

SNMMI Annual Meeting Highlights Theranostics, Novel Research, and Image of the Year

More than 5,000 physicians, technologists, scientists, and exhibitors gathered at the SNMMI 2018 Annual Meeting, June 24–26, at the Pennsylvania Convention Center in Philadelphia. With a theme of “Imagining the future of human health,” the event featured more than 850 scientific podium sessions and almost 1,000 poster presentations. The meeting included ^{18}F -fluciclovine PET live reader training; updates on appropriate use criteria, coding, and reimbursement; and news on ^{99}Mo production and availability. In addition, the University of Pennsylvania (Philadelphia) organized a case review session with 50 exemplar cases.

The June 23 opening ceremony provided an overview of the meeting and was followed by the welcome reception and exhibit hall opening. China was the 2018 highlight country, and the president of the Chinese Society of Nuclear Medicine addressed attendees at the opening ceremony. The Chinese society showcased Chinese culture at the reception and organized scientific and CE sessions throughout the meeting.

At the opening plenary session on June 24, the Henry N. Wagner, Jr., MD, Lecture was given by Richard E. Carson, PhD, professor of radiology, biomedical imaging, and biomedical engineering; director of the Yale PET Center; and director of graduate studies for the biomedical engineering program at Yale University (New Haven, CT). His talk was on “Quantitative nuclear imaging: Is SUV the best we can do?” The presentation covered tracer kinetic analysis methods for quantitative brain imaging applications, with foci on synaptic density imaging, how and why SUV works so well for ^{18}F -FDG oncology studies, and imaging challenges faced in nonbrain dynamic studies. The opening plenary session also included an update on SNMMI’s Value Initiative, presented by 2018–2019 SNMMI President Satoshi Minoshima, MD, PhD, professor of radiology and chair of the Depart-



Richard E. Carson, PhD, delivered the Henry N. Wagner, Jr., MD, Lecture at the 2018 SNMMI Annual Meeting.

ment of Radiology and Imaging Sciences at the University of Utah (Salt Lake City). Also on June 24, Patient Education Day included break-out sessions focusing on neuroendocrine tumors, prostate cancer, and lymphoma.

New at this year’s meeting were “Nuts and Bolts” sessions in each track that covered a wide variety of subspecialty areas, providing practical information to apply in the clinic. An Interactive Training Showcase in the Exhibit Hall featured 30-minute training sessions on the use of new technologies and equipment by major exhibitors.

Several of the major annual awards are featured in this issue of Newsline, and the Highlights Lectures, summarizing the scientific achievements presented at the meeting, will appear serially in upcoming issues.

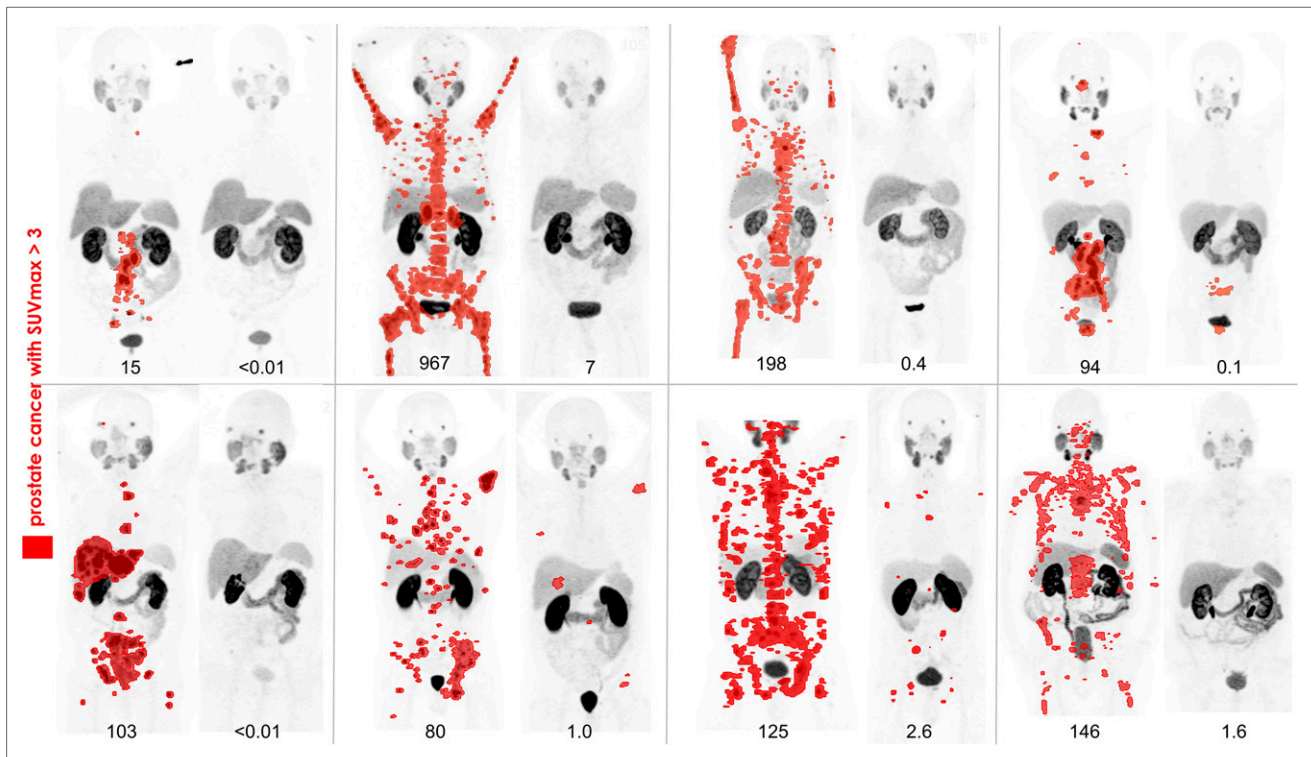
2018 Image of the Year

Each year, SNMMI chooses an image that exemplifies the most promising advances in the field of nuclear medicine and molecular imaging. The 2018 SNMMI Image of the Year was chosen from more than 2,200 abstracts submitted to the meeting and voted on by reviewers and society leadership. The 2018 Image of the Year came from a team of researchers at the Peter MacCallum Cancer Centre (Melbourne, Australia) and Singapore General Hospital and shows exceptional responses in a series of patients with metastatic castrate-resistant prostate cancer who received ^{177}Lu -prostate-specific membrane antigen-617 (^{177}Lu -PSMA617) therapy. In each patient, the extent of tumor spread before and after treatment was visualized with clarity using ^{68}Ga -PSMA11 PET. These patients experienced improved quality of life, including reduction of pain correlated with marked reduction of prostate-specific antigen (PSA).

“This work reflects an appreciation for all the basic science and translation work that has been performed by many groups over a long period of time to develop PSMA theranostics as a paradigm-changing practice for improving



Welcome Reception at the SNMMI Annual Meeting in Philadelphia, PA.



2018 SNMMI Image of the Year: PET imaging before and after ^{177}Lu -PSMA617 therapy for metastatic prostate cancer. ^{68}Ga -PSMA11 PET maximum-intensity projection images at baseline and 3 months after ^{177}Lu -PSMA617 treatment in 8 patients who experienced prostate-specific antigen declines of $\geq 98\%$ in a prospective phase II study. Red = disease with $\text{SUV} > 3$. Used with permission from Hofman et al. from the Peter MacCallum Cancer Centre (Melbourne, Australia).

patient outcomes,” said lead author Michael Hofman, MBBS, of the Peter MacCallum Cancer Centre. “These images tell a story about exceptional responses observed in patients who had progressed after standard therapies. They match striking improvements in patient quality of life. With further research, we look forward to seeing nuclear medicine evolve as a key specialty and standard of care in cancer management.”

In the phase II prospective trial, 30 patients with PSMA-avid metastatic castrate-resistant prostate cancer who had failed standard therapies received up to 4 cycles of ^{177}Lu -PSMA617 every 6 weeks. Inclusion criteria included high uptake on ^{68}Ga -PSMA PET/CT defined by tumor $\text{SUV}_{\text{max}} > 1.5 \times \text{liver}$; patients were excluded if ^{18}F -FDG PET/CT identified sites of PSMA-negative disease. Administered activities (6 ± 2 GBq) were adjusted depending on tumor burden, renal function, and weight. Mean administered activity was 7.5 GBq/cycle. Seventeen patients (57%) achieved a $\geq 50\%$ decline in PSA, including 11 patients (37%) with a PSA decline $\geq 80\%$. An objective imaging

response was seen in 82% of the subgroup of 17 patients who had evaluable soft tissue disease. Marked decreases in pain and low toxicities were reported.

Umar Mahmood, MD, PhD, chair of the SNMMI Scientific Program Committee, said, “The last decade has seen a blossoming of theranostics to treat tumors with molecularly guided radiotherapy. The expansion of patients benefiting from this approach is remarkable, and it is wonderful to know that this effort is being led by nuclear medicine physicians and scientists.” He added, “Prostate cancer, which affects millions of men around the world, can be painful and deadly in the metastatic setting. This phase II prospective study by Michael Hofman and colleagues clearly shows the benefit to men with castrate-resistant prostate cancer treated with a β emitter targeting PSMA when their tumors expressed PSMA. It is gratifying to see the benefit of the approach both rigorously and objectively demonstrated in this trial, in terms of improvement in disease burden and improvement in the pain severity the men suffered.”