An evaluation of a radiographer-lef reporting service for Accident and Emergency referrals

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Background
A radiographer-led reporting service for Accident and Emergency (A&E) referrals was introduced in July 2003 in an acute city centre hospital. The main drivers for this were: to improve the service offered in terms of the number of images reported and timeliness of report, the shortage of radiologists and their increasing workload, and fulfilling NHS Plan requirements. 1.5 whole time equivalent radiographers with post-graduate qualifications and experience in reporting were brought in to start the service. Two radiographers from the existing staff undertook a post-graduate qualification in reporting. Succession planning resulted in another radiographer being trained after these two had completed their training.

The radiographer-led service was evaluated; this evaluation had three discreet components: A quantitative retrospective longitudinal study; accuracy, sensitivity and specificity of the reports; a qualitative study to assess people’s perceptions. The aim of the quantitative study was to evaluate the initial impact of the A&E radiographer reporting service by reviewing the percentage of referrals reported and the timeliness of the report and to see if the improvements were sustained over time. An audit assessed the accuracy, sensitivity and specificity of the reports. The qualitative study evaluated the impact of the reporting service on the advanced practitioners, the Emergency Nurse Practitioners (ENP) and Extended Scope Physiotherapist (ESP) working in the Minor Injuries Unit (MIU).

Methods
Comparative data were generated between January 1 and March 31 for a four-year period for analysis. Generated data were not true matched samples as there were too many variables to control. The data was grouped into examinations the radiographers were qualified to report. The reporting rate and timeliness of the reports were analysed along with report accuracy, sensitivity and specificity. Pre-implementation [baseline] data were used as a benchmark against which post-implementation data were compared. The accuracy, sensitivity and specificity of the five radiographers’ reports were undertaken using cumulative audit data collected between 2004-6. Included in the study were 791 imaging examinations. The quality of the reports was assessed using consultant radiologists’ reports as the benchmark. The qualitative data was evaluated using a thematic analysis of one-to-one interviews with three of the advanced practitioners working in the MIU of A&E.

Results and discussion
Quantitative data
The number of A&E referrals increased slightly during the study period and the percentage of examinations reported showed a marked increase (graph 1). For the examinations the radiographers reported, the reporting rates showed a dramatic increase which was sustained over the study period, increasing from ~40% (pre) to ~80% (post implementation) (graph 2). Approximately 75% of the reports were issued by the radiographer reporting team; the remaining examinations were reported by the trainee radiologists.

Following post-graduate study to report chest examinations in 2004 by one radiographer, the reporting rate for chest examinations increased from ~13% (pre) to ~47% (post) (graph 3).

The timeliness of the report was improved and sustained, eg mean ~10 days in 2003 (baseline data) to post ~5 days (graph 4).

There are two areas for concern; one is the timeliness of the report. At present the reports are still recorded and transcribed, which builds in an additional delay into the system. This can be reduced by transferring over to a system of voice recognition software so the reports can be dictated and verified immediately by the radiographer. The second is the potential de-skilling of radiologists in plain image reporting as they were reporting only 25% of the workload. Plain image reporting is part of the curriculum for the first year fellowship examination.

Audit
The audit of radiographers’ reporting ability demonstrated a mean: accuracy of 97.8%; sensitivity of 95.7%; specificity of 98.6%. These results appeared to be satisfactory, but on comparison with published data (table 1) it can be seen that our reporting radiographer data suggest they perform as well or better.

<table>
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<tr>
<th>Research Paper</th>
<th>Accuracy</th>
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<td>97.7%</td>
<td>96.73%</td>
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<td>Paterson A M, Piper K J, Ryan C M, 1999</td>
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<td>Piper K, Paterson A, 1997</td>
<td>95%</td>
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<td>95.5%</td>
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<td>Piper K J, Paterson A M, Godfrey R C, 2005</td>
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<tr>
<td>Mean</td>
<td>96.40%</td>
<td>94.91%</td>
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<td>Study hospital reporting team</td>
<td>97.8%</td>
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<td>98.6%</td>
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</table>

TABLE 1
Published research on the performance of radiographer reporting skills.

Qualitative data
The emerging themes from the qualitative data derived from the interviews with the advanced practitioners from MIU were classified into three areas; impact on the patient; themselves; multi-disciplinary team (MDT). The advanced practitioners felt the patients benefited because the radiographers were readily available to discuss the images at the time the patient presents. The advanced practitioners used this interaction as a learning exercise. The advanced practitioners were also able to check the reports confirming (or otherwise) their assessment of the radiographs. They also felt the radiographers would inform the practitioner if a patient needed to be re-called.

For the advanced practitioners themselves, the impact was around their own on-going development and evaluation skills. Their main concerns were around autonomous working and their own need for constant updating and concerns over misdiagnosis. They found the bimonthly tutorials given by the reporting team were invaluable, as was the feedback during individual case discussions. Even with the tutorials and development in image interpretation, they all felt that a full evaluation of the images should be the remit of the radiology department.
The advanced practitioners also felt the service impacted on the multi-disciplinary team as a whole. They felt there was an excellent relationship between all the extended-role advanced practitioners, this led to a greater understanding and respect for each other’s professions. This also had a knock-on effect which manifested itself as a general improvement in relationship between A&E staff and radiographers. They were of the opinion that collaborative working has enhanced the service.

**Conclusion**

This evaluation has shown that radiographer reporting has had a positive impact on the service, both for radiology and A&E; consequently we suggest our initial and ongoing investment into advanced radiographic practice has been worthwhile. The noteworthy improvement in the reporting service is important as the percentage of images reported is one of the key performance indicators that the directorate is measured against, for instance the number of reported examinations more than doubled and the timeliness of report availability had nearly halved. The quality of the reports has proved to be acceptable.

Qualitative data confirmed the value of the reporting service in both the management of patients and in supporting the advanced practitioners in MIU in the development of their interpretation skills, improving their confidence in managing patients.

**Acknowledgements**

Gratitude goes to the reporting radiographer team for allowing the use of their audit data and to Dr P Taylor, Clinical Director, and Ms Alison Maw, Business Manager of the Directorate of Clinical Radiology.

**References**

4. Board of the Faculty of Clinical Radiology. The Royal College of Radiologists (1999), Good practice guide for clinical radiologists, Royal College of Radiologists, London.
7. Board of the Faculty of Clinical Radiology. The Royal College of Radiologists (2002), Extended working in clinical radiology, Royal College of Radiologists, London.
Graph 4
Timeliness of the availability of report.

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
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<td>7</td>
<td>6.2</td>
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<td>Mode</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Total no reported</td>
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<td>4941</td>
<td>4748</td>
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