Tracking Radiation Exposures from Medical Diagnostic Procedures

GILBERT W. BEEBE WEBINAR SERIES
December 14, 2021, 10 AM – 12 PM (ET)

The use of medical diagnostic procedures has benefited the care of most patients. However, it is accompanied by growing concerns about the risks associated with diagnostic computed tomography (CT), fluoroscopy, and nuclear medicine imaging exams that utilize ionizing radiation. A number of initiatives in radiation safety in medicine aim to provide higher quality clinical management of patients and to ensure that reasonable steps are taken to keep the exposures as low as possible without compromising diagnostic efficacy. The idea of tracking radiation exposures from medical diagnostic procedures as a means of individual dose monitoring and risk assessment to patients has been debated over the years and more recently national and international organizations have issued statements with opposing views. The Nuclear and Radiation Studies Board of the National Academies will host a two-hour webinar on December 14 to discuss the pros and cons of tracking radiation exposures and possible implications. You can register here.

For comments and questions about the Gilbert W. Beebe Webinar Series, or suggestions for future topics, please contact Ourania (Rania) Kosti at okosti@nas.edu.

AGENDA

10:00 AM **Call 6th Webinar to Order**
6.1 Welcome Remarks
James Brink, Brigham and Women's Hospital, Massachusetts General Hospital, Harvard Medical School

10:05 AM **6.2 Trends in Use of Medical Diagnostic Procedures and Efforts to Adress Optimization and Justification**
Donald Frush, Duke University School of Medicine

10:15 AM **6.3 Epidemiologic Studies on Medically Exposed Populations**
Martha Linet, National Cancer Institute (retired)

10:25 PM **Perspectives from National and International Organizations**
6.4 Armin Ansari, Centers for Disease Control and Prevention (15 min)
6.5 Ioannis Sechopoulos, American Association of Physicists in Medicine (15 min)
6.6 Jenia Vassileva, International Atomic Energy Agency (15 min)
6.7 Mahadevappa Mahesh, American College of Radiology Commission on Medical Physics (10 min)
6.8 David Larson, ACR Commission on Quality and Safety (10 min)

11:35 PM **Q&A and Discussion**
Moderated by Jim Brink and Martha Linet

12:00 PM **Adjourn Webinar**

SPEAKER BIOS

Armin Ansari is the Radiological Assessment Team Lead at the Centers for Disease Control and Prevention (CDC). He received his B.S. and PhD degrees in radiation biophysics from the University of Kansas and completed his postdoctoral research in radiation mutagenesis at Oak Ridge and Los Alamos National Laboratories. His focus since joining CDC in 2002 has been on public health preparedness and response planning for nuclear and radiological emergencies and he has led the development of key national guidance documents as well as numerous training programs directed at public health professionals. He is a fellow and past president of the Health Physics Society and is certified in comprehensive practice by the American Board of Health Physics. He is also an elected member of the National Council on Radiation Protection and Measurements, and serves as member of the United States delegation to the United Nations Scientific Committee on the Effects of Atomic Radiation.

James A. Brink, MD, is chief of radiology at the Massachusetts General Hospital (MGH) and the Juan M. Taveras Professor of Radiology at the Harvard Medical School. Dr. Brink has expertise and broad experience in medical imaging, including utilization and management of imaging resources and monitoring and control of medical radiation exposure. Before joining MGH, Dr. Brink was an associate professor at the Mallinckrodt Institute of Radiology at Washington University School of Medicine and professor and chair of the Yale Department of Diagnostic Radiology. He is a fellow of the Society for Computed Body Tomography/Magnetic Resonance, past-president of the American Roentgen Ray Society, fellow and chair (effective May 17, 2016) of the Board of Chancellors of the American College of Radiology, and scientific vice-president and member of the Board of Directors of the National Council for Radiation Protection and Measurements. He earned his M.D. degree at Indiana University and completed his medical residency and fellowship at MGH. Dr. Brink is a current member of the National Academies' Nuclear and Radiation Studies Board.

Dr. **Donald Frush** is Professor of Radiology and Pediatrics, faculty member of the Medical Physics Graduate Program, and chief Vice Chair for Safety and Quality in the Department of Radiology at Duke University Medical Center in Durham, North Carolina. He earned his undergraduate degree from the University of California, Davis, and his medical degree from Duke University Medical Center. He was a pediatric resident at the University of California, San Francisco, and completed a radiology residency at Duke Medical Center and a fellowship in pediatric radiology at Children's Hospital in Cincinnati. In addition to primary certification in diagnostic radiology, he holds a subspecialty certification in pediatric radiology, both from the ABR. Dr. Frush's research interests are predominantly involved with pediatric body computed tomography (CT), including technology assessment, techniques for pediatric multidetector computed tomography (MDCT) examinations, assessment of image quality, CT radiation dosimetry, and risk communciation. Other areas of investigation include CT applications in children and patient safety in radiology. In addition to serving as an ABR trustee since 2009, Dr. Frush is or has been a member of various committees and scholarly societies. Committee memberships include past chair of the Commission on Pediatrics, American College of Radiology; current member of the board and recent past president (2011 to 2012) for the Society for Pediatric Radiology; board member, National Council on Radiation Protection and Measurements (NCRP); past chair of the Radiological Society of North America (RSNA) Refresher Course Committee; and current chair of the Image Gently Alliance (Image Gently® Campaign). Dr. Frush has also worked internationally with both the World Health Organization and the International Atomic Energy Agency with radiation protection projects in medical imaging. Dr. Frush is a member of numerous associations, including the American Roentgen Ray Society, the Society of Computed Body Tomography and Magnetic Resonance Imaging (fellow), and RSNA, and he is also a subspecialty fellow (and section member for Radiology) in the American Academy of Pediatrics.

David B. Larson, MD, MBA, is Professor of Radiology (Pediatric Radiology) in the Department of Radiology at Stanford University, where he also serves as the Vice Chair for Education and Clinical Operations. He serves as the Associate Chief Quality Officer for Improvement for Stanford Health Care and physician co-leader of the Stanford Medicine Center for Improvement Dr. Larson is a national thought leader in radiology quality improvement and patient safety, and a regular speaker regarding topics ranging from pediatric CT radiation dose optimization to radiology peer learning. He is the executive director of Stanford's Realizing Improvement through Team Empowerment (RITE) program and co-director of the Clinical Effectiveness Leadership Training (CELT) program. He also leads the Stanford Medicine Improvement Capability Development Program. Dr. Larson is the Founder and Program Chair for the Radiology Improvement Summit held annually at Stanford, now in its fourth year. He also serves on the Board of Trustees of the American Board of Radiology, overseeing quality and safety, and on the Board of Directors of the Society for Pediatric Radiology. He serves on the Board of Chancellors for the American College of Radiology as the Chair of the ACR's Commission on Quality and Safety. Prior to his position at Stanford, Dr. Larson was the Janet L. Strife Chair for Quality and Safety in Radiology and a faculty member of the James M. Anderson Center for Health Systems Excellence at Cincinnati Children's Hospital in Cincinnati, Ohio. He holds MD and MBA degrees from Yale University and completed his training at the University of Colorado Health Sciences Center in Denver, Colorado. Dr. Larson is a pediatric radiologist at Lucile Packard Children's Hospital at Stanford. He and his wife, Tara, live in Portola Valley, California and have four children.

Dr. **Martha Linet**, is a physician epidemiologist, who served as Chief of the Radiation Epidemiology Branch of the National Cancer Institute from 2002-2014 and then as a senior scientist until her retirement in January 2020. She continues to support research and mentorship in DCEG as an NIH Scientist Emerita. Dr. Linet is recognized as an international leader in epidemiology and expert on the etiology of pediatric and adult leukemia, lymphoma, and brain tumors, as well as the health effects of ionizing and non-ionizing radiation and benzene exposure. Over the course of her productive career, Dr. Linet led the collaborative NCI-Children's Oncology Group case-control study of extremely low-frequency residential magnetic fields and other environmental exposures and risk of childhood acute lymphoblastic leukemia, and was co-principal investigator of the multi-center NCI case-control study of cellular telephones and other risk factors for adult brain tumors. She was the long-standing principal investigator of the study of cancer and other radiation-related disease risks in the U.S. Radiologic Technologists Study and the co-principal investigator of the study of cancer risks in Chinese benzene workers. Dr. Linet served on the National Academy of Sciences Nuclear and Radiation Studies Board, the National Council on Radiation Protection and Measurements, and the Editorial Board of the American Journal of Epidemiology. During 2004-2005 Dr. Linet was President of the American College of Epidemiology. She also previously served as the NCI liaison to the Committee on Environmental Health of the American Academy of Pediatrics, the Advisory Group on Cancer and the Environment to the American Cancer Society, and the Standing Committee on Epidemiology of the International Commission on Non-Ionizing Radiation Protection. Dr. Linet is a former member of the National Academies' Nuclear and Radiation Studies Board.

Dr. **Mahadevappa Mahesh** is a Professor in the Johns Hopkins Medicine Department of Radiology and Radiological Science and the Division of Cardiology. He is also the Chief Physicist at The Johns Hopkins Hospital. Dr. Mahesh also has a joint appointment in the Johns Hopkins Bloomberg School of Medicine Department of Environmental Health. His research interests are in medical physics and imaging, particularly in areas of multiple-row detector computed tomography (MDCT), interventional fluoroscopy and digital mammography. As chief physicist, he oversees the quality assurance program for diagnostic radiology, which includes maintaining compliance with regard to state and federal regulations and ensuring safe use of radiation to patients. He often provides counsel to patients concerned over their radiation exposure from diagnostic x-ray examinations. He received a B.S. in math and physics and an M.S. in solid-state physics from the University of Mysore in Mysore India. He then completed an M.S. in physics at Marquette University in Milwaukee, Wisconsin, and in 1993 obtained his Ph.D. in medical physics from the Medical College of Wisconsin.

Dr. **Ioannis Sechopoulos** is the chair of the AXTI lab within the Department of Radiology and Nuclear Medicine of Radboud University Medical Center, and scientific advisor of the Dutch Expert Center for Screening (LRCB). He obtained his Ph.D. from the Georgia Institute of Technology , in Atlanta, USA, performing research in the area of digital breast tomosynthesis at Emory University . Since then, his main area of research is the development of advanced x-ray-based imaging techniques, especially for breast cancer detection, diagnosis and therapy response monitoring. Dr. Sechopoulos has performed extensive work in radiation dosimetry, x-ray scatter modeling and correction, image acquisition optimization and image reconstruction, processing and analysis algorithm development for various x-ray imaging modalities. He also performs patient trials to assess the clinical performance of these and other novel imaging technologies. Dr. Sechopoulos is a member or chair of 22 different tasks groups and committees of the American Association of Physicists in Medicine (AAPM), the European Federation for Organization of Medical Physics (EFOMP), the Radiological Society of North America (RSNA), and the European Society of Breast Imaging (EUSOBI). He is a member of the editorial board of the international journals Medical Physics and Radiology , and associate editor of Physica Medica: European Journal of Medical Physics.

Jenia Vassileva is a Radiation Protection Specialists at the Radiation Protection Unit of the International Atomic Energy Agency. She holds a PhD in medical imaging physics, and before joining the IAEA in 2014, she was Professor of Medical Physics and Head of Department of Radiation Protection in Medical Exposure at the National Center of Radiobiology and Radiation Protection in Sofia, Bulgaria. She supervised over 40 MSc and PhD medical physics students and has been involved in the postgraduate education and clinical training of medical physicists and health professionals in Bulgaria. She was involved in over 20 national, European or international research projects, member of the Physics Subcommittee of the European Congress of Radiology 2010–2012 and its chair in 2013. She chaired two International Conferences on Radiation Protection in Medicine, 2010 and 2014 in Varna, Bulgaria, and was a guest-editor of two special issues of Radiation Protection Dosimetry. She was the President of the Bulgarian Society of Biomedical Physics and Engineering in the period 2012-2014. Since 2014 J. Vassileva when she joined the IAEA, she has been responsible for IAEA publications, technical and consultancy meetings and Technical cooperation projects related to radiation protection in medicine. Since 2016 she has been organizing regular webinars on radiation protection of patients, has overseen development of a number of e-learnings, information and training material, and has coordinated international studies of patient doses from medical imaging procedures. She has co-authored over 100 peer reviewed articles and has been invited to speak at many scientific forums. She has acted as a reviewer for several peer reviewed journals and is currently an Associate Editor of Physica Medica.