

Objectives:

1. We will provide a glimpse of history and evolution of development of ultrasound.
2. Briefly discuss about recent developments and possible future applications of US.

Description: Ultrasound is one of the most commonly used imaging modality in our daily imaging practice. The journey that led to the invention and use of ultrasound for medical imaging has been long and it can be traced back to as far as 6th century BC when Greek philosopher Pythagoras performed experiments on the properties of vibrating strings. In 1942, Karl Dussik (Vienna) started its use for medical purposes in brain imaging followed by its use in Musculoskeletal imaging in 1958. Professor Ian Donald (Glasgow), used it for gynaecological purposes in 1955 followed by first B-mode scan in 1972 by McDonald and Leopold. After this ultrasound has become an integral part for diagnostic and therapeutic use in different specialities including obstetrics, cardiology (ECHO), anaesthesia, neonatology, ophthalmology, urology etc. The list of contributors in this process is endless and there were interesting observations and experiments which all eventually evolved into the existing technology.

Conclusion: We hope to present in this poster a vivid account of all interesting facts and historical events, which led to the invention of ultrasound and its application in diagnostic radiology. We will also cover the recent advancements such as microbubble, 4D ultrasound, elastography and fusion imaging and many other future possible applications.

P-169 An amazing journey of evolution of Xrays: Revolution of medical diagnosis

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Objectives:

1. We will look at the history and evolution of Xrays for medical use.
2. Briefly discuss all the related investigations and possible future applications.

Description: X-rays are part of the electromagnetic spectrum, an ionizing radiation with wavelengths shorter than ultraviolet light. X-rays are used to view a non-uniformly composed material in form of an image, which can be developed in order to display areas of different density and composition. Plain xrays are the most commonly used day to day examination worldwide (as in 2010, 5 billion medical imaging studies were performed).

X-rays have been used for medical imaging, since German physicist Wilhelm Röntgen discovered them in 1895. In the same year, Thomas Edison investigated materials' ability to fluoresce when exposed to X-rays. The other important early researchers in X-rays were Ivan Pulyui, William Crookes, Johann Wilhelm Hittorf, Eugen Goldstein, Heinrich Hertz, Philipp Lenard, Hermann von Helmholtz, Charles Glover Barkla, Nikola Tesla and Max von Laue. The use of X-rays for medical purposes (which developed into the field of radiation therapy) was pioneered by John Hall-Edwards in Birmingham, England in 1908.

Conclusion: Tomography, fluoroscopy, digital radiography and CT scanning are various topics related to Xrays, which we will cover in our review. CT uses multiple xrays by clever reconstruction techniques to generate a 3D representation of the scanned object/patient. We aim to display all the historical aspects of xrays with a clear time line and also discuss various uses, advantages, futures advances and challenges.

Student radiography**P-170 Dose audit of adult chest radiographs**

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Background: As required by the Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R) dose to patients should be kept as low as reasonably practicable (ALARP) and dose audits for selected diagnostic examinations are performed to optimise patient radiation dose. The chest radiograph is one of the most frequently performed radiographic examinations. About 1 million of chest x-rays were performed in the UK during 2008 which accounted

for 28% of all x-ray examinations (Hart et al., 2008). A review of radiation doses delivered to patients undergoing posterior-anterior (PA) chest examinations in a teaching hospital in North West England was undertaken.

Aims: To evaluate the radiation doses delivered to patients from PA chest examination.

Method: A 6 month period retrospective study was carried out for 5 computed radiography (CR) and 2 digital radiography (DR) x-ray machines. Data collection was performed by exporting examination date, room, projection, kV, mAs and dose area product (DAP) from Clinical Research Informatics System (CRIS). Average DAP values from each x-ray unit were calculated and compared with current national and local diagnostic reference level (DRL).

Results: The average chest PA dose for the DR system is lower than CR system and the average dose in Room 2 exceeds the national DRL.

P-171 How effective are CTPA and MRA in the investigation of pulmonary emboli?

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Aim: To investigate the clinical effectiveness of CT Pulmonary Angiography (CTPA) and MR Angiography (MRA) in the diagnosis of patients presenting with symptoms indicative of pulmonary emboli (PE).

Content: A system literature review was undertaken in order to identify primary studies comparing radiation dose, image quality and clinical effectiveness of CTPA and MRA for the diagnosis of PEs. A search of Ebscohost, Ovid Online and Scopus was conducted to find citations deemed relevant to the research question. A modified Critical Skills Appraisal Programme (CASP) tool was used to determine the quality of the included citations.

Relevance/Impact: CTPA is currently the reference standard for imaging potential PE. However there is a suggestion that the use of MRA should be further explored due to the limitations, e.g. the high radiation dose, associated with CTPA.

Outcomes: An initial search identified 1118 citations. On further screening, 12 primary research studies were included in the systematic literature review. Very good diagnostic accuracy and image quality of MRA was found in the included studies, comparable to that of CTPA in the diagnosis of PE. The benefit of no radiation dose and safer contrast agents are the most significant advantages with MRA imaging.

Discussion: This systematic literature review suggests that whilst CTPA is likely to remain the reference standard in the diagnosis of PE, there is scope for MRA to play a greater role. Most significantly the findings suggest that MRA should be used on patients that have early symptoms of PE.

P-172 A self audit to compare DAP to DRL for PA chest examinations

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Purpose: The Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R) require all British hospitals to implement diagnostic reference levels (DRLs) for all X-ray examinations. It is also a requirement that doses to patients are routinely audited to assess whether these levels are exceeded.

This work was a self-audit of a third year diagnostic radiography student to ensure DAP readings were within DRL for PA chest examinations.

Method: The survey was undertaken on one digital radiography (DR) unit, using local protocols and AECs, the only variable was field size. Patients not of standard size were excluded. In total, 24 patients (male = 12, female = 12) were surveyed and dose-area product (DAP) recorded. Image critique was also performed to assess collimation.

Standard: The local and national DRL is 0.10 Gy cm^2 . A standard of 100% was expected.

Results: The average DAP reading was 0.083 Gy cm^2 and only 7 male and 6 female patients were correctly collimated.

Discussion: 7 examinations were above the DRL, this was due to overcollimation.

On further assessment of the collimated field size (CFS) it was found that overcollimation was more likely to occur for female patients than for male patients.

This is likely due to a lack of operator confidence when positioning female patients.

Additionally two examinations required repeat exposures both were male patients, a possible cause for this was the operator's over confidence in male patient positioning therefore over collimating and missing anatomy.

Conclusion: The patient's gender impacted on the operator's selection of CFS and requires further investigation.

P-173 Mammography - the relationship between compression force and paddle movement

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Purpose: Image blurring has become more noticeable with the introduction of full field digital mammography. Research has demonstrated that paddles can move during mammography imaging; such motion may induce image unsharpness. This study investigates the relationship between paddle movement (mm) and compression force in Newtons (N).

Method: Six mammography machines with 12 flexible and 9 fixed paddles (n=21), calibrated to give compression force in N, were evaluated. Paddle movement was measured mechanically using 2 calibrated linear potentiometers. A deformable breast phantom was used to mimic female breast. For each paddle, 'machine given' N and paddle movement (mm) were recorded each second for 40 seconds with the phantom in a compressed state (at 80N).

Results: Graphs of 'change in N' (δN) against 'change in paddle position' (δmm) were plotted; these gave $R^2 < 0.86$ (regression) for straight line graphs. A directly proportional relationship between δN and δmm was demonstrated in all cases. Gradients of the graphs were significantly different for flexible and fixed paddles ($p=0.004$). Fixed paddle average, standard deviation, and maximum amount of mm movement in 40 seconds were 0.54, 0.28 and 1.35; flexible were 0.45, 0.20 and 0.94. Approximately 60 % of paddle movement occurred within the initial 10 seconds after applying compression.

Conclusion: A direct relationship exists between δN and δmm . Fixed paddles move more than flexible paddles. If the drop in compression force in a female breast is known then using the relationship derived from the phantom the actual motion can be estimated.

P-174 Lateral hip radiography- which technique produces the lowest organ dose combined with best visual image quality

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Purpose: To determine whether inclusion of an anti-scatter radiation grid is necessary for horizontal beam lateral hip radiography.

Method: A human tissue equivalent anthropomorphic phantom was used to generate horizontal beam lateral hip images at various conditions with and without an anti-scatter radiation grid. Pre-set exposure parameters were used, whereby kV was increased from 80 by factor of five and mAs remained a constant at 40. Same exposure parameters were executed for both techniques. In total thirty X-ray images were produced using a computed radiography (CR) system. Using a forced choice comparison method these images were scored against a devised image quality criterion by a panel of nine observers. Organ dose for both male testes and female ovaries were calculated using thermo luminescent dosimeters (TLDs).

Results: Study data suggested that optimum technique for horizontal beam lateral hip radiography varied between genders. For females an air-gap technique (without grid) using 80kV, 40mAs, 200cm SID and 10cm OID produced the best image quality whilst providing the lowest organ dose of 0.087648mGy to the ovaries. For men a technique which induced a grid produced the best image quality with the lowest testicular dose of 0.0362208mGy using 80kV, 40mAs and 120cm SID.

Conclusion: Results demonstrated that gender specific modifications may need to be applied in order to optimise image quality with lowest gonadal dose. Currently insufficient emphasis has been given to gender specific

modifications to radiographic technique. Further research on a range of examinations is recommended using both CR and digital radiography systems.

P-175 Light beam diaphragm collimator errors and their effects on radiation dose for AP pelvic radiography

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Purpose: To investigate the range of collimator errors in clinical X-ray rooms and to estimate their possible effects on the radiation dose for AP pelvis examinations.

Methods and Materials: A collimator test tool was suspended at three heights (14, 21 and 28cm) above the table bucky in nine X-ray rooms. Heights corresponded to the patient thickness (mean, +/-2SD) from 100 patients who previously underwent AP pelvic radiography. The X-ray beam was visually collimated to the inner boundary of the test tool and exposed to radiation. Differences between the visualized field size and the resultant X-ray field size (corrected for magnification) would indicate a collimator error. Using a pelvic phantom minimum textbook collimation was set and then changed and verified in order to simulate a range of possible collimator errors. Phantom examinations used a standard technique AP pelvis technique with exposure termination using outer AEC chambers. Dose-area-product (DAP) values were recorded.

Results: Out of nine X-ray rooms all but one produced a smaller irradiated area than was visually set. Errors ranged from a 16% reduction in irradiated field size to a slight over irradiation by 0.4%. With the possibility that these errors could be larger in other institutions/rooms a range of (-27% to +18%) errors were simulated. Increasing the field size by 1cm (superior/inferiorly) increased the DAP by 5%. Laterally, a 1cm increase caused a 4% rise. Increases of 1cm in both planes raised DAP by 4%.

P-176 Minor variations in lateral and AP lumbar spine centring, effects on radiation dose and image quality

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Introduction: Accurate radiographic centring is a well established method for reducing radiation dose (RD) and ensuring optimal image quality (IQ). Currently published centring points were not developed in a digital era. Revision of standard centring points (CP) for high radiation dose examinations e.g. lumbar spine radiography may allow further dose optimisation.

Methods: Using a phantom and a digital X-ray unit (with AEC) the centring points for anteroposterior (AP) and lateral lumbar spine projections were varied. For each variation the resultant RD was calculated and IQ was assessed by two experienced observers.

Results: For AP and lateral projections no significant differences in IQ or RD were demonstrated when varying the CP in the superior-inferior plane. A positive (dose reduction) correlation was identified when moving in the medio-lateral plane (AP; $r=0.173$ $p=0.042$) and also in the anteroposterior plane (lateral; $r=0.958$, $p<0.01$). For the AP projection one CP produced an image with a higher IQ score in comparison to a standard centred image but with a 7% reduction in RD. One lateral image achieved an increased IQ score when compared to the standard but required a 12% increased RD. A 10mm superior and anterior off-centring in the lateral projection gave equal IQ but with a 13% lower dose.

Conclusion: For both projections there were situations where marginal revisions to the CP may allow a reduction in RD. For lateral projections minor variations in centring are more likely to cause a significantly reduced IQ. Further research in the clinical environment is therefore warranted.

P-177 Exploring the challenges of increasing levels of patient obesity for diagnostic imaging departments

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Aim: To investigate the ways in which the challenges associated with increasing levels of obesity can be met within the diagnostic imaging department.

Content: This presentation will outline the findings of a system literature review that was undertaken in order to identify the ways in which diagnostic imaging departments can overcome the challenges associated with imaging bariatric patients. A search of Medline, EMBASE, ScienceDirect, Scopus and PubMed was conducted to find citations deemed relevant.

Relevance/Impact: Obesity is deemed to be one of the major health challenges of this century and is continuing to increase in prevalence across all age groups. Chronic health conditions associated with obesity are necessitating an increase in the use of medical imaging. It is anticipated that CT/MRI and interventional imaging will experience some of the greatest increases in service demand. Therefore ensuring imaging service provision is capable of meeting the associated challenges is a necessity for future service provision.

Outcomes: This study found that whilst the majority of literature focused on examples of modified equipment design to accommodate larger patients, this neglected to consider the cost implications to departments. The findings most readily synthesised into current practice centred on the implementation of appropriate pre-scan screening for patients.

Discussion: Pre-scan patient screening can help establish the likelihood of successful imaging for patients. Examples of strategies included; measuring patients girth prior to CT/MR imaging for correlation with bore size, checking patients weight against the maximum for safe working of equipment, increasing field-of-view during imaging, exploring differing imaging pathways.

P-178 Can radiographers visually categorise patient's into correct body mass index bands?

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Aims/ Objectives: The aim of this study was to investigate whether radiographers can visually categorise patients into correct body mass index (BMI) bands.

Content: Photographs taken anteriorly and laterally of eight participants were provided for radiographers to evaluate along with the height of the participants. Twenty radiographers across two hospitals participated in the study. They categorised each participant as optimum weight, over-weight, or obese using the WHO criteria bandings. The study was approved by University ethics and all participants signed informed consent.

Relevance/Impact: The introduction of dose-monitoring software such as dose-watch by GE Healthcare provides better data when the patient's BMI is entered. However, in a busy radiology department measuring and weighing patients is impractical.

Outcomes: The three participants in the optimal BMI group were correctly classified by 46% of the radiographers, with 54% classifying them as sub-optimal. The overweight participant was correctly categorised by 58%, but considered to have an optimal BMI by 42% of the radiographers. The four obese participants were correctly categorised 5% of the time, were categorised as overweight by 70% and categorised as optimal by 25% of the radiographers.

Discussion: Radiographers are unable to accurately visually categorise participants into BMI bandings, with a tendency to under-state the BMI banding. This is likely to be due to the increase in population size and the psychological shift in what is considered to be normal. This needs to be taken into account when asking radiographers to visually assess patient's BMI.

P-179 Fact or fiction: an analysis of the 10 kVp rule in computed radiography

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Purpose: To determine whether increasing the tube voltage by 10kVp whilst reducing the tube current by 50% ('10kVp rule') produces similar perceptual image quality.

Method: 391 matched pairs of anthropomorphic chest phantom X-ray images were produced on a computed radiography (CR) system. Five experienced clinicians graded the images using a 2 alternative forced choice comparison method. Effective dose (E) was calculated for all images using dose calculation software, based on acquisition parameters and DAP readings.

Results: Perceptual image quality scores prior to and following application of the '10kVp rule' were found have no statistical difference ($p>0.1$), indicating that the increase in kVp and reduction in mAs had no impact on the perceived image quality. In all cases E reduced, with an average 36% (s.d 7%) after the rule had been applied ($p<0.001$).

Conclusion: Results demonstrate that application of the 10kVp rule significantly reduces effective dose, with no significant reduction in perceived image quality. Further research should be conducted for a range of examinations using CR and digital radiography (DR) systems. Given these findings, we propose that optimisation within a clinical setting should consider the use of the rule on a more regular basis.

P-180 A first: retrospective audit of Red Dotting occipitomenal views

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An audit of a student auditor's ability to identify abnormalities on OM projections.

Rationale: General observation of the low frequency of Occipitomenal view commenting in clinical placement. It was assumed the complexity of these images rendered them unfavourable in an informal red dotting system.

Method: A sample size of 50 images meeting specific inclusion criteria were selected retrospectively from the Trusts Radiological Information System (RIS), and viewed using a high resolution Picture Archive and Communications (PACs) monitor. Data was recorded and anonymised. The images were reviewed methodically using McGrogors Lines system, and a definitive red dot decision was recorded on the data collection tool as 'no abnormality detected' (NAD) or 'abnormality detected' (AD). The standard to which the the auditors accuracy was compared is the contractual required accuracy of a Reporting Radiographer (95%).

Results: Sensitivity and specificity was calculated as 75% and 78% respectively. These results were higher than the auditor anticipated. The majority of the sample size represented true -ves (66%) suggesting the auditor specificity as statistically reliable when compared to sensitivity (true +ves 12%). Accuracy fell short of the desired optimum standard by 17%. This was deemed an acceptable shortfall, due to the inexperience of the auditor in this specific knowledge and skills area.

P-181 Effect of fluoroscopy parameters on dose

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Our aim for this project was to establish best practice by developing quantifiable data of the effects of different parameters on dose reduction when performing a fluoroscopy examination in an interventional room.

The study was performed using Phillips fluoroscopy equipment in an interventional room representing a pelvic angioplasty examination. The pelvic sections of an anatomically correct Rando phantom were used and our study focused on the effects of collimation, magnification, fluoro flavours and frames per second on dose. We altered one parameter at a time and measured the dose as Dose Area Product readings. The effect of each parameter was calculated as a percentage dose change from a baseline value.

The intended outcome of the study was to provide data that will give a stronger basis for implementing changes to local departmental protocols. Stating that particular parameters produce lower dose is not as powerful as being able to state the exact effect of the parameter change as a percentage dose increase.

The results showed that increasing the frame rate from 1 to 2 per second caused an 82% increase in dose. A 52% reduction could be achieved by using fluoro flavour 1 as opposed to standard fluoro flavour 2. The doses produced in acquisition mode were approximately 10 times those produced in standard fluoroscopy mode.

Our study suggests that limiting the use of acquisition mode, where appropriate, is the most important factor in reducing dose. This has potential benefits for both staff and patients.

P-182 Has the introduction of digital radiography possibly allowed for radiographic practice to decrease in quality?

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Purpose: This presentation will consider the impact that digital radiography has had on the knowledge and understanding of exposure factors and image quality.

Content: There is a growing trend among today's students' being inculcated into a culture of 'button pushing' which can lead to over reliance on pre-set exposure factors on digital systems. The presentation will inform whether digital imaging systems have allowed too much leeway on image quality and if this has affected patient care. The ability of the radiographer to use quality assurance and delete images has allowed for poor quality images to be turned into diagnostic images or never seen. This is a positive in that radiation dose is kept to a minimum (ALARP) but means that errors in exposure factor selection are being made. The impact of this is that this may lead to more images being taken and therefore greater radiation dose to the patient.

Methods: A questionnaire survey has been conducted to student radiographers at an educational institute to gather their knowledge and understanding of the study topic area.

Results: The study yielded mixed responses with regards to the use of pre-set exposure factors, knowledge and understanding of exposures when using digital imaging systems and differences in opinion of resultant image quality

Conclusion: There is over reliance on pre-set exposure factors which does have implications for practice and patient care.

P-183 Scottish Islands – a student diagnostic radiographer's experience

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Radiography is a profession that can be enjoyed throughout the world, and this all begins from being a student radiographer. Whilst being a student radiographer, many clinical placements are successfully completed. When on a clinical placement, there are the initial fears but also the realisations of what was actually gained from completing the placement. These fears and realisations are magnified when given the opportunity to do a clinical placement in a Scottish rural hospital. Many fears were felt before this particular placement, mainly because it was so far from family and friends. Being alone in an unknown rural village is not for the faint hearted. However it was Summer time, beautiful countryside to explore and the bonus of working alongside a great group of radiographers. Being fearful of the unknown should not let us shy away from what could potentially be a life changing experience. It is these experiences that can help mould excellent radiographers and improves employability, as students can benefit from the diversity of clinical placement sites and from this can gain a wider range of skills. Clinical placements are an invaluable opportunity to put knowledge gained at university into practice. This particular clinical placement in the Scottish Islands provided an excellent foundation to build upon with endless radiography knowledge whilst providing an amazing experience and ultimately a higher level of learning was gained here compared to previous placement sites within Scotland.

P-184 Feed-Forward Sandwich; The students perspective

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Aim: To evaluate the 'feed-forward sandwich' (FFS) from a student's perspective.

Method: A qualitative SWOT approach via questionnaire was utilised to receive feedback from the current third year cohort of Diagnostic Radiography students (n=28) where the FFS has been utilised as part of their clinical training.

Results/Discussion: 40% of the respondents felt that assessing students will be difficult when they newly qualify, however 95% felt that the feed-forward sandwich technique would be a great tool to help them. Experiential learning has taught them the importance of providing balanced feedback as part of clinical assessment and the need for constructive comments that are actionable.

Conclusion: Results confirm the earlier research with assessors, in that the feed-forward sandwich is a desirable approach to giving and receiving feedback.

P-185 The research radiographer; who?

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Aims : The role of the Research Radiographer is undervalued; these individuals play an invaluable role in the development of the profession and the completion of the governments drive for NHS led research. The aim is to look at the national overview of the role, and radiographers views regarding the research role.

Outcomes : Radiographers often have little or no knowledge of the research process and are simply undertake the imaging. Radiographers often give the opinion that research is not an established form of clinical work and therefore holds little relevance to their practice. There are only a few Radiographers around the UK with a defined research role.

Discussion : The establishment of a group within the SOR to link Research Radiographers together, raising the profile. This would not just be advantageous to the profession but to radiology departments across the UK that struggle with the demand placed on them. Mapping out strategic hubs of Radiographers involved within research would help to bridge gaps in knowledge and help to raise the profile of research in radiography.

With the recent investment of >£100 million from the government for the NIHR (National Institute of Health Research) will inevitably lead to clinicians and researchers increasing demands upon radiology. Promotion of the role

will bring benefits to investigators from protocol conception to study completion. Radiographers should feel empowered to become actively involved in research with new funding streams available.

P-186 The impact of training of image interpretation on radiographer's skills of reporting: A literature review

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Objective: The objective of this study is to evaluate the impact of training of image interpretation on radiographers' skills of reporting.

Methods: A literature search was performed through different database such as Science Direct, The Cochrane Library, MEDLINE, CINAHL, pubmed central Google and Google Scholar. Search terms were derived from PICO to find the relevant material. The literature was filtered using inclusion and exclusion criteria to remove irrelevant studies. The articles identified were analysed and reviewed according to guidelines of Centre of Review and Dissemination (CRD). Studies were critically appraised according to the criteria of Standard for Reporting Diagnostic Accuracy Studies (STARD).

Results: Ten studies were identified for review after excluding a number of irrelevant articles according to the inclusion and exclusion criteria. These studies compared the reporting skills of radiographers before training and after training based on pattern recognition and image perception. The differences in their sensitivity and specificity were significant in terms of improvement.

Conclusion: The evidences from the studies in this literature review suggest that training of basic concepts of image interpretation improves radiographer's reporting skills. However, discontinuation of training leads to reduced sensitivity and specificity of radiographers reporting. It is inferred that the radiographers need to continue their learning and short-courses according to Continuing Medical Education (CPD).

P-187 Training for theatre radiography is there room for improvement?

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There are many surgical procedures which require the use of fluoroscopic radiographic equipment in order to achieve a successful outcome requiring the radiographer to have an understanding of how to prepare the equipment in relation to the patient and the projections required.

There is little published and on-line material when compared to general radiographic technique, although there is some useful material available from manufacturers, and training is commonly through observation and instruction by other radiographers who in turn have received training in a similar fashion.

Potential problems with the development of training material on radiographic technique in the operating theatre is the variation between hospitals on radiographic requirements and equipment used, however there is scope for a basic format showing the orientation of the equipment to the patient and projections commonly used for different procedures providing a starting point which can then be adapted according to departmental requirements which could prove particularly useful for student and newly qualified radiographers who have yet to experience a wide range of examinations performed in the operating theatre.

Initial use of such a format has been provided to newly qualified radiographers starting with the trust which they can use as a reference point to help them prepare for examinations which they may have not experienced when on clinical placement as students. Elements of the same information can also be used by theatre staff to aid in room preparation and access requirements for radiographic cases.

P-188 Reviewing a case-based learning program “SOLAR” in radiography education

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Aims/Objectives: Over 10 years ago a Case-Based Learning (CBL) Program called SOLAR (Student Oriented Learning About Radiography) was introduced into a Radiography Degree Program. This research aims to determine current student engagement in SOLAR focusing on how the program could be improved and potentially incorporated into other educational institutions.

Content: The structure of SOLAR will be presented outlining how the students engage in real-life clinical cases by using suggested resources to create a clinical action plan (CAP) covering the professional issues involved in each scenario. After submission students are presented with an Expert CAP from which they write a comparative report focusing on their learning outcomes. Discussion will include how this program is incorporated into all 4 years of the course along with the results of the student feedback surveys.

Relevance/Impact: CBL is an effective tool used in many healthcare professions but there is limited literature available in the Radiography setting. This presentation will introduce the audience to SOLAR giving them tangible methods of incorporating effective CBL into their syllabus.

Outcomes: Preliminary results from the students indicate that tutorial discussion facilitates better understanding compared to simply reading the Expert CAP. Students were in favour of using more audio-visual presentation methods to help them better understand the background of the clinical scenario.

Discussion: CBL is a valid learning tool that has the potential to be used more widely within the field of Radiography. The SOLAR program is an excellent avenue for this to occur within.

P-189 Enhancing radiography students understanding of depression: A workshop design involving service users

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Aims/ Objectives: The aim of this abstract is to describe a well-received method of teaching radiography students about depression.

Content: This presentation will describe a depression workshop for increasing student radiographers’ awareness and understanding of depression and anxiety. The workshops are delivered through collaboration between medical imaging and clinical psychology, using a member of the lived experience group.

Relevance/Impact: Depression affects approximately 20% of people throughout their lives and due to co-morbidities; it is likely this percentage is greater within the population seen within an imaging department. However, many radiographers have little understanding of the impact depression has on the ability of patients to engage with the service they offer and the barriers this can cause. The workshops have been designed to increase the understanding of depression among student radiographers, along with developing the potential impact of being depressed on patient-radiographer interactions. The students work through some exercises to share their understandings of depression through visual mediums. The session is summed up with the use of some video clips of the stories of some service users who suffer from depression.

Outcomes: The students have reviewed the workshops highly and their understanding of depression has increased as a result. The use of a service user is incredibly powerful and the students welcomed this approach to teaching them more about mental health.

Discussion: This is a highly successful method for developing an understanding of depression and the impact of this in service users for student radiographers.
