

ASNC/SNMMI Radionuclide Authorized User Training Course

The joint American Society of Nuclear Cardiology (ASNC) and SNMMI “80 Hour Radionuclide Authorized User Training Course” was launched on April 12 as a 1-of-a-kind online educational resource for a broad community of radionuclide users. The collaborative project is the result of significant investment of time and energy from subject-matter experts and staff from both professional societies. “This was a more than 2-year cooperative effort directly addressing a genuine need in both the nuclear medicine and nuclear cardiology communities,” said Vasken Dilsizian, MD, who, as the 2019–2020 SNMMI president, initiated planning for the course and, with James A. Case, PhD, oversaw its development. “As someone who is closely involved with education of radiology, nuclear medicine, and nuclear cardiology trainees, I’ve long believed that we’re missing a key element in preparing our workforce on some of the basics in radionuclide knowledge and technique,” said Dr. Dilsizian. “A partnership between 2 of our leading professional societies, leveraging the expertise of their members and the organizational skills of their experienced staffs, has provided an extraordinarily productive environment for creation of this rich and rigorous new resource.”

The course is targeted at nuclear medicine physicians and cardiologists who wish to complete the 80 hours of classroom training required by the U.S. Nuclear Regulatory Commission (NRC) to meet 10 CFR 35.290 training and Agreement State equivalents in basic radionuclide handling techniques for medical use of unsealed byproduct material for imaging and localization studies in order to become Authorized Users (U.S. NRC 10 CFR 35.200). Individuals who complete the course will still need hands-on training in simultaneous clinical work experience in their local nuclear laboratories in the required specified areas as attested to by their Authorized User preceptors. “I am particularly pleased that this course will be available to residents in nuclear medicine and fellows in nuclear cardiology,” said Dr. Dilsizian. “As diagnostic, therapeutic, and theranostic applications of radionuclides grow in number and complexity and as the range of approved radiopharmaceuticals expands, we will need more Authorized Users with a solid understanding of the requisite knowledge and the adaptability to build on that knowledge along with changing technologies and novel discoveries.” In the future, the course may also be useful for nuclear medicine technologists, especially those who intend to take the Nuclear Cardiology Technologist specialty examination. In addition, the course may be useful for other allied health care professionals, such as radiation safety officers and health physicist specialists.

The online course includes 93 modules of video and slide presentations in 5 sections (see Table 1 for content overview). Each module is divided into 2 or 3 chapters, with quiz questions

to assess comprehension on chapter content. Participants may go back to review presentation content and reanswer incorrect questions to meet the required passing score. Those who successfully complete the 80 hours of classroom training will receive a certificate of completion from ASNC/SNMMI, which will be recognized by the NRC and Agreement States as part of their Authorized User training requirements.

TABLE 1
ASNC/SNMMI Radionuclide Authorized User Training Course: Content Overview

Section 1: Radiation Protection and Safe Radioisotope Handling
Regulatory Requirements
Forms of Radiation
Radiation Units
Radiation Protection
Section 2: Physics and Instrumentation
SPECT and Planar Nuclear Imaging: Gamma Cameras
SPECT and Planar Nuclear Imaging: Data Corrections
SPECT and Planar Nuclear Imaging: Tomographic Imaging
SPECT and Planar Nuclear Imaging: Quality Control
PET Imaging: PET Cameras
Dedicated PET and PET/CT Imaging: Tomographic Imaging
PET Imaging: Quality Control
Image Post Processing
Tracer Kinetics
Clinical Optimization of Radiopharmaceutical Dosing
Application of Technology for Radiation Reduction
Other Clinical Applications of Planar, SPECT and PET Imaging: Image Acquisition and Processing
Section 3: Radiochemistry and Radiopharmaceuticals
Managing a Hot Lab
Radionuclide Production and Radiopharmaceuticals
Quality Control of Radiopharmaceutical Production Kits
Section 4: Radiation Biology
Radiation Biology Overview
Radiation Injury, Cell, and Organ Responses
Risk Models, Exposure Limits, Deterministic and Stochastic Effects
Section 5: Nuclear Medicine Mathematics and Statistics
Measuring Radioactive Decay
Shielding Calculations
Mathematics of Imaging
Mathematics of Radioactivity

(Continued on page 17N)

SNMMI's Role in the Nuclear Medicine Renaissance

Richard L. Wahl, MD, SNMMI President

Nuclear medicine is undergoing a renaissance, as evidenced by the steady introduction and approval of new radiopharmaceuticals, theranostics, and instrumentation. In the past year alone, we have celebrated the U.S. Food and Drug Administration (FDA) approval of new PSMA-targeted prostate imaging and therapy agents, breakthrough research for FAPI PET/CT, new generic SPECT agents, and great advances in artificial intelligence. SNMMI has been there every step of the way to support the field of nuclear medicine and molecular imaging, promoting quality of practice, research and discovery, outreach, and advocacy, all while helping ensure an adequate workforce pipeline for the future.

SNMMI strives to enhance the practice of nuclear medicine by providing professionals with the resources needed to deliver high-quality care. In light of recent advances in the field, SNMMI released appropriate use criteria for PSMA PET imaging and musculoskeletal infection imaging, as well as new procedure standards to assist in obtaining high-quality examinations while simultaneously controlling costs. In February, SNMMI launched its Radiopharmaceutical Therapy Center of Excellence program, which offers options for site designation, and later this year will begin its pilot program for the Radiopharmaceutical Therapy Registry (RaPTR), which supports ongoing data collection and quality improvement in theranostics. SNMMI's Therapeutics Conference, held in March, was well attended and provided education to practitioners wishing to expand their practices to include radiopharmaceutical therapies, such as ^{177}Lu -PSMA-617.

A key SNMMI focus over the past year has been to encourage research. A new initiative, the "Mars Shot" for molecular imaging, focuses on advancing the research and development of diagnostic and therapeutic nuclear medicine. A dosimetry supplement in *The Journal of Nuclear Medicine* addresses both the rapid progress and challenges in applying patient-specific radiation dosimetry to guide radiopharmaceutical therapies, providing a useful starting point for sites considering implementing dosimetry in their clinical practices or research operations. A therapy toolkit has been developed to assist new sites as they begin research projects. An Artificial Intelligence (AI) Summit was held in March to help drive development of AI tools for nuclear medicine. In addition, the society created and awarded 2 Radiopharmaceutical Therapy Research Fellowships to grow the number of trained investigators in our field.

The society has also been successful in advancing its issues and becoming a valued partner among public policy stakeholders. SNMMI is working hard to encourage legislators and regulators to support and pass the bipartisan

Facilitating Innovative Nuclear Diagnostics (FIND) Act, a bill to ensure patient access to nuclear medicine scans (www.snmmmi.org/FindAct). A summit was held in March to educate regulatory representatives about health disparities and barriers to patient access to nuclear medicine procedures. The society has also actively worked to maintain and increase reimbursement for the nuclear medicine community, successfully expanding Centers for Medicare & Medicaid Services coverage for nononcologic PET and ^{18}F -FDG PET for infection and inflammation.

With so much work being done to advance the field, SNMMI realizes the importance of developing a robust pipeline of professionals qualified to practice in all areas of nuclear medicine and molecular imaging, both now and in the future. In the past year, 3 working groups (focused on physicians, scientists, and technologists) were formed to develop content and curricula on radiopharmaceutical therapies and diagnostic procedures for residents. A dedicated resident, medical student, and program director website was also created with tailored content for each group. The society introduced a new education initiative—the Quality Systems Personnel Training Program—to educate individuals with a pharmacy or chemistry background in the production and release of clinical radiopharmaceuticals. SNMMI also launched a new online Career Center which, as of January 2022, has posted more than 2,500 jobs.

Another component of SNMMI's work is outreach. The society reaches referring physicians through presentations at specialty events, such as the Pediatric Endocrine Society meeting and the San Antonio Breast Cancer Symposium. To connect with patients, SNMMI hosted its annual Patient Education Day, which was attended by 223 participants and has received more than 1,000 on-demand views to date. In-person patient roadshows are scheduled to return in 2022. Two new organizations joined SNMMI's Patient Advisory Board in 2021, bringing the total number of participants to 15. Internationally, SNMMI's Department of Energy Grant Taskforce continues to work closely with the Korle Bu Teaching Hospital in Accra, Ghana, to assist in building its nuclear medicine program.

As always, SNMMI supports nuclear medicine and molecular imaging through its meetings and journals. Held virtually last year, the 2021 Annual Meeting welcomed more than 6,000 participants from more than 60 countries, with an expanded scientific program including 80 continuing education and



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scientific sessions, 189 scientific oral presentations, 14 satellite symposia, 1,000 scientific posters, and 115 exhibitors. *The Journal of Nuclear Medicine* continues to promote innovative research and dramatically increased its impact factor last year, now ranking third among all medical imaging journals.

In the fall of 2021 SNMMI kicked off a new consumer-focused public relations initiative to raise awareness about what nuclear medicine is and what it can accomplish. By focusing on consumer broadcast media—print and digital

news publications, radio, and TV—SNMMI has been able to reach a broad audience, including patients, referring physicians, legislators, regulators, payers, and other media. After only 6 months, the program has provided content to a potential 1 billion consumers.

SNMMI is stable, financially secure, and ready to lead in a new era of nuclear medicine and molecular imaging. As the nuclear medicine renaissance continues, the society is committed to our members and the patients we serve.

(Continued from page 15N)

“This would not have been possible without the generous volunteer efforts of the more than 40 course leads and section faculty who participated in multiple planning meetings and devoted substantial time in developing and preparing highly specialized material for this unique effort,” said Dr. Dilsizian. “Kathleen Flood, ASNC CEO, and Virginia Pappas, CAE, SNMMI CEO, deserve special credit for their willingness to bring together their members and staffs to coordinate these efforts. Dawn Edgerton, MA, ASNC Director of Strategic Projects, was an exceptional organizational leader on the project from start to completion.”

The leads for Section 1, Radiation Protection and Safe Radioisotope Handling, are R. Glenn Wells, PhD, and David Wolinsky, MD, with section faculty including Dr. Wells and Brian Abbott, MD; Adam Alessio, PhD; Mouaz Al-Mallah, MD, MSc; Jon Aro, BSc; Stephen A. Bloom, MD; Tyler Bradshaw, MD; James A. Case, PhD; Rami Doukky, MD, MSc, MBA; Dawn Edgerton, MA; Michael King, PhD; Ran Klein, PhD, Elec Eng; Yi-Hwa Liu, MD; April Mann, MBA, CNMT, NCT, RT(N); Frederic J. Mis, PhD, CHP; and William Van Decker, MD.

The second section, on Physics and Instrumentation, is led by Keisha McCall, PhD, and Krishna Patel, MD, MSc, with section faculty including Dr. McCall and Mouaz Al-Mallah, MD, MSc; Ian Armstrong, PhD; James A. Case, PhD; Frederic H. Fahey, DSc; James R. Galt, PhD; Ernest V. Garcia, PhD; Saurabh Malhotra, MD; A. Iain McGhie,

MD; Zhihua Qi, PhD; Piotr Slomka, PhD; Brett Sperry, MD; and Stephanie Thorn, PhD.

The third section, on Radiochemistry and Radiopharmaceuticals, is led by Saurabh Malhotra, MD, and Sally Schwarz, RPh, MS, with faculty including Dr. Schwarz and William Crisp, PharmD; Reiko Oyama, RPh, MS; Stephen Moerlein, PharmD; Peggy Squires, BS, CNMT; and William Van Decker, MD.

Section 4, on Radiation Biology, is led by Frederic J. Mis, PhD, CHP, and Ronald G. Schwartz, MD, MS, who serve as section faculty along with Andrew Einstein, MD, PhD.

The fifth section, on Nuclear Medicine Mathematics and Statistics, is led by James A. Case, PhD, and Frederic J. Mis, PhD, CHP, who serve as section faculty along with Maria L. Mackin, CNMT, and Ronald G. Schwartz, MD, MS.

Special recognition is also due to Tina Buehner, PhD, CNMT, for her service on the task force and her contributions to the content of this course. The cost of the course for SNMMI and ASNC members is \$400 for cardiology fellows and nuclear medicine residents and \$550 for physicians. For nonmembers the cost is \$700. To learn more about the course and to enroll, see: https://sites.snmami.org/SNMMIMAIN/80_Hour_Course/80_Hour_Radionuclide_Authorize_User_Training_Course.aspx or <https://www.ASNC.org/80Hour>.

*American Society of Nuclear Cardiology
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