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Link to Publisher's version: <http://dx.doi.org/10.1259/bjr.20160228>

Citation: Milner RC, Culpan G, Snaith B (2016) Radiographer reporting in the UK: is the current scope of practice limiting plain-film reporting capacity? *British Journal of Radiology*. 89: 20160228.

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Received:
10 March 2016

Revised:
28 June 2016

Accepted:
29 June 2016

<http://dx.doi.org/10.1259/bjr.20160228>

Cite this article as:

Milner RC, Culpan G, Snaith B. Radiographer reporting in the UK: is the current scope of practice limiting plain-film reporting capacity? *Br J Radiol* 2016; **89**: 20160228.

FULL PAPER

Radiographer reporting in the UK: is the current scope of practice limiting plain-film reporting capacity?

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Objective: To update knowledge on individual radiographer contribution to plain-film reporting workloads; to assess whether there is scope to further increase radiographer reporting capacity within this area.

Methods: Reporting radiographers were invited to complete an online survey. Invitations were posted to every acute National Health Service trust in the UK whilst snowball sampling was employed *via* a network of colleagues, ex-colleagues and acquaintances. Information was sought regarding the demographics, geographical location and anatomical and referral scope of practice.

Results: A total of 259 responses were received. 15.1% and 7.7% of respondents are qualified to report chest and abdomen radiographs, respectively. The mean time spent

reporting per week is 14.5 h (range 1–37.5). 23.6% of radiographers report only referrals from emergency departments whilst 50.6% of radiographers have limitations on their practice.

Conclusion: The scope of practice of reporting radiographers has increased since previous studies; however, radiographer reporting of chest and abdomen radiographs has failed to progress in line with demand. There remain opportunities to increase radiographer capacity to assist the management of reporting backlogs.

Advances in knowledge: This study is the first to examine demographic factors of reporting radiographers across the UK and is one of the largest in-depth studies of UK reporting radiographers, at individual level, to date.

INTRODUCTION

Imaging workloads remain a significant challenge, as a result of continued workforce shortages and increasing activity. In 2015, approximately three-quarters of National Health Service (NHS) trusts were carrying a backlog of reporting.¹ This remains most pronounced for “plain-film” radiographs, with a snapshot Royal College of Radiologists survey in February 2015 revealing over a quarter of a million examinations waiting over 30 days for a report.¹ Although in the subsequent 6 months, political focus reduced this figure to 175,000 examinations, this was at the expense of increasing backlogs of CT and MRI scans.² Putting these figures into perspective, it suggests that between 9.6 and 13.7% of all plain-film examinations undertaken each month³ wait over 30 days for a report. This does not take into account the presumably larger numbers waiting up to 4 weeks.

One established strategy within imaging is for radiologists to share the responsibility of reporting with radiographers.^{4–6} The number of radiographer reporting roles in the UK have continued to increase, responding to the increased demand for imaging services, shortage of radiologists, expansion of cancer services and cost

pressures.⁶ Concerns from radiologists regarding the quality of radiographer reporting of skeletal examinations were largely dispelled several years ago^{7–9} and joint guidance by the Royal College of Radiologists and the Society and College of Radiographers (SCoR)¹⁰ has acknowledged the importance of reporting radiographers within the wider team to ensure imaging departments deliver a safe and effective patient-centred service.

Whilst the reporting of radiographs by radiographers is now commonplace in the UK, and there is increasing interest internationally, studies have shown inconsistencies in working practices.^{5,11} Historical data suggest that radiographers have been underutilized and often reporting on an *ad hoc* basis, with most reporting for one or two sessions per week.⁵ In addition, limitations have been placed on their scope of practice, with a 2011 survey demonstrating 24% of departments employing radiographers to report only appendicular skeletal examinations and 52% of staff reporting emergency department (ED) images only.⁵

Much research has concentrated on reporters’ clinical practice; assessing their accuracy,^{9,12} scope of practice¹¹ and

appropriate education and training.^{13–15} Many areas of radiographer reporting have been discussed, including barriers to implementation¹⁶ and the impact of such services.¹⁷ In addition, comparisons with other professionals have been undertaken.^{18–21} Previous articles^{5,11} have reviewed the scope of practice at an organizational (hospital or NHS trust) level. This article describes a survey of reporting radiographers which examined constraints to potential reporting capacity across the UK and explore whether at an individual level there were factors which may not have been identified previously. The study objectives were to update knowledge on individual radiographer contribution to plain-film reporting workloads and to assess whether there is scope to further increase radiographer reporting capacity within this area.

METHODS AND MATERIALS

A cross-sectional online questionnaire was conducted using Bristol Online Surveys (Bristol, England). The questionnaire primarily comprised structured questions, although a small number of semi-structured questions were included and respondents were provided with the opportunity to write additional comments. Study inclusion was limited to radiographers qualified to provide a definitive report on radiographs. This survey aimed to assess the practices of all reporting radiographers; therefore, to identify potential capacity, individuals were still eligible even if they were not currently practising. Prior to distribution, the questionnaire was piloted on trainee reporting radiographers at a local university, which resulted in minor amendments. It should be noted that the pilot group included radiographers who were already reporting, but were attending an academic programme to extend their anatomical scope.

Three paper invitations to participate were posted to every acute NHS trust in the UK, addressed to the plain-film reporting radiographer (a previous study⁵ identified an average of three reporting radiographers per hospital site in England). The covering letter indicated that the invitation could be copied and circulated to all eligible participants, if there were more than three reporting. The contact details for the researcher were included for additional letters if required. The sampling frame was developed using information from a previous study,⁵ UK government statistics and national hospital databases.

The letters were distributed in April 2015, with a response timeframe of 6 weeks. In addition, advertisements, with a link to the survey, were placed in *Synergy News*, a national magazine distributed monthly to radiographers in the UK, and posted on the SCoR website. Snowball sampling *via* social media, a network of colleagues, ex-colleagues and acquaintances was also employed.

Ethical approval was not required; NHS Health Research Authority checklists²² deemed that the study represented service evaluation.

Data were gathered online and downloaded into Excel® (Microsoft®, Redmond, WA) by the researcher. Summary descriptive statistics were generated using Excel; further statistical analysis, using z-test for proportions and the Student's *t*-test, was

undertaken online using the Social Science Statistics calculator on <http://www.socscistatistics.com/>.

RESULTS

There were 264 responses received within the timescale; 5 responses were subsequently excluded as they did not meet the inclusion criteria, leaving 259 valid responses. Of the respondents, 63.9% ($n = 163/255$) respondents were female; 1.5% ($n = 4/259$) respondents did not specify their gender.

The respondents comprised 4 role categories; 9 consultant radiographers, 41 managers, 4 lecturers and 205 who were defined (based on descriptions of their roles) as purely reporting radiographers. The mean age of respondents was 43.3 years (range 25–64 years), with ages of reporting radiographers, consultants, managers and lecturers relatively evenly spread, although there was a bimodal distribution with peaks at the ages of 35 and 52 years.

The highest number of respondents was from the South East, North West, Yorkshire and Humber regions of England, although responses were received from all areas of the UK (Table 1).

When age and geographical location were compared, regions with older populations, defined as >50% of the workforce 50 years or older, were: East Midlands, North East of England and Northern Ireland. Regions with young populations, defined as >50% of the workforce 40 years or younger, were: London, Scotland, Wales, Yorkshire and Humber.

Almost all respondents were actively practising, with 96.0% of reporting radiographers ($n = 197/205$), all consultants ($n = 9$), most managers (85.4% $n = 35/41$) and lecturers (75.0%; $n = 3/4$) undertaking reporting sessions every week.

An average of 42.9% of respondent time is spent reporting, although this varies between role categories (Figure 1). The mean time spent reporting per week is 14.5 h (range 1–37.5). There was a significant difference in the mean number of hours spent reporting between those employed on a full-time basis *vs* those employed on a part-time basis (mean 15.6 *vs* 11.8; $p < 0.05$). A significantly higher proportion of females (40.5%) are contracted to work less than the standard 37.5 NHS hours compared with 6.5% of males ($z = 5.79$; $p < 0.05$).

A number of respondents provided free text comments, offering a rationale as to why they were not currently reporting. A common theme suggested that lack of staff and time were the primary reasons.

“Lack of staff mean I cannot be released from other radiographic duties to report”

[Respondent ID: 005. Reporting radiographer]

“Not enough time given managerial commitments”

[Respondent ID: 235. Manager]

Table 1. Geographical location of respondents

Region	Reporting radiographer number (%)	Consultant number (%)	Manager number (%)	Lecturer number (%)	Total number (%)
England	172 (83.9)	6 (66.7)	35 (85.4)	4 (100)	217 (83.8)
East Midlands	13 (6.3)	1 (11.1)	2 (4.8)	–	16 (6.2)
East of England	21 (10.2)	–	3 (7.3)	–	24 (9.3)
London	21 (10.2)	1 (11.1)	6 (14.6)	–	28 (10.8)
North East	8 (3.9)	–	–	–	8 (3.1)
North West	27 (13.2)	–	6 (14.6)	3 (75.0)	36 (13.9)
South East	31 (15.1)	–	5 (12.2)	–	36 (13.9)
South West ^a	9 (4.3)	–	6 (14.6)	–	15 (5.8)
West Midlands	13 (6.3)	2 (22.2)	3 (7.3)	–	18 (6.9)
Yorkshire and Humber	29 (14.1)	2 (22.2)	4 (9.8)	1 (25.0)	36 (13.9)
Northern Ireland	3 (1.4)	–	1 (2.4)	–	4 (1.5)
Scotland	15 (7.3)	3 (33.3)	2 (4.8)	–	20 (7.7)
Wales	15 (7.3)	–	3 (7.3)	–	18 (6.9)
Total	205	9	41	4	259

^aIncludes Channel Islands.

“No time to regularly report except when free”

[Respondent ID: 249. Manager]

Although interprofessional challenges were also described.

“Support from radiologists and managers is lacking”

[Respondent ID: 209. Manager]

“Radiographer reporting very poorly supported by radiologists. Only a few will support. Most plain films are now outsourced but we have a number of qualified reporting radiographers.....”

[Respondent ID: 251. Reporting radiographer]

“My chest reporting qualification has not been used due to adverse pressure from Radiologists”

[Respondent ID: 91. Reporting radiographer]

Most respondents report both appendicular and axial skeleton examinations, with much smaller numbers undertaking chest and abdominal reporting (Table 2). Just under one-fifth (17.8% $n = 46/259$) of respondents are limited to reporting radiographs of the appendicular skeleton only.

Chest and abdominal reporting varied by geographic region, with half of the responding chest reporters ($n = 20/40$) being based in Yorkshire or the North West of England and half ($n = 10/20$) of the abdominal reporters based in Yorkshire. No radiographers in Northern Ireland, the South West of England or Wales appear to report visceral (chest and abdomen) radiographs (Figure 2).

Approximately one-quarter (23.6%; $n = 61/259$) of radiographers only report ED referrals. For those with a broader

Figure 1. Mean and range of hours spent reporting.

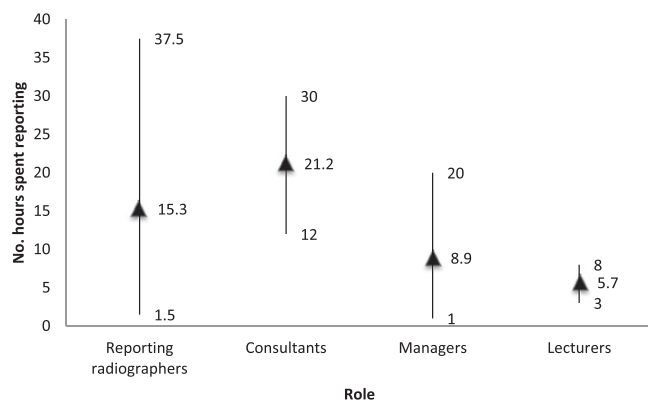
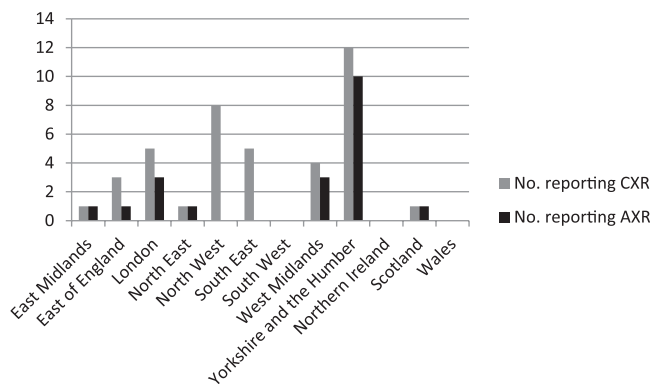


Table 2. Anatomical scope

Anatomical scope	Number (%)
Appendicular	255 (98.5)
Axial	208 (80.3)
Chest	39 (15.1)
Abdomen	20 (7.7)

Figure 2. Number of visceral reporting radiographers per region. AXR, abdominal X-ray; CXR, chest X-ray.



reporting scope, the referral types were relatively consistent (Table 3).

Half of the respondents (50.4%; $n = 126/250$) have other limitations applied to their reporting practice, most commonly related to age (73.0%; $n = 92/126$). The most frequent ages individuals were restricted from reporting were <2 years (32.6% $n = 30/92$), <3 years (10.9% $n = 10/92$), <16 years (9.8% $n = 9/92$) or <18 years (10.9% $n = 10/92$). Further reporting constraints were based on clinical history (29.4%; $n = 37/126$), most commonly not reporting non-trauma (37.8%; $n = 14/37$) and orthopaedic prostheses (18.9%; $n = 7/37$). Two respondents indicated that paediatric radiographs must be double reported, although the author of the second report was not specified. Other limitations on practice were identified; one respondent stated that they double report any positive finding and another respondent indicated that they only report radiographs that show no abnormality.

DISCUSSION

Based on a recent estimate of the population,⁵ the response rate of 259 likely represents approximately one-third of UK-based reporting radiographers. Response rates vary widely for many types of surveys²³ and despite no clear consensus on what constitutes an acceptable response rate,²⁴ this is seen as a satisfactory response for an online survey of this size.

Just under two-third (63.9%) of respondents were female; lower than the national proportion of females in the overall radiography workforce, thought to be between 81 and 93%.^{25,26} More

Table 3. Reporting scope by referral group

Referral scope	Number (%)
ED	255 (98.8)
Primary care	154 (59.7)
Outpatient	153 (59.3)
Inpatient	145 (56.2)

ED, Emergency Department.

One respondent did not specify an answer.

research is required to ascertain why males are more likely to undertake reporting than females. The percentages of males and females working part time is as expected and figures are comparable with national statistics.²⁷ Unsurprisingly, part-time respondents report for less time than full-time members of staff, although the number of reporting hours lost to part-time workers is perhaps less than may have been expected. Nevertheless, results confirm that reporting capacity is diminished when radiographers reduce their core hours.

Although there was a relatively wide spread of respondent ages, the bimodal distribution raises concerns that a large percentage of the reporting radiographer workforce may retire simultaneously, in approximately 2025. The age spread of respondents is almost identical to a recent study of 86 reporting radiographers,¹⁵ providing some validity to the present results.

The geographical variation demonstrated in previous literature⁵ remains evident. Northern Ireland remains the area with the least number of reporting radiographers, and although the smaller population size may explain this, this study identified less reporters than in 2011.⁵ Scotland and Wales still have comparatively low numbers of respondents, although numbers have increased by 82% and 64%, respectively, since 2011.⁵ Just one chest/abdomen reporter was identified in Scotland, with no respondents from Wales or Northern Ireland, suggesting that the uptake in reporting has been limited to musculoskeletal examinations. An increase in engagement in Scotland was demonstrated in 2011;⁵ however, it is clear that there is still further opportunity to extend radiographer engagement in advanced practice.²⁸

When age and geographical location were compared, results demonstrate that some regions had older populations of respondents, perhaps indicating reporting to have been implemented earlier. Importantly, the regions with older populations (East Midlands, North East of England and Northern Ireland) need to ensure succession planning is considered, as over half their reporting radiographer workforce will reach the (current) retirement age in the next 10 years.

The proportion of radiographer time spent reporting per week appears to have increased since previous studies undertaken in 2007¹¹ and 2011,⁵ although there still appears to be the opportunity to increase capacity within the current workforce. The present study identified that a small number of respondents who are actively reporting did not meet the minimum one reporting session per week as recommended in literature,²⁹ raising concerns regarding the maintenance of competence. It is, perhaps, understandable that managers and lecturers are limited in their time to report owing to other commitments, and this is reflected in their free text comments. The average consultant radiographer spends over 50% of their time reporting, in keeping with national guidance on their clinical practice.³⁰

Lack of time to report has been a longstanding issue for radiographers,³¹ although this problem appears to have reduced, there remain inconsistencies in job planning and staff utilization across the UK. Those who were not reporting cited staff

shortages and time constraints to be the primary reasons, echoing a recent study.⁵ Notably, radiologist support was once again raised; undoubtedly, many radiologists are strong advocates of advanced and consultant radiographer practice;³² however, a previous study suggested that lack of support from radiologists was a contributing factor for non-utilization of reporting radiographers,⁵ whilst other authors acknowledge a persistent division within radiological opinion.^{33,34} Future research may help determine whether previously documented radiologist anxieties³⁵ are extended to radiographer chest reporting. An issue which has not been previously identified is the outsourcing of radiographs and the implications this has on the availability of work for radiographers. This may be a localized problem but does require further research to identify the long-term implications, in terms of local staff training, workforce planning and financial viability.

In the last major study of its type,⁵ one-quarter of sites limited radiographers to the reporting of the appendicular skeleton. Although the different sampling strategies mean the results of the present survey cannot be directly compared, it appears that radiographers are starting to extend their scope anatomically. Earlier studies have also shown that visceral reporting by radiographers was undertaken at 7.7–15.1% of UK sites.^{5,36} Although both aforementioned studies were targeted at organizations, results from the present study note a similarly low figure at an individual level. There may be several reasons for this; musculoskeletal reporting has been established longer, “red-dot” historically only comprised skeletal radiographs, pre-registration image interpretation is heavily weighted towards the skeletal system and the number of postgraduate visceral reporting courses remains small. The present study once again confirms that geographic inconsistencies persist, particularly in relation to visceral reporting; again, this will likely contribute to ongoing capacity challenges within some regions.

Just over half of the respondents have limitations on their practice, restricting them further within their educational scope. It appears that referral pathway constraints are reducing, with less than one-quarter of respondents being limited to ED reporting. Age restrictions persist; evidence suggests that paediatric radiograph reporting is more difficult than adult reporting, with more discrepancies.^{37,38} This study did not identify whether respondents worked in paediatric or adult-only

centres; so, although these results are insightful, they cannot be conclusive. The one-third of respondents with limitations related to patient age is comparable with emergency nurse practitioners, who perceived their scope of practice to be narrowed by patient age.³⁹ Rather counterintuitively one respondent stated that they double report any positive finding and another could only report “normal” radiographs. This concept is baffling, as one has to correctly interpret the radiograph in order to know whether it is normal or abnormal initially. In theory, the only restrictions on radiographer reporting practices should be their educational knowledge and competence. Further research is recommended to identify the reasons for such limitations and how these relate to the needs of individual departments or practitioner aspirations/confidence.

The persistent delays in reporting of imaging examinations² confirming the SCoR vision⁴⁰ that “reporting by radiographers is not an option for the future, but a requirement” remains even more pertinent in 2016. However, the ongoing inconsistency in utilization and limited scope is disappointing but demonstrates that there is potential for further reporting capacity. It should perhaps be considered whether the limited evidence of the impact of advanced practice roles⁴¹ such as reporting is hampering developments. Further research is required to address whether radiographer contribution to reporting capacity is having a meaningful effect on service delivery and cost effectiveness.

LIMITATIONS

The study was open to non-response, self-selection and social desirability bias; however, the anonymity of the online questionnaire should negate this to some extent. The difficulties in knowing which respondents had participated reduced the cost-benefit ratio of sending follow-up letters; nevertheless, follow-up letters to all trusts would have undoubtedly provided a greater response rate.

CONCLUSION

Radiographer reporting in the UK is varied, with diversity in practice at a local and regional level. Importantly, visceral radiograph reporting has failed to progress significantly; this requires further debate owing to the ever-increasing demands placed upon imaging departments. What is clear is that there are further opportunities to increase radiographer capacity to assist the management of the well-publicized reporting backlogs.

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