Innovations in clinical practice. Furthermore, this shift in the RTT there has been a decrease in patient wait times with a culture that supports the development of RTTs and an increasing awareness of the success of such roles is dependent on a professional framework. What is widely recognised, however, is that modern radiotherapy is being challenged and redefined.

Modern radiotherapy cares for a population of increasing age, with techniques of increasing complexity. The need for improved efficiency, whilst maintaining a high quality service has resulted in a demanding work environment for the entire multidisciplinary team. As such, RTTs are finding themselves taking on increased responsibilities in a wider range of clinical tasks. RTTs today may be involved in complex dosimetry and planning, quality assurance, use sophisticated image guidance equipment and also assess and triage patients for toxicity assessment. The RTTs involvement in education and research activities also continues to grow; from simply supporting their colleagues to the actual management of clinical trials, as an example. In an attempt to formally recognise this, a number of countries have explored the position of Advanced Practice or Specialist RTTs. This concept is more than a change in specific duties, but has also enabled radiation oncologists, medical physicists, and nursing staff to focus their efforts on development within their own disciplines.

Modern radiotherapy is demanding and as such the role of the RTT is dynamic. As our workforce grows and changes so too must our education programmes in order to meet the needs of the professional radiotherapy community.

**SP-0595** Who does what: The increasing role of the RTT

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Given the wide range of education programmes internationally, what is included within the standard scope of practice of Radiation Therapists (RTTs) is highly variable. The responsibilities of RTTs are primarily based on historical definitions of roles and typically refer to a basic set of clinical competencies. However the professional boundaries of RTTs in modern radiotherapy are being challenged and redefined.

Modern radiotherapy cares for a population of increasing age, with techniques of increasing complexity. The need for improved efficiency, whilst maintaining a high quality service has resulted in a demanding work environment for the entire multidisciplinary team. As such, RTTs are finding themselves taking on increased responsibilities in a wider range of clinical tasks. RTTs today may be involved in complex dosimetry and planning, quality assurance, use sophisticated image guidance equipment and also assess and triage patients for toxicity assessment. The RTTs involvement in education and research activities also continues to grow; from simply supporting their colleagues to the actual management of clinical trials, as an example. In an attempt to formally recognise this, a number of countries have explored the position of Advanced Practice or Specialist RTTs. This concept is more than a change in specific duties, but has also enabled radiation oncologists, medical physicists, and nursing staff to focus their efforts on development within their own disciplines.

Modern radiotherapy is demanding and as such the role of the RTT is dynamic. As our workforce grows and changes so too must our education programmes in order to meet the needs of the professional radiotherapy community.

**SP-0596** New models to study therapeutic targets in tumours and normal tissues

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New technologies for the radiation treatment of small animals allow preclinical studies using orthotopic xenograft models with radiochemotherapy that more closely mimic clinical studies. We have used an XRad 225Cx small animal irradiator/imager to deliver fractionated dose treatment and chemotherapies to early-passage orthotopically growing human cervix cancer xenografts in immune-deprived mice. This model allows assessment of both primary tumor growth and metastases occurring in the para-aortic lymph nodes. Irradiation treatment was delivered to tumours of 5-8 mm diameter growing in the cervix of mice using an 8-beam protocol with imaging of the target immediately prior to each fraction. The treatment plan allowed for a 1-2 mm margin around the imaged tumour target. The radiation treatment (15-20 x 2 Gy fractions delivered 5 days/wk) was combined with weekly cisplatin (4 mg/kg/wk) to match current external beam treatment procedures for cervix cancers. Tumour growth delay analysis was performed using the imaging features of the irradiator to assess tumour size as a function of time during and after the treatment. There was limited response of the primary tumour to treatment with cisplatin alone but significant response to fractionated radiation treatment, which was enhanced when combined with cisplatin (CRTx). Additional combination treatment with either AMD3100, a drug that blocks the interaction of the Hedgehog pathway inhibitors, further enhanced the treatment response of the primary tumours. Lymph nodal metastases in the aortic chain were also significantly inhibited. No significant short-term toxicities have been encountered to date during these studies, in particular there is no enhancement of the response of small intestinal stem cells as assessed using a G1-tract clonal assay.

**SP-0597** Nitroglycerin as a sensitizer in the treatment of non small cell lung cancer: from cells in vitro to phase 3 trial

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Nitroglycerin, a nitric oxide donor agent, reduces the expression of hypoxia-inducible factor-1α (HIF-1α) and could be a normalizer of the tumor microenvironment. Both factors are associated with chemo-radio-resistance. Adding nitroglycerin to the combination of vinorelbine plus cisplatin has been reported to improve the overall survival (OS) of Asian patients with stage IIIB/IV non-small cell lung cancer (NSCLC) (Yasuda et al. J Clin Oncol. 2006). Several trials have tried to confirm that result with contradictory results. A Mexican phase 2 trial concluded that the addition of nitroglycerin to induction chemotherapy and concurrent chemoradiotherapy in patients with locally advanced NSCLC has an acceptable toxicity profile. We hypothesize that the contradictory results obtained were a consequence of the fact that a) we do not know the mechanism of action of nitroglycerin and b) the fact we do not have a biomarker to select the right patient. We further hypothesize that the patient with an hypoxic tumours are more likely to benefit from nitroglycerin patch and that nitroglycerin would act as inhibitor of oxidative phosphorylation by inhibition of complex I. We tested these two hypothesis respectively with...