

# RADIOLOGICAL PROTECTION OF THE PATIENT IN RADIATION ONCOLOGY: CURRENT CHALLENGES AND THE FUTURE

13-15 DEC 2022  
CLEVELAND CLINIC  
ABU DHABI, UAE

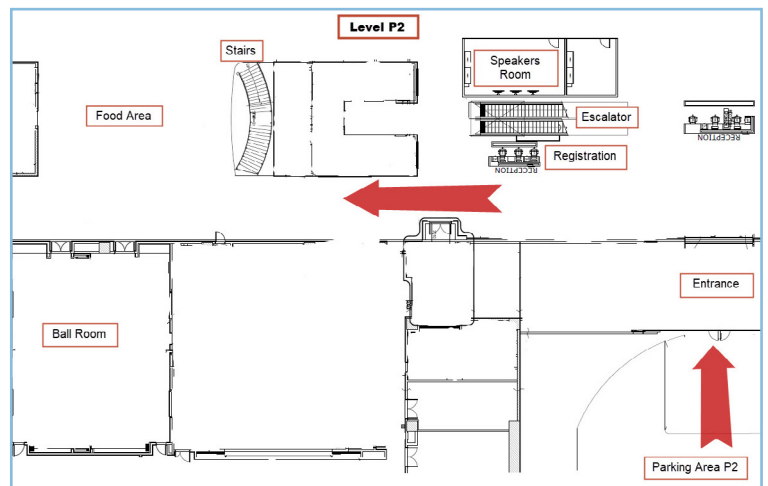
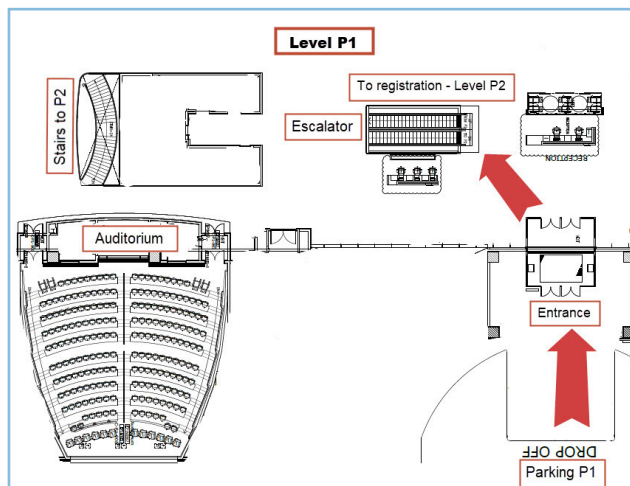


## VENUE

### Cleveland Clinic Abu Dhabi

59 Hamouda Bin Ali Al Dhaheeri St  
Al Maryah Island  
Abu Dhabi Global Market Square  
Abu Dhabi, UAE

Cleveland Clinic Abu Dhabi is conveniently located on Al Maryah Island, Abu Dhabi's new Central Business District. The Island is situated northeast of the Abu Dhabi main island and adjacent to neighboring Al Reem Island, which are connected through a network of bridges. Cleveland Clinic Abu Dhabi is easily accessible and can be reached by public transport or car.



**TUESDAY | 13 DECEMBER 2022**

**Session 1: Imaging in Radiotherapy**

9:00 - 9:10	<b>CCAD Welcome and Workshop Opening</b> <i>(Cleveland Clinic Abu Dhabi)</i>
9:10 - 9:20	<b>FANR Welcome</b> <i>(FANR)</i>
9:20 - 9:30	<b>ICRP Welcome</b> <i>Christopher Clement (ICRP)</i>
9:30 - 9:45	<b>Workshop Agenda and Session Opening</b> <i>Session Chair: Ivan Williams (ICRP)</i>
9:45 - 10:15	<b>Incidents and Accidents Involving Patients in Radiotherapy</b> <i>William Small (ICRP) - online</i>
10:15 - 10:45	<b>Radiological Protection for the Next Generation</b> <i>Christopher Clement (ICRP)</i>
10:45 - 11:15	<b>Break</b>
11:15 - 11:45	<b>Basics of Radiotherapy</b> <i>Jennifer Pursley (Harvard - MGH)</i>
11:45 - 12:15	<b>Regulatory Requirements in Regard to the Protection of the Patient in the UAE</b> <i>Buthaina Al Ameri &amp; Mustafa Majali (FANR)</i>
12:15 - 13:45	<b>Prayer and Lunch Break</b>
13:45 - 14:15	<b>Modern Technology for Adaptive Radiotherapy</b> <i>Fady Geara (Cleveland Clinic Abu Dhabi)</i>
14:15 - 14:45	<b>Functional Imaging in Radiotherapy Planning and Delivery</b> <i>Ibrahim Abu-Gheida (Cleveland Clinic Abu Dhabi)</i>
14:45 - 15:15	<b>Break</b>
15:15 - 15:45	<b>Do You Know What Your Imaging System Limitations Are? Clinical Desire Meets Reality</b> <i>Jennifer Pursley (Harvard - MGH)</i>
15:45 - 16:45	<b>Panel Discussion</b> <i>Moderator: Jennifer Pursley (Harvard - MGH)</i>
16:45 - 17:00	<b>Closing</b> <i>Session Chair: Ivan Williams (ICRP)</i>

**Site Visits**

13:45 - 14:00	<b>Moving from meeting room to Oncology Center &amp; Formation of Groups</b>
14:00 - 14:45	<b>First Visit/Demonstration</b>
14:45 - 15:15	<b>Break</b>
15:15 - 16:00	<b>Second Visit/Demonstration</b>
16:00 - 16:15	<b>Moving from Oncology Center to Auditorium</b>
16:15 - 16:45	<b>Q&amp;A, Feedback and Discussion</b>
16:45 - 17:00	<b>Closing</b>

**WEDNESDAY | 14 DECEMBER 2022**

**Session 2: Optimizing Dose Distributions**

- 9:00 - 9:15**      **Welcome and Session Opening**  
*Session Chair: Jennifer Pursley (Harvard - MGH)*
- 9:15 - 9:45**      **Requirements for Treatment Planning Systems (TPS) Commissioning**  
*Zakiya Al Rahbi (The Royal Hospital, Muscat, Oman)*
- 9:45 - 10:15**      **Small Field Measurements, Verification Tests and Optimization Approaches for TPS**  
*Essa Mayyas (Cleveland Clinic Abu Dhabi)*
- 10:15 - 10:45**      **Break**
- 10:45 - 11:15**      **Future Developments: Automated Planning and Biological Optimization**  
*Jennifer Pursley (Harvard - MGH)*
- 11:15 - 11:45**      **Communication of Radiological Risks to Patients and the General Public**  
*Mohammed Tahlak (Cleveland Clinic Abu Dhabi) & Amjad Waheed (GICC)*
- 11:45 - 12:15**      **Case Study Presentation From the UAE**  
*Buthaina Al Ameri & Mustafa Majali (FANR)*
- 12:15 - 13:45**      **Prayer and Lunch Break**
- 13:45 - 14:45**      **Breakout Groups and Analysis of the Case Study**  
*Group Facilitators:*  
1. Zakiya Al Rahbi and Essa Mayyas  
2. Mohammed Tahlak and Amjad Waheed  
3. Buthaina Al Ameri and Mustafa Majali  
4. Ivan Williams and Jennifer Pursley
- 14:45 - 15:15**      **Case Study Discussion**  
*Moderator: Jennifer Pursley (Harvard - MGH)*
- 15:15 - 15:45**      **Break**
- 15:45 - 16:15**      **Do You Know What Your TPS and Dosimetry Limitations Are?**  
*Ivan Williams (ICRP)*
- 16:15 - 16:45**      **Q&A**  
*Moderator: Jennifer Pursley (Harvard - MGH)*
- 16:45 - 17:00**      **Closing**  
*Session Chair: Jennifer Pursley (Harvard - MGH)*

**Site Visits**

- 13:45 - 14:00**      **Moving from meeting room to Oncology Center & Formation of Groups**
- 14:00 - 15:00**      **Third Visit/Demonstration**
- 14:45 - 15:15**      **Break**
- 15:15 - 16:00**      **Fourth Visit/Demonstration**
- 16:00 - 16:15**      **Moving from Oncology Center to Auditorium**
- 16:15 - 16:45**      **Q&A, Feedback and Discussion**
- 16:45 - 17:00**      **Closing**



**THURSDAY | 15 DECEMBER 2022**

**Session 3: E&T for Radiotherapy; Radioprotection of Patients; Outlook to the Future**

9:00 - 9:15	<b>Welcome and Session Opening</b> <i>Session Chair: Christopher Clement (ICRP)</i>
9:15 - 9:45	<b>Quality of Data</b> <i>Ivan Williams (ICRP)</i>
9:45 - 10:15	<b>Education, Qualification and Training of Personnel Operating in a Radiotherapy Centre</b> <i>Marco Brambilla (EFOMP)</i>
10:15 - 10:45	<b>Break</b>
10:45 - 11:15	<b>Auditing</b> <i>Ivan Williams (ICRP)</i>
11:15 - 11:45	<b>Ionizing radiation and the Risk of Cancer: Epidemiological Evidence</b> <i>Marco Brambilla (EFOMP)</i>
11:45 - 12:15	<b>Hypofractionation</b> <i>William Small (ICRP) - pre-recorded</i>
12:15 - 13:45	<b>Prayer and Lunch Break</b>
13:45 - 14:45	<b>Out of Field Doses and Associated Risks of Cancer in Radiotherapy</b> <i>Marco Brambilla (EFOMP)</i>
14:45 - 15:15	<b>Particle Therapy/Proton Therapy/Ion Therapy</b> <i>Maria-Luisa Ramirez (CSN) - pre-recorded</i>
14:45 - 15:15	<b>Break</b>
15:15 - 15:45	<b>Artificial Intelligence in Radiotherapy</b> <i>Rajiv Gupta (Harvard - MGH) - online</i>
15:45 - 16:45	<b>Panel Discussion</b> <i>Moderator: Jennifer Pursley (Harvard - MGH)</i>
16:45 - 17:00	<b>Workshop Closing</b> <i>Christopher Clement (ICRP)</i> <i>Daniele Giuffrida (FANR)</i> <i>Mohammed Tahlak (Cleveland Clinic Abu Dhabi)</i>

**Site Visits**

13:45 - 14:00	<b>Moving from meeting room to Oncology Center &amp; Formation of Groups</b>
14:00 - 15:00	<b>Fifth Visit/Demonstration</b>
14:45 - 15:15	<b>Break</b>
15:15 - 16:00	<b>Sixth Visit/Demonstration</b>
16:00 - 16:15	<b>Moving from Oncology Center to Auditorium</b>
16:15 - 16:45	<b>Q&amp;A, Feedback and Discussion</b>
16:45 - 17:00	<b>Closing</b>

## SPEAKERS



### Ibrahim Abu-Gheida

Ibrahim Abu-Gheida, MD, is a Radiation Oncologist and member of the Regional Committee for the Middle East & Africa at the Radiological Society of North America (RSNA). He was previously the Head of the Department of Radiotherapy at Burjeel Medical City, a large tertiary center in Abu Dhabi.

Dr. Abu-Gheida earned a B.Sc. with Honours from the American University of Beirut (AUB) and earned his MD at the AUB Medical Center. After joining the Department of Internal Medicine at AUB, he completed his training in the Department of Radiation Oncology and served as the chief-resident. During his training, he completed a Harvard-affiliated NIH-funded research program. After his residency, Dr. Abu-Gheida went to Cleveland Clinic Ohio, where he was appointed as an Advanced Clinical Radiation Oncology Fellow, and then the University of Texas MD Anderson Cancer Center, where he sub-specialized in treating breast, gastrointestinal, and genitourinary cancers.

Dr. Abu-Gheida has more than 35 peer-reviewed papers in prestigious medical journals, including the International Journal of Radiation Oncology, Biology and Physics by the American Society of Radiation Oncology, Nature, Journal of Clinical Oncology, and several others. He is also the primary author and editor of several book chapters published in prestigious books.



### Buthaina Al Ameri

Buthaina Al Ameri works as Sr. Specialist in the Radiation Safety Department at the Federal Authority for Nuclear Regulation (FANR). As a member of radiation sources team, Al Ameri is involved in the review and assessment of high-risk medical facilities' licence applications for facilities and activities other than nuclear facilities and leads the assessment team. As an Emirati professional, she is also involved in the regulatory oversight and pre-licensing inspection.



### Zakiya Al Rahbi

Zakiya Al-Rahbi, PhD, is a Senior Specialist Medical Physicist (A) with the National Oncology Center at the Royal Hospital in Muscat, Oman, and the first Omani Medical Physicist in the clinical field.

Dr. Al-Rahbi has been the Deputy President of the Omani Medical Physics Society (OMPS) since 2018, is Chairman of the Award and Honors Committee in the Middle East Federation Organization of Medical Physics (MEFOMP), and is a member of both the International Organization of Medical Physics - Women Group (IOMP-W) and MEFOMP-W. Previously, Dr. Al-Rahbi served as the Physics Program Coordinator for the Diagnostic Radiology Residency Program at the Oman Medical Specialty Board.



### Marco Brambilla

Marco Brambilla, PhD, is the Head of the Medical Physics Department at the University Hospital of Novara and 6 General Hospitals in Italy and has matured 25 years of experience in nuclear medicine, diagnostic, computed tomography interventional cardiology, and radiology. He received Master of Science degrees in Physics (1988), Medical Physics (1993), and Health Statistics (1997) in Italy. His research interests include the estimation of dose from diagnostic x-ray examinations, radiation protection, and nuclear medicine instrumentation.

Dr. Brambilla has previously served as the President and Secretary General of the European Federation of Organisations for Medical Physics (EFOMP) where he established EFOMP European School for Medical Physics Expert (ESMPE) in 2014.

He held several positions as Radiation Protection Expert, IAEA Expert for Technical Cooperation Projects, Assistant and Adjunct Professor of Medical Physics, Radiation Protection, and Medical Statistics in various universities.



### Christopher Clement

Christopher Clement is the Scientific Secretary and Chief Executive Officer of the ICRP, the ninth to hold this position since ICRP was established in 1928. He oversees the daily business of ICRP, represents the organisation in many international fora, and has presented over 300 invited lectures on radiological protection in more than 40 countries. He has overseen the production of more than 70 issues of Annals of the ICRP as Editor-in-Chief, the basis of radiological protection standards, legislation, and practice world-wide. In addition to his ICRP duties, since 2012 he has been a member of the International Radiation Protection Association (IRPA) Executive Council, and Vice-President of IRPA since 2021.

Clement has a M.Sc. degree in Medical Physics and is a Certified Health Physicist. He has more than thirty years of experience in radiological protection, and prior to joining ICRP worked in environmental monitoring and remediation, radiological counterterrorism, and as Director of

## SPEAKERS

Radiation Protection at the Canadian Nuclear Safety Commission overseeing radiation protection regulation in all sectors across the country. For several years he represented Canada at the IAEA Radiation Safety Standards Committee, and the OECD Nuclear Energy Agency's Committee on Radiation Protection and Public Health.



### Fady Geara

Fady Geara, PhD, MD, is a Professor and the Chairman of the Department of Radiation Oncology at the Oncology Institute of Cleveland Clinic Abu Dhabi. He graduated with an MD from the University of Paris and completed his training in Radiation Oncology both in France and at the University of Texas MD Anderson Cancer Center in Houston, Texas. He also completed his PhD in Radiation Biology at the University of Texas.

Dr. Geara started his professional career at MD Anderson as an Assistant Professor before he moved on to build a modern, state of the art radiation oncology program at the American University of Beirut Medical Center. He has recently joined Cleveland Clinic Abu Dhabi to develop the radiation oncology program at the new Oncology Institute.

Dr. Geara is a diplomate of the American Board of Radiology in Radiation Oncology and a well-known authority in clinical radiation oncology and program development. He is also a prolific writer with over 125 peer reviewed articles published, and a committed teacher with more than 200 hundred teaching lectures given in many countries on current radiation and general oncology topics.



### Rajiv Gupta

Rajiv (Raj) Gupta, PhD, MD, is the Medical Director for Enterprise Neuroradiology for Mass General Brigham, Division Chief for Neuroradiology at the Massachusetts General Hospital (MGH), an Associate Professor of Radiology at the Harvard Medical School, a Visiting Professor of Technical Medicine at University of Twente, Netherlands, and a Lecturer in Nuclear Science and Engineering at MIT. He also directs the Advanced X-ray Imaging Sciences (AXIS) Center at MGH. Dr. Gupta earned his MD at Cornell University, his PhD in Computer Science at the University at Stony Brook, and MSc Honors (Physics) and BE Honors (Electrical Engineering) from the Birla Institute of Technology and Science, Pilani.

Prior to joining MGH, Dr. Gupta was a Computer Scientist at the GE Global Research Center in Niskayuna, NY, conducting research in x-ray imaging, non-destructive evaluation of aircraft engine parts, and computer vision. He also served on the faculty of the University of Southern California, Los Angeles as an Assistant Professor (Research) in Electrical Engineering.

Dr. Gupta is engaged in clinical practice, research, education, and radiology administration. His research is focused on development and clinical translation of novel imaging technologies such as photon-counting CT, multi-spectral CT, artificial intelligence and deep learning.



### Mustafa Majali

Mustafa Majali, PhD, is a Senior Radiation Safety Specialist & Radiation Safety Chief Inspector with the Federal Authority for Nuclear Regulation (FANR) in UAE. He is a Certified Health Physicist with the American Board of Health Physics (CHP), member of the Subcommittee on Model Program Part I Exam of the International Medical Physics Certification Board (IMPCB) for capacity building and identify competences gaps in developing countries, and a member in many other international scientific bodies (AAPM, HPS, AAHP, ASTRO, and IMPC).

Dr. Majali received degrees in Physics, Medical Physics, and a PhD in Nuclear Engineering, specializing in radiation safety. He is a dedicated professional with 30 years of experience in radiation protection and safety, including more than 24 years of work experience as a senior regulator in radiation safety, nuclear safety and security and developing, establishing and implementing regulatory infrastructure in the field of radiation protection and security of radiation sources.

Dr. Majali has previously served as Radiation Protection & Nuclear Control Director for the Jordan Nuclear Regulatory Commission (JNRC) and both Head of the Department of Health Physics & Exposure Control and Head of Licensing & Inspection Department for the Jordan Atomic Energy Commission (JAEC). In addition, he has worked as an external expert with IAEA in the organization and implementation of Regulatory Infrastructure and Integrated Regulatory Review Service (IRRS), and as an external contractor with US-DoE for developing training materials on nuclear and radiation safety and security in Arabic. He has published textbooks in radiation safety and safety of nuclear reactors, as well as many scientific articles and manuscripts in international journals, international conferences and meetings.



## SPEAKERS



### Essa Mayyas

Essa Mayyas, PhD, is a Therapeutic Medical Physicist certified by the American Board of Radiology (ABR). He received a B.S. in Physics from Yarmouk University and received both his Masters and PhD in Physics from Wayne State University. After graduating in 2011, he joined Henry Ford Health System to complete a Post-Doctorate in the Radiation Oncology department and the CAMPEP Residency Program.

Since then, Dr. Mayyas has worked as a Therapeutic Medical Physicist at Bon Secours MaryView Medical Center and Atrium Health System.



### Jennifer Pursley

Jennifer Pursley, PhD, DABR, is an Academic Clinical Physicist in the Department of Radiation Oncology at Massachusetts General Hospital (MGH) and an Assistant Professor at Harvard Medical School. She received her Ph.D. in experimental particle physics from Johns Hopkins University working on the Collider Detector at Fermilab on B-baryon searches, completed her a post-doc with the University of Wisconsin-Madison working on high-mass Higgs searches at CDF, and then completed a three-year Harvard Medical Physics Residency Program in medical physics.

Dr. Pursley is the physics lead for photon radiation treatment planning at MGH and leads MGH's online adaptive therapy program, where a new radiation treatment plan is developed within minutes each day while the patient waits. While most of her day is spent in the clinic, she also teaches and mentors students and residents, is involved with several research projects, and volunteers with professional societies.

Currently, Dr. Pursley serves as an examiner for the American Board of Radiology (ABR) which certifies medical physicists for clinical practice, is the Chair-Elect for the American Physical Society's Topical Group on Medical Physics (APS GMED), and serves as editor for the bi-monthly newsletter published by the American Association of Physicists in Medicine (AAPM).



### Maria-Luisa Ramirez

Maria-Luisa Ramirez, MD, is a Nuclear Medicine Physician and Section Head of the Medical Radioactive Installations and Medical Exposure branch of the Nuclear Safety Council/Consejo de Seguridad Nuclear (CSN), the radiological protection and nuclear safety technical body of Spain. She received her MD from the Complutense University Medical College in Madrid and completed a residency program specializing in nuclear medicine at the Ramon y Cajal Hospital.

Dr. Ramirez first joined the CSN in 1989. She has also been a member of the INES International Event Scale Advisory Committee for IAEA since 2002 and is a member of working groups for FORO (Association of the Iberoamerican Regulatory Bodies) and the UE ACCIRAD Project.

Dr. Ramirez previously worked as a foreign assignee in the medical branch of the USA Nuclear Regulatory Commission (NRC), co-chairman of the INES Scale Advisory Committee for IAEA, and as an expert in IAEA missions (El Salvador, IRRS Guatemala, Paraguay).



### William Small

William Small Jr, MD, FACRO, FACR, FASTRO, is a member of Committee 3 of the ICRP and previously chaired Task Group 89 on Occupational Radiological Protection in Brachytherapy. He is currently Vice-Chair of Task Group 116: Radiological Protection Aspects of Imaging in Radiotherapy, and a member of Task Group 119: Effects of Ionising Radiation on Diseases of the Circulatory System and their Consideration in the System of Radiological Protection. Dr. Small is the Chair of the American College of Radiology Radiation Oncology Commission, in addition to holding leadership positions in several other national and international professional societies.

Dr. Small is Professor and Chair of the Department of Radiation Oncology and Director of the Cardinal Bernardin Cancer Center at the Stritch School of Medicine, Loyola University Chicago. He has been an active researcher, teacher and clinician for over 30 years. Dr. Small has an international reputation for research and treatment of gynecological malignancies, and also specializes in treating gastrointestinal and breast cancers.



### Mohammed Tahlak

Mohammed Tahlak is a Sr. Manager of Radiation Protection & Medical Physics at Cleveland Clinic Abu Dhabi, where he manages radiation protection, medical physics and laser safety programs. He is also serving as President of the Emirates Medical Physics Society (EMPS).

Tahlak studied Biomedical Engineering at University of Sheffield and completed his Master's degree in Engineering and Physical Science in Medicine (Medical Physics Major) at Imperial College London and University College London. He has more than 10 years of experience in radiation protection and diagnostic medical physics.

## SPEAKERS



### Amjad Waheed

Amjad Waheed is the Director of Medical Physics of the Radiation Oncology Department at the Gulf International Cancer Center, Abu Dhabi, UAE. He previously worked as a Medical Physicist at Cape Breton Cancer Center in Nova Scotia, Canada, at Shaukat Khanum Memorial Cancer Hospital & Research Center in Lahore, Pakistan, at Shifa International Hospital in Islamabad, Pakistan, and at Jinnah Hospital in Lahore, Pakistan.

He has extensive experience in the establishment of radiotherapy departments and has operated as OHS Officer, Radiation Protection Officer, and OSHAD auditor during his career. His research work focused on small electron fields, dose distributions and Varian Enhanced Dynamic Wedge Angles.



### Ivan Williams

Ivan Williams is the Chief Medical Radiation Scientist and Medical Radiation Branch Head within the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). He is an internationally recognized and nationally certified expert in radiation oncology medical physics and medical radiation protection. Ivan is particularly passionate about the appropriate use of resources and information to improve and protect patient and public health, and he was appointed to the ICRP Committee 3: Radiation Protection in Medicine in 2021.

## ORGANIZING COMMITTEE

### Mr. Daniele Giuffrida

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### Dr. Rajiv Gupta

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### Dr. Jennifer Pursley

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