Challenges and Accomplishments
for Globalization of Brachytherapy:
The (GEC-) ESTRO Perspective

Richard Pötter, Peter Hoskin, Christian Kirisits, Christine Verfaillie, Jacob Lindegaard

„BrachytherapyNext“

Building a Global Brachytherapy Community
Miami, Florida
May 30, 2014

Disclosures

Richard Pötter, MD, does not have any financial relationships or products or devices with any commercial interest related to the content of this activity of any amount during the past 12 months.

Richard Pötter, MD, is chairman of the ESTRO School since 2006 and Principal Investigator of EMBRACE.

The Medical University of Vienna receives financial and equipment support for training and research activities from Nucletron, an Elekta Company and Varian Medical.
Brachytherapy (BT) developments

- Complex disease assessment
- BT delivery technology
- BT application devices
- Volumetric Imaging for BT
- Advanced concepts for GTV, CTV, OAR
- Treatment Planning (3D/4D, with EBRT)
- Outcome assessment (clinical/imaging, QoL)
- Multidisciplinary (Radiation) Oncology
- Clinical evidence (evidence level approach)

BT essential (component of) oncological treatments (potential)

- Advanced cervix cancer
- Endometrium cancer
- Prostate cancer
- Breast cancer
- Head and Neck Cancer
- Anal Cancer
- Eye melanoma

Potential: Skin, Rectum, Bladder, Oesophagus, Bronchus, Bladder, Metastases, Re-irradiation...
Continuous Progress through Research and Development: Brachytherapy, Radiotherapy, (Radiation) Oncology

- Research & Development (R&D)
  Academic Centers, Study groups, Industry
- Dissemination of Science (DiSc)
- Education and Training (E&T)
  Knowledge Transfer

ESTRO DiSc/E&T Europe
Global Perspective

Training of Skills
Building of Competencies

Major players in R&D, DiSc, E&T

- Academic Centers (critical mass)
- Regional/national/international working groups
- Networks
- National and International Associations and Societies (..., (GEC-)ESTRO, ABS/ASTRO, CARO, ALATRO, AROI, CSRO, SEAROG, JASTRO, Korean, RANZCR...., IAEA)
- Journals (Green, Red, Blue, Contemp. BT, Indian...)
- Schools: ESTRO School, ABS Schools, ACR, ICRO,...
- Industry
- Industry associated Schools, e.g. BT Academy
Strong European Traditions in Brachytherapy
(Curie.....Radium.....Schools.....Systems.....Iridium.....Afterloading.....

• GEC (since late 60ies (Paris, France))
• ESTRO (since 1982), (green journal)
• GEC ESTRO (merge since 1990)

• GEC/ESTRO annual meetings, conferences, workshops
• GEC ESTRO based clinical research and clinical studies
• Education and Training: ESTRO Teaching Courses, GEC ESTRO Guidelines, BT booklets, GEC ESTRO Handbook of BT 2002
• ICRU Reports 38, 58....88 (upcoming)

• European and International Brachytherapy Conferences (Nucletron) + books + journal publications („Activity“)

30 YEARS ESTRO ETC 1984 – 2014

The European core curriculum on radiotherapy.


Leer JW1, Overgaard J, Heeren G.

1Department of Radiotherapy, University Hospital, Leuven, Belgium

1984 ESTRO ETC created

1997 >ESTRO ETC dedicated to teaching only
   >EBR created as a combined ETC for ESTRO & UEMS, responsible for
   the harmonisation of training programmes and structures in Europe

2006 ESTRO School created

2006 Core ETC created to develop long-term strategy and set priorities for
   the School to be implemented by task forces in which ETC members
   and even non ETC members will be invited to take on responsibility

2008 Mission Statement of the ESTRO School

2009 Appointment ESTRO liaison persons to FU on groups of courses

2010 EAGLE Task Force created

2011 FALCON Task Force created
ESTRO educational activities: milestones

ESTRO education started slowly and has been growing exponentially:

1985-1989: 5 courses in 5 years
1990-1999: 58 courses in 10 years (annual Mod. BT course)
2000-2004: 58 courses in 5 years (prostate and Gyn BT)
Total: 121 courses for ~ 11,000 participants

2006: Creation of the ESTRO School for Radiotherapy and Oncology
⇒ framework for ESTRO’s educational activities
⇒ increase profile & quality of education and training
⇒ 2005-2012: 115 courses for ~ 19,000 participants
ESTRO SCHOOL TODAY – LIVE COURSES 2013

• ESTRO CC for RO/RT endorsed by UEMS
• ESTRO School programme max 35 courses/y
  >>> ensure quality
• To cover CC, new courses to be included in the School programme >>> some courses will become biennial + School progr planned for 2y

ESTRO educational activities: milestones

Courses outside Europe
  ➔ In support of Eastern Europe since 1995
  ➔ In support of Internat. Society of Radiation Oncology since 2003
  ➔ In the frame of the ESTRO School since 2007 (~5 courses/year)

  Memorandum of Understandings with
  CSTRO, AROI, SEAROG, ALATRO

Established MoU with RANZCR
Upcoming MoU with JASTRO

International ETC since 2010 (annual meetings)

Up to today: 30,000 participants to ESTRO courses!

4 April 2014
### International courses 2002-2015

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4 April 2014
International courses 2008-2013

4 April 2014

MODERN BRACHYTHERAPY TECHNIQUES
04-06 March 2014 Gdansk, Poland

(GEC) ESTRO Modern BT teaching course since 1990 in Europe and beyond (2 editions)
annual 5 day basic Course for BT:
28 editions and 2865 particip.

ESTRO Guide 2014
(GEC) ESTRO BT Course since 2001 in Europe, 3 day prostate BT 13 editions with 951 participants.

(GEC) ESTRO Gyn IGABT Course since 2004 in Europe and beyond (3 editions) annual 5 day Gynaec Course focus on BT. 14 editions and 1649 particip.
Just finished: 70 participants to be repeated in regular intervals

GEC ESTRO working groups (since 2000)

Tasks: (Facilitation of) Research and Development, Networking, Science Dissemination, (Support of) Education and Training, Guidelines/Recommendations on specific topics, Varia

GEC-ESTRO Breast* - Chair: Vratislav Strnad
GEC-ESTRO Urology* - Chair: Peter Hoskin
GEC-ESTRO Gynaecology* - Chair: Kari Tanderup
GEC-ESTRO BRAPHYS* - Chair: Frank-André Siebert
GEC-ESTRO Head and Neck* - Chair: György Kovacs
GEC-ESTRO Anal - Chair: Arthur Sun Myint (new)

* Publication of Recommendations/Guidelines
clinical trials have been initiated through these groups/networks which were facilitated through ESTRO.

Accelerated Partial Breast Brachytherapy
Versus
Whole Breast Irradiation

in low risk breast cancer

Randomized trial: PI V. Strnad
**Gyn GEC ESTRO NETWORK R&D, Educ.**


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**Work Packages**

- **WP1**: 3D based contouring of CTV and OAR
- **WP2**: Applicator reconstruction
- **WP3**: Treatment planning
- **WP4**: Applicator development

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**Activities**

- EMBRACE Study (since 2008) supported by Nucletron/Varian/Bebig
- Workshops for contouring Dub, Wash, Milwaukee, Utrecht
- Workshop for image guided GYN BT Utrecht 2006
- Workshop for treatment planning Ljubljana 2007
- EMBRACE Kick Off Meeting Brussels 2008
- Workshop for applicator development Leuven 2009
- Workshop for outcome assessment in IGABT Paris 2010
- Workshop on uncertainties in IGABT Aarhus 2011
- Workshop on morbidity and disease outcome Athens 2012
- Workshop on EMBRACE and retroEMBRACE research 2011, 2012

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**Publications on:**

- 3D imaging
- Inter-observer variations
- Applicator reconstruction
- Treatment planning
- Uncertainties

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**Activities**

- Review of clinical brachytherapy uncertainties:
  - Analysis guidelines of GEC-ESTRO and the AAPM
  - Clinical and physics research

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**References**

- Perez-Calatayud, Jose; Tanderup, Kari; Venselaar, Jack L. M.; Siebert, Frank-André; Ballester, Facundo; Baltas, Dimos; Bihari, Reiner; Brabandere, Marisol; Blettner, Marcus; et al. *Radiother Oncol 2014*

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**Notes**

- **Clinical and physics research**
**DIAGNOSIS**

Inclusion criteria:
1. Biopsy proven cervical Ca
2. Treatment with curative intent
3. FIGO, TNM staged
4. MRI/CT pelvis and PAN at diagnosis
5. MR guided BT planned
6. Informed consent (copy to the study office)

**TREATMENT**

EBRT+/ Chemo → Status at BT form → MRI guided BT → Treatment and DVH form (EBRT +/- Chemo + BT1-n) → End of treatment QoL form

**POSTTREATMENT**

facilitation of clinical research through ESTRO supported working groups/networks unresrestricted industry grants

**GEC ESTRO Recommendations for Brachytherapy in Cervix Cancer and other Cancers plus booklets, textbook**

**GEC-ESTRO Recommendations**

Recommendations from gynaecological (GYN) GEC-ESTRO working group on imaging in cervical cancer brachytherapy. First version in December 2014. The recommendations are based on the ESTRO project: Recommendations from gynaecological (GYN) GEC-ESTRO working group on imaging in cervical cancer brachytherapy. First version in December 2014. The recommendations are based on the ESTRO project.

**References**

- Estro Physic Books: A Practical Guide to Quality Control of Brachytherapy Equipment
- The GEC-ESTRO HANDBOOK OF BRACHYTHERAPY
- Estro-ESTRO Recommendations: Recommendations from Gynaecological (GYN) GEC-ESTRO Working Group (IV): Basic principles and parameters for MRI imaging within the framework of image based adjuvant cervical cancer brachytherapy
GEC ESTRO Recommendations for Brachytherapy in Prostate Cancer, Head and Neck Cancer, Breast Cancer, Medical Physics


<table>
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<tr>
<th>Did you make any changes to the way that you treat GYN cancers as a direct result of the workshop? (Please tick all options that apply).</th>
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<tr>
<td><strong>Option</strong></td>
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<tr>
<td>Did not make any changes as a result of the workshop</td>
</tr>
<tr>
<td>I tried using a combination of interstitial and intracavitary applicators to treat cervical cancer</td>
</tr>
<tr>
<td>I learned using 3D volumetric (VMAT) treatment planning for the first fraction</td>
</tr>
<tr>
<td>I learned using 3D volumetric (VMAT) treatment planning for subsequent fractions</td>
</tr>
<tr>
<td>I learned treating patients that have more advanced cervical cancer with brachytherapy</td>
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<tr>
<td>I learned treating patients that have more advanced cervical cancer with other techniques</td>
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<tr>
<td>I’m more effective and achieve better results in treating cervical cancer</td>
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<tr>
<td>I’m more comfortable treating cervical cancer</td>
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<tr>
<td>Other</td>
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</table>

FALCON (Fellowship in Anatomic delineation and CONtouring) is an educational ESTRO project that was started in 2010. FALCON is aimed at improving the contouring skills of the radiation oncology community and at contributing to better treatment planning of cancer patients treated with radiotherapy.

An online educational contouring tool was acquired and integrated into the portfolio of educational ESTRO activities such as live courses, workshops at ESTRO meetings, online virtual workshops and for the database of contouring cases accessible for the ESTRO members.

In the coming years ESTRO will continue to:

- use the contouring tool in about half of the ESTRO live courses and in dedicated contouring workshops to train the delineation skills of the participants before, during and/or after the course or workshop.
- organise online contouring workshops for different tumour sites such as breast, head and neck, rectum, gynaec... These workshops can take maximum 20 participants and are conducted through webconferences over a time span of three weeks. The sessions are very interactive and offer the opportunity to compare delineations from participants and experts and discuss the interobserver variability and the available guidelines.
- expand its database of cases delineated by experts, accessible to the ESTRO membership and community; a limited number of cases is available for free at all time to ESTRO members, access to the full database can be purchased online.
- develop guidelines for delineation of the different tumour sites.

Programme:
- **FRIDAY APRIL 2014** 10:00-13:00
  - Joint ESTRO - ILROG on Lynphoma
  - Chair: L. Spiegel (DE)
- **FRIDAY APRIL 2014** 13:30-15:30
  - Organisers:
    - Chair: M. Guckenberg (DE)
- **TUESDAY APRIL 2014** 10:00-12:00
  - Organisers:
    - Chair: O. Mattinger (CH)
- **TUESDAY APRIL 2014** 16:00-18:00
  - Rectum
  - Chair: C. Marijnen (NL)
The School offers a wide range of educational activities. In the last years a lot of effort was put in developing e-learning and e-tools in order to extend and coordinate teaching resources worldwide.

DOVE LIBRARY

DOVE (Dynamic Oncology Virtual ESTRO) gives access to educational & scientific material, produced and peer-reviewed by ESTRO such as

- GJ articles,
- conference abstracts, webcasts, (e-)posters & slides
- access to FALCON delineation cases
- ESTRO guidelines & publications
- the ESTRO Newsletter

"...

All DOVE content is indexed using the MeSH terms; one’s search can be further refined with subject filters and by putting limitations to content type and year of publication.

The DOVE Task Force works on the development of short educational online learning modules (EGLO) on specific topics.

The possibilities of DOVE for networking between members with similar (research) interests will be further exploited.
ESTRO SCHOOL TODAY – ONLINE LEARNING 2013

11 ESTRO live courses used FALCON for contouring exercises in 2013 for a total number of 982 participants

8 FALCON WS were organised @ ESTRO FORUM II (2x OAR, 2x GYN, 2x CNS, 2x BREAST)

Eagle Learning Objects
Using the existing ESTRO content in DOVE as the core study material for EAGLE (ESTRO Global Learning), which will likely be a mix of different types of content.

www.estro.org

ESTRO MOBILITY GRANTS (TTG)

This is for you: you want to visit another institute to learn about or gain experience with a technique, equipment or its application that is not easily available in your own institute and which would be useful to you and your department in future studies or clinical treatments.

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ESTRO SCHOOL for Radiotherapy and Oncology 2014

- About 33,000 ESTRO live course participants (~3000/y)
- 220 teachers
- 45-50 course directors in 35 courses per year
- 20 ETC members with specific tasks
- 15 Task Force members (e.g. on-line education)
- 8 liaison persons (from Teaching Faculties for Live courses)
- 8 staff members (ESTRO office)
- 14 ESTRO Fellows

> School symposia at ESTRO meetings since 2008 – biennial
> Teachers’ retreat since 2011 – biennial (ESTRO Forum)

VISION FOR 2020 AND EDUCATION
FUTURE OF THE ESTRO SCHOOL/ETC

Vision 1.3: Access to continuing medical education and continuing professional and personal development ... 

Vision 1.5: ESTRO will take all reasonable measures to further develop as the preeminent educational and scientific society ... unique strategic responsibility for the future development ... within Europe and at a global level.

4 April 2014
VISION FOR 2020 AND EDUCATION
FUTURE OF THE ESTRO SCHOOL/ETC

ESTRO acknowledges that access to modern radiation oncology treatment is an essential component of high-quality cancer treatment and central to optimal patient care.

Further development of our discipline will therefore be critically important to the future strategic development of multidisciplinary cancer care.

In that perspective, access to continued medical education and continued professional and personal development will be crucial to empower professionals in radiation oncology to fully participate in all decisions regarding treatment.

In order to achieve this vision, ESTRO wishes
* to support the permanent development of basic and advanced educational courses through the established ESTRO School, also including brachytherapy
* to further extend this offer with online educational tools and its newly created web-based educational platform DOVE (Dynamic Oncology Virtual ESTRO including BT)
* to continue to invest in quality assurance and improvement of its educational offer.

GEC ESTRO committee