Transition from Conventional 2D to 3D Radiotherapy with a special emphasis on Brachytherapy in Cervical Cancers
1st ESTRO-AROI GYN Teaching Course
8-11 March 2017
Bengaluru, India

TARGET GROUP
The course is aimed at teams consisting of radiation oncologists and medical physicists from institutions with concrete plans to transition from conventional 2D to 3D radiotherapy for cervix cancer, with a special interest in Image Based Brachytherapy. The institutions should have the necessary infrastructure for 3D brachytherapy available (afterloader, access to 3D imaging, CT/MR compatible applicators and a relevant treatment planning system) to facilitate the initiation of implementation of 3D techniques after the course. The course is the first out of a series of 3 courses (2017, 2018, 2019). In the 2018 and 2019 editions the course contents will be of increasing complexity in terms of the level of 3D image guidance. By participation in succeeding courses the participants have possibility to further develop and refine their 3D approach over time and get feedback on their progress with implementation. Participants should therefore be prepared to invest time in implementation of 3D techniques in between courses and to take part in homework efforts. A finite number of teams from various set-ups and geographical locations in India will be invited by AROI. Participants from neighbouring countries and other Asia Pacific (APAC) Region (max 5-10) may also participate.

COURSE AIM
• To learn about principles of 2D and 3D image-based EBRT and Brachytherapy including techniques and treatment planning.
• To provide understanding of commissioning, quality assurance, principles of planning, plan evaluation and reporting of 2D and 3D brachytherapy in cervical cancer.
• To introduce 2D and 3D image-based target concepts of GTV, CTV and PTV including both EBRT and Brachytherapy in cervical cancer.
• To enable practical implementation of 3D techniques in EBRT and Brachytherapy in cervical cancer.
• To provide an overview on the radiation therapy (external radiation and brachytherapy) in cervical cancer.

LEARNING OUTCOMES
• Understand the rationale of transition from 2D to 3D and apply concepts of advanced brachytherapy techniques in clinical practice
• Perform and practice target based brachytherapy applications on cadavers
• Perform contouring and treatment planning for 3D image guided EBRT and brachytherapy in clinical practice
• Implement procedures for 3D image guided brachytherapy in cervical cancer in own department
• Implement advanced EBRT techniques in cervical cancer in own department.

COURSE CONTENT
Normal and pathologic anatomy of female pelvis
• Image based anatomy including US, CT, MRI and conventional radiography
• CTV/ITV/PTV for external irradiation
• Combination of external irradiation and brachytherapy
• Different application techniques in brachy-
therapy including cadaveric workshop
• Introduction of ICRU 89 concepts: GTV, CTV, PTV at diagnosis and at time of brachytherapy for 2D and 3D Brachytherapy
• Dose, dose-rate and fractionation and overall treatment time
• Radiobiological effects from combined external irradiation and brachytherapy, linear quadratic model
• Prescribing, recording and reporting including ICRUGEC-ESTRO 89 recommendations (level I (first course))
• Therapeutic outcome: radio-chemotherapy, image based EBRT and brachytherapy
• Introduction to EMBRACE studies
• Commissioning & Quality Assurance of various processes involved in 2D and 3D treatment planning.

PREREQUISITES
Before commencing this course participants should have:
• Basic knowledge of principles and experience with multi-modality management of cervical cancer
• Basic knowledge of and experience with radiological patho-anatomy relevant to cervical cancer
• Experience with existing external beam and brachytherapy workflows and processes in cervical cancer.

• Basic infrastructure in your department which facilitates post-course implementation of 3D image guided brachytherapy (afterloader, access to volumetric imaging, MRI/CT compatible applicators, and treatment planning system).

TEACHING METHODS
• Lectures / tutorials: 16 hours
• Practical workshop: 8 hours
• Applicators commissioning and reconstruction: 6 hours - Physicists
• Cadaveric workshop: 6 hours - Physicians

Description: The tutorials include discussions of basics, evidence based treatments, contouring guidelines, various processes involved in advanced EBRT and brachytherapy techniques and quality assurance. The practical hands on demonstration covers a direct learning process involved in approach, brachytherapy techniques, contouring exercises, evaluation and discussions on transition from 2D to 3D radiotherapy.

METHODS OF ASSESSMENT
Contouring (FALCON tool) and dose planning exercises (pre- and post-course homework)
• Interactive feedback through audience voting on specific questions during lectures
• MCQ (interactive session at the end of the course)
• ESTRO teaching course evaluation form.

KEY WORDS
Evidence based multi-modality management guidelines, 2D to 3D transition, Image Guided Adaptive Brachytherapy (IGABT) in cervical cancers, contouring guidelines for advanced EBRT including IMRT/IGRT and image based brachytherapy in cervical cancer.