

Paving the Way for Research and Discovery

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SNMMI's strategic plan includes a strong focus on research and discovery, with an overarching goal of advancing the development and approval of nuclear medicine and molecular imaging technologies. SNMMI has made significant progress in this area within the past few years.

The SNMMI Clinical Trials Network (CTN)—which celebrates its 10th anniversary this year—has been particularly successful in fulfilling its mission to optimize the use of radiopharmaceuticals in clinical trials and, ultimately, advance them into clinical practice. As a result, the field has seen an increase in the availability and performance of molecular imaging radiopharmaceuticals in the clinic.

A key component of the CTN is its scanner validation program, which uses a proprietary anthropomorphic oncology phantom. The current version of this clinical simulator has 13 lesions of variable size that mimic the National Electrical Manufacturers Association (NEMA) IQ phantom, which is the standard in Europe. Scanner Validation Committee members are working with their European and Australian counterparts to develop international acceptance criteria.

As PET/CT imaging becomes more common in the management of many types of cancer patients, accreditation programs increasingly require phantom-based scanner measurements to ensure imaging accuracy. To meet this growing demand, the Scanner Validation Committee released a new cloud-based, automated Phantom Analysis Toolkit. The toolkit is designed to produce rapid, reliable, reproducible, and fully automated phantom analysis for the 4 most common PET phantoms currently in use in clinical trials and clinical practice: the American College of Radiology PET Phantom, CTN Oncology Phantom, NEMA Image Quality Phantom, and the Uniform Phantom. SNMMI members receive access to the toolkit free of charge.

Educating our members on research-related topics and the latest imaging agents also is a core function of the CTN. Our last 2 webinar series—designed for technologists, fellows, residents, and supervising physicians—focused on anatomy and radiopharmaceuticals and were very well attended; both series are available on-demand on the SNMMI website. In January, a new continuing medical education course, “Gallium-68-Labeled Somatostatin Receptor PET/CT Imaging Reader Training,” went live in the SNMMI Learning Center. For the second year in a row, a CTN-submitted session will be presented at the American Society of Clinical Oncology; this year's topic is “Recent Advances in Nuclear Medicine Theranostics for Cancer,” with planned lectures from Jonathan McConathy, MD, PhD, and Michael Hofman, MBBS. The SNMMI Nuclear Medicine Clinical Trial Group, LLC (NMCTG), offers reader training in-person at SNMMI meetings as well as online and has been highly utilized.

The NMCTG has assisted nearly a dozen companies and entities with incorporating molecular imaging in multicenter trials and has made great strides in enhancing the quality of data collected. Trial activities have included scanner validation and harmonization of study scanners, image quality control, study personnel training, and trial design consultation. Once agents are approved, reader training modules are developed and made available at no charge on the NMCTG web page. Modules are currently available for ^{18}F -fluciclovine, ^{68}Ga -DOTATATE, and ^{68}Ga -DOTATOC—all with embedded case reads. Training is also offered via live webinar, at the SNMMI Annual Meeting, and at other meetings.

Progress has also been made in promoting development of targeted radionuclide therapies. In 2018, SNMMI sponsored a Theranostics Consensus Conference that served as a springboard for several intersocietal initiatives to encourage development of the professional practice of theranostics. SNMMI hosted a categorical session on theranostics at its 2019 Annual Meeting to discuss regulatory perspectives on products that combine an imaging modality with therapeutic radiopharmaceuticals. Based on the success of these 2 initiatives, major stakeholders in theranostics gathered for a productive day of in-depth discussions at the third Targeted Radionuclide Therapy Conference in December 2019.

In addition to theranostics, artificial intelligence (AI) has become a promising topic of interest in the nuclear medicine and molecular imaging field. The Research and Discovery domain and the Physics, Instrumentation, and Data Sciences Council have created an Artificial Intelligence Taskforce that will identify areas where AI can benefit the field.

I am happy to announce that SNMMI has introduced several new research grants and plans for fellowships to promote research in the field. These include 5 grants to introduce high-achieving students to molecular imaging and targeted radiotherapy as a potential career path, a grant to study the value of nuclear medicine tests, and fellowships in targeted radionuclide therapy.

I would like to express my appreciation to those who have led the society's efforts in research and discovery. Bonnie Clarke, BS, SNMMI's director of research and discovery, has managed the CTN and the NMCTG from their inception. Over its 10 years, the CTN has been chaired by several dedicated members, including Sandy McEwan, MD, PhD, Peter Conti, MD, PhD, Michael Graham, PhD, MD, and John Hoffman, MD, as well as John Sunderland, PhD, and Jonathan McConathy, MD, PhD, the current co-chairs. Thanks to these individuals, as well as many others, we can look forward to an exciting future for nuclear medicine and molecular imaging.