

LIASON REPORT

10TH BIENNIAL CONFERENCE THE EUROPEAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY

I. Meeting date and location: August 28 – 3rd September 2009, Maastricht, NL

II. General Aspects

This year's ESTRO conference on Physics and Radiation Technology was aimed at providing a forum for discussing new developments and revisiting long known standards in view of the clinical benefit for the patient. Following the good tradition, there was a dedicated track for the radiation technologists who were strongly encouraged to actively participate in this year's conference. Over the last years the interest of radiation oncologists for the biennial physics meeting has been increasing steadily, which was definitely encouraged. And again, this year the interested clinician were not disappointed as clinical implementation of new technologies, imaging and radiobiological modeling (to name but a few of the many topics) were part of the program.

ESTRO has always recognized and stimulated multidisciplinary collaboration as it is nicely illustrated in the successful teaching courses. The latter emphasized another important pillar of the conference, which is education. In addition to the symposia where state-of-the-art developments were presented, the pre-conference teaching courses were combined with teaching lectures during the conference and included stimulating and actual topics to attract both the young as well as the experienced scientists. In addition, a special program was dedicated to the young physicists following the large success of last year's initiative. ESTRO recognized the challenge to enthuse young scientists to the field of medical physics and the young physicist track covered issues of special interest to this target group.

The conference had accompanying social activities and opportunities for relaxing amongst friends with fine food and a good drink. Maastricht being a very popular student city with its curvy little streets and hidden squares offering a large variety of cafes and restaurants were the ideal places to wind down after a stimulating day. I'm sure the friendly atmosphere of this town provided a fertile soil to establish new friendships and professional collaborations. The 10th ESTRO in Maastricht had all the ingredients to make this conference a mind-expanding experience.

The first Biennial Conference in Budapest, 1991, attracted a few hundred participants and this number has been growing ever since. With more than 2000 participants and 100 corporate booths the conference has grown into a strong organization to be reckoned with. The attendance exceeded the last meeting of this group.

III. Pre-congress courses:

ESTRO meeting this year began with the following three **pre-congress courses**:

Physics:

- MR imaging in radiation therapy
- Biological models and dose optimization

RTT:

- Clinical research in radiotherapy for head and neck cancer

IV. Program subtopics

- Basic principles of MRI
- Biological optimized RT in practice: the QUANTEC effort
- Biological treatment planning systems today: planning, delivery efficiency,
- Can we keep our integrity in this commercially oriented medical world?
- Classical normal tissue volume effect models for dose optimization
- Clinical application of MRI in radiotherapy for cervical cancer
- data limitations, dose uncertainties and subjective endpoints
- Determining normal tissue dose response models from clinical data:
- Diffusion-weighted MRI (DWI)-guided radiotherapy for head and neck cancer
- Discussion on protocol design and practical application
- Evidence for fractionation and treatment time models for normal tissues
- Examples of how to get involved in research activities in RT for head and neck cancer
- Functional Imaging
- Geometrical accuracy
- Honorary Physicist and Gray Award
- Hypoxia Imaging in Prostate Cancer
- IGRT Adaptive
- Imaging the dose response of normal tissues
- Imaging the dose response of tumors
- Integration of 1.5T MRI and a 6MV accelerator for real-time MRI guided radiotherapy
- Integration of MRI in Radiation Therapy through Deformable Modeling
- Interventional MRI Guided Radiotherapeutics for Prostate
- New technology: we need experts not users
- Non-local dose-effect models for normal tissues
- Peculiarities of the RT optimization problem: multiple objectives,
- Physical Aspects of MRI Guided Brachytherapy for Cervical Cancer
- Preclinical MRI in radiation therapy
- reporting and QA
- Research and Methodology
- Rotational IMRT
- State-of-the-art RT work-up, treatment and follow-up for head and neck cancer
- Stereotactic body radiotherapy
- The IMRT/IMPT Optimization problem
- Theory of Non-Linear Optimization
- Treatment delivery and 4D aspects of IGRT

- user/algorithm communication and feasibility
- Varian, Accuracy - Fowler Award - Young Scientist Award

V. Joint RTT/Physics sessions

- Adaptive treatment strategies: Managing workflow and QA
- Arc Therapy techniques, cross referencing different IMRT approaches
- Biology and outcome estimates
- Brachytherapy
- Collaboration with EANM: the role of the technologists NM and RTT
- Defining Protocols
- Delineation and margins
- Delivery techniques
- Dose measurements and novel dosimetry
- Follow-up
- IGRT in radiotherapy
- IGRT, tumour sites
- Imaging for target delineation
- Imaging for target delineation, tumour sites
- Immobilisation techniques
- IMRT
- Positron verification
- Preparation of treatment planning
- Re-irradiation // Follow-up
- Risk management and QA
- Technical aspects of IGRT
- Treatment evaluation
- Treatment planning and delivery
- Treatment planning, Monte Carlo, the only way to make a solid treatment plan?
- Treatment planning, tumor sites
- Treatment Verification QA, Is what you've planned what you get?

More Physics Oriented Topics

- 3D and time resolved (4D) dosimetry
- Arc therapy techniques, cross referencing different IMRT approaches
- Biological and genetic predictive assays: a review for the physicist
- Challenges for scanned particle beam therapy
- Dosimetry for imaging in IGRT (concomitant dose)
- Dosimetry for Nuclear Medicine
- EPID-based dosimetry
- Flattening free photon beams
- New recommendations and formalisms for non-standard field reference dosimetry
- Novel dosimetry methods
- Risk management and QA

More Oriented Towards Clinical Implementation

- Adaptive Treatment strategies: Managing workflow and QA
- Adaptive treatment strategies: Robust treatment planning
- Auto-segmentation and deformable registration algorithms
- Brachytherapy: Monte Carlo source modeling
- Challenges in modern brachytherapy
- Dynamic Imaging
- Fractionated radiotherapy reviewed
- Management of geometrical uncertainties in radiotherapy: margins and correction strategies
- New technologies in CT imaging
- Radiation induced secondary cancer reviewed
- Understand PET images: biology and physics, Integrating PET-CT in treatment planning

There were 365 oral presentations and an impressive number of 698 posters could be viewed through out the meeting. Posters were also available for electronic viewing.

VI. Major Sessions

Primary organization scheme of the meeting is given below:

- A. Teaching lectures
- B. Symposia
- C. Satellite symposium
- D. Proffered papers
- E. Poster discussion
- F. Debates
- F. Award lectures
- G. Young scientists sessions

A summary of daily schedules and itemized subtopics of the meeting is given in Appendix A.

VII. Major ESTRO Committees

ESTRO BOARD

| | |
|--------------------------|---|
| President: | V. Grégoire (BE) |
| Past President: | M. Baumann (DE) |
| President elect: | J. Bourhis (FR) |
| Treasurer: | H. Stankusova (CZ) |
| Secretary: | C. Grau (DK) |
| Executive administrator: | U. Ricardi (IT) |
| Editor in Chief: | J. Overgaard (DK) |
| Councillors: | C. Carrie (FR), T. Knöös (SE), S. Magrini (IT), B. McClean (IE), I. Monteiro Grillo (PT), H.P. Rodemann (DE), P. Strojjan (SI), M. Verheij (NL), J. Yarnold (UK), N. Willich (DE) |

CONFERENCE SECRETARIAT

Muriel Hallet - Conference Manager
Jill Barnard - Registration Coordinator
Agostino Barrasso - Conference Coordinator
Valerie Cremades - Exhibition Coordinator
Maria Sapriza - Scientific Programme Coordinator

Organising Committees

SCIENTIFIC COMMITTEE

Chairperson: D. Verellen (BE)

Members: M. Alber (DE), A. Beavis (UK), J.M. Fernandez-Varea (ES), C. Fiorino (IT), D. Georg (AT), K. Gérard (FR), C. Kirisits (AT), T. Knöös (SE), S. Korreman (DK), M. Mast (NL), R. Moeckli (CH), L. Muren (DK), H. Nyström (SE), D.R. Olsen (NO), A. Osztavics (AT), H. Palmans (SK), M. Pijls-Johannesma (NL), J.J. Sonke (NL), A. Vaandering (BE), F. Van den Heuvel (BE), F. Verhaegen (NL)

NATIONAL ORGANISING COMMITTEE

Chairpersons: F. Verhaegen, M Pijls-Johannesma

Members: A. Bel, AMC Amsterdam - G. Bosmans, Maastricht - J.W. Coebergh, Eindhoven/Rotterdam - A. Dekker, Maastricht - W. Dries, Eindhoven - B. Hanbeukers, Maastricht - J. Lagendijk, Utrecht - M. Mast, Den Haag - B. Mijnheer, NKI Amsterdam - A. Minken, Deventer - L. Murrer, Maastricht - B. Nijsten, Maastricht - M. Oellers, Maastricht - C. Offermann, Maastricht - B. Reniers, Maastricht - M. Schippers, Groningen - J. van den Bogaard, Maastricht - H. P. van der Laan, Groningen - M. van Herk, NKI Amsterdam - M. van Os, Rotterdam - J. van Santvoort, Den Haag - A. van 't Veld, Groningen - C. van Vliet, Amsterdam - P. Visser, Maastricht - P. Vos, Tilburg - A. Zimmermann, Liege

VIII. Scientific Advisory Committee for Radiation Physics

Chairperson: D.R. Olsen (N)

Committee members

M. Bidmead (UK)

W. Bulski (PL)

B. Davis (CH)

M.C. Lopes (P)

T. Eduardo (E)

RC. Fiorino (I)

R. Garcia (FR)

D. Georg (AT)

B. Heijman (NL)

M. de Carmo Oliveira (PT)

J. Malicki (PL)

B. McClean (IRL)

A. McKenzi (UK)

T. Knöös (S)

H. Nyström (S)

G. Gagilardi (S)

E. Gershkevitsh (EE)

O. Holmberg (DK)

C. Hurkmans (NL)
N. Jornet (SP)
T. Knoos (SE)
T. Lomax (CH)
B. McClean(IE)
H. Nystrom(SE)
W. Schlegal (D)

K.A.Johansson (SE)
S. Koreman (DK)
S. Levegrun(DE)
H. Mayles (UK)
A. Nahum (UK)
Y. Seppenwolde (NL)
D. Thwaites (UK)

IX. Role of the Physics Committee

The Board of European Society appoints the Physics Committee for Therapeutic Radiology and Oncology (ESTRO). The primary purpose of the Committee is:

- ✓ to advise the Board on questions related to clinical physics;
- ✓ to improve the quality of physics in radiotherapy;
- ✓ to organize scientific meetings and working parties under the auspices of the Board, e.g., the Biennial Meeting on Physics in Clinical Radiotherapy;
- ✓ to advise on the physics program at ESTRO meetings; and,
- ✓ to cooperate with other organizations on clinical physics.

The Physics members were very much interested to have the AAPM members participate in the activities of ESTRO and were equally interested in participating in the activities of AAPM. They wish to continue the collaboration with the AAPM.

Overall, ESTRO continues to organize highly successful meeting with emphasis on teaching and significant scientific and technical content.

X. Physics Committee Issues

1. Develop structure and operation of the Physics committee
 - links to wider ESTRO structures
 - membership, representatio, nominations, replacements, term
 - horizon scanning (meetings, courses, etc.)
 - horizon scanning (identify developments, topics for pro-active guidance/documents?)
 - links to other organizations (AAPM, EFOMP, etc.) and IAEA, EORTC, etc.
 - links to radiobiology committee
 - links to RTT committee
 - links to brachytherapy committee
 - links to Physics Board members
 - communication, meetings
2. Members to take on specific areas of interest - set up 'virtual' support groups, bring in younger members
3. Need for Vice-chair or Secretary to committee?

4. Younger member involvement generally (link to wider ESTRO initiatives + specific Physics considerations...)
5. Strategies/activities for the future?
6. Physics involvement on ESTRO communication and information platforms/ groups/ committees, e.g. communication group, website group (+ website content/monitoring), newsletter input...
7. General ICT issues at ESTRO
8. Physics (+ other?) booklets... procedures/responsibilities?
9. Meetings
 - Future scientific committee (brief report); pre-meeting w/shops?
 - Physics meeting in Barcelona, 2010 (brief report)
 - IAEA QA meeting
 - 2009 World Congress
10. Education...
 - input to education developments...
 - curriculum review; CPD; recognition of qualifications (+EFOMP)
- 10a. Physics or physics-content ESTRO course reports
 - Basic Physics course; Dose determination; IMRT; IGRT; Imaging
 - (+ extra editions in E Europe; + future plans)
- 10b. ESTRO Course content
 - Liaison between course directors and physics representatives on Education Committee
 - Need to ensure overlap only where necessary
 - Need to include new topics as they arise in existing courses
 - Need to ensure new topics for courses are input and pushed (e.g. possible 3D TPS course)
 - Risk management?
- 10c. Wider involvement of ESTRO in teaching courses... outside Europe activities (ex-ISRO...?)
11. Physics or physics-involved ESTRO working parties or with ESTRO nominees
 - QASIMODO
 - Small field dosimetry; IMRT QA, 3DTPS etc
 - BRAPHYQS
 - Brachytherapy calibration standards?
 - Clinical Audit working party (IAEA; ESTRO)
 - ROSIS
 - ... others... (e.g. ASTRO connectivity WP...)
 - (... ESTRO infrastructure, workload, satellite centres, protons/light ions, IT/grid developments, connectivity, ... etc.?)

- new areas/topics... scientific, professional, multi-disciplinary... ?
- input to ESTRO- EU discussions on new areas

12. QA in ESTRO

- ESTRO-EQUAL... structure, scientific input, promotion...
- IMRT QA
- Clinical trial QA
- Clinical audit development (guidelines for the interpretation of 97/43 for RT in Europe)
- Eur 97/43 implementation follow-up?

13. Reports on areas of mutual interest from

- EFOMP
- AAPM
- IAEA
- EORTC

14. Developments in relationships between ESTRO and other European cancer societies

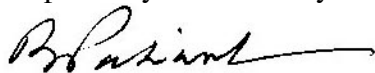
15. Varian, Jack Fowler, etc. awards... nominations...

XI. Overall Remarks

ESTRO physics is an extremely well organized group with focus on teaching, research and clinical applications of modern radiobiological, imaging and treatment delivery tools. Over the last 7 years it has significantly increased its membership of physicists and corporate personnel. It is to some extent due to their aggressive organization of teaching courses in addition to the annual meeting. Yearly new teaching courses are conducted in Europe and in the developing countries. AAPM should consider organizing similar courses in different regions or state on at, if not monthly, least quarterly basis. AAPM has rich and diverse resources in the make up of its committees and Task Group. Each of the Task Groups can play major role in organizing teaching work-shop around the country. This effort would not only share the frontier of the advancing knowledge with the AAPM members and others, it will also provide early feed back to the Task Groups to further refine their reports.

The added special event in the schedule to focus on regional/national associations has promoted the coordination of their efforts with ESTRO. In the case of AAPM it could be a forum for the Canadian and South American countries as well as for the regional chapters to hold their sessions at the time of the AAPM annual meeting.

Respectfully submitted by



Bhudatt Paliwal,
PhDLiason, ESTRO

ESTRO Physics Committee

3rd September 2009

1 pm - 5 pm

Room 0.6

Agenda

- ✓ 1. Apologies
- ✓ 2. Minutes from previous meeting
3. AAPM report (Bhudatt Paliwel) ✓
- ✓ 4. Report on 10th Biennial Conference
 - a. Report from Muriel Hallet
 - b. Report from Dirk Verellen
- ✓ 5. 11th Biennial Conference (DRO)
 - a. Structure of the scientific committee
 - b. Change of name to embrace all physics of rad. onc.
 - c. Next chairman to appoint
6. ESTRO 29 (DG and MH)
7. Physics Committee issues
 - a. Review Role Document and comments
 - b. Nominations for Board Membership
 - c. Honorary Physicist
 - d. Task Group subjects review and suggestions (or suggestions for alternative mechanism)
 - e. Academy of Medical Physics/Academy of Cancer Sciences
8. EIR (DRO)
9. Education and Training (HN)
 - a. Course status/new course
 - b. Core curriculum
 - c. New representative to appoint
10. Follow up from Geneva meeting (DRO)
11. Publications
12. Intersocieties
 - a. Liaison with EFOMP (DRO)

*2011 Venice
- Torino*

b. IAEA workshop collaboration (HN)

c. IAEA & WHO initiatives (DRO)

13. Interaction with IOMP next year

a. World Congress contribution

14. IHE-RO update (TK)

15. Any other business

Appendix A Summary Program

| Sunday, 30 August | Other Monday-Thursday | Joint RTT/Physics | More Physics Oriented | More Oriented Towards Clinical Implementation |
|--|--|---|---|--|
| Basic principles of MRI | Rotational IMRT | Arc Therapy techniques, cross referencing different IMRT approaches | EPID-based dosimetry | Fractionated radiotherapy reviewed |
| Geometrical accuracy | Treatment delivery and 4D aspects of IGRT | Risk management and QA | Arc therapy techniques, cross referencing different IMRT approaches | Adaptive Treatment strategies: Managing workflow and QA |
| Integration of MRI in Radiation Therapy through Deformable Modeling | Honorary Physicist and Gray Award | Adaptive treatment strategies: Managing workflow and QA | Dosimetry for imaging in IGRT (concomitant dose) | Adaptive treatment strategies: Robust treatment planning |
| Preclinical MRI in radiation therapy | Functional Imaging | Treatment planning, Monte Carlo, the only way to make a solid treatment plan? | Risk management and QA | Understand PET images: biology and physics, Integrating PET-CT in treatment planning |
| Diffusion-weighted MRI (DWI)-guided radiotherapy for head and neck cancer | Varian, Accuracy - Fowler Award - Young Scientist Award | Delivery techniques | Novel dosimetry methods | Autosementation and deformable registration algorithms |
| Hypoxia Imaging in Prostate Cancer | Stereotactic body radiotherapy | IGRT in radiotherapy | Dosimetry for Nuclear Medicine | Radiation induced secondary cancer reviewed |
| Clinical application of MRI in radiotherapy for cervical cancer | New technology: we need experts not users | Treatment Verification QA, Is what you've planned what you get? | New recommendations and formalisms for non-standard field reference dosimetry | Brachytherapy: Monte Carlo source modeling |
| Interventional MRI Guided Radiotherapeutics for Prostate | Can we keep our integrity in this commercially oriented medical world? | | Challenges for scanned particle beam therapy | Challenges in modern brachytherapy |
| Physical Aspects of MRI Guided Brachytherapy for Cervical Cancer | IGRT Adaptive | | Flattening free photon beams | Dynamic Imaging |
| Integration of 1.5T MRI and a 6MV accelerator for real-time MRI guided radiotherapy | Biology and outcome estimates | | Biological and genetic predictive assays: a review for the physicist | Management of geometrical uncertainties in radiotherapy: margins and correction strategies |
| Discussion on protocol design and practical application | Dose measurements and novel dosimetry | | 3D and time resolved (4D) dosimetry | New technologies in CT imaging |
| Determining normal tissue dose response models from clinical data: data limitations, dose uncertainties and subjective endpoints | IMRT | | | |
| Classical normal tissue volume effect models for dose optimization | Brachytherapy | | | |
| Evidence for fractionation and treatment time models for normal tissues | Delineation and margins | | | |
| Non-local dose-effect models for normal tissues | Technical aspects of IGRT | | | |
| Biological optimized RT in practice: the QUANTEC effort | Imaging for target delineation | | | |
| Imaging the dose response of normal tissues | Imaging for target delineation, tumour sites | | | |
| Imaging the dose response of tumours | Collaboration with EANM: the role of the technologists NM and RTT | | | |
| The IMRT/IMPT Optimization problem | Defining Protocols | | | |
| Theory of Non-Linear Optimization | Preparation of treatment planning | | | |
| Peculiarities of the RT optimization problem: multiple objectives, user/algorithm communication and feasibility | Treatment planning, tumour sites | | | |
| Biological treatment planning systems today: planning, delivery efficiency, reporting and QA | Immobilisation techniques | | | |
| State-of-the-art RT work-up, treatment and follow-up for head and neck cancer | Treatment planning and delivery | | | |
| Research and Methodology | IGRT, tumour sites | | | |
| Examples of how to get involved in research activities in RT for head and neck cancer | Treatment evaluation | | | |
| | Re-irradiation // Follow-up | | | |
| | Follow-up | | | |
| | Positron verification | | | |