THE SOCIETY AND COLLEGE OF RADIOGRAPHERS

An evaluation of the impact of implementation of consultant practitioners in clinical imaging

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Executive summary

Research to identify the scope of radiographic practice in 2008[1] recommended further work to evaluate the impact of implementation of the Career Progression Framework (CPF), and, in particular, the consultant practitioner role in clinical imaging.

As a result the Society and College of Radiographers (SCoR) commissioned two exploratory case studies. These were undertaken at two NHS trusts where all four tiers of the CPF had been adopted (assistant practitioner, radiographer, advanced practitioner and consultant). One case study was undertaken in the south of England and the other in the north. The sites had consultants specialising in gasto-intestinal (GI) imaging, breast imaging and Emergency Department (ED) services.

Interviews were undertaken with key personnel at each trust. Those participating consisted of consultant radiographers, service managers, a clinical manager (radiologist) and a consultant radiologist.

Each trust viewed the adoption of the CPF as a means of modernising service development and addressing gaps in service delivery. At both sites, the consultant role had been instrumental in bringing about change to meet service needs. In planning prior to introduction of the CPF within the two trusts, the role requirements for the post (and the 'four pillars' of the consultant role) had been contextualised to the specific needs and situation within the relevant departments. Key steps were consultation within and external to the trust and agreement of job descriptions. Gaining the support of radiologists within trusts had also been essential. The strengths of individuals viewed as likely candidates for the consultant roles once they were instituted were also taken into account during the design process. External recruitment to consultant posts had been challenging; they had been mainly filled through internal promotion.

Interviewees were convinced that benefits and improvements in service delivery had been brought about by adoption of the CPF.

- **Increased capacity and patient throughput**. The changes brought about by introduction of the CPF, and in particular the consultant and advanced practitioner posts, had facilitated an increase in throughput of patients.
- **Improved use of medical staff time**. There was evidence that introduction of the consultant and advanced practitioner posts had led to radiologists' time and effort being used to greater effect.
- **Interprofessional working**. Inter-professional working had been improved, leading to service improvements.
- **Cost containment**. Where the consultant radiographer role had been introduced in place of a radiologist, the service expansion had been achieved at less cost than if a consultant radiologist had been appointed.
- **Improved teamworking**. Introduction of the consultant radiographer posts had had a beneficial impact on teamworking, both within the imaging service and across

departments/professions.

- **Improved departmental performance**. Departmental performance had improved at both case study sites following introduction of the consultant radiographer posts. The consultant radiographers had been instrumental in redesigning patient pathways and services.
- **Increased flexibility.** Introduction of the consultant posts had led to more flexibility in responding to patients. More clinics were scheduled and appointments could be offered at a wider and more convenient range of times for patients.
- **More fulfilled staff**. Introduction of the four tier career progression framework had led to more fulfilled staff at all levels, with radiographers being able to utilise their full range of skills to the benefit of the patients.
- **No change in errors or complaints**. No increase in errors or complaints had been experienced since introduction of the consultant posts and their introduction had allowed service 'gold standards' for double reporting to be achieved.

Other benefits arising from the introduction of the consultant radiographer posts included gains through contributions to professional leadership, staff development and clinical governance.

No negative impacts were reported but two issues were identified during the work. These were:

- **Energy and effort**. Introduction of the consultant posts takes a lot of time and effort.
- **Ad hoc nature of developments**. Introduction and design of the consultant posts remains an ad hoc process, driven either opportunistically, through highly talented individuals being in post and driving the development and approval process; or through service need, where the consultant grade is introduced in an attempt to resolve a service difficulty.

This small-scale pilot study has pointed to many benefits arising from implementation of the CPF. There were no reports of negative outcomes for patients and many apparent benefits for patients. However, while interviewees could point to observed benefits, and in some cases could estimate the change to patient capacity that had arisen as a result of the service re-design, they did not believe that data existed that would enable cost/benefit calculations to be undertaken to demonstrate impact, and neither site had attempted to estimate the costs and benefits to date, other than pointing to savings made through not appointing more costly medical staff.

Overall, the research captured data on issues relating to consultant appointment, impact on service operations and service improvement and hence their immediate impact on clinical imaging services at two NHS trusts. Based on the outcomes of the study recommendations are made for a larger study embracing clinical imaging and radiotherapy within the UK as a whole. The major focus of further work would be to explore the possibility of identifying and recording data to enable a thorough cost/benefit analysis to be undertaken.

Background

In 2008 the Society and College of Radiographers commissioned research examining the scope of radiographic practice. The aims of that study were to:

1. Identify and quantify the different healthcare environments in which the radiography workforce function
2. Quantify the current radiography workforce within the career progression framework
3. Quantify the different roles undertaken by the radiography workforce within clinical practice, management, education and research
4. Identify role developments which have occurred within the profession over the past five years and to describe current trends and future prediction.

The subsequent report to the SCoR[1] made a series of recommendations; three of these related directly to Aim 3 around the CPF. The recommendations were as follows:

- the SCoR is urged to commission an independent evaluation of the impact of implementation of consultant, advanced practitioner and assistant practitioner grades in line with that recently commissioned by Skills for Health for the roles of anaesthesia practitioner, endoscopy practitioner, surgical care practitioner, peri-operative specialist practitioner and physician assistant, in order to assess the cost benefits of introduction of the new radiography grades.
- further research is recommended. It would be beneficial for consultants and advanced practitioners to clarify the content of their current roles and the direction in which they should be developed.
- the development of further guidance on implementing consultant and advanced practitioner posts was viewed as potentially helpful; this could include clarification of the various requirements such as whether audit counts towards the 'research' strand of the post and the need for an individual caseload.

The recommendations were prompted by the fact that, while the concept of the CPF (formerly the 4-tier structure) had been in existence for nearly a decade, its adoption and diffusion had been variable[1]. In particular, the rate of adoption of radiographer consultant posts has been slow compared to the adoption of advanced practitioner and assistant practitioner grades. This is despite the announcement of consultant posts from allied health

professions (AHP) in the NHS Plan of 2000[2] and a Department of Health Advanced Letter[3].

Therefore, following the submission of the Scope of Practice report the SCoR commissioned the University of Hertfordshire and the Institute for Employment Studies (IES) to undertake exploratory work on the adoption and diffusion of the career progression frame work and to investigate the evidence for impact of introduction of these roles.

The outcome of this work is reported here. The research captured data on issues relating to consultant appointment, impact on service operations and service improvement and hence their immediate impact on clinical imaging services at two National Health Service (NHS) trusts in England. Based on the outcomes of the study, recommendations are made for a larger study embracing clinical imaging and radiotherapy within the UK as a whole.

The work was classified as a Phase 1 pilot study, leaving the option open for the SCoR to commission an in-depth study at a later stage if required.

This report sets out:

i. the methodology by which the materials and tools were designed

ii. an account of the procedure through which the evaluation research was conducted

iii. an account of the quantitative information obtained

iv. an account of the contextualising information obtained through the qualitative work, on the perceived value and local implementation facilitators and barriers

v. a description of the performance impact/cost-benefits of changes to skill-mix and suggestions for the data required to model cost-benefits

vi. a concluding section making further recommendations based on the findings of the work undertaken to date.

Methodology

Two exploratory case studies were conducted to examine development, implementation and impact of consultant radiographer roles at two NHS trusts. Each case study consisted of structured interviews with key staff members at the trust. The two case studies are appended (Appendix 1).

Research Tool

Discussion guides were designed for use in the interviews with staff. Three versions of the templates were designed: one for use with either imaging service managers or clinical service managers; one for use with consultant radiographers; and one for use with radiologists. These are presented in Appendix 2.

Development of the discussion guides was informed by the themes and issues that had emerged during the scope of practice work. The major themes identified concerned workforce issues and patient pathways. Sub-categories were identified which formed the basis of the specific questions. The two main themes and sub categories are presented below.

Workforce issues

- Drivers for role implementation
- Process of post development
- Rationale and criteria for consultant appointment
- Area of specialist practice and proportion of core elements included
- Accountability and line management arrangements
- Numbers and grades of staff who directly support consultants
- Implementation of the career progression framework
- CPD for consultant staff
- Impact on use of other staff's time.

Service quality

- Impact of introduction on service quality
- Indicators of service improvement
- Cost-benefits
- Other indicators of service improvement
- Benefits for referrers and multi-disciplinary teams

Patient pathways

- Patient throughput numbers pre- and post-implementation
- Proportion of patients meeting targets pre- and post-implementation
- Patient waiting-list length pre- and post-implementation

Participants

It was important that the work was undertaken at sites that had fully implemented the career progression framework. Initially, the SCoR made contact with trusts via their consultant network to seek volunteer trusts to participate in the research. The contact was restricted to NHS trusts in England with radiographer consultants in diagnostic imaging and where the career progression framework was implemented fully. Ten trusts responded to the request; after considering the range of trusts that had volunteered, two were asked to participate, one in the north of England and the other in the south. Interviews were conducted with staff identified as being critical to the development and introduction of the radiographer consultant posts: consultant radiographers, radiologists and service or clinical managers.

Procedure

Each researcher took responsibility for one trust and made arrangements to conduct the interviewees. A briefing paper was sent to each interviewee (Appendix 3). Interviews were conducted on-site at each of the trusts.

Prior to the interview, the interviewees were asked if they had any questions and agreement was sought to record the interview. Confidentiality was guaranteed for each of the two sites and for the staff participating. Consent forms were signed by the interviewees and the researchers in all cases (see Appendix 4).

Ethical Approval

Prior to the interviews ethical approval was sought and gained from the Ethics Committee of the School of Health & Emergency Professions at the University of Hertfordshire, Protocol Number: HEPEC/10/09/2.

Structure of the report

In the remainder of the report we present the results, a discussion and conclusion with recommendations for further work. As indicated above, the two case studies are included as Appendix 1.

Results, discussion and conclusions

Interviews were conducted at two sites at which the CPF had been introduced. They explored the background to introduction of the CPF, the way in which the roles had been introduced and the outcomes of these changes. The main points emerging from the interviews are summarised below.

The benefits

- **Overall benefits**. Benefits had been observed at both case study sites and no negative impacts were reported.
- **Increased capacity and patient throughput**. The changes brought about by introduction of the CPF, and in particular the consultant and advanced practitioner posts, had facilitated an increase in throughput of patients.
- **Improved use of medical staff time**. There was evidence that the introduction of the consultant and advanced practitioner posts had led to radiologists' time and effort being used to greater effect.
- **Interprofessional working**. Inter-professional working had been improved, leading to service improvements.
- **Cost containment**. Where the consultant radiographer role had been introduced in place of a radiologist, the service expansion had been achieved at less cost than if a consultant radiologist had been appointed.
- **Improved teamworking**. Introduction of the consultant radiographer posts had had a beneficial impact on teamworking, both within the imaging service and across departments/professions.
- **Improved departmental performance**. Departmental performance had improved at both case study sites following introduction of the consultant radiographer posts. The consultant radiographers had been instrumental in redesigning patient pathways and services.
- **Increased flexibility.** Introduction of the consultant posts had led to more flexibility in responding to patients. More clinics were scheduled and appointments could be offered at a wider and more convenient range of times for patients.

- **More fulfilled staff**. Introduction of the CPF had led to more fulfilled staff at all levels, with radiographers being able to utilise their full range of skills to the benefit of the patients.
- **No change in errors or complaints**. No increase in errors or complaints had been experienced since introduction of the consultant posts and their introduction had allowed service 'gold standards' for double reporting to be achieved.

Issues

- **Energy and effort**. Introduction of the consultant posts takes a lot of time and effort.
- **Ad hoc nature of developments**. Introduction and design of the consultant posts was an ad hoc process, driven either opportunistically, through highly talented and individuals being in post and driving the development and approval process; or through service need, where the consultant grade is introduced in an attempt to resolve a service difficulty.

In the following sections issues identified in the case studies are explored.

A strong rationale and business case

Each trust viewed the adoption of the CPF as a means of modernising service development and bringing about change to meet service needs. The need for careful planning was evident at both sites but the development of a strong rationale and business case had been more dominant in Case Study 1. As part of that strategy it had been seen as essential to gain the support of key people from the directorate management team and clinicians outside radiology who would be using the service.

In Case Study 2, leading change was viewed as the most important aspect of the rationale. Here, introduction of the consultant posts appeared to have been more of a 'natural progression' from the situation that had already been established: there had been a clinical specialist in the department since 2002. The consultant role was seen (at least in part) as developing from that and building on the existing strengths within the department and allowing additional talent to be recruited. Nonetheless, approval at Strategic Health Authority (SHA) level had been sought and gained prior to introduction of the posts.

The way in which developments unfold may therefore impact on the extent to which a business case needs to be developed over and above a service rationale. The situation itself may also influence the ultimate decision: in one site, failure to recruit a radiologist (and recognition that difficulties in recruitment of radiologists were likely to continue in future) was a factor leading to the decision to plan these changes.

It should be noted, though, that awareness of changes that had been introduced at other sites was influential in local decision-making in both these cases. Therefore, any additional publicity that the SCoR can give to sites at which the CPF has been introduced and where service outcomes/benefits have improved would provide useful supporting evidence for departments seeking to make similar changes in future.

Similarly, while a strong business case may be less of an imperative at some sites than others, any further evidence of potential cost savings that can be provided may be of value to

departments considering implementing one or more consultant posts and the four tier career progression framework. However, we acknowledge the current challenges in providing data on cost-savings and return to this point later in this chapter.

Service benefits and improvements

In each of the case studies those interviewed were convinced of the benefits accrued and the improvements in service delivery that have resulted. Although it is true to say that robust data on the adoption of the CPF were not collected *per se* (as data related to the performance of the departments as a whole), in each case targets were being met and there were accounts of service improvement.

In one of the case studies the number of examination appointments for mammography had been increased following introduction of additional clinics after the consultant appointment was appointed. Attainment of the 'gold standard' of double reporting of mammograms and hot reporting of radiographic images had also been achieved at that site.

Interviewees were also convinced of the service benefits arising from introduction of lower grades within the CPF. Introduction of the assistant practitioner role had significantly freed up the time of more senior staff and aided capacity/throughput of patients. Together with the advanced practice and consultant radiographer roles, introduction of these posts can significantly free up radiologist time and/or increase clinic capacity and flexibility.

While these aspects of the consultant role can be directly linked to improvements in patient care, there had also been indirect benefits, through the contributions made by consultants to professional leadership, management of staff development and clinical governance.

Interviewees were persuaded of the service benefits and improvements but did not necessarily have access to robust relevant data. While the objective costs and benefits were difficult to ascertain clearly, interviewees pointed to a range of clinical and non-clinical benefits including:

- flexible, patient centred GI service and breast service and improved patient pathways
- greater clinical capacity
- robust clinical governance
- service improvement programme leadership.

In addition, at one site there had been introduction of induction and preceptorship programmes together with work experience and increased engagement with local schools.

Cost savings

It was difficult for interviewees to identify any direct cost savings except for reduced salary costs. Where the consultant radiographer had been appointed instead of a consultant radiologist, there were readily identifiable cost savings arising from the difference between an AfC Band 8b salary and a medical consultant's salary.

However, the broad view was that the main focus had not been on saving salary costs but on service improvement. While interviewees could point to savings and cost efficiencies they had not costed these benefits. The data to support such calculations appeared difficult for

departments to isolate from overall statistics.

In the longer term, cost-efficiencies may prove more relevant within the NHS setting than savings. For example, changed work arrangements that meant that individuals were working all of the time at the appropriate level for their salary, rather than just part of the time, may lead to sustained improvements in value for money, while hypothetical savings to expenditure may disappear if NHS budgets are cut across the board.

However it should be borne in mind that improvement to clinical governance and enablement of the double reporting 'gold standard' potentially could lead to additional savings in the long term, for example, from reduced risks of litigation.

Calculating cost benefits

While sites believed there were benefits, they had not attempted to calculate the direct cost benefits; furthermore they felt that there could be problems with making these calculations. At one site, it was believed that because the department had not only introduced the posts but had also re-configured the working arrangements and work practices (both initially and once the consultant had taken a lead on service development) this meant that it was not possible to calculate the cost benefits associated with introducing the posts because of the extent of change.

However, given that first, it is inevitable that an organisation will have to change its practices to accommodate new roles, and second, the intention in introducing these posts is to bring about change to service delivery, then organisational change should not really constitute a barrier to calculating cost-benefits. A rough estimate could be obtained by considering total imaging department income divided by imaging/interventional events (although this would not be appropriate where an individual is employed in one department but performs their duties in another, as in the Emergency Department scenario). It should be possible to collect and compare departmental operational and performance data for a period preceding introduction and for an equivalent period following implementation and then to calculate:

$$\frac{\text{Mean of } \sum \text{ examinations and/or interventional processes}}{\text{Mean of } \sum \text{ all staff plus operational costs}}$$

Operational costs would include recruitment, training and development costs for the period across which the costs and events are being summed and averaged.

This would provide an average cost per imaging event. If the proportion of examinations or modalities or interventional processes used shifted significantly during that time, some correction would need to be made for this.

If there is a benefit, then we would expect to see either an increase in the number of imaging events for the same total envelope of funding or reduced funding producing the same or greater number of events.

There was a feeling that issues around funding 'following the patient' had not been sufficiently resolved to allow throughput of patients to be incorporated into calculations yet, but this will presumably be more feasible in future. At that point, issues of greater throughput, brought about by the operation of parallel clinics, or shorter waiting times, will start to play a part in the cost-benefit analyses.

A full health economics benefit would of course take into account far more sophisticated calculations than these. The total cost per patient per procedure for the different types of skill-mix team before and after the changes, could be attempted, but again, we would point to the difficulties that departments appear to have in identifying and collating the relevant data. Future analyses are likely to include the value to the patient of faster diagnosis and treatment. However, it was not our aim to provide a detailed cost-benefit analysis in health economic terms in this preliminary study.

Conclusions

This small-scale pilot study has pointed to many benefits arising from implementation of the Career Progression Framework. There were no reports of negative outcomes for patients, and many apparent benefits.

On the basis of this work we make the following recommendations to the SCoR:

- information on precedents in establishing consultant posts is clearly useful to sites considering making an application to introduce this role and/or the CPF. It would be helpful if the SCoR could undertake further case studies of the ways in which sites have introduced the CPF to promote more widely the evidence for the improvements in practice that can result. The resulting case studies should be publicised via the SCoR website.
- departments have not tried to undertake cost benefit analyses of the changes they have made. In addition, they appear to have difficulty in understanding the types of data that could be used and the calculations that could be made. Given the continuing difficulty in obtaining consistent data across sites to support economic or cost-benefit analyses of introduction of these posts, we suggest that the SCoR produces a set of guidelines advising department managers on how to undertake a basic cost-benefit assessment.
- evidence points to improvements in both service delivery and clinical governance at sites where the consultant posts have been introduced. Subsequent to the work, questions have been asked about patient safety where radiographers undertake extended role tasks[4]. Although safety was not an issue raised in either of the case studies we recommend that the SCOR considers auditing safety records at sites with consultants and the CPF in place and at comparison sites where these posts/this framework are not in place, to determine whether there is any real evidence for either a) safety concerns at sites with consultant and advanced grade posts in place; or b) improvements in safety and governance at sites where consultant radiographers lead the service.
- the SCoR should develop guidance for departments to help them identify individuals suitable for development as trainees/consultants and identify education programmes appropriate as development routes to consultant positions.

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Appendix 1 - the Case Studies

Case Study 1

The Hospital

This was undertaken at a large district general hospital in the south of England which had been granted NHS Foundation Trust status. It provided a full range of services in addition to being a regional centre for three specialties.

Interviewees

Those participating were the radiology specialty manager, the directorate manager and the consultant radiographer. Three interviews were conducted; two were conducted face-to-face but because of a difficulty of arranging a suitable time for the third, the interviewee completed the question template on-line.

Radiography Profile

There is one consultant radiographer in post who specialises in gastrointestinal imaging (GI). The consultant had been in post for two years and was appointed on Agenda for Change (AfC) band 8b which remained unchanged at the time of interviews.

The 'four tier system' Career Progression Framework began to be implemented pre-2005 and became fully implemented on the appointment of the consultant radiographer in 2008.

There are 12 advanced practitioners in post whose specialities comprise barium enemas, ultrasound, urodynamics and skeletal reporting and nuclear medicine reporting. The introduction of these posts began before 2005. The advanced practitioners are banded at AfC band 7.

There are four assistant practitioners in post but one assistant is studying to become a radiographer. Posts were introduced about 10 years ago and those currently employed are employed at AfC band 4. The assistants' fields of practice are general radiography, trauma, dentals, DEXA and screening (general not interventional). Shortly their scope of practice will be extended to include theatre radiography.

Rationale for adopting the CPF

The main rationale for adopting the CPF was as a service improvement to reduce waiting times and increase flexibility of the service.

Assistant practitioners

The introduction of assistant practitioners, although meeting a service need, was also seen to be important as a way of introducing career progression for helpers. Increasing their scope of practice would be beneficial to the department by contributing to spreading the radiography workload as well as providing a financial benefit. Some years ago, before accredited training was introduced, it was felt that that as the overcouch imaging of barium enema patients was very repetitive, the 'helper' working in screening could probably be trained to carry out this activity under supervision. A risk assessment was undertaken and the helper was trained to carry out this task. This then meant that there was increased job satisfaction for the helper and patient lists could be managed with fewer staff, with those not required being deployed to areas where there was a shortage. This proved to be very successful and when a foundation degree started, the helper was one of the first to register for the programme, having already gained an NVQ level 3 in the interim.

Currently there are three assistants at AfC band 4. There have been as many as five but one retired, another took a post in another hospital and a third is undertaking a radiography degree.

Practice areas are general radiography, trauma, dentals, DEXA and screening (general, not interventional) and shortly to be in-theatre.

The case for more assistants was made by the consultant who was of the view that:

> *"It is the way that the staffing of departments has to go in the present financial climate. We need a lot more assistant practitioners as there is scope to use them in many more areas in the department. With appropriate training there is a role in ultrasound, mammography, theatre, nuclear medicine, CT and MRI."*

Training is provided by a local university to provide an academic content but the trust trains assistants on the job to carry out particular screening procedures that run strictly to protocol; this is felt to have obvious benefits to theatre and the department.

Advanced practitioners

Advanced practitioner posts were introduced to bring about service improvement by reducing waiting times and increasing flexibility of the service.

The advanced practitioner as a title has not been introduced but radiographers in particular areas with an interest in a speciality were encouraged to develop so that they could take on some of the work carried out by radiologists (eg barium enemas, skeletal reporting). Some universities offered courses that gave academic support to their clinical training. This gave the role development process credibility to sceptical radiologists and to the risk management team.

This was straightforward in ultrasound because of the many precedents elsewhere. With regard to skeletal reporting a business case had to be made.

Consultant post

The rationale for seeking to appoint the consultant posts was service need. At times there was not full radiological cover, especially for lower GI imaging and radiographers were

already working at an advanced level in that field at the trust. There was a recognition that this approach to appointing a consultant radiographer had taken place elsewhere in the UK and it was seen as a logical progression to pursue in the trust. The role was included in the departmental strategic plan but the case for the role had to be put to the Directorate Management Team.

In addition to the service need there were issues of professional leadership and educational development on which it was considered important for the consultant to take the lead.

The development of the consultant post was led by the radiology speciality manager and the clinical director. The first step was to review the service need and once this had been established the strategy was to look at consultant appointments elsewhere in the UK. The precedents from other trusts provided for a process of cross-fertilisation in coming up initially with several job plans. There were a number of consultations within radiology and with consultants outside radiology in the trust. The development team emphasised that the necessity was to provide evidence to justify the post and ensure it was not viewed as simply a job that was being designed for a specific individual. Therefore the post had to reflect a role that would meet the needs of the service.

When the post was approved it was advertised both within the trust and externally. There was an external enquiry but this did not lead to an application. There was, however, an internal candidate who applied and was successful.

Role Content

The job description was put together after studying similar posts in other trusts and by taking advice from sources within and external to the hospital. It was agreed by the speciality manager, the lead radiologist and the directorate management. The core elements were agreed as primarily GI radiography/radiology with responsibility for leading on barium enemas; other elements included membership of the multidisciplinary team (MDT); CT colonography; professional lead in radiography; membership of the departmental management team and educational lead including responsibility for ensuring staff CPD needs are met.

Post appointment negotiations took place between the speciality manager and the consultant radiographer as it was recognised that the role would develop. The consultant explained that:

> *'These [requirements] have changed as the job has evolved. When the job description was written, the emphasis was very much on the clinical side: professional lead, education, clinical governance and audit. Now I am very involved in all of the above plus service improvement and skill mix within the department.'*

Although the consultant cannot quantify the percentage of time spent on each element as they are continually in flux, four clinical sessions are routinely undertaken per week plus the reporting requirements arising from those. However if there are radiologists away who have GI lists the consultant covers those in order that the waiting times remain on target.

The initial job description reflected the clinical need but the managerial and leadership roles have developed subsequently. The consultant and managers agreed that the benefits have been greater than anticipated.

Selection criteria

Criteria adopted for assessing and selecting applicants for the consultant post were based around qualifications and experience relative to the job description. The applicant was marked against a scoring grid matched to the job description.

The panel was the speciality manager, the lead radiologist and an external member who was a consultant radiographer.

The consultant has two lines of accountability; on a non-clinical basis to the speciality manager and clinically to the lead radiologist in the same way as other radiologists.

CPD arrangements are in place for the consultants and for advanced practitioners. This is based around a performance management programme using a dial system where performance is scored on a scale 1-10 with 5 being the optimum score, less than 5 demonstrates an underperformance and over 5 an over performance on a particular task type.

Impact and benefits

There have been a number of impacts on the clinical side including freeing-up radiologists' time from some specific types of examination, improving the use of their training time and enabling increased demands elsewhere to be met. For example, prior to the consultant radiographer appointment, the need for barium enemas was not being met to the required level. The radiographer-led barium enema service and radiographer involvement in CT colonography has had a positive impact on service capacity in these areas. The trust is very satisfied in the way the service is run. In particular, the importance of the professional lead role was emphasised which included developing the work force and undertaking a training needs analysis for radiographic staff.

The anticipated benefits of the appointment have been realised but the overall effect is one which is different to what was expected in that there have been advances in areas other than those planned. These have been improvements in clinical governance within radiology which is now much better organised; improvements to staff development and training and improvements in planning and recording. Clinically, there has been an impact on service capacity since introduction of the consultant post.

It was difficult to determine whether there had been any direct impact on proportion of patients meeting 18 weeks targets pre-and post-implementation of the consultant post as there have been so many modernising projects. But it was clear that if the consultant radiographer had not been appointed the department would have to have done things differently. However, the patient waiting-list length pre- and post-implementation has reduced. The trust meets its 6 week target for imaging and 2 weeks for cancer. Overall, there was a strong view that the key benefits are around patient care and timely radiology. Lists are no longer cancelled because of holidays or sickness and, if required, the capacity is increased by extending lists or running extra lists.

As radiologists are normally involved in a range of modalities, they are therefore not always readily available. Because of this, the consultant radiographer is now the named person for contact by referrers on aspects of GI imaging and plays a key role within the multi-disciplinary team.

"I have a part to play within the multidisciplinary team and as such can communicate

> *findings straight to referrers and also arrange any examinations that they may require at short notice. We also discuss service provision, patient information etc."*

Likewise in the case of advanced practitioners, their involvement in ultrasound, urodynamics and with referrers and multi-disciplinary teams has produced similar benefits.

For assistant practitioners, their benefit is exemplified by operating the DEXA service under the responsibility of a band 6 radiographer. The manager recommended that the SCoR extend the scope of practice of assistant practitioners.

In summing up the benefits of the consultant post, the speciality manager stated:

> *"There have been clinical benefits, certainly, but with the development of the managerial and leadership roles, the benefits have been better than planned."*

The consultant radiographer identified the benefits as:

> *"Service improvement and programme leadership. A flexible, patient centred GI service. A robust Clinical Governance Agenda. High level of student support. The introduction of induction and preceptorship programmes together with work experience book and engaging with schools to organise visits as part of their science programme. I do not think that we envisaged that the role would evolve in the way that it has and for that reason the benefits are different. We had thought that they would be mainly to the clinical side of things but the other parts of my role have made a bigger impact on the department".*

Monitoring the service

Activity is measured on a monthly basis and waiting times on a weekly basis for both financial and service planning reasons. In 2006 there were 125,304 examinations and in 2008 it was 147,866. For fluoroscopy following the appointment of the consultant radiographer in the first year there was a 24.8% increase in activity; in the second year it was a 7.8% increase but activity is continuing at this higher level.

Figures are reported internally to the directorate management. They are used to measure performance, comparison with previous returns and are used for strategic planning. Year on year comparisons are made and are noted at Board level. This does impact on departmental income as money is transferred into the budget based on activity.

The figures are also reported externally to the primary care trust and they are compared against national tariffs in relation to funding.

With regard to complaints, the department would investigate any against the consultant if any had been made but to date there have not been any. Where complaints are made against the department the consultant radiographer investigates these. There has been no change in the number of complaints overall since the year in which the consultant the post was introduced.

Consultant costs

Overall, the cost to introduce the consultant post has been salary (Band 8b) plus development and training. There was no additional funding to resource the post; the start-up costs had to be found from within the department's budget. Now the post is established it sits within the department's budget on a recurrent basis. There is no data that directly demonstrates the cost-benefits or could be used to calculate cost savings except the self-

evident difference in salary between a consultant radiographer and consultant radiologist. These were produced when 'selling' the concept to the directorate management and featured as part of the ongoing discussions.

Succession planning

There are no robust succession plans in place should the consultant move on. However, the future of barium enemas are under discussion but the consultant radiographer also performs CT colonography and the role would develop to meet new requirements.

If the consultant did leave, following the initial panic, the trust would seek to reappoint as the post is valued but a new person would have to have the same clinical skills and be at the appropriate level.

The department is now discussing a consultant radiographer post in nuclear medicine and has identified potential for introducing radiographer consultants in ultrasound and breast imaging.

The trust fully endorses the CPF but the development and implementation process has to be rigorous; there are a lot of key people to persuade in radiology as well as the wider trust.

Case Study 2

This was undertaken at a large trust in the north of England.

The Hospital

The hospital was a large trust formed from the merger of three hospitals in the north of England. Imaging services are provided across the three sites.

Interviewees

Interviews were undertaken with four individuals: the director of clinical services (a radiologist), two consultant radiographers (one of whom had been involved in writing the original proposal to introduce consultant posts and the other having come through the trainee consultant route) and a radiologist.

Radiography Profile

The CPF had been in place for around three years by the time at which the interviews were conducted, in late 2009.

There are two consultant radiographers and two trainee consultants at the hospital, along with an extensive cohort of advanced practice radiographers and sonographers. If the scope for and justification (through a business case) for a consultant post is established, a post will be developed and the trainee is eligible to apply, but the posts must be nationally advertised as per Department of Health guidance. Consultant radiographers are employed on AfC band 8b and the trainees are on 8a.

A considerable number of advanced practitioners were in post: two in breast imaging, 20 in ultrasound, two in CT reporting, 9 in film reporting, one GI practitioner, and four in barium studies. Advanced practice radiographers are employed on AfC band 7.

In addition, six assistant practitioners were employed.

Rationale for adopting the CPF

There had been a radiographer clinical specialist role within the hospital since 2002 and this was seen as a precursor to the consultant role: the roles were 50 per cent clinical and 50 per cent non-clinical and had been introduced with the aim of developing advanced practice. This had led into discussions about advanced /consultant practice and the possibility of a radiography role in leading on service development rather than simply leading advanced practice within a focused area.

One key driver had been discussions around the emergency care and critical care agendas which were at the forefront of NHS policy at that time; a further factor was the need to meet the four hour target in Emergency Departments/A&E [1]. Considerations regarding service cover and service development also played a part.

There was some existing history of extended practice: radiographers had been reporting on

[1] A four-hour target in emergency departments was introduced by the Department of Health for National Health Service acute hospitals in England that required trusts to ensure that, by 2004, at least 98% of patients attending an A&E department must be seen, treated, admitted or discharged in under four hours.

plain films in the hospital for over 12 years. However, this had been a somewhat ad hoc arrangement, with some appropriately qualified radiographers not reporting at all. Introduction of the consultant post to lead on service development was therefore seen as an opportunity to extend and formalise the role extension that already existed.

Given that much of the role was envisaged as focusing on leading and changing practice, a significant additional factor in the decision to take forward the proposal for consultant radiographers was the fact that the managers also felt that they had in post an individual who not only had the required talent, drive and ability to do the job but also – and more importantly at the planning stage - to lead on gaining approval for the consultant posts.

Two consultant posts were originally planned: one in the ED and one in GI. Planning for the GI post was largely prompted by screening requirements aligned with the cancer service agenda and largely focused on addressing key clinical service needs for which there was not necessarily any radiologist leadership. Rather than the focus for the changes being on issues that needed to be tackled and which radiologists were not or could not tackle, it was about changing how the imaging services department looked at things in total and in particular worked across disciplines.

Regarding introduction of the advanced practice radiographers, while the intention was for these individuals to take on some of the radiologists' role this was seen as potentially filling a gap in service provision and releasing some of the radiologists' time for other activities rather than being about cutting costs.

Therefore, there had been a combination of factors. *"It wasn't just a cynical move to plug holes, [and] it wasn't singularly because we thought it was a good idea; it was multi factorial".*

One comment is worth noting. The clinical service director stated:

> *"My view is that for the extreme role extension [ie to consultant level] in radiography you need to have suitable people in post before you plan it. And there are not huge [numbers] of people out there. I think that's one of the constraining factors [and] the most interesting bit."*

Assistant practitioners

There are six assistant practitioners in general radiography and one assistant in a partner managed MRI service, with that development being supported by the trust. The trust had recently recruited one person to start as a trainee assistant practitioner for mammography but the individual had then decided against continuing in this post, so there was no assistant in mammography at the moment but it is planned to appoint an assistant practitioner in this area at some point in the future.

The trust first developed just one assistant practitioner; this individual was already a very experienced clinical support worker. A second assistant practitioner was appointed two years later. A further four had been trained in the last year in plain film radiography. The trainee assistant practitioners undertake the first year of the radiography degree to qualify for the role.

These last four posts had been planned with a view to providing the additional staff that would be required when the department moved into new premises in the near future. A key factor influencing this decision had been the fact that the SHA still provides backfill funding, which enabled the department to recruit two trainee assistant practitioners internally and two

externally. The trust was looking at introducing assistant practitioners in a number of other areas, mainly in radiographic practice, with some discussion regarding the possibility of their introduction into CT, too.

The assistant practitioners work the same extended days as other staff and the same rotations too. They work as part of the team, under direct supervision, but as integrated, flexible, members of the team. Their work is varied, although for the majority of their time they may take x-rays under supervision; at other times of the day they will work as a support worker.

Advanced practitioners

The general radiography posts had been developed and reconfigured by the consultant to make best use of their time. Radiographers in plain film were now being used as reporters the majority of the time; previously these radiographers had only been plain film reporting for one or two sessions a week and yet often had been employed in a band 7 post. Following the role reconfiguration 60 per cent of their time is dedicated to advanced practice, clinically, and the remainder of their time is clinical, so that now they are involved in work that is appropriate to their banding all the time. The change had also meant that radiographers were now providing services 12 hours a day and at weekends on one site and 9-5 at the other two sites and at the same time radiographers had taken on a large proportion of the radiologists' reporting workload.

The advanced practitioners are clinically accountable to the Consultant but are line managed by the radiography manager. All advanced practitioners are expected to hold a postgraduate certificate and be working towards a master's degree. All of the sonographers are advanced practitioners.

Consultant post

One of the consultants (one of the case study interviewees) had been employed within the trust prior to introduction of the consultant posts. They had been tasked with writing the proposal for the introduction of the consultant posts and then subsequently had been appointed (following an open recruitment process) as a consultant, at band 8b, in 2004. The second consultant had been appointed initially to a trainee post at band 8a and then, once qualified and following advertising and open competition for the post, was appointed consultant at band 8b in 2006. It should be noted that the original proposal had proposed two posts, with one being in GI imaging. However, a failure to recruit had meant that this post was effectively frozen and the second consultant post had arisen from a subsequent proposal for service support in breast imaging[2].

There were several reasons for seeking to appoint the consultant posts. One was service need. On occasions there was not full radiological cover, especially for lower GI imaging. There was also an acute shortage of suitable consultant radiologists making recruitment challenging and the desire of incoming radiology consultants to focus on their chosen area of subject specialisation meant that a lot of bread and butter radiology work was not being done; as the consultant radiologist stated:

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[2] Trainee consultants for GI and fluoroscopy were subsequently appointed following the original case study interviews.

> *"There was no space in people's work plans, so things like plain film reporting, ultrasound, etc. were being left by the wayside, and there was a need to get it reported and sorted".*

At the same time, several radiographers were already working at an advanced level in the trust when discussions first took place. There was a recognition that the appointment of consultant radiographers to improve imaging services had already taken place elsewhere in the UK and it was seen as a logical progression to pursue within the trust. In addition to addressing the service delivery needs, appointment of a consultant was also expected to provide professional and educational development and leadership.

The development of the consultant post was led by the radiology speciality manager and the clinical director. The first step was to review the service need and once this had been established the strategy was to look at consultant appointments elsewhere in the UK. The precedents from other trusts provided for a process of cross fertilisation in coming up initially with several job plans. There were a number of consultations within radiology and with consultants outside radiology in the trust. The development team emphasised the necessity of providing evidence to justify the post and not a job that was being designed for a specific individual. Therefore the post had to reflect a role that would meet the needs of the service.

Role Content

The job description had been written to fit the framework that would get approval. However, the head of service had had a significant say in making sure that the balance was right. The basic structure for the consultant post was around six-tenths clinical, three tenths development support of others and leadership and one tenth research. However, the ED role had changed since the consultant had been appointed and it was now felt to be closer to a quarter research, a quarter service leadership and development and slightly less clinical. It was felt that over time the role would become less clinical as that individual moved into more of a leadership role alongside the Clinical Director and the radiography manager.

There are indications that, in the case of the two successful appointments, the role had been developed with the strengths of the eventual appointee in mind. The priorities within the two posts allowed the consultants to play to their strengths.

Regarding the consultant post based in ED, while the post is employed through imaging services, the role sits within ED; this post is therefore involved in implementing change more widely within the trust, rather than being constrained to implementing change within imaging services. The consultant had looked at how imaging services integrated with other areas and at how pathways could be changed and new pathways introduced, in collaboration with the management team.

The consultant post in the breast imaging service was also largely focussed on service development. While the role was being defined, the eventual appointee was seen as the person most likely to be appointed to the post. Although this individual has a clinical role, they also enjoy implementing systems and have a strong network of contacts externally. The role now requires this individual to collaborate with outside services across directorates.

Research has been a central part of the role. For example, in the breast imaging service, the

referral pathway for mammographic surveillance had been changed based on a study undertaken by the consultant (while in the trainee consultant post) which culminated in the recognition that patients should be stratified according to risk and their surveillance regime determined from that.

There is also evidence of changes to patient pathways. In the ED, direct access for trauma patients through GPs and through the walk-in centre had been introduced. The big issue had not been access to imaging but access to report. Now, radiographers not only report but can also give the patient advice and instruction regarding their injury, which normally the GPs would do. The immediate availability of reporting means that patients can now also be referred directly into the appointments system, whereas before they would have had to wait for a referral from their GP. This means that patients are managed better and it has increased capacity in the ED.

Selection criteria

The key issues for the posts were seen as being able to work autonomously and confidently and being able to drive their own agenda, to drive change and challenge practice both within the department and across boundaries.

The criteria used for assessing and selecting applicants for the two consultant posts were based around qualifications and experience related to the job description. However, the two trainee consultant posts had not been advertised externally; they had been given to people who were viewed as particularly appropriate because of their previous experience, as the consultant radiologist indicated:

> "*The trainee posts are only secondments at the end of the day. If they don't prove that they've got potential for a consultant post in their area then they'll go back to their old job."*

The trainee consultants are required to go through a Masters' programme and to prove during the secondment that they have the potential to take on a consultant post in their area: if they do not, then they return to their old job. Where the business case for the post is justified, the post is advertised nationally and the trainee will be eligible to apply for the post at that point.

Impact and benefits

A number of clinical and capacity benefits were identified:

At various points in time, the trust had found themselves with gaps in the service; this was attributed largely to the rapid development of complex imaging, with, as a result, the more basic and routine imaging being left behind. There had also been problems with reporting in ED, with radiologists sometimes not reporting for up to 14 or 15 days after the patient attended. The developments in radiography had meant that they now had a 12 hour radiographer-led hot reporting service for the ED which was likely to be extended to a twelve hours seven days a week service in the near future. Recently this had been extended to include radiographer discharge of patients from ED under protocol and these innovations around discharge have freed up clinical time.

Across the imaging service, the consultant and advanced practitioner posts were seen as having plugged gaps, supported service delivery and innovation and/or freed up radiologists'

time. Introduction of these grades had also allowed for double reporting of barium enemas and, in the breast scanning service, introduction of the consultant post has allowed the double reporting of mammograms. The interviewees believed this would not have been feasible before the introduction of the advanced practice posts. Although the actual throughput of patients remained the same the trust had been able to bring the added benefit to the patient of double reporting, which is the 'gold standard' for mammography.

Having the consultant radiographer permanently based in the department meant that the timings for stereotactic core biopsies could be more flexible, which in turn meant that they have been able to reduce the waiting times for patients for that procedure. The consultant radiographer had been responsible for stereotactic core biopsies since 2004 (when they were an advanced practice radiographer prior to being appointed to the consultant post); previously it had only been radiologists who undertook this job and they did just one session per week. The trust did not hold records on this, but the interviewee believed that previously they were doing "probably two stereo cores a week". Now they could accommodate eight a week.

> *"It's been a godsend. It has freed up consultant radiologist time to do more intricate cross sectional imaging. In my world of breast work it's made up for the fact that we haven't been able to recruit to posts. It's provided additional hands in one-stop clinics and in the second reporting of films. And certainly for A&E and for the outpatient, hospital based stuff, that's been expanded; it's definitely taken a huge load off the consultant radiologists to allow them to develop additional services."*

The radiologist confirmed this point, saying that they felt that there had been improvements across the board: introduction of the consultant posts had enabled the trust to adhere to the RCR guidance that everything should be reported and to meet the radiology 6-week (and soon to be two-week) targets for the breast service.

The breast service had one consultant radiographer and one and a half whole time equivalent advanced practitioners in place and this had allowed the service to increase the numbers seen in clinic. The radiologist in charge of the service was unable to provide figures relating to the increase but commented:

> *"We lost one consultant radiologist, were unable to secure a locum and could not re-recruit. We had [these advanced personnel] in place and training up when the crunch came. We had this 'before' scenario, and then we put them in place, and immediately after, we had a service that was ticking along and it would have fallen apart had they not been there, so it's not really that easy to quantify [but] the clinic numbers and smooth running of clinics have been down to having these multi-skilled people, including the consultant and advanced practitioner, able to work with a minimum of supervision."*

One of the biggest impacts of introduction of the consultant role has been the introduction of hard evidence-based practice and change in systems. The change to the referral pathway for mammographic surveillance was reported in an earlier section. There had also been changes made to the referral pathway because previous research had revealed extensive slippage in patients and that some were not getting mammograms until nearly nine months after they should have. In the breast service, then, there is evidence that the consultant has

been able to put research into practice, "to implement it, put the systems in place so we can improve the patient pathways".

When the department moves to new premises it will be possible to have two simultaneous symptomatic one-stop clinic lists running. The proposal on the table at the time of the interview was for the consultant radiologist and the consultant radiographer each to have their own list within that clinic. This would increase the patient throughput significantly. With their present arrangements they have only16 patients per clinic. With the new arrangements they will increase to 24 patients per clinic, with five clinics per week. In addition, the consultant radiographer was able to undertake interventional guided ultrasound; previously it was only the radiologists that could do this procedure. Although the service was not yet at a point where they could really increase the patient numbers (because they were constrained by the existing site and were waiting to move to the new premises), those patients who were seen in the clinic at present did not have to wait so long to be seen because of the additional personnel available.

More widely there were felt to have been benefits for referrers with a more responsive service and better access. There were also thought to be benefits arising from the improved relationship with a number of areas, primarily the emergency department, GI practice, ultrasound, breast and neurological (because of the CT reporting). In ED, as was reported earlier, the consultant radiographer had worked with colleagues to change and improve patient pathways. A large part of these improvements had arisen from their being able to offer immediate reporting – delays in reporting had been a particular weakness previously.

Introduction of the advanced and assistant practitioners in imaging services meant that virtually all patients were now being imaged within two weeks. On a typical day the department conducts a thousand examinations with around half being radiographic and the other half requiring more complex imaging. Looking at the extent of change by modality, radiology is the area in which radiographers have had the biggest single impact by their contribution to reporting. Virtually all images were being reported within five days.

While there had been improvements to capacity arising from introduction of the ED consultant post, the increase in capacity did not relate to the imaging service more generally but to ED itself and, indirectly, with other hospital departments (eg through the new referral processes). Introduction of the consultant had helped the service meet the four hour target. In terms of actual throughput of patients, there was negligible impact because by nature of its role an ED department sees everybody presenting on a day. However, in a report published in 2004[3] on the impact of this site's introduction of the ED consultant post, it was reported that journey times through the ED had been cut (although no data/figures were provided) while ED recalls because of misinterpretation had decreased by approximately 50 per cent.

A complication in demonstrating the cost benefits of introduction of such roles is that they do not occur in a vacuum; neither does the department remain unchanged around the new posts. One of the consultant radiographers stated:

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[3] NHS Modernisation Agency (2004) Radiology: Supporting the Delivery of Emergency Care

> *''It's very difficult [trying to] tie it down to [the impact of] one person because it's more that it's been a gradual change, although some have been quicker than others. It's very difficult to pin down specific cost-benefits. I've looked to see if historically we can and it's very difficult to say 'we saved that money'….[and there is] research income both in terms of through backfill or additional money. The secondments of the two trainee consultants are being funded out of backfill research money, which in turn is funded by a backfill component of a DH research grant that funds my time. And the best way for them to backfill me is for other people to take on some of the strategic things that I do."*

The research is conducted through patient recruitment to trials, so that brings in direct organisational income and although this does not necessarily come in to radiology it is one of the areas where the money can be positively identified. Some of the cost savings may arise through release of workforce (primarily the more expensive radiologists). But this can be difficult to estimate in the ED. Looking at reporting, cost-benefits may centre on the fact that the trust is are gaining more complex work from radiographers than they had been previously, so that is more about value for money than savings per se.

The trust had not attempted to calculate the savings made, or other cost-benefits (e.g as in value for money) arising from the changes made.

Monitoring the service

The department had developed a report tracker and that allows the managers to see activity levels for all the modalities of reporting. They monitored and had graphs giving historical data on total activity, but had now moved to this system which allowed active management of each individual modality. In general their level of activity had grown by 5 - 8 per cent each year for the last 8 – 10 years, with faster growth in areas such as MR and CT but this was not entirely attributable to the introduction of the new posts. Performance data are reported to the SHA and at national level and the Service Board receives a report internally. Figures are recorded internally for the number of complaints, but these are not recorded against individual members of staff.

A record of the number of reports that are made is compiled every month, categorised by reporter and an annual report is produced. While it would be possible to calculate an overall departmental report rate before and after the introduction of these posts, this had not been done.

Consultant costs

Overall, the main costs in introducing the consultant posts had been their salary plus the cost of training (for those who had come through the trainee consultant route). Very little cost was involved. This was partly because they had vacancies at the time. For the ED consultant, the only cost was advertising and selection, plus the cost of the upgrade of the appointee's post to 8b. If the selection process had resulted in an external recruitment, then the trust would have used money saved from existing vacancies. The trust will not allow departments to advertise a job unless they have the money available to recruit to it. Funding for the first consultant posts came from money that had originally been intended for radiologists. In addition, they had not directly replaced the post of the radiographer that was upgraded to consultant. The same situation pertained when they appointed the consultant radiographer for the breast service. However, interviewees – including one of the radiologists - were keen to emphasise that the developments had not been planned and had not been intended as a

way of getting ‘a radiologist on the cheap’:

> *“They [consultant radiographers] can hold their own with any consultant radiologist quite happily and should be allowed to. They are not a replacement or a threat but a…just another colleague. I wouldn’t want trust finance people to see it as a radiologist on the cheap.”*

Part of the training process requires the trainee consultant to justify their employment by demonstrating cost-efficiencies. The interviewee who had been through the consultant training process had identified new funding streams as part of the training and had looked at the current systems and how these could be made more efficient. In addition, by enabling double reporting, introduction of the consultant radiographers has reduced the chance of litigation; this may feed through into cost savings.

Succession planning

The trust does not have a succession plan as such but is trying to develop more of these specialist roles and to grow the service. Another person in a similar role to the clinical specialist had now become a trainee consultant. Regarding succession planning in ultrasound and breast imaging they had a clinical specialist team that works alongside the consultant, so in terms of succession planning they would expect someone from that cohort of people to be appropriate for development.

By the time that the current two trainee consultants finish their training, the department aims to be considering their next steps: whether to look at recruiting two more trainees in other areas, that’s for discussion. Although they recognised that finances were likely to be challenging in the future, they did not anticipate remaining with just five consultants in post. Increasing the number of consultant radiographers was part of their substantive workforce plan at the time of the interview.

Whilst costs were not seen as a real constraint on developing the consultant radiographer posts, one limitation however is finding the time to provide the training and mentoring needed. With limited numbers and limited staff, it is difficult for the radiologists to spare the time to train up consultant radiographers because of the lack of available time in the working day. This could constitute a barrier to the introduction of further posts.

Appendix 2 - Discussion Guides

Consultant radiographer interview template

SECTION 1

Current position

I'd like to start by asking you about your consultancy post and the background to your gaining that position.

1. How long have you been a consultant radiographer here? When were you appointed?
2. Were you employed here prior to gaining this post? YES NO
   i. If YES, What was your band/position prior to becoming a consultant?
   ii. Were you involved in developing the proposal to create the consultant role?
   iii. If YES, Can you tell me how that happened?
   iv. Would you give me a brief outline of what the job entails?
   v. Is that how it was originally anticipated? (ie has the post changed between design and appointment?)
3. What is the AfC band for the consultant's post?
   i. Is this the band you started on when appointed to the consultant position?
   YES NO
   ii. *If NO, ask for details about the change to grading*
4. How long has the 'Four tier system – Career Progression Framework' been fully implemented here?

SECTION 2

Background to introducing consultant posts

If interviewee has indicated they were involved in introducing the post, ask this section. If not, jump to section 3.

5. What was the rationale for seeking to introduce the consultant role(s)?
6. *If service provision/quality not mentioned, ask if any service provision or service quality issues were part of the context to making the bid for consultant post.*
7. Were there any other issues that you or your colleagues thought a consultant would particularly help the department address?
8. If so, what were these?

9. How did you think the consultant position would help?
10. How was/were the consultant post(s) developed?
11. Who led the development process?
12. Did any factors emerge as more important than others during this process?
13. If advanced practitioner(s) also in post – was/were this/these post(s) introduced for similar reasons to those for the consultant post, or different? If different, what were the main reasons?

SECTION 3

Role Content

14. What are the core elements of your job description? *(If more than one consultant)* Is the emphasis of the job descriptions the same for both/all of the consultant posts, or do they differ?
15. Are any areas of specialist practice specified? YES NO
    i. If YES, what are these?
16. Who decided the content for the job description(s)?
17. *(Ask only if the consultant was part of the team that developed/proposed the post)* Do you think that these job components/elements fully reflect the needs that were expressed prior to agreement for the post?
18. If any difference, why was this?
19. Was the content of the job descriptions/person specification for the consultant post subject to any negotiation prior to agreement? YES NO
    i. Who was involved in these negotiations?
20. Who is your line manager?
21. To whom are consultant radiographers clinically accountable if different from line manager?
22. Are there agreed CPD arrangements for the consultant(s) (and for Advanced Practitioners, if in post)? YES NO If YES, what are they? If NO, what has happened so far regarding CPD provision?

SECTION 4

Impact

23. What, in your view, have the main impacts been from introducing the consultant post(s)?
24. *If not specified,* Do you believe that introduction of the consultant post(s) has had an impact on service **quality**?

25. Has there been any impact on service **capacity** since introduction of the consultant post(s)? YES NO
26. Are these the types of benefits that were anticipated in introducing the post(s), or different? SAME DIFFERENT
27. If different, how are they different? Why do you think this is the case?
28. *If not previously mentioned* Has there been any impact on proportion of patients meeting 18 weeks targets pre-and post-implementation of the consultant post(s)?
29. *If not previously mentioned* Has there been any impact on patient waiting-list length pre- and post-implementation?
30. How do you record/monitor service throughput?
31. Are you required to record information on capacity/throughput for the trust? YES NO
32. How is this recorded?
33. Do you record overall number of patients who come through the department/unit? YES NO If YES,
    i. Is this per week, month, quarter, year?
    ii. If YES, how many is this?
34. Do you record overall number of imaging 'events'? YES NO
35. If YES, is this per week, per month, per quarter?
36. Per unit/modality?
37. Is this for the department/unit overall? If not recorded as an overall departmental figure or figures, how is this information recorded?
38. Do you report these figures internally?
39. Who to? What happens to the information?
40. Are year on year comparisons made?
41. Are these figures noted at Board level?
42. Does it impact on your funding?
43. Are you required to report these figures externally? Who to? (SHA? DH?)
44. Do you keep a record of number of complaints made against the department/unit?
45. If so how are these recorded?
46. Do you make year on year comparisons? Has there been any change between [year consultant post was introduced] and now?
47. Are there any other indicators of service improvement you would like to mention?
48. Do you think there have been any benefits since introduction of the consultant post(s) for referrers or for multi-disciplinary teams?

49. *(Only if employed in same department before becoming consultant)* Has there been any impact of introduction of the consultant post(s) on other staffs' time use?
50. Overall, what has it cost to introduce the consultant post(s)?
51. Did the department receive additional funding to resource this? YES NO
    i. If YES, has this continued or were you required to find ways to make the post(s) self-sustaining/funding (eg through cost/efficiency savings)?
52. If not, how was it funded?
53. Do you have data that demonstrate the cost-benefits or could be used to calculate cost savings?
54. Have you done so yourself (made these calculations)?
55. Have you tried to collect any additional information to demonstrate the value of your post (and AP post, if appropriate) for the trust and/or for service users?
56. Overall, what do you think the **main** benefits have been?
57. Do you have any other comments you would like to make about the process of introducing the consultant post(s) or the impact of doing so?

Thank you.

Manager interview template

SECTION 1

Current position

I'd like to start by asking you for some details about the current situation in your trust.

1. How many consultant radiographer posts are there in the trust?
2. What were the dates of appointment?
3. What are their AfC bandings?
4. Are these the bands they started on when appointed to the consultant position?

   YES NO
5. If NO, ask for details about the change to grading
6. How many advanced practitioners are there in post?
7. What is their field of practice?
8. What were the dates of appointment/promotion?
9. What are their AfC bandings?
10. Are these the bands they started on when appointed to the advanced practitioner position?

    YES NO
11. If NO, ask for details about the change to grading
12. How many assistant practitioners are there in post?
13. What is their field of practice?
14. What were the dates of appointment/promotion?
15. What are their AfC bandings?
16. 'How long has the 'Four tier system – Career Progression Framework' been fully implemented here?

SECTION 2

Background to INTRODUCING consultant posts

17. What was the rationale for seeking to appoint the consultant(s)?

18. If service provision/quality not mentioned, ask if any service provision or service quality issues were part of the context to making the bid for consultant post.

19. Were there any other issues that you thought a consultant would particularly help to address within the department? YES NO

i. If YES, what were these?

ii. How did you think the consultant position would help?

20. Who led the development process and who was involved?

    i. What did the process entail?

21. Did any factors emerge as more important than others during this process?

    YES NO

    i. If YES, what were they?

SECTION 3

Role Content

22. Who decided the content for the job description(s)?
23. Do you think that these job components/elements fully reflect the needs that were expressed prior to agreement for the post?
24. If any difference, why was this?

i. Was the content of the consultant post job descriptions/person specification subject to any negotiation prior to agreement?

ii. Who was involved in those negotiations?

25. What criteria did you adopt for assessing/selecting applicants for the consultant post(s)?
26. Did you manage to recruit an individual / individuals who met all the desired criteria for the post(s)? YES NO

    i. If NO, what did you do?

SECTION 4

Impact

27. What, in your view, have the main impacts been from introducing the consultant post(s)?
28. Are these the types of benefits that were anticipated in introducing the post(s), or different? SAME DIFFERENT
29. If DIFFERENT, how are they different?

    i. Why do you think this is the case?

30. *If not specified*, Do you believe that introduction of the consultant post(s) has had an impact on service **quality**?
31. Has there been any impact on service **capacity** since introduction of the consultant post(s)?
32. Has there been any impact on proportion of patients meeting 18 weeks targets pre-and post-implementation of the consultant post(s)?

33. Has there been any impact on patient waiting-list length pre- and post-implementation?
34. How do you record/monitor service throughput?
35. Are you required to record information on capacity/throughput for the trust?
36. Do you record overall number of patients who come through the department/unit?

    YES NO
37. Is this per week, month, quarter, year?
38. How was it in the year prior to employing a consultant?
39. Do you report these figures internally?
40. Are year on year comparisons made?
41. Are these figures noted at Board level?
42. Does it impact on your departmental income?
43. Are you required to report these figures externally, if so who to?
44. Do you keep a record of number of complaints made against the department/unit in relation to the consultant?
45. If so how are these recorded?
46. Do you make year on year comparisons?
47. Has there been any change between [year consultant post was introduced] and now?
48. Are there any other indicators of service improvement you would like to mention?
49. Has the introduction of the consultant post(s) had any impact on other staff's time use?
50. Do you think there have been any benefits since the introduction of the consultant posts for referrers or for multi-disciplinary teams?
51. Has the introduction of advanced practitioner post(s) had any impact on other staff's time use?
52. Do you think there have been any benefits since the introduction of the advanced practitioner posts for referrers or for multi-disciplinary teams?
53. Has the introduction of assistant practitioner post(s) had any impact on other staff's time use?
54. Do you think there have been any benefits since introduction of the assistant practitioner posts for referrers or for multi-disciplinary teams?
55. Overall, what has it cost to introduce the consultant post(s)?
56. Did you receive additional funding to resource this?
57. If yes, has this continued or were you required to find ways to make the post(s)

self-sustaining/funding (eg through cost/efficiency savings)?

58. Overall, what do you think the main benefits have been?
59. Do you have data that demonstrate the cost-benefits or that could be used to calculate cost savings?
60. Have you tried to collect any additional information to demonstrate the value of the consultant (and advanced practitioner posts, if appropriate) posts for the trust and/or for service users?
61. Do you have any succession plans in case the consultant moves on? YES NO
62. If the consultant left now would you reappoint to the post? YES NO
63. If YES, do you have any succession plans in place?
64. If NO, why is that?
65. Do you have any other comments you would like to make about the process of introducing the consultant post(s) or the impact of doing so?

Thank you.

Radiologist interview template

SECTION 1

Background to INTRODUCING consultant posts

I would like to start by asking you for some details about the current situation in your trust

1. What was the rationale for seeking to appoint the radiographic consultant(s)?

2. *If service provision/quality not mentioned, ask if any service provision or service quality issues were part of the context to making the bid for consultant post.*

3. Were there any other issues that you thought a consultant would particularly help the department address? YES NO

4. If YES, what were these?

SECTION 2

Impact

5. What, in your view, have the main impacts been from introducing the consultant post(s)?

6. Are these the types of benefits that were anticipated in introducing the post(s), or different?

   SAME DIFFERENT

7. If DIFFERENT, how are they different?

   i. Why do you think this is the case?

8. *If not specified,* Do you believe that introduction of the consultant post(s) has had an impact on service **quality**?

9. Has there been any impact on service **capacity** since the introduction of the consultant post(s)?

10. Has there been any impact on proportion of patients meeting 18 weeks targets pre-and post-implementation of the consultant post(s)?

11. Has there been any impact on your role and if so what is it?

12. Are there any indicators of service improvement you would like to mention?

13. Do you think there have been any benefits since the introduction of the consultant posts for referrers or for multi-disciplinary teams?

14. Has the introduction of the advanced practitioner post(s) had any impact on other staff's time use?

15. Do you think there have been any benefits since the introduction of the advanced practitioner posts for referrers or for multi-disciplinary teams?

16. Has there been any impact of introduction of assistant practitioner post(s) on other staffs' time use?

17. Do you think there have been any benefits since introduction of the assistant practitioner posts for referrers or for multi-disciplinary teams?

18. Overall, what do you think the main benefits have been of introducing the consultant posts and the four tier framework?

19. Do you have any succession plans in case the consultant moves on?

20. If the consultant left now, would you reappoint to the post? YES NO

21. If YES, do you have any succession plans in place? YES NO

22. If NO, why is that?

23. Do you have any other comments you would like to make about the process of introducing the consultant post(s) or the four tier framework or the impact of doing so?

Thank you.

Appendix 3 - Briefing Paper

Evaluation of impact of radiography consultant posts - case study research

Background

The University of Hertfordshire and the Institute for Employment Studies have been commissioned by the College of Radiographers to undertake exploratory work aimed at evaluating the impact of the four tier Career Progression Framework (CPF) and, in particular, introduction of consultant radiographer roles.

The aims of the project arise from recommendations made to the SCoR in the Scope of Radiographic Practice 2008 report[i] and are to:

- evaluate the impact and cost-effectiveness of consultant radiographer posts on clinical imaging services in England to inform future workforce role redesign decisions
- explore and identify the extent to which core functions are being assimilated into consultant roles
- identify and investigate factors that promote and encourage the establishment of consultant posts and factors that deter their establishment.

As a result we are inviting you to participate in this pilot study to identify issues around the introduction of the consultant posts and their impact on clinical imaging services in England. Outcomes from the study will include recommendations for measures that might be used by departments to gauge the impact of introduction of consultant posts and will outline the potential merits of a larger study to demonstrate the value of these posts across imaging and radiotherapy services across the UK as a whole.

The research

We have gained agreement from two NHS acute trusts that have adopted radiographer consultants and have embedded fully the Career Progression Framework for the radiographic workforce. The work consists of case studies at each site to explore the implementation and impact of consultant roles locally. The case studies will capture data on issues pertinent to consultant appointment, operations and service improvement.

The case studies will involve interviews with key personnel in the trusts, including consultant radiographers, consultant radiologists, other medical staff where appropriate, service managers and advanced practitioners. The interviews will be undertaken by Dr Richard Price (University of Hertfordshire) and Dr Linda Miller (Institute for Employment Studies). The researcher visiting your Trust will be Dr Richard Price.

The aim of the visits to the Trusts is to gather information on the factors that drove introduction of the consultant radiographer posts and the impact that has been seen in the

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1. Price R, Edwards H, Heasman F, Miller L. Vosper M. The Scope of Radiographic Practice Hatfield: The University of Hertfordshire. 2008.

department since then. Some of the areas we will want to discuss with you are shown below; these are factors that our previous work has identified as potentially relevant:

Workforce issues

- drivers for role implementation and the process of post development
- rationale and criteria for consultant appointments and areas of specialist practice
- numbers and grades of staff who directly support consultants
- impact on use of other staff's time.

Patient pathways

- patient throughput numbers prior to implementation and post-implementation
- proportion of patients meeting 18 weeks targets pre- and post-implementation
- patient waiting-list length pre- and post-implementation
- other indicators of service improvement
- benefits for referrers and multi-disciplinary teams.

The interviews will generate a range of both quantitative and qualitative data on the local impact of consultant radiographer practice. Examination of the data gained will enable us to provide an estimate of the benefits of introduction of these posts. In addition, we will use this information to develop a data capture proforma that will be suitable for use either by departments that wish to demonstrate cost-benefits or productivity/service improvements arising from implementation, or as a research tool for a larger future study should the College of Radiographers decide to commission further work on this topic.

Case study involvement

We have therefore gained agreement from two Trusts to assist in this initial exploratory stage of the work and your Trust is one of them. You are one of the individuals we would like to speak to as part of the research and we very much hope you will agree to take part.

What will participation involve?

The interviews will last around an hour and cover the topics identified above and other issues related to implementation. Also as indicated above we will be interested in collecting data on patient pathways and service performance before and after introduction of the post(s) and so will be interested in exploring the data your Trust collects relating to the patient pathway. It is possible too that you may be aware of service improvements arising from the changes that are not routinely collected. We will be very interested in hearing from you about what introduction of the consultant post(s) has meant for your department and your views on what data might be collected in the future to demonstrate impact and value.

Confidentiality

Although an overall research report covering main findings across case study institutions will be produced for the College of Radiographers, neither of the individual institutions nor indeed any individual staff members will be identified in the report. You will be provided with a copy of the final published report, once this is approved by the College of Radiographers.

Ethical Approval

The project has received ethical approval from the Ethics Committee for Health & Emergency Professions at the University of Hertfordshire.

Protocol Number: HEPEC/10/09/2

Appendix 4 - Consent Form

UNIVERSITY OF HERTFORDSHIRE

FACULTY OF HEALTH & HUMAN SCIENCES

HEALTH AND EMERGENCY PROFESSIONS ETHICS COMMITTEE

CONSENT FORM FOR STUDIES INVOLVING HUMAN SUBJECTS

Title of research project:

THE EVALUATION OF THE IMPACT OF IMPLEMENTATION OF CONSULTANT PRACTITIONERS IN CLINICAL IMAGING

	YES	NO
The purpose of this study has been explained to me.	☐	☐
I have been informed of the details of my involvement in the study.	☐	☐
My questions regarding this study have been answered to my satisfaction.	☐	☐
I consent to the audio-taping of the interview in which I am participating.	☐	☐
I understand that I am not obliged to take part in this study and may withdraw at any time without the need to justify my decision and without affecting me in any way.	☐	☐

I understand that any personal information obtained as a result of my participation in this study will be treated as confidential and will not be made publicly available. ☐ ☐

I, the undersigned, agree to take part in this study. ☐ ☐

Signature of interviewee .....

Name of interviewee:.....
(Please print)

Signature of investigator:.....

Name of investigator:.....
(Please print)

Status of investigator:.....

Date:.....