SOCIETY LIFE

ELECTIONS: COMING SOON...
The election of the new ESTRO president and board members
CONTENTS

- Editorial
- Society Life
- Clinical
- Read it before your patients
- Brachytherapy
- Radiobiology
- Physics
- RTT
- ESTRO School
- Young ESTRO
- Health Economics
- National Societies
- ESTRO Conferences
- Calendar of events

View of the Rathaus in Vienna, Austria, the venue of our next annual meeting, ESTRO 33
Dear members,

ESTRO has lost a committed and visionary member, a brilliant scientist and a friend on 29 January 2014 with the death of Professor Adrian Begg (age 67). Our hearts go out to his partner, Fiona, his family and friends. The Society Life Corner in this issue has a eulogy to him.

ESTRO 33 is approaching and I hope to see you all in Vienna, 4-8 April. The congress is the event of the year for connecting with colleagues around the world. All our disciplines will be represented; there will be an abundance of randomised trials, new technology and riveting joint multidisciplinary symposia with other oncology societies.

ESTRO 33 will also see the change of presidency. During my time I have been committed to following and enhancing the road set by my predecessors and allowing our great Society to naturally grow towards increased excellence. I would like to thank everybody who has helped me during these three years:
the other presidents I worked with: Vincent Grégoire, Jean Bourhis and dear Donal Hollywood for their vision, dedication and support;
the Board for challenging me, and for their strong commitment to ESTRO, especially the treasurers and the membership officers;
the committee chairs and members for their hard work and for inspiring our so successful meetings.

A big thank you to:

- the ETC chair and the School faculty for their excellent work;
- the editor-in-chief of the Green Journal, Jens Overgaard, and his team for their marvellous work in ensuring the excellent and continuing success of the journal, both now and in the future, and for co-opting Michael Baumann to lead this important ESTRO flagship;
- everybody who contributed in the creation, enhancement and practicalities of the online services ESTRO offers i.e. FALCON, EAGLE, DOVE.

Thank you to:

- the young task forces for helping to bring our young members’ issues more to the forefront;
- all the local organising committees for their hard work in making our annual congresses the successes they have been;
- all the members, who are the core of ESTRO and the driving reason behind all I have done;
- the ESTRO office for its strong contribution and help from all the different teams: education, events and governance. Thanks especially to the chief operating officer Christine Verfaillie and finance manager Arnaud Ponsart for their support and efforts towards a greater Society;
- the executive assistant, Charlotte Nestén for her competence and keeping me going;

And finally, thank you to the chief executive, Alessandro Cortese, for his capabilities, ethical values, and elegant, but determined approach to issues.

I would also like to thank deeply my department and my wife for being there and supporting me through these years of extremely busy schedules and mountains of work.

Thank you also to Philip Poortmans the incoming ESTRO president. His dedication in the last months has been tremendous and I would like to offer my support to him for the next two years of his presidency when he further advances our wonderful Society.

Best wishes and hoping to see you all in Vienna being proud to be part of such a great family!

Vincenzo Valentini
ESTRO president
ESTRO has lost a very active and committed member with the death of Adrian Begg at the end of January 2014. Adrian was an important figure within the Society through his various responsibilities throughout the years, especially in education. ESTRO awarded him the Emmanuel van der Schueren award lecture in 2008 and the Lifetime Achievement award last year. His life was dedicated to science, to biology and to a Society that is deeply grateful to him for all the ideas, time and contribution he brought. We will never forget him.

At the end of this Corner his colleagues and friends pay tribute to him by sharing with us some memories.

Soon ESTRO will have a new ESTRO president with Philip Poortmans starting in April at the General Assembly at ESTRO 33. The Society needs to appoint a new president elect and new Board members. The Society needs your vote!

We look forward to meeting you on 7 April 2014 at the General Assembly in Vienna.

Vincenzo Valentini
ESTRO president

“A life dedicated to science, to biology and to a Society that is deeply grateful to him”
Tap anywhere on the screen to reveal the top and bottom menu bars: You can access the table of contents, bookmark and share your favorite corners or go back to the ESTRO Newsletter Library.

**SOCIETY LIFE**

“A life dedicated to science, to biology and to a Society that is deeply grateful to him.”

ESTRO has lost a very active and committed member with the death of Adrian Begg at the end of January 2014. Adrian was an important figure within the Society through his various responsibilities throughout the years, especially in education. ESTRO awarded him the Emmanuel van der Schueren award lecture in 2008 and the Lifetime Achievement award last year. His life was dedicated to science, to biology and to a Society that is deeply grateful to him for all the ideas, time and contribution he brought. We will never forget him.

At the end of this Corner his colleagues and friends pay tribute to him by sharing with us some memories.

Soon ESTRO will have a new ESTRO president with Philip Poortmans starting in April at the General Assembly at ESTRO 33. The Society needs to appoint a new president elect and new Board members. The Society needs your vote!

We look forward to meeting you on 7 April 2014 at the General Assembly in Vienna.

Vincenzo Valentini
ESTRO president

**SYMBOLS**

- Swipe down to read more
- Swipe right to read more
- Tap to see more information
- Close frame

**WHERE YOU ARE INSIDE THE CORNER**

Overview of the items in the Corner:

navigate to different sections within the Corner
ESTRO has lost a very active and committed member with the death of Adrian Begg at the end of January 2014. Adrian was an important figure within the Society through his various responsibilities throughout the years, especially in education. ESTRO awarded him the Emmanuel van der Schueren award lecture in 2008 and the Lifetime Achievement award last year. His life was dedicated to science, to biology and to a Society that is deeply grateful to him for all the ideas, time and contribution he brought. We will never forget him.

At the end of this Corner his colleagues and friends pay tribute to him by sharing with us some memories.

Soon ESTRO will have a new ESTRO president with Philip Poortmans starting in April at the General Assembly at ESTRO 33. The Society needs to appoint a new president elect and new Board members. The Society needs your vote!

We look forward to meeting you on 7 April 2014 at the General Assembly in Vienna.

Vincenzo Valentini  
ESTRO president
Elections are electronic and started from 24 February until 23 March 2014. Only eligible members are able to vote (see the conditions in this section) and will already have received an email with the instructions on how to vote. If you have not received anything, just check your junk mail box.

ELECTIONS FOR PRESIDENT
There are two candidates for president-elect:

YOLANDE LIEVENS
Radiation Oncologist
University Hospital Ghent
Ghent, Belgium

Read the biography>
Read the interview>
View the video>

DANIEL ZIPS
Radiation Oncologist
University Hospital Tübingen and the Faculty of Medicine
Tübingen, Germany

Read the biography>
Read the interview>
View the video>
BOARD MEMBERS ELECTIONS
Some members are leaving… but new ones will soon arrive.
The following candidates are running for the Board member elections:

PHYSICS
Brendan McClean
Ireland

Gert Meijer
The Netherlands

BRACHYTHERAPY
Peter Hoskin
UK

Janusz Skowronek
Poland

RTT
(Medical Physicist)
Mary Coffey
(re-running)
Ireland

Filipe Moura
Portugal

This year no clinical and radiobiology positions have to be filled, as their representatives have not finished their term.

View the composition of the ESTRO Board Sept 2013 - April 2014 >

Christine Haie-Meder will complete her term on the Board. The Society deeply thanks her for her contribution.

What you need to know to take part in the vote
- Elections started on:
  24 February – 23 March 2014
- To be eligible to vote you must:
  • have renewed your ESTRO membership for 2014 as a full member (supporting ambassador or active member) by 31 January 2014
  • have been a member of ESTRO in 2013
- The ballot for the president-elect and for Board members will take place at the same time
- Voting is electronic
- All members eligible to vote were sent an email on 24 February with all the information needed to vote
The General Assembly will take place on 7 April 2014 at ESTRO 33 at 17.30-18.30 hrs in Room Strauss 1 in the Vienna congress centre.

An agenda will be sent to all full members. Please note that you need to have renewed your 2014 ESTRO membership by 1 April. All 2014 members are welcome to join.
ESTRO has lost a committed and visionary member, a brilliant scientist and a friend with the death of Adrian Begg on 29 January 2014. Adrian will be remembered for his contribution to the discovery of the genetic determinants of radiosensitivity, which has formed the basis for many improvements, today and in the future, for radiotherapy.

Adrian Begg performed his PhD research at the University of London (UK), firstly within Hammersmith Hospital and subsequently at the Cancer Research Campaign Gray Laboratory. He studied the cell kinetics of murine tumours in relation to radiation response under Jack Fowler. He held a three-year postdoctoral position at the University of California Medical Center, San Francisco (USA), studying the interaction of cytotoxic drugs and radiation, under Ted Phillips and Karen Fu. He returned to the Gray Laboratory as group head for five years where he pursued drug-radiation interactions, and began his translational research interests under both Jack Fowler and subsequently Julie Denekamp.

He moved to the Netherlands Cancer Institute in 1984 with Fiona Stewart, where they set up a radiobiology group with the support of Harry Bartelink. Flow cytometry was coming of age and he was one of the first to apply IUdR antibodies for the measurement of cell proliferation in clinical tumour samples to predict tumour response. He became head of the experimental therapy division in 1990, and professor of molecular radiobiology attached to Radboud University Nijmegen (The Netherlands) in 2002.

His last research focussed on predicting and improving response in head and neck cancer using several array and sequencing technologies and elucidating the genetic determinants of radiosensitivity, particularly base excision repair, single strand break repair and translesional synthesis.

He was a committed member and advocate of ESTRO, and has served on the ESTRO Board, ESTRO radiobiology committee, and on organising committees of many ESTRO meetings including the annual meetings, Wolfsberg, and Toulouse meetings. He taught on both basic clinical radiobiology, and molecular radiobiology courses, as well as organising and/or teaching on several pre-meeting courses. To stimulate radiobiology within ESTRO, he wrote the Radiobiology Corner column for the ESTRO Newsletter.

He published 161 papers in peer reviewed journals, plus 19 book chapters. He was awarded the ESTRO Emmanuel van der Schueren medal in 2008 and the ESTRO Lifetime Achievement award in 2013.

It was wonderful to have the opportunity to work and collaborate with him. We are grateful for the moments of humour and enthusiasm he offered. His kindness and dedication will be deeply missed.

Our hearts go out to his partner, Fiona, his family and friends.

Vincenzo Valentini
ESTRO president
IN MEMORIAM ADRIAN C. BEGG

THE LIFE AND TIMES OF A TRANSLATIONAL RADIOBIOLOGIST

“Inspired by pioneers like Julie Denekamp and Jack Fowler, Adrian performed his PhD research at the University of London and the Cancer Research Campaign Gray Laboratory. He typed his thesis on a typewriter, drew figures with pen and ink, and produced five copies of “Studies of cell removal from irradiated and unirradiated tumours using 125I-iododeoxyuridine and tritiated thymidine” (1975). After a postdoctoral period at the University of California Medical Center in San Francisco in the group of Ted Phillips, he went back to the Gray Lab. From early on, Adrian had an explicit interest in the translational aspects of radiobiology. His studies on hypoxic radiosensitisers and the interaction between radiation and chemotherapy have had great impact on the clinical application of these combinatory strategies in radiation oncology.

After being convinced by Harry Bartelink, he decided to move to the Netherlands Cancer Institute in Amsterdam in 1984. The collaboration with his partner Fiona Stewart resulted in a strong and complementary research programme, addressing both tumour and normal tissue radiobiology. His main research themes were tumour response prediction and tumour-targeted radiosensitisation. Among the potential predictors of response to (chemo)radiotherapy he studied, were the potential doubling time (Tpot), fluorescence in situ hybridisation (FISH) and cisplatin adduct formation. Subsequently, Adrian embarked on the identification of genetic determinants of radiosensitivity. His group was the first to demonstrate a role for the repair enzyme DNA polymerase beta in cellular radiosensitivity and defined a role for the Fanconi and homologous recombination DNA repair pathways after radiation under hypoxic conditions. Adrian’s most recent research focused on gene expression profiling to predict outcome after (chemo)radiotherapy in head and neck cancer.

In 2002 Adrian was appointed Professor of Molecular Radiobiology at the Radboud University.

Memorial donations may be made to research into lung fibrosis.

A bank number for the Nieuwegein hospital (where Adrian was hospitalised) has been set up:
IBAN Number NL 48 RABO 0130661295
BIC code: RABONL2U
In the name of St Antonius Research Fund, mentioning “Fibrosis Research Prof J Grutters”
Nijmegen. Adrian contributed to the translational research and education programme of this department. It also allowed him to strengthen the research links between Amsterdam and Nijmegen. In 2011, Adrian retired but remained actively involved in several ongoing research projects and supervised his last team of PhD students.

Adrian has shaped modern radiobiology through his many scientific achievements and contribution to dozens of books and hundreds of publications. He received several awards, including the prestigious ESTRO Emmanuel van der Schueren Medal in 2008, the Ged Adams Award in 2009 and the ESTRO Lifetime Achievement in 2013. Adrian had a modest nature in the sense that he did not seek the spotlight. Despite the respect and honours he received, he was unpretentious and down to earth. It wasn’t fame that drove him in science. He was truly driven by curiosity and the wish to apply findings and techniques to clinical practice.

As a teacher, Adrian inspired many. He enjoyed teaching and actively pursued communication with his students. He was a committed member of ESTRO, and has served on the ESTRO Board, ESTRO radiobiology committee, and on organising committees of many ESTRO meetings including the annual meetings, Wolfsberg, and Toulouse meetings. For many years, he taught on both the ESTRO basic clinical radiobiology and molecular radiobiology courses. To stimulate radiobiology within ESTRO, he initiated and single-handedly wrote the Radiobiology Corner column for the ESTRO newsletter until recently.

Adrian died on January 29 at the age of 67. Colleagues and friends will remember Adrian for his excellent scientific contributions and for his kindness, collaborative spirit, enthusiasm and humour. We are certain that Adrian would like us to continue raising awareness of radiation biology-related concepts and challenges. In fact, his enthusiastic teaching in so many courses and the continued participation in educational book chapters speak to how close this matter was to his heart. We are grateful to have shared many years of friendship with Adrian. Our heartfelt condolences go out to his partner Fiona Stewart, his family and friends.”

Marcel Verheij and Conchita Vens
The Netherlands Cancer Institute, Amsterdam, The Netherlands

In this Corner
“The much too early death of Professor Adrian Begg left us with great sadness and sorrow. With him we have lost a very good friend, an excellent colleague and scientist, and a strong supporter of the “Wolfsberg Meeting Series on Molecular Radiation Biology/Oncology”. Right from the beginning and establishment of the Wolfsberg Meetings Series in 1998 until his retirement in 2012, Adrian was a very valuable and constant member of the scientific committee of this meeting series. Due to his support, the Wolfsberg Meetings Series, which has been organised since 2005 in association with ESTRO, has become one of the top meetings in the field of molecular radiation biology/oncology worldwide.

At these meetings we always enjoyed having Adrian with us, either as a regular participant or as invited speaker, because he was well known for both his scientific excellence and his wonderful “British” humour. With these attributes he enlightened the scientific issues and also eased many discussions and controversial debates. Moreover, especially during poster discussions, he was always open to young colleagues and shared with them many of his strategic scientific thoughts on the development of basic and translational molecular radiation biology. Due to his outstanding scientific achievements in the field of tumour and normal tissue radiation biology and his enthusiasm to promote young scientists, he strongly motivated and inspired them to start or to continue their research careers in these exciting areas of cancer research.

Besides being an excellent scientist, Adrian was a committed and extremely fair sportsman. He played tennis and golf very well, and he was a dedicated cyclist who even rode some of the Tour de France pre-stages in the Pyrenees. Finally, as some of us experienced personally during the CERRO meetings in the French Alps, Adrian was a very good skier, never afraid of any slope not even the steepest ones. And just as in science, there was no challenge in sport strong enough for him to draw back.

Whenever we met Adrian it was a real pleasure to spend time discussing with him not only hot topics in science but also in politics and sport. The scientific community in general and the radiobiology/radiation oncology community in particular have lost one of its best and most inspiring scientists. Adrian will be greatly missed by colleagues worldwide who will never forget him. Our thoughts are with his wife, Fiona Stewart.”

The Wolfsberg core group organisers
Michael Baumann, Stephan Bodis, Ekkehard Dikomey, H. Peter Rodemann
“Adrian introduced us to the magic world of the potential doubling time, colony assays and radiosensitizers. We could always rely on him for scientific input on new research adventures. During the ESTRO courses, he was an enthusiastic and inspiring teacher who revealed to us all the secrets behind DNA repair and tumour proliferation. At each scientific meeting, it was a pleasure to meet him for a friendly chat, while drinking beer or eating Belgian chocolates, to listen to his wise scientific words always with a humorous accent or to see him fight for the Wolfsberg cup or slalom for the CERRO cup. Our joint publications will be a lasting memory of our fruitful collaborations during all these years. Thank you Adrian!”

The Laboratory of Experimental Radiotherapy
KU Leuven, Belgium

“I have known Adrian since the early 1980s. From the many radiation research, CERRO, and other meetings, and from the many wonderful times we had together, two aspects of his personality persist in my recollections. First and foremost, he possessed that rare facility for getting on well with anybody and everybody. Second, as a modeller I was always surprised that Adrian was perfectly comfortable discussing the mathematical aspects of some of the radiobiology issues of the day in view of the fact that he was a leader in experimental research. An extraordinary person, I will really miss him.”

Howard Thames
M. D. Anderson Cancer Center, Houston, TX, USA
2014 ESTRO MEMBERSHIP
Join ESTRO and benefit from services specially designed to support your career

Take advantage of the many benefits the ESTRO membership has on offer:

- Subscription to the *Green journal*,
- Discounts to courses and congresses,
- Eligibility for grants, awards and fellowships
- Eligibility for working groups, task force and faculties
- Access to job ads
- Access to online material

And much more!

ACCESS TO DOVE (DYNAMIC ONCOLOGY VIRTUAL ESTRO)
Accessible via the estro.org home page, the virtual library can allow you, as a member, to search and download all kinds of scientific documents: webcasts, abstracts, guidelines, educational material, access to FALCON (the delineation platform), etc

Find out about the main categories of the ESTRO membership that could best suit your requirements:

- Active member | €95
- In training member | €75
- Affiliate member | €55
- Corporate member | €55
- Supporting Ambassador | €250
- Institutional Membership: Your institute can buy a package of several individual memberships at a discount rate and take advantage of additional benefits

2014 MEMBERSHIP AVAILABLE ON WWW.ESTRO.ORG
Lung cancer remains the most deadly malignant disease worldwide. Despite small steps towards better diagnosis and treatment only small improvements have been achieved over the last decades. In this newsletter, Professor Yolande Lievens reports on the World Lung Cancer Conference 2013. In her report she places particular emphasis on the current status of clinical and translational research and on future avenues exemplified for locally advanced non-small cell lung cancer. The most burning points (besides the “mysterious” RTOG 0617) such as the role of radiation therapy in multidisciplinary treatment optimisation strategies, large randomised studies on less stratified populations, extrapolation from trial results across different continents, and the use of large registries with non-randomised data to generate evidence are nicely summarised. It is more than obvious from the report of Prof Lievens that lung cancer remains an important field of experimental and clinical research in radiation oncology. Thus, ESTRO’s activities related to lung cancer, such as multidisciplinary teaching courses, contribution to scientific meetings and, of course, in scientific sessions at our ESTRO meetings, need to be continued and further developed. Regarding ESTRO conferences, at ESTRO33 we will focus on lung cancer in a special session on elective nodal irradiation, in proffered paper sessions, in a symposium on SBRT, and in a teaching lecture on locally advanced NSCLC (for more information see >>>).

Daniel Zips
The 15th World Conference on Lung Cancer, organised by the International Association for the Study of Lung Cancer, attracted a large group of healthcare professionals dealing with thoracic malignancies. In October 2013 the venue, Sydney, was enjoyable and welcoming. This city has everything to enchant tourists: a large coast line dotted with sunny beaches, excellent food and wine and plenty of interesting cultural sites, with the splendour of the Sydney Opera House as its ultimate appeal. Moreover, once you’re there, it’s a hub from which you can visit the other attractions of Australia, always with that typical blend of good living in a laid-back atmosphere.

Even if the charms of Australia are obvious, it is quite a way to get there for most of us. This is certainly one of the reasons why the conference attracted only 5,200 of the anticipated 7,500 attendees. Moreover, the conference had been condensed into three days compared to four days in previous years. With its 66 sessions covering 372 invited lectures, about 550 oral presentations and over 1,700 posters, this was an extremely busy meeting.

It is not feasible to give an in-depth review of such a major event within the scope of this newsletter. I have, therefore, restricted my report to cover locally advanced non-small cell lung cancer (LA-NSCLC). And even within these limited boundaries, I have to content myself with some cherry picking, focussing on novel evidence from large (randomised) trials and comprehensive reviews.

In potentially resectable disease, the discussion remains how to combine chemotherapy (CT) with local treatment: does the addition of surgery to...
Chemo- and radiotherapy (RT) lead to superior results compared to concurrent chemoradiotherapy (CRT) alone, and if the surgical approach is chosen, does including radiotherapy in the induction or consolidation phase have an advantage?

In a meta-analysis presented at the conference, a Chinese group neither found an overall survival (OS) advantage for the addition of surgery into multimodality treatment, nor could it support the inclusion of RT in the neoadjuvant setting, although the latter can increase the rate of Downstaging and mediastinal pathologic complete remission, which are both known to correlate with better progression-free and overall survival (Xu et al, O02.07). Similar conclusions had also been drawn from the SAKK 16/00 RCT – not yet included in the meta-analysis – on sequential CRT induction in stage IIIAN2 disease, which was first presented at ASCO 2013 but again highlighted in Sydney.

An American group investigated whether large population databases can help in providing a better answer (Fidler et al, O02.06). Data from the National Cancer Database were used to determine predictors of trimodality treatment (TMT) and to compare OS among a cohort of almost 50,000 stage III NSCLC patients treated with CRT or TMT. TMT was found to be strongly associated with better OS as well as with markers of higher socioeconomic status and treatment at high-volume and academic centres. However, their conclusion that these data support survival benefit in patients undergoing TMT and that treatment at academic centres may improve OS through increased use of TMT, was strongly challenged by the reviewer, as such analyses completely disregard the heterogeneity in patient population and are prone to selection bias.

An interim analysis of a Chinese RCT reopened the debate on post-operative radiotherapy (PORT): patients with pN2 NSCLC and free of relapse after adjuvant CT are randomly assigned to PORT or not (Hui et al, O14.05). Although not yet reaching significance, the early results suggest that 3D-CRT PORT can markedly improve survival and loco-regional control without negatively impacting on toxicity. Further accumulation of patients is on-going.

In the context of non-resectable disease, one continues to explore how to introduce new systemic treatment modalities in the standard of concurrent CRT. Two major RCTs evaluating this question were discussed extensively at the conference.

The phase III START trial analysed MUC1-specific cancer immunotherapy tecemotide (L-BLP25) in the adjuvant setting of non-progressing LA-NSCLC treated with definitive CRT. Interestingly, baseline data of this trial suggest substantial variations in the diagnostic procedures and the treatment of unresectable stage III NSCLC in different regions of the world. While recruited patients from North American and Australian centres mostly received concurrent CRT in accordance with current recommendations, a substantial proportion of patients in Europe, Latin America and Asia received ▼
sequential treatment (Thatcher et al, O02.01). Only patients treated concurrently had more favourable PFS and TTF after tecemotide, as was previously observed for the primary outcome of OS (Mitchell O02.02). Further study is pursued in this setting.

The other study that remained heavily debated was RTOG 0617, a four-arm study with two primary objectives. The first, to analyse the OS advantage of high-dose 74Gy versus standard-dose 60Gy concurrent CRT, was already reported at ASCO. The data showing that 74Gy was not superior – and maybe even worse – than 60Gy in terms of OS led to early closure of the high-dose arms. The second objective, to analyse the impact on OS of the addition of cetuximab, was reported in Sydney. Unfortunately, the result was negative as well, in that no OS benefit was found after adding cetuximab to CRT in stage III NSCLC. Moreover, overall and non-haematologic toxicity increased (Masters et al, PL03.05).

The group of MD Anderson reported on a phase II study of intercalating erlotinib in stage III NSCLC treated with concurrent CRT (Komaki et al, O02.06). Toxicity was acceptable and the median OS of 34 months seemed promising, but the very short and disappointing time to progression of only 13.7 months raised concerns. One may question whether it is still defendable to test the addition of targeted therapies to CRT in unselected patient populations. Answers regarding the added value of targeted drugs in CRT will be more likely to come from studies such as RTOG 1306, a randomised phase II trial of CRT for stage III non-squamous NSCLC testing the individualised inclusion of either erlotinib in the EGFR mutated cohort, or crizotinib in the EML4-ALK fusion cohort.

The same goes for radiotherapy, where the unselected dose-escalation in stage III NSCLC turned out unsuccessful. Hence the need to individualise RT to patient and tumour factors as well as to the evolution during treatment. Results of some phase II studies testing these principles were presented at the conference: the IDEAL trial on isotoxic dose-escalation (Landau et al, O14.07) which later on will be randomly compared to more standard RT approaches in the UK; a trial on mid-treatment FDG-PET adaptive individualised CRT from the University of Michigan (Kong et al, MO25.10), which is now under randomised evaluation in RTOG 1106.

From all the above examples of studies presented at the WCLC it becomes abundantly clear that more is not necessarily better, nor is a one-size-fits-all approach the way to go for this extremely heterogeneous patient population of LA-NSCLC. On-going studies will gradually teach us how to tailor the treatment, systemic as well as local – including radiotherapy doses and techniques – to the specificities of each individual patient.

Yolande Lievens
Member of the ESTRO Clinical Committee
Radiation Oncologist
University Hospital Ghent
Ghent, Belgium
DOVE
THE ESTRO PLATFORM FOR SCIENTIFIC AND EDUCATIONAL DATA

DOVE is the e-library developed by ESTRO giving you access to educational and scientific material, produced and disseminated by the Society: the Green Journal articles, conference abstracts, webcasts, e-posters, slides, access to FALCON (our delineation tool), guidelines, our newsletter...

HOW DOES IT WORK?
DOVE works as a search engine encompassing all kinds of data in radiation oncology. Just type in your key words and then refine your search by ticking the boxes if you are looking for a particular type of support (abstract, webcast...). Or simply type a key word to see all the information available linked to the topic!

HOW TO ACCESS DOVE?
Simply go to www.estro.org: DOVE appears on the welcome page. The level of free access to the content you searched will depend on your membership type.
Too important to miss…
A digest of essential reading for all radiation oncologists

BY PHILIPPE LAMBIN, DIRK DE RUYSCHER AND HANS KAANDERS
Phase III randomised trial of weekly cisplatin and irradiation versus cisplatin and tirapazamine and irradiation in stages IB2, IIA, IIB, IIIB, and IVA cervical carcinoma limited to the pelvis: a gynecologic oncology group study.

Disilvestro PA, Ali S, Craighead PS, Lucci JA, Lee YC, Cohn DE, Spirtos NM, Tewari KS, Muller C, Gajewski WH, Steinhoff MM, Monk BJ.

J Clin Oncol. 2014 Jan 6. [Epub ahead of print]

PURPOSE
This prospective, randomised phase III intergroup trial of the Gynecologic Oncology Group and National Cancer Institute of Canada Clinical Trials Group was designed to test the effectiveness and safety of adding the hypoxic cell sensitizer tirapazamine (TPZ) to standard cisplatin (CIS) chemoradiotherapy in locally advanced cervix cancer.

PATIENTS AND METHODS
Patients with locally advanced cervix cancer were randomly assigned to CIS chemoradiotherapy versus CIS/TPZ chemoradiotherapy. Primary end point was progression-free survival (PFS). Secondary end points included overall survival (OS) and tolerability.

RESULTS
PFS was evaluable in 387 of 402 patients randomly assigned over 36 months, with enrolment ending in September 2009. Because of the lack of TPZ supply, the study did not reach its original target accrual goal. At median follow-up of 28.3 months, PFS and OS were similar in both arms. Three-year PFS for the TPZ/CIS/RT and CIS/RT arms were 63.0% and 64.4%, respectively (log-rank P = .7869). Three-year OS for the TPZ/CIS/RT and CIS/RT arms were 70.5% and 70.6%, respectively (log-rank P = .8333). A scheduled interim safety analysis led to a reduction in the starting dose for the TPZ/CIS arm, with resulting tolerance in both treatment arms.

CONCLUSION
TPZ/CIS chemoradiotherapy was not superior to CIS chemoradiotherapy in either PFS or OS, although definitive commentary was limited by an inadequate number of events (progression or death). TPZ/CIS chemoradiotherapy was tolerable at a modified starting dose.
Use of statins and the risk of death in patients with prostate cancer.

Oriana Yu, et al.

J Clin Oncol 32:5-11, 2013

PURPOSE
To determine whether the use of statins after prostate cancer diagnosis is associated with a decreased risk of cancer-related mortality and all-cause mortality, and to assess whether this association is modified by pre-diagnostic use of statins.

PATIENTS AND METHODS
A cohort of 11,772 men newly diagnosed with non-metastatic prostate cancer between 1 April 1998, and 31 December 2009, followed until 1 October 2012, was identified using a large population-based electronic database from the UK. Time-dependent Cox proportional hazards models were used to estimate adjusted hazard ratios (HRs) with 95% confidence intervals (CIs) of mortality outcomes associated with post-diagnostic use of statins, lagged by one year to account for latency considerations and to minimise reverse causality, and considering effect modification by pre-diagnostic use of statins.

RESULTS
During a mean follow-up time of 4.4 years (standard deviation, 2.9 years), 3,499 deaths occurred, including 1,791 from prostate cancer. Post-diagnostic use of statins was associated with a decreased risk of prostate cancer mortality (HR, 0.76; 95% CI, 0.66 to 0.88) and all-cause mortality (HR, 0.86; 95% CI, 0.78 to 0.95). These decreased risks of prostate cancer mortality and all-cause mortality were more pronounced in patients who also used statins before diagnosis (HR, 0.55; 95% CI, 0.41 to 0.74; and HR, 0.66; 95% CI, 0.53 to 0.81, respectively), with weaker effects in patients who initiated the treatment only after diagnosis (HR, 0.82; 95% CI, 0.71 to 0.96; and HR, 0.91; 95% CI, 0.82 to 1.01, respectively).

CONCLUSION
Overall, the use of statins after diagnosis was associated with a decreased risk in prostate cancer mortality. However, this effect was stronger in patients who also used statins before diagnosis.
PROSTATE

Randomised trial of hypofractionated external-beam radiotherapy for prostate cancer.


PURPOSE
To determine if escalated radiation dose using hypofractionation significantly reduces biochemical and/or clinical disease failure (BCDF) in men treated primarily for prostate cancer.

PATIENTS AND METHODS
Between June 2002 and May 2006, men with favourable- to high-risk prostate cancer were randomly allocated to receive 76 Gy in 38 fractions at 2.0 Gy per fraction (conventional fractionation intensity-modulated radiation therapy [CIMRT]) versus 70.2 Gy in 26 fractions at 2.7 Gy per fraction (hypofractionated IMRT [HIMRT]); the latter was estimated to be equivalent to 84.4 Gy in 2.0 Gy fractions. High-risk patients received long-term androgen deprivation therapy (ADT), and some intermediate-risk patients received short-term ADT. The primary end point was the cumulative incidence of BCDF. Secondarily, toxicity was assessed.

RESULTS
There were 303 assessable patients with a median follow-up of 68.4 months. No significant differences were seen between the treatment arms in terms of the distribution of patients by clinicopathologic or treatment-related (ADT use and length) factors. The five-year rates of BCDF were 21.4% (95% CI, 14.8% to 28.7%) for CIMRT and 23.3% (95% CI, 16.4% to 31.0%) for HIMRT (P = .745). There were no statistically significant differences in late toxicity between the arms; however, in subgroup analysis, patients with compromised urinary function before enrolment had significantly worse urinary function after HIMRT.

CONCLUSION
The hypofractionation regimen did not result in a significant reduction in BCDF; however, it is delivered in 2.5 fewer weeks. Men with compromised urinary function before treatment may not be ideal candidates for this approach.
BACKGROUND
We report the long-term results of a trial of immediate postoperative irradiation versus a wait-and-see policy in patients with prostate cancer extending beyond the prostate, to confirm whether previously reported progression-free survival was sustained.

METHODS
This randomised, phase III, controlled trial recruited patients aged 75 years or younger with untreated cT0-3 prostate cancer (WHO performance status 0 or 1) from 37 institutions across Europe. Eligible patients were randomly assigned centrally (1:1) to postoperative irradiation (60 Gy of conventional irradiation to the surgical bed for six weeks) or to a wait-and-see policy until biochemical progression (increase in prostate-specific antigen >0.2 μg/L confirmed twice at least two weeks apart). We analysed the primary endpoint, biochemical progression-free survival, by intention to treat (two-sided test for difference at α=0.05, adjusted for one interim analysis) and did exploratory analyses of heterogeneity of effect. This trial is registered with ClinicalTrials.gov, number NCT00002511.

FINDINGS
1005 patients were randomly assigned to a wait-and-see policy (n=503) or postoperative irradiation (n=502) and were followed up for a median of 10.6 years (range two months to 16.6 years). Postoperative irradiation significantly improved biochemical progression-free survival compared with the wait-and-see policy (198 [39.4%] of 502 patients in postoperative irradiation group vs 311 [61.8%] of 503 patients in wait-and-see group had biochemical or clinical progression or died; HR 0.49 [95% CI 0.41-0.59]; p<0.0001). Late adverse effects (any type of any grade) were more frequent in the postoperative irradiation group than in the wait-and-see group (ten year cumulative incidence 70.8% [66.6-75.0] vs 59.7% [55.3-64.1]; p=0.001).

INTERPRETATION
Results at median follow-up of 10.6 years show that conventional postoperative irradiation significantly improves biochemical progression-free survival and local control compared with a wait-and-see policy, supporting results at five-year follow-up; however, improvements in clinical progression-free survival were not maintained. Exploratory analyses suggest that postoperative irradiation might improve clinical progression-free survival in patients younger than 70 years and in those with positive surgical margins, but could have a detrimental effect in patients aged 70 years or older.
Algorithm-based management of patients with gastrointestinal symptoms in patients after pelvic radiation treatment (ORBIT): a randomised controlled trial.


BACKGROUND
Chronic gastrointestinal symptoms after pelvic radiotherapy are common, multifactorial in cause, and affect patients’ quality of life. We assessed whether such patients could be helped if a practitioner followed an investigative and management algorithm, and whether outcomes differed by whether a nurse or a gastroenterologist led this algorithm-based care.

METHODS
For this three-arm randomised controlled trial we recruited patients (aged ≥18 years) from clinics in London, UK, with new-onset gastrointestinal symptoms persisting six months after pelvic radiotherapy. Using a computer-generated randomisation sequence, we randomly allocated patients to one of three groups (1:1:1; stratified by tumour site [urological, gynaecological, or gastrointestinal], and degree of bowel dysfunction [IBDQ-B score <60 vs 60-70]): usual care (a detailed self-help booklet), gastroenterologist-led algorithm-based treatment, or nurse-led algorithm-based treatment. The primary endpoint was change in Inflammatory Bowel Disease Questionnaire-Bowel subset score (IBDQ-B) at six months, analysed by intention to treat. This trial is registered with ClinicalTrials.gov, number NCT00737230.

FINDINGS
Between 26 November 2007 and 12 December 2011, we enrolled and randomly allocated 218 patients to treatment: 80 to the nurse group, 70 to the gastroenterologist group, and 68 to the booklet group. Most had a baseline IBDQ-B score indicating moderate-to-severe symptoms. We recorded the following pair-wise mean difference in change in IBDQ-B score between groups: nurse versus booklet 4·12 (95% CI 0.04-8.19; p=0.04), gastroenterologist versus booklet 5·47 (1·14-9·81; p=0.01). Outcomes in the nurse group were not inferior to outcomes in the gastroenterologist group (mean difference 1.36, one sided 95% CI -1.48).

INTERPRETATION
Patients given targeted intervention following a detailed clinical algorithm had better improvements in radiotherapy-induced gastrointestinal symptoms than did patients given usual care. Our findings suggest that, for most patients, this algorithm-based care can be given by a trained nurse.
BACKGROUND
Although repeat radiation treatment has been shown to palliate pain in patients with bone metastases from multiple primary origin sites, data for the best possible dose fractionation schedules are lacking. We aimed to assess two dose fractionation schedules in patients with painful bone metastases needing repeat radiation therapy.

METHODS
We did a multicentre, non-blinded, randomised, controlled trial in nine countries worldwide. We enrolled patients 18 years or older who had radiologically confirmed, painful (i.e. pain measured as ≥2 points using the Brief Pain Inventory) bone metastases, had received previous radiation therapy, and were taking a stable dose and schedule of pain-relieving drugs (if prescribed). Patients were randomly assigned (1:1) to receive either 8 Gy in a single fraction or 20 Gy in multiple fractions by a central computer-generated allocation sequence using dynamic minimisation to conceal assignment, stratified by previous radiation fraction schedule, response to initial radiation, and treatment centre. Patients, caregivers, and investigators were not masked to treatment allocation. The primary endpoint was overall pain response at two months, which was defined as the sum of complete and partial pain responses to treatment, assessed using both Brief Pain Inventory scores and changes in analgesic consumption. Analysis was done by intention to treat. This study is registered with ClinicalTrials.gov, number NCT00080912.

FINDINGS
Between 7 January 2004, and 24 May 2012, we randomly assigned 425 patients to each treatment group. Nineteen (4%) patients in the 8 Gy group and 12 (3%) in the 20 Gy group were found to be ineligible after randomisation, and 140 (33%) and 132 (31%) patients, respectively, were not assessable at two months and were counted as missing data in the intention-to-treat analysis. In the intention-to-treat population, 118 (28%) patients allocated to 8 Gy treatment and 135 (32%) allocated to 20 Gy treatment had an overall pain response to treatment (p=0·21; response difference 4·00% [upper limit of the 95% CI 9·2, less than the prespecified non-inferiority margin of 10%]). In the per-protocol population, 116 (45%) of 258 patients and 134 (51%) of 263 patients, respectively, had an overall pain response to treatment (p=0·17; response difference 6·00% [upper limit of the 95% CI 13·2, greater than the prespecified non-inferiority margin of 10%]). The most frequently reported acute radiation-related toxicities at 14 days were lack of appetite (201 [56%] of 358 assessable patients who received 8 Gy vs 229 [66%] of 349 assessable patients who received 20 Gy; p=0·011) and diarrhoea (81 [23%] of 357 vs 108 [31%] of 349; p=0·018). Pathological fractures occurred in 30 (7%) of 425 patients assigned to 8 Gy and 20 (5%) of 425 assigned to 20 Gy (odds ratio [OR] 1·54, 95% CI 0·85-2·75; ▼
p=0.15), and spinal cord or cauda equina compressions were reported in seven (2%) of 425 versus two (<1%) of 425, respectively (OR 3.54, 95% CI 0.73-17.15; p=0.094).

**INTERPRETATION**

In patients with painful bone metastases requiring repeat radiation therapy, treatment with 8 Gy in a single fraction seems to be non-inferior and less toxic than 20 Gy in multiple fractions; however, as findings were not robust in a per-protocol analysis, trade-offs between efficacy and toxicity might exist.
BACKGROUND
Treatment options for patients with nonbulky stage IA-IIA Hodgkin lymphoma include combined modality therapy (CMT) using doxorubicin, bleomycin, vinblastine and dacarbazine (ABVD) plus involved-field radiation therapy (IFRT), and chemotherapy with ABVD alone. There are no mature randomised data comparing ABVD with CMT using modern radiation techniques.

PATIENTS AND METHODS
Using German Hodgkin Study Group HD10/HD11 and NCIC Clinical Trials Group HD.6 databases, the authors identified 588 patients who met mutually inclusive eligibility criteria from the preferred arms of HD10 or 11 (n = 406) and HD.6 (n = 182). They evaluated time to progression (TTP), progression-free (PFS) and overall survival, including in three predefined exploratory subset analyses.

RESULTS
With median follow-up of 91 (HD10/11) and 134 (HD.6) months, respective eight-year outcomes were for TTP, 93% versus 87% [hazard ratio (HR) 0.44, 95% confidence interval (CI) 0.24-0.78]; for PFS, 89% versus 86% (HR 0.71, 95% CI 0.42-1.18) and for overall survival, 95% versus 95% (HR 1.09, 95% CI 0.49-2.40). In the exploratory subset analysis including HD10 eligible patients who achieved complete response (CR) or unconfirmed complete response (CRu) after two cycles of ABVD, eight-year PFS was 87% (HD10) versus 95% (HD.6) (HR 2.8; 95% CI 0.64-12.5) and overall survival 96% versus 100%. In contrast, among those without CR/CRu after two cycles of ABVD, eight-year PFS was 88% versus 74% (HR 0.35; 95% CI 0.16-0.79) and overall survival 95% versus 91%, respectively (HR 0.42; 95% CI 0.12-1.44).

CONCLUSIONS
In patients with nonbulky stage IA-IIA Hodgkin lymphoma, CMT provides better disease control than ABVD alone, especially among those not achieving complete response after two cycles of ABVD. Within the follow-up duration evaluated, overall survivals were similar. Longer follow-up is required to understand the implications of radiation and chemotherapy-related late effects.
Randomised controlled trial of intensity-modulated radiotherapy for early breast cancer: 5-year results confirm superior overall cosmesis.


PURPOSE
There are few randomised controlled trial data to confirm that improved homogeneity with simple intensity-modulated radiotherapy (IMRT) decreases late breast tissue toxicity. The Cambridge Breast IMRT trial investigated this hypothesis, and the five-year results are reported.

PATIENTS AND METHODS
Standard tangential plans of 1,145 trial patients were analysed; 815 patients had inhomogeneous plans (≥ 2 cm(3) receiving 107% of prescribed dose: 40 Gy in 15 fractions over three weeks) and were randomly assigned to standard radiotherapy (RT) or replanned with simple IMRT; 330 patients with satisfactory dose homogeneity were treated with standard RT and underwent the same follow-up as the randomly assigned patients. Breast tissue toxicities were assessed at five years using validated methods: photographic assessment (overall cosmesis and breast shrinkage compared with baseline pre-RT photographs) and clinical assessment (telangiectasia, induration, oedema, and pigmentation). Comparisons between different groups were analysed using polychotomous logistic regression.

RESULTS
On univariate analysis, compared with standard RT, fewer patients in the simple IMRT group developed suboptimal overall cosmesis (odds ratio [OR], 0.68; 95% CI, 0.48 to 0.96; P = .027) and skin telangiectasia (OR, 0.58; 95% CI, 0.36 to 0.92; P = .021). No evidence of difference was seen for breast shrinkage, breast oedema, tumour bed induration, or pigmentation. The benefit of IMRT was maintained on multivariate analysis for both overall cosmesis (P = .038) and skin telangiectasia (P = .031).

CONCLUSION
The authors concluded that improved dose homogeneity with simple IMRT translates into superior overall cosmesis and reduces the risk of skin telangiectasia. These results are practice changing and should encourage centres still using two-dimensional RT to implement simple breast IMRT.
BACKGROUND
Intraoperative radiotherapy with electrons allows the substitution of conventional postoperative whole breast irradiation with one session of radiotherapy with the same equivalent dose during surgery. However, its ability to control for recurrence of local disease required confirmation in a randomised controlled trial.

METHODS
Women aged 48-75 years with early breast cancer, a maximum tumour diameter of up to 2.5 cm, and suitable for breast-conserving surgery were randomly assigned in a 1:1 ratio (using a random permuted block design, stratified for clinical tumour size [<1.0 cm vs 1.0-1.4 cm vs ≥1.5 cm]) to receive either whole-breast external radiotherapy or intraoperative radiotherapy with electrons. Study coordinators, clinicians, and patients were aware of the assignment. Patients in the intraoperative radiotherapy group received one dose of 21 Gy to the tumour bed during surgery. Those in the external radiotherapy group received 50 Gy in 25 fractions of 2 Gy, followed by a boost of 10 Gy in five fractions. This was an equivalence trial; the prespecified equivalence margin was local recurrence of 7.5% in the intraoperative radiotherapy group. The primary endpoint was occurrence of ipsilateral breast tumour recurrences (IBTR); overall survival was a secondary outcome. The main analysis was by intention to treat.

RESULTS
1305 patients were randomised (654 to external radiotherapy and 651 to intraoperative radiotherapy) between 20 November 2000, and 27 December 2007. After a medium follow-up of 5.8 years (IQR 4.1-7.7), 35 patients in the intraoperative radiotherapy group and four patients in the external radiotherapy group had had an IBTR (p<0.0001). The five-year event rate for IBTR was 4.4% (95% CI 2.7-6.1) in the intraoperative radiotherapy group and 0.4% (0.0-1.0) in the external radiotherapy group (hazard ratio 9.3 [95% CI 3.3-26.3]). During the same period, 34 women allocated to intraoperative radiotherapy and 31 to external radiotherapy died (p=0.59). Five-year overall survival was 96.8% (95% CI 95.3-98.3) in the intraoperative radiotherapy group and 96.9% (95.5-98.3) in the external radiotherapy group. In patients with data available (n=464 for intraoperative radiotherapy; n=412 for external radiotherapy) we noted significantly fewer skin side-effects in women in the intraoperative radiotherapy group than in those in the external radiotherapy group (p=0.0002).

CONCLUSIONS
The authors conclude that although the rate of IBTR in the intraoperative radiotherapy group was within the prespecified equivalence margin, the rate was significantly greater than with external radiotherapy, and overall survival did not differ between groups. Improved selection of patients could reduce the rate of IBTR with intraoperative radiotherapy with electrons.
**ESTRO 33 Vienna: not to be missed!**

In this Corner you can read the recommendations of Jacob Lindegaard, member of the scientific advisory group, on the opportunities to learn and be inspired by the ESTRO 33 brachytherapy sessions and teaching lectures.

Also, you can read the reports of two young brachytherapy fellows who left their home countries for a while to learn about brachytherapy in international centres. The possibilities for global learning are better than ever. The stories of Henrike Westerveld (The Netherlands) and Pittaya Danchulchai (Thailand) demonstrate how valuable it is for the development of the young professional to pursue grants for going abroad with the aim of learning new competencies and becoming integrated in an international research environment.

Last but not least, we invite all of you with an interest in GEC-ESTRO to come learn and discuss about our activities at the GEC-ESTRO assembly on 6 April. More details on this can be found at the end of this Corner. See you there!

*Peter Hoskin, Bradley Pieters and Kari Tanderup*
Cancer is now the most common cause of death in Thailand. The number of patients is gradually increasing over time. Consequently, this leads to a rapid expansion of the radiation oncology department in Siriraj Hospital, the biggest medical school in the country. However, advanced radiation techniques, including brachytherapy, are not well developed in Thailand. Brachytherapy has become a common radiation technique for the treatment of gynaecological, breast, and prostate cancer. Image guided brachytherapy is an emerging development in advanced radiation techniques. As a radiation oncologist who has an interest in this technique, I wished, therefore, to have training in a medical centre with experts who routinely practice this technique.

I applied to be a fellow in brachytherapy in two medical institutes, Vienna General Hospital, Medical University of Vienna in Austria, and Mount Vernon Cancer Centre in the UK. In Vienna I spent most of my time on gynaecologic malignancy, while I focused mainly on prostate cancer at the Mount Vernon Cancer Centre.
It was a wonderful time for learning various skills, including insertion of applicators, implantation techniques, contouring, optimisation of treatment planning, and management of radiation complications. I have attended brachytherapy meetings to discuss the techniques that I could learn from experts, such as how to choose the applicators and design implantation. My great memory was attendance in the operating theatre where I could learn brachytherapy techniques, especially applicator insertion and interstitial implantation, from experts treating the real cases. Moreover, I had a good opportunity to discuss controversial contouring and dose objectives of planning. I also joined the team in their clinic to learn how to explain a plan of treatment and the management of radiation complications to patients. It was a good opportunity to gain more experience in these clinical aspects.

Regarding research, I attended research conferences that made me clearly understand how good research is conducted. My mentors gave me opportunities for proposing my own research questions. They showed me how to deal with unexpected results as well as how to choose an appropriate method of analysis for a project. They provided valuable comments on my manuscripts before submission. Moreover, I have had the chance to present my research at international conferences.

Undoubtedly, this two-year experience has given me more than I can describe. Unexpectedly, living abroad for two years in culture-rich countries like Austria and the UK has introduced me to a fascinating European life that is different from where I come from, but indeed, impressive.

Finally, I would like to say “thank you very much” to Professor Richard Pötter from Vienna, and Professor Peter J Hoskin from London. I learned from both about clinical and international research aspects. I hope I can now set up an image guided brachytherapy unit and conduct research in this field, particularly in gynaecologic malignancy and prostate cancer in my department now that I am back in my own country.

Pittaya Dankulchai
Division of Radiation Oncology
Department of Radiology
Faculty of Medicine Siriraj Hospital
Mahidol University
Bangkok, Thailand
Working and learning in another environment and meeting inspired people is the most valuable experience of my image-guided brachytherapy fellowship. With sponsorship from the Dutch Cancer Association, I was able to broaden my horizon during a two-year fellowship after my residency. Following a two-month crash course in brachy at my own department at the Academic Medical Center in Amsterdam, The Netherlands, I went with my young family to beautiful Vienna, Austria.

For six months I worked at the radiotherapy department of the Medical University of Vienna under the supervision of Professor Richard Pötter, well known as one of the founders of the MRI-guided brachytherapy in cervical cancer patients. Not only did I learn a lot about the treatment of (sometimes very advanced) gynaecological cancers, but also I started some small studies together with my co-fellow Pittaya Dankulchai. One year later, we have published a paper in the Green Journal about vaginal dose points, describing a method for reporting vaginal dose in cervical cancer patients and we hope more is to come.

I have met many interesting people from the gynae network, due to the fact that the head office for the EMBRACE (European and international study on MRI-guided brachytherapy in locally advanced cervical cancer) study is situated in Vienna. Many fruitful and inspiring conversations have taken place and still continue even now, because since then, I am actively participating in this study group.

After an exciting foreign experience, I went back to my home country where my next stay was at the University Medical Centre Utrecht under the supervision of Professor Marco van Vulpen and Dr Ina Jürgenliemk-Schulz. The focus of this part of my fellowship was on MRI-guided brachytherapy in gynaecological and prostate cancer. I’ve learned all the ins and outs of magnetic resonance imaging, which is very useful in daily practice as a brachytherapist. In addition, I have been given the opportunity to get hands-on brachy experience.

In the second and final year of my fellowship, I worked in the Academic Medical Center under supervision of the all-round brachytherapist, Dr Bradley Pieters. This last year I learned the finesse of the profession, from application to planning and 'Paris system'. In our department a wide range of tumours are treated with brachytherapy, not only prostate and gynaecological tumours, but also, for example, bladder and anal canal cancer and rhabdomyosarcoma in children (AMORE).

In conclusion, this fellowship has given me the opportunity to become an all-round brachytherapist from textbook to daily practice and furthermore has led to active participation within the EMBRACE group.

One last tip: be prepared to accept that, when
working abroad, well-laid plans can turn out differently. It might even be possible that initial ideas crash at an early stage. However, if you keep an open mind, there are many more and unexpected opportunities bearing priceless experiences you couldn’t imagine beforehand.

Henrike Westerveld  
Radiation Oncologist  
Department of Radiotherapy  
Academic Medical Center  
Amsterdam, The Netherlands
What are the sessions/topics not to be missed?
The GEC-ESTRO track has a lot to offer at ESTRO 33 and it is difficult to point to some sessions/topics rather than others. However, there are two highly interesting symposia that dig into the current evidence for tumour response and organs-at-risk constraints used in current clinical practice, including image guided adaptive brachytherapy. The working groups of the GEC-ESTRO have been very active during the past years in establishing new evidence and this is a great chance to get a compiled overview of the current status and state of the art for these fundamental parts of contemporary brachytherapy. To complete the circle, a symposium will then look to the physics part in terms of dosimetry in 3D image guided adaptive brachytherapy. Thus, image guided brachytherapy is really in the focus this time in the GEC-ESTRO tracks at ESTRO 33.

Can we expect sessions on guidelines in brachytherapy?
Yes indeed. A whole symposium is devoted to the presentation of new GEC-ESTRO guidelines in clinical practice, encompassing prostate, breast and the use of ultrasound in brachytherapy. In view of the great success of previous GEC-ESTRO guidelines – they were among the top downloads from the Green Journal – these new guidelines will undoubtedly also be top scorers. So why not come and see them presented live at ESTRO 33?

What can we expect from the teaching lectures?
One very important teaching lecture will be the comprehensive lecture on the new ICRU1-GEC-ESTRO recommendations for prescribing, re-coding and reporting brachytherapy for cancer of the cervix, which will be given by Christian Kirisits. All the new developments in image guided adaptive brachytherapy in cervix cancer are included in this new report, which will be published this year. In view of the dominant role played by the Vienna group in the quantum leap that brachytherapy in cervix has taken during the last decade, it will be a very special occasion to hear this presentation in Vienna by one of the key people involved in these developments. This is a chance to learn about all the new features and to get your department ready before the new ICRU GEC-ESTRO report is published and new standards of care are defined.

1 International Commission on Radiation Units and Measurements

In another teaching lecture Kari Tanderup will discuss in detail the question about the planning target volume (PTV) concept in brachytherapy, which has become highly relevant in the era of image guided brachytherapy when adaptive target concepts are being introduced.
We invite all of you with an interest in GEC-ESTRO to come learn and discuss about our activities at the GEC-ESTRO assembly on 6 April.

Peter Hoskin
Chair of the GEC-ESTRO committee

AGENDA

1. Welcome and introductory remarks
2. Yearly activity report from chair
3. GEC-ESTRO structure
   - Chair and chair-elect 2014
   - GEC-ESTRO committee
   - GEC-ESTRO advisory board
4. Iridium 192 awardee 2015
5. Meetings:
   - GEC-ESTRO workshop 2013 evaluation
   - ESTRO 3rd Forum
     24-28 April 2015, Barcelona
   - World Congress of Brachytherapy
     27-29 June, 2016 San Francisco
6. Any other business
7. Next meeting: ESTRO 3rd Forum
   April 2015, Barcelona
As many of you will have heard, the ESTRO community lost a great friend, colleague, and a giant in the field of radiobiology research. Adrian Begg was one of the most important and respected radiation biologists in Europe and his contributions to our community have been enormous. The shock of his passing is still felt deeply within members of the current radiobiology committee at ESTRO, and we have decided to take some time to reflect on Adrian’s contributions and to dedicate the next Radiobiology (RB) Corner to his legacy.

For now, it is my pleasure to introduce some upcoming changes to the RB Corner. For the past few years, the Corner has been written by three members of our committee – Conchita Vens, Martin Pruschy, and Nils Cordes. Nils has stepped down and we have appointed Anne Kiltie as his replacement. In addition, these three people will take on a more editorial role for the
Corner, and the content will be overseen by a member of our committee. Over the course of the year, we will introduce several new components to the programme, focusing on specific topics of general interest to our community. In this issue, we introduce a “Spotlight” section to highlight a particular lab/leader with an invitation to them to contribute a short essay looking at a novel research area they are involved with. In addition, we will provide a “Radiobiology perspective” on new research papers selected by our clinical colleagues that are highlighted in the “Read it before your patients” section of the newsletter.

**Bradly G. Wouters**  
*Chair of the ESTRO radiobiology committee*  
*Department of Radiotherapy*  
*Princess Margaret Hospital*  
*Toronto, Canada*
BIOGRAPHY

Marc Vooijs is a professor at the department of radiotherapy/Mastro Lab at the MUMC+, closely affiliated with the out-patient Maastro Clinic, the largest radiotherapy clinic in the southeast of The Netherlands. Maastro Lab has a state-of-the-art preclinical mouse cancer model pipeline with different cancer models (spontaneous, orthotopic, primary patient xenografts) and imaging modalities (BLI, PET, MRI) and a small animal irradiator and CT. There are 25 people working in the lab with four principle investigator-led teams consisting of six postdocs, ten PhDs and five technicians.

Marc undertook his PhD in the Netherlands Cancer Institute with Anton Berns and conducted postdoctoral fellowships at Washington University in Saint Louis with Raphael Kopan and in Hubrecht Institute with Hans Clevers. In 2006 he started his own group at the department of pathology (head: Paul van Diest) at the UMC-Utrecht. In 2010 he moved to the MUMC to become head of laboratory research at Maastro.

His research is focussed on mechanistic insight into signal transduction by NOTCH family proteins and their context-dependent role in cancer development and treatment response, with an emphasis on tumour microenvironment and hypoxia. Furthermore, he is developing new reagents to monitor the NOTCH activation cascade under normal and pathophysiological conditions.

He has been awarded over three million Euros by an European Research Council (ERC) starting grant (ERC-Stg, NOTCH PROTEOLYSIS, 2008), ERC Proof of Concept (ERC, PoC, 2012 CAPNOTCH) and an ERC Consolidator grant (ERC-CoG, DIRECT, 2013). He has also received funding from the Dutch Cancer Society (KWF/NKB) and the Association for International Cancer Research (AICR 2013). In 2012 he was elected a member of the Young Academy Europe (YAE). He has been a fellow of the Dutch Cancer Society and has been awarded the prestigious van Nieuwenhoven award for biology from the Radboud University and in 2013 the Maastro research award. He holds one patent. Marc is co-organiser of the first international symposium on small animal imaging and precision radiotherapy in 2013 in Maastricht.
WHY NOTCH YET?

Unmet need
Resistance to radiotherapy is a common cause of treatment failure and tumour recurrence. The effect of radiotherapy is largely restricted by toxicity of late responding tissues. Drugs that either enhance tumour cell sensitivity or prevent normal tissue toxicity will enable dose de-intensification on normal tissues while achieving effective tumour cell kill. Whereas there have been successful randomised phase III trials reporting radiosensitisation and increased local control in squamous head and neck cancer using antibodies targeting the EGFR receptor (cetuximab) or by targeting tumour hypoxia by reoxygenation (carbogen, nicotinamide) or hypoxic cytotoxins (nimorazole), effects on overall survival are still limited.

At present, it is unclear whether these tumour-cell specific approaches really target the most resistant, malignant and recurrent tumour cells. Increasing evidence indicates that a small subpopulation of malignant cells in tumours with properties of stem cells also referred to as cancer stem cells (CSC) or tumour-initiating cells are drivers of intra-tumour heterogeneity that underlies poor treatment responses and tumour recurrence. For example, in preclinical models for glioblastoma CD133+ (a CSC marker) cells have a high tumour-initiating capacity and are more radio-resistant compared to the bulk of CD133-glioma cells.

Similar treatment-resistant CSC have been identified in lung, breast and prostate cancer and many studies have shown that CSC are also resistant to chemotherapies (e.g. docetaxel, cisplatin). Studies in human colorectal cancer have shown that the stem cell gene expression signature (from embryonic stem cells or intestinal stem cells) is associated with high-grade tumours and relapse. Taken together CSC may be a good target worth further investigating. How to target these cells? The NOTCH signalling pathway may be an attractive route, albeit not without hurdles.

NOTCH in cancer
NOTCH signalling is a cell-to-cell communication system where adjacent ligand expressing and receptor-expressing cells interact. Ligand binding to NOTCH receptors leads to cleavage in the transmembrane domain of NOTCH by the intramembrane protease complex g-secretase. This causes the release of the membrane tethered cytoplasmic domain which translocates to the nucleus where it is recruited to the chromatin of targeted genes by the DNA binding RBP/CSL and Mastermind like proteins (MAML) resulting in activation of target gene transcription.

Most well described target genes are basic helix loop helix proteins of the HES and HEY family. The human genome encodes for four Notch receptors and up to five canonical ligands of the JAGGED and DELTA family, which are expressed in unique and overlapping patterns and perform essential functions during development and in adult tissues. Notch proteins function is highly context dependent. In certain tissues Notch proteins promote stem cell renewal (e.g. intestine), while in other tissues they promote differentiation (e.g. epidermis). Consequently both gain and loss of function of NOTCH proteins has been associated with cancer development, progression and poor outcome.

The best understood are mutations found in T cell acute lymphocytic leukaemia (T-ALL) where 60% of tumours harbour activating mutations in NOTCH1. Exome sequencing of human non small cell lung adenocarcinomas report activating mutations in NOTCH1 (10%) or loss of NUMB (30%), a negative regulator of the NOTCH pathway. In contrast a high frequency of loss of function of NOTCH1 (and to a lesser extent in NOTCH2 and 3) has been reported in ▼
squamous carcinomas of the skin, lung and head and neck. Head and neck cancers with over-expression of wild type receptors, NOTCH ligands and target genes have also been identified. After TRP53, NOTCH1 is the most frequently deregulated pathway in these cancers. Mutations in NOTCH4 have not been reported in human tumours thus far.

Furthermore, NOTCH signalling is also a key factor in the tumour microenvironment. The NOTCH ligand DLL4 and vascular endothelial growth factor (VEGF) coordinate the sprouting and proliferation of tumour vessels in a co-ordinated fashion and inhibition of either VEGF or DLL4 functionally impairs vessel growth in tumours, causing tumour regression in preclinical xenograft models. In hypoxic cancer cells, induction of VEGF leads to DLL4 expression, which is a negative regulator of VEGF and blocks sprouting and branching of tumour vessels. Interestingly, anti-DLL4 treatment can suppress tumour growth in anti-VEGF resistant tumours (e.g. bevacizumab).

**NOTCH and treatment resistance**
Recent evidence obtained from preclinical models implicates NOTCH signalling in the resistance to radiotherapy and chemotherapy providing new opportunities for therapeutic application. Initially in brain but now also in lung, breast and prostate cancer there is convincing evidence that NOTCH signalling is important in treatment-resistant and recurrent tumour cells reminiscent of CSCs (CD133+ or CD24low/-CD44high (e.g. in breast). Blocking NOTCH signalling in preclinical tumour models reduces tumour growth and sensitivity to radiation treatment while over-expression of NOTCH accelerates growth and promotes resistance to radiotherapy. Taken together these results in preclinical models suggest that NOTCH could potentiate the effect of radiotherapy at least in some tumours.

While there is still much to be learned on the mechanism by which NOTCH proteins confer treatment resistance, available results suggest that NOTCH signalling may increase the survival of hypoxic cells and of CSC. Because normal stem cells have been found in hypoxic niches, this provides a testable hypothesis regarding a hypoxic treatment resistant CSC niche in tumours that depend on NOTCH for survival.

**NOTCH inhibitors in clinical trials**
Many preclinical studies have provided rationale for the use of NOTCH inhibitors in patients. Inhibitors of the g-secretase intramembrane protease complex (GSI) are potent inhibitors of NOTCH signalling in vivo (www.clinicaltrials.gov). Currently there are around 40 registered phase I-II trials in many different tumour types. The first phase I trials using GSIs in T-ALL patients failed due to dose-limiting gastrointestinal (GI) toxicity. New intermittent dosing schemes of GSI in phase I studies seem to negate the initial observed GI toxicity related to on-target NOTCH inhibition in the gut stem cells that causes precocious secretory differentiation and severe diarrhoea. Using these new dosing schemes, much higher maximum tolerated doses are achieved and in one trial stable disease in ten out of 21 patients with high grade gliomas for more than four months was observed. Similarly, studies in patients with advanced breast cancer yield sustained stable disease. Although these results are encouraging and demonstrate potent anti-tumour activity of NOTCH inhibitors, some caution is warranted.

**How to move forward**
While some preclinical studies have studied the effect of GSI in combination with chemotherapy, most have studied the efficacy of GSI as monotherapy. Because patients often receive combined treatments (chemo- and/or radiotherapy) or have relapsed with treatment resistant tumours, ▼
the intervention points for treatment are not comparable/known and treatments involving GSIs may therefore not be effective. This could lead to the dismissal of this potentially potent anti-cancer drug because of lack of understanding of the underlying biology similar to the failure of metalloprotease inhibitors in cancer therapy. Indeed, there seems to be a decline in the number of new clinical studies using GSIs, partly because we still lack the appropriate diagnostic, predictive and theranostic biomarkers for patient stratification and therapy monitoring.

What we need next

Thus, while these first findings of NOTCH inhibitors in patients seem promising, more insight is needed to understand their full potential and shortcomings. Such insight will have to come from preclinical and basic research.

Most research is focussed on the role of NOTCH1. However, the role of other NOTCH proteins in cancer is increasingly being appreciated. Since these may have importance as distinct aspects of tumourigenesis (initiation, invasion, metastasis, drug resistance etc) or even opposing functions (oncogene versus tumour suppressor), the simple measurement of a receptor expression or a few target genes (e.g. HES, HEY) in current clinical studies as a readout for NOTCH activity is clearly insufficient. This is crucial because currently used NOTCH inhibitors are pan-NOTCH inhibitors, i.e. they inhibit processing through all NOTCH receptors and therefore may also inactivate its potential tumour suppressive functions. Therefore, robust reagents such as isoform specific antibodies, which measure cleaved and activated forms of NOTCH receptors, or NOTCH pathway-specific gene-signatures are needed to assess which receptor is active and how this affects outcome or treatment response. Once available, these reagents could be used as diagnostic reagents for patient stratification and as companion diagnostics during GSI treatment.

Secondly, because NOTCH signalling plays crucial roles in the tumour microenvironment, NOTCH inhibitors have the potential to concurrently kill tumour cells and block angiogenesis. This dual function may be exploited to provide a therapeutic window sensitive to NOTCH inactivation. A wrong timing however e.g. NOTCH inhibition of angiogenesis prior or during radiotherapy might increase tumour hypoxia and induce treatment resistance.

Thirdly, because most patients receive combination treatments, such combinations have to be tested first in preclinical models since the underlying biology will teach us how to most optimally schedule NOTCH inhibitors in combination with chemotherapy and/or radiation therapy. In addition, using high throughput screens in cell based systems, synthetic lethal combinations between NOTCH inhibitors and chemo- and radiotherapy may be found that can be directly tested in preclinical models.

Fourthly, many preclinical studies rely on the use of xenografts with human immortalised cancer cell lines in immune deficient recipients. It is evident that at least some aspects of tumour growth and treatment response differs (1) between cell lines and direct transplantation of human tumours (patient derived xenografts or PDX), (2) between tumours grown subcutaneously versus orthotopic models and (3) between immune-competent and immune-deficient models. Further, spontaneous tumour models in mice (GEMM) which mimic specific oncogenic mutations (e.g. KRas/p53 mutant) can produce with short latency and with high incidence tumours that resemble their human counterpart (e.g. NSCLC). While these murine cancer models are spontaneous and therefore most closely resemble human tumour development, there are also substantial differences in the genetics of mouse...
versus man that potentially impact on the extrapolation of these models into a clinical relevant setting. Moreover, in some models only (high numbers of) low-grade tumours develop and do not reflect the clinical presentation where most often only one primary tumour is detected at an advanced stage. Choosing the right model may, therefore, not be so straightforward.

**In conclusion**

NOTCH inhibitors have great potential because they may target the most aggressive treatment resistant tumour cells, but more research is needed to generate biomarkers that should be used to select patients and follow treatment response. Only then, we can carefully assess the real potency of NOTCH pathway inhibitors in patients. We are not(ch) there yet.

**Marc Vooijs**

*Department of Radiation Oncology MAASTRO2/GROW School for Developmental Biology and Oncology Maastricht University Maastricht, The Netherlands*

*marc.vooijs@maastrichtuniversity.nl*
This study demonstrated that the use of statins before and after prostate cancer diagnosis is associated with a decreased risk of cancer-related mortality and all-cause mortality. The beneficial use of statins has been suggested by many laboratory and clinical studies in the past, and this new clinical paper suggests that further research is needed to determine the underlying mechanisms involved. Statins are used primarily to lower blood cholesterol, and they do so by inhibiting the function of the HMG-CoA reductase enzyme. This enzyme is a rate-limiting enzyme responsible for the production of cholesterol in the liver. Reduced production of cholesterol is sensed within cells, leading to an adaptive response that increases the expression of LDL receptors, which subsequently remove cholesterol out of the circulation. The role of this pathway in cancer is complex, but several theories have been put forward to explain the potential of statins to reduce cancer. Inhibition of HMG-CoA reductase prevents not only cholesterol synthesis, but also the synthesis of geranyl pyrophosphate and farnesyl pyrophosphate. This can prevent the prenylation or farnesylation of proteins such as the oncogene RAS, which results in inhibition of their activity. Inhibition of protein prenylation has also been suggested to improve endothelial function and, in prostate cancer, could influence the tumour microenvironment. It is interesting to note that in this study, the benefit of statins was observed primarily in patients receiving statins prior to therapy, suggesting that statins may be modifying tumour sensitivity to treatment.

Bradly G. Wouters
Chair of the ESTRO radiobiology committee
Department of Radiotherapy
Princess Margaret Hospital
Toronto, Canada
This paper presents more disappointing results demonstrating the lack of improvement by adding the hypoxic cytotoxin tirapazamine in combination with radiotherapy and cisplatin in cervix cancer. Although the study did not meet its enrolment goals, there was no difference in the two arms of this Phase III trial. Like other studies before it, no patient selection was used to choose patients who might have been expected to benefit from a hypoxia directed therapy. It is now abundantly clear, that future clinical studies will need to stratify patients using imaging or tissue-based biomarkers that can identify patients where hypoxia is an important contributor to treatment failure. We should not expect all patients to benefit from these types of personalised therapies. At a minimum, hypoxia directed therapies should be administered to patients with hypoxic tumours. Furthermore, recent studies in prostate and head and neck cancer have suggested that hypoxia status alone is unlikely to predict benefit well enough.

The importance of hypoxia, when present, is influenced by other genetic and tumour specific factors. The best example of this comes from the Danish studies from material in the DAHANCA trials showing that in HPV positive head and neck cancer, although hypoxic levels are similar to those in HPV negative head and neck cancer, it does not have the same negative influence on outcome. Our challenge is to identify both imaging and tumour specific biomarkers that can identify those patients most likely to benefit from hypoxia-directed therapy, and to ensure our clinical colleagues use these in future trials of new hypoxia specific drugs.
2014

- **ESTRO 33**
  04-08 April 2014 | Vienna, Austria
Radiobiology will continue to constitute an important part of this large and growing international meeting. The radiobiology committee at ESTRO has recognised the unique opportunity that such a large meeting has to increase the integration of biology into both clinical and physics based research, and to develop new collaborations between different disciplines in our society. As a consequence, the biology components of the programme are increasingly integrated into multi-disciplinary sessions where they have a large audience and relevance to many participants at the meeting. This year, there will be a designated biology track in the morning sessions, and each of these is designed to appeal to a broad audience. In the afternoon, the biology will be integrated into thematic based multidisciplinary sessions.

- **AACR ANNUAL MEETING**
  05-09 April 2014 | San Diego, USA
For those not attending ESTRO 33, the annual AACR meeting is a great opportunity to attend the largest cancer research meeting in the world. This year’s theme is “Harnessing breakthroughs – targeting cures”, and aims to focus on progress in translating cancer research as discoveries in the lab to develop increasingly targeted therapies. The meeting is diverse, but includes several sessions focused on radiation biology and radiation oncology.

- **23**\(^{RD}\) **BIENNIAL EACR CONGRESS**
  05-08 July 2014 | Munich, Germany
EACR-23 is a rapidly growing meeting with more than 1800 expected participants this year working in all fields of cancer research from basic discovery to translational research to personalised treatment.

- **3**\(^{RD}\) **INTERNATIONAL CONFERENCE ON TUMOUR MICROENVIRONMENT AND CELLULAR STRESS Signaling, Metabolism, Imaging and Therapeutic Targets**
  21-26 September 2014 | Mykonos, Greece
This is the third iteration of this meeting focussing on the tumour microenvironment and cell stress in cancer. The meeting includes a major focus on biology relevant to radiation oncology including tumour hypoxia and drug targets. The meeting offers ample opportunity for interactions from colleagues and features speakers from both Europe and North America.

- **60**\(^{TH}\) **ANNUAL MEETING OF THE RADIATION RESEARCH SOCIETY**
  21-24 September 2014 | Las Vegas, USA
This year the Radiation Research meeting will be held in Las Vegas. The meeting gives scientists interested in radiation chemistry, biology, physics, and the clinic to interact in a unique environment.
This meeting has continued to grow in size, popularity and importance over the years. It is a unique European and North American collaboration to foster interactions between scientists and the pharmaceutical industry. Topics include the latest research in drug development, target selection, and the impact of new discoveries in molecular biology. This meeting is a great opportunity for radiobiologists to interact with experts in drug discovery to further research in personalised medicine.

Development of the radiobiology programme for the third ESTRO Forum meeting is currently in progress, and we would like to share a few exciting new changes. Unlike the previous two ESTRO Forum meetings, a full radiobiology programme will be included and will constitute a major focus of the meeting. The Forum will host two thematic based radiobiology symposia that build on successful independent meetings that ESTRO has been involved with previously. The first is called PREVENT (Prediction, Recognition, EValuation and Eradication of Normal Tissue effects of radiotherapy), and will take place over 1.5 days and include researchers focussed on all aspects of normal tissue radiobiology. This meeting is unique in its in-depth discussion of the latest research investigating normal tissue responses to radiation relevant to our radiation oncology. The second is called “TARGET”, and is a new addition to the Forum that will also take place over 1.5 days. TARGET will focus on novel targeted therapies and personalised medicine in radiation oncology. It builds on four previous meetings on this topic initially organised by the Institut Claudius Regaud in Toulouse (France) by Elizabeth Moyal and colleagues. The symposium will enable discussion of the latest research in this area amongst selected experts. These two symposia will be complemented by a meeting-wide interdisciplinary session, allowing radiobiologists to have both in-depth biology focussed sessions as well as interactive sessions with clinicians and physicists.

The Wolfsberg meeting is unique, and considered to be the top molecular radiation biology meeting in the world. It takes place over two days in a beautiful venue and builds on past successful leadership from Dr Peter Rodemann and colleagues. The meeting is extremely popular and attendance is limited to top submitted abstracts that are reviewed by a large panel of experts. All attendees present posters, and the top submitted abstracts are offered oral presentations. The meeting generates intense discussions during poster sessions, offering a unique opportunity to share early stage work to other experts in the field who come from all over the world.
The Physics committee would like to continue its dialogue with the physics members of ESTRO.

The Physics Corner has a new section in which the latest clinical medical physics techniques and procedures will be presented. We hope this will enable us all to share our clinical experiences. If you want to contribute, read more on the next page, and get in touch with Mischa Hoogeman.

We have two recurring features in the Corner: “Back to school” and the “Editors’ picks” of recent important radiotherapy physics papers. We hope that these, together with a review of a new image processing textbook, will provide you with some extra physics stimuli.

Finally, we have an announcement of the 2nd physics members’ assembly, which will be held during ESTRO 33 in Vienna. With this event the physics committee would like to continue its dialogue with the physics members of ESTRO, both to ensure that members are informed and engaged in the many ESTRO activities relevant for physicists, and also that ESTRO can take advantage of the many good ideas arising from active physics members. See more details on this at the end of this Corner.

We hope to see you there.

Ludvig Muren (ludvmure@rm.dk),
Frank Van den Heuvel (frank.vandenheuvel@oncology.ox.ac.uk),
Mischa hoogeman (m.hoogeman@erasmusmc.nl)
The Physics Corner in the ESTRO newsletter is the place to discuss timely topics and practical issues in the field of medical physics. In this context, we would like to give (medical) physicists the opportunity to highlight in future editions of the Corner innovative and practical solutions in the field of medical physics.

This can be a novel time-efficient QA procedure, a new image-guidance or adaptive protocol, or an innovative treatment planning technique. We invite colleagues who would like to pitch their work to contact Mischa Hoogeman (m.hoogeman@erasmusmc.nl) or one of the other editors of the Physics Corner.

Furthermore, in future issues we will give more space to discuss timely topics in the field of radiotherapy and in medical physics in particular. In this way, we expect the Physics Corner to be an even more exciting place to visit.
The “Back to school” series in the ESTRO newsletter is geared towards the reintroduction of basic physics concepts in radiation therapy. Visiting the various conferences, we see many contributions on a clinical level and good work in how to implement new techniques. However, due to our concentration on making things work in practice we sometimes lose sight of understanding the models and concepts underlying how things actually work. Good knowledge of these concepts and their link to what we do separates physicists from the other actors in the radiation oncology arena. If we do not maintain the overview and fundamental knowledge base then we are doomed (doomed, DOOMED, I tell ya!) to become implementers of devices and treatments other people think up for us.

Even then it is still important to be able to distinguish the real, interesting applications from the ones that are only there to get more money for the companies that provide them. Indeed, we should never lose sight of the fact that radiation therapy vendors’ first priority is to make money so that their companies stay afloat. Of course they have to stay believable, so their products aren’t that bad; most of them are even good, and a number of laws make sure that the products they deliver are manufactured according to certain guidelines and that they do what they tell us they do.

This rant aside, I wanted to have a conversation on the impact of spectra. By this I mean the distribution of energy of the different photons and electrons with which we irradiate tumours, how they change and how they impact the dose deposition itself.

Finally, I will look at a number of clinically important repercussions.

**INTRO(SPECTION)**[1]

In “classical” radiation therapy (this currently means using photons and electrons), we are used to designating any treatment with a single number if we want to express with what type of radiation we are treating our patients. This nominal number is just that: a shortcut to describe what we are doing.

It represents something, but in most cases not the energy of the photons or electrons with which we treat our patients. Mostly, the number is a potential difference delivered to the electron (or other charged particles) before it hits a target or is scattered by a foil. What we finally get is a spectrum of electrons delivering dose, this after a number of transformations.
I will follow the original electron and all its transformations throughout an accelerator.

**THE SPECTRE OF THE GUN[2]**
We are specifically speaking of linear accelerators, so it is natural that we start at the source of the electrons, the electron gun. A source of electrons is used (usually a heated wire) to generate the electrons, after which they are accelerated for the first time and injected in the accelerator structure, which accelerates the electrons to the levels we are interested in. Due to the nature with which it is built the accelerator generates high energy electrons with a relatively narrow energy spectrum. Usually, it is described by a Gaussian distribution, and most Monte Carlo codes will allow you to shape it like that. In most accelerators the electron beam is directed towards the patient through the gantry and in most cases the accelerator structure is directed along the main patient axis – by that I mean from head to toe. To get the beam to point towards the patient, a bending magnet is used, which needs to be finely tuned to respect the injected as well as desired output energy spectrum of the electrons.

By now we have a beam of highly energetic electrons that have little or no relationship with the original bunch of electrons generated in the electron gun. But it gets even worse. Depending on the mode of treatment, we want to either scatter the electrons so that they form a nice broad beam, or convert them into photons, by smashing them on a transmission target, changing the original spectrum even more.

**A SURGE OF MASSIVE SPECTRAL ACTIVITY[3]**
The basic mechanism for converting electron kinetic energy into photons is Bremsstrahlung, which is German for deceleration radiation. People used to shout this at me, without the “Strahlung” part when on a ski slope, after which I demonstrated the difference between understanding something and being able to do it. This process generates a spectrum of photons, the highest of which is never higher than the energy of the electron. Most of the photons have energies below one third of that.

The intensity of the beam is directed forward. Sometimes we want to correct for that using a flattening filter, essentially a conical piece of metal made in such a way that the intensity is homogeneous in a plane perpendicular to the beam axis. All this said, we are just a bit excited and/or interested in what these photons do. Surely, a daring statement? However, the impact of the photons themselves on matter is almost negligible. We are interested in the energy that has ionising impact. Granted our friend Albert Einstein got a Nobel prize by showing that electrons can produce ionisations via the photo-electric effect; later, Arthur Compton and Professor Pair (yes, that’s a joke!) showed that there are other ways in which a photon could do this. But Einstein was not a medical physicist[3], so we can forgive him his ignorance. Medical physicists know that photons act as a carrier of energy allowing deeper penetration into matter. The original electron generated by the photon is the culprit, as detective Charlie Chan and his number one son found out. The electron still transfers its energy to the matter and generates many more ionisations. The electrons slow down (modulate) and, as such, create a spectrum of electrons starting from the original electron. It is that spectrum that we are interested in, in dosimetry and which causes so much havoc in the minds of our medical colleagues, which is not surprising as we keep designating the energy with which we treat the patient by the nominal energy and not the actual energy.

**SPECTRAL ERADICATORS**
Now that we have a spectrum of electrons in
the patient it becomes necessary to quantify its biological effect. To do this we use the dose (Gy) as a tool to quantify. For those not in the know anymore (this is a “back to school”), dose is the energy deposited by ionising radiation in a given volume per unit mass. But if we go even further we can specify how this happens. The way we quantify this energy is to use the stopping power, or energy loss per length. This depends on the charged particle (in this case the electron), its energy, charge and the medium in which we are.

So, for one single electron on a very thin slice of patient the dose delivered by that electron is the stopping power. If the energy is different, the stopping power is different and, thus, the dose. If the medium is different, then the dose also changes. This implies that the spectrum has an important impact on the dose delivered, as it tells us how many electrons of every energy are available. Mathematically, it is the integral of the fluence times the stopping power over all available energies. So when we change the medium one could say that it is straightforward to calculate the dose in the new medium as one just needs to know the ratio of the stopping powers of both media. But... hold your horses Ben Hur [4]! Not only does the dose deposition change when we are in a medium, also the spectrum changes. Somewhere in the depths of the basic course on radiological physics it was noted that putting mono-energetic electron sources in a medium led to an equilibrium spectrum where energy below the original energy was represented commensurately with the inverse of the stopping power. So that means the fluence per energy changes, changing the dose (again).

THE END [5]

Why are we interested in this? I just use my planning system and calculate the dose, voilà, like taking candy from a baby, unless you use these new-fangled Monte Carlo or Boltzmann solver type algorithms. They provide dose to medium (all of the things we talked about) and are (I think) calculated correctly. But then we want to compare that with doses calculated by a planning system that is used to calculate dose in a water tank. For these last systems, another medium still means water with a lower (lung) or higher (bone) density, and changing of the fluence, is not taken into account. More specifically for bone the difference is substantial, leading to the question of what dose to prescribe. Food for thought...

---

Frank Van den Heuvel
University of Oxford
Gray Institute for Radiation Oncology and Biology
Oxford, United Kingdom
frank.vandenheuvel@oncology.ox.ac.uk

[4] Albert Einstein, Charlie Chan and Ben Hur are all real medical physicists (two from the US and one from Israel) who, while being excellent physicists, have even more famous homonyminous counterparts.
BOOK REVIEW

“Applied medical image processing – a basic course”
By Wolfgang Birkfellner

Review from Dietmar Georg, member of the ESTRO physics committee

Imaging has become such an integral part of today’s radiotherapy practice that we as physicists in radiation oncology need to able to understand the basics of imaging physics, image handling and processing. Not only that, our task is to advise on issues related to imaging and to be able to discuss with colleagues from our neighbouring imaging disciplines. Therefore, an understanding of the fundamental principles and concepts underlying modern medical imaging is of utmost importance in order to realise the future potential of radiation therapy. That is why I consider this book as significant and timely.

A dear colleague at the Medical University Vienna and scientific collaborator of mine, Wolfgang Birkfellner, who describes himself as a “professional voxel shifter”, has published the great book “Applied medical image processing – a basic course”. Wolfgang is an imaging science trouble-shooter at our university, being actively involved not only in radiation oncology, but also in radiology in general and interventional disciplines such as orthopaedics, nuclear medicine and neurosurgery. The wide range of medical fields supported by him and the experience he collected, both clinical and in research, throughout the years is reflected in this brilliant book.

During the last years this book has become standard teaching material at our university, in my research group for PhD students, and for clinical medical physicists. Its great value and asset lies in the fact that the book does not only describe theory on its own, but also provides simple MatLab codes for running practical exercises that underline the theoretical aspects in a great didactic manner. MatLab, or its open source pendant Octave, is used as some sort of vehicle for executing scripts that come as digital material with the book, and which illustrate the basic concepts of image processing algorithms. The digital material further provides imaging material from human and animal studies that can be used to practise the described exercises.

The book starts with covering the basics in medical image processing, includes image acquisition from multiple sources and deals with various image formats and representations and basic image intensity-based transformations. It is highly relevant for radiation oncology to bring multi-modal images into coherent spatial alignment. Therefore, some chapters of the book handle image filtering, segmentation and registration methods. Finally it includes rendering and surface modelling approaches to object visualisation, and closes with a chapter on CT reconstruction, the same basic
principles used by Godfrey Hounsfield over 40 years ago to launch the era of 3D digital imaging, of which this book speaks. Throughout all chapters, references are given to relevant scientific publications.

Images are used in the various chapters to demonstrate basic principles and image processing applications, and these are explained further in the text in a clear and unique manner. So learning image processing by practical experience is supported in a fantastic way. The reader will discover how enjoyable learning can be.

The reasons why my students like the book is because it’s not an oversimplification, nor is it excessively mathematical. That is why the basic principles of image processing can be readily grasped and applied.

The book ends with an epilogue from the author that I like very much: “Finally, you should be aware that medical image processing is an applied field. The best ideas for research emerge from discussions with physicians and other end users. Listen to them.”

The authors managed to produce an essential overview of relevant basic methods in applied medical image processing (the emphasis is on “applied”), for which the reader requires little prior knowledge beyond basic scientific principles and no sophisticated programming capabilities. The hands-on learning exercises provided with the book (via working programs) demonstrate algorithms and methods in an unconventional practical way – this is more illustrative than complex mathematical formulas.

Wolfgang, be proud of your book, which I really recommend to all who want to know more about image processing, whether it is for daily clinical work or for scientific work.

Dietmar Georg
Member of the ESTRO physics committee
AKH Vienna, Vienna, Austria
Conformity and robustness of gated rescanned carbon ion pencil beam scanning of liver tumours at NIRS

Shinichiro Mori, Silvan Zenklusen, Taku Inaniwa, Takuji Furukawa, Hiroshi Imada, Nakao Minoru, Toshiyuki Shirai, Koji Noda, Shigeo Yasuda
Radiother Oncol. 2014, in press

Cherenkov video imaging allows for the first visualisation of external beam radiation therapy in real time

Lesley A Jarvis, Rongxiao Zhang, David J. Gladstone, Shudong Jiang, Whitney Hitchcock, Oscar D. Friedman, Adam K. Glaser, Michael Jermyn, Brian W. Pogue
Int J Radiat Oncol Biol Phys, in press

Physical and biological factors determining the effective proton range

Rebecca Grün, Thomas Friedrich, Michael Krämer, Klemens Zink, Marco Durante, Rita Engenhart-Cabillic and Michael Scholz
WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?
Pencil beam scanning (PBS) is more sensitive to motion than passive scattering; hence, its use remains limited to anatomical sites not requiring respiratory gating. Tumours in the upper liver region (close to the diaphragm) can be affected substantially by respiration-induced beam range variation, caused by the replacement of liver tissue by lung tissue. Therefore, a separate study for liver tumours is required prior to the start of clinical treatment to ensure the robustness of PBS.

WHAT WERE THE MAIN CHALLENGES DURING THE WORK?
The main challenges were to create a simulation environment, which is reflecting our treatment delivery and the reality very well. In order to do so we have implemented in our simulation as many machine parameters as possible; for example, energy variation times, spot sweep velocity and beam intensity. Further, we needed artefact-less 4DCT data from real patients to obtain representative tumour motion.

WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?
Generally, by applying a gating strategy we would expect to always get improved dose homogeneity and a lower dose to the surrounding tissue, due to the reduction of the motion amplitude. But this was not always the case, because a short gate window leads to less irradiation time, and hence it required us to extend the rescanned irradiation of a layer over several gating windows. This extension can lead to unwanted interference effects and counter the beneficial effects of rescanning. By choosing an odd number of rescannings we could minimise this effect and obtain good target conformity for five and more rescannings.

WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?
This robustness study brought us closer finally to treat liver tumours in a more conformable manner by using the scanning technology. Albeit there are some assumptions in this study, we think that with all other investigations we did, we are not far off starting the treatment of moving targets with the combination of phase controlled rescanning and gating at the National Institute of Radiological Sciences in the near future.
WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?
Radiation therapy, when delivered appropriately, is a safe and effective modality for treatment of many malignancies. Maladministration due to human or electro-mechanical errors is rare but can lead to serious morbidity or even death. In-vivo dose monitoring systems currently available are typically single point detectors placed on the patient’s surface and report total delivered dose after the treatment beams are delivered. Monitoring Cherenkov emission with an optical camera system offered a method of visualising dose delivery in real time during therapy. Data acquired would consist of a two-dimensional projection of the 3D dose cloud near the patient’s surface, providing a richer data set than single point measurements.

WHAT WERE THE MAIN CHALLENGES DURING THE WORK?
The main challenge in measuring Cherenkov emission is the fact that this signal is approxi- mately three to six orders of magnitude weaker in intensity than ambient room lighting. The signal to noise ratio is prohibitive if ambient room light cannot be excluded. But through the discovery that a gated intensified camera allows rejection of the large ambient light signal and temporal gating to the radiation beam, the Cherenkov signal was determined to be readily detectable.

WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?
We found that using the target current signal from the linear accelerator as a trigger for the camera resulted in data acquisition which was synchronised to the times when X-ray pulses were being produced. This allowed for simple subtraction of ambient room light levels and acceptable signal to noise ratio for Cherenkov emission detection. Data are acquired at a frame rate of 28 images per second, allowing for real time monitoring of patient dose delivery. Frame averaging is used to reduce noise due to leakage radiation striking the camera and image intensifier. The resulting images taken from women undergoing whole breast irradiation are striking illustrations of the beam, allowing direct visualisation of the beam outline and estimation of areas of high surface dose. Studies on a number of subjects undergoing fractionated radiation therapy have shown that the images are highly repeatable.

WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?
For the first time it is possible to monitor radiation delivery to patients in real time during delivery of radiation therapy. With further software development, these measurements will be compared to predictions from the treatment planning system and interlocks may be exerted when deviations are detected.
WHAT WAS YOUR MOTIVATION FOR INITIATING THIS STUDY?
There is an ongoing debate about the clinical relevance of the increased relative biological effectiveness (RBE) of proton beams at the distal edge of the spread-out Bragg peak (SOBP), which can lead to an extension of the biologically effective depth dose distribution by a few millimetres. This can be critical if the distal edge is located close to or even in critical organs. Biophysical models like the Local Effect Model (LEM) can help to systematically analyse the dependence of these range extension on physical and biological factors.

WHAT WERE THE MAIN CHALLENGES DURING THE WORK?
Validation of the model by means of comparison to experimental data was required before systematically analysing the RBE of protons and its impact on the corresponding range extension. The main parameters determining this extension comprise the primary energy used for the distal layer of the SOBP, the dose level, dose gradient and tissue type. A major challenge was to understand the somewhat counter-intuitive anti-correlation of the distal edge dose gradient and the RBE-dependent range extension.

WHAT IS THE MOST IMPORTANT FINDING OF YOUR STUDY?
Depending on the physical and biological parameters range extensions up to four millimetres are expected. They are more pronounced for tissues characterised by a small photon α/β-ratio, as compared to tissues represented by a large photon α/β-ratio. The range extension is expected to be larger in the case of a more shallow distal fall-off, although the RBE values itself are generally lower in this case as compared to a steep fall-off.

WHAT ARE THE IMPLICATIONS OF THIS RESEARCH?
In particular, the dependence on the distal dose gradient implies a different impact of the range extension for active and passive beam delivery systems, respectively. For active systems, due to the generally higher gradient, a higher peak RBE, but less pronounced range extension is expected. In contrast, for passive systems, due to the lower gradient, a lower peak RBE, but more significant extension is expected.
ESTRO’s physicists held their first physics members’ assembly last year during the 2nd ESTRO Forum in Geneva. The meeting promoted good interaction between the participants and, based on this success, the assembly will become annual and will offer the opportunity to exchange ideas on current issues for the radiation physics community.

Just have a glance at the agenda and join us on 7 April for the second edition of the physics members’ assembly.

Tommy Knöös
Chair of the ESTRO physics committee

AGENDA
1. Welcome and introductory remarks
2. Overview of the physics committee composition & activities
3. Educational activities for physicists in ESTRO
   - Courses
   - DOVE
   - Workshops
4. Workshop experience from GEC-ESTRO
5. Development of scientific programmes
6. Physics papers & the Green Journal
7. Physics Corner in the newsletter
8. Networking and the DOVE platform
9. National societies committee
10. Collaboration with other organisations
11. Any other business
12. End of meeting
A warm welcome to the RTT Corner. By the time this is published, a lot of colleagues will be busy preparing themselves for the annual ESTRO meeting. I hope everybody's expectations will be met and that this meeting will be as successful as the second biennial of last year in Geneva. The biggest point of improvement on that meeting probably needs to be the weather, and I hope we will be luckier this year! I wish you all good luck preparing the meeting. At least make sure you don't miss the pre-meeting course on adaptive radiotherapy.

This RTT Corner is filled with two articles. The first is about a three-day meeting that was organised by Elena Fidarova and Eduardo Rosenblatt of the International Atomic Energy Agency, in conjunction with Mary Coffey from the RTT committee. This meeting was held in Vienna last December and representatives of educational programmes for RTT of eight different countries were present: Belgium, Bosnia and Herzegovina, Croatia, Estonia, Lithuania, Romania, Russia and Serbia. Personally, I find it really interesting to read about all the actions that take place to improve the educational level of our beloved discipline.

The second article is within the “future role of RTTs” series. We have made a small change in approach to this recurrent section. In previous issues we shared with you the vision of RTT committee members on the future of our profession. Starting with this RTT Corner, we will
have interviews with key ESTRO people outside our own discipline. It will be really interesting to see how other professionals look upon our profession, especially when opinions might sometimes be critical. To quote Albert Einstein: “Once we accept our limits, we go beyond them”. The first interview is, in my opinion, a truly interesting one. Professor Coen Rasch, radiation oncologist from the Academic Medical Center in Amsterdam, shares his vision, and I can ensure you it’s an inspiring one.

Martijn Kamphuis
This project culminated with a three-day meeting of representatives of educational institutes responsible for the current education programme for RTTs. Eight countries were represented: Belgium, Bosnia and Herzegovina, Croatia, Estonia, Lithuania, Romania, Russia and Serbia. Elena Fidarova and Eduardo Rosenblatt of the International Atomic Energy Agency, in conjunction with Professor Mary Coffey, one of the course directors, organised the meeting. The participants included radiation oncologists, physicists, university personnel and RTTs, all of whom were directly involved in either the delivery or future development of the education programmes from which RTTs graduate.

The first morning comprised an introduction and welcome to the meeting by Eduardo Rosenblatt, on behalf of the IAEA, who gave an excellent and comprehensive overview of the difficulties associated with RTT education in Europe. This was followed by an extremely useful overview of the Human Health Campus website by Elena Fidarova, and an overview of the ESTRO and IAEA core curricula for RTTs. Presentations were then given by each country on the current status of the education programmes for RTTs in their country, focussing on the percentage and content of the radiotherapy component.

The country presentations outlined in detail the radiotherapy-specific content of the existing education programmes and any plans that were also being considered to upgrade these programmes. Mary presented an example of an approach to curriculum development and the participants then worked in their country groups on development of their individual course.

ESTRO COURSE FOR RTTs
Best practice in radiation oncology: a project to train RTT trainers
27-29 November 2013
Vienna, Austria
programmes. The participants were highly motivated with respect to increasing the radiotherapy content and made a great deal of progress over the three days. Interim and final presentations and discussion were used as a tool to learn from each other.

Over the course of the three days several specific problems were identified that will need to be addressed to assist institutions in developing RTT specific education programmes. All the participants considered the lack of recognition of the profession of RTT, linked to the large number of titles describing the RTT, to be a significant problem. This, in turn, impacts on the education programme. Many of the existing programmes are organised and delivered by radiation oncologists and/or physicists with RTTs taking responsibility for the clinical education. It was considered that the ultimate goal would be the development of RTT specific education programmes delivered by RTTs.

An action plan has been drawn up and will be implemented in the coming months. An interview was held with Mary on the issues relating to the education of RTTs and its implications, and this is available on the IAEA website: www.iaea.org/newscenter/multimedia/videos/cancer/061213/coffeey/.

This meeting was a major step forward in the context of the project and demonstrates the high level of commitment that exists in improving the educational status and professional profile of the RTT. With sincere thanks to the IAEA for supporting this element of the project and to ESTRO and the IAEA for their ongoing support of the education of RTTs.

Mary Coffey
Discipline of Radiation Therapy
School of Medicine, Trinity College Dublin
Ireland
THE FUTURE ROLE OF THE RADIATION THERAPIST

Interview with Professor Coen Rasch

By Martijn Kamphuis in collaboration with Mary Coffey

Can you tell something about yourself and your role within ESTRO?
I'm a radiation oncologist working in the Academic Medical Center in Amsterdam. My role within ESTRO started as a radiation oncology trainee lecturing on intensity modulated radiation therapy (IMRT) courses. And of course I visit the annual ESTRO meetings. But along the way I have become more and more active within the ESTRO School and its associated short courses. I'm now active in the ETC (Education and Training Committee) and my goal is to contribute to improving the quality of that part of ESTRO.

What is your opinion on the position of RTT in the multidisciplinary team?
That role is ill defined. I mean “the RTT” does not exist. There are so many differences between RTTs within Europe that it is not possible to discuss the RTT in general. In previous years I have worked closely with an RTT. She did research on the topic, which showed large differences between individual countries. This was caused by many different factors, partly by the way a department is organised, partly by financial incentives. These differences will remain, as long as there is no clear description of the role and responsibilities of the RTT in Europe. Therefore, a better description of the RTT role is essential. In my opinion it is possible to delegate activities as long as the RTT definition is clear. This means that you have to come to a consensus between doctors, physicists and...
RTTs about the RTT role and you have to make sure that the processes in the department are properly organised. When this is the case, RTTs know what is within their scope of practice and where their responsibility ends; many processes will be more efficient, clearer and, therefore, better. Furthermore, it is better to have an RTT dealing with a task on a daily basis than having this job done by different doctors doing the same task on a less frequent basis.

In conclusion I believe that there should be a clearly defined role for the RTT and with that, the RTT can have a substantial role in the radiotherapy department.

Where do you see the future developments of RTTs being most effectively focussed?
On a personal level (an individual RTT) it is difficult to judge. You can focus and develop yourself in an area in which you are most interested. On a group level it is essential to work on a clearly defined job description. On a European level there is so much pluriformity, which is inhibiting the development of the RTT profession.

Is this something that is applicable only for RTTs?
Best defined is the role of the radiation oncologist. Therefore, they are most easily exchangeable, even on an international level. Within the discipline of the physicists there are already larger differences in requirements and tasks, e.g. in some countries physicists are taking care of treatment planning. This is mostly due to the way the treatment is financed. In these cases the RTTs are not able or allowed to do treatment planning. In my opinion tasks like treatment planning or decisions on set up can be well performed by RTTs. Countries such as The Netherlands prove that this is really possible. On a European level it is necessary to divide tasks to make sure that they are regarded as being part of the RTT job. ESTRO could play a role in this, but at the moment activities on this matter are very limited. Of course there is the core curriculum where minimal educational requirements are described. The role of the RTT on the other hand is no longer just about positioning patients and irradiating them. More and more decisions are made by RTTs. This should be transformed into a new job description of the RTT. In my opinion it is important to have this description recognised on an international level.

Do you need to create a legal framework?
That would be difficult because legislation differs from country to country. But ESTRO could strive for uniformity on the job description. Being a RTT at the moment means you will struggle with the same problem as research nurses and physician assistants: dealing with delegated tasks from doctors.

What concrete action should be taken to achieve the role of development? Should there be an ESTRO taskforce on this matter? Or should this be done by the RTT committee?
I’m not sure what is being done already within ESTRO on the subject. You will have to start with a document describing the roles and responsibilities of the RTT. This will affect the whole radiotherapy world. If one task is done by RTTs, it can’t be done by other disciplines and the other way around. So when setting up such a document, it is necessary to involve the whole radiotherapy community. It is questionable whether there is consensus within ESTRO on this subject. On certain aspects there will be consensus, on other there won’t. These areas should be identified clearly.

How do you see the RTT in the multidisciplinary team of 2020?
A person that is dealing with the practical execution of radiotherapy in the preparation as well as the execution phase. The RTT has independent decision-making competences within a clearly defined framework.

In what areas should RTT education focus at postgraduate level to best benefit the multidisciplinary team and to enhance their own professional role?
Ideally you have to find out what you need in training and education. This can be compared with what has been described already within the core curriculum. A next step would be to describe the different specialisations within the RTT profession. At the moment it isn’t possible anymore to be an expert in all fields like image guided radiation therapy (IGRT), treatment planning and patient education. In these subfields you can target specific courses and training programmes. ESTRO could play a role in this.

How would you think the RTT committee could

In this Corner
best contribute to the future of ESTRO?
By mobilising and professionalising the RTT community.

How do you consider the RTT could be best represented at national level?
It depends on the country. It is difficult to give a general answer on this question. It could be done by the national society.

Should this be done in a mono- or multidisciplinary fashion?
In the end we will have to do our job together so a multidisciplinary way sounds obvious. On the other hand it is also necessary to have an organisation dealing with profession-specific tasks like educational programmes.

Could you mention a successful project where RTTs are participating as part of the multidisciplinary team in ESTRO?
Within the ESTRO School, for instance. There they have a specific task in the clinical, practical and technological courses. Furthermore, there is a role within the annual ESTRO meeting. It is of concern that subjects within the RTT track should remain focused on RTT specific subjects. Think about practical aspects of treatment planning, or dealing with problems in the workflow, or on defining the goal of the RTT profession (who is doing what?). What you don’t want is a copy of topics from other tracks.

Is there anything else you would like to say about the role of the RTT?
There is a clear role for the RTT within the multidisciplinary team. It is up to the RTT world to have this position established. When that stage is achieved, it will also be beneficial for other disciplines within the radiotherapy treatment team.

Uulke van der Heide, medical physicist at The Netherlands Cancer Institute (NKI/AvL) in Amsterdam once said to me that a clear task description and task delegation enabled other disciplines to spend time on research and development and therefore it enabled the fast developments in the last decade. Do you agree with this quote?
Absolutely. A proper workflow provides structure for the whole team and takes away inefficiencies. This also creates space for other business than the primary treatment process.

ESTRO PERSPECTIVE ON THE ROLES AND RESPONSIBILITIES OF THE RTT IN EUROPE
The responses by Professor Rasch are very much in line with the current thinking of the RTT committee. Our goal is to define the roles and responsibilities of the RTT. A great deal of information on current roles and responsibilities has been gathered through the third revision of the ESTRO core curriculum for RTTs. The roles and responsibilities were used to define the core competencies and the curriculum topics. The committee will carry out a further series of interviews with professionals from the multidisciplinary team. These responses, together with the findings of the core curriculum review, will be used to define the ESTRO perspective on the roles and responsibilities of the RTT in Europe going forward.

Martijn Kamphuis
Member of the ESTRO RTT committee
Academic Medical Center, Amsterdam, The Netherlands
LEARNING WITH ESTRO IN MANY WAYS: HOW, WHERE AND WHEN IS UP TO YOU

The ESTRO School and the education and training committee work all year long to prepare the courses for the forthcoming years. In 2013, almost 3000 participants joined us for live teaching course in Europe, but also in India, China, Thailand, Australia... Have a look at the 2014 calendar of courses and join us for a new experience.

ESTRO 33 is approaching and soon the radiation oncology community will gather to attend the wonderful scientific sessions. But the ESTRO annual meeting is not just the place where you find out about the latest advancements in radiation oncology; it also represents a huge opportunity to pick up some extra education with, for instance, five pre-meeting courses and teaching lectures every morning.

In addition to strengthening your medical knowledge, the congress will also provide the chance to enhance your professional skills,
thanks to the eight e-contouring sessions organised throughout the congress on four topics (organs at risk, oesophagus, lymphoma and rectum). Just have a look at the programme.

All radiation oncology professionals are required to meet competently the everyday challenges in their departments. Part of the mission of ESTRO is to provide a competency-based education, as recommended by the latest update of the core curricula. It’s to move in this direction that the scientific programme of the congress encompasses for the first time a session on the multidisciplinary tumour board. There you will be able to discuss one or two cases comprehensively with experts from different oncology disciplines and to share their experience up to the decision-making process. You will find more details in the conference Corner but, along with the online workshops and the pre-meeting courses, these new sessions will definitely complete the large spectrum of education on site.

Finally, take the time to fly even higher in the skies of knowledge with the ESTRO DOVE (Dynamic Oncology Virtual ESTRO). DOVE is the precious database that ESTRO has been compiling for years, gathering papers, posters, videos and all kinds of publications in the radiation oncology area. If you haven't tested it, just go on the ESTRO home page – you cannot miss the search engine – and start your search. Be careful, you might become addicted…!

Christine Verfaillie and Richard Pötter
THAT WAS GREAT! JUST THESE WORDS COULD EXACTLY SUM UP MY IMPRESSIONS OF THE FIRST ESTRO “HEAD AND NECK ONLINE CONTOURING” WORKSHOP IN DECEMBER 2013.

This was an important and timely workshop, given the large numbers of head and neck cancer patients, tumour spread characteristics for different head and neck cancer sites, and how contouring practices differ from one radiotherapy centre to another. As expected, there was a high level of interest among radiotherapy specialists, and the event was fully booked well before the final deadline by 25 participants from 17 countries.

The course consisted of three online sessions one week apart. At the first meeting our teachers – Vincent Grégoire and Jesper Eriksen – presented an example patient case, which, in my opinion, was the most appropriate case for this course: oropharyngeal carcinoma with ipsilateral lymph node metastasis. The tutors, Sofia Rivera and Arturo Navarro, explained in detail how to use the FALCON Educase contouring system (Fellowship in Anatomic deLineation and CONtouring) and divided all participants into two groups to make discussions easier and more effective. After that it was suggested that we start structures contouring based on provided patient data (anamnesis, clinical, MRI, US, endoscopy etc.). And from that moment the game started. We had a whole week for treatment volumes and organs at risk delineation; a long week of doubts, suspense, reassessment and endless contouring. Fortunately we had an opportunity for continuous contact with teachers and tutors to whom we sent a lot of questions.

At the second session we discussed our “works of art”, each structure, slide by slide. Here I would like to note that it is really good to have the possibility to ask concrete question and receive concrete, scientifically-based answers from experienced people. Of course a lot of questions were concerning neck nodal delineation – which levels (ipsilaterally, contralaterally) and when they should be included. A lot of discussion was around retrostyloid and retropharyngeal lymph nodes and nodes of parotid glands. There was one more remarkable moment when we were interested witnesses to a dispute between the teachers themselves, and we were able see how such a discussion could be conducted in the correct way and based on high level evidence.

Prof Grégoire gave us a very useful presentation about the selection and delineation of target volumes in head and neck radiotherapy, emphasising elective lymph node irradiation depending on tumour and metastatic nodes location, and explaining exact node groups anatomical and CT borders. He also presented the revised (2013) version of CT-based delineation of node levels in the neck, with a new 12-group system instead of the ten levels modified from Robbins. At the end of session we were provided with guidelines.
(“Delineation of the neck node levels for head and neck tumours: a 2013 update”, DAHANCA, EORTC, HKNPCSG, NCIC CTG, NCRI, RTOG, and TROG consensus guidelines) and contouring atlases. It was suggested that we should delineate the same clinical case again, but this time according to our recently gained knowledge.

This was the most exciting moment of the course. While contouring the same patient again you realise that you see the case in a completely different manner: with a more individualised approach, and more meaningfully and confidently. You begin to notice structures (vessels, muscles, nodes etc) that you looked at before but did not see. Now you have guidelines and experts' recommendations that are not just blind mandatory directives, but which give you a deeper understanding of what is happening. The main result of the workshop is shown in the picture, which represents 25 participants' delineation uniformity before and after the teaching course (see scans on the right).

In conclusion, I would like to express profound gratitude to the ESTRO staff, particularly Miika Palmu and Charlotta Nesten, for huge efforts in the implementation of this workshop. I have already taken part in several online ESTRO activities (like EAGLE Evidence and Research on Rectal Cancer and Breast Cancer Contouring) and I am very glad that the list of these courses becomes wider, because online education platforms are convenient and effective at the same time.

I look forward to meeting you at the next ESTRO online workshop!

Kamal Akbarov
Radiation Oncologist
National Centre of Oncology
Baku, Azerbaijan

Before CTV
Orange: Students CTV3 50 Gy / Red: Author CTV3 50 Gy

After CTV
Orange: Students CTV3 50 Gy / Red: Author CTV3 50 Gy
I HAD THE FORTUNATE EXPERIENCE OF ATTENDING AN ONLINE ESTRO COURSE ON HEAD AND NECK CONTOURING.

I have just obtained my fellowship through the Royal Australian and New Zealand College of Radiologists. Head and neck is an area of particular interest to me, and so, when my director of training made me aware of the course, I signed up immediately, despite being somewhat daunted by the timing of the meeting, as 18.00 hrs European time translates to 04.00 hrs in Australia.

I admit that I had a few doubts as I dragged myself out of bed at 03:50 hrs. Fortunately the information for the videoconference had already been distributed and I had tested it earlier in the week – avoiding the potential for last minute headaches.

The course was split into three presentations and three contouring tasks. The initial presentation introduced the speakers and the FALCON contouring tool. We were then asked to use FALCON to contour a GTV, CTV, and organs at risk for a patient with stage IV A (T2 N2b M0) squamous cell carcinoma of the base of tongue.

I admit that I had a few doubts as I dragged myself out of bed at 03:50 hrs. Fortunately the information for the videoconference had already been distributed and I had tested it earlier in the week – avoiding the potential for last minute headaches.

The course was split into three presentations and three contouring tasks. The initial presentation introduced the speakers and the FALCON contouring tool. We were then asked to use FALCON to contour a GTV, CTV, and organs at risk for a patient with stage IVA (T2 N2b M0) squamous cell carcinoma of the base of tongue.

FALCON is a web-based contouring tool that is available through the ESTRO website. It allows contouring and 2D expansion/contraction of volumes. We had one week to contour our volumes based upon our current clinical practice. Once completed, these were anonymously uploaded to the server and were reviewed by the team.

When we convened the following week, there was a group review of the anonymised contours with the assistance of Professor Vincent Grégoire. He provided invaluable feedback on dose levels, lymph node level boundaries, and the inclusion or exclusion of various lymph node groups. We were also provided with the new consensus guidelines for head and neck and asked to re-contour the volumes.

The following meeting we reviewed the updated contours for the group. There appeared to be a significant increase in the consensus amongst those present, although some ongoing debate about which levels to include persisted.

Overall, I found the experience very helpful for my ongoing work as a specialist radiation oncologist. I have presented the article at our weekly journal meeting and there was an interesting debate about different practices and need for consensus guidelines on contouring. In the future we hope that there will be automated contouring tools that will speed up the contouring process.

The ability to perform contours online without any need to download separate software is intriguing and I hope that FALCON will continue to evolve. Not only does it provide a tool for comparing contours easily, but also it may go on ▼
to form the basis of its own treatment planning system.

I would like to thank ESTRO for providing the opportunity for a group contouring session with an international perspective. I would strongly recommend attending a future workshop if it lies in an area of interest for you.

Andrew Lee
Radiation Oncologist
Canberra Hospital
Garran, Australia
Multidisciplinary management of brain tumours
17 - 19 November 2013 | Brussels, Belgium

Paediatric radiation oncology
05 - 07 December 2013 | Brussels, Belgium

VIEW THE 2014 COURSES LIST AND REGISTER NOW >
It has been an honour for me to write a review about the brand new ESTRO course held in Brussels in November 2013. The “Multidisciplinary management of brain tumours” course was a real success. I must congratulate the course director Michael Brada, the teachers Ranj Bhangoo, Umberto Ricardi, Stephanie Combs, Matthias Preusser, Darren Hargrave and the ESTRO staff Gabriella Axelsson, Arta Leci and Sigrid Jacobs-Peeters for their effort and achievements in running this course so smoothly and making these three days very productive for the attendees. When we arrived at the ESTRO head office on Sunday morning we realised that despite the cold weather outside, the course was going to embrace us warmly. It was a true multidisciplinary course with interactive sessions. On the first day, there was a general overview of the pathology, radiology, radiotherapy and systemic therapy issues in CNS tumours. On the second and the third days we had the chance to update our knowledge during lessons devoted to specific pathologies, and during the case presentations we were able to discuss the multidisciplinary approaches. The most challenging part of the course for me was the debates. These were prepared as case presentations with questions directed to the participants. During these debates all teachers were present in ▼
the room, and that gave us the opportunity to discuss these cases as done in tumour boards. I recommend this course both to the residents and to the specialists to refresh their knowledge about CNS tumours and to learn the new therapeutic approaches.

Gozde Yazici (MD)
Assistant Professor
Hacettepe University Faculty of Medicine
Department of Radiation Oncology
Ankara, Turkey
E-mail: yazici@hacettepe.edu.tr
The third teaching course in paediatric radiation oncology, held in Brussels at the beginning of December 2013, was outstanding on multiple accounts owing to the quality of the teachers and the large multinational audience, with participants from all corners of the world.

Paediatric radiation oncology remains a really challenging topic, for you have to deal with a child with his/her particular world, his/her desperate parents, but also treat a wide variety of tumours (each treatment potentially affecting their quality of life). These challenges were brought up and discussed in the open case discussions between experienced teachers from two famous international groups (SIOP & COG) and participants from five continents. All of this makes our field stimulating and captivating and worth the hard work.

After a global and didactic review of topics that included radiology examples highlighted by separate lectures, case discussions pushed us to analyse and learn the logic behind the different protocols.

Additionally, this exhaustive and fulfilling course made me feel better for I did not feel alone and...
could discuss the cases with our experienced teachers. I am responsible for the only paediatric radiation oncology department in Iran (at the Mahak charity hospital) and I work on my own. The hospital takes care of cancer children whose family cannot afford to pay for their treatments. Those children come not only from far away villages but also from neighbouring countries such as Iraq, Afghanistan and Azerbaijan. They often arrive late with no sufficient workup, with their anxious parents, often from different cultures and languages. Notwithstanding all these daily difficulties, I strongly believe that each child has the right to obtain the best possible treatment. I found the same belief in our COG and SIOP teachers; it enriched me and strengthened my determination to doggedly pursue my work and, I suspect, even more wisely. The teaching course also reinforced my belief that only a long follow-up of all treated children will allow me to improve my understanding of the long-term effects of treatments and consequently improve those treatments.

We once experienced a happy childhood and we must do our utmost for our children and give them a similar, blissful childhood.

Mithra Ghalibafian  
Head of Radiation Oncology Department  
Mahak Children Cancer Hospital and Research Centre (MCCHRC)  
Tehran, Iran  
Email: mithraghali@hotmail.com
NEW!

ADVANCED SKILLS FOR TREATMENT DELIVERY
09-12 February 2014
Amsterdam, the Netherlands

MULTIDISCIPLINARY TEACHING COURSE ON PROSTATE CANCER
23-27 February 2014
Amsterdam, the Netherlands

CLINICAL PARTICLE THERAPY
23-27 February 2014 | Nice, France

UNDERSTANDING AND MANAGEMENT OF MORBIDITY
06-08 March 2014 | Brussels, Belgium

ADVANCED TECHNOLOGIES
07-11 March 2014 | Amman, Jordan

MODERN BRACHYTHERAPY TECHNIQUES
09-12 March 2014 | Gdansk, Poland

DOSE MODELLING AND VERIFICATION FOR EXTERNAL BEAM RADIOTherapy
09-13 March 2014 | Prague, Czech Republic

ESTRO 33 PRE-MEETING COURSES
04 April 2014 | Vienna, Austria

PHYSICS FOR MODERN RADIOTherapy
A JOINT COURSE FOR CLINICIANS AND PHYSICISTS
04-08 May 2014 | Madrid, Spain

EVIDENCE AND NEW CHALLENGES IN RECTAL CANCER
08-11 May 2014 | Prague, Czech Republic

TARGET VOLUME DETERMINATION - FROM IMAGING TO MARGINS
16-18 May 2014 | Tokyo, Japan

ADVANCED BRACHYTHERAPY PHYSICS
18-21 May 2014 | Brussels, Belgium

BASIC CLINICAL RADIOBIOLOGY
25-29 May 2014 | Istanbul, Turkey

EANM/ESTRO EDUCATIONAL SEMINAR
POSITRON EMISSION TOMOGRAPHY (PET) IN RADIATION ONCOLOGY
30-31 May 2014 | Brussels, Belgium

IMRT AND OTHER CONFORMAL TECHNIQUES IN PRACTICE
08-12 June 2014 | Torino, Italy

COMBINED DRUG-RADIATION TREATMENT: BIOLOGICAL BASIS, CURRENT APPLICATIONS AND PERSPECTIVES
09-12 June 2014 | St. Petersburg, Russia

BRACHYTHERAPY FOR PROSTATE CANCER
19-21 June 2014
Dublin, Republic of Ireland

COMPREHENSIVE QUALITY MANAGEMENT IN RADIOTHERAPY PART I – RISK MANAGEMENT & PATIENT SAFETY
26-29 June 2014 | Poznan, Poland

BIOLoGICAL BASIS OF PERSONALISED RADIATION ONCOLOGY
29 June - 02 July 2014 | Brussels, Belgium

MULTIDISCIPLINARY MANAGEMENT OF HEAD AND NECK ONCOLOGY
29 June - 02 July 2014 | Athens, Greece

ACCELERATED PARTIAL BREAST IRRADIATION
06-09 September 2014 | Barcelona, Spain

CLINICAL PRACTICE AND IMPLEMENTATION OF IMAGE-GUIDED STEREOTACTIC BODY RADIOTherapy
07-11 September 2014 | Florence, Italy

IMAGING COURSE FOR PHYSICISTS
14-18 September 2014 | Porto, Portugal

BASIC TREATMENT PLANNING BACK TO BACK WITH ADVANCED TREATMENT PLANNING
16-20 September 2014 | Budapest, Hungary

ADVANCED TREATMENT PLANNING BACK TO BACK WITH BASIC TREATMENT PLANNING
21-25 September 2014 | Budapest, Hungary

IMAGE-GUIDED RADIOTHERAPY AND CHEMOTHERAPY IN GYNAECOLOGICAL CANCER – FOCUS ON ADAPTIVE BRACHYTHERAPY
28 September - 02 October 2014
Florence, Italy

EVIDENCE-BASED RADIATION ONCOLOGY: A CLINICAL REFRESHER COURSE WITH A METHODOLOGICAL BASIS
05-10 October 2014 | Varna, Bulgaria

BEST PRACTICE IN RADIATION ONCOLOGY - A WORKSHOP TO TRAIN RTT TRAINERS IN COLLABORATION WITH THE IAEA PART 1 - TRAIN THE RTT TRAINERS
20-24 October 2014 | Vienna, Austria

COMBINED DRUG-RADIATION TREATMENT: BIOLOGICAL BASIS, CURRENT APPLICATIONS AND PERSPECTIVES
02-05 November 2014
Yogyakarta, Indonesia

ADVANCED TECHNOLOGIES
November 2014 | India (date to be confirmed)

ESOR/ESTRO COURSE: MULTIDISCIPLINARY APPROACH OF CANCER IMAGING
06-08 November 2014
Maastricht, the Netherlands

3RD MASTERCLASS IN RADIATION ONCOLOGY
09-12 November 2014 | Lisbon, Portugal

QUANTITATIVE METHODS IN RADIATION ONCOLOGY: MODELS, TRIALS AND CLINICAL OUTCOMES
07-10 December 2014 | Vienna, Austria
European School of Oncology

e-ESO sessions
weekly e-grandrounds
and monthly e-oncoreviews

Connect
every Thursday of each week
1st Tuesday of each month
18:15 CET

Learn
with our experts and
discussants

Interact
make your questions and
receive live answers

Access
at any time, to any past
recorded session
(available for 6 months)

Get
CME and ESMO-MORA
credits

Play
mastermind participant
quiz

Your Education
live, free and just a click away!

• More than 5.000 participants
  from 113 countries
• 26.000 sessions viewed
• Access by mobile devices
• e-Debates with interactive
  voting system
  NEW

JOIN LIVE AND INTERACT
9:15 SAN FRANCISCO
12:15 BOSTON, NEW YORK
17:15 LONDON, DUBLIN, LISBON
18:15 BRUSSELS, PARIS, MADRID,
  MILAN, JOHANNESBURG
19:15 ATHENS, TEL AVIV, CAIRO
20:15 MOSCOW
21:45 MUMBAI

In collaboration with
www.e-eso.net
Welcome to the seventh issue of the Young Corner. In this edition, Raul Hernanz de Lucas reports on the activities of the Spanish group of young radiation oncologists, and Georgi Nalbantov reports about his experience at Ghent University Hospital where he went to collect and standardise imaging and clinical data to externally validate findings obtained at MAASTRO clinic on radiation-induced lung toxicity (RILT).

Finally, we have put together a list of the Young task force (Ytf) members who have been appointed to ESTRO’s standing committees to represent the young members of ESTRO. If you have specific proposals, you can contact them, they’ll be happy to help you! The young ESTRO representatives are your voice within the Society.

We hope you enjoy this issue of the Young Corner.

Catharine Clark and Jean-Emmanuel Bibault
SYROG, the Spanish group of young radiation oncologists, was created some years ago with the intention of being a communication tool for all radiation oncology consultants upon completion of their training period. It was also meant to be a vehicle to start research projects with specialists in different hospitals, since their lack of experience made it more difficult to launch such new projects.

SYROG is open to all radiation oncology consultants within ten years of completing their training time; although this is, in fact, an indicative figure as, any specialist can contribute with any new idea and project that he or she may be interested in sharing.

Within SYROG, there is a smaller group that is responsible for promoting and energising the activity of the group. This group has a coordinator – me at present – who is renewable every two years and who acts essentially as a link with SEOR (Spanish Association of Radiotherapy and Oncology) and with the school of the association, which is in charge of coordinating courses and workshops relating to the specialty.

SEOR has supported SYROG from the inception of the group, and has shown a constant interest in the creation, continuity and diffusion of our activities. We have been invited to participate as non-voting members in meetings of the association. During these meetings, decisions concerning our speciality have been made, and our initiatives and proposals have been heard. SEOR has facilitated our presence in ESTRO and ALATRO and has promoted the holding of a meeting aimed at young specialists within the framework of our national congress. The secretary of SEOR has always been willing to assist us in spite of the tremendous workload associated with her post. For our part, SYROG has carried out in recent years a number of activities of interest not only for the group of young specialists, but also for the rest of the association. Several editions of an English public speaking course have been implemented in order to address our shortcomings when it comes to making scientific presentations in English. An introductory course on scientific methodology and research has also taken place, and a meeting for young researchers was held in Barcelona in 2012 with the participation of young specialists from different countries.

A blog and a Facebook group have been created, which can be used as forums for the exchange of information and the discussion of clinical histories of interest with the participation of consultants of any age. A trial study about pain – promoted by one member of our group – has been initiated in different hospitals with a good turnout.

Different groups were created within SEOR relating to different pathologies (such as the breast cancer group, the lung cancer group, or the brain tumour group) with the aim of establishing a consensus on clinical guidelines and conducting...
trials and studies related to the specific pathology each group is involved in. This situation has resulted in the presence of some specialists working in activities relating to each pathology and, consequently, in us having to share our ideas with the aforementioned groups. This has resulted in a certain loss of independence whereby the group of young researchers has been absorbed, to a certain extent, into the corresponding SEOR group, something against the principles that led to the creation of the group of young researchers in the first place.

The economic situation is another aspect in need of improvement. The economic situation at present could, in fact, be better for everybody, but our lack of economic independence makes it necessary for us to rely on the financial support of SEOR in order to carry out any activity, and, even though SEOR has always supported us whenever possible, it would be better for us to be able to manage our own resources.

It is reasonable to believe that any association should have its own evolution. We all have to get used to changes and new ideas, and SYROG has its own modest ideas and initiatives, and is accomplishing small things. It is becoming more noticed within SEOR, particularly among young consultants like us, although the development of the group is somewhat slower than I, at least, would like it to be.

While it is true that the current situation for young consultants is deplorable, with employment contracts of less than three months and huge wage reductions affecting adversely the inclination of young people to join new projects in such precarious circumstances, we should not forget that the original idea behind the creation of SYROG was to promote the development of our individual and collective careers, and that everybody’s efforts can pave the way to a more successful society. As we grow, I am sure that SEOR will offer even more support, if possible, giving us more independence as a collaborative group.

Raul Hernanz de Lucas
SYROG coordinator
Radiotherapy Oncologist
Hospital Ramón y Cajal
Madrid, Spain
Email: r.hernanzdelucas@gmail.com
The purpose of the visit to the radiotherapy department of Ghent University Hospital was to collect and standardise imaging and clinical data to validate externally findings obtained at MAASTRO clinic regarding radiation-induced lung toxicity (RILT). Specifically, a locally-developed prediction model for RILT that includes imaging, dosimetric, tumour-related and clinical data had to be validated externally. During my stay at Ghent University Hospital, the necessary data were partially collected, and eventually they were collected completely by May 2013. As a result, a journal paper based was published in *Radiotherapy and Oncology* (in December 2013) reporting the main results of the common study, entitled “Cardiac comorbidity is an independent risk factor for radiation-induced lung toxicity in lung cancer patients”.

The visit to Ghent University Hospital was definitely beneficial to both institutions. First, a software programme was written to extract and standardise (PET and CT) imaging data so that they were readily available for between-institution data analysis. Second, imaging deformation software was introduced at the host institution, which was already routinely used in my own institution. And third, a paper was published [1] in *Radiotherapy and Oncology* on our main finding, namely that cardiac comorbidity at the start of definite radiotherapy of lung cancer patients is a crucially important factor influencing lung toxicity (measured by dyspnoea score) one to six months after the start of radio(chemo)therapy, see also www.predictcancer.org. This result would have major implications concerning the choice of personalised radiation dose to be delivered to patients with differential risk profiles. In addition, our work was communicated to the broader ESTRO community via a (invited) talk and a poster at the ESTRO 2013 Forum in Geneva. The main cardiac-comorbidity results of the research are summarised in Figure 1.

The overall prediction model for dyspnoea (shortness of breath), which includes as risk factors cardiac comorbidity, tumour location, forced expiratory volume in one second (FEV1), chemotherapy timing and baseline dyspnoea score, is presented in Figure 2 via a nomogram. Interestingly, mean lung dose was not among these risk factors, which were chosen based on a variable-selection procedure.

One of the key outcomes was the agreement to continue the collaboration between the researchers involved in the study, especially between Dr Georgi Nalbantov and Dr Katrien Vandecasteele. We have planned to expand on the study and include even more imaging and clinical features than those collected so far, with the aim of improving...
the RILT prediction model. If successful, we will be in a position to perform Phase II and eventually Phase III clinical trials on personalising thorax dose delivery for lung cancer patients based on individual patient characteristics, where, very importantly, we will have externally validated results from both institutions.

Georgi Nalbantov
Postdoc researcher
Department of Radiation Oncology (MAASTRO)
University Hospital Maastricht
Maastricht, The Netherlands
Email: georgi.nalbantov@maastro.nl

Figure 1. Results for the hypothesis that maximal dyspnoea (shortness of breath) ≥ 2 and cardiac comorbidity are independent. Results are shown for both the training set and the validation set. The p-values for training and validation sets are 0.0009 and 0.039, respectively.

Figure 2. A nomogram for the multivariate model (with variable selection) for the prediction of maximal dyspnoea ≥ 2 within six months after RT (probability of max dyspnoea ≥ 2).

The Board of ESTRO appointed members of the young task force to join ESTRO’s standing committees, with special responsibility for representing the young members of ESTRO. They will take part in the activities and projects of their committee, and will also report back in this newsletter Corner about issues of special interest for young members. Please feel free to contact them if you have specific proposals that you think should be considered by ESTRO; these individuals will be the voice of the young members of ESTRO.

**CLINICAL COMMITTEE**

Andrea Filippi  
Radiation oncologist  
A.S.O.U. S. Giovanni Battista di Torino  
Torino, Italy  
andreariccardo.filippi@unito.it

**PHYSICS COMMITTEE**

Daniela Thorwarth  
Physicist  
University Hospital Tübingen  
Tübingen, Germany  
daniela.thorwarth@med.uni-tuebingen.de

Wouter van Elmpt  
Physicist  
MAASTRO clinic  
Maastricht, The Netherlands  
wouter.vanelmpt@maastro.nl

**RTT COMMITTEE**

Tina Schuffenhauer  
Radiation therapist  
Hannover Medical School  
Hannover, Germany  
schuffenhauer.tina@mh-hannover.de

Laura Mullaney  
Radiation therapist  
Trinity College Dublin  
Dublin, Ireland  
laura.mullaney@tcd.ie

**GEC-ESTRO COMMITTEE**

Max Schmid  
Radiation oncologist  
AKH Vienna  
Vienna, Austria  
maximilian.schmid@akhwien.at

**RADIOBIOLOGY COMMITTEE**

Kasper Rouschop  
Radiobiologist  
MAASTRO GROW Research Institute  
Maastricht, The Netherlands  
kasper.rouschop@maastrichtuniversity.nl

**ETC (Education & Training Committee)**

Paul Kelly  
Radiation oncologist  
Cork University Hospital  
Cork, Ireland  
paulkelly.ie@gmail.com

**ACROP (Advisory Committee on Radiation Oncology Practice)**

Pierre Blanchard  
Radiation oncologist  
Institut Gustave Roussy  
Villejuif, France  
pierre.blanchard@gustaveroussy.fr

**NSC (National Societies Committee)**

Jean-Emmanuel Bibault  
Radiation oncologist  
Centre Oscar Lambret  
Lille, France  
jebibault@gmail.com
SUNDAY, 6 APRIL 2014 | 08.00-19.00 HRS

Don’t miss the Young Track of ESTRO 33
This year we’ll have a very hands-on programme that you don’t want to miss.

The track will begin on Sunday, 6 April at 8.00 hrs with a teaching lecture with examples on the Do’s and Don’ts in statistics. We will continue with a symposium about implementing evidence-based practices. The morning will conclude with the moving poster session. In the afternoon, we will present the activities of the young in ESTRO, including the young task force, fellows and exchange programmes, ending with an opportunity for you for tell the task force your thoughts. Later on, we will show you how to successfully obtain grants for your research projects. The second moving poster session will conclude the track. The young scientist reception will begin at 17.30 hrs and is always a great opportunity to meet other young ESTRO members and exchange new ideas, so come and join us.

Daniela Thorwarth and Maximilian Schmid
Chairs of the Young programme
SUNDAY, 6 APRIL 2014  |  08.00-08.40
TEACHING LECTURE:
STATISTICS AND METHODOLOGY: “DO’S AND DON’TS WITH EXAMPLES”

Pierre Blanchard
Radiation oncologist
Institut Gustave Roussy, Villejuif, France

Learning Objectives
Knowledge in statistics and methodology is necessary to understand scientific literature and to perform research. This teaching lecture will give an overview on basic principles in statistics and methodology and will provide typical examples relevant for research in the field of radiotherapy and oncology.

SUNDAY, 6 APRIL 2014  |  08.45-10.00
SYMPOSIUM:
HOW TO CHANGE YOUR PRACTICE: IMPLEMENTING EVIDENCE BASED PRACTICE CHANGES

> Clinical perspective:
Implementation of image-guided brachytherapy techniques in clinical practice
Primoz Petric
Radiation oncologist
National Center for Cancer Care & Research, Doha, Qatar
> **Physics perspective:**  
Implementation of IGRT protocols in clinical practice  
Markus Stock  
Physicist  
Vienna, Austria

> **RTT perspective:**  
How to implement new technology for daily clinical use: an RTT experience  
Helen McNair  
Radiation therapist (RTT)  
The Royal Marsden NHS Foundation Trust, Sutton, UK

**Learning Objectives**

Introducing new radiotherapy techniques into clinical practice offers the distinct advantage of the certain 
technique but is accompanied by new challenges and pitfalls in daily routine. This symposium aims at 
providing an overview of relevant aspects when implementing a new technique and will focus on practical 
advises especially for young professionals in the field using the example of image-guided radiotherapy.

**SUNDAY, 6 APRIL 2014 | 10.30- 11.30**

**YOUNG SCIENTISTS MOVING POSTER SESSION 1**

**Session 1:** Head & Neck and Lung  
**Session 2:** Gastrointestinal and gynaecology  
**Session 3:** Prostate  
**Session 4:** Interdisciplinary  
**Session 5:** RTT
SUNDAY, 6 APRIL 2014 | 13.00-14.30
LUNCH SYMPOSIUM:
YOUNG ESTRO ACTIVITIES

> **Report from the ESTRO Young task force (Ytf)**
  Maximilian Schmid
  Radiation Oncologist
  Medical University Vienna, Vienna, Austria

> **Experience of ESTRO Fellows / exchange programmes**
  Berardino De Bari
  Radiation Oncologist
  Centre Hospitalier Univ. Vaudois, Lausanne, Switzerland

> **Experience of ESTRO Fellows / exchange programmes**
  Francesco Cellini
  Radiation Oncologist
  Campus Bio-Medico University, Rome, Italy

> **Proposing mentorship programmes to the Ytf**
  Dorota Gabrys
  Radiation Oncologist
  Maria Sklodowska-Curie Memorial Cancer Centre, Gliwice, Poland

> **Feedback / brainstorm from audience for Ytf**

**Learning Objectives**
In this symposium a report on the latest and currently ongoing young ESTRO activities will be provided. Learn about the experience of ESTRO fellows and exchange programmes. Join this symposium to be part of the young ESTRO community, to get involved into young ESTRO activities and to exchange your ideas on future activities.
SYMPOSIUM: OBTAINING GRANTS SUCCESSFULLY

Overview of EU funding options
Tobias Gauer
Medical Physicist
University Medical Center Hamburg, Hamburg, Germany

How to write a successful grant application
Jan Alsner
Biologist
Aarhus University Hospital, Aarhus, Denmark

Learning Objectives
This session aims at providing a comprehensive introduction into the complex topic of grant writing. In a first presentation, current possibilities for European funding options will be summarised. In a second part of the session, tips and tricks necessary for successful application to obtain a first individual grant will be given. The session is especially devoted to young scientists in the field of radiotherapy who have not yet gained personal experience in grant writing.
SUNDAY, 6 APRIL 2014 | 16.15-17.15
YOUNG SCIENTISTS MOVING POSTER SESSION 2

Session 6: Dosimetry and dose measurements
Session 7: Dose calculation and treatment planning
Session 8: Functional imaging
Session 9: Brachytherapy: Gynaecology and prostate
Session 10: Radiobiology

SUNDAY, 6 APRIL 2014 | 17.30-18.00
YOUNG SCIENTISTS RECEPTION
The methods used in economic evaluations vary significantly between authors and adherence to commonly accepted economic evaluation (EE) guidelines is less than widespread. Although more limited types of evaluations exist, only the formal comparison of costs and effects between two or more alternative interventions is considered to be a full EE. To retrieve evidence-based data for an EE, a systematic review (meta-analysis) of the results of randomised clinical trials (RCTs) is generally considered to be the best source. RCTs have many advantages for this purpose including their prospective design, pre-specified, well defined endpoints, randomisation and control groups, and blinding all work to provide unbiased measures of impact in the trial population. However, this strong internal validity can limit external validity and generalisability about which interventions work best when implemented in different real world clinical settings.

Yolande Lievens, Peter Dunscombe and Madelon Pijls
A task force commissioned by the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) developed a framework for the use of real-world (RW) data to complete RCTs, validate outcomes across different (sub-) populations or geographic regions, and to help with “sound coverage and reimbursement decisions”. RW data are not collected in conventional randomised controlled trials (RCTs) and are characterised by type of outcome (clinical, economic, and patient-reported), by hierarchies of evidence (which rank evidence according to the strength of research design), and by type of data source (supplementary data collection alongside RCTs, large simple trials, patient registries, administrative claims database, surveys, and medical records).

Differences between RCTs and real world practice may exist in, for example, patient selection criteria, dosing regimens, the use of supportive care and the intensity of follow-up. Such differences can lead to significant differences between costs and outcomes based on RCT data versus those derived from actual day-to-day care. For this reason, decision makers are increasingly interested in effectiveness and cost-effectiveness studies that make use of real-world data. This allows them to make better decisions regarding the reimbursement of new treatments, based on data from the population that is actually receiving the treatments under routine clinical conditions.

In a recent publication, van Gils et al. report on the real-world resource use and costs of adjuvant treatments of stage III colon cancer in a population-based observational study. Since 2005, national guidelines in The Netherlands – based on the original evidence from RCTs – have recommended the use of oxaliplatin in combination with 5-fluorouracil and leucovorin (5FU/LV) as the primary adjuvant treatment option for stage III colon cancer. Capecitabine is the preferred treatment option when oxaliplatin is not indicated.

Data from 391 patients were retrieved from The Netherlands Cancer Registry and included in this study. The four most commonly administered regimens were compared: 5-FU/LV, capecitabine, oxaliplatin in combination with 5FU/LV (FOLFOX), and oxaliplatin in addition to capecitabine (CAPOX).

The study demonstrated that drug costs and the costs related to the number of hospitalisation days needed to administer the chemotherapy were the main cost drivers of the total costs of adjuvant treatment for colon cancer. Inpatient stay costs related to the administration of chemotherapy were €416 in 5-FU/LV, €0 in capecitabine, €10,029 in FOLFOX and €889 in CAPOX. Substantial cost savings were identified if the administration of 5FU/LV in the FOLFOX regimen could be administered in an outpatient setting or, alternatively, if it were replaced by the oral drug capecitabine as in the CAPOX regimen. Based on these results, guidelines should be carefully reviewed and modified where appropriate.
For efficiency reasons, only FOLFOX in an outpatient setting or CAPOX could be recommended as primary adjuvant treatment.

This analysis, based on detailed RW data, clearly indicates that clinical choices made in oncology purely based on efficacy of therapy, as identified through randomised clinical trials, can have economic consequences that at first sight may be overlooked. Hence, determining the appropriateness of a treatment (within the context of finite healthcare budgets) should take this aspect into account after considering the effectiveness and safety of the different treatment options.

Taking real world clinical and economic experience into account is thus very useful during discussions on the allocation of scarce health care resources. It is, however, critical that policymakers recognise the benefits, limitations, and methodological challenges in using RW data, and appreciate the need to carefully consider the costs and benefits derived from different forms of data collection in different situations. However, with care, such an approach will make both the cost and effectiveness estimates more representative of real-world practice, for all kind of indications.

WELCOME TO THE FIRST ISSUE OF THE NATIONAL SOCIETIES COMMITTEE (NSC) CORNER

The interaction with national societies (NS) is key to bringing to life ESTRO’s vision and attaining multiple benefits from the work of its standing committees and project groups. The envisioned role of the NSC is to establish a two-way communication channel between ESTRO and the national societies.

As one of the means for serving this role, this column is divided into sections that will cover the following recurrent topics:

- “of interest to all NS”: update on a topic or ESTRO project that deserves the attention of all NS
- “NSC activities report”: a report of ongoing activities or projects undertaken by the NSC
- “Focus on a NS”: an opportunity for a NS to take the floor and report on a chosen topic, whether it’s a public health issue, the organisation and work of the NS, or any other issue of interest to the community
- “Focus on a national project”: a report on a project running at a national level to increase its visibility and augment national or international participation, facilitate opinion exchange, and promote international networking.

In this inaugural NSC corner, the section...
of interest to all NS hosts an interview with the NSC chair, Professor Umberto Ricardi, who elaborates on the role, scope and work plan of the NSC. The NSC activities report section is dedicated to the upcoming national societies meeting (4 April 2014, Vienna) and will feature an interview with Dr Jesper Grau Eriksen, focussing on the afternoon programme of the meeting on core curricula.

In the words of Aristotle, the whole is greater than the sum of its parts, so you are all cordially invited to contribute to this effort of creating synergy by sending your feedback and suggestions for topics to appear in this column.

Last, but not least, the NSC contact details can be found at the end of the column.

Panagiotis Papagiannis
Member of the ESTRO National Societies Committee
Medical School, University of Athens
Greece, Athens
Among the ESTRO Vision priorities to be achieved by 2020, the partnership with the national societies (NS) and the facilitation of dialogue with them are of paramount importance. In order to better ensure the achievements of these goals with a specifically committed executive arm, the ESTRO Board approved the establishing of the National Societies Committee (NSC) as a new standing committee. This new committee, formally constituted by the ESTRO Board in Geneva in April 2013, and finalised during the last months of 2013, represents a permanent body in the structure of ESTRO, dedicated to promoting the relationship with the national societies and to act as a new bridge between ESTRO and the different European national situations.

The creation of the NSC should guarantee an improvement in the permanent and mutual dialogue between ESTRO and the national societies, taking into account all the different ESTRO Vision statements (oncopolcy, quality of care, guidelines, professional and scientific development, audits) and the existence and duties of all ESTRO standing committees.

ACTIVITIES AND AIMS

Based on the ESTRO Vision for 2020 and listening to the suggestions given by the national societies during the last two years, the NSC drafted the Roadmap for 2014-2015. The main areas of activities, agreed and prioritised within the committee, are the following:

- **Communication**
  - Creation of a recurrent NSC corner in the ESTRO newsletter
  - Development of the concept of “National Societies House”
  - Hold a national societies annual meeting
  - Follow-up the collaboration of the NS in the HERO project (Health Economics in Radiation Oncology)

- **Education**
  - Involvement of NS in annual ESTRO School planning and improvement of attendance at ESTRO courses/meetings
  - Provide a better link and monitor the relations with the Atomic Agency and the European Federations
  - Further attention to disseminating the ESTRO core curricula

- **Relationship with young societies/task force/groups within NS**
  - Support the establishment of young societies/groups within NS
  - Promote mobility of young people (TTG)
  - Promote collaboration between young NS/groups and ESTRO

- **Quality**
  - External audits

UPCOMING PROJECTS

- NSC Corner in the ESTRO newsletter
  Communication is central to improving the

In this Corner
dialogue between ESTRO and NS. In this regard, as explained in the introduction, a specific space is now dedicated to the NSC in the ESTRO newsletter, to be considered as a new, dynamic space for dialogue between the committee and the NS.

- **Annual NS meeting**
The annual NS meeting will be held in Vienna, during ESTRO 33. All the national societies’ representatives are invited to join us and share their experience together with their counterparts from other countries. We hope that the programme responds to their needs and interests and that it will induce a lot of interaction and involvement from the NS.

- **“National Societies House”**
The concept of the “National Societies House” will be developed and further discussed in the coming months, including in this newsletter. The National Societies House is expected to be a virtual place in which you can hold regular forums with NS on different hot topics, both discipline-oriented and subject-oriented, and where you can exchange ideas, expectations, convey solutions and understanding with fruitful two-way discussions. We need your help and input in order to make this idea your House and to make the NSC your committee!

Umberto Ricardi  
Chair of the NSC  
University of Turin, Italy

---

**NS HOUSE**

**REGULAR VIRTUAL FORUMS**

- Teleconferences (TC) on hot topics, based on requests of the NS
  - On discipline oriented issues (TC dedicated to RO, or PHY or RTTs)
  - On subject oriented issues

Through the voice of the NSC, ESTRO gives feedback, indications, set standards
THE NATIONAL SOCIETIES COMMITTEE (NSC)

The committee is contactable through Chiara Gasparotto at the ESTRO office: cgasparotto@estro.org

NSC MEMBERS

UMBERTO RICARDI
Radiation oncologist
University of Turin
Turin, Italy
Chair of the NSC committee

ANNE KILTIE
Radiation oncologist
University of Oxford
Oxford, UK
Representative for the ESTRO radiobiology committee

ANNETTE BOEJEN
RTT
Aarhus University Hospital
Aarhus, Denmark
Representative for the ESTRO RTT committee

AUDE VAANDERING
RTT
UCL Cliniques Univ. St.Luc
Brussels, Belgium
Representative for the ESTRO RTT committee

NURIA JORNET
Physicist
Hospital de la Santa Creu i Sant Pau, Barcelona, Spain
Representative for the ESTRO ETC (Education and Training Committee)

ANNE KIL TIE
Radiation oncologist
University of Oxford
Oxford, UK
Representative for the ESTRO radiobiology committee

AUDE VAANDERING
RTT
UCL Cliniques Univ. St.Luc
Brussels, Belgium
Representative for the ESTRO RTT committee

ROBIN GARCIA
Physicist
Institut Sainte Catherine
Avignon, France
Representative for the ESTRO physics committee

FILIPE GARCIA MOURA
RTT
Hospital Cuf Descobertas
Lisbon, Portugal
Representative for the ESTRO ACROP (Advisory Committee on Radiation Oncology Practice)

KRZYSZTOF SKŁADOWSKI
Radiation oncologist
Maria Sklodowska-Curie Memorial Cancer Centre, Gliwice, Poland
Representative for the former ESTRO national societies task force

JEAN-EMMANUEL BIBAULT
Radiation oncologist
Centre Oscar Lambret
Lille, France
Representative for the ESTRO young task force

MAIA DZHUGASHVILI
Radiation oncologist
Grupo IMO, Unidad Regional de Murcia
Murcia, Spain

PANAGIOTIS PAPAGIANNIS
Physicist
Medical School, University of Athens, Athens, Greece
Representative for the GEC-ESTRO committee

KRZYSZTOF SKŁADOWSKI
Radiation oncologist
Maria Sklodowska-Curie Memorial Cancer Centre, Gliwice, Poland
Representative for the former ESTRO national societies task force

ROBIN GARCIA
Physicist
Institut Sainte Catherine
Avignon, France
Representative for the ESTRO physics committee

FILIPE GARCIA MOURA
RTT
Hospital Cuf Descobertas
Lisbon, Portugal
Representative for the ESTRO ACROP (Advisory Committee on Radiation Oncology Practice)

KRZYSZTOF SKŁADOWSKI
Radiation oncologist
Maria Sklodowska-Curie Memorial Cancer Centre, Gliwice, Poland
Representative for the former ESTRO national societies task force

JEAN-EMMANUEL BIBAULT
Radiation oncologist
Centre Oscar Lambret
Lille, France
Representative for the ESTRO young task force

MAIA DZHUGASHVILI
Radiation oncologist
Grupo IMO, Unidad Regional de Murcia
Murcia, Spain

PANAGIOTIS PAPAGIANNIS
Physicist
Medical School, University of Athens, Athens, Greece
Representative for the GEC-ESTRO committee

THE NATIONAL SOCIETIES COMMITTEE

The committee is contactable through Chiara Gasparotto at the ESTRO office: cgasparotto@estro.org
Interview with Jesper Grau Eriksen, President UEMS Section of Radiotherapy and Radiation Oncology

In 2011 ESTRO finalised the revision of the core curricula for radiation oncologists, medical physicists and RTTs. The core curricula are key tools for harmonising the training of the radiation oncology professionals in Europe. How are ESTRO and the European Union of Medical Specialists (UEMS) collaborating on this ground? Beyond the core curricula, are there other fields of collaboration with UEMS? The key activities of the UEMS are within continuing medical education and professional development, postgraduate medical training and quality assurance of medical treatment. For many specialties the development of European curricula is a responsibility of the UEMS sections. In radiation oncology, we are lucky that ESTRO also embraces this activity. The close collaboration between the UEMS section and ESTRO has ensured a high quality curriculum for medical professionals that also takes into account the intention of the European Union to harmonise medical postgraduate training across Europe. Furthermore, UEMS and ESTRO are collaborating on one of the big challenges for the future, which is the implementation of tools for assessing competencies. The EU focusses, as a consequence of the free movement of work force between nations, on common assessment methods for all European countries. For ESTRO and the UEMS section of radiotherapy and radiation oncology, it is important to be ahead of this in order to influence the process as much as possible to get an end product that is relevant for our specialty.

The revised core curricula focus not only on the knowledge and the skills that a professional in the radiotherapy team should master, but also on the non-medical competencies, such as communication, collaboration, health advocacy and management. These areas are, of course, more complicated in terms of evaluation and assessment. How will you tackle this topic during the workshop?

This is the third workshop on competency-based training arranged as a pre-meeting at the ESTRO congresses. The first two, successfully arranged by Jan-Willem Leer, presented the most commonly-used assessment tools such as multisource feedback, mini-CEX evaluations, ...
progress interviews and the use of portfolios and logbooks. We will continue this tradition and this time focus on how this is practically implemented by presenting and discussing the experience from a national 360 degree evaluation project from Denmark and the process of implementing competency-based training in Australia and New Zealand. The Royal Australian and New Zealand College of Radiologists (RANZCR) has years of experience in this area that we can benefit from. Another main topic at the meeting is a presentation and discussion of the art of making multiple choice questionnaires (MCQs). Although not strictly competency-based assessment, it is still one of the most widely used assessment methods worldwide in postgraduate training and there is certainly more to it than just asking a question and presenting different answers. The UEMS have developed guidelines for producing optimal MCQs and these will be presented by one of the main authors and discussed at the workshop.

The national societies’ role in the dissemination and implementation of the core curricula is central, and ESTRO is there to support them. This workshop is a great starting point.

How can the NS expect from ESTRO in the future? ESTRO and UEMS want to support the NS as much as possible in the implementation of competency-based training and assessment. Apart from the pre-meeting workshops, we want to build a knowledge database on the ESTRO webpage. There is a lot of material and expertise out there and it’s not necessary that every department starts from scratch. However, this project is still work in progress.

How will the national representatives benefit from attending the workshop?
They will get inspiration for implementing competency-based assessment in their home countries as well as increased knowledge of how to design MCQs in an optimal way. Furthermore, we know from previous workshops that it is a great forum for meeting colleagues from other countries who are interested in education in order to exchange experiences.
THE COUNTDOWN HAS STARTED

We are now in the final run-up to ESTRO 33 and we hope that you are all looking forward to being there as much as we are. Many abstracts have been received, many sessions are foreseen, many speakers are expected ... not to mention all the brilliant science, education and social activities that will be coming up in the warm atmosphere of the ESTRO annual congress.

In this special Corner dedicated to the event, we try to summarise for you all the important information that might be useful before you join us. There is still a lot to come on our Facebook page, by email and on our website of course... so stay tuned.

See you in Vienna,

*Agostino Barrasso and Eralda Azizaj*
FOCUS ON FUTURE ESTRO CONFERENCE

ESTRO 33
4 - 8 April 2014
Vienna, Austria

ESTRO 33
SEARCHABLE PROGRAMME
WHAT YOU SHOULDN’T MISS...
PRACTICAL INFORMATION
ESTRO 33 IN FIGURES
CELEBRATING THE ORGANISERS AND PROGRAMME MAKERS
SEARCHABLE PROGRAMME

How does it work?

Simply search the programme either by day, by session type, by topic or by author (by clicking on the “Search” button).

A pdf of the abstract book will be available by download a couple of weeks before the congress.

Access the searchable programme >

Registration fees >
To register >
More information on the congress >

SEARCHABLE PROGRAMME NOW AVAILABLE!
The abstracts that will be presented at ESTRO 33, the ESTRO annual congress, are available online.
WHAT YOU SHOULDN’T MISS...

SOCIAL ACTIVITIES

- **Opening ceremony**
  
  *Friday 4 April 2014 | 18.00 hrs | Auditorium*
  
  All participants and company delegates are invited to the official opening ceremony. The opening ceremony will be followed by the welcome reception, which will take place in the exhibition area.

  **Opening remarks**
  
  Vincenzo Valentini (Italy) – ESTRO president
  Daniel Zips (Germany) – chair of scientific programme committee ESTRO 33
  Claudio Fiorino (Italy) – chair of scientific programme committee ESTRO 33
  Richard Pötter (Austria) – chair of national organising committee
  Dietmar Georg (Austria) – chair of national organising committee

  "*Combating global cancer through an effective radiation medicine education.*"

  **Keynote speaker:** Rethy Chhem (Austria)

  **Entertainment:** Vienna Ballet

- **Welcome reception**
  
  *Friday 4 April 2014 | 19.15 hrs | Exhibition area*
  
  All registered participants and all company delegates are invited to the welcome reception which will take place in the exhibition area.

- **Poster reception & Poster Awards**
  
  *Saturday 5 April 2014 | 18.30 - 19.30 hrs | Poster area*
  
  All participants and company delegates are invited to the poster reception and poster awards. Canapés and drinks will be served while participants view more than 500 posters of the best posters. During the reception, three ESTRO awards of €1000 each will be handed out to the best scored posters.
Social event  
Monday 7 April 2014 | the Volksgarten  
The after-dinner party will take place at the Volksgarten, Burgring 1, 1010 Vienna, from 21.30 hrs.

Visit to MedAustron  
Tuesday 8 April 2014  
A visit to MedAustron has been arranged at the end of the congress. MedAustron is one of the most advanced centres for ion beam therapy and research in Europe and currently is being built 40 km to the south of Vienna.  
The price of the visit (€30) includes a packed lunch, transportation and a guided tour of MedAustron.  
To register, you need to:  
1. log in with your details  
2. register for the congress  
3. then the option of booking the visit will be offered.

Patients Day  
Saturday 5. April 2014 | 11.00 - 16.30 hrs | Wiener Rathaus  
The patients day is organised by Leben mit Krebs in collaboration with ÖGRO and ESTRO. The sessions will be held in German.

YOUNG PROGRAMME  
Sunday, 6 April | 08.00-18.00 hrs | Room A4 & poster area  
View the full programme in the Young Corner of this newsletter and read the interview of the chairs of the young programme.  
The young scientists reception will take place from 17.30 to 18.00 hrs.
RENDEZ-VOUS WITH MEMBERS

- **GEC-ESTRO general assembly**
  Sunday 6 April 2014 | 13.30 - 14.30 hrs | Room Schubert 4-5-6

- **Physics member’s assembly**
  Monday 7 April 2014 | 13.30 - 14.30 hrs | Room Schubert 4-5-6
  The annual assembly for physicists will offer the opportunity to exchange ideas on current issues for the radiation physics community.

- **ESTRO general assembly**
  Monday 7 April 2014 | 17.30 - 18.30 hrs | Room Strauss 1
  An agenda will be sent to all full members. Please note that you need to have renewed your 2014 ESTRO membership by 1st April 2014 to be able to participate.

EDUCATION

- **Five pre-meeting courses**
  Friday 4 April 2014
  **Interdisciplinary pre-meeting course** | 08.45 - 17.15 hrs | Room Schubert 1-2-3
  INTRACRANIAL STEREOTACTIC RADIOSURGERY >
  COURSE DIRECTORS: Stephanie Combs (Germany) and Dirk Verellen (Belgium)
  Basics, principles and practice, frame-based versus frameless SRS, discussion on indications in comparison to other treatment possibilities, etc.

  **Clinical pre-meeting course** | 08.30 - 17.00 hrs | Room Schubert 4-5-6
  OPTIMAL USE OF RADIOTHERAPY AND CHEMOTHERAPY IN ORGAN PRESERVATION >
  COURSE DIRECTORS: Christian Rödel (Germany) and Nicholas James (UK)
  New developments in multimodality organ preservation treatment for anal, rectal, and bladder cancer.
Radiobiology pre-meeting course | 08.45 - 17.00 hrs | Room Stolz 0
CURRENT ADVANCEMENTS IN IMMUNOTHERAPY AND RADIOThERAPY
COURSE DIRECTORS: Philippe Lambin (The Netherlands) and Dimitri V. Krysko (Belgium)
Anti-tumour immune response during radiotherapy: overview of the key concepts and elements involved, and latest developments.

Physics pre-meeting course | 08.30 - 17.00 hrs | Room Stolz 1-2
CURRENT ADVANCEMENTS IN TREATMENT PLANNING AND OPTIMISATION
COURSE DIRECTORS: Markus Alber (Denmark) and Ben Heijmen (The Netherlands)
Latest developments in adaptive treatments, organ deformation modelling, optimisation of treatment robustness, multi-criteria optimisation, automatic plan generation as well as knowledge-based planning.

RTT pre-meeting course | 08.50-17.30 hrs | Room Lehar 4
IMAGE GUIDED ADAPTIVE RADIATION THERAPY FOR RTTs
COURSE DIRECTORS: Annette Boejen (Denmark) and Bruno Speleers (Belgium)
Focus on the principles for advanced IGRT as a concept leading to ART.

Eight contouring sessions
The hands-on workshops will use FALCON (Fellowship in Anatomic delineation and CONtouring), the multifunctional ESTRO platform for contouring and delineation.

Joint ESTRO – ILROG on lymphoma
FRIDAY 4 APRIL 2014 | 08.00 - 10.00 HRS | Repeated on SATURDAY 5 APRIL 2014 | 08.00 - 10.00 HRS
Chair: Lena Specht (Denmark)
Panellists: Stephanie Terezakis (USA) and Anne Kiil Berthelsen (Denmark)
Administrator: Berardino de Bari (Switzerland)

Organs at risk
FRIDAY 4 APRIL 2014 | 10.30 - 12.30 HRS | Repeated on SUNDAY 6 APRIL 2014 | 08.00 - 10.00 HRS
Chair: Matthias Guckenberger (Switzerland) and Sofia Rivera (France)
Panellists: Sofia Rivera (France), Lucyna Kepka (Poland) and Ursula Nestle (Germany)
Administrator: Danilo Pasini (Italy)
Oesophagus
FRIDAY 4 APRIL 2014 | 13.30 - 15.30 HRS | Repeated on MONDAY 7 APRIL 2014 | 08.00 - 10.00 HRS
Chair: Oscar Matzinger (Switzerland)
Panellists: Maarten Hulshof (The Netherlands) and Thomas Rozema (The Netherlands)
Administrator: Berardino de Bari (Switzerland)

Rectum
FRIDAY 4 APRIL 2014 | 16.00 - 18.00 HRS | Repeated on TUESDAY 8 APRIL 2014 | 08.30 - 10.30 HRS
Chair: Corrie Marijnen (The Netherlands)
Panellists: Karin Haustermans (Belgium) and Maria Antonietta Gambacorta (Italy)
Administrator: Danilo Pasini (Italy)

Educational aims of the workshops
- Provide attendees with the opportunity for interactive training on contouring CTV, GTV and, when relevant, OAR and to discuss their results with international experts in the field.
- Provide the participants with knowledge on how contouring is performed in different institutions and on the existing recommendations and guidelines.
- Provide the participants with consistent information to validate or modify/improve their daily contouring practice.

Methodology for the workshops
- Clinical case presentation.
- Delineation tool presentation.
- Delineation with maximum two participants per computer.
- Presentation of the contouring guidelines recommended by the experts for the delineation of the CTV, GTV +/- OAR + bibliographic references for the therapeutic strategy chosen.
- Inter-comparison of the contours by the participants and by the experts.
- Justification and comments.
- Analysis of the heterogeneity index.

Participants are required to bring their own computer for contouring.

MORE INFORMATION ON THE CONTOURING SESSIONS >
AWARDS

- **Lifetime Achievement Award**
  Fiona Stewart (The Netherlands)
  Jean-Claude Horiot (Switzerland)
  Jean-François Bosset (France)
  Michael Goitein (Switzerland)
  Dieter Kogelnik (Austria)

- **ESTRO Award Lectures**
  **Emmanuel van der Schueren Award**
  “Back to the future: synergies between physics and medicine from history to horizon”
  David Thwaites (Australia)
  SATURDAY 5 APRIL 2014 | 12.20 - 13.00 HRS

  **Donal Hollywood Award**
  “No prognostic impact of HPV on RT-outcome in advanced non-oropharynx cancer – analysis of 1606 DAHANCA patients”
  Pernille Lassen (Denmark)
  SUNDAY 6 APRIL 2014 | 11.45 - 12.00 HRS

  **GEC-ESTRO Iridium 192 Award**
  “From milligram-hour over absorbed dose to equieffective dose and EQD2”
  André Wambersie (Belgium)
  SUNDAY 6 APRIL 2014 | 17.30 - 18.00 HRS

  **Klaas Breur Award**
  “Image guided adaptive radiotherapy – the paradigm of cervix cancer brachytherapy”
  Richard Pötter (Austria)
  MONDAY 7 APRIL 2014 | 12.30 - 13.00 HRS
Honorary Member Award Lectures

“Innovation of radiation therapy from 3DRT to 4DRT”
Masahiro Hiraoka (Japan)
SATURDAY 5 APRIL 2014 | 17.30 - 17.45 HRS

“In Cobalt-60, carbon ions, nanotechnology and beyond”
Bhadrasain Vikram (USA)
SATURDAY 5 APRIL 2014 | 17.45 - 18.00 HRS

University Award

ESTRO-Jack Fowler University of Wisconsin Award
“Real-time dose reconstruction during volumetric modulated arc therapy with dynamic MLC tracking”
Thomas Ravkilde (Denmark)
SUNDAY 6 APRIL 2014 | 18.20-18.30 HRS

Company Awards

ESTRO-Accuray Award
“Real time prostate gland motion and deformation during cyberknife stereotactic body radiotherapy”
Deepak Gupta (India)
SUNDAY 6 APRIL 2014 FROM 18.00-18.10 HRS

ESTRO-Varian Award
“PET imaging for characterization of head and neck tumours”
Bianca Hoeben (The Netherlands)
SUNDAY 6 APRIL 2014 | 18.10-18.20 HRS
ESTRO-Nucletron Brachytherapy Award
“Evaluation and comparison of a novel vaginal dose reporting method in 153 cervical cancer patients”
Henrike Westerveld (The Netherlands)
SUNDAY 6 APRIL 2014 | 10.30-10.40 HRS

GEC-ESTRO Best Junior Presentation – sponsored by Nucletron
“Investigation of radiation therapy effectiveness and safety of recurrent head and neck squamous cell carcinoma”
Viktoras Rudzianskas (Lithuania)
SATURDAY 5 APRIL 2014 | 16.55-17.05 HRS
EXHIBITION
An exhibition featuring equipment and medical publishers will be held in the exhibition area. The opening of the exhibition will be on Friday 4 April 2014 at 19.15 hrs. The exhibition will remain open from Friday 4 April to Monday 7 April between 9:30 and 17:00 hrs. Entrance is free for all registered participants.

WIFI
Wireless internet will be available in the congress centre during congress hours.

LUNCH AND REFRESHMENTS
The registration fee for the conference includes coffee breaks to all participants wearing their conference badges. Lunch will be available for purchase in the exhibition area and is not included in the registration fee.
ESTRO 33 IN FIGURES

- 909
- 10,000
- 5000
- 270
- 250
- 11
- 110
- 528
- 1953
- 8
- 5

CLICK OR TAP ON THE CIRCLES TO REVEAL THE FIGURES

FOCUS ON FUTURE ESTRO CONFERENCE

ESTRO 33
ESTRO 33 IN FIGURES

909 E-POSTERS

10,000 M² EXHIBITION

5000 DELEGATES
(3400 participants + 1600 exhibitors)

270 INVITED SPEAKERS

250 ORAL PRESENTATIONS

8 CONTOURING WORKSHOPS

5 PRE-MEETING COURSES

1953 SUBMITTED ABSTRACTS

> Clinical: 721
> Physics: 710
> Brachytherapy: 170
> RTT: 136
> Radiobiology: 106

528 POSTERS

11 JOINT SESSIONS

110 LATE-BREAKING ABSTRACTS

FOCUS ON FUTURE ESTRO CONFERENCE
ESTRO 33
FOCUS ON THE NEW SESSIONS

Tumour board sessions

Interview with Richard Pötter
Member of the ESTRO 33 scientific programme committee

What is the concept of the tumour board sessions?
The concept of these new ESTRO multidisciplinary tumour board sessions is to demonstrate and discuss one or two cases comprehensively with experts from different oncology disciplines and to share their experience, their discussion process and their joint decision-making with the audience. Such tumour board sessions should serve as an educational tool for radiation oncologists in order to become familiar with the complex challenges and needs within the growing multidisciplinary environment in regard to knowledge and competence. The concept is to demonstrate how the knowledge about different levels of clinical evidence for various prognostic, predictive, diagnostic and therapeutic measures is finally “tailored” to the needs for decision-making of the individual patient with cancer.

There will be three sessions in total: head and neck cancer, breast cancer, and rectal cancer.

What happens during each session?
A radiation oncologist (preferably an ESTRO fellow) will be identified to prepare and demonstrate a “usual” clinical case for discussion. The tumour board panel will include a diagnostic radiologist, a surgical oncologist, a medical/clinical oncologist, and a radiation oncologist, all specialised in the organ field. The leader of such an ESTRO tumour board session (a radiation oncologist with long standing experience in the field) will coordinate the on-site panel discussion with the participation of the audience. Finally, a joint decision will be taken for the individual case. Voting systems for the audience may be used.

Why has this session been created and what is the benefit of attendance?
This is the first time this type of session has been included in the educational and scientific programme of an ESTRO conference. This live demonstration of multidisciplinary tumour board sessions will provide the opportunity...
for radiation oncologists to study the decision-making process and to learn about possibilities and pitfalls typical for such scenarios. Listening to and discussing with each other by sharing opinions on diagnostic procedures and treatment possibilities for the individual clinical situation are essential communication competencies and have to be based on comprehensive knowledge, both of the individual case and of the clinical evidence for the different measures to be taken. Successful and efficient interaction will be demonstrated by reaching a final consensus after joint decision-making. Such sessions aim at an individual learning process for the participant, who should be able to transfer some of the demonstrated experience to the real home situation after returning to the regular tumour board taking place in “every-day” multidisciplinary oncology.

**Who should attend?**
In principle, all the oncology disciplines involved in the multidisciplinary tumour board are welcome. However, on the occasion of an ESTRO conference, we expect radiation oncologists and clinical oncologists to participate, of any age and experience, who have an interest in multidisciplinary oncology for the organ sites offered at ESTRO 33, i.e. breast, head and neck, rectum. Such ESTRO tumour board sessions may also be of interest for the multidisciplinary radiation oncology team, which includes medical physicists, radiation biologists, radiation therapists (RTTs), radiation oncology nurses and administrators.
What is the concept for the session?
Efficient cancer treatment currently relies, for most major entities, on a precise interaction between more than one sub-specialty. Complex issues arise in the field of radiation oncology; whereas aspects of radiation technology, radiation treatments and radiation biology may be covered fully by ESTRO members, the discussion of treatment strategy requires the presence of experts from neighbouring sub-specialties. Thus, within both sessions, the new ESMO-ESTRO-ESSO guidelines will be introduced by experts from the panel.

On what will the session specifically focus?
Both sessions basically focus on complex treatment approaches in gastro-intestinal cancer. Whereas anal cancer per se is the domain of radiation oncology and major parts of the treatment procedure are in the hands of radiation oncologists, the role of radiation-based approaches in gastric cancer is less well defined. Nevertheless, both sessions aim to address all treatment aspects from any relevant perspective.

Why has this been created?
ESTRO, as a strong player in the concert of scientific societies in the field of oncology, has created a new committee (Advisory Committee on Radiation Oncology Practice - ACROP) with a special focus on managing and pushing forward all aspects of guidelines within ESTRO, and also multidisciplinary guidelines in close interaction with all relevant partners. The ESMO-ESTRO-ESSO guidelines were the first interdisciplinary guidelines, which were, at least in part, already being handled by the newly formed ACROP committee.

Who should attend?
Clinicians with a key interest in GI cancer looking for an in-depth update on anal or gastric cancer.
Celebrating the organisers and programme makers

FOCUS ON THE YOUNG PROGRAMME

Sunday, 6 April 2014
08.00-19.00 hrs
Room A4 & poster area

Interview with Daniela Thorwarth and Maximilian Schmid
Chairs of the Young scientific programme

Why is it important to have a young track in the congress scientific programme, and why should the young audience participate?
Young scientists are major drivers of research projects all over Europe. However, they are relatively under-represented during big scientific meetings and congresses. Therefore, the young track at ESTRO 33 aims to offer young scientists sessions tailored to their needs, and to give them a platform for their own work. Furthermore, the young track offers a unique opportunity to build personal networks with people in a similar career phase and research field around Europe. These are three reasons why young scientists absolutely should not miss the young track at ESTRO 33.

What is definitely not to be missed in the young programme?
The whole day! The young track will start with a teaching lecture on basic statistics (Do’s and Don’ts). A second session will be devoted to the implementation of evidence-based practice into clinical routine, followed by a lunch symposium with the latest news from the young task force in ESTRO. In the afternoon, a symposium on tips and tricks for effective and successful grant writing will be presented to the young audience. In addition, the best posters from young scientists will be discussed within a number of poster presentation sessions (clinical, physics, brachytherapy, radiobiology, RTT) during the day.

Is the young programme tailored to all the disciplines?
Yes indeed. It is an interdisciplinary track with contributions from various disciplines. The programme has been devised to match with the expectations of all the young professionals in our community.

See you all on Sunday, 6 April in Vienna!

In the Young Corner you can read in full the programme for this special day dedicated to the young scientists of the radiation oncology community. Maximilian Schmid and Daniela Thorwarth give us more details on the programme and remind young scientists about why you should participate.

VIEW THE FULL PROGRAMME >
What have been the main missions of the members of the NOC (National Organising Committee)?
First of all we are happy that ESTRO is coming back to Vienna after a long time. I was a PhD student in 1996 when the last annual ESTRO meeting took place in Vienna. Members of the NOC are devoting their time to various activities to prepare ESTRO 33 in Austria and also to prepare ourselves for it. Task groups were set up for public relations, for the opening ceremony, and for organising the social event and the patients’ day. We are very pleased that the International Atomic Energy Authority, with their headquarters in Vienna, agreed to be part of the NOC and support us.

Together with Richard Pötter, as co-chairs of the NOC, you will chair a symposium on the Vienna school of radiotherapy and its impact on 100 years of radiotherapy. Why was it important to include this topic in the scientific programme? The early days of “radiation medicine”, which started soon after the discovery of X-ray by Wilhelm Konrad Röntgen, were defined by pioneers of the Vienna medical school. For example, Leopold Freund who did the first X-ray treatment just a few months after X-ray discovery, Holzknecht who pioneered dosimetry and radiology, or Gottfried Schwarz who did basic radiobiology work and studies. Although all of them have written first textbooks to spread their knowledge, today their impact on the success story of more than 100 years of radiotherapy tends to be forgotten. Having such a session in the programme, with educational and historical talks, provides a nice opportunity for participants to learn about the roots of radiotherapy and how this is connected to the city where they are.

A visit to MedAustron has been organised. Why could visiting the site be interesting to radiation oncology professionals? Proton and light ion therapy come more and more into the focus of radiation oncology.
I am happy to see that the photon and particle therapy communities are getting closer and not evolving in parallel and separately – as in the past. MedAustron is one of the few ion beam therapy cancer research and treatment centres in Europe that explores both protons and carbon ions. First, the installation of equipment is advanced, and patient treatment will start at the end of 2015. At present it is still possible to look “behind the scenes”, which will not be the case in the coming years. Second, it is largely based on collaborations (e.g. with CERN, PSI, CNAO, Univ. of Salzburg and Vienna) and not on a commercial turnkey solution. In that sense the whole setting of such a centre is interesting by itself.

Can you tell us a bit more about the patients’ day that is being organised this year?
Prior to when the date for the ESTRO meeting was set, the Austrian Cancer Society set the date for the traditional Cancer Day for patients in the marvellous Viennese Town Hall on 5 April. Thanks to excellent relations with the Cancer Society, we were able to integrate our talks and the messages we would like to transfer into this traditional Viennese Cancer day for patients. In this way we will reach more patients and be more visible.

What can we expect at the opening ceremony?
Should I really open the box? We have tried to organise an opening ceremony with an entertainment programme that is specific for Vienna in many ways. Entertainment will be done in two parts, each about ten minutes and if you want to know more about it, come to the opening!

Can you tell us more about the social event planned for 7 April?
For the social event we have selected the Volksgarten, which is a famous dancing/clubbing location in Vienna. To be honest, I “lost” quite some time there during my study period. The Volksgarten is close to the city centre and can be easily reached with public transport. We will have a DJ in one of the rooms and a band in a second room. Of course there are several bars inside and there will be finger food to regain the lost calories from dancing.....

Despite a busy programme with the meeting, what should participants not miss visiting in Vienna?
Although I am not Viennese but from a different part of Austria, I had plenty of opportunities to explore it as a student. Vienna is a city with generally high standards, and compared to other European capitals, it is not that expensive. One can find nice restaurants and bars all over the city. Any sightseeing activities can be easily done by public transport. Vienna has an outstanding public transport system. Now what to do besides ESTRO 33 and what to visit? There are almost endless opportunities for sightseeing. The first district in the centre of the city itself is worth an exploratory tour, with the St Stephan’s Cathedral, the Opera, Burgtheater, City Hall, Parliament, etc. What I really like is the Mozart House, where Mozart as a human being is the main focus, not Mozart the artist. Then there is Schönbrunn Palace and Belvedere Palace with the permanent Klimt exhibition. Last but not least, there was an Austrian artist, architect and painter called Friedensreich Hundertwasser. Houses, a museum and even a waste-burning factory were built in Vienna according to his architectural ideas. They are outstanding and impressive. Vienna has an extraordinary technical museum where one can spend a full day and, believe me, time will fly there. Of course there are the world-famous Viennese coffee houses, with their sweet “temptations” to relax, to refill the batteries, or to read in a nice ambiance. At the end you will find out that the days of ESTRO 33 are not enough to fully explore and experience Vienna. I guess you need to come back!
# EVENTS DIRECTORY

2014

ECCO - the European CanCer Organisation organises multidisciplinary meetings of excellence on behalf of its Member Organisations:

<table>
<thead>
<tr>
<th>ORGANISATIONS</th>
<th>SAVE THE DATE</th>
</tr>
</thead>
</table>
|               | 5 – 8 July 2014  
*Munich, Germany*  
EACR-23  
23rd Biennial Congress of the European Association for Cancer Research |
|               | 21 – 27 July 2014  
*Flims, Switzerland*  
16th Flims Workshop  
Methods in Clinical Cancer Research |
|               | 18 – 19 September 2014  
*Istanbul, Turkey*  
EONS-9  
9th European Oncology Society Nursing Society Congress in partnership with Oncology Nursing Association of Turkey (TONA) |
|               | 29 – 31 October 2014  
*Liverpool, UK*  
ESSO 34 - BASO 2014  
34th Congress of the European Society of Surgical Oncology in partnership with BASO 2014 |
|               | 18 – 21 November 2014  
*Barcelona, Spain*  
26th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics |

To discover more about ECCO, visit: [www.ecco-org.eu](http://www.ecco-org.eu)
### 2014

#### MARCH

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 - 15/03</td>
<td>Perspectives in lung cancer - 15th European congress</td>
<td>Amsterdam, NL</td>
<td><a href="http://imedex.com/lung-cancer-congress-europe/">More information &gt;</a></td>
</tr>
</tbody>
</table>

#### APRIL

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 - 08/04</td>
<td>ESTRO 33 Annual Congress</td>
<td>Vienna, Austria</td>
<td><a href="http://www.estro.org/congresses-meetings/items/estro-33">More information &gt;</a></td>
</tr>
<tr>
<td>24 - 25/04</td>
<td>2nd World Rectal Conference</td>
<td>Leiden, NL</td>
<td>Early registration deadline: 15 March 2014</td>
</tr>
</tbody>
</table>

#### MAY - JUNE

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 - 31/05</td>
<td>BrachyNext Symposium 2014</td>
<td>Miami, USA</td>
<td><a href="http://www.rectal-cancer.net/2wrc/2WRC/Home.html">More information &gt;</a></td>
</tr>
<tr>
<td>30/05 - 02/06</td>
<td>RPM 2014 - International Conference on Radiation Protection in Medicine</td>
<td>Varna, Bulgaria</td>
<td>Deadline for registration: 31 March 2014</td>
</tr>
<tr>
<td>21 - 27/06</td>
<td>FLIMS 16 - Methods in Clinical Cancer Research</td>
<td>Flims, Switzerland</td>
<td><a href="http://www.cvent.com/events/brachynext-working-together-to-shape-the-future-of-brachytherapy/event-summary-bc11932f5a2244fdbeb79be113dc4f0e3.aspx">More information &gt;</a></td>
</tr>
</tbody>
</table>

#### OCTOBER

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 - 04/10</td>
<td>Protons in Therapy and Space</td>
<td>Erice, Italy</td>
<td><a href="http://events.unitn.it/en/ishi2014">More information &gt;</a></td>
</tr>
</tbody>
</table>

#### NOVEMBER

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
</table>

#### 2015

#### APRIL

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 - 28/04</td>
<td>3rd ESTRO Forum Interdisciplinary Congress</td>
<td>Barcelona, SP</td>
<td><a href="http://www.cvent.com/events/brachynext-working-together-to-shape-the-future-of-brachytherapy/event-summary-bc11932f5a2244fdbeb79be113dc4f0e3.aspx">More information &gt;</a></td>
</tr>
</tbody>
</table>