



**ESTRO**

# **6<sup>TH</sup> AROI ESTRO GYN TEACHING COURSE 16-19<sup>th</sup> MARCH 2023**

**3D Radiotherapy with a Special  
Emphasis on Implementation of  
MRI / CT Based Brachytherapy in  
Cervical Cancer**

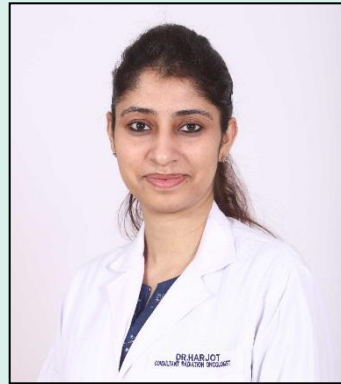
**Organised by  
Department of Radiation Oncology  
Basavatarakam Indo American Cancer Hospital & Research  
Institute, Hyderabad**



# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE



**Dr. A K Raju**  
Organizing Chairman



**Dr Harjot Kaur Bajwa**  
Organizing Secretary



**Dr. Rajesh Vashistha**  
Chair AROI



**Dr. Manoj Gupta**  
President AROI



**Dr. V Srinivasan**  
Secretary AROI



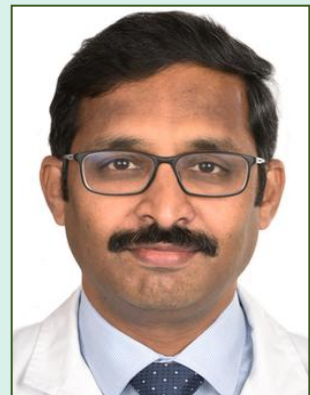
**Dr S N Senapati**  
President Elect AROI



**Dr. Remi Nout**  
ESTRO  
Course Director

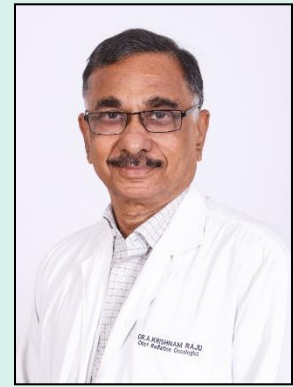


**Dr. Kari Tanderup**  
ESTRO  
Course Director



**Dr. Umesh Mahantshetty**  
AROI  
Course Director

# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE



Dear Friends,

It is a great pleasure for us to host the **6<sup>th</sup> ESTRO AROI GYN teaching course** at Basavatarakam Indo American Cancer Hospital and Research Institute, Hyderabad.

The ESTRO-AROI GYN teaching course was started with an aim to enhance current standards and develop uniform protocols in brachytherapy for cervical cancers in India.

The first five courses were conducted by Ramaiah Advanced Learning Centre in Bengaluru in 2017, Dr Ram Manohar Lohia Institute of Medical Sciences in Lucknow in 2018, AIIMS in Rishikesh, in 2019, Tata Memorial Hospital, Mumbai in 2020 and Burdwan Medical College, Kolkata in 2022. We have made significant advancements with each course. This is also reflected in the fact that the first course was conducted with the theme “Transition from conventional 2D to 3D brachytherapy in cervical cancers” and the current theme for the course is “3D Radiotherapy with A Special Emphasis On Implementation of MRI / CT Based Brachytherapy in Cervical Cancer”.

The **6<sup>th</sup> ESTRO-AROI GYN Teaching Course 2023** at **Hyderabad, India** is aimed to further refine the concepts of image guided brachytherapy and emphasize on the reporting parameters and develop protocols for future research.

Hope to see you soon in Hyderabad for this academic feast!

**Dr. Alluri Krishnam Raju**

**Organizing Chaiman**

**Professor and Head, Department of Radiation Oncology,**

**Basavatarakam Indo American Cancer Hospital & Research Institute**

**Hyderabad**

# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE

## COURSE FACULTY

### AROI Course Director:

Umesh Mahantshetty, *Radiation Oncologist, Homi Bhabha Cancer Hospital & Research Centre, Visakhapatnam, (IN)*

### ESTRO Course Directors:

- Kari Tanderup, *Medical Physicist, University Hospital, Aarhus (DK)*  
(Online only)
- Remi Nout, *Radiation Oncologist, Erasmus University Medical Centre, Rotterdam (NL)*  
(Online only)

### ESTRO Faculty:

- Primoz Petric, *Radiation Oncologist, University Hospital Zurich (CH)*
- Christian Kirisits, *Medical Physicist, Medical University Vienna, Vienna (AT)*

### AROI Faculty:

- Manoj Gupta, *Radiation Oncologist, AIIMS, Rishikesh (IN)*
- G Lavanya, *Radiation Oncologist, Tata Memorial Hospital, Mumbai (IN)*
- Bhavana Rai, *Radiation Oncologist, PGIMER, Chandigarh, (IN)*
- Yogesh Ghadi, *Medical Physicist, Tata Memorial Hospital, Mumbai (IN)*
- Abhishek Basu, *Radiation Oncologist, Burdwan Medical College, Purba Bardhaman, (IN)*
- Ajeet Gandhi, *Radiation Oncologist, Dr Ram Manohar Lohia Institute of Medical Sciences, Lucknow, (IN)*
- Arun S Oinam, *Medical Physicist, PGIMER, Chandigarh (IN)*

### Guest Faculty:

- M Raviteja, *Radiation Oncologist, Homi Bhabha Cancer Hospital & Research Centre, Visakhapatnam, (IN)*
- KK Sreelakshmi, *Medical Physicist, Homi Bhabha Cancer Hospital & Research Centre, Visakhapatnam, (IN)*
- Harjot Kaur Bajwa, *Radiation Oncologist, Basavatarakam Indo American Cancer Hospital & Research Institute, Hyderabad, (IN)*
- Rashmi Sudhir, *Radiologist, Apollo Hospital, Hyderabad (IN)*

### Local Organizers:

- Alluri Krishnam Raju
- Harjot Kaur Bajwa

### ESTRO Coordinator:

- Miika Palmu *ESTRO, Brussels (BE)*

<b>DAY 1</b> <b>MARCH</b>  <b>16</b>	<b>Anatomy, pathology and imaging of the female pelvis and of cervical cancer</b>  <b>CTV, PTV, OAR assessment and treatment planning EBRT</b> <b>Contouring and planning workshops for EBRT</b>	<b>Speaker</b>
<b>Session 1</b>	<b>Chair: Primoz Petric</b>	
08.30 – 09.00 (30 min)	Welcome address (15 minutes)	Course Directors
	Presentation on pre-workshop questionnaire results (08 minutes)	H Bajwa
09.00 - 09.20 (20 min)	Anatomical considerations, role of clinical gynaecological examination, and staging (TNM, new FIGO, AJCC)	A Gandhi
09.20- 09.50 (30 min)	Imaging normal anatomy: uterus, parametria, organs at risk and nodes US, CT, MRI	R Sudhir
09.50 - 10.45 (55 min)	Imaging pathology of cervix cancer (incl. nodes) Clinical drawings, CT, US, PET-CT, MRI: - At time of diagnosis - At time of brachytherapy	U Mahantshetty P Petric
10.45 -11.05	<b>Coffee Break</b>	
<b>Session 2</b>	<b>Chair: U Mahantshetty</b>	
11:05-11:35 (30 min)	Patient preparation for treatment planning & EBRT including immobilization, organ filling, reproducibility	G Lavanya
11.35 - 12.15 (30 min)	GTV - CTV - ITV in EBRT including EMBRACE II	P Petric
12.15 – 12.45(30 min)	Image guidance and ITV-PTV ( <b>online / pre-recorded</b> )	K Tanderup
12.45 - 13.05 (20 min)	Para-aortic Nodal radiation – Indications, Doses & EBRT planning techniques	B Rai
13:05-14:00	<b>Lunch</b>	
<b>Session 3</b>	<b>Chair: C Kirisits</b>	
14.00 - 14.25 (25 min)	Treatment techniques EBRT – physics aspects and plan quality criteria	Y Ghadi
14.25 - 14.45 (25 min)	EBRT Boost - Parametrial& Nodal: Simultaneous or Sequential? ( <b>online / pre-recorded</b> )	K Tanderup
14.45 - 15.05 (20 min)	Clinical evidence for EBRT techniques and medical dose constraints including DVH parameters & EMBRACE II planning aims for EBRT ( <b>online / pre-recorded</b> )	R Nout
15.05 - 15.45 (40 min)	Radiobiology relevant to Cervical Cancer Brachytherapy with special emphasis on HDR BT	M Gupta
15.45 – 16.10	<b>Coffee Break</b>	
16.10 -17.45 (95 min)	<b>Physician’s EBRT workshop(TATA 01 EBRT CT):</b> CTV (Primary / Nodal / Post op) & organs at risk [15’ Introduction, 30’ Contouring, 45’ discussion including evaluation of homework EBRT case]	U Mahantshetty/ B Rai/Raviteja/ G Lavanya/P Petric/ Others
16.10 - 17.45 (95 min)	<b>Physicists EBRT Planning Workshop:</b> [15’Introduction, 90’ discussion including evaluation of homework EBRT case]	Y Ghadi /A Oinam / C Kirisits /Sree Laxmi

<b>DAY 2</b> <b>MARCH</b> <b>17</b>		
	<b>Patient preparation, principles &amp; selection of BT techniques, clinical drawings, commissioning processes for BT</b>	<b>Speaker</b>
	<b>Contouring and Commissioning workshops for BT</b>	
<b>Session 1</b>	<b>ChairP Petric (Physicians) / C Kirisits (Physicists)</b>	
08.30 – 09.10 (40 min)	<b>All Physicians:</b> Patient preparation and principles of BT application including, preparation, anaesthesia, procedure	G Lavanya
	<b>All Physicists:</b> BT Sources for cervical cancer brachytherapy (Ir Vs Co Sources)	A Oinam
09.10 - 09.50 (40 min)	<b>All Physicians:</b> Clinical diagrams: Cervix cancer	A Basu
	<b>All Physicists:</b> Commissioning and QA of HDR brachytherapy unit including TPS	Y Ghadi
09.50 - 10.15 (25 min)	<b>All Physicians:</b> Video presentation: IS (TATA)	G Lavanya/ U Mahantshetty
	<b>All Physicists:</b> Commissioning & QA of BT Applicators	C Kirisits
10.15 – 10.35	<b>Coffee Break</b>	
<b>Session 2</b>	<b>Chair: U Mahantshetty/ C Kirisits</b>	
10:35-11:10 (35 min)	Cervix cancer BT techniques: IC, IC+IS, IS Applicators & Indications	U Mahantshetty
11.10 - 11.30 (20 min)	Video presentation: IC + IS (TATA)	G Lavanya
11.30 - 11.50 (20 min)	Video presentation: IC + IS - PGI Chandigarh /Others	B Rai
11.50 - 12.15 (25 min)	Video presentation: Newer Applicators	U Mahantshetty/ others
11.10 – 12.15(65 min)	<b>All Physicists:</b> Standard IC planning	C Kirisits / Y Ghadi / A Oinam / Sreelaxmi
12:15-13:20	<b>Lunch</b>	
<b>Session 3</b>	<b>Chair: Petric (Basic track) / U Mahantshetty (Experienced track)</b>	
13.20 - 14.05 (45 min)	ICRU-GEC-ESTRO Recommendation: GTV, CTV's at diagnosis and at time of brachytherapy for cervix cancer	P Petric
14.05 - 14.25 (20 min)	2D & 3D Delineation of Organs at Risk	A Basu
13.20 – 14.25(65 min)	<b>All Physicists:</b> IC Planning Workshop (ICRU level 1 Reporting)	C Kirisits / Y Ghadi / A Oinam / Sreelaxmi
14.25 - 14.55	<b>Coffee Break</b>	
14.55 - 17.00 (125 min)	<b>All Physicists:</b> <b>BT Commissioning Workshop in 2 batches</b> - Video on Commissioning of Applicators - Autoradiography on HDR machine area	C Kirisits / Y Ghadi / A Oinam/ SreeLaxmi
	<b>All physicians: BT Contouring workshop (HBCH 01 MR &amp;CT)</b>	G Lavanya / A Gandhi / Raviteja

DAY 3 MARCH  18	Target Concept, OAR delineation, Principles of BT planning of IC , IC+IS & IS Applicator reconstruction, Radiobiology, Workshops: Contouring (MDs), Applicator reconstruction	Speaker
	<b>Session 1</b>	<b>Chair: P Petric</b>
08.30 – 08.55 (25 min)	Clinical implications of Radiography & CT based BT Planning	G Lavanya
08.55 - 09.25 (30 min)	Principles of radiography-based BT planning & CT information (ICRU 89 Level I Reporting)	Y Ghadi / U Mahantshetty
09.25 - 10.30 (55 min)	CT contouring and planning (including ultrasound) for brachytherapy	U Mahantshetty
10.30 – 11.00	<b>Coffee Break</b>	
<b>Session 2</b>	<b>Chair: Y Ghadi (Basic track) / P Petric/ Lavanya(Experienced track)</b>	
10:30-11:15 (45 min)	ICRU-GEC-ESTRO recommendations on dose points & volume reporting	P Petric
	<b>Experienced track (RO only):</b> Presentations & Discussions on CT Registration Study	U Mahantshetty/ G Lavanya/Other Faculty
11.15 - 12.00 (45 min)	Applicator reconstruction, geometry and image fusion	C Kirisits
	<b>Experienced track (RO &amp; MP):</b> Presentations & Discussions on CT Registration Study	U Mahantshetty/ P Petric / Other Faculty
12.00 - 12.45 (45 min)	Physics aspects of treatment planning IC +/- IS techniques in cervix cancer	C Kirisits
12:45-13:30	<b>Lunch</b>	
<b>Session 3</b>	<b>Chair: C Kirisits</b>	
13.30 - 14.00 (30 min)	Physics aspects of treatment planning of pure interstitial techniques in cervix cancer	Y Ghadi
14.00 - 14.30 (30 min)	Imaging Approaches during fractionated BT & its Implications	U Mahantshetty / K Tanderup
14.30 - 15.00 (30 min)	Radiobiological models for BT, EBRT AND Combine (HDR)	C Kirisits/ Sree Lakshmi
15.00 - 15.30	<b>Coffee Break</b>	
15.30 - 18.00 (150 min)	<b>Physicists workshop:</b> Reconstruction & reference point exercises in groups	C Kirisits /P Petric / Y Ghadi / A Oinam/ K Sreelaxmi
	<b>Physicians Workshops:</b> cervix large-good response MRI/CT [15'Introduction, 45' Contouring, 90' discussion including evaluation of homework EBRT case] ( <b>TATA 04 MR</b> ) + <b>TATA 04</b> CT Based [10'Introduction, 30' Contouring, 30' discussion]	U. Mahantshetty / M Raviteja/ Other Faculty
19.00	<b>Course dinner</b>	

<b>DAY 4</b> <b>MARCH</b>  <b>19</b>	<b>IGABT Treatment planning, physics, biology, clinical strategies</b> <b>Uncertainties, imaging &amp; several BT fractions</b> <b>Nodal boost (EBRT), parametrial boost (IGABT, EBRT)</b> <b>Workshops: Contouring (MDs), Treatment Planning (Physicists)</b> <b>IGABT: Practical exercises treatment planning</b> <b>Interactive feedback session</b>	<b>Speaker</b>
<b>Session 1</b>	<b>Chair: C Kirisits</b>	
08.15 – 08.35 (20 min)	Feedback on BT treatment planning homework	Y Ghadi / A Oinam/ Sreelaxmi
08.35 - 10.00 (85 min)	Cervix cancer: treatment planning workshop – including with participants <b>(TATA 04)</b>	All Teachers
10.00- 10.45 (45 min)	Treatment Planning Workshop in groups: (Same case as in the morning - <b>TATA 04</b> ) on Elekta/Varian/ Bebig) systems	All Teachers
10.45 -11.00	<b>Coffee Break</b>	
11:00-11:20 (20 min)	Time Dose fractionation for EBRT + HDR BT	P Petric / U Mahantshetty/ C Kirisits
11.20 - 11.40 (20 min)	BT fractionation and scheduling – practical aspects	M Raviteja/ U Mahantshetty
<b>Session 2</b>	<b>Chairs: P Petric / U Mahantshetty</b>	
11.40 - 12.30 (50 min)	Medical Aspects, Dose Constraints & Clinical Outcome including toxicities	P Petric
12.30 - 12.45 (15 min)	EMBRACE Studies ( <b>Online / pre-recorded</b> )	R Nout
12.45 - 13.15 (30 min)	Other Center Experience (2-3 presentations)	
13.15 - 13.45 (30 min)	Practical implementation - Tips and tricks AROI GYN research network	U Mahantshetty
13.45 - 13.55 (10 min)	Final Remarks and valedictory function	P Petric / C Kirisits/ U Mahantshetty/ Local Organizers
13:55-14:50	<b>Lunch Break</b>	



## COURSE OVERVIEW

### TARGET GROUP

The course is aimed at teams consisting of radiation oncologists and medical physicists from institutions with concrete plans to implement 3D radiotherapy for cervical cancer, with a special interest in MR/ CT Image Based Brachytherapy. The Institutions which participated in previous editions of Gynaecology AROI ESTRO teaching course in Bengaluru, Lucknow, Rishikesh, Mumbai and Kolkata between 2017- 2022 are encouraged to register and will be selected on priority for the course. Also, Institutions who have the necessary infrastructure for 3D brachytherapy (afterloader, access to 3D (US/ CT/ MR) imaging, CT/MR compatible applicators and a relevant treatment planning system) to facilitate the initiation of implementation of 3D techniques after the course can apply. The course is conducted on regular basis every year and this will be 6<sup>th</sup> Edition which will focus on feedback, hurdles, progress and further development of a network to systematically work on research and implementation issues specific to India and other developing countries. The workshop involving both the advanced track and freshers should be prepared to invest time in implementation of 3D techniques in between courses and to take part in homework / feedback efforts. A finite number of teams from various set-ups and geographical locations in India will be invited by AROI. Participants from neighboring countries and other Asia Pacific (APAC) Region (max 5-10) may also apply to participate.

### COURSE AIM

The course aims to:

- Learn about principles of 3D image-based EBRT and brachytherapy including techniques and treatment planning
- Provide understanding of commissioning, quality assurance, principles of planning, plan evaluation and reporting of 2D and 3D brachytherapy in cervical cancer
- Introduce 3D image-based target concepts of GTV, CTV and PTV including both EBRT and brachytherapy in cervical cancer
- Enable practical implementation of 3D techniques in EBRT and brachytherapy in cervical cancer
- Enhance the practical implementation and logistics in the existing environment.
- Further roadmap and steps of intervention to improve the existing standards.
- Provide a platform to implement and develop an Indian network for future research and development in cervical cancer radiotherapy

## COURSE OVERVIEW

### LEARNING OUTCOMES

By the end of this course participants should be able to:

- Understand the rationale of 3D and apply concepts of advanced brachytherapy techniques in clinical practice.
- Understand and apply ICRU 89 concepts: GTV, CTV, PTV at diagnosis and at time of brachytherapy for 2D and 3D brachytherapy.
- Perform contouring & treatment planning for 3D image guided EBRT & brachytherapy in routine clinical practice.
- Implement procedures for 3D image guided brachytherapy in cervical cancer in your own department
- Implement advanced EBRT techniques in cervical cancer in your own department.
- After successful implementation, participate in some research protocols.

### COURSE CONTENT

- Normal and pathologic anatomy of female pelvis
- Image based anatomy including US, CT, MRI & conventional radiography at diagnosis & at BT
- CTV/ITV/PTV for external irradiation
- IMRT/VMAT, IGRT and treatment planning for external irradiation
- Combination of external irradiation and brachytherapy
- Dose, dose-rate and fractionation and overall treatment time
- Radiobiological effects from combined EBRT and BT, linear quadratic model
- Prescribing, recording and reporting including ICRU- GEC-ESTRO 89 recommendations
- Therapeutic outcome: radio-chemotherapy, image based EBRT and brachytherapy
- Introduction and update on EMBRACE studies
- Commissioning & Quality Assurance of various processes involved 3D BT Treatment planning.
- Feedback and review of hurdles in implementation and roadmap
- Workshops with hands-on contouring and treatment planning

### PREREQUISITES

Before commencing this course participants should have:

- Basic knowledge of principles & experience with multi-modality management of cervical cancer
- Basic knowledge of & experience with radiological patho-anatomy relevant to cervical cancer
- Experience with existing EBRT and BT 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)

# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE

## COURSE OVERVIEW

### TEACHING METHODS

- Lectures / tutorials: 16 hours
- Practical workshop: 8 hours
- Applicators commissioning and reconstruction: 6 hours – Physicists
- Video presentations: 2 hours - Clinicians

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 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.
- Exclusive feedback sessions for “Experienced track” participants

## COURSE FEE

	<b>Physician or Physicist</b>	<b>Team (Physician and Physicist)</b>
<b>Indian Delegate</b>	<b>INR 12000*</b>	<b>INR 18000*</b>
<b>Foreign Delegate</b>	<b>USD 450</b>	<b>USD 800</b>

\* Inclusive of GST

# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE

## ORGANIZING COMMITTEE

### Patron in Chief

Shri Nandamuri Balakrishna

### Patrons

Dr. Prabhakar Rao

Dr. T Subramanyeshwar Rao

### Scientific Committee

Dr. Umesh Mahantshetty

Dr. A Krishnam Raju

Dr. Harjot Kaur Bajwa

Dr. Vijay Anand Reddy

Dr. Srikanth Rao

Dr. Madhusudhana Sresty

### Organizing Committee

Dr. A Krishnam Raju

Dr. Harjot Kaur Bajwa

Dr. V Sudhakar Kumar

Dr. E Vasundhara

Dr. Deleep G

Dr. Tasneem Rushdi

Dr. Rohith Singareddy

Dr. Heena Kauser

Dr. Ashwini G

Dr. B Sukrutha

Dr Naga Prasanthi

Dr Nagarjuna Reddy

Dr Madhusudhana Sresty

Dr Anil Kumar Talluri

Lakshmi Anil

Devender Reddy B

Srikanth G

Sahitya

Yakub

Sudhakar

Parmesh

Sri Latha

Sibi Treesa

## LOCAL CONTACT

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Basavatarakam Indo American  
Cancer Hospital and Research Institute, Hyderabad  
Phone no: 9652538753

# 6<sup>TH</sup> AROI - ESTRO GYN TEACHING COURSE

## VENUE



**AUDITORIUM, BLOCK II, 4TH FLOOR,  
BASAVATARAKAM INDO AMERICAN  
CANCER HOSPITAL AND RESEARCH INSTITUTE.  
ROAD NO 10, BANJARA HILLS, HYDERABAD  
Pin code: 500034**

## REGISTRATION

Last Date of Registration is 15<sup>th</sup> Feb, 2023  
One Physicist & Physician from an institute  
are encouraged for team participation

## MAILING ADDRESS

**[aroiestrogyn2023@gmail.com](mailto:aroiestrogyn2023@gmail.com)**

## WEBSITE

**<http://www.aroiestrogyn2023.com/>**