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Abstracts – Poster Presentations

Meta-analysis of Prognostic Value of Regression Change in Cutaneous Melanoma

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Purpose

This meta-analysis aims at evaluating the prognostic value of regression in cutaneous melanoma patients.

Materials and Methods

A literature search was undertaken across various electronic databases. The databases include PubMed, Embase, Web of Science, and Cochrane Library for studies published up to October 2024. Notably, it included studies that investigated the existing relationship between histological regression and patient outcomes in melanoma. Studies reporting various hazard ratios (HRs) and sufficient data to calculate risk estimates for survival outcomes was included. Various random-effects models was applied in calculating pooled effect estimates.

Results

Ten studies involving 3,782 melanoma patients attained the inclusion criteria. The presence of regression was not significantly related to overall survival (OS) (HR is equal to 0.87, 95% CI: 0.69- 1.10, $p = 0.24$). The regression revealed a significant association with improved disease-free survival (DFS) (HR is equal to 0.72, 95% CI: 0.58-0.89, p is equal to 0.003). Subgroup analysis revealed that extensive regression (is more than 50% of tumor area) was related to better prognosis (HR is equal to 0.65, 95% CI: 0.48 - 0.88, p is equal to 0.006) compared to partial regression. Regression in thin melanomas (is less than or equal to 1 mm) revealed a more substantial protective effect (HR is equal to 0.61, 95% CI: 0.45 - 0.83, p is equal to 0.002) than in thick melanomas.

Conclusion

The meta-analysis suggests that regression in melanoma, especially extensive regression in thin melanomas, is related to improved disease-free survival. Therefore, the findings challenge the traditional view that regression represents a negative prognostic factor. It also challenges the suggestion that the extent of regression and tumor thickness are important considerations when evaluating its prognostic impact. Further prospective studies with standardized regression assessment criteria are essential in validating the findings.

Understanding the Impact of Palliative and Ablative Radiotherapy (RT) on Health-Related Quality of Life (HRQOL) in Patients with Metastatic Disease

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Purpose

Radiotherapy (RT) is an effective but underutilized treatment option for patients with metastatic cancer. While studies have examined RTs impact on health-related quality of life (HRQOL) internationally, there is limited data on Irish patients. This study aims to explore the feasibility of the use of electronic patient-reported outcomes (ePROs) to assess HRQOL in Irish patients receiving palliative or ablative RT.

Materials and Methods

This single-institution observational study at Cork University Hospital utilizes the ePRO, ONCOpatient, to administer pre-validated HRQOL questionnaires including the EORTC-QOL-C30, EORTC-QOL-C15 PAL, and EQ-5D-5L to patients or their caregivers via their smartphone at four- time points: baseline, final, 4- and 12-weeks-post-treatment.

Results

From October 2024 to March 2025, 22 participants were on boarded (mean age 63.23 years, 40.9% male, 59.1% female), with various cancer subtypes. Overall app engagement was 54.5% (9/14 patients and 3/8 caregivers). Compliance declined over time: 40.9% at baseline, 25% at final treatment, 15% at 4-weeks post-RT, and 0% at 12-weeks post-RT. Barriers to app engagement included licensing issues, syncing delays and difficulty locating assessment dates. Limited provider engagement regarding patient identification and onboarding also presented challenges.

Conclusion

This study highlights feasibility challenges in integrating ePROs for metastatic cancer patients receiving RT. While engagement was moderate, declining compliance indicates barriers to data collection. Addressing app usability issues and incorporation of patient feedback opportunities may improve long-term implementation. Future analyses will further assess HRQOL changes over time and identify predictors of patient-reported outcomes to enhance RT decision-making and patient- centered care.

Radiation-based approaches for renal nerve denervation: a systematic review

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Purpose

Hypertension remains a significant public health challenge worldwide, despite advancements in pharmacological treatments. Renal nerve denervation (RND) has emerged as a promising therapeutic approach for hypertension management, particularly in cases of resistant hypertension. Traditional RND methods have limitations, prompting exploration into alternative approaches such as radiation-based techniques. The aim of this study is to conduct a systematic review of preclinical studies on the efficacy and safety of radiation-based RND methods.

Materials and Methods

A systematic review following PRISMA guidelines was conducted to explore radiation-based approaches for RND in resistant hypertension. Electronic databases were searched for relevant studies published between 2009 and 2024. Inclusion criteria encompassed prospective studies evaluating the effectiveness and safety of radiation-based RND, with primary outcome measures including the reduction in blood pressure (BP) and secondary outcomes assessing procedural complications and long-term safety.

Results

Four pre-clinical animal studies met inclusion criteria, employing various radiation-based techniques including stereotactic body radiotherapy (SBRT), stereotactic radiosurgery (SRS), and vascular brachytherapy (VBT) (1-4). Included studies collectively involved a total of 50 swine, providing a comprehensive evaluation of these methods in a preclinical setting. Procedural outcomes demonstrated successful nerve ablation with minimal complications. Reductions in sympathetic activity and BP were observed post-procedure. Histological assessments revealed nerve damage and minimal arterial changes. However, there was heterogeneity in the measurement of outcomes across different studies, with variations in methodologies and the specific parameters assessed.

Conclusion

Radiation-based RND shows promise as a therapeutic strategy for resistant hypertension. Further research is needed to validate findings in human populations and optimise procedural techniques.

Burnout and job satisfaction among radiation therapists/ therapeutic radiographers in Ireland and the United Kingdom.

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Purpose

Over the next 20 years the World Health Organisation (WHO) projects a 70% increase in newly diagnosed cancer cases (1). Approximately 50% of patients with cancer will require radiation therapy (RT) at some point during their treatment (2), therefore the need for RT services increases along with the increase in incidence of cancer (3). Currently there is a staffing crisis among the RT workforce (4). Burnout and job dissatisfaction among healthcare workers can have significant implications for staff health and wellbeing. This research seeks to document the burnout and job satisfaction (JS) for radiation therapists (RTTs)/therapeutic radiographers (TRs) and associated factors. Findings of this study could provide valuable insights into developing strategies to address any imbalance and retention.

Materials and Methods

Ethical approval was obtained. A Qualtrics online survey was created, incorporating demographic questions along with two previously validated survey tools; the Maslach Burnout Inventory (MBI) and the Job Satisfaction Survey (JSS). The survey was distributed to state registered radiation therapists (RTTs) and therapeutic radiographers (TRs) online through LinkedIn, X and email over a six-week period between January and February 2024. Statistical analysis was conducted using IBM SPSS.

Results

The study sample consisted of 68 respondents, of which 56 (82%) were female. The survey received 57 (84%) respondents from Ireland and 11 (16%) from the United Kingdom. The mean values for emotional exhaustion (EE) 18, depersonalisation (DP) 10.5 and personal accomplishment (PA) 38 indicate moderate levels of burnout among respondents. Among the participating RTTs/TRs 24 (35%) classed as dissatisfied, 29 (43%) felt ambivalent and just 15 (22%) expressed complete JS. The three main contributors leading to burnout were workload, feeling underappreciated and timing pressures. High workload and staff shortages were identified as the main factors negatively affecting JS.

Conclusion

RTTs/TRs in this study reported moderate burnout levels, while total JS was low. Factors such as work tasks and staff numbers were found to influence both JS and burnout. The stressors affecting burnout and JS can be utilised to develop strategies aimed at addressing disparities within the RTTs/TRs work environment

Radiation therapists experiences and perceptions of providing treatment and support to patients suffering from acute psychosocial distress

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Purpose

Cancer incidence is increasing worldwide with the World Health Organisation (WHO) predicting 35 million new cancer cases in 2050. Approximately one-third of patients with cancer who receive radiotherapy experience clinically significant psychosocial distress. Radiation therapists (RTTs)/therapeutic radiographers (TRs) are typically the only healthcare professionals in direct contact with patients each day during their treatment. RTTs/TRs can help reduce patient anxiety and distress and their impact on supporting patients should not be underestimated. Our study aimed to target clinically practicing RTTs in Ireland and TRs in the United Kingdom (UK) to investigate their perceptions of providing support to psychosocially distressed cancer patients undergoing radiotherapy.

Materials and Methods

Ethical approval was granted. An online anonymous cross-sectional survey was posted on social media platforms and sent via professional networks. The target demographic was clinically practicing RTTs/TRs. RTTs/TRs were asked about their comfort levels regarding anxiety and depression symptom management, how often they provide specific education/management options for symptoms, and if they felt they would benefit from further education in this area. A two-sample t-test examined differences in RTT/TR comfort levels in providing treatment and support to patients suffering from anxiety and depression.

Results

One hundred and twenty-six responses were received; one hundred and fourteen (90.5%) RTTs completed all questions. RTTs felt more comfortable recognising, asking about, and making recommendations for anxiety than depression ($p < 0.001$). RTTs with >10 years' experience felt more comfortable managing depression than RTTs with 10 years' experience ($p = 0.05$). Previous experience with patient anxiety and depression (76.8%) was the most common factor positively affecting RTT comfort levels. Lack of

education (71.1%) was the most common factor negatively affecting RTT comfort levels. The majority of RTTs (93.6%) reported they would benefit from further education in this area.

Conclusion

With cancer incidence rising, it is likely the number of patients expressing anxiety and depression symptoms will also rise. RTTs/TRs felt more comfortable managing patient anxiety than depression. Those with more years of clinical experience felt more comfortable managing depression than those with fewer years of experience. Given the desire for further education expressed by RTTs/TRs, future research focusing on training in this area may benefit both RTTs/TRs and patients.

Does Retinoic Acid-induced growth-response influence the outcome of irradiation in Glioblastoma cells?

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Purpose

Glioblastoma multiforme (GBM), stands as the most prevalent and aggressive primary brain tumour amongst adults, characterised by its infiltrative growth and notorious resistance to standard treatment modalities (1). Among emerging strategies, retinoic acid (RA) has garnered attention as a potential adjunct to radiation therapy (RT) in GBM treatment (2). RA, a derivative of vitamin A, exhibits a spectrum of biological effects, including modulation of cell proliferation, differentiation, and programmed cell death (3). Pre-clinical investigations have underscored the ability of RA to heighten cancer cell sensitivity to ionising radiation, thus augmenting the therapeutic potential of RT (3). This study aims to investigate the impact of RA administration on irradiation outcomes in GBM cells. Given GBM's notorious aggressiveness and resistance to therapy, largely attributed to cancer stem cells (CSCs), the efficacy of RA, as a radiosensitiser in GBM treatment warranted further study.

Materials and Methods

The study used the commercially available GBM cell line A172 to evaluate cell viability and cytotoxicity subsequent to treatment with RA +/- irradiation. For optimal growth and treatment conditions, it was determined that seeding 100,000 cells per T25 flask for each treatment group was ideal. The experimental groups included dimethyl sulfoxide (DMSO)/RA alone, DMSO/RA followed by irradiation (2Gy), and control groups. A wax mould was created for the flasks to maintain a consistent and reproducible position throughout the treatment process. Three water equivalent blocks (30x30x5.0cm) were placed above and at either side of the wax mould. Assessment of cell viability and cytotoxicity was conducted 16 hours post irradiation to ascertain the impact of RA in conjunction with irradiation.

Results

Results indicated a significant decrease in cell viability in A172 cells treated with RA followed by irradiation compared to cells treated with RA alone or control groups ($p < 0.05$), suggesting a synergistic effect between RA and irradiation. The observed effects can potentially be attributed to RA's modulation of cellular signaling pathways involved in the DNA damage response, thereby sensitising GBM cells to radiation-induced cytotoxicity.

Conclusion

This study underscores the potential of RA as a radiosensitiser in GBM therapy, offering promising avenues for improving treatment outcomes in patients with this challenging disease. The findings contribute to the growing body of evidence supporting RA's adjunctive role in enhancing the effectiveness of radiation therapy in GBM. Moreover, using contemporary formulations of RA and A172 cell lines commonly employed in GBM research ensures clinical relevance and translational applicability of the study's findings.

Barriers to Five-Day Turnaround for Radiotherapy for Head and Neck Cancer Patients

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Purpose

Head and neck cancers are fast-growing tumours frequently treated curatively with radiotherapy. St Luke's Radiation Oncology Network (SLRON) currently operate a standard planning pathway over 15 working days. A pilot strategy to shorten this to 5 working days is to be implemented. This retrospective analysis aims to identify barriers to implementing this strategy.

Materials and Methods

This is a retrospective analysis including fifty patients referred to SLRON for radical radiotherapy +/- chemoradiotherapy. Data was extracted from patient records relating to turnaround time from initial radiation oncology consultation, ready-to-treat date and start of radiotherapy.

Results

Fifteen patients (30%) were ready to treat after five days. 35 (70%) were awaiting further investigations or procedures. Twenty-three patients required dental appointments/procedures, six patients required further imaging. Six patients would have been delayed due to external factors including requiring emergency procedures, preference for start dates, and social reasons. The average wait for dental checks was fifteen days, with a potential delay of seven/ten days if procedures were required. The main reason for repeat imaging was due to imaging being greater than three months old.

Conclusion

Around one third of head and neck cancer patients could avail of a new 5 day planning pathway. The two main barriers identified for the remaining 70% of patients are current timelines for dental review and imaging. These issues could be raised at initial MDM discussion in order to facilitate faster turnaround.

A retrospective review of factors influencing the successful implementation of radiotherapy clinical trials (CTr) in a new radiotherapy department.

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Purpose

In 2021 the radiotherapy CTr portfolio at the Bon Secours Radiotherapy Cork commenced. The portfolio includes interventional, local and international academic trials, industry, and pharmaceutical sponsored CTr. This review aims to assess the effectiveness of our screening and recruitment processes, by reviewing key metrics, and exploring factors influencing the success of CTr accrual.

Materials and Methods

A retrospective CTr portfolio review was conducted from July 2021 to April 2025.

Key metrics reviewed included, the patient screening processes, the number of patients screened and registered to a CTr. Effectiveness was measured by participant retention rate and target accrual achievements.

Results

The screening process was effective in identifying eligible patients, with a consistent number of patients screened each year. The total number of patients screened & offered a CTr as part of their treatment options were 2021=44, 2022=33, 2023=38, 2024=21, 2025 (Jan- April only) 2025=10.

A significant increase in CTr recruitment was observed from 2023 compared to 2021 & 2022, this is attributed to the introduction of designated Clinical Research RTT and Data Manager. The Clinical Research RTT plays an active role in the screening, recruitment, and consent processes. CTr Retention rate = 98%.

Conclusion

RTTs play a crucial role in patient education, understanding, and support of patients throughout the clinical trial process. Effective screening and recruitment strategies are essential for successful CTr management. RTTs are integral to the CTr team, contributing to patient education, support, and protocol adherence. Future disease specific groups will include lung, site specific oligo metastatic, head and neck, brain, and breast cancer CTr.

Assessing the feasibility of reducing Planning Target Volume (PTV) margins by quantifying institutional inter-fraction motion of patients having radiotherapy for Head and Neck cancer.

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Purpose

The prevalence of late effects from radiotherapy toxicity remains a clinical challenge as reducing dose to healthy Organs at Risk (OARs) in close proximity to the Planning Target Volume (PTV) can be difficult to achieve. Guidance from On Target 2, highlights how daily Cone Beam CT (CBCT) pre-treatment imaging with online correction can be of particular clinical benefit in facilitating a reduction in PTV margins. To calculate the inter-fraction motion of radical Head and Neck radiotherapy treated with Volumetric Modulated Arc Therapy (VMAT) following daily CBCT. To ascertain if the current institutional PTV margin of 0.5cm can be safely reduced.

Materials and Methods

618 pre-treatment CBCTs from 20 Patients with a radical Head and Neck prescription, 60-70Gy in 25-35 fractions were retrospectively evaluated. CBCT daily displacements (vertical, lateral, longitudinal) were extracted and the mean, standard deviation and variance directional displacement for each translation was calculated.

Results

The translations analysed resulted in mean displacements of -0.26cm (0.11 SD) -0.04cm (0.17 SD) and -0.02cm (0.1 SD) in the vertical, longitudinal and lateral directions respectively. 3% of treatments had a displacement greater than 0.5cm, the current PTV margin expansion.

Conclusion

All displacements are corrected pre-treatment online for each fraction. Therefore, a PTV margin reduction from 0.5cm to 0.4cm is acceptable with the current immobilization.

Greening a Radiotherapy Treatment Unit: Integrating Sustainability into the Largest Single Site Radiotherapy Unit in Ireland

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Purpose

Climate change, described by the WHO as the single biggest health threat facing humanity today significantly affects cancer incidence and outcomes while healthcare contributes 8.5% of national greenhouse gas emissions, oncology has fallen behind other specialties in adopting sustainability measures. Existing literature illustrates that radiotherapy has a significant environmental impact, yet Irish-specific data is scarce. This project aims to measure the environmental impact of radiotherapy at Cork University Hospital and create practical strategies to reduce emissions while maintaining high-quality cancer care.

Materials and Methods

Patient and staff workflows at the Glandore Radiotherapy Centre, Cork University Hospital, have been mapped to identify key energy-intensive touchpoints including treatment delivery, travel, energy usage and consumables. Building on this, a prospective life cycle assessment (LCA) will be carried out to quantify the environmental impact of radiotherapy services. A mixed-methods survey will be distributed to multidisciplinary staff to explore perceived barriers and facilitators to integrating sustainability into clinical care. The findings will inform the co-development of practical interventions, including a sustainability checklist and an infographic tool, to support implementation of greener practices in radiotherapy delivery.

Results

This project will assess the environmental impact of radiotherapy at Cork University Hospital through workflow mapping and a life cycle assessment, aiming to identify strategies to reduce emissions while maintaining quality care. The findings will inform the development of practical interventions, such as a sustainability checklist and infographic, to facilitate the integration of greener practices into radiotherapy delivery.

Conclusion

Through life cycle analysis and a staff survey, the environmental impact of radiotherapy in Cork University Hospital will be assessed, aiming to identify opportunities for sustainable improvements.

Reviewing contouring and planning criteria of breast cancer patients with seroma formation: Towards the implementation of the Fast Forward boost trial

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Purpose

A seroma is a serous fluid collection following breast surgery and/or axillary dissection, altering the volume of the tumour bed (TB). The EORTC 22881-10882 trial demonstrated improved local recurrence rates with a TB boost after breast-conserving surgery compared to no boost. The aim of this audit is to review international guidelines for seroma delineation, current clinical practices and to identify potential challenges in implementing the FASTFORWARD (FF) boost protocol.

Materials and Methods

A comprehensive literature review of boost trials with subsequent retrospective audit of patients who required a simulation rescan due to seroma size was performed with analysis of CTV (Clinical Target Volume) TB, PTV (planning target volume) TB, PTV WB (whole breast).

Results

The literature revealed variability in CTV TB delineation. The EORTC, Lyon Randomized Control Trial, IMPORT High and FF boost delineated CTV TB as surgical clips with architectural distortion/seroma whereas the Young Boost trial relied on preoperative imaging. We found that the FF boost trial states that CTV TB should be approximately 30% of CTV WB which we used as the standard for our audit. Between 2024-2025, 27 patients were rescanned, 8 due to clinically deemed large seroma size. CTV TB, CTV WB and PTV WB delineation for baseline scan and rescan was consistent with FF boost trial protocol but with minor deviations in PTV TB.

Conclusion

Seroma delineation and CTV TB guidelines vary. Successful FF boost implementation depends on accurate and consistent CTV TB delineation with measurements of the outlined proportional parameters.

Palliative Radiotherapy 30-Day Mortality Audit Compliance with RCR Guidelines

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Purpose

The Royal College of Radiologists (RCR) recommends auditing 30-day mortality rates after palliative radiotherapy to ensure they remain 10%, as treatment near end-of-life may offer limited benefit. This audit evaluates 30-day mortality rates at UPMC Hillman Cancer Center to identify areas for improving patient selection and treatment planning.

Materials and Methods

A retrospective review was conducted over two months involving 57 patients treated with palliative radiotherapy. Data included demographics, cancer type, treatment regimen (single vs. multifraction), and 30-day survival. Mortality was assessed against the RCR benchmark, with subgroup analysis by tumour type, regimen, and ECOG performance status.

Results

The 30-day mortality rate was 8.77% (5/57), meeting the RCR standard. Single-fraction treatment was used in 31.6% of patients, with a mortality rate of 16.7%, compared to 68.4% of patients receiving multi fraction therapy with mortality rate of 5.1%. Lung cancer patients had the highest mortality (30%), accounting for 60% of deaths. Breast cancer mortality was 6.3%, while prostate and rectal cancers had no deaths. Among those who died, 80% were aged 70 and all had ECOG scores of 2-3. One patient died before completing treatment.

Conclusion

This audit meets RCR standards, with 30-day mortality below 10%. Higher mortality with single- fraction regimens may reflect frailer patients. Lung cancer and poor performance status correlate with early mortality, underscoring the importance of patient selection and holistic assessment.

Better outcomes in prostate and rectal cancers highlight variability in palliative responses. These findings support ongoing refinement of selection criteria and prognostic tools to improve decision- making in palliative radiotherapy.

Initial experience of the Implementation of Stereotactic Ablative Body Radiotherapy (SABR) for Head and Neck Cancer (HNC) in the Austin Hospital, Melbourne

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Purpose

To report the implementation process and initial experience of the first HN SBRT program in Australia. Local and regional relapse in previously irradiated HNC presents significant challenges in radiation planning. While surgery is preferred after recurrence, re-irradiation remains beneficial for some unsuitable patients due to comorbidities, unresectable disease, or performance status. SABR delivers highly conformal, ablative doses in fewer fractions (fx), with potential radiobiological advantages.¹ This study examines these technically challenging cases, supporting the need for a phase III randomized trial. The goals of local control and palliation must be balanced against long-term risks to quality of life.

Materials and Methods

Prior to implementation, robust plan verifications were performed using the Monaco treatment planning system (TPS) on 10 previously treated HNC patients, using the 70Gy planning target volume (PTV) as the SABR PTV. Re-irradiation dose constraints and objectives were adapted from RTOG 3507. VMAT 6x FFF beams with full or partial arcs were used based on PTV location. Eight treatment plans passed departmental physics QA. Patients were enrolled in a prospective registry. Eligible patients had primary HNC unsuitable for salvage surgery, or recurrence following prior surgery and PORT, not amenable to further surgery. Outcomes assess using descriptive statistics.

Results

Highly conformal clinical plan templates were created for a retrospective HNC cohort using Monaco TPS. Applied an imaging threshold of 1.5mm and 1.5 degree rotation. Plans were reviewed by two Radiation Oncologists. At implementation all patients had CT, MRI and PET in treatment position. Seven patients underwent SABR, including one second reirradiation for regional recurrence. Mean treatment duration was 5fx over 14 days (Treated subsites included oropharynx (n=4), oral cavity (n=2), larynx (n=1), and neck/SCF (n=1). Five patients received reirradiation for recurrence two were treated definitively due to inoperability. Two patients had local recurrence at 2 and 12 months.

One patient with local control developed regional recurrence, treated with a second SABR course. Of five reirradiation cases (median 35Gy/5fx), three maintained local control at 12 months, two developed regional recurrence requiring systemic therapy, and one had distant metastasis. In two de novo cases (median 36Gy/5fx), neither recurred locally; one had regional recurrence.

Conclusion

We have successfully implemented the first precise, effective, and safe HN SBRT for HNC patients in Australia with no to limited toxicities.

An Audit of Mono-Isocentric Bilateral Breast Verification in St Luke's Radiation Oncology Network

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Purpose

The current image guided radiotherapy procedure at our institution for verifying mono-isocentric bilateral breast external beam radiation therapy (EBRT) is daily online imaging (DOI) by cone beam computed tomography (CBCT). This study evaluates whether the current frequency and modality is adequate or if it could be justifiable to reduce imaging frequency.

Materials and Methods

A retrospective review of 3239 new breast EBRT appointments in 2022 - 2024 breast identified 38 (1%) patients receiving mono-isocentric bilateral Breast/Chest Wall (Br/CW) EBRT with or without nodal irradiation. Compliance was assessed via IGRT Documentation and Offline Review workspaces, guiding recommendations to update the associated IGRT procedure.

Results

Of 38 patients, 22 (58%) received EBRT to Br/CW only, and 16 (42%) to nodal volumes. Compliance was higher in Br/CW-only cases (14/22, 64%) than nodal cases (5/16, 31%). CBCT frequency was reduced in 6/22 (27%) Br/CW cases, and in 9/16 (56%) nodal cases. For 5/16 (31%), DOI using supplemental MV/kV verification was used instead. Additional MV imaging in 3/22 (13%) Br/CW cases, and 3/16 nodal cases (19%), assessed breast coverage outside the CBCT field of view.

Conclusion

CBCT (with prior orthogonal kV imaging in nodal cases) sufficiently verifies EBRT for bilateral Br/CW patients using a Tolerance Action Level strategy. In nodal cases, DOI orthogonal kV is justified to verify the nodal volumes prior to CBCT. Additional MV imaging is justified for some patients to review coverage of breast tissue excluded by the CBCT FOV. Based on these findings an updated IGRT procedure has been developed.

Adapting Radiotherapy for the Older Adult: Hypo fractionated Radiotherapy for Cutaneous SCC of the Head and Neck Requiring Nodal Treatment

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Purpose

In Ireland, non-melanoma skin cancer (NMSC) is frequently diagnosed. At 10,000 new cases annually, cutaneous squamous cell carcinoma (cSCC) accounts for approximately 30%. As life expectancy rises, cSCC burden in older adults is expected to grow. Hypo fractionated radiotherapy, giving fewer, larger doses over a shorter period is appealing for elderly patients with high-risk head and neck cSCC. The National Comprehensive Cancer Network (NCCN) guideline and Royal College of Radiologist (RCR) recommends 60-66Gy using conventional fractionation [2], however hypo fractionated regimens are being explored, offering shorter treatment durations with potentially fewer side effects [3].

Materials and Methods

Retrospective analysis of 8 patients aged 75 years with cSCC of the head and neck requiring nodal treatment between 2019-2023 in a single centre treated with hypo fractionated regimen via IMRT. Toxicities were graded using CTCAE [4]. Follow-up data was collected for a minimum of two years post-treatment.

Results

Median patient age of 83.5, with an ECOG performance status between 1 and 3. Stage varied across all subjects with presentations of both primary and recurrent disease represented. Treatment regimens included 55 Gy in 20 fractions (n=7) and 51 Gy in 17 fractions (n=1), in adjuvant or radical settings. All patients completed treatment, with no Grade 3 or higher acute or late toxicities reported. At follow-up of 24 months, no loco regional recurrences were observed in 5 subjects.

Mortality of 3 patients was recorded, with 2 being unrelated to treatment. This regimen demonstrated variable disease control reflected by stage with acceptable toxicity in this frail, elderly cohort.

Conclusion

This case series supports the use of hypo fractionation in the elderly with high risk cSCC of the head and neck requiring nodal treatment [5]. Given the unique clinical challenges posed by this population, hypo fractionation may offer the balance between curative intent and quality of life.

These findings underscore the need for prospective studies and development of geriatric-specific treatment guidelines or assessment tools, such as a radiation-adapted CARG or CRASH score [6]

AI-Guided segmentation in radiotherapy: Audit of workflow efficiency gains at Cork University Hospital

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Purpose

Radiotherapy departments are continuously adopting technological solutions to enhance workflow efficiency and improve the accuracy of patient treatments. One such advancement is the integration of commercially available artificial intelligence (AI) tools for anatomical structure segmentation. These AI-based auto-contouring systems have demonstrated clinically acceptable accuracy in segmenting organs at risk (OARs) (1), with documented reductions in contouring time (2). This study presents the practical workflow experience at Cork University Hospital (CUH) following the introduction of MVision Contour+ Guideline-Based-Segmentation (GBS).

Materials and Methods

Workflow data was reviewed by interrogating the Quality Check Lists (QCLs) available from the department oncology information system (OIS) Mosaic. The QCLs record a timestamp for each key step in the radiotherapy workflow, from CT scanning, to contouring to planning, to first treatment. For this workflow audit timelines from 2022 and 2023 (pre-implementation) were compared to 2024 where the system was implemented fully.

Results

From this audit, we found that the mean contouring time for VMAT patients in CUH went from 5.4 ± 6.0 calendar days in 2022 and 2023 to 3.9 ± 4.0 calendar days in 2024 post-implementation of the system. In 2024, 84% of patients were contoured within 7 calendar days of CT, compared to 74% and 70% in 2022 and 2023, respectively. The percentage of contours completed out of hours (OOH), weekdays from 6pm-8am and weekends, decreased from 39%/42% in 2022/2023 to 20% in 2024.

Conclusion

An audit of the OIS QCLs at CUH indicate efficiency gains from the introduction of the MVision Contour+ GBS.

An institutional experience of Open-Faced Immobilization Masks in Head and Neck Radiotherapy at Galway University Hospital.

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Purpose

Head and Neck Cancer (HNC) has a prevalence of approximately 800 cases per year in Ireland, accounting for 3.3% of all invasive cancers (excluding non-melanomatous skin cancers). Approximately half of these patients receive radiotherapy treatment. Psychological distress and anxiety has proven to be associated with thermoplastic immobilisation masks and can impact the delivery of treatment. Open-faced radiotherapy masks were introduced in Galway University Hospital in April 2025. This study aims to survey the patient's experience of closed versus open faced masks following radiotherapy treatment.

Materials and Methods

Sixty HNC patients receiving radiotherapy were identified; 30 treated using closed-face masks and 30 treated using open-faced masks. Patient-experience surveys were completed within 30 days of completion of radiotherapy. Data was also collected for these patients regarding inter-fraction translational moves, number of reset-ups and number of replans.

Results

Data collection is ongoing. Preliminary findings suggest improved patient experience and reduced anxiety with the use of open-faced masks. To date, no difference in translational moves, number of reset-ups or replans have been identified between both groups.

Conclusion

Open-faced immobilization masks appear to enhance the patient experience during head and neck radiotherapy without compromising setup accuracy or immobilization. Final results will be presented at the conference.

Incident Learning Systems in Radiation Therapy: A Five-Year Audit from an Irish Radiotherapy Department

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Purpose

Radiation Therapy (RT) is a complex treatment with inherent risks. Despite stringent safety protocols, incidents still occur, underscoring the importance of fostering a strong safety culture. Incident Learning Systems (ILS) and clinical audits play a key role in enhancing patient safety and care quality. This audit aimed to assess radiotherapy-related events reported to the ILS of an Irish RT department over a five-year period. Safety culture was evaluated by analysing reporting trends, event types, causative factors, detection points, and clinical outcomes.

Materials and Methods

Approved by the local Research Ethics Committee, this retrospective audit reviewed anonymised events reported to the ILS from 2019 to 2024. Events were categorised and analysed using descriptive statistics to identify patterns and trends.

Results

A total of 848 events were reported, with annual increases in reporting. Events included non-conformities (n=375), near-misses (n=167), concessions (n=145), and incidents (n=161); four incidents met the threshold for regulatory reporting. The average event rate was 12.57 per 100 treatment courses, with an error rate of 2.39%. Most events (93.2%) had negligible clinical impact; only one had a major impact. Events were primarily detected during chart checks, with 75.6% occurring at treatment units. The most common cause was related to Image Guided Radiation Therapy. Radiation Therapists reported 77.2% of events.

Conclusion

The findings demonstrate a strong safety culture, with increasing reporting and low error rates indicating proactive risk management. Recommendations include strengthening pre-treatment QA, promoting near-miss reporting, addressing non-conformities, and enhancing staff training and feedback systems to further improve safety and quality.

**Radiation Oncology
Annual Scientific Meeting 2025
Faculty of Radiologists and Radiation Oncologists
Royal College of Surgeons of Ireland**

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Abstracts – Oral Presentations

The use of Whole Brain Radiotherapy in Cork University Hospital – A clinical audit and analysis of survival outcomes

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Purpose

Brain metastases (BM) are a common cause of cancer related morbidity and mortality. Whole brain radiotherapy (WBRT) is generally reserved for patients unsuitable for stereotactic radiosurgery but carries significant toxicity. There are no Irish guidelines on the use of WBRT for BM. The ASCO-SNO-ASTRO guidelines recommend that radiotherapy should not be offered for asymptomatic patients with KPS > 50 or <70 with no systemic options. We analysed guideline compliance over 2 years in Cork University Hospital and survival outcomes in this patient cohort.

Materials and Methods

Data from patients who received WBRT for BM from June 2022-2024 was obtained via electronic patient records. Survival outcomes were calculated from final date of WBRT to date of death/last follow up. Analysis was performed using R version 4.4.2.

Results

Seventy-eight patients received WBRT. The most common tumour subtypes were lung, breast and melanoma. 58 had a performance status ECOG 0-1 and 21 ECOG 2-3. Compliance with the ASCO-SNO-ASTRO guidelines was 92% with 72/78 patients meeting the standard. Median overall survival (OS) was 91 days. Patients with ECOG 2-3 had a median OS of 30 days vs 107 days for ECOG 0-1 ($p=0.0004$). Patients with small-cell lung cancer had a median OS of 293 days vs all other histologies (range 40-99 days) ($p=0.01$).

Conclusion

Despite 92% compliance with the ASCO-SNO-ASTRO guidelines, patient outcomes are poor especially for patients with ECOG 2-3. These guidelines may be insufficient to identify patients in whom best supportive care may be more appropriate. Clinician awareness is crucial to avoid overtreatment of this patient population.

The needs for Radiation Oncology to be an option for intern rotations: A Medical Interns Survey

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Purpose

Medical Intern training in Ireland includes mandatory 6 months in General Surgery and General Medicine with opportunities to train in other specialties like Paediatrics, Anaesthesia,, Psychiatry, Radiology and many others in the remaining 6 months. Unfortunately Radiation Oncology (RO) is not an option for the intern rotations (1). The aim of this survey is to examine the adequacy of undergraduate RO teaching and the need of establishing RO as an option for intern rotations.

Materials and Methods

Medical interns graduated in 2024 working in 2 major teaching hospitals (Beaumont Hospital and University Hospital Waterford) were invited to complete a survey questionnaire near the end of their intern year (May 2025). Questions were asked about the undergraduate RO education, and the need of having RO as an option for the intern rotations.

Results

A total of 20 Interns have completed the survey. The majority (75%) did not study RO course during their undergraduate medical education. 70% were aware that RO is not an option in the Intern rotations while 30% did not look for it or were not aware of it. If RO was an option for intern rotations, 60% would have considered rotating through it (40% would have definitely considered it and 20% would have probably considered it). The majority again 75% feels they did not receive enough information to guide their career choice with or against RO.

Conclusion

A minimum curriculum for RO should be established in the undergraduate medical education in Ireland. RO should be an available option for the intern rotations.

Toxicity of loco regional radiotherapy and concomitant CMF chemotherapy.

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Purpose

Assess the toxicity of Concomitant CMF and radiotherapy for breast cancer patients

Materials and Methods

This retrospective study included all breast cancer patients treated with adjuvant radiotherapy from January 2019 December 2019 receiving CMF either concomitantly or sequentially in St Luke's Radiation Oncology Network. Acute and late side effects were documented according to NCI CTCAE V4.

Results

Thirty-two patients were included, 21 had concomitant CMF and radiotherapy with or without nodal irradiation and boost and 11 patients had sequential CMF. Radiation treatment volumes were as follows: breast / chest wall only 12 (37.5%), breast / chest wall and nodal irradiation 20(62.5%).

No patient experienced G4 side effects. G3 dermatitis occurred in 4.8% and 9.1% of patients receiving concomitant and sequential treatment respectively. There were similar rates of G1/2 dermatitis in both groups. G1/2 fatigue was more common in the concomitant group; 81% versus 64% in sequential treatment. No symptomatic pneumonitis was recorded.

Conclusion

Our data suggests concomitant CMF locoregional radiotherapy can be delivered with acceptable toxicity profiles. We have expanded our study timeline to include a greater number of patients.

A survey investigating exposure to and attitudes surrounding clinical trials in a national cohort of Radiation Oncology trainees

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Purpose

Oncologists are uniquely positioned to actively participate in clinical trials. Trainees perceive many barriers to engaging in research, including time constraints, insufficient funding, job insecurity and lack of support/mentorship. Early career involvement in research may be the most important factor in fostering physicians who engage in clinical research. Furthermore, evidence suggests that centres that enrol patients in clinical trials may have better outcomes (5-7). Therefore, it is imperative that we understand how to manage this additional workload and support trainees in order to encourage their ongoing participation in clinical trials.

Materials and Methods

An anonymous electronic survey was devised, comprising of twenty questions pertaining to issues such as extent of exposure to and formal training in clinical trials, confidence in carrying out the tasks necessary for patients on trial with patients and highlighting challenges associated with involvement in clinical trials. This was then circulated to all Irish Specialist Registrars (SpRs) enrolled in the national training programme in Radiation Oncology.

Results

20 of 22 SpR's responded. 100% of responding trainees are delegated to act as sub investigators on clinical trials. 85% have obtained formal consent. 65% have completed baseline data forms. 100% have completed toxicity assessments for patients on trial but only 25% have had formal training.

15% of our trainees have had alternative exposure to clinical trial procedures through other means, e.g. higher degree or while working in other specialties. Subjectively, our more junior trainees are more likely to report their experience as limited, and our more senior trainees show a shift towards what they would describe as a more moderate experience level. Confidence appears to improve organically over time without any specific formal training. Trainees report high levels of confidence in introducing the idea of a clinical trial to a new patient. 70% of trainee's have described themselves as more likely to engage in future

clinical research as a result of this exposure. No trainee reported being less likely to want to participate in clinical trials. However, 75% report issues with time and workload balance as major barriers to future engagement in trials.

Conclusion

RO training in Ireland provides trainees with consistent exposure to clinical trials. This has made our trainees more likely to engage in clinical research in the future but time constraints and lack of formal training are significant barriers to overcome.

A Review of Acute Severe Renal Toxicity in Head and Neck Cancer Patients Receiving Radiotherapy and High-Dose Cisplatin

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Purpose

The NRG-HN009 study will investigate Cisplatin 100mg/m² 3 weekly vs 40mg/m² weekly with radiotherapy as the standard of care for locally advanced oropharyngeal squamous cell carcinoma (OPSCC). In advance of this, we compared our rates of acute severe nephrotoxicity in patient receiving 100mg/m² cisplatin 3 weekly with radiotherapy with those observed in the De-ESCALaTE trial (1). A post publication analysis of De-ESCALaTE identified diuretic use as the only centre-level hydration policy variable associated with severe acute toxicity (2). Diuresis is not routinely used in our hydration protocols at SLH.

Materials and Methods

Retrospective review. Inclusion criteria:

OPSCC patients treated at SLH with 1 cycle of high-dose cisplatin (100 mg/m²). First cycle on/after 01/04/2023. Final cycle on/before 06/02/2025

Results

52 patients meeting inclusion criteria: 35 received 3 cycles of high-dose cisplatin. 21 had renal function checked within 7-21 days after final cycle. Of these, 1 identified to have acute severe AKI.

Rates of acute severe AKI (CTCAE v4 criteria): De-ESCALaTE Trial: 9 of 162 patients (5.56%).
SLH Cohort: 2 of 52 patients (3.84%).

Conclusion

In our SLH cohort, the rate of acute severe nephrotoxicity appeared lower than in the De-ESCALaTE trial. However, several factors limit this comparison: - Sample size, Inconsistent follow-up of renal function, - Control for HPV-positive low-risk OPSCC. Limited longitudinal renal data precludes comment on the continued exclusion of diuresis from our hydration protocols. This review highlights the need for larger studies to better assess institutional practices, and a consistent approach to post treatment follow-up so that HD cisplatin-associated toxicities are accurately captured.

Hippocampal-Sparing Radiotherapy as an Emerging Standard in the Treatment of Head and Neck Cancers

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Purpose

Hippocampal avoidance (HA) has been used in whole brain radiotherapy planning to preserve cognitive function. It is not standardly optimised in patients with head and neck cancer (HNC). We aim to audit the current radiation doses to the hippocampus in patients undergoing radiotherapy for cutaneous HNC and sinonasal cancer in our institution and assess feasibility of implementing HA for these patients.

Materials and Methods

We retrospectively reviewed patients with HNC who received adjuvant radiotherapy at our institute using volumetric modulated arc therapy (VMAT), from January 2024 to March 2025. Bilateral hippocampi were delineated on the original dataset using the RTOG contouring atlas, while contours for target volumes and Organs at Risk (OARs) were kept unchanged. The dose volume constraints (DVCs) for the hippocampi were D100% - 500cGy and D0.03cc - 1600cGy.

Results

Twenty-four patients were reviewed (5 sinonasal, 19 cutaneous). Median prescription dose was 60Gy (range 55-66 Gy) in 20-30 fractions. 54% of cases exceeded D0.03cc - 1600cGy and 33% of cases exceeded D100% - 500cGy. Ten plans were chosen (3 sinonasal, 7 cutaneous) with equivalent laterality and were re-optimised using HA. This achieved compliance in all cases with dose constraints while maintaining planning target volume coverage and without increasing modulation complexity or estimated delivery times.

Conclusion

It is feasible to implement HA for HNC radiotherapy planning. Given these results and evidence linking hippocampal dose to memory impairment, HA should be adopted as standard practice when hippocampi lie within the incidental radiation field. Prospective validation of neurocognitive outcomes is warranted to quantify clinical benefits.

Predictors of Dose-Volume Constraint Failure in Patients Assessed for Conventionally Fractionated Lung Radiotherapy: A Retrospective Cohort Study

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Purpose

Lung cancer is a leading cause of cancer-related death worldwide, with many patients requiring radiotherapy as part of definitive management. Technological advances such as 4DCT allow for precise targeting of tumour volumes. However, the feasibility of delivering curative-intent treatment can be limited by the need to comply with dose-volume constraints (DVCs) for organs at risk (OARs), including the lungs, heart, oesophagus, and spinal cord. These constraints are essential to minimise treatment-related toxicity. In practice, a proportion of patients referred for definitive radiotherapy are found to be unsuitable for radical radiotherapy. This is often due to difficulties creating an acceptable radiotherapy plan which delivers a radical dose while respecting institutional DVCs. This can lead to delays in care and missed opportunities for earlier non-radiotherapy treatments. We hypothesise that tumour dimensions, specifically anterior-posterior (AP), left-right (LR), and superior-inferior (SI) measurements, or derived parameters may correlate with the likelihood of meeting 4D radical lung OAR constraints. Furthering our understanding of this relationship may enable the development of predictive tools to identify, at an earlier stage such as MDT, patients unlikely to proceed with radiotherapy.

Materials and Methods

Data was collected on adult patients with lung cancer who were booked for 4D EBRT conventionally fractionated (non-stereotactic) radiotherapy treatment to the lung between 2017 and 2022 in St. Luke's Radiation Oncology Network. A cohort matched by TNM stage was collected in a 2:1 fashion (2 control cohort: 1 fail cohort). Plans were reviewed and data collected regarding the tumour dimensions (anterior - posterior, medio-lateral and infero-superior). Details regarding DVCs were collected, as well as relevant pulmonary function parameters.

Results

32 radiotherapy plans were identified which were unsuitable for radical 4D lung RT due to breach of OAR constraints. 64 control cases were collected, matched by TNM stage (in 1:1 fashion). Statistical analysis is ongoing. The data is not normally distributed, but preliminary

analysis of the data appears using non-parametric methods appears to demonstrate a statistically significant correlation between OAR constraint breach and extent of mediolateral and craniocaudal dimension (when compared to control of similar TNM stage). There does not appear to be a correlation in the anteroposterior direction. Further statistical analysis would be shared with a poster presentation if accepted for ASM 2025.

Conclusion

In patients with lung cancer, maximal tumour dimension in the medio-lateral and craniocaudal directions may predict ability to create a 4D IMRT plan which does not breach OAR dose constraints.