Reporting radiographer academy training model; an evaluation of the impact for trainees and clinical service

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Introduction

Imaging services demand increases annually in response to population needs and national policy drivers - being a primary investigation in many patient pathways across the vast majority of clinical specialties [1]. This, compounded by a multitude of workforce issues, creates challenges for healthcare service delivery which meets population needs [2-7].

Positive impacts of radiographer reporting are well documented [2, 3, 8-13], there remains an urgent requirement to increase the number of advanced practice reporting radiographers [4, 14, 15] as image reporting backlogs remain high [4, 5, 10 12]. Many NHS Trusts rely on expensive outsourcing to meet demand [4]. Through collaborative and collective working, it is suggested this challenge could be addressed through a cross system workforce [14, 15].

A regional reporting radiographer academy (RRA) was established to offer a simulation based training model to compliment academic learning. During the academic year in this study there were a total of 10 trainees from 5 NHS Trusts. All trainees attended the same University academic course to ensure the academy delivery could be aligned to the academic delivery. The RRA was sited away from the clinical departments and the delivery model was 2 days a week initially, reducing throughout the training to one day a week then one day a month. RRA delivery was a combination of face to face and distance learning online sessions.

Academy model (AM) training promotes a flexible advanced practice workforce that makes the best use of individuals' skills and experience for cross system working. It facilitates the sharing and integration of practices between trusts promoting common practice [12] so that newly qualified trainees could report for any trust locally once they have met course competencies requirements. An exchange visit allowed trainees to experience working in a different department other than their employing trust as part of the academy delivery. The development of advanced practice skills (aligned to the four pillars) were promoted and opportunities to prepare for professional body accreditation.

Whilst the establishment of reporting radiographer academies are gaining pace with investment from NHS England and Improvement (NHSEI) and Health Education England (HEE), it remains an under researched area. This study proposed to capture the impact of the RRA from the trainees and clinical departments' perceptions during a major healthcare crisis; the Covid-19 pandemic.

Literature review

Search criteria focussed on radiographer, reporting, academy, workforce (whilst acknowledging the initial models were built on the radiologist models) and four databases and hand searches were conducted. Lung cancer was also included to improve results as identified by Woznitza[10]. Only two studies were identified from the search that met the criteria for inclusion (figure 1) Woznitza et al [10] and Harcus and Snaith [12].

Inclusion criteria	Exclusion criteria
Academy, educational institution, university, postgraduate level	Undergraduate education
Diagnostic radiographer in plain radiography	All other health professions including therapeutic radiographer, breast radiographer
Image interpretation, medical image reporting	All non-image based reporting
Over the age of 18 years	Under the age of 18 years
Workforce capacity within radiology	Workforce capacity outside of radiology
Lung cancer, lung malignancy, lung tumour	All other pathology

Table 1

Each of these studies used a different training model (our training model aligned to Harcus and Snaith's) and reported similar themes including both positive and negative aspects of the training model from manager/mentor and trainee perceptions [10-12].

Both previous studies[10,12] identified that the AM protected study was considered a benefit and had a positive impact from the perspective of the trainees. Academy sessions away from the clinical department(s) meant that the trainees could focus on their learning without interruptions or losing study time due to clinical demands. Conversely, both studies identified that some managers/mentors considered this inflexibility as a negative. Not having the trainees available for clinical demand was seen as a limitation for the departments and had a clinical impact in some areas [10,12].

Trainee cohorts in both papers who had experience of traditional non academy training previously agreed that AM(s) were equal to or better than traditional methods (using mentors within their employing department). There was a consensus that content and delivery of learning materials was enhanced compared to traditional methods [10, 12]. Managers/mentors highlighted benefits associated with reduced impact on the clinical departments in terms of both time teaching and mentor workload. This resulted in minimal or no impact to clinical reporting services, an improvement on traditional models [10, 12].

The previous studies found that once qualified, trainees transitioned into advanced practice roles quicker than previously experienced with traditional models [10, 12] and the increased reporting capacity on completion was beneficial [10, 12].

Current evidence, whilst limited, suggests that the AM is successful in having positive trainee and clinical impact [10, 12].

Further research is needed to increase the body of knowledge concerning RRA training. This is particularly pertinent as we enter the first stages of imaging networks formalisation. It is proposed the academy model can offer a sustainable training model to support the required reporting workforce growth and whole network collaborative working proposed in national drivers [1, 4, 7, 15].

Methods

Ethical approval was gained through XXX.

An online questionnaire survey was developed, informed by relevant literature including a previous RRA study[12], and consisted of multiple choice questions, Likert scales and open ended questions to gain both numerical and qualitative data. The questionnaire survey format utilised Qualtrics© and participants consented through the platform and responses were anonymous.

Three stages explored; participants experiences, trainees perceptions of the differences between academy and traditional models (for those having experienced both through previous non academy based training) and a manager/mentor phase to capture an insight into the benefits and challenges of training through an AM. Data collection was phased over a 10 week period from 16th August 2021 to 25th October 2021 (at the end of the training) to allow any emerging themes to be explored in the subsequent stages of the study.

Data Analysis was conducted by descriptive statistics for the quantitative data using Microsoft Excel and framework analysis was used to analyse qualitative data. This enabled the development of themes and cross comparisons between comments to ensure the generated themes represent the full breadth of the participants' opinions. Independent peer review of the analysis by a second researcher enhanced rigour, credibility and trustworthiness.

Results

All trainees (n=10) completing academy training during the academic year 2020/21 participated. Only 50% (n=3) of the manager/mentor group responded, we acknowledged that this may not be representative of the whole cohort, but felt the

data was important to include given the limited published literature. Three main themes emerged from the data -

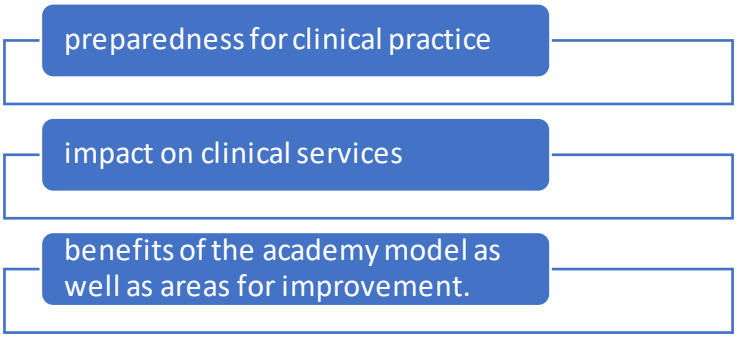

Figure 1

Participant direct quotes have been used to contextualise the results.

Theme 1 - <u>Preparedness for clinical practice</u>

There was consensus across all (all participant groups) but one trainee participant that the AM increased trainee reporting confidence levels. Participants agreed (except for one trainee, different to the trainee aforementioned) that the AM facilitates cross organisation working.

Trainees (regardless of whether they had previous reporting experience) all indicated the AM prepared them for independent reporting practice, enhanced their clinical skills, enhanced peer support and reduced the time taken to complete clinical aspects of training.

All mentor/manager respondees indicated, with varying confidence levels (figure 2), that trainees were prepared for –

- image interpretation
- leadership
- teaching and presenting to peers
- implementing protocol change based on evidence based practice
- undertaking research and/or service improvement projects

Encouragingly, the confidence levels ranged from slightly, moderately and very prepared for these areas aligned to the four pillars of advanced practice.

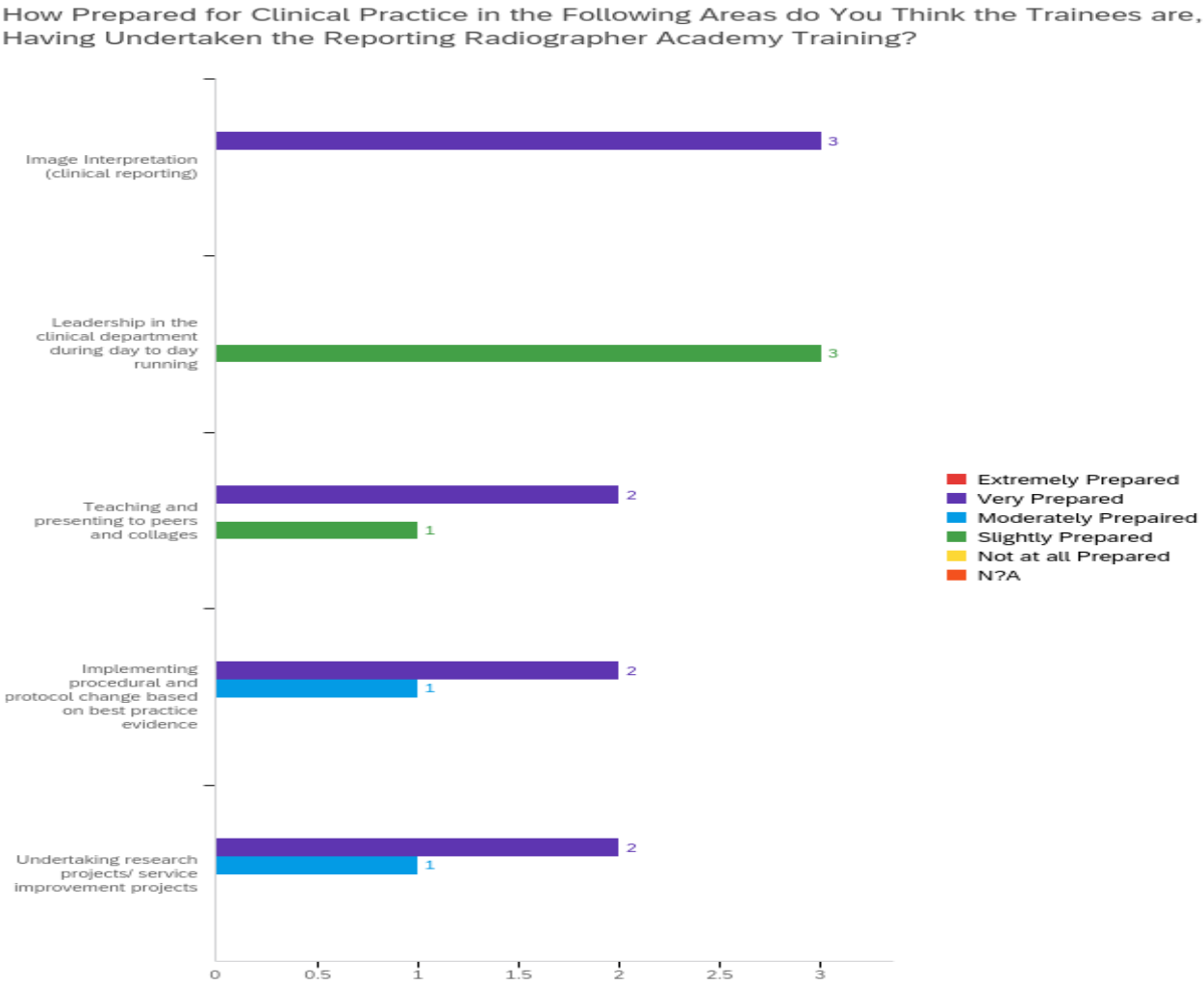

Figure 2
Manager/Mentor Confidence Levels in Trainee Abilities Post Academy Training

Two (67%) manager/mentors agreed the AM prepared trainees for future imaging network working. The group agreed trainees demonstrated a high level of confidence when independently reporting and the AM had caused little or no disruption to clinical workload.

Regarding post training preceptorship and undertaking independent reporting, two (67%) manager/mentors agreed there was little or no need for a long preceptorship period and the speed at which the trainees would undertake independent practice had increased. However, one respondee strongly disagreed with both statements.

Most trainees (n=9, 90%) disagreed that the traditional model better prepared them for independent reporting, whereas one manager/mentor agreed the traditional model better prepared the trainees for clinical practice.

Manager/mentors highlighted the benefits of more structured academy training allowing easier planning for clinical rotas.

".. academy training has more structured clinical (reporting) sessions in comparison …and I think this is an advantage. The structure… has been beneficial over the pandemic so that the staff rotas were organised well in advance." (Manager 1).

Theme 2 - Impact of Academy Model on Clinical Service

The impact of the AM on service improvement yielded more diverse responses from trainees; some clearly identified the benefits of increased competency, expertise in department and subsequent improvements in patient care and trust reputation.

"Higher standard of reporting and improved reporting accuracy will… have a positive impact on patient care and the trust's reputation" (Trainee 6)

Whilst this is undoubtedly the case, it is acknowledged however, that this is beyond the scope of this study to measure.

There was also a suggestion that staff retention could improve as mentor workloads eased.

"I think the academy model has relieved the individual Trust mentors of a lot of 1:1 training" (Trainee 7).

Future collaborative working in imaging networks was recognised as a positive impact for imaging services and service users (Table 2), especially in relation to relieving clinical pressures from the Covid-19 pandemic and post pandemic recovery. Encouragingly, reporting radiographer training during this challenging time had not impacted on reporting turn-around time.

"helped to alleviate some of the clinical pressures of training during COVID and the post pandemic period. This has been hugely beneficial to ensure that our services and reporting turnarounds haven't been effected [sic]." (Manager 1).

Conversely, one trainee thought the training would have negative short term impact.

"short term it probably affected service as we were not available" (Trainee 4).

Section	Responses
Theme 2 – Impact of the academy model on clinical service	*'Radiographers in department will benefit from increased support and education to give patients the best imaging, evaluation and directed to the appropriate pathway."* (Trainee 3). *"future collaborative working is definitely more likely within the academy peer group, reporting style is likely more consistent within these groups."* (Trainee 8).

	'I think it has had a good impact, as we talk about different practices and techniques across different hospitals and share information. The exchange week was good for this also.' (Trainee 5).

Table 2

Theme 3 - Challenges and Benefits of the Academy Model

Challenges and benefits of the AM compared to the traditional model were explored to identify differences from the respondees perspectives who had experienced both models. All participants in this group concluded that there was a difference between training models, the AM was preferable and they would recommend it to colleagues embarking on radiographer reporting training.

Challenges

Trainees recounted very few barriers to the AM in terms of facilities, location, support, cost and length of training. One participant found the location of the academy slightly challenging and two (20%) respondees found the length of training slightly challenging.

Trainees (n=6, 60%) identified additional challenges to academy training in their host organisations relating to allocated reporting time on site, completing clinical audit and improving clinical skills. One trainee referenced the wider national staffing shortage a contributing factor

"Dedicated study time has always been an issue, even more now with the nationwide staffing crisis." (Trainee 6).

Departmental staffing levels negatively impacting on trainees experience was a reoccurring theme as departments strived to meet demands with one potential solution suggested being the provision of back-fill (Table 3).

Both groups recognised one AM strength was, off site, protected study time on dedicated training days. However, whilst acknowledging this, 2 (67%) participants felt it negatively impacted department staffing levels.

"We struggled with staffing levels - however the time out of department was protected" (Mentor 2).

One manager thought trainees would have demonstrated further mentoring and preceptorship skills following academy training. However, another believed these advanced practice skills were predominantly established locally rather than at a RRA.

"course is designed to prepare individuals for the practice of reporting, advanced practice can't be taught and is something that needs to be developed with experience and job profiles/scope of practice etc." (Manager 1).

The manager/mentor group also suggested their own attendance at the academy would have been beneficial for continued professional development.

"would have been good for the mentors to have had time at the academy to share knowledge. … watch the students present some interesting cases." (Mentor 1).

Benefits

An overarching theme was the benefit of protected study time away from the host department. Trainees (n=7, 70%) recognised the benefit of undisturbed study time and not being pulled back to clinical duties. Manager/mentors also acknowledged the importance despite staffing challenges.

Trainees identified several additional benefits of the AM, many of these centred around tailored learning and teaching strategies employed at the academy including "one-to-one" and group learning and support. Targeted learning experiences to meet trainees needs and increase confidence levels were provided through dedicated image banks and visiting external lecturer presentations.

RRA was seen as a safe environment for peer-based learning and increased opportunities to share experiences (Table 3).

Section	Responses
Theme 3 – Challenges and Benefits of the academy model	*"Time allocated specifically for reporting - MSK trainee reporters often pulled to cover clinical duties. Lack of mentor support."* (Trainee 2). *"Time away from department may be an issue depending on number of staff participating however, the time at the academy is essential and back filling should be considered for training."* (Trainee 7). *" 'One to one' education and learning support. Group/participant support and education. Able to offer a more specific learning experience - targeting areas that students feel less confident or struggling with."* (Trainee 2). *"Provided with one to one tutor/student supervision throughout. General image bank of plain film radiographs were selected in line with our current learning and objectives each week. Presentations also linked directly to our learning each week- often topics selected by students, which provided support in areas which seemed to be lacking from university studies."* (Trainee 6). *"Provides a space for learning and making mistakes which is separate from your employer/manager/appraiser. Academy provides*

	a space to discuss best practice without offending/questioning established colleagues" (Trainee 7). *"Good environment where you felt not judged if you got something wrong and could feel could ask any questions even if the questions were 'silly'."* (Trainee 5). *"It has been beneficial to learn with my peers through this model and has given us a basis of knowledge which wouldn't be matched with only attending university lectures"* (Trainee 1). *"Gained support from peers who were going through the same process- ability to bounce ideas off each other. Would not have had this support network as uni lectures were provided over teams due to pandemic."* (Trainee 6). *"Great teaching… realistic work lists, great visiting lecturers. Overall this academy has been fantastic!"* (Trainee 10). *"Increased time in reviewing images. Increased support. Someone on hand to answer questions and clarify misunderstandings. Extra teaching sessions from radiologists."* (Trainee 9).

Table 3

The final benefit identified was in depth discussion and learning centred around report writing and management of discrepancies.

"Discussion and feedback over images allowed us to experience discrepancies and how we might discuss them." (Trainee 7).

Discussion

To date there is limited published evaluations of RRA models, other published works focussed on Radiologist training or hub and spoke models (no incorporated simulation learning). It is, therefore, difficult to draw similarities from the existing evidence base, although comparable themes have emerged.

The main benefit of the AM reported by both groups was off site protected study time which was invaluable in improving trainees experience and final outcome. Both groups recognised challenges remain in creating protected study time in light of the national staffing shortages and increasing pressures on services.

Similarly, Harcus and Snaith [12] highlighted dedicated study time away from the clinical department as a benefit, with a clear notion that trainees would have been pulled back to clinical duties in the traditional model, negatively impacting their studies [12].

Comparably, no practical barriers to the AM were highlighted by Harcus and Snaith [12], but location was highlighted as a potential barrier by Woznitza [10]. However, Woznitza's[10] model required trainees to travel for two hour lectures on multiple

different days whereas the Harcus and Snaith's[12] model utilised full day training which could have impacted on the trainees views as the latter being more favourable.

Our study found the dedicated imaging banks and safe learning environment the AM provided were beneficial, concurring with the findings from Harcus and Snaith[12]. This aspect is one that would arguably be more challenging to replicate in the traditional training model.

Additionally, trainees in this study emphasised the benefits of a consistent clinical educator supported by external lecturers contributing to delivery. This combined with the multifactorial gains associated with learning experiences shared across multiorganisational collaboration promotes cross system working. Woznitza[10] also highlighted the benefit of combining trainees from multiple organisations into a single unit for dedicated lectures.

Common to the comparable studies [10, 12] trainees found the AM provided a positive and "safe" learning environment. Dedicated teaching time and discussion on specific topics chosen by trainees utilising either a "one-to-one" or group model appears to be a significant benefit over the traditional model.

Trainees considered themselves ready for clinical practice with a good degree of confidence on completion, which was reflected by the manager/mentor group, the majority of which felt that there was limited need for long (defined as 6 months) preceptorship periods post qualification. Managers also identified the academy facilitated the development of foundations for advanced practice whilst recognising that these needed further development locally. Audit and service evaluation learning were integrated into the AM as were opportunities to prepare for Society and College of Radiographers accreditation.

These findings indicate the AM has been fit for purpose fulfilling its aims; reducing pressure on clinical services and local mentors and alleviating pressures in achieving timely reporting turn-around times, mirroring earlier findings[12].

The impact of the AM on clinical service is harder to define; with only better collaborative cross organisational working and standardisation of reporting practice identified. These themes emerged in the comparable research [12] and will become increasingly important as imaging networks are established [21].

Only one trainee identified improved report turn-around times and 'extended scope of practice' as being an area of service improvement. Demand on clinical reporting services during the Covid-19 pandemic significantly reduced which could have influenced these findings but this exploration was beyond the study remit.

Areas for improvement highlighted are similar to previous studies[12] ; greater mentor involvement with the academy based training and increased cohesion between the

academy and Higher Education Institution (HEI). Despite attempts to align delivery, unavoidable disruptions due to the Covid-19 pandemic arose.

Limitations and recommendations

The main limitation of this research is the small sample size and feedback from one year. Nevertheless, valuable learning was revealed in this under researched area adding to the evidence base. It is acknowledged that caution is needed for wider application of these results, although the emergent themes may be applicable to other academy projects.

The comparable financial cost of the AM has not been ascertained and is a recommended area for future investigations.

Conclusion

The AM focussed strongly on simulation and was well received by both groups with overwhelming support. The primary objectives of lessening the clinical training burden on departments and preparing the trainees for advanced practice in image interpretation were met. All participants in this study would recommend training through an AM.

The positive gains of RRAs have been strengthened by this study adding to previously published literature. There is growing evidence supporting the positives of the AM over traditional models.

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