Student Conference Abstracts
Friday 16 March, 11:15–12:45
Student Conference Morning Session (MI)

Transgender health in Australia – a beginner’s guide to gender identity
Alex Schelleman
RMIT, Camberwell, Australia

Transgender individuals face several barriers when accessing health care in Australia. Trans individuals have unique health care needs that are poorly understood by many within the medical radiations profession, leading to discrimination, stigma and marginalisation of transgender people.

This presentation is intended to address how we, as medical radiations professionals, can adapt our practice to prevent further marginalisation of this group. This will include a discussion on the health care requirements of trans people, how to select pronouns and language to best communicate with patients and how to collaborate with other health care providers to provide the best experience for trans patients. By understanding the spectrum of different gender identities, medical radiations professionals can positively contribute to the respect and empowerment of trans individuals within the Australian health care system.

The whole picture about mammographic practice: a scoping systematic review from the beginning to the end
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Curtin University, Bentley, Australia

Objectives: To review studies describing all steps of mammography examinations worldwide regarding patient-centric practices by radiographers, to compare this to practice in the Australian context and to identify areas for future research.

Methods: A systematic literature review was performed to identify studies written in English in the past 10 years. A search of six databases consisting of PubMed, ScienceDirect, CINAHL, Informit, OATD and the Cochrane Library identified studies reporting practice in mammography with a focus on communication, breast compression, radiation dose and image quality.

Results: 76 studies that met selection criteria were included in this review. Eight topics were reviewed through analysis of these studies with three being presented. Communication was emphasised as one of the best strategies to reduce pain, as was the optimisation of breast compression. The compression behaviours are increasingly utilising compression pressure rather than force. Medical devices implanted in the breast are associated with lower image quality and the recent imaging practices of breast implants are not well stated.

Conclusion: This review shows that there are some aspects of radiographers practice not fully covered in the literature, including patient reception and preparation and technique adaptations in non-standard patients such as disabled patients, male patients or patients with implants or postsurgical breasts. Evidence reflecting these areas of practice is limited, thus emphasising the necessity for future research.
The value of the erect abdominal radiograph
Wendy Geng,1 Kerry Thoirs,1 Michael Fuller,2 Brooke Osborne1
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Introduction: There is dispute in the literature on the diagnostic value of the erect abdominal radiograph when performed on patients with acute abdominal pain.1–3 It is also noteworthy that adopting the erect position can be uncomfortable for patients with acute abdominal pain and increases patient radiation dose.

Aim: To determine if including the erect abdominal view in plain abdominal radiography (PAR) improved diagnostic accuracy for identifying mechanical bowel obstruction and/or paralytic ileus in adults presenting with acute abdominal pain.

Methods: Ethical approval was obtained. PAR of 40 consecutive adults suspected with bowel obstruction or paralytic ileus were retrospectively sampled and independently reviewed by two emergency department consultants and two radiology consultants for bowel obstruction and paralytic ileus across two sessions. In session one, participants assessed the supine abdominal radiographs (PAR1) and clinical details in randomised order, and session two, at least 6 weeks later, they assessed the supine and erect abdominal radiographs (PAR2) and clinical details of the randomly re-ordered cases. The diagnostic accuracy of PAR1 and PAR2 were compared using computed tomography as the reference standard.

Results: Sensitivity, specificity and area under the receiver operating characteristic curves (AUROC) ranged from 40.0–86.7%, 36.0–96.0% and 0.581–0.712 for PAR1 respectively, and from 70.3–86.8%, 37.5–68.0% and 0.565–0.673 for PAR2 respectively. For AUROC there were no significant differences (P > 0.05) between PAR1 and PAR2. Intra-rater and inter-rater agreement improved in PAR2.

Conclusion: There was no significant improvement in diagnostic accuracy when including the erect radiograph in PAR for the acute abdomen.

References
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3. Tie H, Edwin P. The role of plain erect abdominal radiography in the diagnosis of small bowel obstruction. J Med Imaging Radiat Oncol 2016;60(S1):187.

Facing the faeces: imaging of associated defacatory disorders
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RMIT, Melbourne, Australia

Diagnostic examinations for defacatory disorders are becoming uncommon, with fewer radiographers being exposed to the methodology and clinical significance of associated imaging. Negative stigma and decreased involvement suggest provision of appropriate care is increasingly difficult. Regardless, the imaging options available for diagnosis and management of defacatory disorders are extremely valuable to visualise both physiological and anatomical information. As such, it is paramount that radiographers are aware of the nuances of conducting such examinations, contributing to positive patient outcomes and optimisation of care.

This presentation systematically examines the imaging methods available in diagnosis and assessment of defacatory disorders, and identifies their key strengths and weaknesses. Clinical indication, image interpretation, aspects of patient care and treatment options are also addressed to ensure comprehensive understanding of defacatory disorders and associated imaging. Through acknowledgement of the significance of such uncommon and invasive procedures, appropriate patient management can be made possible.
Planar radiography of developmental dysplasia of the hip
Alexandra Kuptsova, Nicholas De Pasquale, Deon Xu
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The role of planar X-ray imaging in the diagnosis and treatment interventions of developmental dysplasia of the hip (DDH) in the paediatric patient was investigated. DDH is the most common musculoskeletal disorder in children and affects 1 in 600 females and 1 in 3000 males born in Australia.¹

Reduced mobility, leg length discrepancies, waddling gait are some of the common clinical indicators of DDH. Ultrasound and planar X-ray are the main modalities used for diagnosis and a number of different lines and angles are used to assess for DDH. The Pavlik harness and immobilisation with a cast are the main treatment options used in conjunction with follow-up imaging to monitor progression of concentric reduction of the femoral head into the acetabulum. The figure below shows the imaging pathways for the diagnosis of DDH.² Early diagnosis improves the prognosis for the patient and reduces the likelihood of the utilisation of more invasive treatments.³ It is important for health professionals to understand what clinical tests and imaging modalities are performed at different stages of this disorder, as shown in the imaging pathway. Ongoing communication between health professionals and educating the public so that they are aware of the importance of early signs of DDH is essential.

References
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Friday 16 March, 11:15–12:45
Student Conference Morning Session (RT)

Do radiation therapists recognise anxious patients in the radiation oncology treatment setting?
Kelly Elsner
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Objectives: To assess to what extent radiation therapists (RTs) can recognise patient anxiety and recommend appropriate management strategies.

Methods: An online survey, designed with Qualtrics software, contained two vignettes representing common patient presentations in a radiation oncology setting. Three questions were used to assess responses to the vignettes. RTs in three countries were invited to participate via email. Descriptive analysis was performed using SPSS. Ethics approval was granted by the University of Sydney.

Results: Responses of 582 participants were analysed. In vignette 1, descriptions – anxious, worried and distressed – were endorsed and accounted for 80.1% of responses (1385/1730). In vignette 2 – angry, anxious, worried and distressed – accounted for 91.4% of responses (1937/2118). The most frequently endorsed management strategies were: vignette 1 ‘acknowledge and encourage’ patient – 576 (99.0%), ‘discuss psychosocial referral’ with patient – 296 (50.9%), and ‘involve friend/family in setup’ – 240 (41.2%); vignette 2 ‘acknowledge and encourage’ patient – 519 (89.1%), ‘contact radiation oncologist/nurse prior to treatment’ – 514 (88.3%), and ‘discuss psychosocial referral’ with patient – 252 (43.3%).

Discussion: Relevant indicators were recognised as signs of anxiety in both vignettes. Management strategies endorsed demonstrate RTs willingness to engage with patients and/or the multidisciplinary team to provide emotional and psychological support to patients.

Conclusion: When presented with vignettes, RTs can detect anxiety and recommend appropriate management strategies. Understanding how RTs do this in practice and the possible systemic barriers is important to determine future approaches to implementing psychosocial care in the radiation oncology setting.
A multifaceted approach to patient care in the radiotherapy department: an oropharyngeal cancer case study
Dannielle Costello
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Introduction: The radiation therapy department is a multifaceted approach to caring for cancer patients throughout their treatment. Patient care within a department consists of not only caring for the patient’s physical health, but also caring for their mental and emotional wellbeing. There are many professions who contribute to this care including radiation therapists, radiation oncologists, speech pathologists, dieticians and social workers.

Case presentation: This case study is based on a 60-year-old man who was diagnosed with a p16 positive, primary unspecified malignant neoplasm of the oropharynx and a secondary unspecified neoplasm of the lymph nodes of the head, face and neck.

Management and outcome: This patient underwent a course of chemoradiotherapy with other regular management from a speech pathologist, a dietician and a social worker.

Discussion: The collaboration of all professions to aid in this patient’s care throughout his treatment worked to minimise as many physical side effects as possible while also reducing the impact of the cancer diagnosis on the patient’s mental and emotional health, and his family’s. This communication and collaboration between all fields can have a direct impact on a patient’s mental, physical and emotional wellbeing and therefore, their ability to cope with their treatment and the side effects.

Dose de-escalation for HPV-positive head and neck squamous cell carcinomas – is it viable?
Jessica Boersen
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Objectives: Despite oropharyngeal squamous cell carcinomas (OPSCC) human papillomavirus (HPV)-associated disease having superior overall survival (OS) and progression-free survival (PFS) outcomes than HPV-negative disease,¹ current standard-of-practice does not account for this, resulting in similar acute quality of life (QoL) effects.² This project aimed to assess the viability of multi-disciplinary dose de-escalation for HPV+ OPSCC, by investigating the aetiological differences which contribute to an improved treatment response, and comparing de-escalation strategies and their impact on OS, PFS and QoL.

Methods: A review of literature (published during or after 2012) was performed through the Embase, PubMed and Cochrane databases with key words including ‘HPV’, ‘oropharyngeal’ and ‘de-escalation’ to collate results from recent and ongoing trials. The preliminary papers were perused for further relevant studies. Ethics approval was not required as no primary research was conducted.

Results: For most HPV+ patients, de-escalation of radiation dose, concurrent chemotherapy or adjuvant surgery showed improvements in QoL outcomes whilst having little impact on OS or PFS. P16-positivity was frequently used to distinguish HPV+ patients, however, was found to be not completely indicative of a good response cohort. Minimal evidence was available in regards to long-term outcomes.

Discussion/Conclusion: The findings indicated a strong advantage in response-adapted de-escalation such as utilising the response of the disease to induction chemotherapy as the determinant of suitability to de-intensification of the adjuvant treatment in comparison to risk-based stratification, which has implications related to aetiological discrepancies between p16+ and definite HPV-positivity. Further long-term results are required before changing the current standard-of-practice.

References
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Brain metastases: how should we treat?
Joshua Scott, Ellen Bartley, Bridget Bennett, D’arcy Picton-Barnes, Joshua Sams
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Objectives: Studies have shown that 10-30% of cancer patients develop brain metastases throughout their cancer journey. Current treatment modalities, such as whole brain radiation therapy (WBRT) and stereotactic radiosurgery (SRS), while treating the brain metastases, produce large neurological deficits and dramatically decrease quality of life. Through the thorough comparison of WBRT and SRS, we aim to assess patient outcomes such as cognitive function and overall survival, to determine which technique would provide the best quality of care for patients presenting with brain metastases.

Methods: A review of the current literature was undertaken, utilising a number of reliable scientific databases. Topic related keywords such as ‘WBRT’, ‘SRS’, ‘brain metastases’, ‘cognitive decline’ and ‘life expectancy’ produced pertinent results from which our evidence was drawn.

Results: SRS was found to minimise the detrimental neurocognitive functional impacts produced in WBRT, successfully preserving functional integrity and positively impacting on the cognitive health and quality of life of patients. A notable increase in survival rates was seen with SRS treatments, with some studies showing increases in survival by as much as 10 months when compared with WBRT. However, there are also other influencing factors that affect how a patient responds to their treatment. Evidence shows that outcomes are significantly better for patients who undergo pre-operative resections as well as those with smaller/fewer brain metastases sites.

Conclusion: SRS evidently produces greater survival rates while minimising effects on neurological and cognitive quality of life, therefore proving its suitability as the preferred treatment modality for brain metastases.

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Improving communication skills training in student health practitioners
Anna Didenko
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Background: A cancer diagnosis is traumatic for patients, as it is often coupled with severe therapeutic effects, insufficient pain management and physical deterioration. Psychological symptoms are known to affect a patient’s ability to cope with the burden of an illness, negatively affecting the patient's quality of life. Radiation therapists occupy a unique role in patient care, as they have the ability to further explore a patient’s psychosocial needs through considerable contact over the duration of treatment. Good communication skills are essential in establishing trust between patients and family members, leading to better patient satisfaction, compliance and an improved state of health.

Aim: The aim of this literature review is to look at the role of communication in patient outcomes and how communication skills training can be improved for student health practitioners.

Results: Results demonstrate that most student health practitioners would benefit from communication skills training prior to clinical practice sessions. Students place greater emphasis on clinical skills rather than on relational competencies in simulation-based training, however, a key finding shows most complaints regarding health care relates to ineffective communication rather than a lack of clinical skills.

Conclusion: There is a need for incorporating communication training early in curricula to ensure competency in this skill is achieved prior to graduation. Simulation-based training allows students to link theory and practice, facilitating learning and increasing confidence before clinical practice. This in turn allows students to develop cognitive and emotional skills through learning from their own mistakes and allowing engagement through reflection.

References
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Exploring the psychosocial impact of an anal cancer diagnosis on a busy mother and wife
Amelia Rew
**RMIT, Melbourne, Australia**

For women undergoing anal cancer radiotherapy, the psychosocial impact of their disease is substantially large. Anal cancer, a relatively rare cancer site that comprises 4% of anorectal cases, has been known previously for its prevalence within HIV positive men. However, the rates of anal cancer in the heterosexual female population is increasing according to recent data. How-ever, the rates of anal cancer in the heterosexual female population is increasing according to recent data. Since the 1970s, radiotherapy as a part of a combined modality therapy with chemother-apy has provided an alternative to the disfigurement of abdominoperineal resection, which resulted in permanent colostomy. Development of chemo-radiation to be used in the front line for the management of anal cancer made considerations to the psychosocial wellbeing of patients receiving care for their disease, linking sphincter preservation as an integral element to mental wellbeing. This case study will further explore the psychosocial issues that arise with a diagnosis of anal cancer, through the clinical experience I was fortunate to have with a mother of two undergoing anal cancer chemo-radiotherapy. Issues highlighted will include stigma, family relationships, sexuality, the late effects of pelvic radiation and their relationship to perceived quality of life (QoL). In aim of increasing awareness of these effects, discussion will be made regarding what steps we can take as health professionals to be aware of and meet the specific needs of this particular subgroup of patients.

**References**
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Friday 16 March, 13:45–15:15
**Student Conference Afternoon**
**Session (MI)**

**Student learning preferences and difficulties in medical imaging**
Giovanni Mandarano, Christopher Parsons
**Deakin University, Waurn Ponds, Australia**

**Objectives:** The aim of this research is to survey and identify the number of medical imaging (radiography) students who may have a learning difficulty and if this influences their learning preferences. Currently there is limited literature on learning difficulties in diagnostic medical imaging, with most articles focussing on student experience and dyslexia. Dyslexia is the most commonly known specific learning disability (SpLD) and may cause difficulty in radiography education. There is a need for both qualitative and quantitative data on learning preferences and difficulties in radiography and for this reason it is the focus of this investigation.

**Methods:** A three-part survey was created to gain an insight into the learning of those studying a Bachelor of Medical Imaging at Deakin University. General learning preferences and difficulties of students are explored in part one of the survey, with parts two and three focussing on learning and difficulties at university and on clinical placement respectively. Ethics approval has been submitted and is pending consideration.

**Results:** Results for this research are pending. It is anticipated that results will be used to help tailor methods in which radiography is taught and content delivered.

**Discussion/Conclusion:** The current public prevalence of dyslexia has been estimated to affect 3–10% of individuals. There is no evidence to suggest the prevalence of SpLDs in radiography; rather literature relies on research performed within other health care professions. This study hopes to create recommendations that can help tailor learning for students with SpLDs in the university and clinical settings.

**References**
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Issues arising from incidental findings in subjects undergoing medical imaging for teaching and research
Jessie Chau, Paul Lombardo
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Background: The proliferation of medical imaging and marked improvements in image quality have resulted in a greater number of incidental findings (IFs).1, 2 IFs occur in approximately one-third of subjects undergoing non-clinical imaging, with a small percentage (2-11%) found to be medically significant.3–6 The detection of IFs offer potential medical benefits, but also raises serious ethical issues related to informed consent and the follow-up of findings that can potentially harm subjects.

Aims: To review the ethical implications and logistical considerations associated with IFs and to develop a basic framework for the management of IFs in non-clinical settings.

Methods: A search was conducted through Ovid MEDLINE and Scopus databases to review the current management of IFs in non-clinical settings. Data was collected regarding the prevalence of IFs and the issues arising from the detection and disclosure of findings.

Results: Serious ethical issues related to obtaining informed consent and the disclosure of IFs were revealed, together with significant inconsistencies in the way IFs are managed.7, 8 Non-clinical IFs occur commonly, however there is little practical guidance was found to assist researchers and demonstrators.

Discussion/Conclusion: A basic framework for the management of IFs in non-clinical settings is proposed that addresses valid consent, the consideration of an image review process and formal disclosure protocols. Doing so would potentially allow collaboration among researchers and demonstrators from various non-clinical settings, and proper communication and minimisation of potential harm towards subjects.

References
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Overseas clinical experience: challenges in establishing and undertaking work experience in Cambodia
Jacinta Pang
University of Canberra, Canberra, Australia

After having completed student clinical placements in rural Australia, I was keen to learn more and gain further insights into patient care, protocols and practices. I also wondered what it would be like to use part of my holidays to experience radiography in another country. So I looked into the possibility of achieving both as part of my studies; initially my chances were slim.

As the University of Canberra course was new, none of the university’s international study programs catered for medical imaging students. Not to be deterred, I approached the Study Abroad Department at the university. As a result I gained the university’s approval to undertake a 2-week clinical work experience at Preah Kossamak Hospital in Phnom Penh, Cambodia (in November 2017). How I obtained approval and the steps I took may help and encourage other students to establish and undertake overseas medical imaging work experiences within their universities.

Further, what I experienced was a valuable insight into working in a developing Asian country. Cambodia has a very different economic status, culture, medical system and medical imaging infrastructure to Australia.1 I will discuss the challenges faced with caring for and communicating with the patients and staff, as well as noting the differences in common clinical practices.

Reference
1. Harrington S, Makris J. Imaging in the Khmer’s land: Cambodia Country Report. Journal of Global Radiology [Internet]. 2015. Available at http://escholarship.umassmed.edu/jgr/vol1/iss2/2/ [Accessed 19 October 2017].
Closing the Gap: steps to health equality for Aboriginal and Torres Strait Islander peoples
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RMIT, Yarraville, Australia

The imbalance in health outcomes between Aboriginal and Torres Strait Islander peoples compared to the general Australian population is well-documented and opined upon. Despite several organisations providing innumerable reports and recommendations on the issue, the Australian Government still struggles in its commitment to Close the Gap.¹ The disparity is a result of social and historical factors, including the transgenerational impact of colonialism and dispossession, ongoing systemic racism, limited Indigenous-specific primary health care services and lower levels of education and employment.¹,² Despite an awareness of the issues, there still exists an inability for policy makers to engage with a holistic view of health care that meets the expectations of the Aboriginal and Torres Strait Islander population. This results in a mistrust of mainstream care, poorer health status, alienation, underutilisation of health services or an avoidance of health care systems altogether.² Raising awareness of the gap is the first step, but it’s time we did more.

This literature review will describe strategies to improve health care for Aboriginal and Torres Strait Islander peoples, and will outline some effective and practical steps that can be implemented within medical radiation departments. A specific focus is placed on a collaborative and locally appropriate approach to care, with the aim of including Aboriginal and Torres Strait Islander voices in the discussion and decision-making process.

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Regional imaging centres across Australia must adapt their services to the limited availability and quantity of physicians, as the Australian Department of Health states the average doctor per 100,000 citizens is 88.5, around 11 doctors less than major cities.¹ To keep up with the high demand of patient centred care, and workplace efficiency, these centres rely heavily on the aspects of care, communication and collaboration to still perform at a high level. This is achieved through the utilisation of interprofessional practices and as students endeavour to undertake their professional development through clinical placements,² these core themes are highlighted within these regional centres and are vital to ensure students will be able to deal with a range of situations, retain the current knowledge of practising radiographers, and maintain advanced and proficient patient care for the future of Australia’s health care.

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Skin markings in external beam radiation therapy: a literature review of patients’ perceptions
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²Monash University, Melbourne, Australia

Introduction: Numerous studies have been conducted on the emotional and psychological distress associated with cancer diagnosis and the subsequent treatment journey that lies ahead.¹ What is unclear, however, is the correlation between permanent tattoos, which are common practice in radiation therapy centres across Australia, and the psychosocial health of patients after the completion of treatment.

Objective: The objective of this review was to analyse peer-reviewed journal articles discussing the advantages and disadvantages of three alternative strategies to permanent skin tattooing for external beam radiation therapy: ultraviolet (UV) tattoos, temporary markers and henna tattoos.

Method: The databases of PubMed, Medline, Ovid and Scopus were searched using the key words ‘skin markings’ OR ‘ultraviolet tattoos’ OR ‘temporary markers’ OR ‘henna tattoos’ with 15 articles selected for analysis. Studies pertaining to the impact of permanent tattoos have been relatively neglected in the literature, as this may appear less of a priority to some practitioners, and even some patients, in the context of managing a potentially life threatening disease.

Results: As radiation therapy practice evolves and practitioners are adopting a more holistic approach to health care, greater importance is being placed on the mental and psychological health of patients.² Results concluded that temporary skin markings may be more beneficial for patients in terms of mental and emotional health but further research needs to be conducted on how they can be implemented in radiotherapy centres without compromising the quality of treatment being delivered.³

References
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Atlas-based auto-segmentation: development and validation of organ at risk atlas based auto-segmentation
Laura Mahoney,¹ Glen Dinsdale,² Michael Geoffrey Jameson,³ Vikneswary Batumalai,² Siobhan Burke,² Shivani Kumar²
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Objective: Manual delineation of contours remains the standard practice within radiation therapy departments, however, it is time-consuming.¹ Auto-segmentation of structures allows for time-saving and reduction in interobserver variation.²³ This study evaluated the accuracy of a lung cancer organ at risk (OAR) atlas based auto-segmentation and assessed the overall efficiency gain.

Methods: Utilising MIM maestro (V6.7, MIM software, Cleveland, OH) a departmental auto-segmentation lung atlas was generated. The OAR atlas was then run on 10 datasets that generated the atlas contour volume set A, Atlas. Manual contours were also performed which formed the reference volume set B, Manual. The volume set A was duplicated and manually edited to best fit each anatomical contour which became volume set C, Edited Atlas. Contouring time was recorded and compared. Contour comparison statistics of dice coefficient (DC), to assess the overlap of the volume sets, were done on volume set B vs. A, and B vs. C.

Results: The DC value of volume set B vs. A, resulted in mean dice coefficient of 0.99, 0.99, 0.92 and 0.80 for the left lung, right lung, heart and trachea, respectively. The average time taken to complete manual segmentation was 48:61 minutes compared to the atlas segmentation of 2:73 minutes, P < 0.05.

Conclusion: Utilising departmental site-specific atlas based auto-segmentation has the potential to reduce the workload of radiotherapy planners within a department. This study shows the ability to produce multiple contours to the gold standard benchmark of 0.80 DC value.² Current work includes development and validation of gynaecological and prostate cancers atlas.

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The benefits and limitations of electronic tissue compensation in modern breast radiotherapy: a literature review
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Background: Electronic tissue compensation (eComp) is a novel external beam forward planned technique provided by Varian Eclipse treatment planning system (Varian Medical Systems, Palo Alto, CA)¹. eComp enables the delivery of homogeneous dose to irregular surfaces via the manual generation of dynamic beam fluence.¹ Thus allowing normal tissue sparing as well as adequate target volume coverage.² However, eComp is not widely used across all radiotherapy centres.

Aims: This review will analyse the benefits, feasibility and limitations of eComp in breast radiotherapy. A comparison of eComp to other common planning techniques, including 3DCRT and IMRT, will also be completed.

Methods: A database search yielded five articles for this review. Included articles contained a sample size more than five, dosimetric analysis and dated within the past 10 years.

Results: Overall eComp can generate treatment plans with a reduced mean skin dose and lung V20Gy as compared to 3DRT plans.² The benefits of eComp were also found to be more pronounced in larger breasted patients.¹ Monitor units (MUs) and planning time were also increased in comparison to 3DCRT, but not IMRT.²

Conclusion: These results may suggest an improved cosmetic and long-term outcome for eComp patients, as hotspots are reduced within the breast tissue.¹ However, due to increased planning time and MUs required, eComp should be considered where 3DCRT is inadequate.¹ Although a relatively new planning technique, eComp is an advanced and beneficial technique for the treatment of breast cancer patients, with the potential to be used successfully in other treatment sites.

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Radiotherapy for low-grade carcinomas of the breast: is it required? Case study on DCIS
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Introduction: An improvement in the quality of life after treatment for patients is the ultimate goal for radiation therapy. Patient care within a department consists of not only caring for one’s current physical, emotional and psychological well being, but extends further on post-treatment examining all their aftereffects.

Case presentation: This case study is based on a 79-year-old woman who was diagnosed with a Grade 1 T1b N0, right breast ductal carcinoma in-situ.

Management and outcome: This patient underwent breast-conserving surgery with the addition of a hypo-fractionated radiation therapy treatment. The patient completed treatment well with no major side effects.

Discussion: In order to prescribe any type of treatment to a patient, their quality of life needs to be considered. By analysing and reviewing multiple trials within the current literature, it was proposed that this patient might not have required to receive any additional radiation post-surgery.¹ Due to the low grade of this patient’s disease, adding any unnecessary radiation poses a risk of overdose and an increased risk of radiation-induced diseases. With the use of the Van Nuys Prognostic Index, a justified decision can be made on which patients may benefit from adjuvant radiotherapy. When analysing the patient’s treatment, intensity modulated radiation therapy was shown to be the more superior way of treating breast tissue over other treatment modalities such as three-dimensional conformal radiation therapy. An outlook of potential side effects due to the radiation treatment has been discussed.

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Generating the abscopal effect with radiation therapy and checkpoint inhibitor immunotherapy: cure for metastatic cancer
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Objectives: This report aims to investigate the efficacy of radiotherapy and checkpoint inhibitor immunotherapy combinations in generating the abscopal effect, propose how the abscopal effect can be optimised and identify current limitations in knowledge.

Methods: A literature search was conducted using PubMed, EMBASE and Medline databases. Search themes included: ‘abscopal’, ‘immunotherapy’, ‘checkpoint inhibitors’ OR ‘checkpoint blockers’, ‘anti-CTLA-4’, ‘anti-PD-1’ and ‘radiation therapy’ OR ‘radiotherapy’. The search was limited to full-text English articles published since 2012. However, older cross-referenced articles were included where appropriate and relevant.

Results: Pre-clinical studies, case studies and clinical trials demonstrate that checkpoint immunotherapy and radiotherapy have the potential to synergistically generate systemic tumour regression. However, prospective clinical trials demonstrate that many patients still do not exhibit an abscopal response; for those who do, the response is often partial rather than complete (see Figure).1-5 Notably, at this early stage, the clinical studies available are low powered and lack a robust design.

Discussion/Conclusion: Outcomes of prospective clinical trials demonstrate that the abscopal effect with the combination of RT and CI although possible, is a rare event. In future, prospective randomised control trials need to be carefully designed to allow optimal potentiation and evaluation of the abscopal effect generated by radiotherapy and checkpoint inhibitors in different tumour subsets. Further research is also required to define: radiotherapy dose and fractionation schedules, checkpoint inhibitor chronology and treatment sequencing. Lastly, the identification of biomarkers may be helpful to define patient and tumour subsets that will most likely respond to treatment.

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