



# ESTRO

**NEWSLETTER** JULY - AUGUST

ESTRO | EUROPEAN SOCIETY FOR RADIOTHERAPY & ONCOLOGY



## SOCIETY LIFE

*Eulogy Donal Hollywood*

*ESTRO 2013 election results*



## ESTRO SCHOOL

*Teachers' retreat*

















## ESTRO CONFERENCES

*European Cancer Congress  
27 September - 1 October 2013  
Amsterdam, The Netherlands*

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***“We lost a great professional, visionary and friend”***



VINCENZO VALENTINI

Dear Members,

This is a time of mourning for ESTRO. We lost a great professional, visionary and friend on 10 May 2013 with the untimely death of Prof. Donal Hollywood, President-Elect of ESTRO. The Society Life Corner in this issue has been dedicated to him.

During a period of transformation in ESTRO, Donal provided enduring leadership and vision to the Society, combining strategic insights with his ability to envision and shape the future of Radiotherapy and Oncology, both at a national and international level. He was an inspiring advocate of the role of ESTRO, founding director of the ESTRO teaching course on molecular oncology, the first Chair of the ESTRO Clinical Committee, and was elected incoming President of the Society in 2011.

Donal played a pivotal role in laying the foundation of the present-day position of ESTRO and its reputation as a leading scientific organisation in the field of multidisciplinary oncology, both in Europe and worldwide.

Even though Donal was not physically with us at the successful 2<sup>nd</sup> ESTRO Forum in Geneva he was with us in spirit. He had given his contribution beforehand to the excellent scientific programme we witnessed. More highlights of the Forum can be found in the Conference Corner.

Our deepest sympathy goes to Donal's wife, children and family members, as well as to his colleagues at Trinity College.

With kind regards,  
*Vincenzo Valentini*



In partnership:



### The European Cancer Congress 2013: Showcasing the latest practice-changing research

As a vital aspect of treatment and care from the day of diagnosis through the entire course of a patient's disease, radiation oncology forms an integral part of the Congress's multidisciplinary focus:

- The Imaging track discusses the role of images in tumour response monitoring
- The Radiobiology/radiation physics/radiotherapy track will present the latest updates and achievements of significance for radiation oncologists
- The Oncotechnology & bioengineering track will showcase new image-guided therapies, novel radiation technologies and strategies, nanotechnologies, etc.
- Clinical radiation oncology will be featured in all the Organ tracks

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**[eccamsterdam2013.ecco-org.eu](http://eccamsterdam2013.ecco-org.eu)**

“We lost him at the age of fifty-three”



VINCENZO VALENTINI

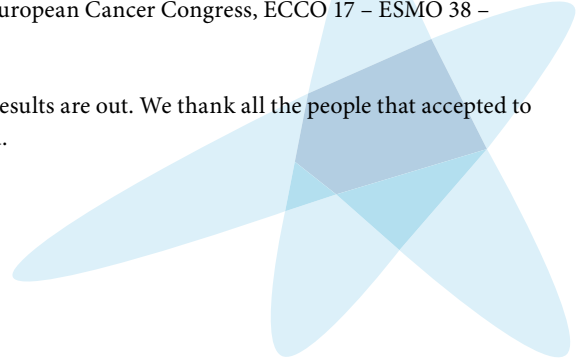
## A TIME OF LOSS AND CHANGE

ESTRO is mourning the death of Prof. Donal Hollywood, President-Elect of ESTRO, at the age of fifty-three. His colleagues and friends have written eulogies that you can read after the section on the General Assembly.

First, there is a short summary of the proceedings of the ESTRO General Assembly (GA) which took place during the 2<sup>nd</sup> ESTRO Forum. We also are pleased to share with you the agenda for the next GA that will take place at the European Cancer Congress, ECCO 17 – ESMO 38 – ESTRO 32, in Amsterdam.

Lastly but not least, this year’s election results are out. We thank all the people that accepted to run for office and welcome those elected.

With kind regards  
*Vincenzo Valentini*



### ESTRO GENERAL ASSEMBLY AT ECCO 17 - ESMO 38 - ESTRO 32

The GA will take place 29 September 2013 from 18:15 - 19:00, Hall 3.2 at Amsterdam RAI.

#### AGENDA

- Welcome
- Governance
- ESTRO elections 2014
- 2014 Budget approval
- Any Other Business



The full minutes of the GA hosted at the 2<sup>nd</sup> ESTRO Forum and the presentations given are available to all members on request from the ESTRO office ([info@estro.org](mailto:info@estro.org)).

The main points at the GA were:

- An update on progress made on the Vision roadmap
  - Most of the actions have been finalised
- Announcement of the 2014 ESTRO awardees
- Notification of the resignation of the former Treasurer, Karin Haustermans
  - Board member Dirk Verellen was approved as the interim Treasurer until the end of his term in September 2014
- The GA approved the 2012 ESTRO financial accounts and budget for 2013
- General updates on the School, events, Green Journal and collaborations



*By M John Kennedy MB, FRCPI*

*Consultant Medical Oncologist, St James's Hospital*

*Clinical Professor of Medicine, Trinity College, Dublin*

## EULOGY

### Donal Hollywood



M JOHN KENNEDY

In 1994 our great friend and colleague Donal Hollywood returned to Dublin from Baylor College of Medicine where he had completed his training as a radiation oncologist. What was to become a glittering career had begun 12 years previously when he graduated from medical school in Dublin and commenced his higher medical professional training in the Mater Hospital. Donal became interested in the use of radiation therapy for the treatment of cancer and commenced his specialty training in radiation oncology in St Luke's hospital in 1986. After an initial period in Dublin he moved to the Hammersmith hospital in London to complete his clinical training and then to the Imperial Cancer Research Fund, also in London, to focus on research. He was awarded an MD and a PhD for his work and in 1993 moved to Baylor College in Texas where he won a Fulbright scholarship and a series of prizes for his research.

In 1994 he returned to Dublin to take up the position of Consultant Radiation Oncologist in St Luke's and St James's Hospitals and was appointed Marie Curie Professor of Clinical Oncology at Trinity College, Dublin. This appointment was essentially three full-time jobs masquerading as two. As a practising radiation oncologist Donal joined a small number of specialists treating large numbers of patients with malignant disease, and rapidly established himself as an expert in treating cancers of the prostate gland, the oesophagus and the head and neck. In the university he collaborated with his friend and colleague Mary Coffey to grow the discipline of radiation therapy within the school of medicine, developing the undergraduate and postgraduate teaching programmes and leading the research programme in the molecular oncology and radiation biology of prostate cancer. He supervised multiple young trainees who were awarded MD and PhD degrees under his tutelage and, in 2004, in collaboration with Bill Watson and Mark Lawlor established the ground-breaking cross university and hospital prostate cancer research consortium which is now seen as the model for how translational cancer research should be conducted in Ireland. His tireless work for Trinity included serving on its board for three years in the late 90s. His contributions were recognised by his election to the Fellowship of Trinity College in 2009.

In the trenches, as it were, Donal was appointed Regional Director of Cancer Services to the old Midland Health Board and oversaw the centralisation of what were then typically fragmented and inadequately resourced services. His efforts to do what he saw would be best for patients drew the ire of some local interests which extended to personal threats and vilification. However, it was then for the first time that many of us saw the steel under the polite, calm, thoughtful exterior. To borrow a phrase, Donal was not for turning. He stuck with the project and saw it through. It would not be the last time he would need that inner strength.

On a more pleasant note, Donal also contributed extensively to the development of a national training programme for aspiring radiation oncologists. He helped establish the programme in 2003 and was the first national training coordinator in the Faculty of Radiologists. On the international stage, Donal served on the board of the NCI-all Ireland Cancer Consortium and was instrumental in securing one million euros of funding from the Department of Health to establish a national telemedicine service for cancer patients. His impact was also felt on the European stage where he served on the Council and Clinical committees of ESTRO, the pan European organisation for training, education and standards of care in radiation therapy.

I think you will agree that this sounds like a summary of the highly productive career of a committed, talented, hardworking academic physician who was devoted to his patients, to his research, to training the next generation and to contributing in the international arena. However, the truth is that I have not yet come to Donal's greatest achievement. To do that, we need to go back to 1994 when Donal first returned to Ireland. It would be charitable to describe cancer treatment in Ireland at that time as dire. Small numbers of specialists laboured to treat patients in the face of huge workloads and inadequate resources, which were the accumulated result of many decades of neglect. Many patients received inadequate treatment or indeed no treatment or were treated by non-specialists due to lack of manpower. The results were entirely predictable. As the Department of Health coyly put it in a 1996 report "Ireland's mortality from cancer compares unfavourably with that of the EU average." That statement was putting it mildly. As a result of that report an advisory cancer forum was established and extensive investment in infrastructure (both human and physical) was commenced. Many of us who are here today were appointed on the back of these recommendations. ▼

Nowhere were the deficiencies in treatment for patients with cancer more glaringly obvious than in the provision of radiation therapy. St Luke's had been starved of resources since the 1960s yet was expected to provide radiation therapy to the large majority of the country. Staff laboured heroically in a dilapidated facility with inadequate amounts of equipment (much of which was in any event outdated). The results were there for all to see. Lifesaving radiation treatment was being delayed for months because of inadequate treatment capacity. It's not too much to say that this was a national disgrace. Even with emergency investment into the hospital in 1994 huge problems remained.

Donal was asked to chair a group to decide how this problem was to be solved. He and his committee forensically examined the scope of the problem, not just as it was at that time but how it would be for the next 20 years. They looked at international standards, best models of care, and how the problem of getting timely state of the art treatment to the patient should be solved. The report ran to 274 pages. It proposed a massive expansion of radiation services in Cork, in Galway and in Dublin with the development of two new state of the art radiation facilities in the city to be integrated with two of the large academic teaching hospitals. This was the Report of the Expert Group on the Development of Radiation Oncology Services in Ireland. Everyone simply called it "The Hollywood Report".

As chair of the National Radiation Oncology Coordinating Group Donal set about implementing his vision for the delivery of modern hi-tech radiation therapy for all cancer patients in Ireland with determination. Again, he had to fend off attacks from both parochial and private sector interests but he convinced the then Minister for Health, Mary Harney, that this was the right avenue. I do not think that Minister Harney needed much persuasion - she was a great fan of Donal's. The cabinet granted approval and the project proceeded. Radiation services were expanded in Cork and established in Galway. The St Luke's network was built in Dublin with the original site in Rathgar, just around the corner from us being joined by two new integrated radiation facilities in St James's and Beaumont hospitals. Donal then served for two years as national academic lead in radiation oncology within the national cancer control plan whilst the programme was implemented.

His enormous contribution was recognised both nationally but also internationally. For many years Donal had served in ESTRO. He chaired committees based at the ESTRO secretariat in Brussels which demanded a punishing travel schedule to go alongside all of his other activities. There were of course some compensations for this. Donal's love of fine red Italian wine, and his encyclopaedic knowledge of it, probably kicked off at a particularly harrowing ESTRO meeting in a Brussels restaurant. And of course he developed a taste for very fast Italian cars. I was in an airport with him once when he was leafing through a magazine devoted to these outrageously expensive vehicles. He was chuckling away as he listed to me all the negative features of a particular car. These ranged from the requirement for a new clutch every time the car took off from the lights, to the disconcerting feature that several of the electrical systems shut down when you opened the passenger door. Donal wasn't deterred. I asked him what the positives were. He smirked and said, "it sounds amazing in a tunnel."

Donal's love of speed extended to skiing. I remember the wonderful annual joint Kennedy/Hollywood family ski trips when the children were of an age when they would still appear in public with parents wearing funny clothes. The main agenda item, no matter how small the kid, was to try to keep up with Donal who was clearly the best skier of the bunch. The trips always started in Dublin airport where hot chocolate and croissants at Butler's became an annual ritual. Donal would slip into holiday mode once we got through security. He liked to stop in the duty free to buy some nice wine to bring on the trip. One year he bought an expensive bottle of port and nestled it tenderly in the bottom of a wardrobe in the apartment. His daughter Aoife came in and slung her ski boots into the wardrobe. That was the end of the bottle of port. He was not amused. During the mornings, Donal would have everyone out on the first lift and spend his time teaching Aoife, Niamh and Patrick and my children how to jump and tackle moguls and approach black runs. They all got very good very fast.

And Donal was a stalwart of the famous annual St James's anaesthetists' ski trip, where his speciality was bringing us down mogul fields that looked like they had been carpet bombed rather than groomed. Eamon McGuinness and I would stand there stranded looking at him wondering how we were going to get to the bottom and asking each other what on earth were we doing on this run? Donal only slowed down recently when he decided after his heart scare that off-piste skiing and blood thinners didn't really mix.

Donal was awarded the ultimate professional accolade in 2011 when he was elected, after a competition, by his peers across Europe as the President Elect of ESTRO. This was an ▼



unparalleled achievement for an Irish oncologist. Tragically, early this year his illness took hold. Instead of travelling to Geneva to take up his position he spent his last weeks in St Luke's hospital where, in a room on D ward specially set up for him, his three children Aoife, Niamh and Patrick and his wife Brid continued a vigil of care that they had started when he was in St James's so that Donal was never left alone.

During that time we were all grateful that Donal was able to spend one precious week with his family at home. His parents Patricia and Patrick arrived from Rostrevor every Tuesday without fail to share some of the care as did his brothers, and, surrounded by his family and friends he passed away on Friday tended to by the superb nursing staff in St Luke's hospital. Even while his illness was becoming more debilitating Donal, being Donal, was able to grab the moments when he was well to comfort those most close to him, particularly his three precious children.

So when we think of Donal's legacy, to my mind it's very simple. The awards, the accolades, the grants, they are all transient. But his lasting legacy is that this Monday morning, and next Monday and the Monday after someone's brother, or sister or aunt is receiving appropriate state of the art radiation therapy supervised by highly trained specialist professionals. With time, those of us who remember the bad old days of delays and inadequate treatment and sometimes no treatment, will forget them. But we will not forget Donal.

*M John Kennedy MB, FRCPI*

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*By Michael Baumann, Mary Coffey, Norman Coleman and Dirk Verellen*



*Prof. Donal Hollywood*

On the 10<sup>th</sup> May 2013, Donal Hollywood MD, PhD, Marie Curie Professor of Clinical Oncology at Trinity College Dublin, and President-Elect of ESTRO passed away after metastatic cancer had been diagnosed only in January this year. The Irish and European Radiation Oncology community is grieving for a visionary and dedicated leader, and for many of us a good friend.

After graduation from medical school in Dublin, Donal began his specialty training in clinical oncology first in Dublin and later in London where he also completed a PhD at the Imperial Cancer Research Fund. In 1993 he moved to Baylor College in Houston to return to Dublin as a consultant oncologist at St. Luke's and St. James's hospital in 1994 and was then appointed as Professor of Clinical Oncology in Trinity College Dublin. Immediately on his return to Europe, Donal became highly engaged in ESTRO where he established and directed the new teaching course on molecular oncology and became part of many working parties and committees. He was one of the "Bright Young Guys" who in 1997 were invited by the then ESTRO leadership to think and discuss in San Miniato about the future challenges for radiation oncology and about the generation change in the Society.

As illustrated by the eulogy presented during his funeral by his close friend Prof. John Kennedy, medical oncologist from Dublin, Irish radiation oncology changed from a hugely understaffed and under-resourced service at the time of Donal's arrival to the present days' excellent and international competitive standards. Today Irish radiation oncology is fully integrated with strong academic activities in teaching and research, has achieved national co-ordination, is well-equipped and delivered by excellently educated staff. Naturally Donal could not have done this alone, but he clearly was the leader and master-mind behind these remarkable achievements. By his clear vision, everlasting enthusiasm and dedicated work Donal was able to assemble a strong multi-professional radiation oncology team pushing together with him in this direction. Donal was always eager to fully integrate Irish radiation oncology in the ▼





MICHAEL BAUMANN



MARY COFFEY



NORMAN COLEMAN



DIRK VERELLEN

European radiation oncology community and he did so (among others) by frequently inviting peers to assess the quality of services and research during site visits, to sit on committees of the University, the Royal College of Surgeons of Ireland, and of Government agencies. He also insisted on international involvement in examining students and in search-committees for new tenured staff. Donal played a key role in a 3-way international partnership, the All-Ireland Cancer Consortium that emerged from the Irish peace talks and brought together Northern Ireland, the Republic of Ireland and the US National Cancer Institute for research and education. Other ongoing and emerging international collaborative research programmes between the NCI and

ESTRO grew from this pioneering effort. Due to these activities successful co-operations and close friendships sprouted and international reviewers were often awe-inspired in light of the tremendous and fast progress of Irish radiation oncology in clinical services and academia.

As Chair of the ESTRO Clinical Committee, Donal was a key figure in expanding the Society's involvement in the promotion of modern radiation oncology in Europe. He gave focus to evidence based and deeply scientific educational activities for the next generation of radiation oncologists and to exciting clinical programmes during the scientific conferences of ESTRO. Donal was equally concerned about the heterogeneity of provision of radiation oncology services in Europe and about fair access to best care for every patient. He promoted these positions very actively for example in various hearings of European and international bodies, where his first-hand experience from the Irish scenario was of tremendous advantage. To support these activities Donal

actively created strong networks to assemble a unified and powerful voice on behalf of current and future cancer patients. Not surprisingly Donal therefore was a strong and highly credible supporter of multidisciplinary integration of oncology professionals, which importantly improves therapeutic options for cancer patients but is also essential to promote the interests of cancer patients to governments, health care providers and research funds.

Donal was a role-model in long-term strategic planning, in listening and patiently finding out different perspectives before transforming best evidence into clear road-maps. He was never too proud to ask for outside advice and to accept when there were different views, as long as these were well founded and in the interest of patients. However after a strategy was formulated, Donal certainly was not shy to push it through, convincing those who needed to be convinced and leaving out those who did not want be convinced, being straight and outspoken and not afraid of conflicts. It certainly helped that Donal, even when fully determined and even when battles became harsh, always remained fair in a personal and charming way. Not least because of these rare abilities Donal became a strong leader of European radiation oncology and was elected by his peers in 2011 as President-Elect of ESTRO.

During his entire professional career Donal worked hard and very successfully to fight cancer through research, education and provision of best care in modern structures for the patients. In the past months he lost his own private fight against this often still deadly disease.

*Much too early he left his wife Brid, his three children Aoife, Niamh, and Patrick, his parents, family and friends. Our thoughts are with all of those who were close to Donal. Donal's wish was that his colleagues and friends in the radiation oncology community in Ireland, Europe and worldwide continue the way he cannot walk any longer, towards defeating cancer and patient suffering.*

We will not forget Donal.

*Michael Baumann*

*Mary Coffey*

*Norman Coleman*

*Dirk Verellen*

## ESTRO 2013 ELECTION RESULTS

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*Here below are the members that have been elected to the ESTRO Board. They will officially start their functions at the GA in Amsterdam. We welcome them on board.*



PHILIP POORTMANS  
*President Elect*



CORRIE MARIJNEN  
*Member of the  
Board, clinician*



JOANNA KAZMIERSKA  
*Member of the  
Board, clinician*



CONCHITA VENS  
*Member of the  
Board, biologist*



LUDVIG MUREN  
*Member of the  
Board, physicist*



—

**“Donal Hollywood will be greatly missed by all who knew him and worked with him.”**

—



DANIEL ZIPS  
Chair Clinical Committee

Dear colleagues,

Welcome to this corner.

The Clinical Committee has lost a colleague, a friend, the first Chair of our committee and a member of this present committee. Donal Hollywood will be greatly missed by all who knew him and worked with him.

We will never forget his affection for radiation oncology, science and of particular importance modern biological approaches that can be translated into clinical radiation oncology.

Donal set the direction of our committee and we will continue along that path, never forgetting his very significant contribution to our work.

*Daniel Zips*



*Prof. Donal Hollywood*

## PERSONALISED RADIOTHERAPY

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ANNE HANSEN REE

## MULTIPLICITY AND COMPLEXITY ON THE PATHWAY TO SUCCESS

*Modern radiation oncology will require a synergy between high-precision radiotherapy protocols and innovative approaches for biological optimisation of radiation effect. From a clinical perspective, new insight into molecular radiobiology will provide a unique opportunity for rational integration of molecularly targeted therapeutics into radiotherapy.*

In two of the 2012 ESTRO Newsletter Clinical Corner columns, the late President-Elect, Prof. Donal Hollywood, presented some of his visions within this topic, highlighting a number of principles in addressing clinical evaluation of combined-modality targeted therapeutics and radiotherapy. The articles I have in mind were entitled ‘The Future Integration of Molecular Targeted Therapies’ and ‘Efficacy of Biomarkers and Personalised Cancer Therapeutics’. In addition to encouraging all of you to read these highly informative chapters one more time, I truly believe Donal would have wished us to continue addressing and actively debating these questions within the Society.

Within the radiation oncology community, we are still at a relatively early stage of analysing and discussing the opportunities that may underpin new investigatory approaches regarding the use of systemic targeted therapeutics. By way of contrast, there is a much more developed understanding of such issues when new investigational agents are being used solely as systemic drugs. One example is potential biomarkers for patient selection. However, in fairness to the radiation oncology discipline, as opposed to the medical oncology approach of defining patient eligibility for a particular therapy primarily on single – and “simple” – tumour gene aberrations, the composite activities of a range of signalling effector proteins determining tumour resistance to radiation may conceptually comprise actionable targets for radiosensitisation. Hence, previous paucity of relevant theranostic profiling technologies, or the existing biotech’s low applicability to facilitate this particular research activity at the current stage, might ▼



explain some of these challenges that we have faced.

Another significant issue is to understand how systemic targeted therapeutics will become available for possible examination with radiotherapy. Recognising both the huge costs and long timescale that are commonly required to develop and evaluate new drugs, and also the increasing and alarming failure rate of gaining ultimate regulatory approval, it is highly unlikely that new drugs will be developed as exclusive radiosensitisers. In addition, within this frame of reference, concepts specific for the radiotherapy modality (such as: definitions of the target volume; dose fractionation schedules and overall treatment time; and dose variations within all relevant organs at risk) add an extra level of complexity onto the implementation of targeted drugs in combined-modality treatment, and how formally to evaluate relevant endpoints. Hence, it is sensible that the radiation oncology discipline itself takes on the responsibility of propelling this field, rather than expecting the pharmaceutical industry to pave the way. A rational and appealing strategy in this regard will be to exploit our accumulating knowledge from molecular radiobiology in improvement of radiation efficacy. Conceptually, it is likely, given the mechanism of action, that a number of already available targeted therapeutics may be expected to modulate signalling pathways activated by DNA damage repair or tumour hypoxia and repopulation, and thereby have the potential to enhance tumour radiosensitivity.

Within both of the above issues, we will need to look at new and possibly novel manners of defining and validating biomarkers of treatment response and toxicity that may act as surrogates for established clinical endpoints. My own scientific experience in this particular field is limited, so I cannot provide any view or recommendations here. However, I have been looking with curiosity at the programme schedules of a few recent conferences within the cancer biomarker field to see what place (if any) radiotherapy might have had. Not surprisingly (but still a bit disappointingly) little if anything was found. In looking at 2011–2013 major biomarkers conferences jointly organised by EORTC, NCI, and ASCO or AACR, I observed typical sessions termed 'Molecular Diagnostics', 'Clinical Evaluation of Biomarkers' or 'Changing Landscape of Clinical Trial Design', and even 'Targeting DNA Damage Response', 'Tumour Microenvironment' or 'Mechanism-based Targeted Combination Therapies', but none which specifically implemented the concept of molecularly targeted radiotherapy. Even though this at first glance may feel discouraging, I believe it is ultimately our own responsibility – and commitment to the immediate future of our discipline – to approach the multidisciplinary oncology community with these inspiring principles of next-generation cancer care.

*Anne Hansen Ree*

*Member of Clinical Committee ESTRO*

*Department of Oncology, Institute of Clinical Medicine*

*Akershus University Hospital, University of Oslo, Oslo*

**Too important to miss...**  
A digest of essential  
reading for all radiation  
oncologists



PHILIPPE LAMBIN



DIRK DE RUYSSCHER



HANS KAANDERS

## LUNG

### *Phase II trial of erlotinib plus concurrent whole-brain radiation therapy for patients with brain metastases from non-small-cell lung cancer.*

Welsh JW, Komaki R, Amini A, Munsell MF, Unger W, Allen PK, Chang JY, Wefel JS, McGovern SL, Garland LL, Chen SS, Holt J, Liao Z, Brown P, Sulman E, Heymach JV, Kim ES, Stea B.  
J Clin Oncol. 2013 Mar 1;31(7):895-902.

#### PURPOSE

Brain metastasis (BM) is a leading cause of death from non-small-cell lung cancer (NSCLC). Reasoning that activation of the epidermal growth factor receptor (EGFR) contributes to radiation resistance, the authors undertook a phase II trial of the EGFR inhibitor erlotinib with whole-brain radiation therapy (WBRT) in an attempt to extend survival time for patients with BM from NSCLC. Additional end points were radiological response and safety.

#### PATIENTS AND METHODS

Eligible patients had BM from NSCLC, regardless of EGFR status. Erlotinib was given at 150 mg orally once per day for one week, then concurrently with WBRT (2.5 Gy per day 5 days per week, to 35 Gy), followed by maintenance. EGFR mutation status was tested by DNA sequencing at an accredited core facility.

#### RESULTS

Forty patients were enrolled and completed erlotinib plus WBRT (median age, 59 years; median diagnosis-specific graded prognostic assessment score, 1.5). The overall response rate was 86% (n = 36). No increase in neurotoxicity was detected, and no patient experienced grade  $\geq 4$  toxicity, but three patients required dose reduction for grade 3 rash. At a median follow-up of 28.5 months (for living patients), median survival time was 11.8 months (95% CI, 7.4 to 19.1 months). Of 17 patients with known EGFR status, median survival time was 9.3 months for those with wild-type EGFR and 19.1 months for those with EGFR mutations.

#### CONCLUSION

Erlotinib was well tolerated in combination with WBRT, with a favorable objective response rate. The higher-than-expected rate of EGFR mutations in these unselected patients raises the possibility that EGFR-mutated tumours are prone to brain dissemination

## LUNG

### *Surrogate endpoints for overall survival in chemotherapy and radiotherapy trials in operable and locally advanced lung cancer: a re-analysis of meta-analyses of individual patients' data.*

Mauguen A, Pignon JP, Burdett S, Domerg C, Fisher D, Paulus R, Mandrekar SJ, Belani CP, Shepherd FA, Eisen T, Pang H, Collette L, Sause WT, Dahlberg SE, Crawford J, O'Brien M, Schild SE, Parmar M, Tierney JF, Pechoux CL, Michiels S; on behalf of the Surrogate Lung Project Collaborative Group.  
Lancet Oncol. 2013 May 13. [Epub ahead of print]

#### BACKGROUND

The gold standard endpoint in clinical trials of chemotherapy and radiotherapy for lung cancer is overall survival. Although reliable and simple to measure, this endpoint takes years to observe. Surrogate endpoints that would enable earlier assessments of treatment effects would be useful. The investigators assessed the correlations between potential surrogate endpoints and overall survival at individual and trial levels.

#### METHODS

The authors analysed individual patients' data from 15,071 patients involved in 60 randomised clinical trials that were assessed in six meta-analyses. Two meta-analyses were of adjuvant ▼

chemotherapy in non-small-cell lung cancer, three were of sequential or concurrent chemotherapy, and one was of modified radiotherapy in locally advanced lung cancer. Disease-free survival (DFS) or progression-free survival (PFS) was investigated, defined as the time from randomisation to local or distant relapse or death, and locoregional control, defined as the time to the first local event, as potential surrogate endpoints. At the individual level, the squared correlations between distributions of these three endpoints and overall survival was calculated, and at the trial level, the squared correlation between treatment effects for endpoints was calculated.

### RESULTS

In trials of adjuvant chemotherapy, correlations between DFS and overall survival were very good at the individual level ( $\rho^2=0.83$ , 95% CI 0.83-0.83 in trials without radiotherapy, and 0.87, 0.87-0.87 in trials with radiotherapy) and excellent at trial level ( $R^2=0.92$ , 95% CI 0.88-0.95 in trials without radiotherapy and 0.99, 0.98-1.00 in trials with radiotherapy). In studies of locally advanced disease, correlations between PFS and overall survival were very good at the individual level ( $\rho^2$  range 0.77-0.85, dependent on the regimen being assessed) and trial level ( $R^2$  range 0.89-0.97). In studies with data on locoregional control, individual-level correlations were good ( $\rho^2=0.71$ , 95% CI 0.71-0.71 for concurrent chemotherapy and  $\rho^2=0.61$ , 0.61-0.61 for modified vs standard radiotherapy) and trial-level correlations very good ( $R^2=0.85$ , 95% CI 0.77-0.92 for concurrent chemotherapy and  $R^2=0.95$ , 0.91-0.98 for modified vs standard radiotherapy).

### CONCLUSIONS

The authors found a high level of evidence that DFS is a valid surrogate endpoint for overall survival in studies of adjuvant chemotherapy involving patients with non-small-cell lung cancers, and PFS in those of chemotherapy and radiotherapy for patients with locally advanced lung cancers. Extrapolation to targeted agents, however, is not automatically warranted.

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## HEAD & NECK

### *Long-term results of RTOG 91-11: a comparison of three nonsurgical treatment strategies to preserve the larynx in patients with locally advanced larynx cancer.*

Forastiere AA, Zhang Q, Weber RS, Maor MH, Goepfert H, Pajak TF, Morrison W, Glisson B, Trotti A, Ridge JA, Thorstad W, Wagner H, Ensley JF, Cooper JS.  
J Clin Oncol. 2013 Mar 1;31(7):845-52.

### PURPOSE

To report the long-term results of the Intergroup Radiation Therapy Oncology Group 91-11 study evaluating the contribution of chemotherapy added to radiation therapy (RT) for larynx preservation.

### PATIENTS AND METHODS

Patients with stage III or IV glottic or supraglottic squamous cell cancer were randomly assigned to induction cisplatin/fluorouracil (PF) followed by RT (control arm), concomitant cisplatin/RT, or RT alone. The composite end point of laryngectomy-free survival (LFS) was the primary end point.

### RESULTS

Five hundred and twenty patients were analysed. Median follow-up for surviving patients is 10.8 years. Both chemotherapy regimens significantly improved LFS compared with RT alone (induction chemotherapy v RT alone: hazard ratio [HR], 0.75; 95% CI, 0.59 to 0.95;  $P = .02$ ; concomitant chemotherapy v RT alone: HR, 0.78; 95% CI, 0.78 to 0.98;  $P = .03$ ). Overall survival did not differ significantly, although there was a possibility of worse outcome with concomitant relative to induction chemotherapy (HR, 1.25; 95% CI, 0.98 to 1.61;  $P = .08$ ). Concomitant cisplatin/RT significantly improved the larynx preservation rate over induction PF followed by RT (HR, 0.58; 95% CI, 0.37 to 0.89;  $P = .0050$ ) and over RT alone ( $P < .001$ ), whereas induction PF followed by RT was not better than treatment with RT alone (HR, 1.26; 95% CI, 0.88 to 1.82;  $P = .35$ ). No difference in late effects was detected, but deaths not attributed to larynx cancer or treatment were higher with concomitant chemotherapy (30.8% v 20.8% with induction ▼

chemotherapy and 16.9% with RT alone).

#### CONCLUSION

These 10-year results show that induction PF followed by RT and concomitant cisplatin/RT show similar efficacy for the composite end point of LFS. Locoregional control and larynx preservation were significantly improved with concomitant cisplatin/RT compared with the induction arm or RT alone. New strategies that improve organ preservation and function with less morbidity are needed.

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## LYMPHOMA

### *Randomized phase III trial of ABVD versus Stanford V with or without radiation therapy in locally extensive and advanced-stage Hodgkin lymphoma: an intergroup study coordinated by the Eastern Cooperative Oncology Group (E2496).*

Gordon LI, Hong F, Fisher RI, Bartlett NL, Connors JM, Gascoyne RD, Wagner H, Stiff PJ, Cheson BD, Gospodarowicz M, Advani R, Kahl BS, Friedberg JW, Blum KA, Habermann TM, Tusciano JM, Hoppe RT, Horning SJ. *J Clin Oncol.* 2013 Feb 20;31(6):684-91.

#### PURPOSE

Although ABVD (doxorubicin, bleomycin, vinblastine, and dacarbazine) has been established as the standard of care in patients with advanced Hodgkin lymphoma, newer regimens have been investigated, which have appeared superior in early phase II studies. The aim of the investigators was to determine if failure-free survival was superior in patients treated with the Stanford V regimen compared with ABVD.

#### PATIENTS AND METHODS

The Eastern Cooperative Oncology Group, along with the Cancer and Leukemia Group B, the Southwest Oncology Group, and the Canadian NCIC Clinical Trials Group, conducted this randomised phase III trial in patients with advanced Hodgkin lymphoma. Stratification factors included extent of disease (localised v extensive) and International Prognostic Factors Project Score (0 to 2 v 3 to 7). The primary end point was failure-free survival (FFS), defined as the time from random assignment to progression, relapse, or death, whichever occurred first. Overall survival, a secondary end point, was measured from random assignment to death as a result of any cause. This design provided 87% power to detect a 33% reduction in FFS hazard rate, or a difference in 5-year FFS of 64% versus 74% at two-sided 0.05 significance level.

#### RESULTS

There was no significant difference in the overall response rate between the two arms, with complete remission and clinical complete remission rates of 73% for ABVD and 69% for Stanford V. At a median follow-up of 6.4 years, there was no difference in FFS: 74% for ABVD and 71% for Stanford V at 5 years ( $P = 0.32$ ).

#### CONCLUSION

ABVD remains the standard of care for patients with advanced Hodgkin lymphoma.

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## OESOPHAGUS

### *Chemoradiotherapy with or without cetuximab in patients with oesophageal cancer (SCOPE1): a multicentre, phase 2/3 randomised trial.*

Crosby T, Hurt CN, Falk S, Gollins S, Mukherjee S, Staffurth J, Ray R, Bashir N, Bridgewater JA, Geh JI, Cunningham D, Blazeby J, Roy R, Maughan T, Griffiths G.  
Lancet Oncol. 2013 Apr 24. [Epub ahead of print]

#### BACKGROUND

Definitive chemoradiotherapy (CRT) is an alternative to surgery for the curative treatment of oesophageal carcinoma. The SCOPE1 trial aimed to investigate the addition of cetuximab to cisplatin and fluoropyrimidine-based definitive CRT in patients with localised oesophageal squamous-cell cancer and adenocarcinomas to assess activity, safety, and feasibility of use.

#### METHODS

In this multicentre, randomised, open-label, phase 2/3 trial, the investigators recruited patients aged 18 years and older from UK radiotherapy centres who had non-metastatic, histologically confirmed carcinoma of the oesophagus (adenocarcinoma, squamous-cell, or undifferentiated; WHO status 0-1; stage I-III disease) and been selected to receive definitive CRT. Patients were randomly assigned (1:1) via a central computerised system using stratified minimisation (with an 80:20 random element) to receive CRT alone or CRT with cetuximab (400 mg/m<sup>2</sup> on day 1 followed by 250 mg/m<sup>2</sup> weekly), stratified by recruiting hospital, primary reason for not having surgery, tumour histology, and tumour stage. CRT consisted of cisplatin 60 mg/m<sup>2</sup> (day 1) and capecitabine 625 mg/m<sup>2</sup> twice daily (days 1-21) for four cycles; cycles three and four were given concurrently with 50 Gy in 25 fractions of radiotherapy. The primary endpoint was the proportion of patients who were treatment failure free at week 24 for the phase 2 trial and overall survival for the phase 3 trial, both measured from randomisation.

#### RESULTS

258 patients (129 assigned to each treatment group) from 36 UK centres were recruited between Feb 7, 2008, and Feb 22, 2012. Recruitment was stopped without continuation to phase 3 because the trial met criteria for futility, but we continued to follow-up recruited patients until all had reached at least 24-week follow-up (median follow-up of patients who survived was 16.8 months [IQR 11.2-24.5]). Fewer patients were treatment failure free at 24 weeks in the CRT plus cetuximab group (79 of 119 patients [66.4%, 90% CI 58.6-73.6]) than in the CRT only group (93 of 121 patients [76.9%, 69.7-83.0]). The CRT plus cetuximab group also had shorter median overall survival (22.1 months [95% CI 15.1-24.5] vs 25.4 months [20.5-37.9]; adjusted HR 1.53 [95% CI 1.03-2.27]; p=0.035). Patients who received CRT plus cetuximab had more non-haematological grade 3 or 4 toxicities (102 [79%] of 129 patients vs 81 [63%] of 129 patients; p=0.004). The most common grade 3 or 4 toxicities were low white blood cell count (14 [11%] in the CRT plus cetuximab group vs 21 [16%] in the CRT only group), low absolute neutrophil count (15 [12%] vs 24 [19%]), fatigue (26 [20%] vs 25 [19%]), and dysphagia (35 [27%] vs 37 [29%]).

#### CONCLUSIONS

The addition of cetuximab to standard chemotherapy and radiotherapy cannot be recommended for patients with oesophageal cancer suitable for definitive CRT.

## GASTRO-INTESTINAL

### *Mitomycin or cisplatin chemoradiation with or without maintenance chemotherapy for treatment of squamous-cell carcinoma of the anus (ACT II): a randomised, phase 3, open-label, 2x2 factorial trial.*

James RD, Glynn-Jones R, Meadows HM, Cunningham D, Myint AS, Saunders MP, Maughan T, McDonald A, Essapen S, Leslie M, Falk S, Wilson C, Gollins S, Begum R, Ledermann J, Kadalayil L, Sebag-Montefiore D.  
Lancet Oncol. 2013 May;14(6):516-24.

#### BACKGROUND

Chemoradiation became the standard of care for anal cancer after the ACT I trial. However, ▼



only two-thirds of patients achieved local control, with 5-year survival of 50%; therefore, better treatments are needed. The authors investigated whether replacing mitomycin with cisplatin in chemoradiation improves response, and whether maintenance chemotherapy after chemoradiation improves survival.

#### METHODS

In this 2×2 factorial trial, the authors enrolled patients with histologically confirmed squamous-cell carcinoma of the anus without metastatic disease from 59 centres in the UK. Patients were randomly assigned to one of four groups, to receive either mitomycin (12 mg/m<sup>2</sup>) on day 1) or cisplatin (60 mg/m<sup>2</sup>) on days 1 and 29), with fluorouracil (1000 mg/m<sup>2</sup>) per day on days 1-4 and 29-32) and radiotherapy (50.4 Gy in 28 daily fractions); with or without two courses of maintenance chemotherapy (fluorouracil and cisplatin at weeks 11 and 14). The random allocation was generated by computer and patients assigned by telephone. Randomisation was done by minimisation and stratified by tumour site, T and N stage, sex, age, and renal function. Neither patients nor investigators were masked to assignment. Primary endpoints were complete response at 26 weeks and acute toxic effects (for chemoradiation), and progression-free survival (for maintenance). The primary analyses were done by intention to treat. This study is registered at controlled-trials.com, number 26715889.

#### RESULTS

The investigators enrolled 940 patients: 472 were assigned to mitomycin, of whom 246 were assigned to no maintenance, 226 to maintenance; 468 were assigned to cisplatin, of whom 246 were assigned to no maintenance, 222 to maintenance. Median follow-up was 5.1 years (IQR 3.9-6.9). 391 of 432 (90.5%) patients in the mitomycin group versus 386 of 431 (89.6%) in the cisplatin group had a complete response at 26 weeks (difference -0.9%, 95% CI -4.9 to 3.1; p=0.64). Overall, toxic effects were similar in each group (334/472 [71%] for mitomycin vs 337/468 [72%] for cisplatin). The most common grade 3-4 toxic effects were skin (228/472 [48%] vs 222/468 [47%]), pain (122/472 [26%] vs 135/468 [29%]), haematological (124/472 [26%] vs 73/468 [16%]), and gastrointestinal (75/472 [16%] vs 85/468 [18%]). 3-year progression-free survival was 74% (95% CI 69-77; maintenance) versus 73% (95% CI 68-77; no maintenance; hazard ratio 0.95, 95% CI 0.75-1.21; p=0.70).

#### CONCLUSION

The results of our trial—the largest in anal cancer to date—show that fluorouracil and mitomycin with 50.4 Gy radiotherapy in 28 daily fractions should remain standard practice in the UK.

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## SIDE EFFECTS: HEART

### *Risk of ischemic heart disease in women after radiotherapy for breast cancer.*

Darby SC, Ewertz M, McGale P, Bennet AM, Blom-Goldman U, Brønnum D, Correa C, Cutter D, Gagliardi G, Gigante B, Jensen MB, Nisbet A, Peto R, Rahimi K, Taylor C, Hall P.  
N Engl J Med. 2013 Mar 14;368(11):987-98.

#### BACKGROUND

Radiotherapy for breast cancer often involves some incidental exposure of the heart to ionizing radiation. The effect of this exposure on the subsequent risk of ischemic heart disease is uncertain.

#### METHODS

The authors conducted a population-based case-control study of major coronary events (i.e., myocardial infarction, coronary revascularization, or death from ischemic heart disease) in 2168 women who underwent radiotherapy for breast cancer between 1958 and 2001 in Sweden and Denmark; the study included 963 women with major coronary events and 1205 controls. Individual patient information was obtained from hospital records. For each woman, the mean radiation doses to the whole heart and to the left anterior descending coronary artery were estimated from her radiotherapy chart. ▼

## RESULTS

The overall average of the mean doses to the whole heart was 4.9 Gy (range, 0.03 to 27.72). Rates of major coronary events increased linearly with the mean dose to the heart by 7.4% per gray (95% confidence interval, 2.9 to 14.5;  $P < 0.001$ ), with no apparent threshold. The increase started within the first 5 years after radiotherapy and continued into the third decade after radiotherapy. The proportional increase in the rate of major coronary events per gray was similar in women with and women without cardiac risk factors at the time of radiotherapy.

## CONCLUSIONS

Exposure of the heart to ionizing radiation during radiotherapy for breast cancer increases the subsequent rate of ischemic heart disease. The increase is proportional to the mean dose to the heart, begins within a few years after exposure, and continues for at least 20 years. Women with preexisting cardiac risk factors have greater absolute increases in risk from radiotherapy than other women.

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## BREAST

### *Axillary dissection versus no axillary dissection in patients with sentinel-node micro-metastases (IBCSG 23-01): a phase 3 randomised controlled trial.*

Galimberti V, Cole BF, Zurrada S, Viale G, Luini A, Veronesi P, Baratella P, Chifu C, Sargenti M, Intra M, Gentilini O, Mastropasqua MG, Mazzarol G, Massarut S, Garbay JR, Zgajnar J, Galatius H, Recalcati A, Littlejohn D, Bamert M, Colleoni M, Price KN, Regan MM, Goldhirsch A, Coates AS, Gelber RD, Veronesi U; International Breast Cancer Study Group Trial 23-01 investigators.  
Lancet Oncol. 2013 Apr;14(4):297-305.

## BACKGROUND

For patients with breast cancer and metastases in the sentinel nodes, axillary dissection has been standard treatment. However, for patients with limited sentinel-node involvement, axillary dissection might be overtreatment. We designed IBCSG trial 23-01 to determine whether no axillary dissection was non-inferior to axillary dissection in patients with one or more micrometastatic ( $\leq 2$  mm) sentinel nodes and tumours of maximum 5 cm.

## METHODS

In this multicentre, randomised, non-inferiority, phase 3 trial, patients were eligible if they had clinically non-palpable axillary lymph node(s) and a primary tumour of 5 cm or less and who, after sentinel-node biopsy, had one or more micrometastatic ( $\leq 2$  mm) sentinel lymph nodes with no extracapsular extension. Patients were randomly assigned (in a 1:1 ratio) to either undergo axillary dissection or not to undergo axillary dissection. Randomisation was stratified by centre and menopausal status. Treatment assignment was not masked. The primary endpoint was disease-free survival. Non-inferiority was defined as a hazard ratio (HR) of less than 1.25 for no axillary dissection versus axillary dissection. The analysis was by intention to treat. Per protocol, disease and survival information continues to be collected yearly. This trial is registered with ClinicalTrials.gov, NCT00072293.

## FINDINGS

Between 1 April 2001 and 28 February 2010, 465 patients were randomly assigned to axillary dissection and 469 patients to no axillary dissection. After the exclusion of three patients, 464 patients were in the axillary dissection group and 467 patients were in the no axillary dissection group. After a median follow-up of 5.0 (IQR 3.6-7.3) years, we recorded 69 disease-free survival events in the axillary dissection group and 55 events in the no axillary dissection group. Breast-cancer-related events were recorded in 48 patients in the axillary dissection group and 47 in the no axillary dissection group (10 local recurrences in the axillary dissection group and 8 in the no axillary dissection group; 3 and 9 contralateral breast cancers; 1 and 9 regional recurrences; and 34 and 25 distant relapses). Other non-breast cancer events were recorded in 21 patients in the axillary dissection group and 8 in the no axillary dissection group (20 and 6 second non-breast malignancies; and 1 and 2 deaths not due to a cancer event). 5-year disease-free survival was 87.8% (95% CI 84.4-91.2%) in the group without axillary dissection and 84.4% (80.7-88.1%) in the group with axillary dissection (log-rank  $p = 0.16$ ; HR for no axillary dissection vs axillary ▼

dissection was 0.78, 95% CI 0.55-1.11, non-inferiority  $p=0.0042$ ). Patients with reported long-term surgical events (grade 3-4) included one sensory neuropathy (grade 3), three lymphoedema (two grade 3 and one grade 4), and three motor neuropathy (grade 3), all in the group that underwent axillary dissection, and one grade 3 motor neuropathy in the group without axillary dissection. One serious adverse event was reported, a postoperative infection in the axilla in the group with axillary dissection.

#### INTERPRETATION

Axillary dissection could be avoided in patients with early breast cancer and limited sentinel-node involvement, thus eliminating complications of axillary surgery with no adverse effect on survival.

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## BREAST

### *Ten-Year Survival Results of a Randomized Trial of Irradiation of Internal Mammary Nodes After Mastectomy.*

Hennequin C, Bossard N, Servagi-Vernat S, Maingon P, Dubois JB, Datchary J, Carrie C, Roulet B, Suchaud JP, Teissier E, Lucardi A, Gerard JP, Belot A, Iwaz J, Ecochard R, Romestaing P. *Int J Radiat Oncol Biol Phys.* 2013 May 9. [Epub ahead of print]

#### PURPOSE

To evaluate the efficacy of irradiation of internal mammary nodes (IMN) on 10-year overall survival in breast cancer patients after mastectomy.

#### METHODS AND PATIENTS

This multicentre phase 3 study enrolled patients with positive axillary nodes (pN+) or central/medial tumours with or without pN+. Other inclusion criteria were age <75 and a Karnofsky index  $\geq 70$ . All patients received postoperative irradiation of the chest wall and supraclavicular nodes and were randomly assigned to receive IMN irradiation or not. Randomisation was stratified by tumour location (medial/central or lateral), axillary lymph node status, and adjuvant therapy (chemotherapy vs no chemotherapy). The prescribed dose of irradiation to the target volumes was 50 Gy or equivalent. The first 5 intercostal spaces were included in the IMN target volume, and two-thirds of the dose (31.5 Gy) was given by electrons. The primary outcome was overall survival at 10 years. Disease-free survival and toxicity were secondary outcomes.

#### RESULTS

A total of 1334 patients were analysed after a median follow-up of 11.3 years among the survivors. No benefit of IMN irradiation on the overall survival could be demonstrated: the 10-year overall survival was 59.3% in the IMN-nonirradiated group versus 62.6% in the IMN-irradiated group ( $P=0.8$ ). According to stratification factors, we defined 6 subgroups (medial/central or lateral tumour, pN0 [only for medial/central] or pN+, and chemotherapy or not). In all these subgroups, IMN irradiation did not significantly improve overall survival.

#### CONCLUSIONS

In patients treated with 2-dimensional techniques, we failed to demonstrate a survival benefit for IMN irradiation. This study cannot rule out a moderate benefit, especially with more modern, conformal techniques applied to a higher risk population.



## PROSTATE

### *Mortality in the Finnish Randomized Screening Trial.*

Kilpeläinen TP, Tammela TL, Malila N, Hakama M, Santti H, Määttänen L, Stenman UH, Kujala P, Auvinen A.  
J Natl Cancer Inst. 2013 May 15;105(10):719-725.

#### BACKGROUND

Prostate cancer (PC) screening with prostate-specific antigen (PSA) has been shown to decrease PC mortality by the European Randomised Study of Screening for Prostate Cancer (ERSPC). We evaluated mortality results in the Finnish Prostate Cancer Screening Trial, the largest component of ERSPC. The primary endpoint was PC-specific mortality.

#### METHOD

A total of 80,144 men were identified from the population registry and randomised to either a Screening Arm (SA) or a Control Arm (CA). Men in the SA were invited to serum PSA determination up to three times with a 4-year interval between each scan and referred to biopsy if the PSA concentration was greater than or equal to 4.0ng/mL or 3.0 to 3.99ng/mL with a free/total PSA ratio less than or equal to 16%. Men in the CA received usual care. The analysis covers follow-up to 12 years from randomisation for all men. Hazard ratios (HRs) were estimated for incidence and mortality using Cox proportional hazard model. All statistical tests were two-sided.

#### RESULTS

PC incidence was 8.8 per 1000 person-years in the SA and 6.6 in the CA (HR = 1.34, 95% confidence interval [CI = 1.27 to 1.40]). The incidence of advanced PC was lower in the SA vs CA arm (1.2 vs 1.6, respectively; HR = 0.73, 95% CI = 0.64 to 0.82;  $P < .001$ ). For PC mortality, no statistically significant difference was observed between the SA and CA (HR = 0.85, 95% CI = 0.69 to 1.04) (with intention-to-screen analysis). To avoid one PC death, we needed to invite 1199 men to screening and to detect 25 PCs. We observed no difference in all-cause mortality between trial arms.

#### CONCLUSION

At 12 years, a relatively conservative screening protocol produced a small, non-statistically significant PC-specific mortality reduction in the Finnish trial, at the cost of moderate overdiagnosis.



## WELCOME TO THE BRACHYTHERAPY CORNER

We hope you enjoyed the GEC-ESTRO Meeting at the 2<sup>nd</sup> ESTRO Forum in Geneva. Most of this Corner is dedicated to highlighting some of the brachytherapy events that took place at the Forum. In the Conference Corner you will also find interviews with the recipients of the GEC-ESTRO awards: Iridium 192, Best Junior Presentation and Nucletron Brachytherapy .

Last but not least, GEC-ESTRO recently held elections for what was formerly known as the GEC-ESTRO Council. You can find the results of the elections at the end of this corner.



PETER HOSKIN



BRADLEY PIETERS



KARI TANDERUP

## NEWS AND PROGRESS IN BREAST BRACHYTHERAPY

### *A Report from the 2<sup>nd</sup> ESTRO Forum, Geneva*

In spite of the unfortunate scheduling clash of the 2<sup>nd</sup> ESTRO Forum with the Annual Meeting of the American Brachytherapy Society (ABS), a significant number of European BrachyTherapy (BT) experts participated in the sessions at GEC-ESTRO, many of whom presented their new results with breast BT to the Forum in a series of talks.

First, Joe Hammer from Salzburg, Austria, one of the early pioneers of HDR breast BT, was this year's recipient of the Iridium Award. In his acceptance speech, Joe went through the milestones of his scientific carrier, giving us an excellent talk on his tremendous clinical experience with HDR breast BT starting as early as 1984(!) and which has involved treating more than 1000 patients with interstitial BT boost and APBI as well.

In the GEC-ESTRO symposium "Brachytherapy as a boost", Philip Poortmans presented an overview of the role of breast BT in the multidisciplinary management of breast cancer. He reported that in the EORTC "boost vs. no boost" trial the 10-year local recurrence rate was 6.3% after electron boost, 5.3% after photon boost, and only 3.7% after interstitial breast BT (p=0.13). The occurrence of fibrosis was similar in the three groups. Philip concluded that breast BT has several advantages and therefore will continue to be used for:

- Boost in selected patients
- Accelerated partial breast irradiation (APBI)
- As part of second breast conserving treatment in cases of local recurrence.



In another GEC-ESTRO symposium "Imaging for brachytherapy" Dr. Jolicoeur from Canada gave an excellent overview of the role of multimodality imaging in interstitial breast BT. According to her findings the best time for CT imaging for planning purposes is between day 30 and 60 after breast conserving surgery. She reported that both CT and MRI are useful for PTV definition in breast BT, however, target volumes defined by MRI are significantly smaller. ▼



In contrast, within the poster presentations, Den Hartogh *et al* from Utrecht reported that MRI based target volumes were larger compared to CT based volumes.

In the clinical session “Partial breast irradiation (randomised trials)” there was a presentation on the one-year toxicity of the GEC-ESTRO Phase III APBI trial (as well as updated results of the TARGIT and ELIOT trials). At one-year follow-up, significant differences were observed between whole breast irradiation and APBI using multi-catheter BT regarding skin atrophy (27.7% vs. 22.3%;  $p=0.02$ ), and hyperpigmentation (27.4% vs. 21.5%;  $p=0.01$ ) favouring breast BT.

Paralleled with this in the “Highlights: Best of Brachytherapy 2013” session, Isabelle Kindts from Leuven gave an excellent presentation (and for which she was awarded the “GEC-ESTRO Best Junior Presentation”) of a comparison of three different radiotherapy boost techniques after breast conserving therapy. In this retrospective analysis, 1576 patients were treated with electrons ( $n=1195$ ), photons ( $n=89$ ), or interstitial BT ( $n=257$ ) boost. No difference in local recurrence was observed between the three different boost techniques.

In the proffered papers session, Jose-Luis Guinot from Valencia reported his team’s long-term experience with a single-fraction HDR BT boost of 7 Gy. At 167 consecutive young ( $\leq 45$  years) patients, the 5- and 10-year local recurrence rate was only 4.3%.

In summary, interstitial (or multi-catheter) breast BT is a valid option in the treatment of breast cancer. In addition to the breast BT boost, new indications – including APBI and 2<sup>nd</sup> breast conserving therapy – are emerging on the horizon. So, it’s time to teach our medical colleagues how to make a good quality breast implant!



CSABA POLGÁR

*Csaba Polgár*

*Co-ordinator, Breast Cancer Working Group,  
GEC-ESTRO*

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## OVERVIEW GYNAECOLOGY

**2<sup>nd</sup> ESTRO Forum, Geneva, April 2013**

The growing amount of clinical results, accompanied by structured elaboration of the ongoing developments in the form of the new ICRU/GEC ESTRO report was reflected in a strong presentation of the gynaecological Image Guided Adaptive Radiotherapy (IGART) at the 2<sup>nd</sup> ESTRO Forum in Geneva.

During the past decade, we have witnessed the systematic development and publication of concepts, terms and recommendations for IGART for cervix cancer. The importance of using common terminology, preferably compatible with that used for other brachytherapy sites and external beam radiotherapy (e.g. ICRU 83), was stressed in the lecture given by T. P. Hellebust on the first day of the Forum. The limitations of some of the commonly reported dose-volume parameters were elucidated and an overview of the newly proposed parameters, included in the upcoming ICRU/GEC ESTRO report, were given.

The EMBRACE study (a European and international study on MRI-guided brachytherapy in locally advanced cervical cancer, [www.embracestudy.dk](http://www.embracestudy.dk)) has surpassed its initial recruitment aim. With approximately 800 patients registered, the first interim results have attracted a lot of attention and spurred lively discussions within the gynaecological IGART community. In an award-winning report, K. Kirchheiner presented the results on vaginal morbidity analysis in the first two years after MRI-guided BT for locally advanced cervix cancer on behalf of the EMBRACE study group. While the analysis revealed rare cases of severe vaginal morbidity, the probability of mild to moderate morbidity is considerable with 92% at 2 years. Interestingly, the traditional ICRU rectal point dose was found to correlate significantly with occurrence of vaginal morbidity. During the same session, the researchers of the retro-EMBRACE study group presented the encouraging interim results on the morbidity profile of IGABT for cervix cancer. This retrospective multi-institutional analysis, which involved over 500 patients, revealed ▼



actuarial G1-2 and G3-5 morbidity of around 20% and 5%, respectively.

For the patients with recurrent cervix cancer following definitive radiotherapy, re-irradiation remains one of the only therapeutic options. As demonstrated by the results of two mono-institutional studies from India and Poland, utilisation of IGABT may hold some promise for dose escalation in order to increase the chance of an uncomplicated cure for these unfortunate patients.

In the proffered papers session, which highlighted the best of brachytherapy in 2013, K. Tandrup presented the interim results of the retro-EMBRACE study analysis on the dose-response for local control in cervix cancer IGABT. A significant dose-response relationship, based on D90 was demonstrated for the high risk clinical target volume; local control was obtained in 95% of the patients when D90 for the HR CTV exceeded 92 Gy. Notwithstanding the encouraging clinical results of gynaecological IGABT, several challenges related to this approach have been recognised. Problems concerning uncertainties of the various steps of the IGABT procedure, limited sectional imaging availability and complexity of application techniques were stressed systematically in the interesting symposium on the challenges and pitfalls of gynaecological IGABT.

Further, the effect of heterogeneity corrections, random dosimetric uncertainties, applicator reconstruction accuracy, comparison of parametrial boost to interstitial BT and dose contribution from BT to regional lymph node regions are just some of the other interesting topics that were presented during the proffered papers and poster sessions in Geneva.

The contribution of the gynaecological topics at the Forum was rounded up by the symposium on cervical cancer, defining the role of functional imaging modalities, IMRT and giving an overview of the state of the art IGABT.

Finally, the upcoming ICRU/GEC-ESTRO report on IGABT in cervix cancer was summarised by R. Pötter at the end of the Forum. The new report is based on the preceding GEC-ESTRO recommendations on the IGABT concepts and terms that have become widely accepted during the past decade. While focusing on the volumetric IGABT approach, the ICRU/GEC-ESTRO report supports the link between the 2D tradition and the 3D/4D world. Further widespread clinical validation of gynaecological IGART concepts, together with their implementation in the educational programmes will help to define their value and reliability.

In conclusion, the constant technical improvements we are seeing combined with encouraging clinical and research developments in gynaecological oncology will enable continuous improvements in patient care and forecasts exciting and promising scientific reports at the conferences in the future.



PRIMOZ PETRIC

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## HIGHLIGHTS OF PHYSICS SESSIONS

*at the 2<sup>nd</sup> ESTRO Forum, Geneva*

Two Brachytherapy (BT) physics sessions were held at the recent ESTRO Forum. In the first session, two presentations were given showing the results of Model Based Dose Calculation Algorithms (MBDCA) benchmarked to Monte Carlo simulations. The collapsed cone dose calculation algorithm was validated in a water phantom and good agreement was found in breast cases. Others showed that the optimal kernel size depends on phantom size, and in clinical cases kernel size has to be adapted to the distance to the closest tissue-air interface. The MBDCA calculates the dose to medium, and A. C. Tedgren investigated the problem of conversions between absorbed dose to medium and water. The current standard dose calculation formalism in clinical BT is still the TG-43, however its limitations are well known, which are more ▼



pronounced at low energies. This was presented for an electronic BT source.

In the second physics session the topic was the imaging in Brachytherapy. According to physicists from the Christie Hospital S. Petit, who have applied a special MR sequence for titanium applicator reconstruction, T2-weighted MR imaging, in addition to tumour delineation, can also be used for applicator reconstruction with low inter-observer variations. In a multi-institutional study, seed reconstruction on T1-weighted MRI images was found to be less accurate than on CT. A phantom study revealed that dual energy CT can be used for metal artefacts reduction, and a real-time, automatic 3D seed & needle localisation using electromagnetic navigation system was demonstrated. A group from Australia used a flat panel detector (EPID) combined with an X-ray source for independent validation of HDR BT source localisation. They found the EPID sensitive enough to reveal source position and dwell time errors. In an overview presentation, M.A. Moerland discussed the technical opportunities of MRI for treatment planning, and K.Tanderup reviewed the image quality in MRI guided BT.

On the posters that were displayed at the forum, a few QA issues were discussed including film dosimetry with gamma evaluation, a comprehensive survey for HDR QA from the UK, source calibrations with different protocols and a second system for independent check of point dose calculations. A group from Greece showed how the Monte Carlo calculation can be shortened with a voxel compression method, and the effects of tissue composition to kerma and in absorption and scattering were analysed. Finally, physicists from Valencia applied a simple equivalent path length method in LDR BT to calculate the heterogeneity correction.

My overall impression was that Brachytherapy (including the physics of Brachytherapy) had unfortunately a much lower emphasis and representation in the Forum than in the former stand alone BT meetings and that this did not serve the interests of brachytherapy.



TIBOR MAJOR

*Tibor Major*

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## ESTRO-GEC-ESTRO SYMPOSIUM FOR RTT IN BRACHYTHERAPY

*Short Summary - 2<sup>nd</sup> ESTRO Forum, Geneva*

On Tuesday 23 April 2013 a joint ESTRO-GEC-ESTRO symposium was held for Radiation Technologists in Brachytherapy. The morning started with a lecture by M. Moerland about the developments of the MR compatible afterloader. It was very inspiring to hear about how they have developed solutions to the challenges that they have encountered during this project.

After the lecture, two sessions were scheduled about image-guided BT and physics aspects of treatment planning. The topics were presented by L. Fokdal and D. Berger and overlapped with the usual physicians and physicists talks that are given in the regular ESTRO programme. The RTT programme is a new concept for ESTRO and as one of the physicists said it is hard to make a clear distinction between the work of the technician and that of a physician or a physicist.

Because of the overlap of the work done by the different disciplines within a radiotherapy department the last talk of F. Monnot from the Gustave Roussy Institute in France was very interesting. This was a session in which we were told about the role of the radiation technologist within the Institute's brachytherapy department. It was useful to hear about the workflow in another hospital. In Gustave Roussy the technicians are involved with patient treatment from the beginning. The RTT informs the patient about their brachytherapy treatment using a picture book enabling the patient to be well informed prior to treatment. Other patient related activities that RTTs perform include, for example the making of a mould, assisting the physician in the OR and making an MRI scan. RTTs also reconstruct the applicator and dose points and start the dose optimisation for the planning. When the brachytherapy treatment gets started the technician connects the patient to the afterloader. During treatment they visit the patient daily and check the connections. The technicians are also involved with the more physics based ▼





preparations for the treatment, like the Quality Control of the afterloaders.

The session closed with a symposium on the education of RTTs. L. Mullaney told us how the ESTRO core curriculum was developed as a result of increased responsibility and accountability of technicians and as a reaction to changing political and public responsibilities [1]. This was followed by two sessions about how different training programmes were developed.

In summary it was a very useful first ESTRO symposium for RTTs, from which to continue and expand.

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[1] The updated ESTRO core curricula 2011: The updated ESTRO core curricula 2011 for clinicians, medical physicists and RTTs in radiotherapy/radiation oncology. Eriksen JG, *et al.*, *Radiother Oncol*, 2012,103:103-108 (<http://www.estro.org/binaries/content/assets/estro/school/european-curricula/the-updated-estro-core-curricula-2011-for-clinicians-medical-physicists-and-rtts.pdf>).

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## FOCAL BRACHYTHERAPY FOR PROSTATE CANCER

### *Summary of the pre-meeting course - 2<sup>nd</sup> ESTRO Forum, Geneva*

The GEC-ESTRO pre-meeting course topic was focal brachytherapy for prostate cancer. Several aspects of focal therapy were discussed, such as pathology, imaging, and focal therapy modalities (including the different brachytherapy modalities). A key point was that with focal therapy only a part of the prostate is treated. This concept can be applied for treating dominant lesions or recurrent disease after previous treatment. However, no clear indication criteria are yet available and this should be explored in future clinical studies.

It is well known that prostate cancer is a multifocal disease in the majority (approximately 80%) of cases. Most multifocal non-index tumours will never be clinically significant. By contrast, the index tumour has the potential to progress and may therefore be the target for treatment. Treatment of index lesions can only be performed if these lesions are properly visualised. Techniques that can be used for visualisation are: multiparametric MRI, Magnetic Resonance Spectroscopic Imaging, elastography, and contrast-enhanced ultrasound.

One of the main goals of primary focal therapy is to reduce toxicity. Whole gland therapy, including radiotherapy, will lead to urinary toxicity, rectal toxicity, and erectile dysfunction for some of the treated patients. These patients can benefit from treatment of potential lethal index lesions at low toxicity levels. In the follow-up, imaging will still play an important role to discover (new) lesions that are progressing and that should be treated in a second instance. Careful identification of patients for this strategy is of the utmost importance so that patients that need aggressive treatment at first instance are not withheld the treatment they need.

When treating patients with local recurrent disease, whole gland salvage therapy will lead to a high toxicity rate, such as incontinence and impotence. For these patients focal therapy can be a solution and should be explored further.

A big challenge is identifying the most suitable treatment modality for focal therapy. By now there are about 10 different modalities that can be used, some of which are more and others which are less effective. D. Baltas described the physical aspect of brachytherapy in comparison to external beam radiotherapy. One characteristic of focal therapy is that it should have a preferentially local effect. In this sense brachytherapy is superior to external beam radiotherapy. The main advantage of brachytherapy compared to other non-ionising treatments is that the accuracy of dose calculation and dose delivery is very high. High-dose rate brachytherapy has ▼



a great potential to develop as one of the main standards for focal prostate therapy, as has been pointed out by M. van Vulpen and P. Hoskin.



The course concluded with a debate between H. Ahmed and G. Kóvacs (in favour of focal therapy) versus T. de Reijke and M. Cosset (against focal therapy). In general the advantages of focal therapy were summarised as being a method to control malignant prostate disease at a lower toxicity rate. However, there are a lot of uncertainties that should be investigated such as proper patient selection and use of imaging modalities.



BRADLEY PIETERS

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## CONCERNS ABOUT THE FUTURE OF BRACHYTHERAPY FOR ORO-PHARYNGEAL CANCER

Brachytherapy is a highly-conformal radiation technique that we already use to treat early-stage head and neck cancers from different sites with excellent local control rates, low toxicity profile and good cosmetic and functional outcomes. The local control rates at 5 years for early-stage carcinoma of the lip, nasal vestibule, and buccal mucosa treated with brachytherapy alone were 96%, 93%, and 87% respectively at our institution. These tumours are mostly small and shallow and are barely recognised on any of the currently available diagnostic imaging techniques. For such sites there are no better alternatives to brachytherapy as the outcomes for patients treated by external beam techniques are disappointing.

With regard to more deeply located tumours such as oropharyngeal cancers, we are now finding that brachytherapy may not be the best option as we increase our understanding of the different perspectives regarding the imaging and the treatment approach for these patients. These different viewpoints have arisen as a result of the improvements made in the diagnostic imaging by means of MRI, the possibilities of fusing the MRI-data with the planning CT-data in order to increase the delineation accuracy, the availability of more conformal non-invasive techniques such as stereotactic radiotherapy techniques, the logistical hassle around the implantation (as it's time-consuming and labour-intensive) and the need for dexterity.

In our institution, stereotactic body radiation boost by means of the Cyberknife was introduced in 2005 as an alternative option for oropharyngeal cancer patients who were considered to be not suitable for brachytherapy. Between 2000 and 2010, 250 patients with early-stage oropharyngeal cancer were treated at our institution with 46 Gy of IMRT, followed by a boost by means of brachytherapy or Cyberknife. The 3-year actuarial local control rates were 91% and ▼



95% for brachytherapy and Cyberknife boost respectively (p=0.34). The incidence of grade ≥2 late xerostomia were 13% and 16% respectively (p=0.26). The figures for grade ≥2 late dysphagia were 10% and 13% respectively (p=0.44). The prospectively collected QoL data for these two boost techniques were also fairly comparable. Furthermore, the adoption of functional imaging for patients in need of dose escalation is easier to implement in case of stereotactic radiation than in brachytherapy.

Despite these concerns about brachytherapy, it is important that its utility as a treatment method for oropharyngeal cancer is maintained and strengthened. We need to ensure that this elegant technique does not die out, especially in radiation oncology departments where no facilities are available for stereotactic radiotherapy techniques. The brachytherapy community therefore needs to invest more in integrating new imaging techniques to improve the delineation and the brachytherapy planning of these tumours, work hard to recruit and train new radiation oncologist for this highly-conformal radiation technique by organising workshops, practical teaching courses and bedside teaching in the operation rooms, and subsequently continue the training of brachytherapists to consolidate their skills.



A. AL-MAMGANI

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## RESULTS OF THE 2013 GEC-ESTRO ELECTIONS

Twenty members are part of the GEC-ESTRO Advisory Group (formerly known as the Council) with the main task to advise the GEC-ESTRO Committee. Elected members for 2013 are:

**Second term**

- Dimos Baltas (DE)
- Beth Ericksson (US)
- Kari Tanderup (DK)

**First term**

- Umesh Mahantshetty (IN)
- Tibor Major (HU)
- Ina Jürgenliemk-Shulz (NL)
- Janusz Skowronek (PL)
- Frank Verhaegen (NL)

The elected members are congratulated for their appointment and we wish them good luck.



**“We would be interested in your opinion on how you see personalised medicine realised”**



CONCHITA VENS



NILS CORDES



MARTIN PRUSCHY

As usual we encourage you to contact us with comments (good or bad) at our “electronic” mail address: [radiobiology\\_corner@estro.org](mailto:radiobiology_corner@estro.org)

The first half of the year was busy with patient care, meetings, grants and paper writing. Thus, many of you might have not had the chance to attend this year’s 2<sup>nd</sup> ESTRO Forum. Therefore, we decided to give you a quick update on what happened. In addition to these short notes from us, summaries from some well-reputed colleagues nicely portray the content of specific parts of the Forum.

## AT THE BAR *scientific chat among radiobiologists*

There are different opinions on the new ESTRO conference style which we now call a “Forum”. The Forum serves as a platform for various ESTRO meetings which were formerly separate, eg. the Clinical & Translational meeting, the GEC-ESTRO-ISIORT meeting, the Physics Biennial meeting, the RTT meeting, and the PREVENT (Prediction, Recognition, Evaluation and Eradication of Normal Tissue effects of radiotherapy) meeting.

Our President, Prof. Vincenzo Valentini, announced the 2<sup>nd</sup> ESTRO Forum with the following statements: “ The ESTRO Forum will foster interdisciplinarity and exchanges between the professionals of radiotherapy. It will offer the usual broad portfolio of scientific and educational opportunities in line with the ESTRO Vision, which aims to develop optimal patient care and equitable patient access to state-of-the-art radiation therapy. [...] It will also be a further opportunity for the young professionals to meet, learn, and deepen their engagement within the Society. [...] The scientific experts of the five meetings have compiled an outstanding scientific programme dedicated to clinicians, medical physicists, biologists, radiation technologists and nurses, in collaboration with non-European societies”.

Importantly, we all agree on a mode-enabling integrative communication between physicians, biologists and physicists. A major challenge for the coming years is particularly pinpointing (i) the communication hurdles between these disciplines, (ii) the gap of translation research, and (iii) confronting the question of which path to go down to further develop radiotherapy in the most relevant, reasonable and cost-effective manner.

During the evaluation of this “Forum” conference style, we identified a need for a greater implementation of radiobiology-related aspects. Clearly, when one reviews the compilation of the five meetings, a more radiobiology-based part is missing. Thus, we will intensify our efforts for an integration of more radiobiology into future ESTRO Forum conferences. This will support and stimulate the gathering of radiobiologists and promote the discussion of clinically-relevant radio- and tumour-biological issues on the European level.

Let’s first look at the PREVENT meeting. Previously a separate meeting, it is now integrated into the ESTRO Forum. Drs. Jan Alsner and Marie Catherine Vozenin chaired this meeting and wrote the following lines for the Radiobiology Corner: “The PREVENT meeting at the 2<sup>nd</sup> ESTRO Forum in Geneva was very successful. The quality of the sessions was very high with excellent speakers and lively discussions with the attendees. The number of participants exceeded what had been anticipated and so an additional room with live videocasting had to be arranged.

The overarching topic of the first day was ‘Normal tissue tolerance: the Bridge between individual and population’. The day started with an excellent teaching session on patient reported outcomes versus clinical assessment of radiotherapy adverse effects by John Yarnold. The first symposium ‘Normal tissue tolerance: The lessons of population-based approaches’ addressed a relatively novel topic for PREVENT, and brought in experts working with large population-based studies on late effects of radiotherapy. The session focused on the various study designs and how to bridge the gap between population-based epidemiological studies and the risks for the individual patient. The second symposium ‘Normal tissue tolerance: individualised treatment’ was looking from the individual patient point-of-view, and focused on the clinical implications of dose volume parameters, functional imaging, comorbidities, and radiogenomics. These first two symposia were very inspiring sessions that clearly highlighted the need ▼

for a multidisciplinary approach to assessment of the risks of long-term radiation injuries. The first day also included two excellent proffered papers sessions: 'Modelling and prediction of normal tissue response' and 'Optimisation of treatment'.

The topic of the second day was 'Normal tissue: New treatment strategies' and started with another excellent teaching session on the effects of high doses per fraction by Wolfgang Dörr. The first symposium 'Fibrosis' included both preclinical and clinical developments in radiation induced fibrosis. It also presented a novel and inspirational topic for PREVENT, namely the lessons from successful clinical trials in idiopathic pulmonary fibrosis. The second symposium 'Regenerative therapy' brought up the latest updates on stem cells, how and when to use them, the effects of paracrine factors, and a special look at hematopoietic stem cells. There was also an excellent proffered papers section on 'Cardiac toxicity'. The meeting ended on an optimistic note with a symposium on 'Early biomarkers for late effects in daily practice', with examples of how DNA damage repair assays and cellular assays (particularly apoptosis) are being tested in the clinic. Although it will take a while before genetic biomarkers are implemented in daily practice, the field is rapidly moving forward and the latest uses of genome-wide approaches were also presented.

All in all, the PREVENT meeting 2013 was very successful, and we look forward to the next meeting at the 3<sup>rd</sup> ESTRO Forum 2015."

Another highly interesting symposium at the ESTRO Forum covered "The molecular biology of particle and tissue interactions". As particle radiation therapies are still experimental, it remains critical that we continue to foster research in these areas. Dr. Peter O'Neill (Oxford) and Dr. Peter Peschke (Heidelberg) provide some minutes of their excellent talks:

Peter O'Neill: "The talk I gave focussed on differences in the dose profile of energetic photons used in conventional radiotherapy with that for particle therapy. With the latter the dose increases with increasing tissue thickness up to the Bragg peak which occurs near the end of the particle's range followed by a dose drop to zero (for protons) or almost zero (for heavier ions). As a consequence, particle therapy results in enhanced targeting of the dose delivery to the target tumour and for heavier ions a dramatic increase in the ionisation density towards the end of the particle's range. The spatial and temporal aspects of DNA damage distribution result in elevated yields of clustering of lesions per unit track, known as clustered damage and 'dirty' Double Strand Breaks (DSB), on ionisation density. The talk concentrated on the molecular aspects of the variation of the complexity of DNA damage on radiation quality and the known ▼



challenges that DNA damage complexity causes repair pathways. For instance, with heavier ion-particles, the ionisation density towards the end of the particle's range increases resulting in damage which is more difficult to repair leading to enhanced cellular inactivation but a reduced oxygen effect with increasing ionisation density. These are areas requiring more molecular research, especially when considering the overall ionisation density for a spread out Bragg peak. Additionally, the radiobiological effectiveness for any increased cell killing of tumour cells has to be balanced against the increase in normal tissue damage and secondary tumours."

Then, Peter Peschke talked about "Translational aspects of particle radiobiology". He has summarised his lecture as followed:

"The finite range and the inverted depth dose profile of charged particles in combination with a higher Linear Energy Transfer (LET) in the Bragg-peak region as compared to the beam entrance region (plateau) meets the demand for highly conformal treatments of deep-seated tumours. Especially for carbon ions, the higher LET is associated with an increase of the Relative Biological Effectiveness (RBE) towards the distal edge of the depth dose curve. Clinical trials have been performed in Japan and Germany, demonstrating safety and effectiveness for a variety of tumours, however, a definitive confirmation that the use of carbon ions is superior to protons is still missing. Hence this therapy is presently still considered as a promising but not completely validated experimental clinical strategy. From the radiobiological point of view, a central demand is the fact that treatment planning for carbon ions is performed in terms of RBE-weighted rather than absorbed dose. As the depth modulation for active techniques is varying throughout the complete radiation field, RBEs have to be calculated locally at each beam spot. The RBE is a complex quantity, which depends on physical parameters such as dose, LET and particle type as well as on biological properties like the tissue type and the biological endpoint. To consider the RBE in treatment planning, bio-mathematical models are required. The predictions of the RBE by these models, however, are associated with significant uncertainties, and moreover are difficult to verify in patients. The lecture summarised the present status of clinical particle radiobiology addressing the RBE and its dependencies on physical and biological factors. Examples were given of how RBEs for normal tissues and tumours are determined. For normal tissues, a not fully understood relationship between fractionation, volume, spatial dose distribution and the clinical outcome of radiation therapy exists. For tumours the question of whether high-LET irradiation can overcome radiation resistance against conventional radiation strategies and which patients will benefit is most challenging. Finally, some characteristics regarding underlying mechanisms of high-LET irradiation possessing clinical relevance were addressed."

All in all these two parts of the 2<sup>nd</sup> ESTRO Forum 2013 in Geneva were hugely successful. We look forward to future ESTRO meetings – e.g. ESTRO 33 in 2014 (for which planning is already in full swing). So, my glass is empty ... cheers and goodbye.

“Learn more about the PMMA”



LUDVIG MUREN



FRANK VAN DEN HEUVEL

THE 1<sup>ST</sup> PHYSICS MEMBERS’ ASSEMBLY held during the 2<sup>nd</sup> ESTRO Forum



Welcome to another issue of the Physics Corner!

With summer arriving across Europe, we have the pleasure of providing you with some refreshing summer reading that we in the Physics Corner team hope you will find of interest. We report to you on the first ever Physics Members’ Assembly that was held during the Biennial Physics Conference, part of the 2nd ESTRO Forum. With this event, the Physics Committee would like to open up the Society more to the physics members, creating a forum for interactions concerning activities in ESTRO of particular relevance for physicists.

Finally, we provide you with summaries written by the authors of another selection of recent very high quality radiotherapy physics publications in the leading journals in our field.

As always, we greatly appreciate any input and ideas you give us related to this Corner.

Wishing you an exciting summer,  
*Ludvig (ludvmure@rm.dk) and Frank (frank.vandenheuvel@uz.kuleuven.ac.be)*

WOULD YOU LIKE TO JOIN LUDVIG AND FRANK IN COORDINATING ARTICLES FOR THIS CORNER?

Well, they are looking for an active and enthusiastic physicist to join them. Grab this opportunity and express your interest to them before someone else beats you to it!!



The first ever Physics MeMbers Assembly (PMMA) was held as a lunch break meeting during the recent Biennial Physics Conference organised within the framework of the 2<sup>nd</sup> ESTRO Forum, in Geneva in April. The idea behind the PMMA was to provide an arena that facilitates interactions between the Physics Committee (PC) – who are responsible for all aspects relating to physics within ESTRO – and the physics members of the society. It is the ambition of the PC to represent the wider physics membership of ESTRO – across all national variations and differences in professional and scientific interests – and it is therefore the hope that the PMMA becomes an important means of securing such important interactions. ▼

The 1st PMMA started with a presentation of the PC and its members, lead by the PC chair, Tommy Knöös. The PC has recently refined its remit, giving the PC a better base for its activities. Following the new ESTRO Internal Rules of Procedure, the PC is currently facing a renewal process, with several of the current PC members being replaced in the coming years. In the next presentations, the current status of key activities of the PC was covered. Nuria Jornet (who is also a core member of the Education and Training Committee) reported on the status of the ESTRO teaching courses with a focus on the physics components. Next, she gave an introduction to ACROP (Advisory Committee on Radiation Oncology Practice), the new committee within ESTRO that will oversee development of guidelines, including those relating to physics. Ludvig Muren (also on behalf of Claudio Fiorino) then presented the procedures followed when creating the physics scientific programme of ESTRO meetings, including both the part based on invitations (teaching lectures, symposia, debates) and the part based on abstract submissions. In the following presentation, David Thwaites (Physics editor of the Journal) reported on the current state of the Green Journal. The journal is experiencing considerable growth, both in impact and in the number of submissions. In 2012 the journal received around 1300 manuscript submissions, with about one third of these being handled by the physics editor team (Thwaites and Muren). In the last part of the PMMA, Brendan McClean (secretary of the PC) outlined the important on-going developments in the Memorandum of Understanding between ESTRO and both EFOMP (signed during the Forum) and AAPM.

Throughout the assembly, there was a good dialogue between the audience and the PC members, clearly indicating that the opportunity to get a closer look at, and comment on, the work of the PC was greatly appreciated.

Presentation material from the 1st PMMA is available on the Physics Committee segment of the ESTRO web site: [www.estro.org/about/governance-organisation/committees-activities/physics-committee-activities](http://www.estro.org/about/governance-organisation/committees-activities/physics-committee-activities)

If you have any questions or comments related to the PMMA and/or the work of the PC, please do not hesitate to contact any of its members, its chair (Tommy Knöös - [tommy.knoos@med.lu.se](mailto:tommy.knoos@med.lu.se)) or through the ESTRO contact person (Evelyn Chimfwembe - [echimfwembe@estro.org](mailto:echimfwembe@estro.org))

On behalf of the Physics Committee,

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## EDITORS' PICKS

### Highlight Radiotherapy Physics Papers



G.A. CABAL

## DYNAMIC TARGET DEFINITION: A NOVEL APPROACH FOR PTV DEFINITION IN ION BEAM THERAPY

Radiother. Oncol. 2013 Apr 16. pii: S0167-8140(13)00127-8. doi: 10.1016/j.radonc.2013.03.010.

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### WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?

One of the challenges in ion beam therapy is how to make treatment plans robust towards range uncertainties, set up errors and organ motion. The problem of plan robustness is not new in radiation therapy and traditionally it has been addressed mainly by the use of margin expansions deriving from concepts like the Planning Target Volume (PTV). The main motivation of the study was to revisit the concept of PTV as used in photon therapy and to understand when and how it can be used in ion beam therapy.

### WHAT WERE THE MAIN CHALLENGES DURING THE WORK?

Probably the most challenging task was the development of an in-house treatment planning ▼



system in which the study was carried out. We needed not only to have a dose calculation and optimisation engine but also to be able to simulate the impact of different sources of uncertainties on the dose distributions.

#### WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?

We understand now, when and how the PTV concept works in ion beam therapy. We developed a framework for PTV definition (Dynamic Target Definition) that produces non-isotropic, beam-specific expansions. The obtained volumes not only improve the probability of dose coverage in the CTV but if the beam angles and the spot modulation are chosen wisely they are smaller than the PTV obtained by applying a constant margin.

#### WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?

The PTV definition has a major impact on both local control and treatment toxicity. We developed a method that optimises the size and the shape of the PTV. It is expected that this methodology translates into an enhanced local tumour control and in some cases it might help reduce the toxicity associated with having an unnecessarily large PTV.



MARIA THOR

## PREDICTION OF RECTUM AND BLADDER MORBIDITY FOLLOWING RADIOTHERAPY OF PROSTATE CANCER BASED ON MOTION-INCLUSIVE DOSE DISTRIBUTIONS

Radiother Oncol 107: 147-152, 2013

Thor M, Bentzen L, Hysing LB, Ekanger C, Helle SI, Karlsdóttir Å and Muren LP.

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#### WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?

Current assessments of dose-volume response relationships following radiotherapy (RT) are typically based on a snapshot of both the anatomy and the delivered dose distribution. However this snapshot-based assumption is probably not valid for organs displaying considerable internal motion throughout the RT course, such as the rectum and bladder. In our study of a series of prostate cancer patients we calculated both planned and actually delivered (i.e. motion-inclusive) dose distributions for these two organs, and associated these with corresponding (rectal and urinary) morbidity data.

#### WHAT WERE THE MAIN CHALLENGES DURING THE WORK?

We had a large repeat CT material available, so our first ambition was to apply dose accumulation following *deformable* image registration (DIR). However in two of our previous studies we found that accumulated doses using contour-based biomechanical DIR agreed to a large extent to simpler dose summation following contour-based rigid registration on intra-prostatic fiducials. We therefore decided to use the latter. Another challenge was the considerable workload required for manual delineation, registration, re-calculation and DVH extraction for the patients in the material (38 patients, with 336 CT scans (7-10/patient) in total).

#### WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?

We found that acute rectal morbidity was significantly associated with the motion-inclusive volume receiving doses close to the prescription dose (2 Gy-equivalent dose of 76 Gy) and smaller treatment course averaged rectal volumes (population median: 75 vs. 94 cm<sup>3</sup>). Both of these findings are plausible – smaller rectal volumes are likely to be related to a more stable portion of this organ being located in the high-dose volume and a high-dose relation with morbidity is in agreement with the QUANTEC data collection – increasing the credibility of the findings despite the modest patient number.

#### WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?

The findings of this study indicate that accounting for organ motion and deriving actually delivered dose/volume parameters will likely improve our ability to predict morbidity following RT. However, since the study was performed using acute morbidity data from a rather limited patient population these findings need validation in larger data sets with longer follow-up.



R. BOKRANTZ

## DISTRIBUTED APPROXIMATION OF PARETO SURFACES IN MULTI-CRITERIA RADIATION THERAPY TREATMENT PLANNING

Phys Med Biol. 2013 Jun 7;58(11):3501-16. doi: 10.1088/0031-9155/58/11/3501. Epub 2013 May 1. Bokrantz R. Phys Med Biol 58: 3501-3516, 2013.

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### WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?

Pareto surface navigation is a technique for radiation therapy treatment planning where physicians and treatment planners can interactively adjust the importance of different planning objectives; and then obtain real-time feedback about how the chosen priorities affect the planned dose distribution. The navigation relies on interpolation over a database of pre-calculated treatment plans. The goal of the study was to re-design the current best known method for calculation of a representative set of database plans into a technique that allows parallelisation over multiple computers, and thereby avoid lengthy computational times.

### WHAT WERE THE MAIN CHALLENGES DURING THE WORK?

Distributed computation often relies on partitioning of a difficult problem into smaller sub-problems that can be solved independently. This strategy is not trivial to apply to calculation of a set of plans that approximate to the surface of Pareto optimal plans because the solution to one sub-problem affects the solutions to the other. One therefore has to rethink how parallelisation can be performed.

### WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?

It is possible to generate high-quality Pareto surface representations in a distributed manner if a model of the Pareto surface is used to predict how best to sample treatment plans in parallel fashion.

### WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?

A distributed technique enables representations of Pareto surfaces to be calculated about an order of magnitude more efficiently than if the database plans are generated one at a time. The degree of parallelisation that is possible without compromising the accuracy of the representation depends on the number of planning objectives. Database generation for a difficult patient case with ten conflicting objectives can take four hours with a sequential technique and can, for example, be performed in about 15 minutes with the distributed approach.



GIG S MAGERAS

## INVESTIGATION OF GATED CONE-BEAM CT TO REDUCE RESPIRATORY MOTION BLURRING

Medical Physics 2013; 40:041717

Kincaid KE, Yorke ED, Goodman KA, Rimner A, Wu AJ, and Mageras GS

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### WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?

Respiratory motion adversely affects organ visibility in treatment room cone-beam CT (CBCT) systems, particularly in abdomen where soft tissue contrast is low. We previously experimented with so-called gated CBCT, in which gantry rotation and image acquisition are restricted to a respiratory gate. It showed promise but resulted in mechanical strain on earlier linacs. The programmable control capabilities of the Varian TrueBeam linac in a research mode (called Developer Mode) led us to revisit gated CBCT. ▼

#### WHAT WERE THE MAIN CHALLENGES DURING THE WORK?

First, we had to find a way to programme the linac in order to achieve the desired behaviour for acquiring gated CBCT scans. Some post-acquisition re-ordering and averaging of projection images was needed to improve reconstruction quality. Another challenge was to put in place the appropriate safeguards and institutional review board approvals to carry out the patient imaging study in a non-clinical mode of linac operation.

#### WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?

Gated CBCT at end expiration reduces motion-induced image blurring and streaking artifacts in lung and abdomen. The improvement is particularly noticeable in abdomen: in standard CBCT soft tissue boundaries are difficult to discern, whereas in gated CBCT target structures such as the gastro-oesophageal junction and pancreas are visible and therefore localisable. These results are borne out in most of the patient cases studied in which organ motion is 5 mm or more.

#### WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?

A potentially important application is BCT-guided radiation treatment. When used in combination with a respiration-correlated CT scan at end expiration as a reference, the improved soft tissue visualisation facilitates patient position correction, assessment of target coverage and organ-at-risk sparing, particularly in abdomen. A limitation is the longer scan time of roughly five minutes, compared to one minute with standard CBCT. Gated CBCT is also potentially applicable to gated treatment, where a consistent motion state is desirable for imaging and treatment.



KE SHENG

## 4π NON-COPLANAR SBRT FOR CENTRALLY LOCATED OR LARGER LUNG TUMORS

Int J Radiat Oncol Biol Phys 2013;85:1360-6.

Dong P, Lee P, Ruan D, Long T, Romeijn E, Low DA, Kupelian P, Abraham J, Yang Y, Sheng K.

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#### WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?

Highly hypofractionated stereotactic body radiotherapy (SBRT), typically delivering 50-60 Gy in 3 fractions, has achieved remarkable success in treating early stage non-small-cell lung cancer; excellent local control rates and low toxicity have been observed in many clinical trials. However, patients with large or centrally located tumours cannot be treated using state of the art methods to such high doses because of the dose tolerances of nearby structures. A method to markedly improve the dose gradient on existing hardware platforms is urgently needed to overcome the problem.

#### WHAT WERE THE MAIN CHALLENGES DURING THE WORK?

We have shown that by using a large number of non-coplanar beams, the desired dose gradient can be achieved. However, creation and delivery of such plans are challenging. The integrated beam orientation and fluence optimisation is an enormously complicated problem. Although the current generation hardware allows automated couch and gantry motion, the choreography of couch and gantry required for such plans needs to be planned and optimised.

#### WHAT ARE THE MOST IMPORTANT FINDINGS OF YOUR STUDY?

Although non-coplanar plans have previously been created, the solution space has not been thoroughly searched. Our new optimisation and modeling approaches overcome these deficiencies and allow the creation of significantly more conformal plans for patients with centrally located and larger lung tumours. The reduction of 50% isodose volume, by an average of 54%, affords the opportunity for clinically meaningful dose escalation to these challenging tumours.

#### WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?

The research has an immediate impact on lung SBRT but its implication is beyond this specific disease site. We have reported improved radiation dosimetry of using 4π radiotherapy for ▼



liver SBRT. Clinical evidence to support its use for sites including pancreas and head and neck will likely emerge in the very near future.

The vast dosimetric gain motivates not only rethinking of the non-coplanar beams as underutilised tools for radiotherapy, but also innovative engineering approaches to safely and efficiently deliver such beams.

“This RTT corner is mainly devoted to the Geneva conference.”



MARTIJN KAMPHUIS

A warm welcome to all of you to the RTT Corner. The second ESTRO Forum is already some weeks behind us. For many of us this was a great opportunity to catch up with and consider the latest insights in radiotherapy. Besides that, it was also a perfect chance to meet interesting colleagues and share ideas. One of my personal highlights was the presentation of the Honorary Physicist award to Mary Coffey. This is a truly deserved distinction for all the excellent work she has done for the ESTRO community, as well as for the radiotherapy world in general. Congratulations to her!

This RTT corner is mainly devoted to the Geneva conference. The first article is a summary of the event written by the scientific chair for the RTT-track, Danilo Pasini, together with scientific co-chair Michelle Leech.

The second article, also written by Michelle Leech and Danilo Pasini, is a summary of the top 10 best abstracts that were submitted to the RTT-track. Both articles are well worth reading even if you attended the event, as they provide some additional insights.

The third article is contributed by the Swiss National Society (SVMTRA). In their article they describe the characteristics, mission and vision of their society.

The last article in the RTT Corner is on the Basic Planning Course. Course director Michelle Leech is interviewed on the content and recent changes. Some excellent changes have been made - especially, in my opinion, the introduction of workshops on contouring of Organs at Risk and this course may well be a great opportunity to expand your skills. So don't hesitate, there is still space to register.

I hope you will all enjoy reading the RTT Corner. If you would like to contribute, feel free to send me an email ([m.kamphuis@amc.nl](mailto:m.kamphuis@amc.nl)). This Corner is a great place to share your vision and knowledge.

*Martijn Kamphuis*

## SUMMARY

### 2<sup>nd</sup> ESTRO Forum, Geneva

The 2<sup>nd</sup> ESTRO Forum in Geneva was a resounding success combining a stimulating scientific programme of symposia, award and teaching lectures and poster discussions with a large exhibition of stands of interest to those in the field of radiation oncology.

The RTT track received a positive response from participants and all the sessions were attended by a significant number of colleagues from the outset.

One of the most relevant topics in the field of radiotherapy is the localisation of the CTV, the sub-volumes and the organs at risk. For the past few years, at the ESTRO congress, target delineation workshops have taken place. Following the success of the RTT pre-meeting on the normal structure delineation last year in Barcelona, it was decided to organise a delineation workshop on organs at risk and the inaugural workshop took place at the Forum in Geneva.

The workshops are organised by the Falcon Team under the auspices of the ESTRO School. Falcon is the web-software that belongs to the Educase platform, on which the cases used for the delineation sessions are uploaded.

This year the Geneva workshops were duplicated (each was repeated twice during the Forum) with the aim to have a small number of participants for each one and in this way, participants could be more involved and engaged. A particular strength of these new workshops is the opportunity they provide to discuss any uncertainties regarding the delineations with teachers and panellists.

All the workshops have had a good response, especially in terms of the excellent educational content. However, the number of participants was not as high as anticipated, possibly due to the duplication of each one.

The RTT Pre-Meeting: “Applied radiobiology in daily clinical routine” was a one-day course ▼



with the aim of providing an introduction to radiation biology as applied to radiotherapy. It covered the basic radiobiological mechanisms and the radiation response of tumours and normal tissues, applying the formulae of tissue tolerance. Moreover the RTT pre-meeting covered some very interesting topics related to our daily practice, such as novel fractionation schemes, retreatment, modification of hypoxia and combined radiotherapy/chemotherapy. All of these topics have been greatly appreciated by the pre-meeting participants.

All the RTT sessions focused on the RTTs' daily work routine including: (1) new challenges in positioning; (2) immobilisation and verification for treatment accuracy; (3) research on geometric uncertainties; (4) emerging possibilities offered by the autocontouring software; and (5) new imaging modalities. All were extremely well attended by participants from many disciplines. It has been very interesting also to repeat two "experiments" that had great success in the last Forum at ESTRO31: the Interdisciplinary Track and the RTT Debate. The first feature reinforced the idea and the reality of multi-professional radiotherapy teams. Of course RTT speakers and Chairs have been involved in this "special" track giving their professional contribution.

The topic of the debate was of particular current interest: "This house believes that normal structures delineation should be delegated to RTTs" and led to an interesting and, at times, heated discussion between the professional elements of our "family".

An exciting time during the conference was the presentation of the "Honorary Physicist" award to our RTT colleague, Mary Coffey. This was an important recognition for a professional that has made a significant contribution to the recent history of our category.

The 2<sup>nd</sup> EIOF Forum has overall been an opportunity to meet and make friends with colleagues from other European countries. We have strengthened our working relationships through enhancing our shared knowledge and professional development and built camaraderie through the shared fun moments during the social events. For example, those who attended the social event will have had the opportunity to dance with the ESTRO President! This may have limited use from a professional point of view but it was certainly an "unforgettable" experience!

Everything at the Forum was carried out with Swiss precision and punctuality. Only the weather in Geneva was unpleasant and this is the only point on which the organisation team can be criticised!! On the other hand it was one more reason for the delegates not to have missed any activities and events.

Finally I want to thank all of the RTT Committee members and especially Michelle Leech, the RTT Track co-chair, for helping define the scientific programme and resolve all of the logistical difficulties that arise when organising such an event.

## 10 HIGHEST SCORING ABSTRACTS

### 2<sup>nd</sup> ESTRO Forum, Geneva



MICHELLE LEECH



DANILO PASINI

*The poet W.B. Yeats once wrote that 'education is not the filling of a pail, but the lighting of a fire'. A fire certainly blazed brightly on the Swiss city of Geneva as preparations for the 2<sup>nd</sup> ESTRO Forum came to fruition in April.*

The top 10 highest scoring abstracts for the proffered papers sessions in the Radiation Therapist (RTT) track showcased the best of education and research within the RTT community, with many synergies present in the oral presentations.

Rianne de Jong and colleagues from the Netherlands Cancer Institute, Amsterdam, outlined their strategy for selecting the best-fitting plan of the day for cervix patients, based on CBCT imaging. Even with less than perfect image quality, high consistency was noted between observers and the positive impact of a joint RTT/Radiation Oncologist workshop was also reported. De Ruiter and colleagues, at the same institute, continued on this theme and outlined their strategy for the production of a library of plans for cervix patients. This abstract can be studied in more detail in the Conference Corner of this newsletter.

Head and neck cancer was the focus of four of the top 10 highest-scoring abstracts. McGarry and colleagues from Hamad Medical Corporation in Doha, Qatar, reported on an RTT-led quality assurance programme of their CT-MRI SIM localisation protocol for head and neck radiation therapy patients. Not only has this work led to the quality assurance programme, but imaging and image registration metrics have also been well defined, as a result.

Returning to the Netherlands Cancer Institute in Amsterdam, Kager and colleagues reported on the influence of pre and post-hydration during chemoradiation therapy on geometric changes of the parotid glands. In the era of adaptive radiation therapy, this group concludes that due to these geometric changes, rescanning for replanning during pre and post-hydration periods is ill advised. Also focussing on head and neck radiation therapy were Duffton and colleagues from the Beatson West of Scotland Cancer Centre in Glasgow and the University of Malaya, Kuala Lumpur, Malaysia. This study demonstrated that delineation and evaluation of dose to the swallowing organs at risk at the initial planning stage was a reasonable estimate of expected dose throughout treatment. Some variance in dosimetry may occur, however, in the cricopharyngeal, superior and inferior pharyngeal constrictor muscles as well as the oesophageal inlet over the course of radiation therapy.

On a similar topic, Christiansen and colleagues from Odense University Hospital in Denmark discussed whether a commercially-available algorithm, "Metal Artifact Reduction for Orthopaedic Implants" (O-MAR) can increase precision in delineation in head and neck cancer, while Speleers and colleagues from EORTC Radiation Oncology Group in Brussels as well as the Netherlands Cancer Institute in Amsterdam, reported on the development of guidelines in OAR delineation for RTTs - this time in the pelvis. As delineation is a topic of interest to many RTTs, we have included these two studies in the Conference Corner for you to read in detail.

Respiratory motion was the focus of a further four of the top 10 highest scoring abstracts, with Mak and colleagues from the Radiotherapy Department of Hong Kong Sanatorium and Hospital presenting on their comparison of planned dose distribution for gated IMRT of lung cancer, using two gating windows (40-60% and 30-70%). It was found that the PTV homogeneity indices and the toxicity parameters of the organs at risk were comparable for both gating windows. Given that the treatment time for the 30-70% gating window was reported as being the shorter of the two, the group concluded that this may be the more favourable option. Bruin and colleagues from both the Nuclear Medicine and Radiation Oncology Departments of the National Cancer Institute, Amsterdam discussed how a multidisciplinary approach between RTTs and nuclear medicine technologists can derive safe and efficient workflows, as well as improved PET image quality in 4D PET/CT for radiation therapy treatment planning of lung tumours. This novel 4D PET-CT protocol takes 15-30 fewer minutes than the standard.

Leong and colleagues from the Radiation Oncology Department at University Hospital Zurich discussed their solution to respiratory motion in distinct regions of the liver. Six patients, receiving SBRT for abdominal lesions underwent two 4D CTs, one with abdominal compression (AC) and one without. Use of AC reduced the range of overall liver motion, particularly in the craniocaudal plane with motion in the cranial region of the liver most likely to be significantly reduced using AC. Moving to breast radiotherapy, Betgen and colleagues from the Netherlands Cancer Institute, Amsterdam, presented on their study, which assessed respiratory-induced motion of target area and organs at risk in breast radiation therapy and specifically its impact in partial breast irradiation (PBI). Ten patients underwent both a 3D CRT and a 4D respiratory correlated CT scan to investigate intrafraction motion due to respiration. Large respiratory-induced motion was found for the heart and, in cases where treatment beams are in close ▼

proximity to the heart, an organ at risk margin is required. The motion was found to be very small for seven other regions of interest (ribs and part of sternum, breast surface, tumour bed and four quadrants of the breast). The authors concluded that for PBI, the additional margin required to account for respiratory-induced motion of the target area would be negligible.

The educational content of the Forum also extended to the contouring workshops. The workshops were organised by the Falcon Team, under the responsibility of the ESTRO School. The Falcon Team is a group of experts that has the task of organising the online and live workshops; setting up their practical structure; preparing adapted cases for the delineation; and preparing and presenting evidence-based lectures. This group can also rely on the technological help and expertise of Scott Kaylor, the developer of the FALCON/EduCase software and Miika Palmu from the ESTRO office. The workshops were well attended by all professions, including RTTs, this year.

So, the 2<sup>nd</sup> ESTRO Forum has drawn to a close and we all have enjoyable memories of Geneva ranging from the impressive CERN to the equally impressive alpine horns at the opening ceremony. And so on to the beautiful city of Vienna for ESTRO 33.

*Michelle Leech & Danilo Pasini*  
*RTT Track, Co-Chairs, Geneva Forum*

## SVMTRA

### Schweizerischen Vereinigung der Fachleute für medizinisch technische Radiologie

“Association of Radiographers  
 for Medical Radiology,  
 Switzerland”



YVES JAERMANN



The SVMTRA, founded in 1946 is a politically and religiously independent organisation, which brings together radiographers working in three different fields: radiotherapy, nuclear medicine and radiology. In Switzerland about 16% of these professionals are working in radiotherapy (n=500), 24% in nuclear medicine (n=750) and 63% in radiology (about 2000). Of the 3,200 radiographers in Switzerland, 50% are member of the SVMTRA.

For each area, there is a specialist office in SVMTRA that deals with job-related issues and organises training. For radiation therapists (RTTs) a one-day training programme is organised twice a year. (see also: <http://www.svmtra.ch/verband/fachstelle-radio-onkologie/kontakt.html>)

#### THE MISSION OF SVMTRA

##### 1. We are:

- the independent professional association of radiographers for medical radiology in Switzerland. We are experts in the field of radiation protection. ▼



**Our members:**

- maintain a professional contact with the patient. They are empowered by their thorough training to develop careers in radiology and radiotherapy treatment but also in research and development, industry, education and training as well as veterinary. Our members are well aware of their professional role within the interdisciplinary team.

**2. We want:**

- to represent our members in public authorities and among other health professions. We act as the leading platform for debate in the areas of practice, education and occupation policy.
- to maintain a mode of communication with our members. We are committed to promoting an open dialogue in order to create a climate of confidence in our association.

**3. Our goals are:**

- to ensure a high-quality education that is enshrined in law and has official recognition.
- to ensure quality-oriented practice of the profession, which is based on modern quality standards.
- to offer up-to-date training for all three fields of activity we represent.
- to strengthen the perception of our profession in the healthcare environment as well as in society in general.

**4. Our partners are:**

- educational partners and universities enabling us to connect with high-quality education for our professions.
- the industry to keep in touch with the rapid technological development within our professions.
- Associations and leading organisations that share our goals and values.
- Radiologists and the Swiss Society of Radiology.
- Nuclear medical doctors and the Swiss Society of Nuclear Medicine
- Neuroradiologists and the Swiss Society of Neuroradiology
- Medical physicists and the Swiss Society of Radiobiology and Medical Physics
- Authorities at regional and national level.

**5. We offer:**

- A wide range of services, which are based around the needs of our members.
- Information and Communication
- A job platform.
- High quality (continuous) education
- Advice on legal and insurance issues

*Yves Jaermann,  
President SVMTRA*



# BASIC TREATMENT PLANNING COURSE

**Interview with Michelle Leech, Course Director**

**WHAT IS NEW IN THE BASIC TREATMENT PLANNING COURSE PROGRAMME THIS YEAR?**

The course programme has been adapted to include organ at risk contouring. This is a task that is more and more frequently being delegated to RTTs across Europe. The contouring aspect of the programme focuses not only on inter-observer variability in contouring of OARs but also importantly in the dosimetric impact of the contouring method on the analysis of the resultant plan.

As we will be using FALCON (Educase), the ESTRO web-based contouring software for the programme, participants will be invited to familiarise themselves with the tools prior to attendance on the course. All participants will be asked to bring their own laptops to the course for this purpose.

The programme will also for the first time contain a workshop on managing risk of errors and near misses in the treatment planning process. ▼



MICHELLE LEECH



To facilitate these programme changes, we are pleased to welcome Danilo Pasini, A. Gemelli, Rome, Italy and Martijn Kamphuis, Academic Medical Centre Amsterdam, The Netherlands to the teaching faculty.

#### THE COURSE HAS ALWAYS BEEN RUN IN DUBLIN, SO WHY MOVE TO THE NETHERLANDS THIS YEAR?

The basic treatment planning course has been run in Dublin since its inception. This year, it will be run 'back to back' with the advanced treatment planning course in UMC Utrecht and we are very grateful to Gert Meijer and his team for hosting us. The change of location means that participants will have the opportunity to work on four different treatment planning systems, kindly provided by Elekta, Varian and Philips. Participants can either choose to work on a system they are familiar with or try a new system. The change of venue also means that we can engage in small group teaching during the practical planning sessions.

#### CAN YOU GIVE AN OVERVIEW OF THE COURSE PROGRAMME?

The course is run over five days from Friday 13 September to Tuesday 17 September 2013. The basic principles of physics and radiobiology and their application to treatment planning will be taught, coupled with a focus on position verification and its impact in margin determination.

The focus of the practical sessions will be on organ at risk contouring and treatment planning for pelvic (prostate and gynaecological), thoracic (breast and lung) and head and neck cancers. This will be followed by plan evaluation and a discussion of the clinical consequences of a selection of plans for each site.

#### HOW CAN RTTS REGISTER FOR THIS COURSE?

Registration is done via the ESTRO website, [www.estro.org](http://www.estro.org) and any queries can be made to the Course Manager Viviane van Egten [vvanegten@estro.org](mailto:vvanegten@estro.org).

We look forward to meeting you in the beautiful city of Utrecht!



**“Volunteers don’t get paid, not because they’re worthless, but because they’re priceless!”**



CHRISTINE VERFAILLIE  
ESTRO School Manager



RICHARD PÖTTER  
Chairman Education and Training Committee

**TIME TO THANK THE TEACHERS!**

Over the last few decades the ESTRO School has been one of the Society’s central pillars and is now an internationally recognised provider of high-quality education in radiotherapy and oncology.

Since the first course in 1985, the school’s activities and impact have known a prodigious expansion and are a prime membership benefit. Over the last 28 years, over 30,000 participants have attended a countless number of courses. The School currently hosts 35 live courses in its portfolio, as well as several online courses, workshops, and pre-meeting courses. These courses and the School’s resulting success would not be possible without all those course directors and teachers who selflessly volunteer their time and energy towards freely sharing their expertise with their peers.

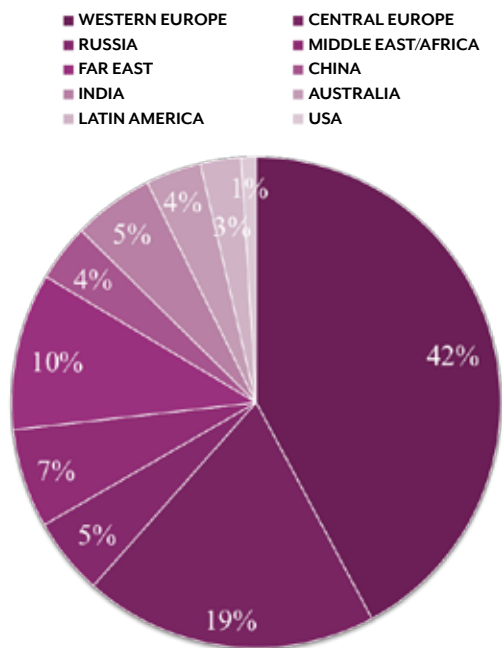
In April, just before the Forum opened its doors, the ESTRO Education and Training Committee hosted the second ESTRO Teachers’ Retreat in order to discuss the School’s future developments with those who are the most intricately involved with its affairs. Forty-four enthusiastic and dedicated teachers joined the meeting where they split off into work groups and discussed a number of pertinent topics; these are reported on in this section of the Newsletter by Ann Barrett, Roger Taylor, Kari Tanderup and Li Tee Tan.

You can also read all about seven of our courses that have been hosted since February this year. These reports are provided by participants to the courses. Please have a look and get inspiration for choosing your next course.

**LIVE ESTRO COURSES 1985-2012**



**ORIGIN OF COURSE PARTICIPANTS IN 2012**





WE WOULD LIKE TO EXTEND OUR SINCEREST GRATITUDE TO ALL CURRENT MEMBERS OF OUR TEACHING FACULTY, WITHOUT WHOM THE SCHOOL'S EXISTENCE AND SUCCESS WOULD BE IMPOSSIBLE:

Ahnesjö, A.  
Aird, E.  
Al Qaisieh, B.  
Alferi, S.  
Algaba, F.  
Alsner, J.  
Aspridakis, M.M.  
Aznar, M.  
Baltas, D.  
Barillot, I.  
Barrett, A.  
Baumann, M.  
Beets-Tan, R.  
Bentzen, S.  
Berger, D.  
Bernier, J.  
Boersma, L.  
Bonomo, L.  
Borras, J.M.  
Bossi, A.  
Brada, M.  
Briganti, A.  
Broggi, S.  
Buckney, S.  
Buffa, F.  
Burnet, N.  
Carey, B.  
Carrie, C.  
Chalmers, A.  
Coco, C.  
Coffey, M.  
Cosset, J.M.  
Cottrill, C.  
Curigliano, G.  
Olsen, D.R.  
Darby, S.  
De Bari, D.  
de Crevoisier, R.  
de Jong, R.  
De Meerleer, G.  
De Neve, W.  
De Ruyscher, D.  
Debus, J.  
Delorme, S.  
Depuydt, T.  
Dieckmann, K.  
Dinapoli, N.  
Dirix, P.  
Dörr, W.  
Dubray, B.  
Dunscombe, P.  
Dziadziuszko, R.  
Eriksen, J.  
Fonteyne, V.  
Freeman, C.  
Gabrys, D.  
Gagliardi, G.  
Gambacorta, M.A.  
Geleijns, K.  
Gilham, C.  
Glynne-Jones, V.  
Grau, C.  
Grégoire, V.  
Gubanski, M.  
Guckenberger, M.  
Haie-Meder, C.  
Hansen, V.  
Hargrave, D.  
Harrington, K.  
Hartmann, G.  
Haustermans, K.  
Heijmen, B.  
Hennequin, V.  
Henry, A.  
Hol, S.  
Hoogeman, M.  
Hope, A.  
Hoskin, P.  
Hoyer, M.  
Hug, E.  
Hurkmans, C.  
Hyholm, T.  
Jaeckel, O.  
Jaspan, T.  
Jefferies, S.  
Jerezek, B.  
Joiner, M.  
Jornet, N.  
Juhler-Nøttrup, T.  
Jürgenliemk-Schulz, I.  
Kaanders, J.  
Kamada, T.  
Kamphuis, M.  
Khoo, V.  
Kirova, Y.  
Knoos, T.  
Koritzinsky, M.  
Kortmann, R.D.  
Kovacs, G.  
Krengli, M.  
Kristensen, B.  
Kuzdzal, J.  
Köhn, T.  
Lambin, P.  
Lammering, G.  
Langendijk, H.  
Lartigau, E.  
Leech, M.  
Leemans, R.  
Leer, J.W.  
Lefebvre, J.L.  
Li Tee, T.  
Licitra, L.  
Lievens, Y.  
Lim Joon, D.  
Lindgaard, J.  
Liney, G.  
Lohr, F.  
Lomax, A.  
Machiels, J.P.  
Machtens, S.  
Mahantshetty, U.  
Maingon, P.  
Manfredi, R.  
Mantello, G.  
Marijnen, C.  
Mazal, A.  
Mazeron, R.  
McClellan, B.  
McNair, H.  
Meijer, G.  
Ménard, C.  
Mendez Romero, A.  
Menu, Y.  
Mirimanoff, R.  
Molinelli, S.  
Müller, A.C.  
Navarro, A.  
Nestle, U.  
Nicolai, P.  
Nystrom, H.  
O'Donovan, A.  
Oehlke, O.  
Oelfke, U.  
Offersen, B.  
Olofsson, J.  
Orecchia, R.  
Osztavics, A.  
Pahlman, L.  
Pameijer, F.A.  
Papanikolaou, N.  
Pasini, D.  
Paulsen-Hellebust, T.  
Peeters, S.  
Peiffert, D.  
Perez Romasanta, L.  
Peschke, P.  
Peters, S.  
Petric, P.  
Petrow, P.  
Picchio, M.  
Pieters, B.  
Polo Rubio, A.  
Poortmans, P.  
Pötter, R.  
Pruschy, M.  
Rasch, C.  
Remeijer, P.  
Reymen, B.  
Reynders, P.  
Ricardi, U.  
Rivera, S.  
Rödel, C.  
Rosenblatt, E.  
Rossi, C.  
Salembier, C.  
Scalliet, P.  
Schippers, M.  
Schmoll, H.J.  
Schwarz, M.  
Scoccianti, S.  
Scott, N.  
Senan, S.  
Senkus-Konefka, E.  
Sharpe, M.  
Siebert, F.A.  
Sjöström, D.  
Söhn, M.  
Sonke, J.J.  
Stahel, R.  
Stam, M.  
Stewart, F.  
Tanderup, K.  
Taylor, R.  
Ten Haken, R.  
Thiesse, P.  
Thirion, P.  
Thorwarth, D.  
Timmermann, B.  
Tombal, B.  
Tomej, M.  
Tournel, K.  
Valentini, V.  
Van de Velde, C.  
van der Heide, U.  
van der Kogel, A.  
van Herk, M.  
Van Houtte, P.  
van Limbergen, E.  
van Loon, J.  
van Luijk, P.  
van Vulpen, M.  
Vandavelde, G.  
Varela, G.  
Venselaar, J.  
Verellen, D.  
Villeirs, G.  
Voet, P.  
Vogel, W.  
Vogelius, I.  
Vozenin, M.C.  
Vriens, B.  
Walker, D.  
Walz, J.  
Weber, D.  
Wouters, B.  
Wyld, L.  
Zips, D.



## TEACHERS' RETREAT

### INTRODUCTION

#### *Teachers retreat, 2<sup>nd</sup> ESTRO FORUM Geneva*

Based on the successful ESTRO "Teachers Retreat" in London in 2011, the ESTRO education and training committee invited teachers from all ESTRO courses and members of the FALCON Task Force to a meeting prior to the Geneva ESTRO Forum. The purpose was to facilitate a forum for discussion and to brainstorm on future developments of ESTRO education.

A total of 44 enthusiastic teachers joined the meeting. An introduction was given by Richard Pötter and Christine Verfaillie on the status of educational activities and developments over recent years. Most impressive was the recent growth in the number of both European and international courses. The ESTRO courses are highly appreciated by members and there have been a total of 30,000 participants during the last 28 years. This indicates that education is a cornerstone of ESTRO. Furthermore, the growing collaboration with international societies beyond Europe establishes ESTRO as a very important partner in the organisation of high quality international education within radiotherapy.

The above developments have brought new challenges which then provided the basis for four working groups which were held during the rest of the day to discuss the following topics:

- ESTRO school programme and how it can be developed and contained within available resources;
- ESTRO International courses;
- ESTRO Educational material;
- Linking live and on-line education.

The groups took advantage of the excellent weather, and brought chairs, pen and paper into the garden of the Villa Sarasin, a former 19th Century Manor restored in 1993, situated adjacent to the Palexpo Centre. Each group had two rounds of discussions and reported back to the entire group with discussions and conclusions. Reports of these discussions, which were stimulating and constructive, are given below.

The day, enhanced by glorious sunny weather, concluded with a reception which allowed for extremely pleasurable social interaction with friends and colleagues.

*Ann Barrett, Roger E. Taylor, Kari Tanderup and Li Tee Tan*



ANN BARRETT

### ESTRO SCHOOL PROGRAMME AND HOW IT CAN BE DEVELOPED AND CONTAINED WITHIN AVAILABLE RESOURCES

**Ann Barrett**

*Professor in Radiation Oncology, Norwich, UK*

The day started with a review of the current status of the ESTRO School by Christine Verfaillie. She showed how the number of courses and participants has increased exponentially since 1985 and particularly since the formal creation of the ESTRO School in 2005. There are now 35 courses (basic and advanced) run by the School each year both in Europe and worldwide, as well as workshops and pre-meeting courses before annual meetings. This represents a huge investment of energy by ESTRO staff and all who contribute as course directors and teachers. The courses are greatly appreciated by those who attend them.

Mobility grants encourage young oncologists, physicists, RTTs and biologists to visit other centres to learn new skills and techniques which will then benefit their own institutes and between 25 and 45 such visits have been undertaken each year since 2008. There has also been a great deal of work in developing on-line resources and a new website, as well as seeking recognition of the core curricula by the UEMS. An audit of School activities against the standards for post-graduate and continuing medical education drawn up by The World Federation for Medical ▼



Education is being undertaken to ensure that the quality of the provision that the school makes is as good as it can be.

*Ann Barrett*

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ROGER E. TAYLOR

## ESTRO INTERNATIONAL COURSES

**Professor Roger E. Taylor MA, FRCPE, FRCP, FRCR**

*Associate Clinical Director (Cancer Services), Regional Specialties Directorate  
Professor of Clinical Oncology, College of Medicine, Swansea University  
South West Wales Cancer Centre  
Singleton Hospital, Swansea*

Following a welcome and introductions from Christine Verfaillie and Richard Pötter we divided into four parallel discussion groups. I was in the second group that brainstormed the future strategic direction of ESTRO international courses. The ability to expand the number of courses while maintaining standards and ensuring long-term viability is potentially limited by the finite number of teachers available and will require collaboration between ESTRO and international advocates leading to partnerships in the form of “chapters”.

As a member of the Paediatric Radiation Oncology Course Faculty it was very helpful to be involved in generic discussions around the future of the ESTRO School as a whole. For the future, the expansion of the scope of the retreats will help enfranchise the wider faculty as the breadth of courses expands.

*Roger E. Taylor*

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KARI TANDERUP

## ESTRO EDUCATIONAL MATERIAL

**Kari Tanderup**

*Aarhus University Hospital, Aarhus, Denmark*

I was in the discussion group on “Educational material: how to produce/collect/make available high quality educational material and/or wiki material for radiation oncology”. The ESTRO birds “FALCON” and “DOVE” are tools which offer web-based training in contouring as well as access to teaching

material. The ESTRO school faculties play an important role in keeping up the quality for the educational tools. The faculties may also be the engines to further structure and build up the web-based material according to different sites or topics, so that members can access a full package on e.g. “Breast cancer” or “IMRT”. There is also a significant international potential to make material available to

developing regions where there is overall less access to resources and money for education. The future possibilities of web-based resources and educational material offer ESTRO great possibilities to reach many people with valuable resources through the web site.

On top of the structured group discussions, the “Teachers’ retreat” was an excellent opportunity for teachers to discuss other ideas for the development of teaching and education. The active participation in the “Teachers’ retreat” demonstrated that ESTRO teachers are a group of dedicated and enthusiastic people, and the faculties represent an excellent platform not only for teaching but also for research and development within ESTRO.

*Kari Tanderup*



## LINKING LIVE AND ON-LINE EDUCATION

*Li Tee Tan*

*Consultant Oncologist Addenbrooke's NHS Trust Cambridge*



LI TEE TAN

The teachers' retreat was possibly the highlight of the 2013 ESTRO Forum for me although I did feel a bit of a fraud being there, having not actually taught on an ESTRO course yet. Nevertheless, the opportunity to meet like-minded colleagues with an interest in education was not one I could forego.

Medical education is currently facing unprecedented challenges. The pace of knowledge and technological developments is accelerating dramatically (thankfully) while funding and opportunities for travelling to educational activities are increasingly limited. The focus of this year's retreat was to review the current teaching programme and to discuss ways forward.

I joined the group on "Linking live and on-line education" as I have a special interest in e-learning, particularly for teaching radiotherapy planning skills. It was very encouraging to hear about the technology-enhanced learning programmes that have already been developed (EAGLE, FALCON, DOVE). Some programmes have been more successful than others; in particular, the EAGLE programme which requires a regular time commitment over several months has had limited uptake. One suggestion was to develop shorter more focussed programmes (baby EAGLES delivered by a STORK?) which may be more appealing to end-users. Watch this space!

We also discussed the possibility of a formal system of recognition for producers of online teaching materials in the form of citations similar to publications. In addition, there needs to be a system for evaluating the effectiveness of the different teaching methods. Who knows, we may yet see the first randomised trial of teaching methods in the not too distant future.

In summary, there were several innovative suggestions made at the retreat and I look forward to hearing about progress at the next meeting in two years.

*Li Tee Tan*

## COURSE REPORTS

## MULTIDISCIPLINARY TEACHING COURSE ON PROSTATE CANCER

*2-6 February 2013 | Madrid, Spain*



KRISTIINA KOSKELA



**Course directors: Alberto Bossi, Radiation Oncologist, Institut Gustave Roussy (FR)  
Alberto Briganti, Urologist, Università Vita-Salute San Raffaele, Milan (IT)**

*Saludos desde Madrid muy soleado!* (Greetings from sunny Madrid!) After a months' long winter with darkness and freezing temperatures in Finland, participating in my first ESTRO course in sunny Spain was like a promise of spring. In addition, from the outset, the atmosphere on ▼



the Multidisciplinary Teaching Course on Prostate Cancer was very open-minded and fruitful. There were more than 80 participants – radiation and medical oncologists, clinical physicists, a few urologists and at least one hospital pharmacist - from all over the world and during the coffee breaks, as groups of people gathered around the refreshments and espresso machines, the conversation that filled the air was very cosmopolitan. The teachers were an inspiring group of specialists in different fields: radiotherapist Valerie Fonteyne (Gent, Belgium), pathologist Ferran Algaba (Barcelona, Spain), urologists Bertrand Tombal (Brussels, Belgium) and Jochen Walz (Marseille, France), radiologist Geert Villeirs (Gent, Belgium) and the two course directors - radiotherapist Alberto Bossi (Paris, France) and urologist Alberto Briganti (Milan, Italy).

On the first day, after registration in the morning, we spent the afternoon revising essential knowledge about the prostate – its embryology, anatomy and function as well as the histology of the normal prostate and the pathology of prostate cancer. As we learned in the session on, the prevention of prostate cancer, red wine may play a role in it and so together we all enjoyed some tasty drinks and snacks at a cocktail party after the lessons!

As a trainee working in a radiation therapy unit and prescribing hypofractionated treatments for prostate cancer patients, I found the lectures concerning radiotherapy the most interesting. Early on Sunday morning we were guided through the different imaging modalities of prostate cancer. The illustrative presentation by Geert Villeirs clearly demonstrated what all radiotherapists who delineate the prostate and surrounding at risk organs know: CT-based delineation is very challenging, especially in the apex area. We are convinced that the MRI (sometimes combined with other multimodality features like diffusion weighted imaging etc.) gives us the most informative imaging concerning the local staging of prostate cancer and delineation of the prostate. On the other hand, no matter how precise the imaging modalities you have available or how capable the specialists doing the radiotherapy planning, focusing the treatment is also a challenge, as both the prostate and the vesicles as well as the patient themselves may (and often do) move during and in between the treatments. Therefore it was extremely helpful to see different ways of solving this problem presented on the course.

Before the course started participants were given homework focusing on target delineation and the contours that we had looked at were interactively gone through in detail during the course. This session also included a handful of tips and tricks for better delineation of both the target and the organs at risk. As Alberto Bossi told us, clinicians can improve on delineation to make it more uniform.

As lymph node involvement cannot unequivocally be predicted by any of the available nomograms, nor can it be found by present imaging modalities, the only definite way to evaluate it is through an extended pelvic lymphadenectomy. The enthusiasm of urologist Alberton Briganti with his wealth of clinical experience was extremely inspiring and convincing. As all treatment choices in all phases of prostate cancer have their toxicities, there is no easy solution. Instead all treatment modalities are needed. The best results are achievable when patients' wishes are combined with the expertise of each clinic. The discussions and conversations during the breaks and lunches were a fundamental part of the course and meeting specialists from different fields and countries always gives new perspectives to one's work. The official course dinner on the rooftop of the Palacio de Cibeles offered grand surroundings for socialising and networking with other course participants and staff. I would warmly recommend this course to all my colleagues in Europe - trainees as well as more experienced seniors - dealing with prostate cancer.

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## DOSE MODELLING AND VERIFICATION FOR EXTERNAL BEAM RADIOTHERAPY

10 - 14 March 2013 | Florence, Italy



ANS SWINNEN



ANE L. APPELT



**Course directors: Tommy Knöös, Physicist, Skåne University Hospital, Lund (SE)**  
**Brendan Mc.Clean, Physicist, St. Luke's Hospital, Dublin (IE)**

On the first morning of “*Dose Modelling and Verification for External Beam Radiotherapy*”, as we approached the course venue in the Convitto della Calza, we were both a bit apprehensive as to what we would gain from this course. One of us, a junior physicist, had been told by a colleague that the course was quite intensive, covering a lot of material. “Will I be able to follow the more advanced topics?” she worried. The other had already attended the prequel to this course in 2003 – then named “*Dose Determination in Radiotherapy: Beam Characterisation, Dose Calculation, and Dose Verification*” – and now wondered: “Will this version of the course teach me anything new?” As it turned out, our doubts were laid to rest by the end of the week. The course clearly has something to offer for both the experienced and the more junior medical physicist. While the course does cover some fundamental concepts e.g. factor-based dose calculations, the programme has also been adapted to include current developments in dose modelling (for example grid-based approaches) and the pitfalls surrounding small field dosimetry for highly modulated treatments as well as other similarly advanced topics – all delivered in a clear and concise manner, which should be easy to follow for anybody with a basic grounding in physics and mathematics. What was very much appreciated was the fact that the slides all included relevant references, allowing the student to dig deeper into specific subjects, and that all the course material had been digitally distributed about one week beforehand.

On Sunday morning we kicked off with an introduction by the course directors. During this 5-day course, the enthusiastic Günther Hartmann gave an overview of basic concepts (fluence, ray tracing, MC tracking) and the convolution/superposition principle. Günther also talked about non-reference conditions and guided us through the practical workshops. Jörgen Olofsson explained to us the different types of current linac head design, mentioning the most important features of flattening filter free linacs. Anders Ahnesjö and Jörgen taught us multisource models, grid based approaches and point/pencil kernels. Brendan McClean in turn focused on uncertainties in diagnostic CT images, DVH and dose-based metrics and also initiated a fruitful dose-to-water vs dose-to-medium discussion. The importance of good periodic tests after commissioning of a TPS was stressed by him as well as by Tommy Knöös. Maria Aspradakis, for her part, talked about various phantoms and covered the small field dosimetry, which was complementary to the talks of Núria Jornet about the challenges in the search for the best detectors for different jobs. Núria also shared her experience of in-vivo dosimetry with us. Finally, two of the afternoons were dedicated to practical exercises in monitor unit calculations and basic dose modelling, including estimation of head scatter and kernel-based dose calculations.

The setting in Florence was as scenic as one could wish for. Every day we enjoyed a delicious Italian lunch in one of the medieval-looking rooms of the Convitto, a converted former hospital and monastery. The historic ambience more than made up for the slightly cramped conditions in the lecture room. The course dinner on Monday evening took place in a charming restaurant with a picturesque view of the Ponte Vecchio. All this wonderful food and wine made us forget the rainy days in Florence.

In summary, this was an inspiring course with informed speakers, who provided practical knowledge and put calculation models, different detectors and phantom material into ▼



perspective. The topics addressed many issues encountered during commissioning and quality control of clinical equipment. This course can be highly recommended to any medical physicist.

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NIKOLAOS TSELIS

## EVIDENCE AND NEW CHALLENGES IN RECTAL CANCER COURSE

21-24 March, 2013 / Istanbul, Turkey



**Course director: Vincenzo Valentini, Radiation Oncologist, Università Cattolica S.Cuore, Rome (IT)**

*“No city has eaten the fruits of the garden of art so richly as the city of Istanbul, birthplace and school of famous men, the nursery of many nations.”—Nabi*

I came to Istanbul as the place that geographically divides Europe from Asia but also as the only city in the world that spans two continents. This melting point of cultures proved to be an ideal location to hold the *Evidence and New Challenges in Rectal Cancer* course. The course venue was located in the oldest part of Istanbul, the historical peninsula of “Sultanahmet”. Stepping out of the building, I found myself at the epicentre of the city’s tumultuous life, minutes from the Spice Bazaar and the street markets around the New Mosque. Stepping into the course room, all the participants found themselves in a motivating interactive learning environment created by an excellent multidisciplinary team.

The academic programme had been meticulously designed and the lectures had a balanced mix of theory and practical information concerning the clinical routine in daily practice. The teaching staff consisted of outstanding radiation oncologists, radiologists, medical oncologists and oncological surgeons. The group of lecturers was completed by a distinguished pathologist. The course schedule was structured around important topics in rectal cancer treatment which were covered from a multidisciplinary point of view in blocks of four teaching lectures. These were followed by interactive discussions and a variety of comprehensive workshops from which the participants could choose. Covered topics included: the role and types of rectal surgery; the choice of long versus short course radiotherapy; the sequencing of treatment modalities in local and metastatic disease; and the challenge of tailored treatment. The transition from one ▼



subject to another was performed smoothly by the course director Professor Valentini with all faculty members participating with gusto during the discussions. In addition, an interactive voting system gave all of the participants the opportunity to take part actively in case-specific treatment decisions which were then debriefed to the audience. As a radiation oncologist, these workshops were of special interest for me. In small groups we had the opportunity to gain a deeper understanding of the pitfalls in pelvic target volume delineation, the potency of molecular imaging and the optimal implementation of systemic treatments. This complementary connection between lectures and workshops was extremely appealing.

In conclusion, I was expecting an intense four-day programme with many topics of interdisciplinary importance but also potential for interdisciplinary disagreement. However, the faculty led by Professor Valentini mastered the task creating an outstanding programme of great didactic impact. This ESTRO course exceeded my expectations and proved to be a great educational experience for all participants – independent of age, academic background or working experience.

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Germany*

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## MODERN BRACHYTHERAPY TECHNIQUES

24-27 March 2013 | Athens, Greece



**Course director: Prof. Dr. Erik Van Limbergen, University Hospital Gasthuisberg, Department of Radiotherapy, Leuven (BE)**

I am a specialist in Radiation Oncology and have been working at a private oncology clinic in İzmir, Turkey for nearly 15 years. My experience is in brachytherapy for gynecological cancers, endoluminal brachytherapy and interstitial brachytherapy using a 2D planning system. Recently our clinic has added a new 3D planning system and applicators and therefore I participated in this course on modern brachytherapy techniques in order to refresh my knowledge of brachytherapy.

The course took place in the Royal Olympic Hotel, which has a wonderful view of the Acropolis and the Temple of Zeus Olympia. It was great to be able to visit these sites which were only a short walk from the hotel.

The course began with the introduction to the education team - Drs. Erik van Limbergen, Bradley Pieters, Christine Haie-Meder, Didier Peiffert, Dimos Baltas, Peter Hoskin and Renaud Mazon. The education team was fantastic and they worked exceptionally hard throughout the course to ensure that every lecture was presented perfectly. ▼



The first day's lectures covered the general aspects of brachytherapy, radiobiology and physics. A particular highlight was Dr Haie-Meder's simple and clear explanation of The Paris System.

On the second day we covered the topics of brachytherapy use in breast cancer, paediatric tumours (in particular rhabdomyosarcoma of the bladder and prostate) and in head and neck cancers. There was also a lecture on PDR Radiobiology. That evening the entire group went for dinner to a local restaurant in Plaka.

The third day concerned brachytherapy in gynecological cancers, a subject in which I am particularly interested. The lectures were presented so well, that by the end of the day I had all the answers to my questions on this subject. At the end of the day there was a nice surprise, as Dr Erik Van Limbergen was given a cake to celebrate his birthday.

Finally, the course ended on the fourth day with lectures on brachytherapy in prostate cancer and endoluminal brachytherapy.

I greatly enjoyed participating in this course and it was an extremely good experience. Aside from everything else, the thing I most enjoyed was sitting around the table at dinner with fellow participants from different countries (Sweden, Italy, Turkey, France, Mozambique and Poland), and having the feeling of being citizens of the world, sharing and enjoying our time together.

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TOMAS MERINO

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## ONLINE BREAST CONTOURING COURSE

### *The view of a student*

Being a young radiation oncologist working in a small medical school in a distant country like Chile has a number of difficulties, especially when it comes to staying updated on the most recent developments in the specialty.

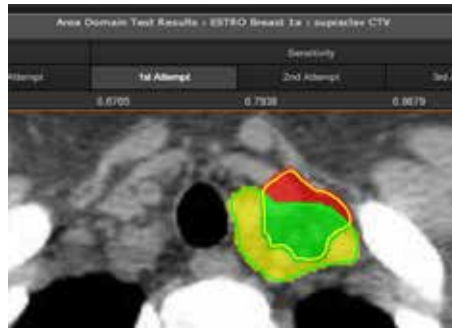
The ESTRO School provides various courses which allow access to the latest knowledge in an educational environment that fosters in depth learning. We were fortunate therefore to have the opportunity to experience this when the first ESTRO course took place in Chile in 2012.

Communication technology has grown a lot in the last few years. Wireless internet is now available through smartphones allowing us to access a variety of services, from tools (such as guidelines and risk evaluation calculators) to functions (such as calculating the equivalencies of different radiotherapy schedules). However, the impact of technology and communications had not been fully deployed in radiotherapy education until the development of the online breast delineation course.

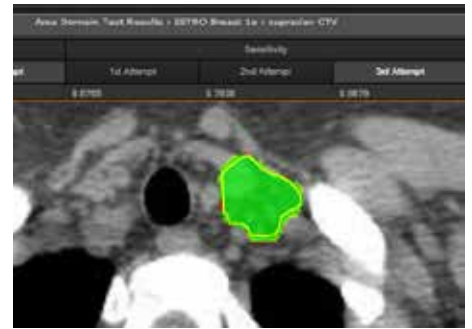
With this course, I was able for the first time to communicate with expert teachers and students from all around the world simultaneously: from South America, to Asia, Europe, and Australia. A virtual platform gave us the opportunity to interact through chat, audio and video.

As teachers developed their classes with audiovisual support, students were able to ask questions in real time. Assigning a mentor to each small group allowed us to participate actively in different languages and have a friendlier teaching-learning environment throughout the course. The methodology used was enlightening, and the FALCON drawing tools were user-friendly and easy to use. In our first class, we were introduced to the course objectives and methodology, as well as the platform tools. Our first task was to draw the volumes of the breast and nodal areas according to our usual practice.

In the second class we analysed different students' drawings and commented on the significant differences in the drawing styles that existed between us and the recommended pattern. We had a very detailed class in which the teachers explained the different references for each structure to draw. It was illuminating to appreciate that the drawing problems were not related to each individual, but rather were a deviation from the drawing pattern, especially in some structures such as the surgical bed and boost volume. The teachers' comments on this issue ▼



Online breast contouring course - Tomas Merino's 1<sup>st</sup> attempt



Online breast contouring course - Tomas Merino's 3<sup>rd</sup> attempt

(as well as more controversial ones, such as the volumes in the axilla with positive sentinel lymph node and no axillary dissection) were very constructive. At the end of each class, we were given additional audio material and slides, as well as the homework of returning to our drawings to try to improve and adjust them following the instructions received. It was very encouraging to be able to identify new references that we hadn't been aware of before the course. After working extremely hard on them, we sent our drawings to our teachers and received the results of our similarity coefficient DICE. It was very rewarding to see how my drawings were getting closer and closer to the expert's pattern, and how my DICE ratio was improving from the first attempt. In our last class we could see how the students' drawings, which were so different at the beginning, were starting to look alike. We had time to discuss, ask questions, and experience how physical distance is no impediment to establishing a custom and efficient class. There are several advantages to this type of course which are worth mentioning: the ease of taking a course directly from my workplace with significant savings in time and money by not having to travel long distances; the advantages of taking the course without having to leave my workplace; and the opportunity to interact with teachers and students from all over the world. Perhaps the most tangible benefit I experienced was when I had to draw my next patient with breast cancer right after my last lesson. I immediately started to apply what I had learned and as result I drew better and with more confidence. I am sure that my skills have objectively improved after this online course.

*Tomas Merino, MD,  
Radiation Oncologist  
Hematology and Oncology Department  
Pontificia Universidad Catolica de Chile*



PETER GORAYSKI

## EVIDENCE BASED RADIATION ONCOLOGY

*A Clinical Refresher Course with a Methodological Basis*

*7 - 11 April, 2013 | Beijing, China*

**Course director: Jan Willem Leer, Radiation Oncologist, Radboud University Nijmegen Medical Center (NL)**

**BY PETER GORAYSKI**

The ESTRO run 'Evidence-Based Radiation Oncology – A Clinical Refresher Course with a Methodological Basis' has a long track record in delivering a compact and comprehensive overview of the most up-to-date high-level evidence that guides our discipline. I attended the course as part of the new collaboration between ESTRO and the Australian and New Zealand ▼



College of Radiologists ([www.ranzcr.edu.au](http://www.ranzcr.edu.au)). In just over five days, the course covers major tumour sub-sites including breast, lung, prostate, gastrointestinal, gynaecological, Head & Neck and palliation. In addition, critical appraisal techniques, basic statistics and advice on writing scientific papers were interspersed into the programme.

China has an expanding radiotherapy community with over 1000 treating centres and 10,000 radiation oncologists. As a result, holding this course in Beijing has far reaching impact across the region and the rest of the country. I strongly believe that this and many other courses run by ESTRO should make their way to non-English speaking countries where there are relatively new but rapidly developing radiation oncology communities.

Despite the omission of case discussions (which had long been a cornerstone of this particular course) the lecture-based presentations allowed ample time for questioning. As one of only three non-Chinese delegates, there was a unique opportunity to interact with faculty members between lectures and during social events like our welcome dinner on the first night. As a direct result, I was informed of other learning opportunities such as the Cambridge Cancer Medicine Online ([www.ccmo.co.uk](http://www.ccmo.co.uk)), an online interactive program and question-based resource, among others.

The simultaneous translation into Chinese was an obvious limitation of the course. However, as I attended the course with a Consultant colleague from my institution, this afforded the opportunity to discuss differences in practice between what the evidence supports and what is actually done in clinical practice. A lot of what appears in clinical practice guidelines is not necessarily only based on high-level evidence - something which is important to recognise.

Notwithstanding the traffic, Beijing was a fascinating place to visit with sites like the Great Wall, Forbidden City, Tiananmen Square, the Temple of Heaven and the Olympic precinct being notable highlights. Lastly, one would be amiss to not mention the food. Although local Peking duck was immeasurably better than any other I have ever had before coming to China, other so called 'delicacies' like scorpion, spider, and snake, I will forever leave to more adventurous visitors.

In conclusion, as a trainee in radiation oncology, attempting to navigate the vast and ever expanding body of evidence can become overwhelming very quickly. In my opinion, if one first is able to understand the highest level of evidence (as was taught on this course), this provides a mental framework upon which delving into individual trials becomes less daunting, more interesting and ultimately more rewarding.

*Dr. Peter Gorayski,  
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Brisbane, Queensland, Australia*



WENYANG LIU

## BY WENYANG LIU

The ESTRO Evidence Based Radiation Oncology (EBRO) course was recently held in Beijing with great success. The EBRO course may be one of the largest courses ESTRO has held - attracting more than 240 participants from all over China and further afield. This year was a particularly special year for the course as it was the 10th Anniversary of the course being held in China and thus also the 10th Anniversary of the successful collaboration between ESTRO and CSTRO (Chinese Society for Radiation Oncology). The course was excellent, not only in its content which allowed us to refresh in a systematic way our knowledge of radiation oncology but also for allowing us to foster friendships between European and Chinese oncologists.

Professor Leer, the course Director, gave us a very interesting introduction detailing his first trip to Beijing in 2003 when he brought over the course and the difficulties and amusing incidents he encountered in bridging the gap between Europe and Asia. The fun atmosphere lasted the whole course and was undoubtedly one of the reasons (as well as the excellent presentations) for the excellent attendance at the course to the final day.

The course was extremely comprehensive and helpful, covering the introduction of evidence based oncology fundamentals and the methodological basis including statistics, biological basis, systematic reading and so on. This was very valuable for many of the Chinese radiation ▼



oncologists who have been educated in a different training system. The talks on the lecturers' own particular research areas were especially interesting and well presented as they reviewed the evidence and recent developments in the most common cancers, eg. lung cancer, rectal cancer and breast cancer etc. As a young oncologist and interpreter for Prof. Dubray, I believe this course helped me considerably in understanding the principles of radiation oncology as well as providing me with a framework for managing new information and articles when they are published. From my discussions with other participants they were also very satisfied and stated how helpful it would be for them when they went back to clinical practice. At the same time, the enthusiasm of the Chinese participants and the high quality of the questions were welcomed by the teaching staff.

Finally, it was a pleasure to be in Beijing, with its culture, ancient architecture and beautiful music and food and I hope all the participants and teachers enjoyed it.

Finally, I would like to say that this course is suitable for all doctors, especially young clinicians. The course is excellent for not only providing one with a new methodology from which to learn, but also for generating ideas for new research.

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National Cancer Centre  
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P.R. China*

## ESTRO SCHOOL OF RADIOTHERAPY & ONCOLOGY

### ■ 2-6 FEBRUARY

Multidisciplinary teaching course on prostate cancer  
*Madrid, Spain*

### ■ 8-9 FEBRUARY

ESTRO/EANM educational seminar on PET in Radiation Oncology  
*Brussels, Belgium*

### ■ 10-14 MARCH

Dose modelling and verification for external beam radiotherapy  
*Florence, Italy*

### ■ 10-14 MARCH

Radiotherapy with protons and ions  
*Pavia, Italy*

### ■ 17-21 MARCH

Physics for clinical radiotherapy  
*Izmir, Turkey*

### ■ 21-24 MARCH

Evidence and new challenges in rectal cancer  
*Istanbul, Turkey*

### ■ 24-27 MARCH

Modern brachytherapy techniques  
*Athens, Greece*

### ■ 7-11 APRIL

Evidence-based radiation oncology: a clinical refresher course with a methodological basis  
*Beijing, China*

### ■ 19 APRIL

Pre-meeting courses at 2<sup>nd</sup> ESTRO Forum  
*Geneva, Switzerland*

### ■ 5-9 MAY

Basic clinical radiobiology  
*Poznan, Poland*

### ■ 11-14 MAY

Multidisciplinary management of breast cancer  
*Prague, Czech Republic*

### ■ 24-27 MAY

Combined drug-radiation treatment: biological basis, current applications and perspectives  
*Porto, Portugal*

### ■ 26-30 MAY

IMRT and other conformal techniques in practice  
*Stockholm, Sweden*

### ■ 6-8 JUNE

Multidisciplinary teaching course on lung cancer  
*Krakow, Poland*

### ■ 6-8 JUNE

Brachytherapy for prostate cancer  
*Cologne, Germany*

### ■ 9-13 JUNE

Target volume determination - from imaging to margins  
*Ljubljana, Slovenia*

### ■ 30 JUNE - 3 JULY

Multidisciplinary management of head and neck oncology  
*Budapest, Hungary*

### ■ 30 JUNE - 4 JULY

Image-guided radiotherapy and chemotherapy in gynaecological cancer - focus on adaptive brachytherapy  
*Moscow, Russian Federation*

### ■ 5-9 SEPTEMBER

Advanced technologies  
*Amman, Jordan*

### ■ 8-12 SEPTEMBER

Clinical practice and implementation of image-guided stereotactic body radiotherapy  
*Lille, France*

### ■ 8-12 SEPTEMBER

Image-guided radiotherapy and chemotherapy in gynaecological cancer - focus on adaptive brachytherapy  
*Barcelona, Spain*

### ■ 8-12 SEPTEMBER

Advanced Imaging course for physicists  
*Vienna, Austria*

### ■ 8-12 SEPTEMBER

Advanced treatment planning  
*Utrecht, the Netherlands*

### ■ 13-17 SEPTEMBER

Basic treatment planning  
*Utrecht, the Netherlands*

### ■ 13-16 OCTOBER

Quantitative methods in radiation oncology: models, trials and clinical outcomes  
*Cambridge, United Kingdom*

### ■ 20-23 OCTOBER

Target volume determination - from imaging to margins  
*Bangkok, Thailand*

### ■ 20-24 OCTOBER

Image-guided radiotherapy in clinical practice  
*London, United Kingdom*

### ■ 27-30 OCTOBER

Multidisciplinary management of head and neck oncology  
*Indore, India*

### ■ 28-30 OCTOBER

Best practice in radiation oncology - A four phase project to train RTT Trainers - In collaboration with the IAEA Part II - Train the RTT (Radiation Therapists) trainers - consolidation phase  
*Vienna, Austria*

### ■ 7-9 NOVEMBER

ESOR/ESTRO course  
Multidisciplinary approach of cancer imaging  
*Rome, Italy*

### ■ 9-12 NOVEMBER

Comprehensive quality management in radiotherapy Part II Quality assessment and improvement  
*Prague, Czech Republic*

### ■ 17-19 NOVEMBER

Multidisciplinary management of central nervous system tumours  
*Brussels, Belgium*

### ■ 22-23 NOVEMBER

EANM/ESTRO educational seminar on PET in Radiation Oncology  
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“The 2<sup>nd</sup> ESTRO Forum and the Young Track were a great success.”



CATHARINE CLARK



JEAN-EMMANUEL  
BIBAULT

## 2<sup>ND</sup> YOUNG TASK FORCE ACTIVITY REPORT

### Roadmap 2013-2014

Dear Young Corner readers,

We hope you had a great time in Geneva. We certainly did! The 2<sup>nd</sup> ESTRO Forum and the Young Track were a great success. The Young task force (Ytf) presented its activities from the previous year. Among other things, they successfully organised the first ESTRO Agorá – Future Leaders Retreat, during which both future needs and activities within ESTRO were discussed. The session had a strong focus on on-line services for education, training and networking. We also discussed the roadmap for next year and many other exciting things still to come. Another highlight for the young members was the moving poster sessions at the 2<sup>nd</sup> Forum, which was the occasion to discuss and exchange between clinicians and physicists.

In this issue, we publish the report from the second Ytf that presents its mission and activities. We also have the roadmap of the Ytf for the next year. There are also links to the presentations given during the Young Session in Geneva.

Our Corner features a report on A. Begg's presentation on How to build a successful scientific career written by Laure Marignol and two reports from the best clinical and physical poster winners of the Young Scientist Moving Poster Session.

Elisabetta Cagni and Vedan Rajevac report on their TTG (or Mobility Grant as we should call them from now on) experiences in Brussels and Dresden.

Best regards,  
*Catharine and Jean-Emmanuel*

#### INTRODUCTION

The 2<sup>nd</sup> Young task force (Ytf) was formed following the ESTRO 31 conference in Barcelona with the following members:

- Vincenzo Valentini (IT, Chair)
- Ludvig Muren (DK, Co-chair) PHYS
- Sofia Rivera (FR) CLIN
- Pierre Blanchard (FR) CLIN
- Andrea Filippi (IT) CLIN
- Paul Kelly (IE) CLIN
- Kasper Rouschop (NL) RB
- Maximilian Schmid (AT) CLIN/BT
- Tina Schuffenhauer (DE) RTT

#### ACTIVITY REPORT

The 2<sup>nd</sup> Ytf has worked on all the major issues raised at the first ESTRO Agorá – Future Leaders Retreat, organised in Taormina, Sicily in October 2012. During this event, separate sessions were held, with each session including ‘state of the nation’ talks, brainstorming break-out groups and a plenary summary and evaluation process.

In the following section, the current Ytf outlines its recommendations for further activities within the framework of the current and future Ytf. Here are some general remarks on the Ytf activities.

During the process of optimising ESTRO's activities by and for young ESTRO members within ESTRO's three main fields of operation (scientific exchange, education/training and professional services), it has become evident that the vast majority of activities that young members ▼

would like to see developed (beyond existing services) are very much in line with the interests of the general membership of the Society. There are a few exceptions, where the young members are interested in additional services and features – many of these are already existing activities – but this understanding has implications for the further role of the Ytf. The Agorá event, if repeated, is very likely to provide a means of identifying the future leaders of ESTRO, and offer them an arena to interact and develop with professional colleagues and with the current management of ESTRO.

Through the first Agorá we have identified around 30 young ESTRO members eager to contribute to ESTRO - through this event these individuals have been prepared to take on such tasks. Together with the Ytf, these individuals should be seen as a ‘pool of volunteers’ that could and should be involved in ESTRO activities according to the needs of the current standing committees, other task forces and further projects. Many of them are already involved in different tasks, such as becoming FALCON tutors and in the development of DOVE and its learning objects.

The first Agorá was organised by the 2<sup>nd</sup> Ytf through a carefully planned selection process. In addition to the core ESTRO management and Ytf members, participants consisted both of individuals suggested by Board members and young ESTRO members (40 years or younger) applying on-line through an open process to join the event. These applications were systematically scored based on scientific, educational and professional experience as well as formulated visions for ESTRO. The programme was designed to first provide participants with the history and evolution of European radiotherapy and the background and role of ESTRO within this setting. The second and main part of the event then focused on brainstorming how to optimise the services of ESTRO within the three main areas of operation, as well as how best to design the Society structure to address the youngest ESTRO members. This way, the Agorá thoroughly addressed points 2-5 in the current roadmap of the Ytf. The evaluations of the event were uniformly positive, indicating that the participants greatly appreciated this new facet of ESTRO.

**Recommendation: The Agorá event should be repeated to secure a continued interaction within the framework of ESTRO for dedicated young individuals who are likely to be the future leaders of the Society.**

The current Ytf is in the portfolio of the President of ESTRO, and is appointed on an annual basis, based on a specific roadmap. This provides flexibility, but it is also a rather short period for the members to serve in this role. A three-year period would be more in line with ESTRO’s Internal Rules of Procedure. The next Ytf could, for example, have nine members, with three new members appointed.

**Recommendation: The Ytf is appointed on an annual basis, but with a composition and turn-over system in which all members serve for three years, and one-third of the members are renewed each year.**

Likewise, for optimal function as a means of ‘educating’ the future ESTRO leaders, Ytf members should be involved in their respective standing committees.

**Recommendation: The Ytf members should be appointed as observers in their respective standing committees, serving as liaisons between these committees and the Ytf.**

**It is also suggested that the Ytf is given the formal responsibility to oversee i) the Young Corner in the Newsletter, and ii) the creation of the Young Track at the ESTRO conferences.** In reality this will mean that the Ytf is a discussion partner for both the Young Corner Newsletter editorial team and the SAG (scientific advisory committee) for young ESTRO members (that is responsible for the development of the Young Track programme at conferences). Likewise, any future activities mainly originating from or relating to young ESTRO members could also be overseen by the Ytf.

**The Ytf recommends that all existing ESTRO activities and services dedicated to its young members are maintained.** This includes the Young Corner in the newsletter, the successful Young ESTRO conference track as well as the involvement of Ytf members in a range of educational activities (e.g. FALCON).

A number of new ideas for further development and refinement were put forward by the Ytf (e.g. DOVE learning objects, self-assessment tools, networking possibilities through the new website). The list has intentionally been limited to ideas where the Ytf believes it can fill a special role in seeing the ideas materialising. Importantly, it does not include the many ideas presented at the Agorá which directly supplement existing developments, or ideas for ▼

optimisation of existing ‘young’ activities such as the young conference track (these ideas have been / will be passed on to the current and next young SAG). Indeed it is an important point to mention that the developments young members are looking for are in fact areas already in the focus of ESTRO’s activities, primarily including better and more modern (i.e. web-based) means of communicating and learning. The suggestions are given below.

- The creation of a web space on the ESTRO website (or on the Elsevier web site) for interactive discussions connected to papers published in R&O. As such a process requires moderators, a team of relatively young ‘blog editors’ should be appointed to cover the whole field of RT. The selection of papers for such discussions could originate from the journal editors, and the ‘blog editor’ team may be connected to the journal editors.  
Discussions have already been initiated with Elsevier through the Editor-in-Chief of the journal – this will be introduced in a step-wise fashion, initially we are exploring the potential for interactivity through testing a ‘polling system’ that allows questions related to papers to be polled - this is now ready for implementation on the Elsevier website. (Responsible: Ludvig Muren; others involved: Kasper Rouschop; Pierre Blanchard, Daniela Thorwarth and Maximilian Schmid).
- Creation of a better platform for improved on-line communication – a searchable member’s directory, including information about clinical and scientific fields of interests, tumour sites, publication lists (PubMed links), clinical trial involvement (links to ClinicalTrial.gov), etc. (Responsible: Pierre Blanchard; several others from the Ytf and Agorá participants are involved)
- Improving on-going efforts towards on-line educational services, such as :
  - Library optimisation: ongoing pending the new website (Daniel Berger, Giovana Mantello)
  - Meta-learning objects: the Ytf will be contacted by the online TF when needed (Jesper G. Eriksen)
- FALCON:
  - Library and data analysis: ongoing. Ytf will be contacted if needed
  - Training of new FALCON tutors (e.g. 6 new tutors per year for online workshops trained by Arturo Navarro and Sofia Rivera, selected by the FALCON task force)
- Improving membership ‘awareness’:
  - Videos aimed at potential new young members informing them about what ESTRO offers (Maximilian Schmid, Sofia Rivera, Jean Emmanuel Bibault and Ludvig Muren). The videos are planned to be filmed at the ESTRO Forum in Geneva.
- Fellowship
  - Plan for improvement to be prepared by Pierre Blanchard and Gokhan Ozygit. Contact has been made by Pierre Blanchard for further discussion on the concept and evolution of the Fellowship, with a link to the Agorá.
  - Self-assessment: Approved for Geneva Forum (Responsible: Maximilian Schmid)

All of the above-listed activities are currently being explored and worked on by the members of the 2<sup>nd</sup> Ytf.



Participants at the ESTRO Agorá retreat visiting the Greek Theatre in Taormina, Sicily.

# ROADMAP FOR 3<sup>RD</sup> YOUNG TASK FORCE IN ESTRO 2013-2014

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ESTRO continues its commitment to its young members through a number of dedicated services and features. ESTRO acknowledges the importance of engaging its young members, to secure a long-term future for the Society. The Young task force (Ytf) is a key structure in this process. The existence of the 3<sup>rd</sup> Ytf was approved following the Board meeting at the 2<sup>nd</sup> ESTRO Forum in April 2013, and has been given the roadmap below for the 2013-2014 period of operation. Composition of this task force is still pending final approval.

## CONTINUING THE AGORÁ CONCEPT

The established Agorá concept is a tool for ESTRO to prepare and 'educate' young members for new responsibilities. The Agorá has created a first 'pool' of approximately 30 young members willing and ready for such tasks. The Agorá represents an arena for 'strategic discussions', bringing young, promising RT scientists/professionals together with the core ESTRO leadership. The Board is considering approving the Agorá event to be repeated on regular basis.

### Actions:

- Until the proposed next Agorá, the 2013-14 Ytf should keep the Agorá network active, e.g., whenever suitable, involving them in Ytf/ESTRO activities, and through sharing information
- Evaluate and optimise the organisation of the 1<sup>st</sup> Agorá (i.e. the planning, undertaking and follow-up), as preparation for a possible 2<sup>nd</sup> Agorá

## SOCIETY STRUCTURES FOR THE YOUNG

The discussions at the 1<sup>st</sup> Agorá resulted in a new proposal for future Ytfs. Ytf members should serve for a 3-year period, balancing stability and renewal (turnover system with 1/3 of Ytf members replaced every year). The Ytf members should be appointed as observers in their respective standing committee. Finally, the Ytf should oversee ESTRO activities relating to young members, e.g., SAG of young members for conferences, the Young Corner in the Newsletter and any other activities originating from or relating to young members. These points have been accepted by the ESTRO Professional & Membership Council (PMC) and the Board. The Board also appointed a Board member, Dirk Verellen as contact person for the Ytf.

### Action:

- The 2013-14 Ytf should implement these Society structures, i.e., defining the tools required to sustain the activities related to the Ytf and the young members of ESTRO

## SCIENTIFIC EXCHANGE, EDUCATION AND TRAINING AND PROFESSIONAL SERVICES

The Agorá discussions first of all confirmed the needs of the young in terms of new and improved on-line services, with respect to both scientific interactions, training and professional services. In line with the new Society structures, most ideas for development of future services should be integrated within the overall Society. However, selected activities should be overseen by the Ytf.

### Actions:

- Most importantly, a key point for the 3<sup>rd</sup> Ytf is to secure the activities that are already ongoing
- The 3<sup>rd</sup> Ytf should continue to oversee or be involved in the following developments:
  - Web area on the Elsevier or ESTRO website for interactive discussions connected to papers published in R&O
  - Support the development of a better platform for improved on-line communication between members, i.e. a searchable member's directory
  - Support improvement of on-line educational services, e.g. library optimisation and development of meta-learning objects
  - Within the FALCON project, support library and data analysis as well as training of new FALCON tutors
  - Improving membership 'awareness' through creation of videos aimed at potential new young members, illustrating ESTRO's services
  - Revise the concept of the ESTRO Fellow, including a self-assessment tool

## A REPORT FROM THE TEACHING LECTURE IN THE YOUNG TRACK IN GENEVA

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### HOW TO BUILD A SUCCESSFUL SCIENTIFIC CAREER: HINTS AND ADVICE FOR YOUNG SCIENTISTS

*Speaker: Adrian Begg (NL)*

Prof. Adrian Begg from the Netherlands Cancer Institute (NKI) gave us an excellent teaching lecture entitled “*How to build a successful scientific career: hints and advice for young scientists*”.

Prof. Begg began by stressing the importance of choosing a research group with a good reputation as the place to start your training. Aside from the available infrastructure, he identified a strong student/supervisor relationship, nurtured by regular communication, and monitored by a supervision committee as key to successful research training. Prof. Begg next outlined the need for a successful scientist to be curious, motivated, focused and sociable.

Indeed, the ability to open yourself to your peers and learn from them is a second key to success: he recommended taking part in journal clubs, seminars and favour attendance at small rather than large scientific meetings, to enrich your knowledge and your research network.

Finally, he advised that regular assessment of performance, goals and opportunities are important in order to find your place in the scientific world.

*Laure Marignol*

## REPORTS FROM THE YOUNG MOVING POSTER DISCUSSION AT ESTRO, GENEVA

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### YOUNG SCIENTIST POSTER AWARD

*Clinical Poster : Laurien Daniëls*

For the 2<sup>nd</sup> ESTRO Forum in Geneva this year, I submitted the abstract of our research: Long-term Risk of Secondary Skin Cancers after Radiation Therapy for Hodgkin Lymphoma. Hodgkin Lymphoma survivors are known to be at risk of developing secondary tumours due to the treatment they have received. However, little is known about the increased risks of developing radiation induced skin cancers in these patients. In our study, we evaluated the occurrence of skin cancers among patients treated in our facility in the Netherlands, and found that the risk in patients treated with radiotherapy is significantly increased, both compared to patients treated with chemotherapy alone and to the general Dutch population.

After submitting, the abstract I learned that we had not just been selected for a poster presentation, but that our work had also been nominated for the Best Young Scientist Poster Award. Winners would be selected after the presentation of the poster, which was held in small sessions with posters of similar topics.

Each presenting author was given six minutes to explain their research, with four minutes for questions and discussion. My poster was assigned to the CNS, Haematology and Gynaecology session. The fact that the separate sessions were kept small made it easy to interact with the other authors and ensured sufficient time to ask in depth questions. In my presentation I gave a short overview of the methods used in our research – since epidemiological statistics are not always easily understood – and I commented on our results and the clinical relevance of our findings. Afterwards, there were some very good questions, indicating that the other authors were well prepared for the session. All and all, it was a fun and informative way of presenting posters.

Unfortunately, it wasn't clear to me that the winners of the award would be selected during the Forum event. Therefore, I missed the Young Scientist reception with the award ceremony. However, after returning to the Netherlands, I found an email in my inbox congratulating me on winning! Although already honoured to be nominated for the award in the first place, I am delighted to have won as it offers a unique opportunity to draw attention to the research that we conducted. ▼



LAURIEN DANIËLS

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SARA LEIBFARTH

## YOUNG SCIENTIST POSTER AWARD

### *Physics Poster : Sara Leibfarth*

At the 2<sup>nd</sup> ESTRO Forum in Geneva in April 2013 I had the opportunity to present my work at a Young Scientists Poster Session. In this kind of session, eight young scientists with similar research topics are grouped together and each participant gives a short presentation about their poster to the audience. The audience in this session is limited to the other presenting group members, others closely connected to the projects, and the two chairpersons. After each presentation the audience is encouraged to ask questions.

I participated in the session with the general topic “Image registration and management of intra- and interfraction motion”, where I presented my project about multimodal deformable image registration. In short, my work is about developing an accurate and robust strategy for the fusion of CT and MR for the integration of combined PET/MR data into radiotherapy treatment planning. The background is that PET/MR provides a good basis for biologically individualised radiotherapy, since it offers valuable anatomical, functional and molecular information that complements the information provided by the planning CT.

I like the concept of the Young Scientists Poster Session very much because one can make contact quite easily with other young scientists working on similar projects. The rather small group provides a nice atmosphere for scientific discussion. Thus, this is a good opportunity to exchange ideas and get feedback from the other researchers in the field. There was a high level of active participation in the session, from which I think everyone in the group profited.

The presenters at the Young Scientist Poster Sessions received a poster award which provides free registration to a course run by the ESTRO school. I was very pleased to receive the Best Physics Poster Award for my contribution. Now I am looking forward to attending an ESTRO course.

*Sara Leibfarth*  
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## ESTRO MOBILITY GRANT (TTG) REPORTS

## ADAPTIVE RADIOTHERAPY OF HEAD AND NECK CANCERS (HNC): GEOMETRICAL AND DOSIMETRIC EVALUATIONS USING DEFORMABLE IMAGE REGISTRATION TOOLS

*Elisabetta Cagni, Medical Physicist,  
Arcispedale Santa Maria Nuova, Reggio Emilia, Italy*

Host Institute: University Catholique de Louvain, Molecular Imaging, Radiotherapy and Oncology, Brussels, Belgium ▼



ELISABETTA CAGNI

**BACKGROUND AND PURPOSE**

HNC patients may undergo significant anatomical changes over the course of a radiation treatment. Shrinkage of the primary tumour and nodal volumes, weight loss and alteration in muscle mass and fat distribution have been widely observed and reported. These effects may be responsible for the geometrical miss of the tumour (TV) and/or for unnecessary irradiation of organs at risk (OARs). The use of on-board imaging devices (IGRT) combined with non-rigid deformation tools may help to estimate the volume changes.

The main points of this TTG project study were:

- To evaluate the results in terms of anatomical changes of HNC patient during treatment. In particular to quantify the volumetric and positional changes of high dose targets volumes (GTV,CTV, PTV), and organ at risk (OAR).
- To evaluate the differences between planned, delivered and adaptive dose, taking into account the voxel tracking information, caused by anatomical changes in terms of both physical (dose and volume) and biological index (TCP and NTCP).

**MOTIVATION FOR SITE SELECTION**

The UCL Department of Radiation Oncology and Laboratory of Radiobiology and Radiation Protection (RBNT) is one of the major centres studying the use of functional imaging with PET for treatment planning radiotherapy of head & neck and lung tumours. This Department is also closely involved in Adaptive radiotherapy treatment and, in particular, in the evaluation of dosimetric impact of anatomical modifications during radiation therapy for head and neck cancer. Moreover the group is actually studying Dose Painting aspects for lung, and head & neck cancer patients: from target delineation to individualised dose-escalation strategies using PET images.

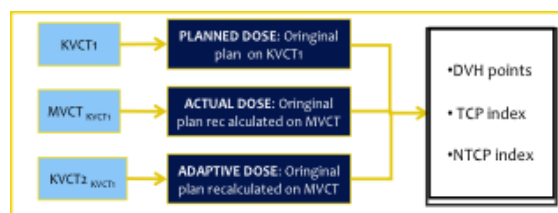
**MATERIAL AND METHODS**

Five HNC patients treated by chemo-RT were retrospectively analysed. These patients underwent IMRT simultaneous integrated boost (SIB) and daily IGRT by Helical Tomotherapy (HT). For each patient, the planning (KVCT1) and a per-treatment kvCT (KVCT2) as well as a HT-MVCT, performed the same day as KVCT2, were used.

TVs and OARs were manually delineated on KVCT1 and KVCT2 by a physician. Per-treatment MVCT structures were automatically delineated using a deformable registration algorithm (Smart Adapt (SA) (Varian Medical System, v.11)).

To study the impact of anatomical modifications on dose distribution, the total dose that was actually delivered during the course of the treatment was calculated. First, the planned Tomotherapy sinogram was applied on the MVCT to generate a per-treatment dose map. Then, the per-treatment MVCT was registered to the planning CT using the deformable registration SA tool, generating a MVCT-KVCT1 deformation map on the pre-treatment KVCT1. A tool was developed to apply this deformation field to the corresponding per-treatment MVCT dose map on the pre-treatment KVCT1. This tool is integrated in the free tool of DIRART (Deformable Image Registration and Adaptive Radiotherapy) environment. Finally, the cumulative dose distribution was calculated taking into account the relative dose weight of each CT image set, using the CERR software (Computational Environment for Radiotherapy Research) to find out the *Actual dose distribution*.

To study the potential gain of a re-planning strategy, a new treatment plan was generated on the KVCT2 per-treatment planning image set. The per-treatment new dose map was back-projected on the pre-treatment KVCT1 set. The cumulative Adaptive dose distribution was calculated using the same method described for the *Actual dose distribution* (Figure 1). ▼



**FIGURE 1** Dosimetric comparison between Planned, Actual and Adaptive Dose by means of non-rigid registration field in terms of dosimetric and radiobiological indices.



An EUD-based TCP and NTCP model was estimated for high-dose targets (PTV and CTV) and parotid glands, respectively. The parameters required for this model are TD50,  $\alpha$ ,  $\alpha/\beta$ . For the targets we used TD50=46 Gy,  $\alpha$ =13,  $\alpha/\beta$ =10 Gy and for parotid glands, TD50=28.4 Gy,  $\alpha$ =0.5,  $\alpha/\beta$ =10 Gy.

The differences between planned, actual, and adaptive dose distributions in terms of physical and biological indices (TCP and NTCP for high dose target and parotid glands) were reported.

		PLANNED		ACTUAL		Diff%	ADAPTIVE		Diff%
		Mean	StDev	Mean	StDev		Mean	StDev	
CTV66	D2% (Gy)	69,6050	0,8515	69,0550	0,9394	-0,7902	69,2730	0,5952	-0,4770
	D50% (Gy)	67,9650	0,7616	67,9630	0,7693	-0,0029	68,0910	0,6191	0,1854
	D95% (Gy)	66,5850	0,6865	66,6550	0,7898	0,1051	66,9650	0,4848	0,5707
	D98% (Gy)	66,2370	0,7266	65,9730	1,0346	-0,3986	66,5650	0,5568	0,4952
	TCP (%)	96,5453	0,1452	96,5519	0,1307	0,0068	96,5696	0,1121	0,0251
PTV66	D2% (Gy)	69,5790	0,8628	69,0750	0,9361	-0,7244	68,9591	1,0312	-0,8909
	D50% (Gy)	67,8030	0,7309	67,7470	0,7275	-0,0826	67,7970	0,7394	-0,0088
	D95% (Gy)	65,7210	0,2540	65,2750	1,2575	-0,6786	65,4170	0,7652	-0,4626
	D98% (Gy)	64,9691	0,7104	64,0290	1,9084	-1,4470	64,0730	1,3718	-1,3793
	TCP (%)	96,2755	0,5164	96,0914	1,3124	-0,1912	96,2382	0,5330	-0,0387
SpinalCord	Dmax1cc (Gy)	24,9350	3,2596	26,1070	2,1081	4,7002	26,4390	4,1010	6,0317
Oral Cavity	Dmean (Gy)	42,5813	7,8678	43,6274	8,3176	2,4568	44,6171	9,2631	4,7809
Parotid glands	Dmean (Gy)	25,3122	8,1076	25,9421	7,1506	2,4887	25,4238	10,2617	0,4409
	NTCP (%)	20,2480	14,5231	22,3400	14,4489	10,3320	21,3349	20,0693	5,3683

TABLE 1 Comparison between Planned, Actual, and Adaptive dose in terms of dosimetric and radiobiological indices

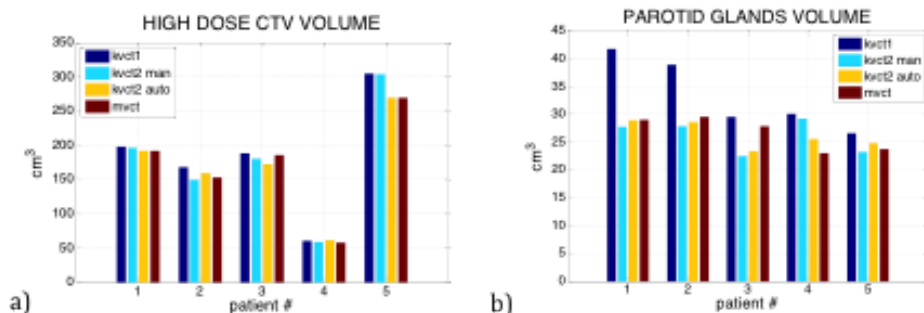


FIGURE 2

(a) Volume variations between kvct1, kvct2 and mvct for the high dose volume CTV in the five patients considered in this study;

(b) Volume variations between kvct1, kvct2 and mvct for the parotid glands in the five patients considered in this study.

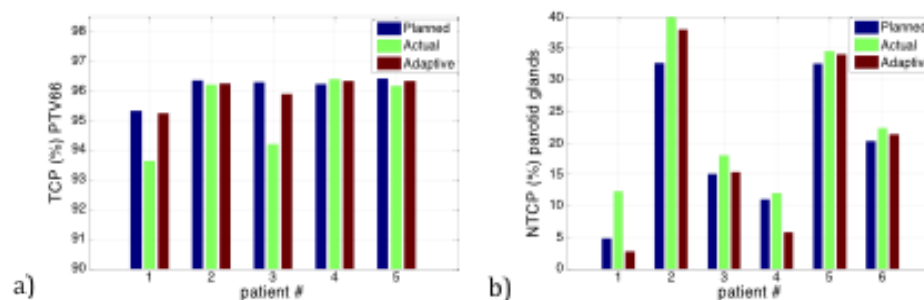


FIGURE 3

(a) TCP variations between Planned, Actual and Adaptive Dose for the high dose volume PTV in the five patients considered in this study;

(b) TCP variations between Planned, Actual and Adaptive Dose for the parotid glands in the five patients considered in this study.

## RESULTS

The volume reduction ( $\Delta V$ ) and centre-of-mass shift (CMS) of both OARs and TVs during the course of radiotherapy were reported, comparing the volumes on KVCT1 and KVCT2. A  $\Delta V$  ▼

of  $-1.84 \pm 3.19$  % and  $-20.22 \pm 4.36$  % and a CMS of  $0.43 \pm 0.13$  cm and  $0.47 \pm 0.16$  cm were observed for the GTV and parotids respectively. Some of these results are shown in *Figure 2*.

The comparison between Planned, Actual, and Adaptive dose has been summarised in *Table 1*.

Concerning the targets, we observed a decrease of TCP for the Actual high dose PTV compared with both the Planned and Adaptive TCP (*Figure 3. a*). At the same time we observed lower values of D98% and Dmean of the Actual dose distribution with respect to the Planned and Adaptive one. For high dose CTV, the biological and dosimetric indices are quite similar for Planned, Actual, and Adaptive dose distribution.

For both parotid glands combined, the Actual Dmean showed an increase of 2% compared with the Planned Dmean. The corresponding NTCP value increment observed was around 10%. The re-planning strategy allows the NTCP values to be reduced close to the original Planned ones (*Figure 3. b*). For the oral cavity the Planned Dmean was 2. % smaller than the Actual ones. For the spinal cord, there was an increase of about 4.0% between the Actual and the Planned one.

### CONCLUSIONS

The dose distribution that is actually delivered to patients differs from what was planned because of anatomical modifications. For most cases, adaptive radiotherapy is feasible in HNC treatment and could compensate and improve dose distribution.

I am very grateful to Professor Vincent Gregoire, Director, Department of Radiation Oncology and Center for Molecular Imaging and Experimental Radiotherapy and his team for their hospitality and support. I would like to address special thanks to Dr. John Lee for valuable discussion and the time he dedicated to my research.

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VEDRAN RAJEVAC

## IMPROVING THE QUALITY OF THE RADIOTHERAPY USING HYPERFRACTIONATED RADIO/CHEMOTHERAPY IN H&N TUMOURS

2 – 25/02/2013

*Vedran Rajevac, Division of Radiation Oncology, Department for Tumours, University Hospital Center Sisters of Charity, Zagreb, Croatia*

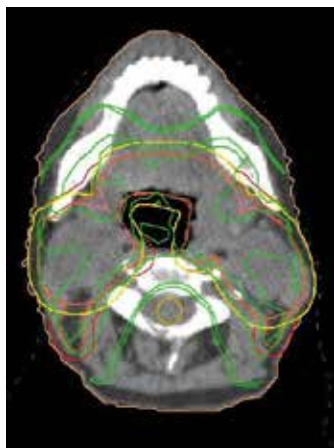
**Host Institute: Universitätsklinikum Carl Gustav Carus an der Technischen Universität Dresden, Germany**

The main aim of this multidisciplinary project is to improve the quality of radiotherapy using hyperfractionated radio/chemotherapy in H&N tumours. This project involves a different procedure (patient preparation, simulation, delineation and dose prescription, planning, plan verification, QA of the patient and irradiation on the linear accelerator).

Thanks to this opportunity, I was able to assist world-class specialists in Head and Neck treatment. The experience gained in Dresden has already been used in our department. Moreover, this visit may contribute to introducing IMRT in head&neck treatment in my country.

### PATIENT PREPARATION

The patient was prepared to be as reproducible as possible. Fixation was done with 4-point mask in the supine position. ▼



**FIGURE 1** Treatment planning with IMRT

### SIMULATION

The simulation procedure started on the conventional simulator where the reference point was determined (front edge of C4, on the medial line of the patient). A CT scan was then performed with 3 mm slices.

### DELINEATION AND DOSE PRESCRIPTION

RTT delineated the organs at risk (OAR): spinal cord, brain stem, parotids, lens and outer patient contour. Each patient also had an MRI. After the CT and MRI were registered, a radiation oncologist contoured the optical nerves, the optic chiasm, inner ear and brachial plexus and target volumes according to the institutional guidelines. Hyperfractionated (accelerated or not) regimes were generally preferred.

Dose prescriptions were:

- According to Budach: 30 Gy/2.0 Gy/fx, then 29.4 Gy/ 2 x 1.4 Gy/fx with Boost 12.6 Gy/ 2 x 1.4 Gy/fx CTx: 5FU d1-5, CDDP every Monday
- According to Bonner: 70 Gy/ 2.0 Gy/fx in 6 weeks, max. 7 weeks; alternatively 2 x 1.2 to 76.8 Gy
- With Cetuximab: Loading dose d-3, then every friday - hyperfractionated: 60 Gy adjuvant with 2 x 1.2 Gy, Boost 16.8 Gy/ 2 x 1.2 Gy/fx
- Conventionally: 70 Gy/ 2.0 Gy fx over 7 weeks or better accelerated in 6 weeks with 6 fractions per week (2 Fx on Friday)
- Palliation: 50-60 Gy/ 2.0 Gy/fx, or 10 x 3 Gy or 5 x 5 Gy, according to patient's condition
- Adjuvant RT: 50 Gy/ 2.0 Gy/fx with boost: 10 Gy; in case of high risk: 16.0 Gy + Cisplatin 100 mg/m<sup>2</sup> week 1/4/7

### PLANNING

Conformational 3D or IMRT treatments were planned. 3D planning was performed on Master Plan with collapsed cone algorithm. IMRT planning was always used when LN from both sides were included in the target volume or when the target volume was concave. IMRT was calculated on Pinnacle and checked with the Master plan. The IMRT plan used 5, 7 or 9 treatment fields, depending on the complexity of the target volume.

### PLAN VERIFICATION

Treatment plans were verified by two oncologists. When the plans were approved, a second physicist checked the dose in the record and verify system (Mosaik). The criteria for acceptance of the treatment plans were based on ICRU 50 and 62 reports as well as on the literature data on the OAR.

For instance, dose constraint on the spinal cord was  $D_{max} < 45$  Gy.

When hyperfractionated treatments were performed, the dose was calculated using the LQ model with  $a/b=2.5$ . On the brain stem and brachial plexus  $D_{max}$  were 54 and 56 Gy respectively. On the parotids median dose was limited to 28 Gy. The whole procedure from CT simulation to treatment planning approval took about seven days.

### QA OF THE PATIENT AND IRRADIATION ON THE LINEAR ACCELERATOR

Before the first fraction, the position of the patient was checked by the radiation oncologist and the RTT. Before every fraction, the position of the patient was checked with the EXACTRAC system. This system has 2 kV RX tubes with the detectors in the ceiling. Images were compared to DRRs from the treatment planning CT and the system automatically calculated the required movements of the treatment table.

*Vedran Rajevac*

*Division of Radiation Oncology,  
Department for Tumours, University Hospital Center Sisters of Charity,  
Zagreb, Croatia*

**“Cancer therapy is a major economic expenditure for all developed countries”**



YOLANDE LIEVENS



PETER DUNSCOMBE



MADELON PIJLS

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## BRIDGING THE GAP OF EVIDENCE AND TOWARDS PERSONALISED MEDICINE

Health care, and specifically cancer therapy, is a major economic expenditure for all developed countries. This is not simply due to an increase in absolute numbers of patients and treatments, but also because of the increased expenditure per cancer treatment. For decision-makers primary studies of costs of health technology are gaining importance and cost-effectiveness data are increasingly being used to estimate the incremental health gain for an incremental use of resources. A major problem in economic evaluations for new technologies is often the lack of evidence as a result of limited data on effectiveness as well as on costs. This can cause controversy in the results.[1]

In the absence of level 1 evidence, well-performed modelling studies which take into account uncertainties and available cost and outcome parameters can help to tackle this problem. However, modelling studies need valid data to populate the model. In cases where data on effects of new technologies of radiotherapy are unavailable, data from in silico dosimetric data (i.e. comparative planning studies)[2], combined with Normal Tissue Complication (NTCP) models could be used. NTCP models estimate the probability of toxicity according to the expected radiation dose to healthy tissues. In silico dosimetric data, compare the dose distributions in patients for different radiation therapy techniques.

In a recent publication by Ramaekers *et al.* [3] NTCP models and comparative planning studies were used to explore the (cost-)effectiveness of swallowing sparing Intensity Modulated Proton radiotherapy (IMPT) compared with swallowing sparing Intensity Modulated Radiotherapy with photons (IMRT) in Head and Neck cancer (HNC).

Markov model was used to compare 3 groups for the probability of developing the radiation related side effects of dysphagia and xerostomia in the following divisions: (1) IMPT for all patients; (2) IMRT for all patients; and (3) 'IMPT if efficient', that is, IMPT only in those patients where planning and cost data suggest that the outcome would be superior to the standard of IMRT.

The required dose parameters were retrieved from a planning study comparing swallowing-sparing IMRT and swallowing sparing IMPT. Subsequently, the individual dose parameters and NTCP models were used to calculate individual IMPT/IMRT toxicity probabilities (<http://www.predictcancer.org/Main.php?page=MarkovInfo>). These individual probabilities were used to obtain the average probabilities for each of the three groups. The toxicity probabilities for 'IMPT if efficient' were obtained by first determining which treatment (IMPT/IMRT) was expected to be cost-effective for each individual patient. This was done by using the individual dose parameters and toxicity probabilities to calculate individual cost-effectiveness. Secondly, in patients for whom IMPT was expected to be cost-effective the IMPT probabilities were used (whereas the IMRT probabilities were used in the remaining patients).

The authors found that IMPT and IMRT each used for all patients yielded 6.620 and 6.520 QALYs and cost €50,989 and €41,038, respectively. In other words, IMPT compared to IMRT resulted in an incremental cost-effectiveness ratio of €127,946 per QALY gained, which is typically not considered value for money. 'IMPT if efficient', on the contrary, yielded 6.563 QALYs and costs €43,650, resulting in an incremental cost effectiveness ratio of 'IMPT if efficient' versus IMRT for all patients of €60,278 per QALY gained. It was concluded that the cost-effectiveness analysis based on normal tissue complication probability models and planning studies proved feasible and informative and enables the analysis of individualised strategies. The increased effectiveness of IMPT does not seem to outweigh the higher costs for all head-and-neck cancer patients. However, when assuming equal survival amongst both modalities, there seems to be value in identifying those patients for whom IMPT is cost-effective.

The authors demonstrated a unique methodology which appeared feasible in cases where data on clinical effectiveness are unavailable. Hence, NTCP models and in silico dosimetric data can be used in economic evaluations to estimate the expected benefit of innovative radiation therapy techniques.

This method could be 'copied' to other modalities and indications to bridge the gap of evidence. Of course, if available, prospective data will always 'win' from in silico data. Therefore analyses based on in silico data must always be validated with results of prospective studies. Nevertheless, the combination of planning studies and NTCP models can be helpful in clinical decision-making and to identify patients that would benefit most from a new technology. This may increase both efficiency and the adoption of personalised medicine.

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**“In this Conference  
Corner we have started  
to lift the veil  
on ESTRO 33”**

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AGOSTINO BARRASSO  
Congress Manager



ERALDA AZIZA  
Programme Manager

## AND ONTO THE NEXT ONE...

The hubbub and tumult of the 2<sup>nd</sup> ESTRO Forum has just fizzled out somewhat, but already we are onto the next succession of events. Indeed, life for congress planners never seems to include any down-time and this is also very true when it comes to ESTRO Conferences!

Preparations for the joint 17<sup>th</sup> ECCO – 38<sup>th</sup> ESMO – 32<sup>nd</sup> ESTRO European Cancer Congress and ESTRO 33 are in full swing.

In this Conference Corner you can read about how the 2013 European Cancer Congress envisages a further enhancement of its scientific standards thanks to the significant increase of abstract submissions.

We have also started to lift the veil on ESTRO 33. We share with you what is being prepared for the scientific programme of this congress that is being held in 2014 in Vienna; the birth-city of radiotherapy.

We are pleased to take you for a stroll along memory lane to revisit our recently hosted 2<sup>nd</sup> ESTRO Forum. We have provided you with some facts, figures, and feedback which we believe stand testament to a successful formula. And, you have listened to their presentations or you have viewed their abstracts, now we offer you the chance to get to know the people behind the awards a little bit more personally. See what their Award means to them, who they thank and how they have come to be involved with ESTRO.

Enjoy you reading!

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## FOCUS ON ESTRO CONFERENCES

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JOHN YARNOLD

## EUROPEAN CANCER CONGRESS

27 September - 1 October 2013  
Amsterdam, The Netherlands

Be one of 18,000 delegates expected in Amsterdam, 27 September - 1 October 2013!

“Reinforcing multidisciplinary” may seem an obvious theme for a cancer congress. We all practise multidisciplinary oncology, so **why attend after enjoying such a successful ESTRO Forum in Geneva?**

The most compelling reason is that radiation oncologists cannot afford to fall behind in understanding, if not exploiting, advances in other clinical specialities and in translational research. The course’s topics may involve moving beyond one’s comfort zone at times, but the rewards are often as great as they are unexpected. The programme is packed with new findings this year, courtesy of 700 invited speakers and 3000 submitted abstracts, including a strong contribution from radiation oncology. The Amsterdam congress promises to be interesting and fun!

*John Yarnold*  
Co-scientific Chair

### RECORD LEVEL OF ABSTRACT SUBMISSIONS FOR THE ECC 2013

The 17<sup>th</sup> ECCO – 38<sup>th</sup> ESMO – 32<sup>nd</sup> ESTRO European Cancer Congress is an ideal platform for consolidating expertise and resources across borders and speeding up the translation of discoveries into applications that impact healthcare delivery. Organised in partnership with ESSO 33, EACR, EONS and SIOPE, focus has been placed on enhancing the scientific excellence of the ECC 2013 programme to ensure it plays a pivotal role in facilitating these processes.

A record 38 percent increase has occurred in the number of abstracts submitted in comparison to the Stockholm Congress in 2011. The largest number of submissions came from Japan, followed by The Netherlands, UK, Italy, Spain and the USA. With such record submissions, the Congress will play a pivotal role in establishing standards for the future in Europe.

Basic, translational research and drug development make up 23 percent of all submissions, clearly demonstrating the importance of basic and translational research to this meeting. This highlights the uniqueness of the Congress in bringing together scientists and clinicians to discuss the fundamentals of cancer, furthering the understanding and development of its diagnosis, treatment and care. We also had increased numbers of radiotherapy, systemic therapy, surgery, pathology and radiology abstracts, demonstrating the true multidisciplinary of the meeting.

Gastrointestinal malignancies are proving to be the most popular tumour type, with 20 percent of all abstracts submitted covering colorectal and non-colorectal topics. This is closely followed by breast cancer, genitourinary malignancies, lung cancer and head and neck cancer. This year we saw a 64 percent rise in the submission of abstracts on gynaecological cancer compared to 2011, propelling gynaecological cancer into the Top Ten for abstract submission.

Abstract submissions will reopen again for late-breaking abstracts from 24 July until 7 August, where we hope to attract the latest practice-changing data to the European Cancer Congress 2013 also.



**ECCO 17**

**ESMO 38**

**ESTRO 32**

**In partnership:**

**ESSO 33**

**EACR**  
European Association for Cancer Research

**SIOPE**  
Society for International Radiation Oncology

**17<sup>th</sup> ECCO - 38<sup>th</sup> ESMO - 32<sup>nd</sup> ESTRO**  
**European Cancer Congress**  
Reinforcing multidisciplinary  
AMSTERDAM, 27 SEPTEMBER - 1 OCTOBER 2013  
[www.ecco-org.eu](http://www.ecco-org.eu)

**The European Cancer Congress 2013:**  
**Showcasing the latest practice-changing research**

As a vital aspect of treatment and care from the day of diagnosis through the entire course of a patient's disease, radiation oncology forms an integral part of the Congress's multidisciplinary focus:

- The Imaging track discusses the role of images in tumour response monitoring
- The Radiobiology/radiation physics/radiotherapy track will present the latest updates and achievements of significance for radiation oncologists
- The Oncotechnology & bioengineering track will showcase new image-guided therapies, novel radiation technologies and strategies, nanotechnologies, etc.
- Clinical radiation oncology will be featured in all the Organ tracks

**Recognised Impact**
 **Top Quality Content**  
 **Global Visibility**
 **No Limits**

**Late-breaking Abstract Submission: 24 July – 7 August, 2013**  
[eccamsterdam2013.ecco-org.eu](http://eccamsterdam2013.ecco-org.eu)

## ESTRO 33 4 - 8 April 2014 Vienna, Austria



DANIEL ZIPS



CLAUDIO FIORINO

On behalf of the Scientific Programme Committee, we are pleased to invite you to attend the ESTRO 33 congress in Vienna, Austria from 4 to 8 April 2014.

ESTRO is an interdisciplinary society where radiation oncologists, medical physicists, biologists, RTTs (Radiation Therapist) and nurses aspire to join forces with other organisations in the oncology field that share ESTRO's vision of excellence in cancer treatment. At ESTRO 33, we draw attention to the multidisciplinary and interdisciplinary components of our practice, with emphasis on the new opportunities that they represent for all professionals of oncology, not only in research but also in the daily care of patients.

The interdisciplinary component of our society will be highlighted during sessions addressing prominent topics in Radiation Oncology such as individualised approaches, safety and quality, adaptive strategies and new technologies. Recent trends in medical physics and radiation biology will also be receiving wider coverage from different perspectives. The multidisciplinary component of our profession will be highlighted in several joint sessions with other oncology societies.

ESTRO 33 will continue with the tradition of starting the congress with a series of pre-meeting courses and contouring workshops. Some of the many highlights in the scientific programme will include presentations of the best abstracts and several joint sessions with international scientific organisations.

As in previous conferences, ESTRO 33 will offer an additional Young Scientists Track on Sunday, 6 April. This track is fully organised by our young members and it enables them to meet young colleagues, share common interests, network and start to build their own collaborative projects at an international level.

Finally, all of the leading exhibitors will contribute to ESTRO 33, Europe's largest industrial exhibition in Radiation Oncology, offering the opportunity to view the latest products and services in cancer treatment and cancer care.

Hosting the annual ESTRO congress in Vienna is not a pure coincidence: this is the city where radiotherapy started more than 100 years ago and special sessions in the scientific programme will pay homage to the Vienna School of Radiotherapy and to some of the pioneers of radiotherapy.

The Scientific Programme Committee is working hard to further develop the ESTRO annual congress as the prime scientific gathering of Radiation Oncology in the world. Therefore we encourage you to participate in next year's edition by submitting your abstracts.

Sincerely,

*Daniel Zips and Claudio Fiorino*  
*Chairpersons of the Scientific Programme Committee*



ESTRO  
**33**

4 - 8 April 2014  
*Vienna, Austria*



WWW.ESTRO.ORG

## FOCUS ON FUTURE JOINT CONFERENCES

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### EMUC

#### European Multidisciplinary Meeting on Urological Cancers

*15-17 November 2013*

*Marseille, France*

After the success of the fourth meeting in Barcelona, we are moving onto our first milestone – the 5th edition of the European Multidisciplinary Meeting on Urological Cancers.

We will be dealing with new challenges and discussing the latest data in the field with the world's top experts in the field of urology, radiation and medical oncology. Our cooperation is well-established but we have yet to deal with many challenges in the practical implementation and dissemination of multidisciplinary knowledge in uro-oncological centres within and beyond Europe. Ours is a continuous effort, but the success of the European Multidisciplinary Meeting on Urological Cancer reassures us that we are going in the right direction.

We are also very excited about inviting you to the meeting's new venue in France's second largest city – Marseille. This beautiful Mediterranean city was designated as the European ▼



Capital of Culture in 2013, and the delegates will certainly have many opportunities to enjoy the city at its best.

Looking forward to seeing you in Marseille,

The EMUC Scientific Committee:

EAU - Prof. Walter Artibani, Verona (IT)

EAU - Dr. Steven Joniau, Leuven (BE)

ESMO - Prof. Tim Eisen, Cambridge (UK)

ESMO - Prof. Carsten Bokemeyer, Hamburg (DE)

ESTRO - Prof. David Dearnaley, Sutton (UK)

ESTRO - Prof. Marco van Vulpen, Utrecht (NL)

ESUR - Gertraud Heinz-Peer, Vienna (AT)

EORTC Genito Urinary Cancer Group - Prof. Noel Clarke, Manchester (UK)

[WWW.EMUC2013.ORG](http://WWW.EMUC2013.ORG)



## 5th European Multidisciplinary Meeting on Urological Cancers

Embracing Excellence in Treatment of Prostate,  
Bladder and Kidney Cancer

**From guidelines to personalised medicine**

**Abstract deadline: 8 July 2013**

15-17 November 2013, Marseille, France

[www.emuc2013.org](http://www.emuc2013.org)



Organised by

 **EAU** European  
Association  
of Urology

 **ESMO** GOOD SCIENCE  
BETTER MEDICINE  
HIGH PRIORITY  
European Society for Medical Oncology

 **ESTRO**  
European Society for  
RADIOTHERAPY  
& ONCOLOGY

# FOCUS ON PAST CONFERENCES

### Introduction

## The 2<sup>nd</sup> ESTRO Forum in a Nutshell

As our President and Scientific Programme Committee Chair, Vincenzo Valentini, puts it in the Post Forum Report ([link](#)) “I think we’ve finally cracked it!”

This 2<sup>nd</sup> ESTRO Forum, hosted in Geneva last April, can be considered as a success on all fronts and has provided us with confirmation that we can further consolidate this strong format – bringing together five meeting components – for our future Forum congresses.

What better way to herald the Forum’s success then by providing you with some numbers:

- We welcomed 3647 delegates from 67 countries
- Physicists and radiation oncologists each made up 37% of the attendees, followed by RTTs (14%), clinicians (5%) and 3% biologists
- A total of 161 sessions were provided, of which 26 were interdisciplinary
- 1175 abstracts were received, of which 335 were selected for presentations
- 260 speakers were invited
- 88 exhibitors made for a great technical exhibition
- 121 delegates attended the contouring workshops
- 438 delegates attended the 6 pre-conference courses
- Alongside the Award lectures and the Poster awards, 4 Lifetime Achievement awards were handed out, as well as one university award, and several company awards
- 10 commercial satellite symposia were hosted
- 10 people benefitted from a travel grant to attend the Forum
- 3 new ESTRO Fellows passed the exam: R. Shankar (IN), N. Dinapoli (IT), W. Mohamed (EG)

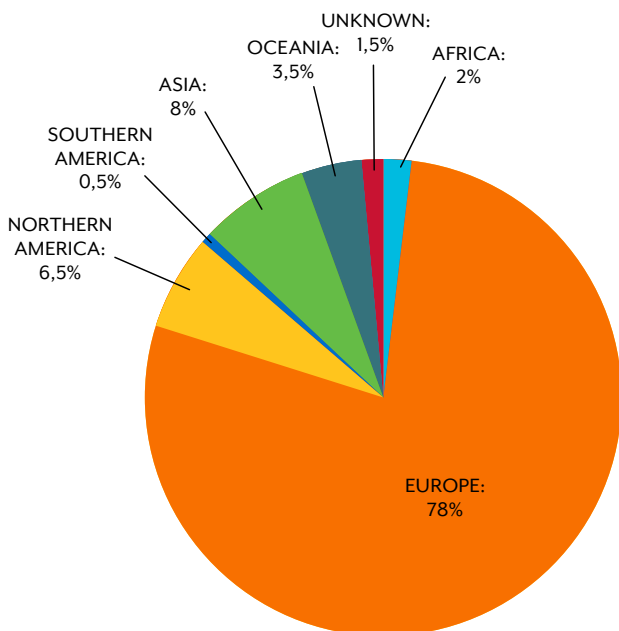


AGOSTINO BARRASSO

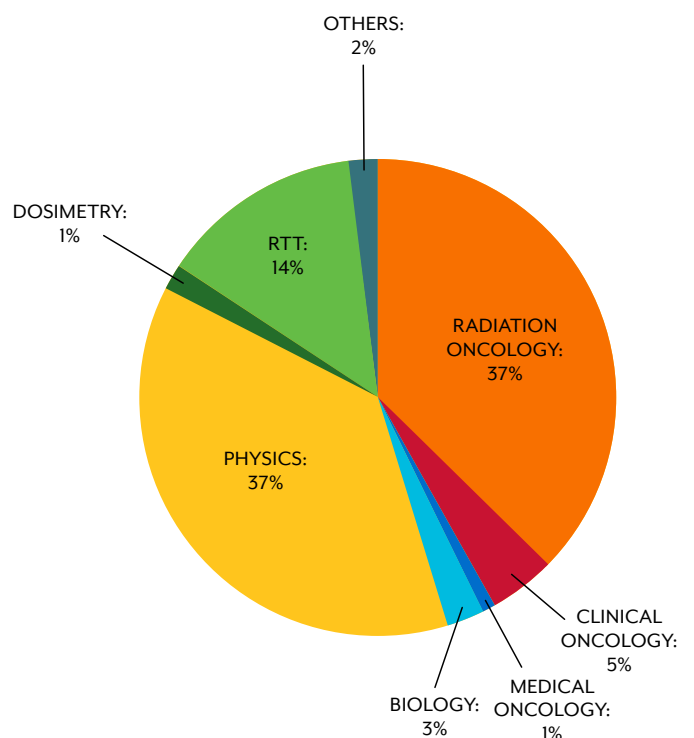


ERALDA AZIZA

### GEOGRAPHIC BREAKDOWN OF THE PARTICIPANTS



### DISCIPLINARY BREAKDOWN OF THE PARTICIPANTS



**THE FOLLOWING TOPICS WERE PRESENTED TO THE PRESS:**

- World's largest study of a new radiotherapy technique finds that it can reduce side effects after breast cancer treatment
- Can palliative radiotherapy help elderly patients?
- Can the lungs and heart be better protected during thoracic radiation treatment?
- How do doctors and mathematical models compare in predicting cancer patients' outcomes and responses to treatment?
- New radiotherapy approach reduces symptoms of dry mouth in head and neck cancer patients
- Two landmark studies – EMBRACE and retroEMBRACE – report on using brachytherapy for treating cervical cancer.

The scientific programme proved to be of interest for anyone working in, or with an interest in, the field of radiation oncology. Certain sessions were specific crowd-pleasers:

- The plenary lecture in which the two highest scoring abstracts were presented:
  - HNSCC cell lines positive for HPV and p16 possess high cellular radiosensitivity due to impaired DSB repair capacity. Presented by T. Rieckmann (DK) and discussed by J. Overgaard (DK)
  - A national dosimetric audit of VMAT and Tomotherapy in the UK. Presented by C.H. Clark (UK) and discussed by T. Knöös (SE)
- The riveting closing debate 'The house believes that technology is the obsession but not the answer'. Debated by A. Zietman (USA) and D. Verellen (BE)

We would like to thank all those who took the time to fill-out the evaluation survey. Here is some of the feedback we received:

- 72% felt they learnt about the latest improvements in radiation oncology
- 66% felt they learnt about innovative high precision technologies for imaging cancer patients
- 47% felt they were introduced to new areas of research
- 53% felt the quality of the education on offer was 'good' and 33% of you felt it was 'very good'
- 52% felt that the overall management and organisation of the congress was 'good' and 29 % of you rated it as 'very good'
- 71% of you really appreciated the interdisciplinary tracks
- Some of the feedback to take into account for future congresses related especially to acoustics in the meeting rooms, the high cost of the host city, the organisation of the E-posters, and the catering facilities

We look forward to continuing this appealing approach and invite you to attend ESTRO 33 in Vienna in April 2014.

Kind regards,

*Eralda Azizaj & Agostino Barrasso*  
 Programme Manager - Congress Manager

**RELIVE THE 2<sup>ND</sup> ESTRO FORUM'S MEMORABLE MOMENTS**

The Forum delivered a scientific programme of remarkable interest and you can now reminisce about some of its highlights. The report gathers a compilation of some of the most noteworthy abstracts as selected by the Scientific Committee Chairs as well as certain Award winning abstracts. The web casts offer video recordings of speakers that have been synchronised with the corresponding slide show. Viewing is restricted to participants and ESTRO members; log-in instructions have been sent by e-mail

**Download and read the Geneva post Forum report:**

[www.estro.org/binaries/content/assets/estro/conferences/forum2013/post-forum-report.pdf](http://www.estro.org/binaries/content/assets/estro/conferences/forum2013/post-forum-report.pdf)

**See the photos:**

[www.fewer.nl/ESTROforum2013/](http://www.fewer.nl/ESTROforum2013/)

**Award Interviews**

**ESTRO Lifetime Achievement Award**

**Professor Mary Gospodarowicz**

*Radiation Oncologist, Princess Margaret Cancer Centre, Toronto, Canada*

**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

The huge opportunity of developing Radiation Oncology in Toronto and at Princess Margaret Hospital. Now, it is contributing to the global cancer cause as President of UICC with the purpose of uniting the cancer community to lower the global burden of cancer, promote greater ▼



equity and integrate cancer control in the global health and development agenda.

**WHAT DOES THIS AWARD MEAN TO YOU?**

Recognition from one's peers and colleagues is the highest honour. I am deeply humbled.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

To my colleagues at the Princess

Margaret Cancer Centre - with their support my work is made easier and is a lot of fun.

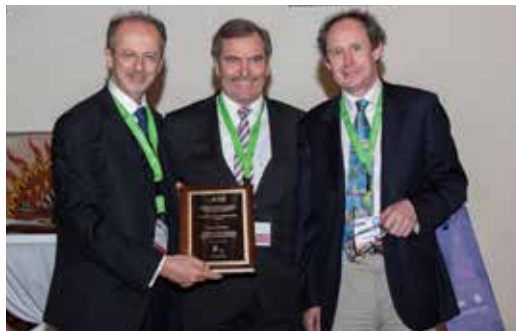
**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

Canadian oncologists have had a lot of collaboration with their European colleagues. In the past as CARO's President, I was involved in bringing CARO to ESTRO. This relationship still exists and I am very proud of that.

**ESTRO Lifetime Achievement Award**

**Prof. Dr. med. Michael Bamberg**

*Radiation Oncologist, University Hospital, Tuebingen, Germany*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

The foundation of the German Society of Radiation Oncology (DEGRO) in 1995 which, stimulated by the activities of the ESTRO, pushed radiation therapy into becoming a clinical discipline.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I dedicate it to the mentorship of ESTRO's founder Emmanuel van der

Schueren, who sadly died much too soon. My special thanks go to my colleagues, Jens Overgaard, Gordon Steel, Jean-Claude Horiot, Jan Willem Leer, Jean-Pierre Gérard, Jacques Bernier, Bert van der Kogel and Pierre Scalliet, who have helped bring the knowledge of the various diagnostic and therapeutic methods into the hands of future generations via teaching courses all over Europe.

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

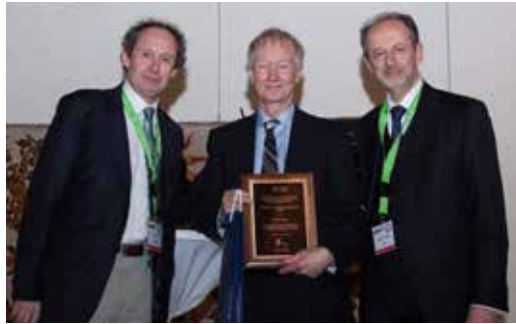
About twenty years ago, as representatives of ESTRO, we were one of the first disciplines to be accredited by the European Union. At that time, after robust internal discussions, we succeeded in not limiting the official term "radiotherapy" to radiation beams but rather broadened its meaning to comprise the methods of combined application of chemical substances, hormones, and antibodies.



**ESTRO Lifetime Achievement Award**

**Professor Adrian Begg**

*Biologist, scientist, Netherlands Cancer Institute, Amsterdam, The Netherlands*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

In terms of research, at the start of my career, it was gaining insights into the role of vascular damage in tumours (e.g. tumour bed effect). Later on, it was contributing to understanding and predicting tumour response (the roles of repopulation, intrinsic radiosensitivity, hypoxia etc), and ways of measuring these in individuals. More recently, a highlight has been entering the world

of genomics and finding ‘signatures’, which has thrown light on radio responses of tumours. Apart from that I have most enjoyed making friends all around the world.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

It is difficult to choose between the many people who have been instrumental in helping me personally and professionally. These include Fiona Stewart, Jack Fowler, Julie Denekamp, Harry Bartelink and Piet Borst (and many others to whom I apologise for not mentioning here).

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

- One of the earliest teachers on the Basic Clinical Radiobiology course
- Teacher and subsequently director of the Molecular Radiobiology course
- Co-organiser of several ESTRO pre-meeting courses
- Member of the scientific committee of several ESTRO meetings
- Board member

**ESTRO Lifetime Achievement Award**

**Professor Albert van der Kogel**

*Radiation Biologist, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

Highlights have been seeing the application of my research (and that of my close colleagues and trainees) in the clinic and its impact on treatment results. This research has included analysing various aspects of the tolerance of the spinal cord, as well as improvements in tumour control by hypoxic modification.

**WHAT DOES THIS AWARD MEAN TO YOU ?**

I appreciate the recognition by ESTRO, but I do not regard this as the end of my contributions to ESTRO, and I look forward to continuing to teach radiobiology to trainees around the world.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

Without hesitation I would like to dedicate this award to Emmanuel van der Schueren, who had the greatest influence on my career. ▼

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

I previously chaired the Radiobiology committee. I am one of the editors of the Green Journal and a teacher on the Basic Clinical Radiobiology course.

**ESTRO Lifetime Achievement Award**

**Professor Bengt Glimelius**

*Clinical Oncologist, Dept of Radiology, Oncology and Radiation Science, Uppsala university, Uppsala, Sweden*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

The successful completion of several large randomized clinical trials revealing benefit to many patients. The possibilities to do long-term follow-up of patients in the trials evaluating pros and cons. Get better understanding of what influences treatment decisions and patient and tumour outcomes.

**WHAT DOES THIS AWARD MEAN TO YOU?**

It is always a great pleasure to be appreciated for what you have done.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

All the patients and many colleagues but in particular the surgeon Professor Lars Pählman with whom I have collaborated ever since he came as a PhD student early 1980.

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

I have been a member for many years, given many presentations at ESTRO-meetings and participated in a few task forces. I am also a member of the advisory board of Radiotherapy and Oncology.

**Honorary Physicist award**

**Adjunct Professor Mary Coffey**

*Radiation Therapist, Trinity College Dublin, Dublin, Ireland*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

There have been several: establishing the degree programme for Radiation Therapists in Trinity College Dublin; establishing the RTT committee of ESTRO together with Guy Vandeveld and Riet van der Heide; establishing the Radiation Oncology Safety Information System (ROSI) with Ola Holmberg and sustaining and developing it with Ola, Tommy Knoos and Joanne Cunningham; setting up and

running the Best Practice in Oncology: a project to train RTT trainers with ESTRO and the IAEA; receiving the Emmanuel van der Schueren award and the Honorary Physicist award; and working closely with Donal Hollywood to develop the national strategy for radiation oncology in Ireland and in securing the major centre for St. James' hospital. ▼

#### WHAT DOES THIS AWARD MEAN TO YOU?

It is a real honour to be recognised in this way by the ESTRO Physics Committee and to join the eminent recipients who have gone before me.

#### WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?

Together with Guy Vandeveld and Riet van der Heide I started the RTT committee of ESTRO. I have represented RTTs on the Education and Training Committee and now as a member of the ESTRO Board. I was involved in the establishment of the first ESTRO Treatment Planning course and was the course leader for some years. I set up the Best Practice in Radiation Oncology: a project to train RTT trainers and am its course leader together with Guy Vandeveld. I am a member of the faculty on the ESTRO Risk Management course. I have chaired the working groups for the three core curricula for RTTs and have managed projects on RTT education in Europe, the establishment of a European network for RTTs and on the role of radiotherapy technologists in clinical trials. I chaired the first joint Physics and Technologist biennial meeting in 2001 and have chaired or been a member of the scientific committee for the ESTRO annual conferences since 1992.

#### *Klaas Breur Award*

**Professor Vincent Grégoire**

*Radiation Oncologist, Université Catholique de Louvain, Brussels, Belgium*



#### WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?

I have been extremely fortunate to have been appointed to two Fellowships at an early stage in my career, in Amsterdam and Houston, which were a great foundation for me as an academic. Another highlight was my work delineating target volumes in head and neck cancer and its impact on clinical practice. Last but not least, my time in ESTRO, in particular as President.

#### TO WHOM WOULD YOU DEDICATE YOUR AWARD?

To my mentors and teachers: Prof. André Wambersie, Prof. Adrian Begg and Prof. Walter Hittelman

#### WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?

I have been an active member of ESTRO for many years and currently teach on two ESTRO courses, lecture at the major meetings, and also served a term as President.

#### *Emmanuel Van der Schueren Award*

**Dr Ben Mijnheer**

*Medical Physicist, The Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital Amsterdam, The Netherlands*

#### WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?

To be actively involved in many aspects related to the implementation of 3D CRT and IMRT. This was a very exciting period because it required the input of all disciplines in an RT department. It was also a challenge to bring findings from numerous research projects to the clinic in a safe way. ▼



**WHAT DOES THIS AWARD MEAN TO YOU?**

It brought back many memories of the early days of ESTRO and my contacts with Emmanuel van der Schueren. He gave physicists ample opportunities to start new ESTRO activities, which was, certainly at that time, quite unique.

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

I had the privilege of being physics editor of the Green Journal, was

involved in the start of the ESTRO physics course (the “Leuven course”) and the ESTRO IMRT course (the “Amsterdam course”), and was co-organiser of several biennial physics meetings.

**GEC-ESTRO Iridium 192 Award**

**Professor Josef Hammer**

*Radiation Oncologist, Barmherzige Schwestern Hospital, Linz, Austria*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

First, the implementation of brachytherapy at my department in 1980. The first nuclide was a Cs-source for gynaecological applications. In February 1982 we started using Iodine-seed implants in prostate cancer. Then in Autumn 1982 LDR-Iridium wires were introduced, followed by an HDR-source in September 1984.

**WHAT DOES THIS AWARD MEAN TO YOU?**

It is an award for the HDR-pioneer-activities in brachytherapy, both in the application of an HDR-source and in particular the introduction and refinement of the breast boost. For me it signifies the highest award of my career.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I would like to dedicate this award to my teachers, P. Veraguth, Dan Ash, Jim McGee, Bernard Pierquin and Luis Delclos, but also to my colleagues in Linz, the physicians and the physicists.

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

- GEC-ESTRO Council member until 2003.
- Co-organiser of the breast-workshop in Stresa, Italy, 2001.





**Jack Fowler U. Wisconsin Award**

**Benjamin Sobotta, PhD**

*Physicist, Section for Biomedical Physics, Radio-oncological Clinic, University of Tuebingen, Tuebingen, Germany*



**WHAT DOES THIS AWARD MEAN TO YOU?**

I am extremely grateful to have my work recognised by an institution like ESTRO. I hope that this will pave the way to my working and creating new solutions with other researchers, universities, or maybe even companies.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I dedicate this award to all the people who are in the field of radiotherapy, from those who devote their lives

developing better tools to fight cancer to those who work on a daily basis with patients. They deserve this award as much as I do.

**Poster Award Clinical**

**Maaïke Schippers, M.D.**

*Trainee Radiation Oncologist, University Medical Center Utrecht, Utrecht, The Netherlands*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

Actually, my daily clinical work with patients and colleagues in the radiotherapy department have made every day of my career a special one. I have enjoyed giving the best care possible to patients, together with the team. I have done research during my training, all of which has been in the field of cervical cancer where I feel there is still so much to gain. This award is certainly the highlight of my scientific career so far.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I'm very grateful to the EMBRACE study group for giving me the opportunity to investigate the nodal failures in this observational study on locally advanced cervical cancer. In particular I would like to thank and dedicate this award to my supervisor Ina Schulz, who has helped me both in my clinical and scientific career.



**Poster Award Physics**

**Ali Sid Ahmed M. Ali**

*Physicist, Department of Radiation Oncology, Daniel Den Hoed Cancer Centre, Erasmus Medical Centre University, Rotterdam, The Netherlands*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

When I graduated from university with a first class honours degree, I was employed as a teaching assistant. After three years in that position, I was given the opportunity to continue further in my field of medical physics by joining a Masters programme at King Fahd University of Petroleum and Minerals (KFUPM). After that I returned to Sudan where I was promoted to become a lecturer and appointed as the head of the medical physics unit. Then after two years I had another fantastic opportunity come my way - to do my PhD in Radiation Oncology at Erasmus Medical Center which has been the biggest step in my career.

**WHAT DOES THIS AWARD MEAN TO YOU?**

It is a massive encouragement pushing me to reach my goal of finishing my PhD within a year.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

To all my co-workers, supervisors and family, especially my forbearing mother and my beloved wife and kids.

**Poster Award Radiobiology**

**Monica Mangoni, MD, PhD**

*Radiation Oncologist, University of Florence, Florence, Italy*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

From the time I was a medical student, I wanted to focus on the areas of preclinical and translational research. Professor Biti encouraged me to study radiobiology in depth when I was an intern in radiation oncology. This was a milestone in my decision to dedicate myself to this area. I obtained my PhD in radiobiology at the Institut Gustave Roussy working with outstanding researchers (Bourhis, Deutsch, Vozenin). At

present, I'm a radiation oncologist and researcher at the Radiotherapy Unit of the University of Florence, where we have recently created a radiobiology laboratory.

**WHAT DOES THIS AWARD MEAN TO YOU?**

This is an important and prestigious award that encourages our young group to invest resources and energy in radiobiological research.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

To my six month old son. I hope he gets the same encouragement that I have received to realise his passion in life!



### Poster Award RTT

**Martijn Kamphuis MSc**

*RTT, Academic Medical Center (AMC), Amsterdam, The Netherlands*



#### WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?

In the year 2010 I was given the opportunity to become a specialist RTT (Radiation Therapist) in the field of IGRT. This gave me considerable time for research and development. But this award, to be quite honest, is probably the highest I've ever reached.

#### WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?

In 2012 I was fortunate to become a member of the RTT committee. Editing the RTT Corner has been my main activity so far. Last year I was part of the ESTRO Agora meeting, which was truly an amazing experience. Next September I will start as a teacher on the Basic Planning Course (see RTT Corner). For ESTRO 33 in Vienna 2014, Michelle Leech and I are the scientific chairs for the RTT Track. Currently, Professor Coen Rasch, Rianne de Jong (course director) and I are working on a new course designed for RTTs, which is planned to start next year.

### Young Poster Award Clinical

**Laurien Daniels, M.D.**

*Resident Radiation Oncology, Leiden University Medical Centre, Leiden, The Netherlands*



#### WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?

My career is only just starting. Currently I work as a resident in Radiation Oncology, which I combine with my PhD looking at late effects of radiation treatment in Hodgkin's Lymphoma survivors. Winning this award is definitely a highlight, since it gives me a unique opportunity to draw attention to the research that we conducted, and it enables us to share our insights into late treatment sequelae with a large audience.

#### TO WHOM WOULD YOU DEDICATE YOUR AWARD?

Obviously, conducting research is not something you do just by yourself. Credits for our work, and therefore the dedication of this award, should go to our entire team. I have no doubt that it will give us extra energy to continue our research. Currently, we are focusing on cardiac sequelae and quality of life in Hodgkin's Lymphoma survivors.

### Young Poster Award Physics

**Sara Leibfarth**

*Physicist, Section for Biomedical Physics, University Hospital for Radiation Oncology, Tübingen, Germany*

#### WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?

In 2011 I received my Master's degree in physics. After that, I started my PhD project which is about medical image registration as applied to radiotherapy. ▼



**WHAT DOES THIS AWARD MEAN TO YOU?**

I was very pleased to receive the Young Physics Poster Award. Now I am looking forward to attending a course run by the ESTRO School, which I can do for free because of the award.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I dedicate the award to my working group for their support in my research project and the inspiring atmosphere they create.

**WHAT HAS BEEN YOUR INVOLVEMENT WITHIN ESTRO?**

Since I am quite new to the research field of radiotherapy, I have not been directly involved in ESTRO before. However, I follow ESTRO activities with great interest.

**COMPANY AWARD**

**ESTRO-Accuray Award**

**Dr. Aidan Cole**

*Clinical Oncologist, Northern Ireland Cancer Centre & Queens University, Belfast, Northern Ireland*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

As a radiation oncology trainee I have been privileged to be accepted for a Clinical Research Fellowship leading to a PhD. My project is investigating the underlying radiobiological response to respiratory motion in radiotherapy which has been stimulating and hopefully will guide improvements in the future. Being selected as the ESTRO Accuray Award winner in 2013 has been the highlight of my career to date.

Having the opportunity to present my research at the ESTRO conference has been a landmark achievement for me.

**WHAT DOES THIS AWARD MEAN TO YOU?**

Whilst the award has been fantastic to receive at a personal level, the real achievement is attributed to the excellent research ethos in Belfast. This award is a result of several years of close collaboration between the clinicians, medical physics department and radiation biology departments in Belfast. The shape of academic research in radiotherapy has been revolutionised under the guidance of Professor Joe O'Sullivan in Belfast. His close links with Professor Alan Hounsell (Medical Physics) and Professor Kevin Prise (Radiation Biology) ensure that all the basic science research carried out in Queen's University is carefully planned and executed with a strong clinically translational element. Our current strengths are underlined by high recruitment into clinical trials and using clinically relevant advanced radiotherapy techniques to better elucidate radiobiological responses. Receiving this award has given us increased confidence that our work is benefitting the oncology community and has stimulated my interest in pursuing a career in academic radiation oncology.



**COMPANY AWARD**

**GEC-ESTRO Nucletron Brachytherapy Award**

**Kathrin Kirchheiner**

*PhD student, Department of Radiation Oncology, Comprehensive Cancer Centre, Christian Doppler Laboratory for Medical Radiation Research for Radiation Oncology, Medical University of Vienna, Austria*



**WHAT DOES THIS AWARD MEAN TO YOU?**

The receipt of this award signifies a major acknowledgement by the radiotherapy community in regard to the EMBRACE study (the European and International study on MRI-guided brachytherapy in locally advanced cervical cancer). There is great interest in the first interim reports of the ongoing study, as the large amount of prospectively collected multicentre data allows for a comprehensive analysis.

I joined EMBRACE at the beginning of 2008 and have supported this study in various aspects, which represent my professional development during my PhD study. Initially, I was part of the administrative study office team, coordinating the patient flow in Vienna and the Quality of Life sub-study. Later on, I focused on data management and developing the database which is now the backbone for all statistical analyses. As methodological aspects are one of my main areas of interest, I became increasingly involved in the outcome analyses and was fascinated by the numerous research questions, which can now be answered by this growing amount of data.

These years provided a great learning experience and I am proud to be part of the EMBRACE team and the opportunity it offers to work with multidisciplinary teams across an international network.

**COMPANY AWARD**

**ESTRO-Varian Award**

**Sara Thörnqvist**

*Physicist, Department of Medical Physics, Aarhus University Hospital, Aarhus, Denmark*



**WHAT HAVE BEEN THE HIGHLIGHTS OF YOUR CAREER?**

The biggest highlights of my career have been receiving the award at the ESTRO 2<sup>nd</sup> Forum and a few weeks later my PhD defence. They were both very rewarding moments when people have taken time and shown interest in what I've been working on for the last three years.

**WHAT DOES THIS AWARD MEAN TO YOU?**

It is a great honour! It is also motivating me even more in wanting

to attack the challenges involved when taking the modelling work conducted in the office into something applicable to the clinic.

**TO WHOM WOULD YOU DEDICATE YOUR AWARD?**

I'd like to dedicate the award mainly to my supervisors Ludvig Muren, Liv Hysing and Lise ▼

Bentzen and of course also to my collaborators within my PhD, Ben Heijmen, Mischa Hoogeman and Andras Zolnay in Rotterdam, Matthias Söhn in München and Jørgen Pedersen, Morten Høyer and Cai Grau in Aarhus.

## COMPANY AWARD

### GEC-ESTRO Best Junior Presentation

**Ms. Isabelle Kindts**

*Radiation Oncologist, Radiation Oncology, University Hospitals Leuven, Department of Oncology, Leuven, Belgium*



#### WHAT DOES THIS AWARD MEAN TO YOU?

Receiving the GEC-ESTRO Best Junior Presentation Award is a great honour for me. As a first year resident, I'm still discovering the wide universe of radiation oncology and so presenting during the 2<sup>nd</sup> ESTRO Forum was a great opportunity and a thrilling experience. Winning the award is a great incentive to go further in this field and the nomination makes me eager to broaden my

clinical and scientific knowledge on a day-to-day basis during my career.

#### TO WHOM WOULD YOU DEDICATE YOUR AWARD?

I was mentored by Prof. Dr. C. Weltens, from whom I was given the opportunity to participate in this retrospective research, for which I'm very grateful. Similarly, without the guidance and very devoted participation of Dr. K. Verhoeven, the results wouldn't have been this captivating. Furthermore, I'd like to thank Prof. Dr. K. Haustermans, Chair of our Department. Special acknowledgements also go to Prof. Dr. E. Van Limbergen, Prof. Dr. S. Peeters and Ms. A. Laenen. Finally, I would like to dedicate this award to the patients. After all they are the start and the goal of all research.

## IN THE NEXT NEWSLETTER WE'LL HAVE REPORTS ON:

### EMCTO

European Multidisciplinary Conference in Thoracic Oncology

Recently held in Lugano, Switzerland, 9-11 May 2013



### Wolfsberg

Meeting Series on Molecular Radiation Biology/Oncology


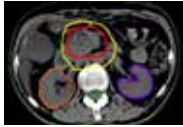
Just held in Switzerland, 22-24 June 2013





## 2013


### AUGUST

25 - 29/08	<b>PARTICLE RADIOSURGERY, A NEW FRONTIER IN PHYSICS IN MEDICINE</b> Oberurgl, Austria	
30 - 31/08	<b>XI<sup>TH</sup> TATA MEMORIAL CENTRE ANNUAL PRACTICUM: WORKSHOP ON GASTROINTESTINAL CONTOURING AND PLANNING</b> Mumbai, India	

### SEPTEMBER

01 - 05/09	<b>2013 ERR 40<sup>th</sup> annual meeting of the European Radiation Research Society</b> Dublin, Ireland	
08 - 11/09	<b>9<sup>TH</sup> INTERNATIONAL CONFERENCE ON DOSE, TIME AND FRACTIONATION IN RADIATION ONCOLOGY</b> Wisconsin Institutes for Discovery, Madison, Wisconsin, USA	
22 - 25/09	<b>ASTRO ANNUAL MEETING</b> Atlanta, GA, United States	
25 - 28/09	<b>THE FUTURE OF RADIATION ONCOLOGY: IMAGING, DOSIMETRY, BIOLOGY &amp; THERAPY</b> Berder Island, France	
27/09 - 01/10	<b>JOINT ECCO 17 – ESMO 38 – ESTRO 32</b> Amsterdam, The Netherlands	

### OCTOBER

18 - 19/10	<b>2<sup>ND</sup> ANNUAL UPMC BEACON HOSPITAL AND UPMC International Stereotactic Radiosurgery and Stereotactic Body Radiotherapy Symposium</b> Dublin, Ireland	
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### NOVEMBER

14 - 16/11	<b>POLISH SOCIETY OF RADIATION ONCOLOGY 6<sup>TH</sup> CONGRESS</b> Poznan, Poland	
15 - 17/11	<b>EMUC 5<sup>th</sup> European Multidisciplinary Meeting on Urological Cancers</b> <b>Joint EAU-ESMO-ESTRO</b> Marseille, France	
21 - 22/11	<b>GEC-ESTRO WORKSHOP</b> Brussels, Belgium	



# 2014

## FEBRUARY

10 - 14/02	<b>ICTR-PHE 2014</b> Geneva, Switzerland	
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## APRIL

04 - 08/04	<b>ESTRO 33</b> Vienna, Austria	
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# CREDITS

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