

practices, and other providers and suppliers. The Model Performance Period for BPCI Advanced starts on October 1, 2018, and runs through December 31, 2023. As with all models tested by CMS, a formal, independent evaluation to assess quality of care and changes in spending under the model will be performed. For more information about the model and its requirements or to download a Request for Applications document, the application template, and the required attachments, see: <https://innovation.cms.gov/initiatives/bpci-advanced>. Applications must be submitted via the Application Portal, which will close at 11:59 PM EST on March 12, 2018.

*Centers for Medicare & Medicaid Services*

### **NNSA Highlights Complete Curium <sup>99</sup>Mo Conversion**

The U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) announced on January 17 that Curium (St. Louis, MO), an international health care company, had completed conversion of its <sup>99</sup>Mo production process from highly enriched

uranium (HEU) to low-enriched uranium (LEU). According to the NNSA press release “this conversion to LEU represents a key milestone in the global effort to end the use of HEU in <sup>99</sup>Mo production.” “Curium’s successful conversion marks another major step towards a more secure world where the <sup>99</sup>Mo supply is stable and proliferation-sensitive material is not at risk,” said David Huizenga, NNSA Principal Assistant Deputy Administrator for Defense Nuclear Nonproliferation. “By increasing the share of worldwide <sup>99</sup>Mo production that uses LEU, we are closer to eliminating the use of weapons-grade uranium in making this critical resource and making the world safer.”

NNSA and Curium have collaborated on the conversion process since 2014 as part of NNSA’s nonproliferation mission, which helps support major global <sup>99</sup>Mo producers in the conversion process. NNSA’s support assisted Curium in developing new LEU-based targets and in designing, building, and testing new production equipment and processes for separating LEU-based <sup>99</sup>Mo after irradiation. In a parallel press

release, Curium officials noted that the completion of this process makes Curium the only North American <sup>99m</sup>Tc generator manufacturer able to supply its customers exclusively with 100% LEU-based generators. Curium is the world’s largest supplier of <sup>99m</sup>Tc generators and the largest user of <sup>99</sup>Mo. “This milestone helps satisfy the goals set forth by the DOE NNSA and confirms our support for the NNSA project to eliminate the use of weapons-grade uranium in the production of medical isotopes,” said Dan Brague, Curium North American CEO. “We are eager to see others follow our lead and comply with the government’s call for full conversion as soon possible.”

The achievement also means that more than half of the world’s production of <sup>99</sup>Mo is now LEU based. In addition to supporting conversion among international <sup>99</sup>Mo producers, NNSA works domestically to support commercial partners in establishing a reliable, non-HEU-based supply of this critical medical radioisotope.

*National Nuclear Security Administration*

## **FROM THE LITERATURE**

*Each month the editor of Newsline selects articles on diagnostic, therapeutic, research, and practice issues from a range of international publications. Most selections come from outside the standard canon of nuclear medicine and radiology journals. These briefs are offered as a monthly window on the broad arena of medical and scientific endeavor in which nuclear medicine now plays an essential role. The lines between diagnosis and therapy are sometimes blurred, as radiolabels are increasingly used as adjuncts to therapy and/or as active agents in therapeutic regimens, and these shifting lines are reflected in the briefs presented here. We have also added a small section on noteworthy reviews of the literature.*

### **<sup>18</sup>F-DOPA PET vs. MR Contrast Imaging in Recurrent Glioma**

Youland et al. from the Mayo Clinic (Rochester, MN) reported on January 13 ahead of print in the *Journal of Neuro-Oncology* on a prospective clinical trial comparing the imaging sensitivity and specificity of <sup>18</sup>F-DOPA PET and of MR with contrast enhancement in patients with recurrent gliomas. The study included 13 patients with MR imaging suggesting recurrent glioma who underwent <sup>18</sup>F-DOPA PET and contrast-enhanced MR imaging for neurosurgical planning. Areas of concordant and discordant PET and MR findings, all from regions of T2 fluid-attenuated inversion recovery

signal hyperintensity, underwent stereotactic biopsy (total of 37 specimens). Sensitivity and specificity of imaging results were calculated based on histopathologic analyses. More than 51% of the biopsied specimens showed MR contrast enhancement, and 78% were <sup>18</sup>F-DOPA avid on PET. Imaging results were MR-negative/PET-negative in 16% of biopsies, MR-negative/PET-positive in 32%, positive on both modalities in 46%, and MR-positive/PET-negative in 5%. Histopathologic review showed grade II components in 16%, grade III in 43%, grade IV in 30%, and no tumor in 11%. Contrast-enhanced MR imaging sensitivity for recurrent tumor was 52% and specificity was 50%; corresponding values for PET were 82% and 50%. For MR imaging,

a tumor-to-normal threshold  $> 2.0$  altered sensitivity to 76% and specificity to 100%; corresponding figures for PET for an  $SUV_{max}$  threshold  $> 1.36$  were 94% and 75%. The authors concluded that  $^{18}F$ -DOPA PET “can provide increased sensitivity and specificity compared with MRI contrast-enhanced for visualizing the spatial distribution of recurrent gliomas.” They added that future studies will incorporate  $^{18}F$ -DOPA PET into reirradiation target volume delineation for radiotherapy planning, with a special focus on benefits in distinguishing recurrence from treatment-related changes.

*Journal of Neuro-Oncology*

### MR and PET/CT Imaging in Cardiac Sarcoidosis

In an article published online in the January issue of *Circulation. Cardiovascular Imaging* (2018;11:e007030), Vita et al. from the Brigham and Women’s Hospital (Boston, MA), Johns Hopkins Hospital (Baltimore, MD), Walter Reed National Military Medical Center (Bethesda, MD), and the Uniformed Services University of Health Services (Bethesda, MD) reported on the potentially complementary information provided by cardiac MR and PET imaging in determining the likelihood of cardiac sarcoidosis and in guiding treatment approaches. The retrospective study included 107 patients (ages,  $55 \pm 11$  y; left ventricular ejection fraction,  $43\% \pm 16\%$ ) referred for sarcoidosis evaluation with both cardiac MR and  $^{18}F$ -FDG PET imaging. Reviewers unaware of additional clinical data categorized imaging results using predetermined criteria to estimate the likelihood of cardiac sarcoidosis: none ( $< 10\%$ ), possible (10%–50%), probable (50%–90%), or highly probable ( $> 90\%$ ). Patient management after imaging, as indicated in the medical record, was assessed for all patients and compared with categories of increasing sarcoidosis likelihood. Final clinical diagnoses were assigned based on subsequent review of all available imaging, clinical, and pathology data. Ninety-one patients (85%) showed late gadolinium enhancement on MR imaging, and 82 (76%) showed abnormal

$^{18}F$ -FDG uptake on PET, suggesting active inflammation. Among the 91 patients with late gadolinium enhancement, 60 (66%) also showed abnormal  $^{18}F$ -FDG uptake. When the PET data were added to the cardiac MR results, 48 patients (45%) were reclassified as having higher or lower likelihood of cardiac sarcoidosis, with most of these (80%) found at the time of final diagnoses to be correctly reclassified. Management changes to immunosuppressive therapies were significantly more likely in patients assessed as highly probable for cardiac sarcoidosis. The authors concluded that “among patients with suspected cardiac sarcoidosis, combining cardiac MR and PET provides complementary value for estimating the likelihood of cardiac sarcoidosis and guiding patient management.”

*Circulation. Cardiovascular Imaging*

### PET and Refractory Epilepsy

Chan et al. from the London Health Sciences Centre (Canada) reported in the January issue of the *Canadian Journal of Neurological Sciences* (2018;45:30–34) on the role of PET in presurgical evaluation of patients with refractory epilepsy, compared to the more conventional epileptogenic foci localization made by scalp video-electroencephalography (vEEG), MR imaging, and intracranial EEG (iEEG). The retrospective review included 62 patients (mean age, 34 y; range, 20–68 y) with refractory epilepsy who had undergone PET imaging and one or more of the conventional imaging approaches. A total of 36 were found to have concordant PET and vEEG findings: of these, 6 underwent surgical resection and either became seizure free or showed improvement in seizure frequency at 3 mo; 11 also had surgical resection and either became seizure-free or showed improvement in seizure frequency at 3 months but required iEEG for final verification. The authors concluded that “PET has an important role in presurgical evaluation of patients with refractory epilepsy” and “may allow resection of the epileptogenic focus without the

need for iEEG, guiding intracranial electrode placement for further localization of the epileptogenic focus, or exclusion of patients from further evaluation.”

*Canadian Journal of Neurological Sciences*

### $^{18}F$ -Choline PET/CT for Parathyroid Scintigraphy

In an article e-published on January 27 ahead of print in the *Journal of Radiological Protection*, Rep et al. from University Medical Centre Ljubljana, the Onkoloski Institut Ljubljana, the Jozef Stefan Institute, and the Institute of Occupational Safety Ljubljana (all in Ljubljana, Slovenia) reported on a study comparing the organ doses and effective doses (EDs) from conventional subtraction scintigraphy, dual-phase  $^{99m}Tc$ -sestamibi SPECT/CT, and  $^{18}F$ -choline PET/CT in localization of hyperfunctioning parathyroid glands in primary hyperparathyroidism. The study included 36 patients referred for parathyroid imaging with a clinical indication of primary hyperparathyroidism. Each patient underwent preoperative parathyroid subtraction scintigraphy and dual-phase SPECT/CT imaging as well as  $^{18}F$ -choline PET/CT. In addition to dose and exposure calculations, results were compared with histology findings. The diagnostic performance of  $^{18}F$ -choline PET/CT was found to be significantly better than that of the 2 conventional imaging modalities (sensitivity of 97% for PET, 64% for  $^{99m}Tc$ -sestamibi SPECT/CT, and 46% for conventional subtraction scintigraphy; specificity was  $> 95\%$  for all modalities). Radiation exposures were 7.4 mSv for conventional subtraction scintigraphy, 6.8 mSv for dual-phase  $^{99m}Tc$ -sestamibi SPECT/CT, and 2.8 mSv for  $^{18}F$ -choline PET/CT. The additional burden imposed by the inclusion of CT in the 2 hybrid approaches did not significantly affect total radiation exposures. The authors concluded that “in comparison to conventional scintigraphic imaging for hyperfunctioning parathyroid glands, emerging hybrid (SPECT/CT, PET/CT) imaging techniques combine superior

diagnostic performance with lower radiation exposure to patients.”

*Journal of Radiological Protection*

### Preoperative PET/CT in PC/PGL

Nockel et al. from the National Cancer Institute (Bethesda, MD), the Eunice Kennedy Shriver National Institute of Child Health and Human Development (Bethesda, MD), and the George Washington University School of Medicine and Health Sciences (Washington, DC) reported on January 12 ahead of print in *Annals of Surgery* on the effect of incremental knowledge from routine presurgical  $^{18}\text{F}$ -FDG PET imaging on surgical management of patients with pheochromocytomas and paragangliomas. The retrospective study looked at clinical, biochemical, genetic, and anatomic and functional imaging data from 93 patients with pheochromocytomas/paragangliomas who underwent PET/CT imaging before a collective total of 100 surgical procedures. PET/CT identified additional lesions not previously noted in 15 patients, and, on the bases of this information, these patients were more likely to undergo open surgical approaches. Other variables assessed, including genetic mutation, reoperation, sex, age, and tumor size had no significant association with additional lesions identified on PET/CT. The authors concluded that because additional lesions detected on preoperative  $^{18}\text{F}$ -FDG PET/CT can affect choice of operative approach “surgeons should routinely obtain  $^{18}\text{F}$ -FDG PET/CT imaging in patients with pheochromocytoma/paraganglioma to allow for a more precise surgical intervention.”

*Annals of Surgery*

### PET vs CSF in AD Diagnosis

In an article e-published on January 10 ahead of print in *Neurology*, Mattsson et al. from Lund University (Sweden), Skåne University Hospital (Lund, Sweden), the University of Gothenburg (Sweden), the Veterans Affairs Medical Center (San Francisco, CA), the

University of California San Francisco, Sahlgrenska University Hospital (Gothenburg, Sweden), and the University College London Institute of Neurology (UK) reported on a comparison of  $^{18}\text{F}$ -AV-1451 PET tau pathology imaging and cerebrospinal fluid (CSF) measures (total tau and phosphorylated tau) in diagnosis of Alzheimer disease (AD). The study included 83 patients: 14 with prodromal AD, 39 with AD dementia, and 30 controls. The 53 patients with prodromal AD or dementia were screened for amyloid positivity using CSF  $\beta$ -amyloid 42. Uptake of  $^{18}\text{F}$ -AV-1451 on PET was moderately elevated in prodromal AD and markedly elevated in AD dementia compared to controls. CSF total tau and phosphorylated tau were increased to similar levels in both AD dementia and prodromal AD.  $^{18}\text{F}$ -AV-1451 PET had excellent diagnostic performance for AD dementia, significantly better than total tau and phosphorylated tau, hippocampal volume, or temporal cortical thickness. For prodromal AD, no significant diagnostic differences were noted between CSF tau and  $^{18}\text{F}$ -AV-1451 PET measures, but both performed better than MR imaging. The authors concluded that “although CSF tau and  $^{18}\text{F}$ -AV-1451 have equal performance in early clinical stages of AD. . .  $^{18}\text{F}$ -AV-1451 is superior in the dementia stage and exhibits close to perfect diagnostic performance for mild-to-moderate AD.”

*Neurology*

### DTC Treatment and Long-Term Cardiac Outcomes

Pajamäki et al. from the University of Tampere/Tampere University Hospital (Finland), Tipotie Health Centre (Tampere, Finland), Oulu University Hospital (Finland), Päijät-Häme Central Hospital (Lahti, Finland), and Seinäjoki Central Hospital (Finland) reported in the February issue of *Clinical Endocrinology* (2018;88:303–310) on a study evaluating long-term cardiovascular morbidity and mortality in patients treated for differentiated thyroid cancer (DTC) and assessing the effects of thyroid-stimulating hormone suppression and radioiodine treatment on cardiovascular

outcomes. The retrospective study included the records of 901 patients treated for DTC and 4,485 age-, gender-, and place of residence–matched individuals as a reference group. Risk of morbidity and death from various cardiovascular diseases was assessed. Morbidity from all cardiovascular disease and as the result of arrhythmias or atrial fibrillation was higher in the DTC group than controls. Increased cardiovascular morbidity was seen in those patients with a mean thyroid-stimulating hormone level  $<0.1$  mU/L and in those treated with radioiodine. Overall, however, cardiovascular mortality was lower in the DTC patients than controls, because the patient group had lower mortality from coronary artery disease. The authors concluded that DTC patients have increased cardiovascular disease–related morbidity, accounted for largely by atrial fibrillation and cases in which thyroid-stimulating hormone suppression is  $<0.1$  mU/L.

*Clinical Endocrinology*

### PET/CT and Bone Formation During AS Therapy

In an article e-published on January 9 ahead of print in *Rheumatology (Oxford)*, Bruijnen et al. from the VU Medical Center (Amsterdam, The Netherlands) and Maartenskliniek (Woerden, The Netherlands) reported on a study assessing whether  $^{18}\text{F}$ -fluoride uptake on PET/CT in patients with clinically active ankylosing spondylitis corresponds to focal bone formation at spine biopsy and can monitor change during anti-tumor necrosis factor (anti-TNF) therapy. The study included 12 anti-TNF–naïve patients with ankylosing spondylitis (7 women, 5 men; mean age, 39 y). All patients underwent PET/CT imaging at baseline. In 2 patients, biopsies were obtained from PET-positive and -negative spine lesions. The other 10 patients underwent a repeat PET/CT imaging after 12 wk of anti-TNF therapy.  $^{18}\text{F}$ -fluoride uptake was quantified using SUVs corrected for individual integrated whole blood activity concentration. Clinical

response to anti-TNF was defined as  $\geq 20\%$  improvement in Assessment of SpondyloArthritis International Society criteria scores at 24 wk. Baseline PET imaging showed at least 1 axial PET-positive lesion in each of 11 patients. Histologic analysis of PET-positive lesions in the spine showed local osteoid formation. PET-positive lesions were identified in the costovertebral joints (43%), facet joints (23%), bridging syndesmophytes (20%), nonbridging vertebral sites (14%), and in sacroiliac joints (75%). After 12 wk of treatment,  $^{18}\text{F}$ -fluoride uptake in responders decreased significantly in the costovertebral and sacroiliac joints. The authors concluded that “ $^{18}\text{F}$ -fluoride PET/CT identified bone formation, confirmed by histology, in the spine and sacroiliac joints of ankylosing spondylitis patients and demonstrated alterations in bone formation during anti-TNF treatment.”

*Rheumatology (Oxford)*

### **$^{68}\text{Ga}$ -PSMA and High-Risk Prostate Cancer Staging**

Corfield et al. from the University of Melbourne (Australia), Austin Hospital (Melbourne, Australia), Peter MacCallum Cancer Centre (Melbourne, Australia) and the University of Queensland (Brisbane, Australia) reported on January 17 ahead of print in the *World Journal of Urology* on a systematic review of currently available data on  $^{68}\text{Ga}$ -prostate-specific membrane antigen ( $^{68}\text{Ga}$ -PSMA) PET for primary staging of high-risk prostate cancer. The authors used the guidelines of the Preferred Reporting Items for Systematic Review and Meta-analysis statement to conduct a critical review of the major medical databases for studies using  $^{68}\text{Ga}$ -PSMA PET for primary staging of prostate cancer. Twelve studies, including a total of 322 patients who underwent  $^{68}\text{Ga}$ -PSMA PET for primary staging, were ultimately included in the analysis. Of these, only 5 included data on histopathologic correlation. As in many systematic analyses of newer tracers, the studies evidenced wide variations in both methodology and outcomes. Sensitivity of PET in this application ranged from 33% to

99%. Specificity was high, at  $>90\%$  in all studies. The authors concluded from the available data that “in the primary staging of prostate cancer  $^{68}\text{Ga}$ -PSMA PET appears to outperform traditional imaging modalities,” but that the paucity of studies highlights “the need for formal assessment of PSMA PET in the form of large-volume, prospective studies.”

*World Journal of Urology*

### **PET and PET/CT in Adrenal Masses**

In an article e-published on January 12 ahead of print in the *British Journal of Radiology*, Kim et al. from Pusan National University Yangsan Hospital (Busan, Korea) and Kyungpook National University Medical Center and School of Medicine (Daegu, Korea) reported on a systematic review and meta-analysis of the diagnostic accuracy of  $^{18}\text{F}$ -FDG PET or PET/CT in characterizing adrenal lesions. After a critical review of the major medical databases, 29 studies with 2,421 patients were selected for inclusion. From these studies, the pooled sensitivity and specificity for  $^{18}\text{F}$ -FDG PET and PET/CT were 91% and 91%, respectively. Likelihood ratio syntheses gave an overall positive likelihood ratio of 9.9 and negative likelihood ratio of 0.09. The pooled diagnostic odds ratio across studies was 105. The range of studies had multiple sources of heterogeneity, but additional analyses could not identify a significant variable in overall study heterogeneity. The authors concluded that “ $^{18}\text{F}$ -FDG PET or PET/CT showed good sensitivity and specificity for the characterization of adrenal masses and could provide additional information for that purpose.”

*British Journal of Radiology*

### **PET/CT and Metal Debris in Hip Replacement**

Aro et al. from the University of Turku/Turku University Hospital (Finland) reported on December 27 ahead of print in *Clinical Physiology and Functional Imaging* on a study evaluating the characteristics of  $^{18}\text{F}$ -FDG and  $^{68}\text{Ga}$ -citrate PET/CT imaging in patients with

adverse reactions to metal debris (ARMD) after total hip or hip-replacing arthroplasty. ARMD is marked by locally severe inflammation and tissue necrosis leading to implant failure. The study included 18 patients: 12 with ARMD and a total of 16 metal-on-metal hips, and 6 after hip arthroplasty but with no ARMD. All underwent PET imaging with the 2 tracers, and  $\text{SUV}_{\text{max}}$  was assessed in the gluteal muscle region. MR imaging evaluated ARMD severity. The authors identified periprosthetic  $^{18}\text{F}$ -FDG uptake in 15 of the 16 hips, but  $^{68}\text{Ga}$ -citrate uptake was seen in only 3.  $\text{SUV}_{\text{max}}$  for  $^{18}\text{F}$ -FDG in the gluteal muscle region was significantly greater in hips with moderate-to-severe ARMD than in the non-ARMD group. In the group of patients who proceeded to revision surgery, intraoperative gluteal muscle necrosis was associated with increased local  $\text{SUV}_{\text{max}}$  on preoperative  $^{18}\text{F}$ -FDG PET but not with that on  $^{68}\text{Ga}$ -citrate PET. The authors concluded that “the inflammatory reaction to metal debris in hip arthroplasty patients is best visualized with  $^{18}\text{F}$ -FDG.”

*Clinical Physiology and Functional Imaging*

### **Optimal PET Timing After CRT in Rectal Cancer**

Kawai et al. from the University of Tokyo (Japan) reported on November 21 ahead of print in *Clinical Colorectal Cancer* on a study of optimal intervals between preoperative chemoradiotherapy, predictive PET imaging, and radical surgery in patients with rectal cancer. The retrospective study included data from 148 patients with rectal adenocarcinoma who received chemotherapy followed by  $^{18}\text{F}$ -FDG PET and surgery. The authors analyzed associations between  $\text{SUV}_{\text{max}}$  on PET and pathologic response, with a primary focus on intervals between chemoradiotherapy and PET and between PET and surgery. Baseline  $\text{SUV}_{\text{max}}$  before chemoradiotherapy was not correlated with pathologic response, whereas  $\text{SUV}_{\text{max}}$  after chemoradiotherapy completion was closely correlated. Moreover, the ability of  $\text{SUV}_{\text{max}}$  to identify future pathologic responders was significantly associated

with a long interval ( $\geq 7$  wk) between chemoradiotherapy and imaging. This ability was not correlated with the PET-to-surgery interval.  $SUV_{max}$  was a poor predictor in shorter chemoradiotherapy-to-PET intervals. The authors concluded that “a minimum wait time of 7 weeks is recommended before performing FDG PET after neoadjuvant chemoradiotherapy for rectal cancer to obtain maximal predictive accuracy for pathologic response.”

*Clinical Colorectal Cancer*

### End-of-Treatment PET and B-Cell PTLD

Zimmerman and colleagues from the Diakonie-Krankenhaus Bremen, University Medical Center Schleswig-Holstein (Kiel), the University of Munich, the Zentrum für Nuklearmedizin und PET/CT (Bremen), the Zentrum für Modern Diagnostik (Bremen), and the Universitätsmedizin Berlin (all in Germany) reported on November 17 ahead of print in *Transplantation* on the role of end-of-treatment  $^{18}F$ -FDG PET after uniform first-line therapy of B-cell post-transplant lymphoproliferative disorder (PTLD). Using data from the German PTLT registry, the retrospective study included 37 patients with CD20-positive PTLT after solid organ transplantation and treatment with first-line protocols who also underwent end-of-treatment  $^{18}F$ -FDG PET imaging. Patients were followed for a median of 5 y. Any non-physiologic  $^{18}F$ -FDG uptake (Deauville score  $> 2$ ) was interpreted as PET-positive. With CT as final staging, 18 patients were determined to have complete responses, 18 had partial responses, and 1 had stable disease. End-of-treatment PET imaging was negative in 24 patients and positive in 13. Positive and negative predictive values for end-of-treatment PET for PTLT relapse were 38% and 92%, respectively. Both time to progression and progression-free survival were significantly prolonged in patients whose results on PET were negative.

End-of-treatment PET findings were also associated with overall survival, time to progression, and progression-free survival in patients who had partial responses. The authors concluded that “even without baseline imaging, end-of-treatment PET in PTLT identifies patients at low risk of relapse and offers clinically relevant information, particularly in patients in a partial remission by CT staging.”

*Transplantation*

### $^{18}F$ -FDOPA PET/CT and Small Bowel NETs

On December 12, ahead of print in the *Journal of Gastrointestinal Surgery*, Addeo et al. from Haute-pierre University Hospital, University Hospitals of Strasbourg, and the University of Strasbourg (all in Strasbourg, France) and Edouard-Herriot University Hospital/Claude-Bernard Lyon 1 University (France) reported on the diagnostic value of  $^{18}F$ -FDOPA PET/CT during preoperative work-up of small bowel neuroendocrine tumors (NETs). The study included 17 patients: 9 (53%) with multiple tumors, 15 (88%) with metastatic lymph nodes, 3 (18%) with peritoneal carcinomatosis, and 9 with (53%) liver metastases. All had undergone  $^{18}F$ -FDOPA PET/CT imaging as part of a preoperative work-up that also included CT and somatostatin receptor scintigraphy, followed by surgery. The authors compared the sensitivity and accuracy ratio for PET/CT in primary and multiple tumor detection with data from surgery and pathology. At surgery, a total of 70 small bowel NETs were found by pathology. Surgery identified the primary in all 17 patients and identified 7 of 9 (78%) with multiple synchronous small bowel NETs. The preoperative  $^{18}F$ -FDOPA PET/CT showed a significantly higher sensitivity for primary tumor localization and multiple tumor detection, as well as a higher accuracy for number of tumors detected, than either somatostatin scintigraphy or CT. The

authors concluded that “ $^{18}F$ -FDOPA PET/CT should be included systematically in the preoperative work-up of small bowel NETs.”

*Journal of Gastrointestinal Surgery*

### Reviews

Review articles offer an important way to stay up to date on the latest topics and approaches by providing valuable summaries of pertinent literature. The Newline editor recommends several reviews accessioned into the PubMed database in late December and January. In an article e-published on January 11 ahead of print in *Current Opinion in Neurology*, Meyer et al. from the Johns Hopkins University School of Medicine (Baltimore, MD) summarized “The role of molecular imaging in the characterization of renal masses.” De Koster et al. from Radboud University Medical Center (Nijmegen, The Netherlands), Leiden University Medical Center (The Netherlands), and the Royal Marsden Hospital (London, UK) described the “Diagnostic utility of molecular and imaging biomarkers in cytological indeterminate thyroid nodules” online on January 2 ahead of print in *Endocrine Reviews*. In the January issue of the *Indian Journal of Urology* (2018;34:20–27), Razik et al. from the All India Institute of Medical Sciences (New Delhi) published “PET-CT and PET-MR in urological cancers other than prostate cancer: An update on the state of the art.” Liu et al. from Fudan University (Shanghai, China) and Toronto Western Hospital/University Health Network (Toronto, ON) provided an “Update on molecular imaging in Parkinson’s disease” on December 27 ahead of print in *Neuroscience Bulletin*. In the latest issue of the *Journal of Alzheimer’s Disease* (2018;61:487–508), Tan et al. from Qingdao University (China) reviewed “Tauopathies: Mechanisms and therapeutic strategies.”