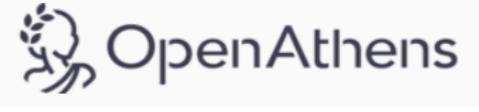


Library Current Awareness Bulletin

Radiology – January 2021

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News

[AHP students: placements will continue as planned says Health Education England](#)

The Society of Radiographers
January 2021

[MRHA urges caution with gastric bands during an MRI scan](#)

The Society of Radiographers
January 2021

[The Medicines and Healthcare products Regulatory Agency (MHRA) has identified potential for harm when patients implanted with gastric bands containing metallic components undergo MRI.]

Statistics

[Diagnostic imaging dataset for September 2020](#)

NHS England
January 2021

["The Diagnostic Imaging Dataset (DID) is a central collection of detailed information about diagnostic imaging tests carried out on NHS patients, extracted from local Radiology Information Systems (RISs) and submitted monthly."]

Guidance

[Artificial intelligence for analysing chest CT images](#)

Medtech innovation briefing [MIB243]. NICE.

January 2021

["The main points from the evidence summarised in this briefing are from 2 retrospective studies. The best quality evidence came from 1 UK study showing that Veye Chest (Aidence) performed similarly to chest radiologists for lung nodule segmentation growth assessment. The studies were limited in quality and no studies were published in full."]

[Artificial intelligence in mammography](#)

Medtech innovation briefing [MIB242]. NICE

January 2021

["The main points from the evidence summarised in this briefing are from 6 retrospective clinical validity studies, 3 conference proceedings, 3 conference abstracts, and 1 diagnostic accuracy study. They included a total of 71,470 mammography exams. They show that AI technologies may improve performance and save time in interpreting mammograms. There are a number of ongoing trials for these technologies."]

[Radiotherapy dose fractionation, third edition](#)

The Royal College of Radiologists

December 2020

["The third edition includes particular updates on central nervous system tumours, brain metastases and paediatric cancers as well as smaller updates on other sections."]

[Ultrasound gel: good infection prevention practice](#)

Public Health England

January 2021

[This interim guidance is intended for clinicians and specialists who undertake ultrasound and related procedures in radiology or clinical areas. It has been in part adapted from guidance produced elsewhere and should be considered in the wider context of standard infection prevention and control precautions.]

Artificial Intelligence

[Artificial intelligence performance in detecting tumor metastasis from medical radiology imaging: A systematic review and meta-analysis](#)

Zheng, Q., Yang, L., Zeng, B., Li, J., Guo, K., Liang, Y., and Liao, G.

E Clinical Medicine, vol. 31

January 2021

[This systematic review and meta-analysis aimed to evaluate the diagnostic accuracy of AI algorithms in detecting tumour metastasis using medical radiology imaging. 2,620 studies were identified and 69 were included. 34 studies were included in a meta-analysis with a pooled sensitivity of 82% (95% CI 79–84%), specificity of 84% (82–87%) and AUC of 0.90 (0.87–0.92). Analysis for different AI algorithms showed a pooled sensitivity of 87% (83–90%) for machine learning and 86% (82–89%) for deep learning, and a pooled specificity of 89% (82–93%) for machine learning, and 87% (82–91%) for deep learning. The authors concluded that AI algorithms may be used for the diagnosis of tumour metastasis using medical radiology imaging with equivalent or even better performance to healthcare professionals, in terms of sensitivity and specificity.]

[National Cancer Institute workshop on artificial intelligence in radiation oncology: training the next generation](#)

Kang, J., Thompson, R.F., Aneja, S., Lehman, C., Trister, A., Zou, J., Obcemea, C., and El Naqa, I.

Practical Radiation Oncology, vol. 11(1) pp. 74-83

January 2021

[The National Cancer Institute (NCI) Workshop on AI in Radiation Oncology was the first of two data science workshops in radiation oncology hosted by the NCI in 2019. During this workshop, the Training and Education Working Group was formed by volunteers among the invited attendees. Its members represent radiation oncology, medical physics, radiology, computer science, industry, and the NCI. The action points discussed in this article are as

follows: (1) creating AI awareness and responsible conduct; (2) implementing a practical didactic curriculum; (3) creating a publicly available database of training resources; and (4) accelerating learning and funding opportunities.]

COVID-19: Impact on Radiology Services

[COVID-19: looking beyond the peak. Challenges and tips for radiologists in follow-up of a novel patient cohort](#)

McStay, R., Johnstone, A., Hare, S.S., Jacob, J., Nair, A., Rodrigues, J.C.L., Edey, A., and Robinson, G.

Clinical Radiology, vol. 76(1)

January 2021

["This review from the British Society of Thoracic Imaging explores the thoracic and extra-thoracic complications of COVID-19, recognising the importance of a holistic approach to patient follow-up. The British Thoracic Society guidelines for respiratory follow-up of COVID-19 will be discussed, together with newly developed reporting templates, which aim to provide consistency for clinicians as well as an opportunity for longer-term data collection."]

[Escalation and de-escalation of the radiology response to COVID-19 in a tertiary hospital in South London: The King's College Hospital experience](#)

Panayiotou, A., Rafailidis, V., Puttick, T., Satchithananda, K., Gray, A., and Sidhu, P.S.

The British Journal of Radiology, vol. 93(1116)

December 2020

[This article presents the steps that the Radiology Department at The King's College Hospital undertook to adapt the imaging service and structure, both initially escalating and then de-escalating a response to the COVID-19 pandemic. A step-by-step management strategy, effective and sustained staff deployment, and imaging management are presented and discussed to provide a guide for managing a major incident in a radiology department.]

[Radiology departments as COVID-19 entry-door might improve healthcare efficacy and efficiency, and emergency department safety](#)

Garcia Santos, J.M., Plasencia Martinez, J.M., Lozano Ros, M., Perez Hernandez, G., Fabuel Ortega, P., Sanchez Ayala M.C., Menchon Martinez, P.

Insights into Imaging, vol. 12(1)

December 2021

[This study aimed to assess the efficiency of a primary-care high-resolution radiology service (pcHRRS) for possible COVID-19 pneumonia patients (ppCOVID-19) in terms of time at hospital and decision's reliability. 849 consecutive ppCOVID-19 patients were assessed, 418 through the pcHRRS (home-confined ppCOVID-19 with negative—group 1 and positive—group 2 X-rays) and 431 arriving with respiratory symptoms to the ED by themselves (group 3). The pcHRRS provided X-rays and oximetry in an only-one-patient agenda. Radiologists made next-step decisions (group 1: pneumonia negative, home-confinement follow-up; group 2: pneumonia positive, ED assessment) according to X-ray results. The pcHRRS halved ED respiratory patients (49.2%), allowed faster decisions and prompted admission (84/93, 90.3%) while maintaining time response for ED patients.]

[Radiology workload changes during the COVID-19 pandemic: implications for staff redeployment](#)

Shi, J., Giess, C.S.; Martin, T., Lemaire, K.A., Curley, P.J., Bay, C., Mayo-Smith, W.W., Boland, G.W., and Khorasani, R.

Academic Radiology, vol. 28(1) pp. 1-7

January 2021

[This retrospective study aimed to quantify changes in total and by subspecialty radiology workload due to deferring non-urgent services during the initial COVID-19 pandemic, and describe operational strategies implemented due to shifts in priority. During March 9–15 (intervention period), non-urgent outpatient service deferrals began. Five-week periods pre- (baseline) and post-intervention (COVID) were defined. Primary outcomes were radiology volume (reports per day) overall and in 11 subspecialty divisions. Secondary outcomes included changes in relative value units (RVUs), inpatient and outpatient volumes. There were 62,791 baseline reports vs. 23,369 during COVID; a 60% overall precipitous volume decrease ($p < 0.001$). Mean volume decrease pre- and during-COVID was significant ($p < 0.001$) amongst all individual divisions. Mean volume decrease differed amongst divisions: Interventional Radiology experienced least disruption (29% volume decrease), 7 divisions experienced 40%–60% decreases, and Musculoskeletal, Breast, and Cardiovascular imaging experienced >75% volume decrease. Total RVUs decreased 60% (71,186 baseline; 28,476 COVID). Both outpatient and inpatient report volumes decreased; 72% (41,115 baseline;

11,326 COVID) and 43% (12,626 baseline vs. 6,845 COVID), respectively. In labour pool tracking data, 21.8% (162/744) total radiology employees were reassigned to other hospital duties during the intervention period.]

[Response of UK interventional radiologists to the COVID-19 pandemic – survey findings](#)

Rostampour, S., Hamady, M., Cleveland, T., White, H., Haslam, P., and McCafferty, I.

CVIR Endovascular, vol. 3(1)

December 2020

[Members of BSIR were surveyed to obtain a snapshot of the experiences of UK IRs in response to COVID-19. A total of 228 responses were received to an online survey distributed to BSIR members on 18th April 2020 that was open for 14 days. Two thirds of respondents work in a tertiary unit and 33% deliver IR in a District Hospital. 84% have a day-case facility. After the COVID-19 crisis, 81% of respondents were able to maintain 24/7 on-call service. 59% of respondents had been required to change their day to day practice to allow the on-call service to continue. 55% of respondents were involved in providing a central line service. Of those questioned, 91% continued to offer endovascular services, 98% genitourinary and 92% hepatobiliary services, although a degree of service reduction was described. 38% have provided IR trainees with additional training material during this pandemic.]

[The bug stops with me: prevention of COVID-19 nosocomial transmission during radiographic procedures](#)

Heng, A.L, Ooi, C.C., Wen Eu, B.J., San Kiew, Y., Wong, A.S.K, and Da Zhuang, K.

Journal of Medical Imaging and Radiation Sciences, vol. 51(4) pp. 540-545

December 2020

[The aim of this article was to describe the prevention of COVID-19 nosocomial transmission during radiographic procedures by the utilisation of stringent infection prevention measures at a leading tertiary hospital in Singapore. The implemented measures were the appropriate use of personal protective equipment, staff education, infection control measures such as equipment disinfection, physical distancing and segregation of staff and patients. Despite the handling of 1,637 COVID-19 cases as of July 25, 2020, there had not been a single case of known nosocomial transmission of the disease in the institution.]

[The impact of COVID-19 on interventional radiology services in the UK](#)

Zhong, J., Datta, A., Gordon, T., Adams, S., Guo, T., Abdelaziz, M., Barbour, F., Palkhi, E., Adusumilli, P., Oomerjee, M., Lake, E., and Walker, P.

Cardiovascular and Interventional Radiology, vol. 44(1) pp. 134-140

January 2021

[A retrospective cross-sectional study of IR practice in six UK centres during the COVID-19 pandemic was carried out to measure the impact of COVID-19 on IR services in the UK. All therapeutic IR procedures were identified using the respective hospital radiology information systems and COVID-19 status found on the hospital patient record systems. The total number of therapeutic IR procedures was recorded over two time periods, 25/03/2019–21/04/2019 (control group) and 30/03/2020–26/04/2020 (COVID-19 group). The data points collected were: procedure type, aerosol-generating nature, acute or elective case, modality used, in or out-of-hours case and whether the procedure was done at the bedside (portable). A 31% decrease in overall number of IR procedures was observed during COVID-19 compared to the control group (1,363 cases vs 942 cases); however, the acute work decreased by only 0.5%. An increase in out-of-hours work by 10% was observed. COVID-19 was suspected or laboratory proved in 9.9% of cases ($n = 93$), and 15% of total cases ($n = 141$) were classed as aerosol-generating procedures. A 66% rise in cholecystostomy was noted during COVID-19. Image-guided ablation, IVC filters, aortic stent grafting and visceral vascular stenting had the greatest % decreases in practice during COVID-19, with 91.7%, 83.3%, 80.8% and 80.2% decreases, respectively.]

Diagnostic Radiology

[Racial and ethnic disparities in disease severity on admission chest radiographs among patients admitted with confirmed coronavirus disease 2019: a retrospective cohort study](#)

Joseph, N.P., Reid, N.J., Som, A., Li, M.D., Hyle, E.P., Dugdale, C.M., Lang, M., Betancourt, J.R., Deng, F., Mendoza, D.P., Little, B.P., Narayan, A.K., and Flores, E.J.

Radiology, vol. 297(3)

December 2020

[The purpose of this study was to evaluate whether non-White minority patients hospitalised with confirmed COVID-19 infection presented with increased severity on admission chest radiographs compared with White or non-Hispanic patients. Patients hospitalised with confirmed COVID-19 infection between March 17, 2020, and April 10, 2020, were identified using the electronic medical record (n = 326; mean age, 59 years \pm 17 [standard deviation]; male-to-female ratio: 188:138). The primary outcome was the severity of lung disease on admission chest radiographs, measured using the modified Radiographic Assessment of Lung Edema (mRALE) score. The secondary outcome was a composite adverse clinical outcome of intubation, intensive care unit admission, or death. The primary exposure was the racial and/or ethnic category: White or non-Hispanic versus non-White (i.e. Hispanic, Black, Asian, or other). Multivariable linear regression analyses were performed to evaluate the association between mRALE scores and race and/or ethnicity. Non-White patients had significantly higher mRALE scores (median score, 6.1; 95% confidence interval [CI]: 5.4, 6.7) compared with White or non-Hispanic patients (median score, 4.2; 95% CI: 3.6, 4.9) (unadjusted average difference, 1.8; 95% CI: 0.9, 2.8; P < .01).]

[Subspecialized radiological reporting reduces radiology report turnaround time](#)

Zabel, A.O.J., Leschka, S., Wildermuth S., Dietrich T.J., Hodler J.

Insights into Imaging, vol. 11(1)

December 2020

[The objective of this study was to compare the radiology report turnaround time (RTAT) between decentralised/modality-based and centralised/subspecialised radiological reporting at a multi-centre radiology enterprise. RTAT values for MRI, CT, and conventional radiography were compared between decentralised/modality-based (04 September 2017–22 December 2017) and centralised/subspecialised radiology (03 September 2018–21 December 2018) reporting grouped into three subspecialisations (body radiology, musculoskeletal radiology, and neuroradiology) at eleven sites of a multi-centre radiology enterprise. Change of reporting system from decentralized/modality-based to centralized/subspecialized radiology was associated with a significant decreased RTAT. Specifically, the RTAT for MRI reports and conventional radiographs was significantly reduced. A pronounced RTAT decrease was observed at minor hospitals.]

[To keep or reject, that is the question – A survey on radiologists and radiographers' assessments of plain radiography images](#)

Kjelle, E., Schanche, A.K., and Hafskjold, L.

Radiography, vol. 27(1) pp. 115-119

February 2021

[An online, questionnaire was distributed among radiographers (n = 116) and radiologists (n = 76) in a hospital trust in Norway, including 30 clinical cases (one image and a short referral text) that were divided into three categories; keep, could keep and reject, based on European guidelines. When rejecting, the respondents identified the main reason by ticking a list (positioning, collimation, centring, artefact or exposure error). Group differences were explored using 2-tailed chi-squared test. Inter-subjectivity was measured using Cohen's kappa for multi-rater sample. In total, 36% of the radiographers (n = 42) and 14% of the radiologists (n = 14) responded to the survey. Total response rate was 30% (56/192). Analysis showed significant difference between radiographers and radiologists in the categories of Reject ($\chi^2 = 6.3$, df = 1, p = 0.01), and Could keep ($\chi^2 = 6.3$, df = 1, p = 0.01), identifying radiologists as keeping more images compared to radiographers. Agreement among radiographers (Cohen's κ : 0,39; 95% CI: 0.30–0.48; p < 0.001) and radiologists (Cohen's κ : 0,23; 95% CI: 0.09–0.37; p < 0.001) respectively, is fair. The most common reason for rejecting an image is suboptimal positioning. Suboptimal collimation constituted 15% of the rejected images among radiographers, compared to 5% among radiologists. Centring, artefacts and exposure error showed quite similar rates as reasons for rejection.]

[Workload for radiologists during on-call hours: dramatic increase in the past 15 years](#)

Bruls, R.J.M. and Kwee, R.M.

Insights into Imaging, vol. 11(1)

December 2020

[The objective of this study was to investigate the workload for radiologists during on-call hours and to quantify the 15-year trend in a large general hospital in Western Europe. Data regarding the number of X-ray, ultrasound and computed tomography (CT) studies during on-call hours (weekdays between 6.00 p.m. and 7.00 a.m., weekends, and national holidays) between 2006 and 2020 were extracted from the picture archiving and communication system. All studies were converted into relative value units (RVUs) to estimate the on-call workload. The Mann–Kendall test was

performed to assess the temporal trend. The total RVUs during on-call hours showed a significant increase between 2006 and 2020 (Kendall's tau-b = 0.657, p = 0.001). The overall workload in terms of RVUs during on-call hours has quadrupled. The number of X-ray studies significantly decreased (Kendall's tau-b = -0.433, p = 0.026), whereas the number of CT studies significantly increased (Kendall's tau-b = 0.875, p < 0.001) between 2006 and 2020. CT studies which increased by more than 500% between 2006 and 2020 are CT for head trauma, brain CTA, brain CTV, chest CT (for suspected pulmonary embolism), spinal CT, neck CT, pelvic CT, and CT for suspected aortic dissection. The number of ultrasound studies did not change significantly (Kendall's tau-b = 0.202, p = 0.298).]

Education and Training

[A randomised controlled trial of SAFMEDS to improve musculoskeletal radiology interpretation](#)

Lydon, S., Fitzgerald, N., Gannon, L., Choynowski, M., O'Connor, P., Devitt, A., Fenelon, C., and Byrne, D.
The Surgeon

January 2021

[This RCT examined the impact of a Say-All-Fast-Minute-Everyday-Shuffled (SAFMEDS) intervention on musculoskeletal radiology interpretation ability. It addressed two research questions: 1) what degree of performance improvement in musculoskeletal radiology interpretation does SAFMEDS engender beyond usual teaching? and; 2) does the degree of improvement differ for participants who achieve behavioural fluency and those who do not? Third-year medical students were randomised to either an intervention group (n = 22), who received SAFMEDS and usual teaching, or a control group (n = 20) who received usual teaching only. Eleven participants (5 intervention group, 6 control group) did not complete participation. A large effect size of the SAFMEDS intervention was identified (partial η^2 = 0.672; M = 38.5 min practice). When controlling for baseline performance, intervention group participants' performance on the post-test was significantly higher (M = 77.4%) than that of control group participants (M = 49.6%). Intervention group participants who achieved fluency performed significantly better at post-test (M = 82.4%) than intervention group participants who did not (M = 72.9%).]

[Has the COVID-19 pandemic opened our eyes to the potential of digital teaching? A survey of UK vascular surgery and interventional radiology trainees](#)

Nickinson, A.T.O., Carey, F., Tan, K., Ali, T., Al-Jundi, W.

European Journal of Vascular and Endovascular Surgery, vol. 60(6) pp. 952-953

December 2020

[This study aimed to gain insight into the implementation of digital teaching (DT) in the teaching of vascular disease by surveying UK vascular surgery and interventional radiology trainees. A questionnaire was used to investigate trainees' previous (pre-COVID) and current use of DT, their experiences using the technology, and recommendations on its future use. Fifty-two responses were obtained, with 49/52 (94.2%) from those in a training scheme. With the exception of Northern Ireland, at least one response was obtained from each health education deanery across the UK. Overall, 30/49 (61.2%) were "satisfied" and 19/49 (38.8%) "very satisfied" with their experience of DT; however, technology problems (e.g., poor internet connection, software/applications not working) were frequent (33/49, 67.3%). When asked about after the pandemic, 40/52 (76.9%) recommended using DT in conjunction with conventional "face to face" teaching and 42/52 (82.1%) agreed that the modality would help them better prepare for postgraduate exams.]

[How to perform an excellent radiology board examination: a web-based checklist](#)

Dicle, O., Özan, S., Şahin, H., Seçil, M.

Insights into Imaging, vol. 12(1)

January 2021

[Experts with national and international experience both in radiology and medical education contributed to the preparation of this checklist. The guide includes 174 elements to consider before, after the exam order and examination. From the perspective of assessment standards, it has been observed that the steps to be considered before the exam have a greater impact on the validity and reliability of the exam. The standard in which the questions are most associated was validity with 117 (67.24%) questions.]

Interventional Radiology

[Audit of electronic operative documentation in interventional radiology: the value of standardised proformas](#)

Theodoulou, I., Raja, U., Karunanithy, N., Sabharwal, T., Gangi, A., Diamantopoulos, A., Judd, R.

CVIR Endovascular, vol. 3(1)

December 2020

[Following the decision of an interventional radiology department, of a tertiary hospital, to convert its peri-procedural documentation from paper-based to electronic using a standardised proforma, a study was performed to ascertain the effects of this change on the standard of clinical documentation for radiologically-guided angiographic procedures. Using a retrospective approach, perioperative records were analysed in reverse chronological order for inclusion in the study. The standard for this audit was developed in the form of minimum criteria that all clinical documentation of angiographic procedures were expected to meet. The audit was performed at three equally spaced intervals of 6 months, yielding a total of 99 records. The baseline audit of paper-based records concluded > 80% completeness for 8 out of the 14 of parameters measured, with only two parameters meeting the target of 100% completeness. The second audit cycle performed on electronic records found 7 out of 14 parameters demonstrating absolute improvement in completeness, when compared to paper-based, but with the number of parameters exceeding 80% completeness falling to only 4 out of 14. Again, 100% completeness was observed in only 2 of the parameters. In the final audit cycle, after the introduction of a standardised electronic proforma, performance improved in every dimension with 6 out of 14 parameters reaching completeness of 100% and the 80% completeness threshold met by 12 out of 14 parameters.]

[Interventional radiology in the management of uncommon causes of obstetric haemorrhage](#)

Gorsi, U., Bansal, A., Chaluvashetty, S.B.; Lal, A., Kalra, N., Kang, M., Suri, V., and Sandhu, M.S.

European Journal of Radiology, vol. 134

January 2021

[This study aimed to delineate the uncommon causes of pregnancy related haemorrhage and discuss various endovascular, and direct percutaneous interventional radiology techniques that can be used for successful management. 44 females with uncommon causes of pregnancy related haemorrhage, who were referred for uterine artery embolization, between January 2013 and May 2020, were retrospectively analysed. Observations were tabulated under age, prior procedure, post procedure day, underlying pathology, route, embolizing agent used, complications and recurrence, and statistical analysis done. The mean age of the studied population was 28.5 ± 4.9 years (range 20–41 years), and the most common prior procedure performed was caesarean section (31.8 %), followed by post abortive procedures (29.5 %) and normal vaginal deliveries (27.3 %). The median post procedure duration was 6.5 days (range 1–80 days). Most common underlying pathology was pseudoaneurysm (31.8 %), followed by arteriovenous malformations and uterine artery hypertrophy (18.2 % each). Percutaneous route was used in six patients while the remaining 38 patients underwent endovascular management. Overall, Gelfoam was used in 50% patients, gelfoam plus another agent in 29.5 % and glue in 20.5 % patients. Technical success was achieved in 97.7 % and clinical success in 95.4 % with no major procedure related complications.]

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