GP referrals within the surgical referral guidelines for patients being considered for hip and knee replacements

Year	Referrals <i>n</i>
2000	< 10
2001 (Jan–Dec)	97
2002 (Jan–Aug)	96

and widely adopted and undertaken by practices within 2001. Table 4 documents the number of surgical referral guidelines for patients being considered for hip and knee replacements where plain x-rays of the appropriate joint would be undertaken.

## Sustainability

A key challenge is whether this reduction can be sustained. Table 5 provides comparative information

for the first six months of 2001 and 2002. It would appear from this information that our local GPs are maintaining the improvement.

Anecdotally, with the implementation of the locality radiology guidelines, there was a perception that this may drive up referrals to rheumatology and orthopaedics. However, review of referral behaviour has shown no significant impact.

These findings have been discussed further with the Executive Committee within the primary care organisation (PCO) and represent the beginning of the feedback process. A detailed report of the referral behaviour will be circulated to all local practices in two formats. Information pertaining to behaviour at practice level will be provided across the PCT in the currently agreed format whereby the majority of practices are identified. At primary healthcare team (PHCT) level, the intention is to circulate detailed information pertaining to each GP within their relevant PHCT for further consideration.

## Conclusions

This interface audit programme demonstrates significant reduction in the number of plain radiological x-ray requests initiated by primary care for the priority areas considered within the guideline. This is despite the potential increased demand by primary care, instigated by other initiatives, including the surgical referral guidelines. The reduction in primary care referrals for plain radiography for the priority areas within the guideline is mirrored by an overall reduction in primary care plain radiography requests. The audit demonstrates a very positive response by local GPs and reflects an effective and shared implementation of the guideline.

**Table 5** Total number of GP referrals to hospital radiology department for plain radiography

Diagnostic area	Knee <i>n</i>	Hip <i>n</i>	Cervical spine <i>n</i>	Lumbar spine <i>n</i>	Total <i>n</i>
Jan–June 2001 (1st year of guideline)	227	231	47	128	633
Jan–June 2002 (2nd year of guideline)	139	198	48	77	462
Reduction:					
Total	88	33	–	51	171
%	38	14.3	–	40	27

## Discussion

The interface audit programme has demonstrated that the objectives of the adopted guideline have been significantly implemented and these changes appear sustainable. The success of this guideline clearly reflects the willingness of our local practitioners to adopt it. This is hopefully because it was developed in a form that was intended to be useful and a prompt to good clinical practice. In addition, our local framework for the development of guidelines has, we hoped, achieved true ownership of the initiative and its effective communication and implementation, following its adoption.

An important element for the successful implementation of any guideline is its incorporation into the commissioning model to create the appropriate service in primary and secondary care, to support a guideline. With regard to resources, the guideline may highlight a further call on current resources or, in certain circumstances, facilitate the availability of resources that can then be utilised within other elements of the care pathway. Our local experience has been that it is essential, where resource may be created through the implementation of the guideline, that those health professionals involved have appropriate input into the utilisation of the resource that is released. A clear and tangible benefit to local GPs has been the opportunity to halve the waiting time for primary care access to plain radiography.

The establishment of PCOs has created the opportunity for a co-ordinated approach to effective implementation of guidelines that were perhaps less practical previously. The creation of PCOs has also made a reality the harmonisation of clinical and managerial skills, supported by appropriate resources to develop and implement such guidelines.

Reflecting on the positive impact of the initiative from the individual GP's perspective, the development of this guideline appears to have provided the additional support for them in appropriate circumstances, to manage patients in a sensible and evidence-based fashion, which was reflected in the change in utilisation of plain x-rays. By doing so and securing the agreement of the patient that the x-ray is not clinically beneficial, achieves the double benefit of both utilising local resources most effectively and also preventing the patient from unnecessary exposure to radiation.

From the outset it has been our intention to progress from a radiology guideline focused on

primary care, to one adopted and shared across the local health community. Following recent discussions with the radiology department they have identified this as a priority area. They have indicated that they wish to implement similar guidelines within secondary care in the near future. This will facilitate the standardisation of approach, which will further consolidate the primary care elements.

To date, our focus has been to review best use of plain radiography. Given the success of the current initiative, we will now consider whether it may be appropriate to broaden the remit and consider other elements of diagnostic investigations such as ultrasound, including Doppler. However, we will await further feedback from our constituent practices.

## ACKNOWLEDGEMENTS

The success of the implementation of the radiology guidelines reflects a significant input of a number of individuals including: Lynn Poucher, Associate Director of Governance; Elaine Cullum, Facilitator, Directorate of Governance; Linda Manley, Data Analyst, Directorate of Governance; Mrs Clair Brookes, PA/Administrator, Directorate of Governance; and Sarah Johnstone, previously Assistant Director of Clinical Governance, NEL PCT; Dr R Harries, Lead Consultant Radiologist; Mr Jeremy Baskett, Divisional Manager, Clinical Sciences; Mrs Claire Jenkinson, Divisional Support Manager; and Paul Gould, Radiology Manager, Diana, Princess of Wales Hospital.

The success of the guideline perhaps most importantly reflects the active support and involvement of all local GPs.

## REFERENCE

- 1 The Royal College of Radiologists (1998) *Making the Best Use of a Department of Clinical Radiology, Guidelines for Doctors* (4e). The Royal College of Radiologists: London.

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## Appendix 1

### Making the Best Use of Our Local Radiology Department

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*These guidelines were developed in collaboration between the local radiology department, primary care and appropriate secondary care clinicians given the initial focus of the guidelines.*

*The outline guidelines were supported by the Radiology Service Review Meeting of 28 September 2000.*

*'A guideline is not a rigid constraint upon clinical practice but a concept of good practice against which the management of the individual patient can be considered.'* Royal College of Radiologists (1990)

#### Clinical indications where plain x-rays will no longer be routinely available

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This group of conditions consists of areas where the current evidence shows that the undertaking of an x-ray routinely does not support the appropriate clinical management of the patient. Prior to an x-ray being undertaken for any of the clinical areas outlined below, it is appropriate that a discussion with either a radiologist or senior radiographer be undertaken to consider the appropriate options.

X-rays will no longer be routinely available for the following:

- plantar fasciitis
- sinusitis
- headaches
- Tietz syndrome
- potential rib fractures (unless complicated by underlying lung pathology)
- coccydynia
- cervical spine x-ray for patients presenting with vertebro-basilar symptoms.

#### Evidence-based indications for plain x-rays

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When considering indications for plain x-rays it is appropriate to consider indications in three age groups for adults:

- young
- middle aged
- elderly.

Within these specific age groups certain conditions can be common.

It is also appropriate to consider the indications for x-ray requests in association with significant medical conditions, for example, rheumatoid arthritis.

### Spine

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#### Cervical spine

##### *Potential atlanto-axial subluxation*

A single lateral cervical spine x-ray with the patient in supervised comfortable flexion should review any significant subluxation in patients, e.g. with rheumatoid arthritis.

##### *Neck pain, brachialgia, degenerative change (cervical spondylosis) – in the absence of neurological signs*

Routine plain x-rays are not indicated, as degenerative changes begin in early middle age and are often unrelated to symptoms. Where brachialgia is present, further clinical assessment, including MRI, may be appropriate (dependent upon the clinical circumstances).

#### Lumbar spine

##### *Chronic back pain with no pointers to infection or neoplasm*

Plain lumbar spine x-ray is not routinely indicated as degenerative changes are common and non-specific. An x-ray may be helpful in younger patients where there is a clinical suspicion of spondylolisthesis or ankylosing spondylitis.

##### *Acute back pain*

Where clinically a patient may have an acute disc, a plain x-ray of the lumbar spine is routinely not helpful. Appropriate assessment and treatment includes physiotherapy, advice re posture, analgesics and other assessments, including MRI scan/specialist opinion as felt appropriate.

In patients where there is a suspicion of osteoporotic collapse of a vertebra a plain x-ray of the lumbar spine is helpful.

For back pain with possible serious features, which include sphincter, or gait disturbance, saddle anaesthesia, severe progressive motor loss, urgent specialist

opinion is appropriate. In such cases plain x-rays may be falsely reassuring.

## Suspected skeletal metastasis

In patients with known primary tumour, where there is a clinical suspicion of skeletal metastasis, a skeletal survey is not routinely indicated. Localised plain x-rays may be helpful in association with a bone scan. It is important in such scenarios not to rely purely on radiological investigations but, where appropriate, to develop the clinical picture, e.g. for patients with suspected prostatic cancer and bony secondaries, undertaking a PSA and alkaline phosphatase can further clarify the situation.

## Joints

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### Painful shoulder

Routine plain x-ray not indicated.

Degenerative changes in the acromio-clavicular joints and rotator cuff are common and not always related to symptoms. An indication for a plain x-ray is where soft tissue calcification is suspected.

### Knee pain/hip pain

Principal indication for plain x-ray is within assessment of the patient for consideration of surgery.

Other indications:

- plain x-ray of the hip is appropriate here if there is a clinical suspicion of avascular necrosis, although in early disease an x-ray may be normal
- if the patient is presenting with knee pain associated with locking, plain x-ray can be helpful to identify radio-opaque loose bodies
- in a child, a plain x-ray of the hip is appropriate if Perthe's is clinically suspected.

### Sacroiliac joints

Plain x-ray of the sacroiliac joints can be helpful in the assessment of a patient with suspected seronegative arthropathy such as ankylosing spondylitis.

For patients with both seronegative and seropositive rheumatoid arthritis who have active disease, yearly x-rays of the hands and feet are appropriate to assess disease progression.