



*Department of Radiation Oncology
Comprehensive Cancer Center
Vienna General Hospital
Medical University of Vienna*



Challenges and Accomplishments

for Globalization of Brachytherapy:

The (GEC-) ESTRO Perspective

Richard Pötter , Peter Hoskin, Chrisitan 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.

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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 c **within the field of**
- Breast car **rapidly evolving**
- Head and **multidisciplinary oncology**
- Anal Canc
- 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) **ESTRO DiSc/E&T**
Academic Centers, Study gr
Industry **Europe**
- Dissemination of Science (DiSc) **Global Perspective**
- Education and Training (E&T)
Knowledge Transfer

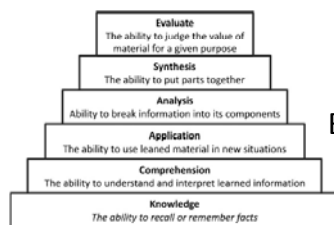


Fig. 3. Bloom's taxonomy, modified after Krathwohl [8].

Training of Skills

Building of Competencies

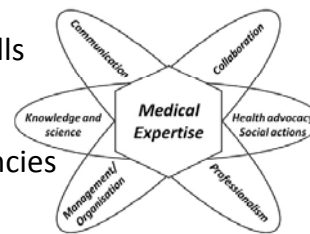


Fig. 1. The seven roles of a physician identified by the Canadian CanMEDS system. Figure modified from <http://rcpsc.medical.org/canmeds/index.php>.

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



1984
1988
1998
2004
2006



In this Corner





ESTRO CORE CURRICULA: 1991, 2004, 2012



Radiother Oncol. 1991 Nov;22(3):153-5

The European core curriculum on radiotherapy.
Leer JW, Overgaard J, Heeren G.

¹Department of Radiotherapy, University Hospital, Leuven, Belgium



Radiotherapy and Oncology 101 (2012) 1-4

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.elsevier.com/locate/rtog

Editorial

Competencies in radiation oncology: A new approach for education and training of professionals for Radiotherapy and Oncology in Europe

Richard Pitter^{1,2*}, Jesper Grau Eriksen³, Andy W. Beavis^{4,5,†}, Mary Coffey⁶, Christine Verfaillie⁶, Jan Willem Leer¹, Vincenzo Valentini⁷



Radiotherapy and Oncology 79 (2004) 105-107

Editorial

Shaping the future: training of professionals for radiotherapy in Europe

Michael Baumann^{1*}, Christine Verfaillie², Germaïne Heeren³, Jan Willem Leer⁴

¹Department of Radiation Oncology, University Hospital Carl Gustav Carus, University of Technology Dresden, Fetscherstr. 76, 80357 Dresden, Germany
²ESTRO Office, Av. Middelheim 61, 8020 Brussels, Belgium
³Department of Radiation Oncology, University Medical Centre Groningen, Nijmegen, The Netherlands



Radiotherapy and Oncology 108 (2012) 108-108

Contents lists available at ScienceDirect

Radiotherapy and Oncology

journal homepage: www.elsevier.com/locate/rtog

ESTRO Core Curricula

The updated ESTRO core curricula 2011 for clinicians, medical physicists and RTTs in radiotherapy/radiation oncology

Jesper G. Eriksen^{1*}, Andrew W. Beavis², Mary A. Coffey³, Jan Willem H. Leer⁴, Stefano M. Magrini⁵, Kim Benstead⁶, Tobias Boelling⁷, Marie Hjalm-Eriksson⁸, Guy Kintor⁹, Bogusław Maciejewski¹⁰, Mario Mercedi¹¹, Angelo Oliveira¹², Pierre Thirion¹³, Pavol Vitek¹⁴, Dag Rune Olsen¹⁵, Teresa Rutkado¹⁶, Wolfgang Enghardt¹⁷, Pascal Francois¹⁸, Cristina Garibaldi¹⁹, Ben Hojman²⁰, Mirjana Josipovic²¹, Tibor Major²², Stylianos Nikitopoulos²³, Alex Rindén²⁴, Michael Waligorski²⁵, Marta Wasielewska-Radwancka²⁶, Laura Mulaney²⁷, Annette Boonen²⁸, Aude Vaandering²⁹, Guy Vandevosse³⁰, Christine Verfaillie³¹, Richard Potter³²



ESTRO ETC ESTRO School for Radiotherapy and Oncology

- 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 ev also 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

03/01/13





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

4 April 2014

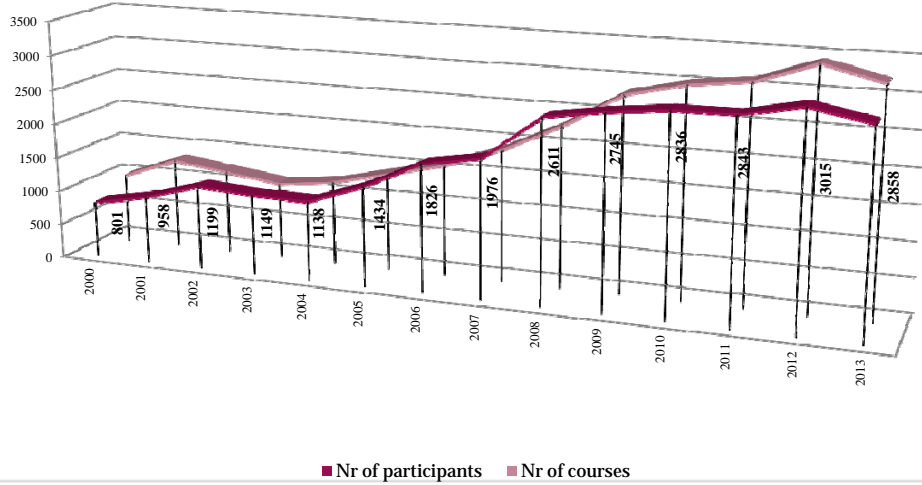


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Live courses & participants 2000-2013



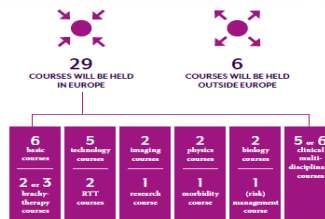
4 April 2014



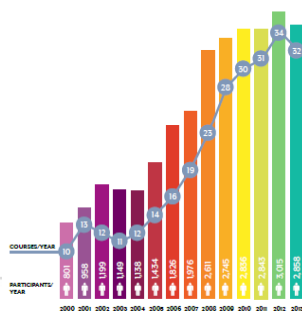


ESTRO SCHOOL TODAY – LIVE COURSES 2013

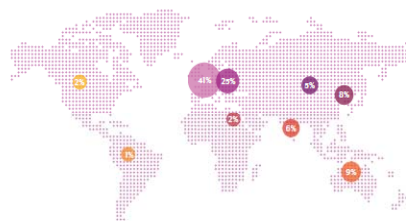
- ESTRO CC for RO/RT endorsed by UEMS
- ESTRO School programme max 35 courses/y
>>> ensure quality
- To cover CC, new courses to be included in the School programme >>>some courses will become biennial + School progr planned for 2y



GROWTH IN THE NUMBER OF COURSES OVER THE YEARS



GEOGRAPHIC BREAKDOWN OF COURSE PARTICIPANTS IN 2013



2,838 PARTICIPANTS IN TOTAL



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)

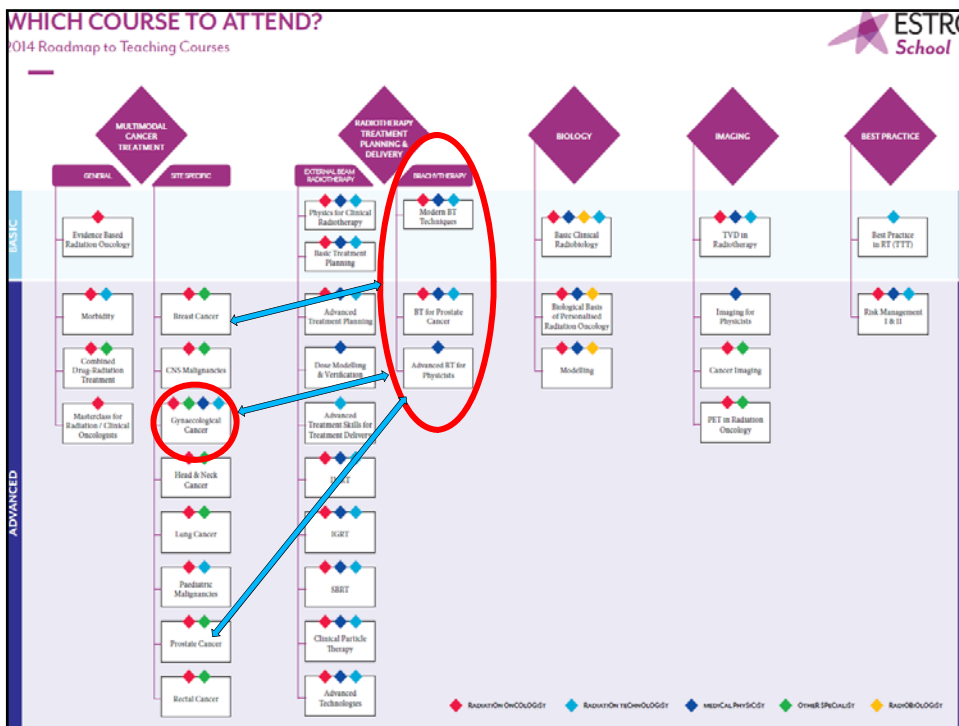
Up to today: 30.000 participants to ESTRO courses!

4 April 2014



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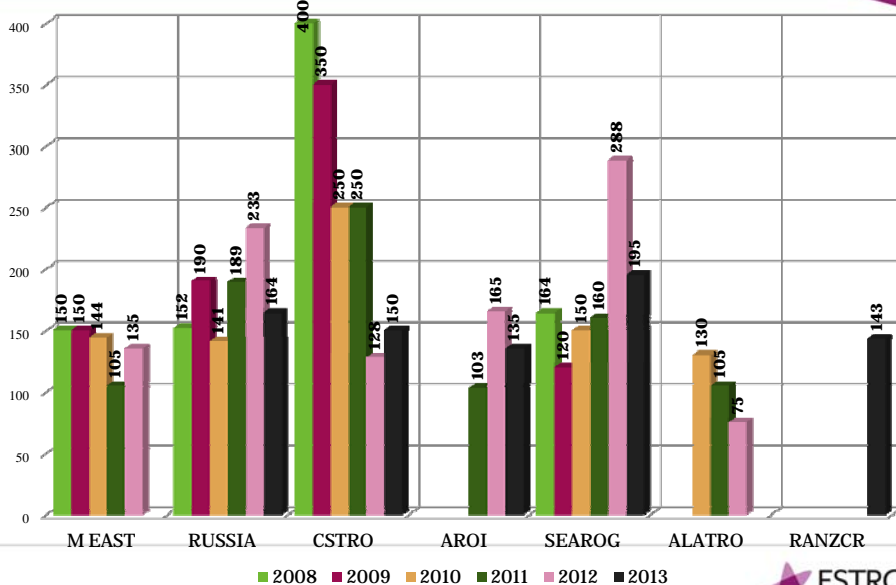
International courses 2002-2015

	RUSSIA	CSTRO	AROI	ALATRO	SEAROG	RANZCR	M EAST	JASTRO
2002	RB							
2003	PHYS							
2004	EBRO							
2005	BT		EBRO					
2006	PHYS							
2007	2 D-3 D	RB		PHYS				
2008	RB	TVD					EBRO	
2009	2 D-3 D	RB/RECT			GYNAE	EBRO	RB	BT
2010	PHYS	ADV TECHN		BT	RB		2 D-3 D	
2011	EBRO	PHYS	GYNAE	2 D-3 D	ADV TECHN	RB	TVD	
2012	2 D-3 D	GYNAE	ADV TECHN	EBRO	PHYS		BREAST	
2013	GYNAE	EBRO	H&N	PHYS	TVD	RB	ADV TECHN	
2014	RB	LUNG	BREAST		COMBINED		PAED	TVD
2015	TVD	H&N	EBRO		ADV TP	RB	GYNAE	MOL ONC

4 April 2014



International courses 2008-2013



4 April 2014



MODERN BRACHYTHERAPY TECHNIQUES

09-12 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.



FACULTY

Course director
Erik Van Limbergen, Radiation Oncologist, Ghent University Hospital (Belgium)

Teachers
Dimos Baltas, Medical Physicist, Klinikum Offenbach (DE)
Peter Hoskin, Radiation Oncologist, Mount Vernon Hospital, London (UK)
Renaud Mazeron, Radiation Oncologist, Institut Gustave Roussy, Villejuif (FR)
Didier Peiffer, Radiation Oncologist, Centre A. Vautrin, Nancy (FR)
Boudry Theeuwes, Radiation Oncologist, Academisch Medisch Centrum, Amsterdam (NL)

Local organizers
Anna Kowalczyk, Radiation Oncologist, Medical University of Gdansk

COURSE AIM

- To cover the basic and general principles of brachytherapy: historical notes on evolution of brachytherapy sources, afterloading systems, imaging for brachytherapy, dosimetry, radiobiology and patient dose rates (LDR, HDR, PDR and permanent implants), radioprotection, organisation of a brachytherapy department.
- To discuss different technical & dosimetrical aspects of interstitial, endoluminal and endocavitary brachytherapy.
- To discuss the main clinical subjects: gynaecological (cervix, endometrium), head and neck (oral cavity, oropharynx), urology (i.o. prostate seed implants), skin, soft tissue sarcomas, paediatric malignancies.

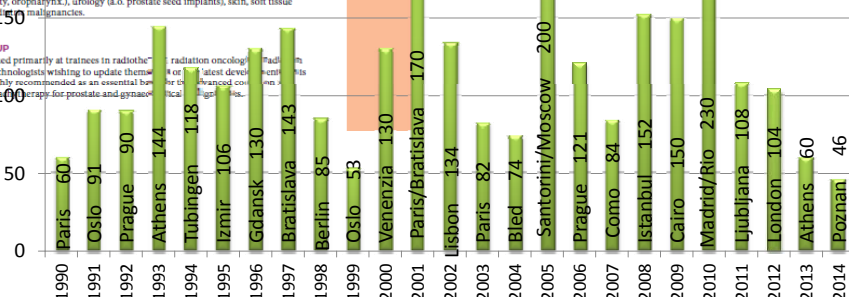
TARGET GROUP

The course is aimed primarily at trainees in radiotherapy and radiation oncology. The course is also highly recommended as an essential for clinical physicists and dosimetrists.

EDUCATIONAL PROGRAMME

- Sources used in brachytherapy
- Physics and dose calculation
- Clinical radiobiology in brachytherapy: general principles and practical examples
- Radioprotection and afterloaders
- Optimisation of stepping source brachytherapy
- Interstitial brachytherapy
- Place of intracavitary brachytherapy in cervix, endometrium and vaginal cancer
- Place of endoluminal brachytherapy in oesophageal and bronchus carcinoma
- Recommendations for recording and reporting in interstitial, intracavitary and endoluminal brachytherapy
- Eye plaque brachytherapy
- Permanent seed and HDR prostate implants
- Radiobiology of permanent implants
- Practical examples of interstitial, intracavitary, endoluminal brachytherapy for clinicians
- Practical exercises
- Interactive sessions for physicists

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Brachytherapy



BRACHYTHERAPY FOR PROSTATE CANCER

19-21 June 2014 | Dublin, Republic of Ireland

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

Course director: Peter Hoskin, Radiation Oncologist, Mount Vernon Hospital, London (UK)

Teachers: Bashir Al Qaisieh, Clinical Physicist, Cookridge Hospital, Leeds (UK); Jean-Marc Cosset, Radiation Oncologist, Institut Curie, Paris (FR); Stefan Machiels, Urologist, Martens Kankerziekenhuis, Berghich Gasthuis, (DE); Frank André Siebert, Uroloog, Universitair Ziekenhuis, (NL)

Contouring Administrator: Carl Salembier, Radiation Oncologist, Europe Hospitals, Brussels (BE)

Local Organiser: Michelle Leech, RTT, Trinity College, Dublin

EDUCATIONAL PROGRAMME
This two and half day ESTRO course covers an overview on epidemiology and treatment options for localised prostate cancer and gives an adequate introduction to brachytherapy. Patient selection for both HDR and seed implants will be discussed with treatment indications and contra-indications. To start this service equipment and staffing for brachytherapy could be important, therefore this is also included in the programme. Special steps of working, such as volume study, types of treatment planning, different implant techniques, as well as post implant planning are presented with possibilities of interactive discussions between participants and the teaching staff. Interactive application videos promote understanding theoretical learning. Comparisons of differences in the indication of permanent (seed) vs. temporary (HDR) brachytherapy implants, as well as management of PSA failure are discussed.

ESTRO Guide 2014

COURSE AIM

- To provide an overview of the epidemiology and treatment options for localised prostate cancer
- To explain patient selection/indications and contra-indications for brachytherapy
- To provide an overview of the techniques, equipment and staffing for prostate brachytherapy
- To give an overview of the results, side effects/complications & their management, management of PSA failure after brachytherapy

TARGET GROUP
The course is aimed at all those who may be members of the prostate brachytherapy team and for those wishing to set up prostate brachytherapy. I.e. urologists, radiation oncologists, radiologists who are sometimes responsible for the ultrasound, physicists, and nuclear specialists.

Year	Participants
2001	52
2002	50
2003	65
2004	80
2005	58
2006	115
2007	79
2008	102
2009	58
2010	66
2011	56
2012	110
2013	60
2014	-

IMAGE-GUIDED RADIOTHERAPY AND CHEMOTHERAPY IN GYNAECOLOGICAL CANCER - FOCUS ON ADAPTIVE BRACHYTHERAPY

28 September - 02 October 2014 | Florence, Italy

(GEC) ESTRO Gyn IGABT Course since 2004 in Europe and beyond (3 editions) annual 5 day Gynae Course focus on BT 14 editions with 1649 participants.

Course directors: Christine Hatz-Moder, Radiation Oncologist, University of Cologne, Cologne (FR); Richard Potter, Radiation Oncologist, University of Manchester, Manchester (UK)

Teachers: Daniel Berger, Physicist, Medical Physics Department, University Hospital, Vienna (AT); Johannes Dimopoulos, Radiation Oncologist, Metropolitan Hospital, Athens (GR); Ina Jürgenliemk-Schulz, Radiation Oncologist, University Medical Centre, Utrecht (NL); Umesh Mahantshetty, Radiation Oncologist, Tata Memorial Hospital, Mumbai (IN); Taran Paulsen-Hjeltnes, Physicist, DNK Norwegian Radium Hospital, Oslo (NO); Primos Petric, Radiation Oncologist, National Center for Cancer Care & Research, Doha (Qatar); Peter Petrow, Radiologist, Institut Curie, Paris (FR); Karl Tanderup, Physicist, University Hospital, Aarhus (DK)

Local Organiser: Lorenzo Livi, Radiation Oncologist, University of Florence

EDUCATIONAL PROGRAMME

- Normal and pathological anatomy of female pelvis
- Image based adaptive brachytherapy
- CTV, CTV₁, PTV of brachytherapy
- Combination of brachytherapy and external irradiation
- Different applications of brachytherapy
- Image requirements for brachytherapy
- Treatment planning for brachytherapy
- Brachytherapy on standard patterns using point A and B
- Brachytherapy including external irradiation and IMRT
- Dose-volume constraints for CTVs and organs at risk
- Dose, dose-rate and fractionation and overall treatment time
- Radobiological effects from combined external irradiation and brachytherapy, linear quadratic model
- Planning aims, prescribing, recording and reporting including the recommendations from the new ICR-ESTRO report
- Normal tissue tolerance and brachytherapy
- EM and Retrospective outcome study in brachytherapy
- Time in gynaecological brachytherapy
- Planning with brachytherapy
- Participating in the course

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COURSE AIM

- To provide a comprehensive overview on the whole field of gynaecological radiation therapy focusing on brachytherapy and external irradiation in cervix cancer, endometrial cancer, vaginal and vulvar cancer including combination with chemotherapy
- To provide an overview on evidence based medicine in cervical and endometrial cancer
- To learn about advanced image-based techniques including IMRT and optimization process in brachytherapy using stepping source technology
- To introduce image-based and adaptive concepts of GTV, CTV₁ and PTV in gynaecological radiation oncology including both external irradiation and brachytherapy (with adaptation during 4D treatment)
- To enable practical implementation of advanced concepts and techniques in gynaecological external irradiation and brachytherapy, including parametrial boost and nodal techniques
- To give the results of image-guided adaptive brachytherapy in cervix cancer

TARGET GROUP
The course is aimed at radiation and gynaecological oncologists and radiation technologists involved in gynaecological cancer treatment.

Year	Participants
2004	104
2005	100
2006	137
2007	96
2008	153
2009	284
2010	97
2011	197
2012	213
2013	268
2014	-



ADVANCED BRACHYTHERAPY PHYSICS

18-21 May 2014 | Brussels, Belgium

NEW!

**Just finished:
70 participants
to be repeated
in regular intervals**

FACULTY

Course directors

Jack LM Venselaar, *Physicist, Verbeeten Instituut, Tilburg (NL)*
Dimos Baltas, *Physicist, Sana Klinikum Offenbach GmbH (DE)*

Teachers

Luc Beaulieu, *Physicist, Centre Hospitalier University de Quebec (CA)*
Christian Kirtsits, *Physicist, Medical University Vienna (AT)*
Panagiotis Papagiannis, *Physicist, University of Athens (GR)*
Mark Rivard, *Physicist, Tufts University School of Medicine, Boston (US)*

Guest lecturers

Mark De Ridder, *Radiation Oncologist, Universitair Ziekenhuis Brussel (BE)*
Philip Poortmans, *Radiation Oncologist, Instituut Verbeeten, Tilburg (NL)*

COURSE AIM

- To provide physics knowledge relevant to modern brachytherapy, including radiobiology, physics backgrounds of experimental dosimetry, calibration of radioactive sources, treatment planning, use of MC techniques in brachytherapy planning, fundamentals and limitations of algorithms, and developments therein.
- To provide an overview of sources and delivery systems, and the essential quality assurance aspects: in vivo dosimetry, and developments therein.
- To provide an introduction to modern prescription and delivery concepts in brachytherapy, including imaging, optimisation strategies and treatment plan evaluation, and the required quality assurance and concepts of risk assessment.

TARGET GROUP

The course is primarily aimed at medical physicists who are interested in extending their knowledge in the field of brachytherapy physics. A basic knowledge of the sub-specialty is required, preferably based on at least 1 year of experience in clinical practice. Participation in a previous course (such as the *Modern Brachytherapy Techniques* teaching course) is recommended. Also, any senior who would like to refresh part of his/her knowledge would benefit from this course.



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EDUCATIONAL PROGRAMME

This is a 3.5 day course organised to create a high level of understanding of the physics backgrounds of brachytherapy delivery and its technical aspects. The following items will be covered

Advanced dose calculations:

- TG43: essentials and limitations
- 3D models based dose calculations
- 3D Monte Carlo techniques
- Open issues and consequences of introducing 3D dose calculations
- Commissioning of MBDCA in clinical practice

Dose optimisation and evaluation:

- Optimization and inverse planning
- Dose plan evaluation
- Practical session on treatment planning

Imaging in brachytherapy:

- Overview of imaging modalities for brachytherapy
- Reconstruction using 3D imaging
- Tissue segmentation and characterisation in 3D
- Demands on QA of imaging

Measurements in brachytherapy:

- Source strength determination
- Experimental dosimetry in brachytherapy
- In-vivo dosimetry

Radiobiology and modelling, prescription and reporting:

- Overview of radiobiology in brachytherapy
- Models and modelling
- Prescribing and reporting

Accuracy and quality management:

- Risks and safety in brachytherapy
- Uncertainties in brachytherapy
- Quality management
- Failure mode and effect analysis

This course will be organised in co-operation with manufacturers of equipment for treatment planning and delivery. Interaction with the industry is encouraged.

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 BRAPHYQS*](#) - Chair: Frank-André Siebert

[GEC-ESTRO Head and Neck*](#) - Chair: György Kovacs

GEC-ESTRO Anal - Chair: Arthur Sun Myint (new)

* Publication of Recommendations/Guidelines



BRAPHYQS work packages

BRAPHYQS

ESTRO
EUROPEAN SOCIETY FOR
RADIOTHERAPY & ONCOLOGY

- WP1+2 *Dose delivery audit, Geometric reconstruction audit (co)*
- WP3 *QA recommendations (completed)*
- WP4 *TG43 website*
- WP5 *Calibration for LDR and HDR*
- WP6 *Prostate survey of practices (completed)*
- WP7 *Phantom studies for physics part (completed)*
- WP8 *Evaluation of clinical part (completed)*
- WP9 *New recommendations*
- WP10 *DVH calculation evaluation (completed)*
- WP11 *Physics data on radiation protection*
- WP12 *QA for prostate implant dosimetry in LDR and HDR*
- WP13 *Uncertainties in Brachytherapy (completed)*
- WP14 *In-Vivo dosimetry*
- WP15 *Interobserver variability study (completed)*
- WP16 *Integral doses in BT*
- WP17 *DICOM standard in Brachytherapy*



BRAPHYQS/UroGEC Meeting
Clinica La Luz, Madrid, Juli 2013

AAPM BTSC/ABS liaison: FA Siebert

**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.

since 5/2005, coordinator Medical Uni.Vienna and Aarhus Uni.Hosp.



AARHUS ATHENS LEEDS LEUVEN LJUBLJANA MILWAUKEE MOUNT VERNON MUMBAI OSLO PARIS IGR UTRECHT VIENNA



WORK PACKAGES

EMBRACE Study (since 2008) supported by Nucletron/Varian/Bebig

ACTIVITIES

- WORKSHOPS FOR CONTOURING Dub, Wash, Milwauk, Utrecht
- WORKSHOP FOR IMAGE GUIDED GYN BT UTRECHT 2006
- WORKSHOP FOR TREATMENT PLANNING Ljubljana 2007
- EMBRACE KICK OFF MEETING Brussels 2008
- WORKSHOP FOR APPLIATOR 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

PUBLICATIONS ON:

- 3D IMAGING
- INTER-OBSERVER VARIATIONS
- APPLICATOR RECONSTRUCTION
- TREATMENT PLANNING
- UNCERTAINTIES

Editorial/Radiotherapy and Oncology 107 (2013) 1-5

Contents lists available at SciVerse ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com

Editorial

Uncertainties in image guided adaptive cervix cancer brachytherapy: Impact on planning and prescription

Kari Tanderup^a, Nicole Nesvacil^b, Richard Pötter^b, Christian Kirisits^{b,*}

Radiotherapy and Oncology, 2013, Volume 107, Issue 1, April, pp. 1-122

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K. Tanderup, N. Nesvacil, R. Pötter, C. Kirisits (Denmark, Austria) 1

Inter-observer variation in MRI guided adaptive brachytherapy of cervix cancer: A multi-national study
S. Lang, M. Neuwald, C. Kirisits, P. Gani, J.C.A. Oosterwijk, M. Pötter, T.F. Lindgaard (Spain, Slovenia, Belgium, Austria, Greece, Norway) 6

Dosimetric impact of interobserver variability in MRI based delineation for cervical cancer brachytherapy
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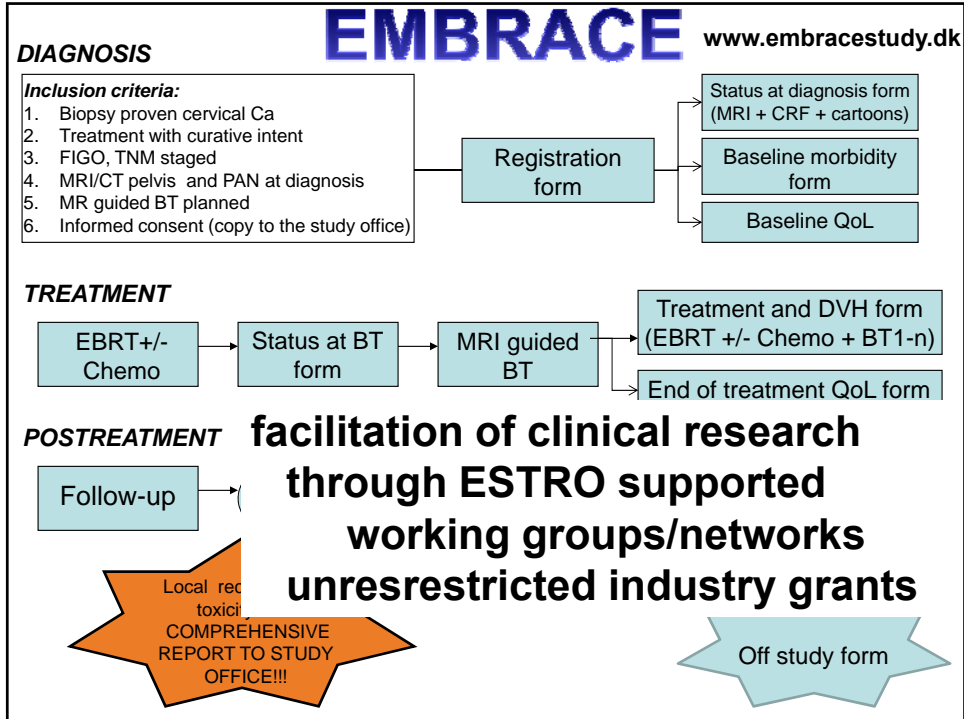
Review of clinical brachytherapy uncertainties

Analysis guidelines of GEC-ESTRO and the AAPM

Christian Kirisits, Mark J. Rivard, Dimos Baltas, Facundo Ballester, Marisol De Brabandere, Rob van der Laarse, Yury Niatsetski, Panagiotis Papagiannis, Taran Paulsen Hellebus, Jose Perez-Calatayud, Kari Tanderup, Jack L. M. Venselaar, Frank-André Siebert

Radiother Oncol 2014

Clinical and physics research



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

Radiotherapy and Oncology 74 (2009) 239–240

Recommendations from Gynaecological (GYN) GEC-ESTRO Working Group[®] (I): concepts and terms in 3D image based 3D treatment planning in cervix cancer brachytherapy with emphasis on MRI assessment of GTV and CTV

Christine Haie-Meder^{a,*}, Richard Pötter^b, Erik Van Limbergen^c, Edith Bitoi^d, Marisol De Brabandere^e, Johannes Dimopoulos^f, Isabelle Dumas^g, Taran Paulsen Hellebust^h, Christian Kiritsisⁱ, Stefan Lang^j, Sabine Muschitz^k, Juliana Nevinson^l, An Nulens^m, Peter Petrowⁿ, Natacha Wachter-Gerssen^o

Radiotherapy and Oncology 96 (2010) 933–950

ESTRO project

Recommendations from gynaecological (GYN) GEC ESTRO working group (II): Concepts and terms in 3D image-based treatment planning in cervix cancer brachytherapy—3D dose volume parameters and aspects of 3D image-based anatomy, radiation physics, radiobiology

Richard Pötter^{a,*}, Christine Haie-Meder^b, Erik Van Limbergen^c, Isabelle Barillot^d, Marisol De Brabandere^e, Johannes Dimopoulos^f, Isabelle Dumas^g, Beth Erickson^h, Stefan Langⁱ, An Nulens^j, Peter Petrow^k, Jason Rownd^l, Christian Kiritsis^m

Radiotherapy and Oncology 110 (2012) 113–122

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GEC-ESTRO Recommendations

Recommendations from Gynaecological (GYN) GEC-ESTRO Working Group (III): Considerations and pitfalls in commissioning and applicator reconstruction in 3D image-based treatment planning of cervix cancer brachytherapy

Taran Paulsen Hellebust^a, Christian Kiritsis^b, Daniel Berger^c, José Pérez-Calatayud^d, Marisol De Brabandere^e, Astrid De Leeuw^f, Isabelle Dumas^g, Robert Hudej^h, Gerry Loweⁱ, Kari Tanderup^j

* ESTRO (PHYSICS) BOOKLETS
(with the support of Europe Against Cancer and Atomic Energy Agency)

Recommendations from Gynaecological (GYN) GEC-ESTRO Working Group (IV): Basic principles and parameters for MR imaging within the frame of image based adaptive cervix cancer brachytherapy

Johannes C.A. Dimopoulos^a, Peter Petrow^b, Kari Tanderup^c, Primoz Petric^d, Daniel Berger^e, Christian Kiritsis^f, Erik M. Pedersen^g, Erik van Limbergen^h, Christine Haie-Mederⁱ, Richard Pötter^{j,*}

* **THE GEC ESTRO HANDBOOK OF BRACHYTHERAPY**
by A. Gerbaulet, R. Pötter, J.-J. Mazon, H. Meertens, E. Van Limbergen
Supported by Nucletron, Oncura and Varian

* **Booklet No. 8**
A Practical Guide to Quality Control of Brachytherapy Equipment
by J. Venselaar, J. Pérez-Calatayud



GEC ESTRO Recommendations for Brachytherapy in Prostate Cancer, Head and Neck Cancer, Breast Cancer, Medical Physics

Ash D et al.; **ESTRO/EAU/EORTC recommendations on permanent seed implantation for localized prostate cancer.** *Radioth Oncol* 2000 Dec;57(3):315-21

Kovács, G., et al. **GEC/ESTRO-EAU recommendations on temporary brachytherapy using stepping sources for local prostate cancer.** *Radiother Oncol.* 2005, 74; 137-148.

Hoskin, P.J., et al. **GEC/ESTRO recommendations on high dose rate afterloading brachytherapy for localised prostate ca.: an update.** *Radiother Oncol.* 3, 2013, 325-32.

Mazeron JJ et al. **GEC-ESTRO recommendations for brachytherapy for head and neck squamous cell carcinomas.** *Radiother Oncol.* 2009 May;91(2):150-6.

Polgár C et al. **GEC-ESTRO cancer working group. Patient selection for APBI after breast conserving surgery. Recommendations of the GEC ESTRO breast cancer working group based on clinical evidence.** *Radioth.Oncol.* 2010 Mar;94(3):264-73.


Kirisits C. et al. **Review of clinical brachytherapy uncertainties: Analysis guidelines of GEC-ESTRO and the AAPM** *Radiother Oncol* 2014

Monday, January 9 Program			
Time	Activity	Presenter/ Moderator	Location
08:30 - 09:00	Registration		Hotel Strudshof
09:00-09:15	Welcome	Richard Pötter	Conference Room

Programme Clinical Workshop

ADAPTIVE IMAGE-GUIDED BRACHYTHERAPY FOR GYNAECOLOGY USING THE COMBINED INTRACAVITARY-INTERSTITIAL TECHNIQUE

Department of Radiotherapy, Vienna Medical University – Nucletron
7 – 8 July 2008, Vienna General Hospital – Vienna Austria



09:00 - 09:15	Coffee break		
APPLICATION RECONSTRUCTION			
18:33 - 18:30	Challenges and Uncertainties	Christian Kirits	Conference Room
18:30 - 17:00	Solutions	David Berger	Conference Room
17:00 - 17:30	Demonstrations	Nicole Neuwald	Conference Room
Sessions for contributing in settings with limited access to MRI			
18:00 - 18:30	General Discussion	All	Conference Room
18:30 - 18:35	Break		Hotel Strudshof
19:30 - 22:30	Evening dinner with group		TBD

14 Vienna workshops from 2008-2013
~200 international participants
from ~100 centres


Tuesday, January 10 Program			
Time	Activity	Presenter/ Moderator	Location
08:30-09:30	Application techniques according to tumor spread	Richard Pötter	Conference Room
09:30-09:45	Coffee break	Bruno Barot	Conference Room



3 international workshops 2012/2013/2014

Mumbai
Bangkok
Gunma (Japan)

Educational workshop:
3-D Image-Guided Adaptive Brachytherapy for Gynaecology using the combined Intracavitary-Interstitial Technique

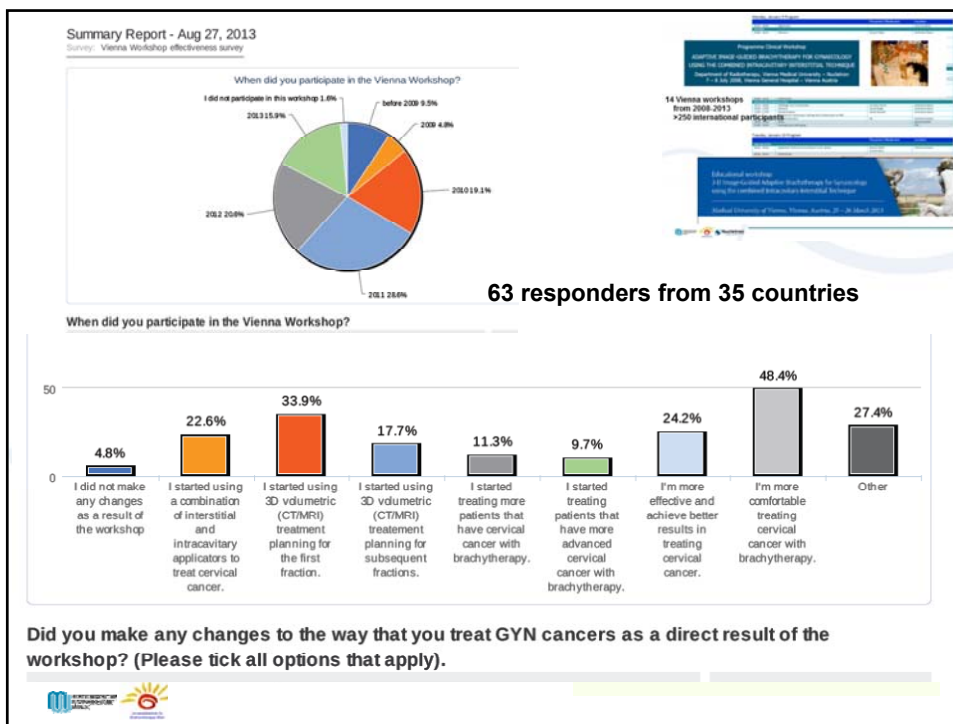
Medical University of Vienna, Vienna, Austria, 25 – 26 March 2013



BrachyNext

Working Together to Shape the Future of
Brachytherapy



FALCON

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.

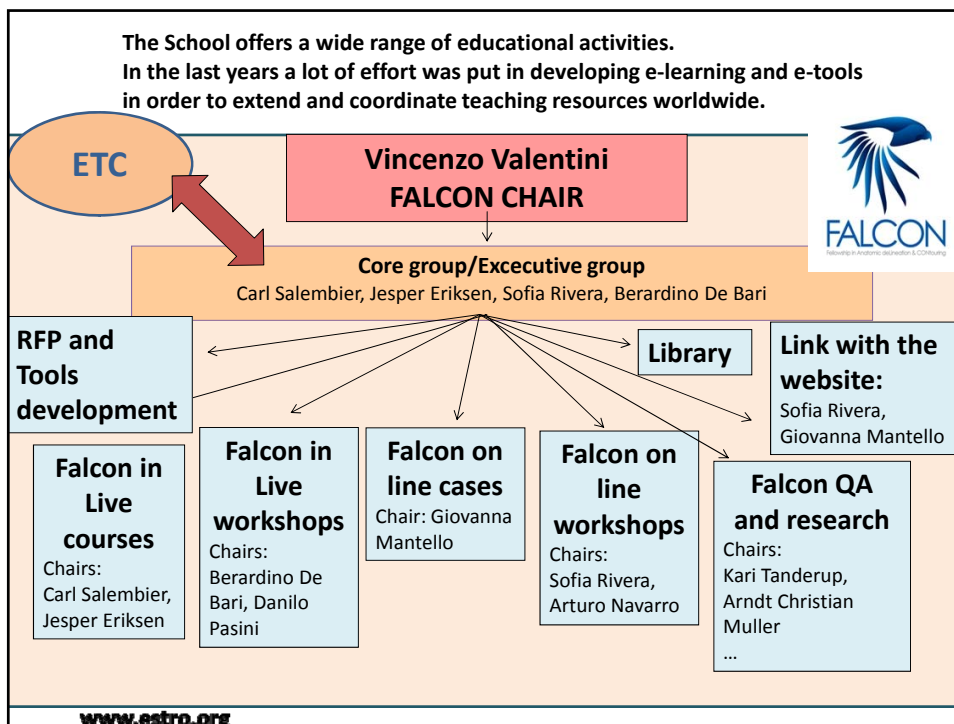

In the coming years ESTRO will continue to:

- 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, gynae.... 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. (dates of these online workshops are published on the website in the calendar of the School - www.estro.org/school/courses/FirstLevel/Live+courses).
- 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 4 APRIL 2014 | 08:00-10:00 / SATURDAY 5 APRIL 2014 | 08:00-10:00
Joint ESTRO - ILROG on Lymph
Chair: L. Specht (DK)
- FRIDAY 4 APRIL 2014 | 10:30-12:30 / SUNDAY 6 APRIL 2014 | 08:00-10:00
Organs at risk
Chair: M. Guckenberger (DE)
- FRIDAY 4 APRIL 2014 | 13:30-15:30 / MONDAY 7 APRIL 2014 | 08:00-10:00
Oesophagus
Chair: O. Matzinger (CH)
- FRIDAY 4 APRIL 2014 | 16:00-18:00 / TUESDAY 8 APRIL 2014 | 08:30-10:30
Rectum
Chair: C. Marijnen (NL)

www.estro.org

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

www.estro.org



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)



Learning Object

EGLO



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.

Year	RO	Phy	RTT	RB	Total
2008(1X)	14	9	5	3	31
2009(2X)	1	22	8	0	43
2010(2X)	22	21	6	0	49
2011(2X)	17	11	3	2	33
2012(2X)	21	15	8	0	44
2013(2X)	33	22	6	0	61
TOTAL	118	100	36	5	259
%	45,5	38,5	14	2	100

Year	# Proposals	# Funded	% Funded
2008	27	19	70
2009	42	22	52
2010	46	25	54
2011	28	21	75
2012	40	33	82
2013	40	29	73
TOTAL	223	149	66





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)

03/01/13



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

Radiotherapy and Oncology 103 (2012) 99-102



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ESTRO Vision 2012

ESTRO 2012 Strategy Meeting: Vision for Radiation Oncology

Vincenzo Valentini^{*1,4,5}, Jean Bourhis^{2,4,5}, Donal Hollywood^{3,4,5}

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 preminent 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

