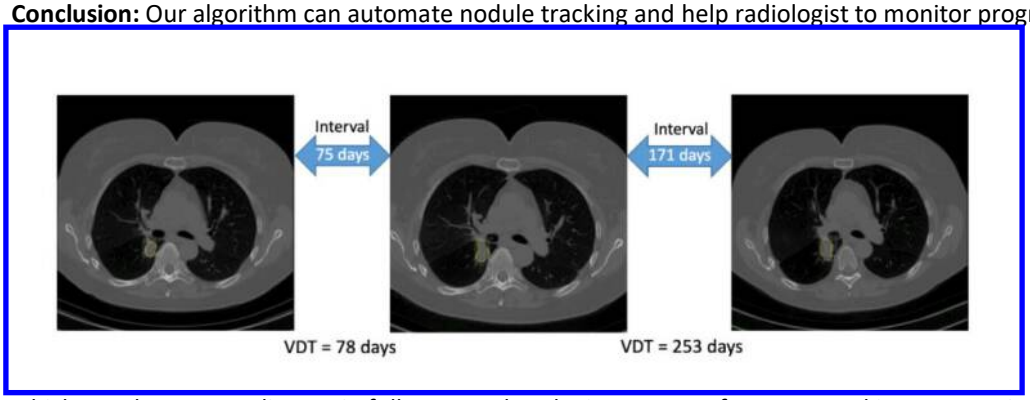
Conclusion: Our algorithm can automate nodule tracking and help radiologist to monitor progression of nodules



which may become malignant in follow-ups, thereby increase performance and improve patient management.

1. MacMahon, H., Naidich, D.P., Goo, J.M., Lee, K.S., Leung, A.N., Mayo, J.R., Mehta, A.C., Ohno, Y., Powell, C.A., Prokop, M. and Rubin, G.D., 2017. Guidelines for management of incidental pulmonary nodules detected on CT images: from the Fleischner Society 2017. Radiology, 284(1), pp.228-243. 2. Devaraj, A., van Ginneken, B., Nair, A. and Baldwin, D., 2017. Use of volumetry for lung nodule management: theory and practice. Radiology, 284(3), pp.630-644.

P117 Using artificial intelligence (AI) to diagnose pathology on chest x-rays

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Although Artificial intelligence (AI) has been around for decades, due to the recent advances in technology interest and use continues to expand in clinical practice. From the introduction of radiological imaging being digitised and stored electronically, it has advanced the construction of deep learning (DL) models by collecting datasets and ground truth labelling. This in theory could aid health professionals to reach a diagnosis promptly when there is a lack of radiology expertise to assist. Chest x-rays are one of the most useful tools for diagnosis due to fast turnaround, however, due to a shortfall in expected workforce, DL could prove to be beneficial in alleviating reporting turnaround time pressures. From a radiographer's perspective, AI has the potential to assist with clinical decision making, enhance education and extend radiography led research. Using a narrative literature review, this poster demonstrates a basic introduction into AI for chest x-ray image interpretation. It provides a brief explanation into the construction of a DL model and performance measurement. Plus, highlighting advantages and disadvantages of this being applied into clinical practice. This poster contains nine sections (including references) summarising a literature review of five articles on the topic.

RADIOTHERAPY SERVICE DEVELOPMENT POSTER PRESENTATIONS

P118 Pain flare following palliative radiotherapy for bone metastases: A systematic literature review

Rachel Shaw

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Background: External Beam Radiotherapy (EBRT) is an effective treatment for palliation of symptomatic bone metastases (Spencer et al, 2018). One potential side effect of EBRT is pain flare, a transient increase of pain in the treated area, with varying incidence. This review aimed to determine the incidence and timing of pain flare following EBRT for bony metastatic disease, and whether this toxicity could be predicted, improving informed consent.

Method: A systematic search and critical review of published literature was performed. Electronic databases searched included PubMed, CINAHL complete and the Cochrane library using keywords including 'pain flare', 'palliative radiotherapy' and 'bone metastases'. Primary studies written in English, published between January 2005 and December 2020 were eligible for inclusion. Additional inclusion criteria comprised studies conducted in adult humans

receiving palliative EBRT for bony metastatic disease arising from any primary cancer. Single patient case reports, abstracts, newsletters and commentaries were excluded.

Results: 674 articles were identified. Of these, 5 studies met the inclusion criteria, comprising a total of 400 patients. Incidence of pain flare occurred in 30-40% of patients. Pain flare lasted for an average of 1.5-3 days, most commonly occurring in the first five days following EBRT. No relationships were identified between pain flare and dose and fractionation, age, gender, treatment site or primary tumour site.

Conclusion: Pain flare following EBRT is common and unpredictable. Patients should be counselled and supported to manage a flare effectively through analgesic optimisation, potential prophylactic steroids and telephone follow up.

1. Spencer, K., Parrish, R., Barton, R. and Henry, A. (2018) Palliative radiotherapy. Bmj, 360, 1-12.

P119 Therapeutic radiographer awareness of the signs and symptoms of neutropenic sepsis in patients undergoing concurrent chemoradiotherapy

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Background: Neutropenic sepsis is a life-threatening combination of neutropenia and infection (NICE 2012). Patients undergoing concurrent chemoradiotherapy are at high risk of neutropenic sepsis and thus are likely to present in a clinical setting (Okera 2011). This study aimed to evaluate levels of Therapeutic Radiographers' understanding of sepsis signs and response pathways along with the impact of a training session on this.

Method: A teaching session at the trust was conducted by the Lead Sepsis Nurse and utilised a range of active learning techniques including scenario-based questions and a sepsis game. Pre- and post-training questionnaires were completed by participants; these comprised multiple-choice questions related to sepsis identification and response. Respondents were asked to rate their confidence in each answer (Gardner-Medwin 1995). This enabled scoring to award penalties for higher levels of confidence in incorrect answers and reward high confidence in correct answers. Lower levels of confidence attracted or lost smaller marks.

Results: There was a statistically significant ($p < 0.0002$) improvement in questionnaire scores after the training session from 42% to 66%. Lower scores on the pre-test survey mainly related to incorrect selection of responses to scenario questions.

Conclusion: This service evaluation has highlighted a potential lack of awareness of sepsis signs and in particular correct response pathways among clinical Therapeutic Radiographers. It also demonstrates that an active-learning based training session can significantly improve understanding of this. Sepsis training utilising scenario and response questions should be provided to Therapeutic Radiographers who are likely to work with patients undergoing concurrent chemoradiotherapy.

1. Gardner-Medwin, A.R. (1995) Confidence assessment in the teaching of basic science. ALT-J; 3: 80-85. 2. National Institute for Health and Care Excellence (NICE) (2012) Neutropenic Sepsis: Prevention and Management of Neutropenic Sepsis in Cancer Patients [cited 2022 Apr 11]. Available from: https://www.nice.org.uk/guidance/cg151 3. Okera, M., Chan, S., Dernede, U., Larkin, J., Popat, S., Gilbert, D. et al. (2011) A prospective study of chemotherapy-induced febrile neutropenia in the South West London Cancer Network. Interpretation of study results in light of NCAG/NCEPOD findings. Br J Cancer. 104(3): 407-412.

P122 Developing a therapeutic radiographer workforce strategy for career progression and succession planning for advanced practice roles

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Introduction: Within radiotherapy, role development has moved into advanced and consultant level practice. However, for radiographers wishing to remain in patient-facing roles, there has been a lack of defined career progression.

Aims: To work collaboratively with radiographers to develop team leader roles and investigate the role of specialisms within radiotherapy, including progression to expert generalist practitioner. This can be used to create individual career progression plans and succession planning for existing ACP and Consultant roles.

Methods: Utilising the model of appreciative inquiry, small focus groups were interviewed to establish which areas of current practice led to a sense of fulfilment, as well as where the radiographers would like to see their careers developing. Investigations into regional and national specialist roles were also carried out. Several one-to-one meetings were also held, according to staff preference.

Results: of the focus groups aided development of ideas for career pathways with unlimited potential. Phase 2 involved scoping provision of training for different specialisms and how pathways and job descriptions could change based on the findings.

Conclusions: This project has identified frustration over a lack of clear career progression. Outcomes will look to build elements of the four domains of advanced practice into job descriptions for staff at all career stages and build cases for specialist practice. This will create robust and fluid mechanisms of career progression and facilitate succession planning for advanced and consultant roles. This aligns with the updated 2022 CoR Education and Career Framework publication.

P123 Evaluating how prepared UK student therapeutic radiographers are to support transgender and gender diverse patients

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Clatterbridge Cancer Centre

Introduction: Transgender and gender diverse people face multiple health disparities and often have to educate their Health Care Professionals on how to provide appropriate and inclusive care. Gender diverse patients having radiotherapy may require additional needs in regards to language, education and inclusivity on pregnancy status to prevent unintended radiation exposure to individuals of childbearing age. With a lack of evidence in the literature of education within the radiotherapy undergraduate curriculum, this research project aimed to evaluate how much transgender or gender diverse education is being distributed into the United Kingdom (UK) radiotherapy curricula.
Method: An online survey questionnaire was distributed to final year therapy radiography students studying in the UK. Search strategy and terms, eligibility criteria and peer review of questions were all predefined prior to ethical approval. The survey recruited participants via email sent from the Heads of Radiotherapy Education.

Results: There were a total of 45 responses to the survey. Almost all participants agreed transgender patients require additional needs in regards to language and 98% felt it was important a therapeutic radiographer was aware their patient was transgender. Many students who received training felt this was not enough to prepare them to support a transgender/ gender diverse patient.

Conclusion: Final year therapy radiographers understand basic terms and concepts of gender diversity; however, many do not feel prepared to treat a gender diverse patient. Future studies are needed to identify where development is required.

P124 Radiotherapy management priorities for embedding a research culture

Kirsty Farnan; Damian Parr; Zoe Monteith

NHS Tayside

Background: AHP led research ensures working practices are evidence based and committed to continually improving (Health Education England, 2022). Embedding research within the workplace culture is not an easy task (Comer et al., 2022). Existing frameworks offer guidance for managers to support this transition (Harris, Cooke and Grafton, 2022).

Purpose:
- Share local experience of embedding research culture
- Share local experience of evaluating impact of change

Summary of content: The management team identified 3 priorities to introduce about a culture change: embed, disseminate and translate.

Embed: Research will be added as a standing agenda item to internal meetings where relevant, demystifying research and ensuring it is a regular topic of conversation for all. All team members will fulfil aspects of the research pillar,

reflected in personal objective settings aligned with departmental and individual visions. The management team will lead by example sharing their own objectives such as utilise workforce planning tools to support.

Disseminate: Ongoing work will be regularly disseminated with the staff group and wider team. This will further embed the culture change by raising awareness and reinforcing the overall strategic vision. Networking is an important aspect of successful dissemination. The management team will engage with Radiotherapy and AHP research streams.

Translate: Engagement of all staff will strengthen confidence level with research skills. Placing value on all projects regardless of size will allow a build up of skills sets. Sharing resultant changes in practice relating to patient care directly or indirectly demonstrates the impact of embedding a research culture strengthening the strategic vision.

1. Comer, C., Collings, R., McCracken, A., Payne, C., and Moore, A. (2022) *Allied health professionals perceptions of research in the United Kingdom national health service: a survey of research capacity and culture.* BMC Health Serv Res **22**, 1094. https://doi.org/10.1186/s12913-022-08465-6.
2. Harris, J., Cooke, J., and Grafton, K. (2019) *Shaping Better Practice Through Research: A Practitioner Framework*. CAPHR (Council for Allied Health Professions Research) and NIHR (National Institute for Health Research).
3. Health Education England. (2022). *Allied Health Professions Research and Innovation Strategy for England.* Available at: https://www.hee.nhs.uk/our-work/allied-healthprofessions/enable-workforce/allied-health-professions-research-innovationstrategy-england.

P125 To provide an overview into becoming a therapeutic radiographer in the speciality field of Gamma Knife Stereotactic Radiosurgery by delivering treatment with high intensity radiation sources to treat a variety of lesions within the brain. To aim is to provide an education poster to promote the career in this field

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The National Centre for Stereotactic Radiosurgery

The shortages of therapeutic radiographers have been noted as mentioned by the Society of Radiographers in their publish work on "Shortage of therapeutic radiographers will have 'critical effect' if decisive action is not taken to" mentioning the negative impact that shortage of qualified therapeutic radiographers could have in the delivery of treatment for cancer patients, how this issue has been going for years and how universities are finding it very difficult to recruit people in this profession or difficult to retain them(1). For the Stereotactic Radiosurgery Department this not only represent the impact in cancer patients but also in so many other areas that are supported by this treatment technology presenting a non-invasive alternative treatment for vascular lesions e.g. AVMs (Artero Venus Malformation), Functional lesions e.g. Trigeminal neuralgia, non-malignant tumours among others. The aim of this educational poster is to showcase what is Gamma Knife treatment and how therapeutic radiographers support it. For an easy comprehension it has been broken into the following sections: · How Gamma Knife and Stereotactic Radiosurgery works · Which conditions do we treat · An outlook into the Patient's Journey · How does the Multidisciplinary team looks · A day in the life of a therapeutic radiographer in Stereotactic Radiosurgery · Career progression and social media QR codes for people to follow us. It is aim for this poster to give us a platform by which we can create awareness of this career and to promote more therapeutic radiographers in this field.

1) Deeson, D. (2018). Shortage of therapeutic radiographers will have 'critical effect' if decisive action is not taken to. Title. Society of Radiography. https://www.sor.org/news/import/shortage-of-therapeutic-radiographers-

RESEARCH / SHARING BEST PRACTICE POSTER PRESENTATIONS

P126 Using aria carepaths to enhance the clinical trial quality assurance process both pre-trial and on-trial

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Background: Trial Quality Assurance (QA) exists in two forms, Pre-trial and On-trial. Our existing ARIA carepaths/tasks and current process was not sufficient to cover the variety of trial QA requirements. We wanted to create and implement carepaths to ensure the QA process was functionally efficient for all staff groups involved in the patient journey.