Letter from the President

Twyla Bartel, DO, MBA, FACNM

I would first like to mention that the 2014 Annual ACNM Lifetime Achievement Award was bestowed upon Dr. Simin Dadparvar. She has been a friend and strong supporter of ACNM and nuclear medicine for many years, and this was well-deserved on her part. You can read more on her award in a separate article in this newsletter.

There are several items that your ACNM Board of Directors has been working on (including at the recent June board meeting), and it is not possible to list every one of them in this brief note. However, I have itemized a few of these below:

ACNM Board at 2014 SNMMI Annual Meeting

1) Program for annual Mid-Winter Meeting. The Mid-Winter Meeting will be held in San Antonio, Texas, January 22–25, 2015. Dr. Tracy Yarbrough is the program chair, and she and her committee are hard at work developing a sound and more innovative program to incorporate current practice, quality improvement and research presentations. This includes incorporating an extended trainee abstract presentation section under the direction of Dr. Simin Dadparvar. Several awardees will be selected to attend the next Sino-American Conference in Shanghai in May 2015. These awards as well as the usual annual ACNM abstract awards will be presented at

(Continued on page 2. See President.)
(President. Continued from page 1.)

the ACNM Banquet, which we encourage you to attend.

2) Budget. Over the last several months, we have been working to reduce the ACNM budget deficit. We have been successful thus far; we are still gaining ground and keeping our head above water. Adjusting our membership dues several months ago was a huge part of this, and we have added several new members/renewals within the last few months. I am truly thankful for the membership drive efforts that have been underway and for all of those who have volunteered their precious time for tasks such as making personal phone calls and having a presence at our ACNM booth at the annual meeting. Thank you so much everyone! Let’s keep the momentum going!

3) The criteria for the ACNM delegate and alternate delegate for the AMA House of Delegates have been updated. Congratulations to Dr. Haydn Williams, who was elected for a two-year term as the delegate, and Dr. Erica Cohen, who is the alternate delegate. I am confident they will serve and represent us well.

4) By the time you read this, our “refreshed” website should be up and running. Please be looking for it. Thanks so much to Dr. Erin Grady for overseeing this as well as the many individuals at our administrative office who have been a part of making this happen.

5) You may have heard of the recent price hike for MAA/DTPA initiated by Jubilant DraxImage. ACNM sent out a strong statement on this to our members regarding our opposition. This will be posted, also, on our website for anyone who wishes to view it again.

6) ACNM addressed The Joint Commission (TJC) regarding its release of proposed changes to the Diagnostic Imaging Standard Change for Radiologists’ Qualifications and Competency. We requested more background information on how the suggested qualifications and experience were being determined by the TJC and strongly suggested that ABNM be included in this process (as our specialty board) before a final decision is made. We also requested that the TJC include language to recognize nuclear medicine specialists with specific training in PET and combined PET/CT. This also will be posted on our website.

7) We are defining and initiating efforts to help finance our Nuclear Medicine Resident Organization (NMRO) activities, as we strongly believe in and support this group. Several NMRO members have become members of our board and committees. You will be hearing more about this.

8) Strategic planning was initiated August. We have discussed ways to give added value to ACNM membership. We are taking a look at what we are “doing right” and what we can do better. We will be defining the overall areas ACNM needs to maintain, improve, or begin participating in to strengthen our organization as well as the field of nuclear medicine. We are here for you and each other. We truly hope if you are not already a member, that you will join us! Your involvement and ideas are important to nuclear medicine’s future.

Again, we are working on many items, and we will keep you updated. Thank you for this opportunity to serve you.

Sincerely,

Twyla Bartel, DO, MBA, FACNM

Focus on the Fellow:

Robert Wagner, MD, FACNM, FACR

If you have ever met Dr. Robert Wagner, you’ve certainly been greeted with a smile, a great announcing voice and knowledge that you were dealing with someone who is in all aspects completely genuine. He is the chief of the Nuclear Medicine Section and professor of radiology at the Loyola University Medical Center.

Dr. Wagner started his medical school in India and transferred to the United States to complete his medical school at the Rush Medical College, in Chicago, Illinois. Following medical school, he started his general surgery residency. He completed three years and then realized: “Surgery really was not for me. I thought that interventional radiology might be a better fit, to make use of my surgical skills, but the radiology match was full.”

At that time, he sat down with his medical school advisor. Psychiatry was discussed, since Dr. Wagner loves talking to patients, but that didn’t seem like a good fit. Then, pathology was discussed, but Dr. Wagner really likes talking to patients. Then his advisor said, “Why don’t you talk to Bob Henkin? He does nuclear medicine, which I think you would like.” That’s what Dr. Wagner did, and the rest is history. Dr. Wagner says, “I discovered nuclear medicine totally by accident, but I completely fell in love with it and didn’t want to do anything further.” After starting his training at Loyola University Medical Center, he felt inspired by people there at the time—Drs. Henkin and Dillehay, who were great clinical mentors, and Drs. Karesh and Halama, who were excellent teachers of radiopharmacy and physics. This cemented his love for the specialty.

Today, Dr. Wagner finds his greatest career satisfaction in teaching residents, technologists, medical students and really anyone else who finds themselves in the reading room. He says, “Teaching has really become a big part of my life. I really love when you can see someone who gets it, when they get that sparkle in their eyes—as if they were thinking, ‘Wow, that’s really cool!’ And they grasp the concept.” He says also that he really enjoys following the careers of his trainees and takes a lot of pride in their success.

“I find the most personal satisfaction in my three kids, without a doubt.” Then he went on to say, “I was thinking about this earlier this morning. There are really three aspects of my career. As chief I have to do a lot of business related things—my master’s degree in information systems with minor MBA degree have helped me with this. Teaching and science are the two other main areas of my career. Turns out, all three of my kids have either gone into business, teaching or science!”

He also answered a few other questions, below:

EG: What was the best advice you got when you were starting out and who gave it to you?

RW: I received this advice early on, as a medical student: to “DO THE RIGHT THING.” I think my senior resident in surgery during my intern year gave it to me as well. This is great advice and I have tried to follow that through everything I have done.

(Continued on page 7. See Focus on the Fellow.)
CMS Releases the Proposed Rule for CY 2015
As usual this time of year, the CMS has released their proposed rule for the physician fee schedule and hospital outpatient prospective payment system. If you would like to see the proposed HOPPS changes as they pertain to nuclear medicine compared to 2014, click here. In this rule, you’ll notice that there is more radiopharmaceutical bundling proposed, in keeping with CMS’s prior actions. For the proposed changes to the Medicare physician fee schedule compared to 2014, click here. The final rule will come out in November, and we’ll keep you posted on any changes.

CMS Rules on Direct Supervision
As you may have heard, there’s good news in CMS’s final rule for Part II Regulatory Provisions to Promote Program Efficiency, Transparency and Burden Reduction regarding direct supervision when preparing radiopharmaceuticals: the phrase “direct supervision” was removed. The final rule allows trained nuclear medicine technologists in hospitals to prepare radiopharmaceuticals for patients without a supervising physician or pharmacist being present, which will help deliver the needed services to patients, particularly after hours. These changes went into effect on July 12, 2014. To see the entire final rule, click here.

The Importance of ACNM Membership
Simin Dadparvar, MD, FACNM
The American College of Nuclear Medicine is not just an organization; it is a group comprising physicians and scientists who are passionate about nuclear medicine.

Being a member allows nuclear medicine to have another seat at many tables: representation at the American Medical Association, the Relative Value Scale Update Committee (RUC), another voice on Capitol Hill, and the list goes on.

The mission of ACNM is an important and multifaceted one: “to foster the highest standards in nuclear medicine consultation and service to referring physicians, hospitals, and the public, advance the science of nuclear medicine through study, education, and improvement of the socioeconomic aspects of the practice of nuclear medicine and thereby to improve nuclear medicine consultation and service and to promote the continuing competence and socioeconomic awareness of practitioners of nuclear medicine through a program of continuing professional development emphasizing high standards of nuclear medicine practice.” The mission is also something we as nuclear medicine professionals can all benefit from.

If you haven’t seen a more complete list of member benefits, you should:

- Clinical Nuclear Medicine – Official Journal of the ACNM
- Fellowship Program
- Mentorship Program
- Scanner newsletter
- E-Updates (NEW!)
- Educational programs – Scientific presentations in Annual Meetings, webinars, teaching file, CT for Nuclear Medicine Physicians
- Advocacy for the nuclear medicine discipline
- Representation at the American Medical Association (AMA), IAC Nuclear/PET, American Board of Science in Nuclear Medicine (ABSNM), Academy of Radiology Research (ARR) and American College of Radiology (ACR) Commission on Nuclear Medicine
- Reduced registration rate for the combined ACNM Annual Meeting and SNMMI Mid-Winter Meeting
- Continued monitoring of all congressional and regulatory actions that may affect nuclear medicine issues
- The Nuclear Medicine Residents Organization (NMRO)
- Leadership programs for nuclear medicine professionals
- Online membership directory
- Networking opportunities
- Professional and public information programs
- Opportunity to serve in ACNM leadership

If you would like to learn even more about the College, please visit www.acnmonline.org and click on “About ACNM”.

There is no question that there are exciting times to come for the field of Nuclear Medicine, for which we will need as many seats and voices as we can get to make sure the right things are done for our patients and our specialty. If you would like to get behind this mission and our goals, visit the membership page of our website and join right now.

The New and Improved ACNM Website
If you haven’t had a chance to visit the new and improved ACNM website, please make it your mission to visit it today. I wanted to take the opportunity to go over a few of the new features that should really add value to your website experience.

- A section on the latest news
- Government relations news
- Links to the latest publications
- Important dates for your calendar
- Educational opportunities, such as the virtual journal club (which now boasts CE credits!)
- The usual links at the banner, which will help you navigate the website
- Links to social media and the ACNM email address
- A new members-only section where you can access additional resources

If you have suggestions for improvement, please email acnm@acnmonline.org or visit us on social media to let us know your thoughts.
Challenge Case
Erin Grady, MD, CCD

The patient is an 85 year-old male who presents with chest pain, new onset atrial fibrillation and known coronary artery disease.

What is your diagnosis?

(Continued on page 6. See Challenge Case.)

Staying Connected with ACNM

In this day and age of email, eTOC’s, Facebook, LinkedIn, Twitter, podcasts and everything in between, the ACNM wants to make sure you’ve got what you need in the format you like best. To make sure we’ve “got your number,” so to speak, we’d like to get your input on a quick anonymous survey (only 7 questions). In the next issue, we’ll reveal the results and let you know how we plan to meet your needs. Please access the survey here: https://www.surveymonkey.com/s/DKGZL3K. Thank you in advance for your participation!

Sign up for the Clinical Nuclear Medicine eTOC!

The official journal of the ACNM, Clinical Nuclear Medicine, is partnering with the ACNM Publications Committee to give you updates on its eTOC. We urge you to sign up. To do so, visit http://journals.lww.com/nuclearmed/Pages/acnmcollections.aspx and click on the drop-down menu from the gear, pictured below. Click on eTOC and enter your email address. It takes less than 30 seconds, and it will keep you up to date with the ACNM happenings in between Scanner newsletters.

Congratulations to Benjamin Franc, MD, on winning a free registration to the upcoming ACNM Annual Meeting in 2015 in San Antonio, Texas, after renewing his membership early at the SNMMI Annual Meeting in St. Louis, Mo. We hope you enjoy this great prize!
1. AMA recommends that **coverage of screening low-dose CT (LDCT) scans** for patients at high risk for lung cancer by Medicare, Medicaid, and private insurance be a required covered benefit.
   - In December 2013, the United States Preventive Services Task Force (USPSTF) recommended CT lung cancer screening for high-risk patients.
   - Under the Affordable Care Act, private insurers are required to begin covering this service starting Jan. 1, 2015.
   - However, Medicare is not required to follow USPSTF recommendations.

2. Voted (a) to ask President Barack Obama to provide **timely access** to entitled care for eligible veterans via the health care sector outside of the U.S. Department of Veterans Affairs (VA) health care system until the VA can provide health care in a timely fashion and (b) to urge Congress to quickly enact long-term solutions so eligible veterans always can have timely access to entitled care.

3. Continues to investigate **maintenance of certification** (MOC), osteopathic continuous certification (OCC), and **maintenance of licensure** (MOL), including assessing the impact of MOC on physician practices:
   - **Opposes making MOC mandatory as a condition of licensure.**
     - Conducting a study to evaluate the impact MOC requirements and MOL principles have on workforce, practice costs, patient outcomes, patient safety and patient access.
     - Working with the American Board of Medical Specialties (ABMS) and its member boards to collect data on why physicians choose to maintain or discontinue their board certifications.

4. Conditions for coverage and payment of telemedicine, including **teleradiology/telenuclear medicine**, include:
   - Abiding by state licensure laws and following evidence-based practice guidelines.
   - Pilot Medicare programs to enable coverage of telemedicine services, including store-and-forward telemedicine.
   - Physicians should verify that medical liability insurance policy covers telemedicine services, including telemedicine services provided across state lines if applicable, prior to the delivery of any telemedicine service.
   - Importance of national medical specialty societies continuing to be involved in the development of appropriate and comprehensive practice parameters, standards and guidelines to address the clinical and technological aspects of telemedicine.
   - Study issues associated with the state-based licensure and the portability of state licensure for telemedicine services.

5. **Physician Workforce Shortage: Approaches to Graduate Medical Education (GME) Funding.** As proposed, the AMA position would have been to advocate Congress to fund GME positions for the most critical workforce needs (primary care) and reallocate funding away from support specialties (radiology and nuclear medicine). Directly due to our testimony and lobbying by radiology and nuclear medicine, the resolution was modified and approved to advocate for additional GME education positions for critical workforce needs and to not reallocate or reduce funding for radiology or nuclear medicine, another demonstration of the value of radiology and nuclear medicine being at the HOD with appropriate numbers and representation.

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**2014 Lifetime Achievement Award: Simin Dadparvar, MD, FACNM, FACR**

Twyla Bartel, DO, MBA, FACNM

The ACNM Lifetime Achievement Award (LTA) is presented annually to an individual who has strongly supported nuclear medicine and been actively involved with the college. He or she must be a member and a fellow of ACNM with dedication to the field of nuclear medicine.

This award has been in place for more than two decades and was previously entitled the Man-of-the-Year Award. Dr. Terence Beven was the recipient more than 10 years ago. In 2009, the criteria for receipt of the ACNM LTA were formalized, after which it was presented on an annual basis. In 2011, Dr. Sue Abreu was the first recipient of the ACNM LTA, followed by Dr. Michael Siegel (2012) and Dr. Jay Harolds (2013).

The 2014 Lifetime Achievement Award went to Dr. Simin Dadparvar, an individual who exemplifies excellence and leadership with the college and the field of nuclear medicine. She has been dedicated to ACNM for many years and has supported and helped shape what we are today. She was born and raised in Tehran, Iran, and graduated at the top of her class. Prior to her many years of service to the ACNM, she completed a diagnostic radiology residency and a nuclear medicine fellowship in Pennsylvania. She is a visiting professor in the Department of Hematology and Oncology and an associate professor of radiology at the Hospital of University of
**Answer and Discussion:**

Normal myocardial perfusion. Wall motion images (not shown) were also normal with a LVEF of 68%.

Prominent abnormal skeletal activity is noted on the screen captures of the cine projections images and also in a punctate fashion adjacent to the left ventricle most prominently on the vertical long axis images, indicating rib uptake. The projection images are important for not only image quality/patient motion assessment but also for checking the biodistribution of the radiopharmaceutical. Since we know that skeletal activity is not in the normal biodistribution and that the myocardial perfusion imaging agents are nonspecific tumor imaging agents, further evaluation is required.

This patient went on to have a whole body bone scan with $^{99m}$Tc MDP, which demonstrates findings most compatible with a superscan of osseous metastatic disease. Subsequently, the patient’s prostate-specific antigen (PSA) level was measured at 3277 ng/mL. This patient’s widespread osseous metastatic disease was identified on his $^{99m}$Tc sestamibi myocardial perfusion study. Remember to look at the cine projection images for every patient.

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**ACNM Now Welcomes International Full Members**

*Simin Dadparvar, MD*  
*Chair, ACNM Membership Committee*

Due to an increasing number of international nuclear medicine physicians, scientists, and pharmacists interested in joining the college, the ACNM Membership Committee felt it was prudent to amend the bylaws to provide international members with the same rights and privileges as those members within the United States. On April 4, 2014, the ACNM officially amended its bylaws to specifically include “international” members to the full member category. The ACNM membership voted, online, from February 24–April 4 on the following bylaws changes:

- The proposed change eliminates the previous “corresponding” membership category, which was reserved for “a physician or scientist practicing the specialty of Nuclear Medicine outside the United States and Canada, who is not a citizen of the United States or Canada, and who is in good ethical standing in his/her respective country.”
- The proposed change includes the addition of international board certification recognition under both the full member and member-in-training areas.
- In addition, the proposed changes also include the addition of “nuclear pharmacists,” which were not specifically outlined in the current bylaws.

The ACNM Board of Directors discussed and approved these proposed changes during its meeting in Palm Springs, CA, on February 6, 2013.

We believe that these changes embrace the growth and expansion of the field of nuclear medicine and of the college, and we hope that you agree that it is important to include our international colleagues in the ACNM.

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**Let us know your opinion!**

As part of the “new and improved” ACNM, we would like to make this newsletter a useful resource for you. We hope to keep you abreast of the news that matters to you. This includes things like upcoming events and items available for public comment that could affect the future of our specialty. We welcome ideas for topics you would like to see in the newsletter. Likewise, if you have any clinical questions you would like us to forward to an expert or letters to the editor of the ACNM Scanner Newsletter, please send us your inquiries.

Additionally, if you’re a member and have an exciting accomplishment to highlight or share with the rest of the nuclear medicine community, please send us your announcement.

Please send your inquiries or announcements to Erin Grady, MD, the ACNM Scanner Newsletter editor, at egrady@christianacare.org. We will do our best to be a valuable resource for you.
Pennsylvania, as well as a staff nuclear medicine physician and director of the nuclear medicine residency at Hahnemann University in Philadelphia.

Dr. Dadparvar has been and is one of the strongest advocates for the field of nuclear medicine. She has served in multiple leadership roles within our national nuclear medicine organizations (including ACNM), organized multiple educational courses, facilitated training CT training of more than 3,500 nuclear medicine physicians, and lobbied at Capitol Hill for our field. She is a past president of ACNM, has been an ACNM board member for more than 10 years, is the present chair of the ACNM Membership Committee, has served as editor in chief of the ACNM Scanner, and previously oversaw and guided the Nominating Committee. She is also past president of the SNMMI Greater New York Chapter. She has received multiple awards in our field, including the 2012 SNMMI Presidential Distinguished Educator Award.

Dr. Dadparvar has also had many years of strong involvement with those in training in the field of nuclear medicine. This includes creation of ACNM’s Nuclear Medicine Resident Organization (NMRO), oversight of the ACNM resident abstract presentations at the SNMMI mid-winter meetings, and guidance of the ACNM internship program.

A heartfelt congratulations to Dr. Dadparvar for her many accomplishments, dedication, and now, this award!!

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**Focus on the Fellow. Continued from page 2.**

EG: What developments in nuclear medicine excite you most?

RW: The possibility of additional radionuclide therapies for patients. As a resident, we discussed the possibility of alpha particle therapies. It’s really great to see that others are being explored. I look forward to using these therapies and to assisting patients with a number of diseases.

EG: What is your favorite professional book? Novel?

RW: This is a really tough one. From the beginning of my career, the *Textbook of Medical Physiology* by Guyton would have to be it. I really looked at this as an engineering manual of how everything in the body works. For the personal books, I’ve been reading a lot of the Sherlock Holmes series lately and they’re great, but the books by Robert Heinlein are visionary. They are early science fiction stories and in fact, one of the early stories talks about the use of radioactive materials as weapons of war. He highlights the good and dark sides of technologic innovations and explores the human psyche. If you’re thinking about starting out reading these, some of them are written for a younger crowd, but *The Past Through Tomorrow*, a series of novellas, is a great place to start. Then consider *Time Enough for Love*.

EG: Is there anything that few people know about you?

RW: Other than starting medical school in India and my short career as a radio DJ, it would have to be my love of German shepherd dogs. I have had one for the last twenty or so years. They’ve been marvelous companions for our kids as they’ve grown up. Dr. Halama and I also wrote a book on physics, which was a really neat and fun thing to do. Everyone should write a book at least once.

EG: Is there anything else you would like to share?

RW: Yes, absolutely. I could never do all the things that I have done without the support of someone else, and that person has been my wife. She has borne the brunt of things, and I can’t tell you how much I appreciate her.

Speaking as one of Dr. Wagner’s trainees, his passion for teaching shows. He is beloved amongst the trainees, and he has a sincere passion for nuclear medicine.
High-quality imaging services are an expectation of patients, physicians and third party payers. The performance of high-quality nuclear medicine requires professionals who: (1) are well trained; (2) have access to the right technologies; (3) use protocols that ensure the thoroughness of image data gathering; and (4) synthesize and transform those data into clinically meaningful information that advances care. This is the so-called imaging chain.

It is more difficult to assess the clinical benefit or harm with imaging. Leaders in the field recognized this in the 1980s and formed an organization to develop standards for cardiac imaging, which was later expanded to nuclear medicine and PET/CT. This organization became known as the Intersocietal Commission for the Accreditation of Nuclear Laboratories (ICANL). The standards were developed and updated by imaging peers within the practicing community determining specific elements of laboratory structure, outlining expectations for the education and certification of medical and technical staff members. Essential equipment was defined.

The group drafted imaging protocols encompassing necessary views and report elements. They required efforts to correlate a laboratory’s results with clinical information derived from other modalities. Sponsoring societies such as ACNM and SNMMI embraced this approach for nuclear laboratories.

The process of submitting an accreditation application was designed, in and of itself, to be a quality improvement initiative for a laboratory. A structured approach to self-examination, coupled with external validation and feedback, provided a clear path toward a laboratory’s improvement. Rather than receiving a pass/fail outcome, as one might expect when taking a board examination, laboratories that initially did not meet the bar were given very specific direction as to how they could improve. Laboratories that performed at an overall level that merited accreditation also received feedback as to how they could perform even better in the future. This idea of accreditation as a peer-driven pathway to quality improvement is now recognized throughout the “House of Medicine.”

Although each imaging division within the umbrella accrediting body initially functioned as an independent business unit, all were based on the same principles: peers authoring standards and peers evaluating a laboratory’s conformance with those standards. In 2008, to achieve economies of scale and streamline operations, these individual accrediting entities merged into one organization, and the Intersocietal Accreditation Commission (IAC) was created. As part of this organizational change, ICANL has been renamed IAC Nuclear/PET. Currently there are 15 board members representing 8 nuclear/molecular imaging organizations, and ACNM is currently represented by two members, Lorraine Fig, who is the nuclear/PET representative to the IAC Board of Directors, and Leonie Gordon, who is a nuclear/PET division board member.

In many areas of the United States, accreditation is no longer a badge of distinction marking a laboratory’s quality but instead a prerequisite for payment. The adoption of accreditation requirements by some local Medicare carriers and private payers has increased application volumes (Figure 1) and sparked dialogue as to how stringent accreditation requirements should be. Congress officially weighed in on this issue by passing the Medicare Improvements for Patients and Providers Act of 2008. With this law, the Centers for Medicare and Medicaid Services were mandated to link reimbursement with accreditation for advanced imaging services offered outside of the hospital setting. Three accrediting organizations were initially recognized: the American College of Radiology, The Joint Commission, and IAC. With the passage of this legislation, accreditation morphed from an accolade that signified quality work to a necessary hurdle to overcome in order to practice.

So where does IAC stand today, and where is it headed? At present, across five imaging modalities and two therapeutic divisions, IAC has accredited 8,372 laboratories, conducting operations at a total of 13,239 sites. There are some 35 professional societies that serve as sponsoring organizations for the various accreditation divisions. IAC is itself accredited, having achieved certification by the International Organization for Standardization (ISO) for quality management and information security management systems. Thus, as an organization that renders judgments on quality within imaging, IAC has practiced what it preaches by going through the rigorous process of internal analysis and external review.

Divisional boards of IAC meet at least twice annually, and the parent IAC board meets quarterly to develop and enact initiatives aimed not only to improve operations but also reduce the work of those who submit applications. Some examples:

• To simplify the accreditation process, IAC has adopted a common online application, so that data submitted for accreditation in one modality can be easily transferred to applications in other modalities. Further efforts to simplify an institution’s multimodality application are being developed.

• The ability to submit images online in a secure manner compliant with the Health Insurance Portability and Accountability Act is also being developed. Common quality improvement guidelines are being authored so that improvement can be gauged in standard fashion within each modality.

• The incorporation of appropriate use criteria in laboratories’ operations has now become part of each modality’s standards.

• But perhaps the broadest effort of IAC over the past 2 years has been the creation of an internally funded research program, the mission of which is to demonstrate the value of accreditation in improving the quality of imaging. It is through a program of research that we hope to get beyond today’s baseline of expert consensus to a more informed and validated approach that links laboratory performance and clinical quality. The results of these research efforts are beginning to appear in published, peer-reviewed research.
The introduction of SPECT/CT in 1999, and PET/CT in 2001, had a significant impact on the practice of nuclear medicine. PET, in particular, underwent dramatic growth since its introduction. There were approximately 200,000 PET and PET/CT studies performed in the United States in 2001. By 2010, that number had grown to over 1.7 million studies, and virtually all of those studies were PET/CT.

The rapid adoption of hybrid imaging required retraining a generation of nuclear medicine physicians, as well as radiologists, which was largely accomplished by post-graduate continuing medical education offered by radiology and nuclear medicine professional societies. The Society of Nuclear Medicine and Molecular Imaging (SNMMI) established a popular course, "CT for the Nuclear Medicine Physician," which was initially a free-standing meeting and evolved into a regular two-day course at the midwinter and annual meetings, where attendees reviewed 100 diagnostic CT cases in an interactive case-based format. SNMMI also provided online education with the Lifelong Learning and Self Assessment Program (LLSAP). One hundred fifty CT cases and 150 PET/CT cases allowed physicians to review studies in a format simulating clinical practice. Physicians who earned 100 hours of AMA Category 1 CME and reviewed 500 CT cases, online or during meetings, could obtain an SNMMI "Certificate of Qualification to Perform, Supervise, and Interpret PET/CT and SPECT/CT."

The Nuclear Medicine Residency Review Committee (RRC) of the Accreditation Council for Graduate Medical Education (ACGME) changed the residency program requirements in 2007 to include hybrid imaging. Changes included an increase in the amount of nuclear medicine training from two to three years and the addition of a requirement for a minimum of four months of CT experience that could be combined with a rotation that included PET-CT or SPECT-CT, although rotation on a CT service was considered desirable for part of the training. In 2011, the requirement was revised to specify that residents must have a minimum of six months of CT experience, including a minimum of four months on a diagnostic radiology CT service.

In 2012, SNMMI and the American Board of Nuclear Medicine (ABNM) jointly issued a position statement on optimizing nuclear medicine training in the era of hybrid imaging, which stated that physicians practicing nuclear medicine would benefit from combined training in diagnostic radiology and nuclear medicine (ref. 1). Four-year and 5-year diagnostic radiology and nuclear medicine training pathways were encouraged. The 4-year pathway was made possible by recent changes in radiology residency training, which allowed for 12 months of focused training in a subspecialty area such as nuclear medicine. Since radiologists with 16 months of nuclear medicine training are eligible for certification by ABNM, the new pathway allowed radiologists to be eligible for ABNM certification after 4 years of training rather than 5 years. The 4-year pathway is recommended for physicians planning clinical practice in diagnostic radiology and nuclear medicine.

Several nuclear medicine programs have developed a 5-year training pathway where physicians get two years of nuclear medicine training, of which one year is obtained in a nuclear medicine program and the second year is obtained during four years of diagnostic radiology residency. The 5-year pathway is recommended for physicians who will do research and teach in academic centers.

The need for dual training will increase as molecular imaging grows, with the introduction of PET/MR in 2011 as the next milestone. At the present time, MR training is not included during nuclear medicine residency, so the only pathway to full qualification in PET/MR is dual training in diagnostic radiology and nuclear medicine. It is likely that new molecular imaging technologies will include anatomic imaging, further increasing the need for physicians with dual training.

The changes in nuclear medicine come at the same time as major changes in health care delivery in the United States, which are being driven by economics, issues regarding access and equitability, and concern about quality and safety. There has been downward pressure on diagnostic imaging, which, for the first time, has seen a decrease in the number of advanced imaging studies performed in the United States, on top of declining reimbursement for studies that are performed. The result has been a poor job market for physicians only with nuclear medicine training, although radiologists also are seeing fewer job opportunities. Besides economic pressures, concerns about quality and safety are making dual training in nuclear medicine and diagnostic radiology the likely pathway of the future.

Figure 1. Number of certificates granted by ABNM and ABR for subspecialty in nuclear radiology.

Figure 2. Number of Nuclear Medicine (NM) and Nuclear Radiology (NR) Certificates Issued by Year.

(Continued on page 12. See Nuclear Medicine Training.)
Thirteen errors to avoid in academic manuscript submissions

Patrick M Colletti, MD

The appropriate and efficient use of language is important for successful preparation, submission, peer review, editing and publication of scholarly manuscripts. Tabled here is some verbiage to avoid:

<table>
<thead>
<tr>
<th>What authors write:</th>
<th>What readers, reviewers and editors think:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Titles with more than 140 characters</td>
<td>Shorten title to improve searchability</td>
</tr>
<tr>
<td>2. Titles in the form of: “The Role of…”</td>
<td>“Role of…”, really? Based on that limited evidence?</td>
</tr>
<tr>
<td>3. Long list of authors</td>
<td>Vicarious authorship reduces author credibility. Authors should meet ICMJE guidelines for authorship*</td>
</tr>
<tr>
<td>4. Multiple typographical errors</td>
<td>How did all of these authors miss obvious errors?</td>
</tr>
<tr>
<td>5. “various,” as in “We present images in various adrenal conditions”</td>
<td>This content will be unfocused</td>
</tr>
<tr>
<td>6. “Due to its retrospective nature, this study did not require approval by the local Ethic Review Board…”</td>
<td>Implies that authors are attempting to circumvent the local ethics committee. All human research must be approved or excused or waived by the local IRB.</td>
</tr>
<tr>
<td>7. “All participants consented for this retrospective study…”</td>
<td>What did participants consent for in retrospect?</td>
</tr>
<tr>
<td>8. “To our knowledge, this is the first study…”</td>
<td>Such claims of primacy are often challenged, and authors’ assertions are commonly impeached.</td>
</tr>
<tr>
<td>9. “This is the first reported PET image of an S2 nerve root tumor of this histology…”</td>
<td>It may not be so and so what if it is?</td>
</tr>
<tr>
<td>10. “conventional imaging”; “structural imaging”</td>
<td>Please specify CT, MRI...of course, FDG PET is conventional in numerous settings.</td>
</tr>
<tr>
<td>11. “functional imaging”</td>
<td>Please specify planar, SPECT, PET... Dynamic contrast enhanced and cine CT, MRI and ultrasound and fMRI are also functional imaging</td>
</tr>
<tr>
<td>12. “This 60 year old gentleman visited our medical center with a chief complaint of chest pain” (90 characters).</td>
<td>Wordy. Consider: “This 60-year-old man presented with acute chest pain.” (52 characters).</td>
</tr>
<tr>
<td>13. “In recent times, FDG PET/CT has been shown to be superior for the staging of numerous cancers…”</td>
<td>Here is a waste of 93+ characters…</td>
</tr>
</tbody>
</table>

Authors should critically review their manuscripts in search of opportunities for improved clarity and elimination of redundant text.

* ICMJE (International Committee of Medical Journal Editors) guidelines for authorship vs. contributorship: [http://www.icmje.org/ethical_1author.html](http://www.icmje.org/ethical_1author.html)

Authorship credit is based on:
- Substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- Drafting or revising of the manuscript critically for important intellectual content;
- Final manuscript approval for submission and publication.

Contributors who do not meet the criteria for authorship may be listed in an acknowledgments statement.
Test your knowledge of Nuclear Medicine history!

For the people you may know in NM history, the answers will be last name only unless otherwise specified.

**Down**

1. This German physicist coined the term isotones
2. She, along with her husband, isolated radium, thorium, polonium, and coined the term “radioactivity”
3. In 1971, Nuclear Medicine was recognized as a specialty and in 1972, this board was formed (abbreviation)
4. This individual was a pioneer in nuclear endocrinology and developed I-131 mIBG and iodocholesterol
5. A calculation of the speed of light, which was given to us by this famous man, allows us to have lines in response to PET imaging
6. This individual, with the help of Nutt, developed the PET/CT scanner
7. This is what electrons were called in the 1890s
8. This individual, with the help of Phelps and Hoffman, has been credited with the development of PET at Washington University School of Medicine
9. This individual, along with Strauss, introduced non-invasive myocardial perfusion imaging in 1973
10. This well-known researcher kept a sample of radium from the Curies in his vest pocket
11. This British chemist coined the term isobars
12. This individual, along with Kaminski, pioneered radioimmunotherapy (RIT)
13. This Italian physicist, along with Glenn Seaborg, isolated Tc-99m
14. Often referred to as the “father of Nuclear Medicine”, he was the first to use P-32 to treat leukemia
15. This individual, along with Marinelli, developed calculations of radiation dose. She was one of the founding members of the American Association of Physicists in Medicine
16. Also involved in the development of SPECT, he now has a phantom named after him
17. This individual, along with McAfee, developed phosphates for bone imaging, as well as several other radiopharmaceuticals
18. Edwards and this nuclear medicine physician/researcher developed SPECT in 1963
19. A man of many accomplishments and accolades, including international outreach, he pioneered work in brain imaging and neurotransmitters
20. The first developer of the scintillation gamma camera; did you know his highest degree was a master’s?
21. A daughter of a legend, she too made strides in radioactivity demonstrating artificially produced radionuclides (first name)
22. Known as “Tappy”, his contributions to aerosol lung ventilation, thyroid, liver, and renal imaging were key
23. This nuclear medicine physician reports on the first human use of lung scanning and was instrumental in the development of the ABNM
24. This town in Tennessee, along with the lab, played an integral role in the discovery /development of radionuclides
25. This radiochemist coined the term “tracer principle” after tracing metabolic pathways in animals
26. This Scottish pathologist was the first to use radioiodine to treat thyroid goiter
27. The creator of the rectilinear scanner
28. This discoverer of thallium had a penchant for the paranormal; also developed a radiometer

**Across**

1. This German physicist coined the term isotones
2. She, along with her husband, isolated radium, thorium, polonium, and coined the term “radioactivity”
4. This individual was a pioneer in nuclear endocrinology and developed I-131 mIBG and iodocholesterol
5. A calculation of the speed of light, which was given to us by this famous man, allows us to have lines in response to PET imaging
6. This individual, with the help of Nutt, developed the PET/CT scanner
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25. This radiochemist coined the term “tracer principle” after tracing metabolic pathways in animals
Upcoming Meeting Dates

October 2014
• October 9–11, 2014: 19th World Congress on Advances in Oncology and 17th International Symposium on Molecular Medicine
• October 9–12, 2014: SNMMI Southeastern Chapter—2014 Annual Meeting
• October 11–12, 2014: SNMMI Central Chapter—2014 Fall Educational Symposium
• October 18, 2014: Mid-Eastern Chapter SNMMI—Fall Meeting
• October 30–November 2, 2014: 39th Annual Western Regional Meeting
• October 31–November 1, 2014: Multi-Modality Cardiovascular Imaging Conference

November 2014
• November 7–9, 2014: Northeast Regional Meeting, Greater NY and New England Chapters, SNMMI
• November 22, 2014: Mickey Williams Memorial Meeting—Back to Basics 2014

January 2015
• January 22–25, 2015: SNMMI 2015 Mid-Winter Meeting

(Nuclear Medicine Training. Continued from page 9.)

The number of new certificates issued by ABNM has remained relatively constant over the years, with an average of about 70–80 new specialty certificates issued each year. The number of nuclear radiology subspecialty certificates issued by the American Board of Radiology (ABR) has also remained relatively constant, at about 5–10 per year (Figure 1, from ref. 1). However, the percentage of physicians certified by ABNM who are also certified by ABR has been steadily increasing from 20% in 2007 to 48% in 2013 (Figure 2). It is expected this percentage will continue to increase due to the growth of hybrid imaging and molecular imaging, as well as changes in health care in the United States.

There are many challenges and opportunities that lie ahead. We must make sure that the current workforce has the necessary skills to keep up with a changing practice environment and that their qualifications are recognized by employers, regulators and payers. We must also work to attract highly qualified medical students and young professionals already in training to get dual training in nuclear medicine and radiology. A lot of groundwork has been laid, but there is still a lot of work to be done.

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SUBMIT YOUR ABSTRACT!

Attention young professionals including those in training (residents, physicians, nuclear pharmacists, or scientists) or in practice within 10 years of graduation:

The American College of Nuclear Medicine (ACNM) and the Society of Nuclear Medicine and Molecular Imaging (SNMMI) are currently accepting the submission of abstracts for the ACNM Annual Meeting and SNMMI 2015 Mid-Winter Meeting, January 22-25, 2015 in San Antonio, TX.

Clinical and scientific abstracts will be accepted on the following topics:

- Aspects of Clinical and Basic Science in Nuclear Medicine
- Correlative Imaging in Nuclear Medicine and Radiology
- Nuclear Cardiology
- Nuclear Pharmacy and Physics
- Radionuclide Therapy
- Quality and Safety in Nuclear Medicine

Upon review, the top abstracts submitted will be selected to make oral and poster presentations during the 2015 ACNM Annual and SNMMI Mid-Winter Meeting. These presenters will compete for the following awards:

- Grand Prize! The top twelve abstract presenters will receive a paid trip to China to present their submissions at the 3rd Sino-American Conference, May 4-5, 2014, in Shanghai and additionally compete for two spots in the prestigious Sino-American Exchange Program.
- Two $750 ACNM Travel Grants
- Three $500 ACNM Best Assay Awards

Submit your Abstract Today!

www.snmmi.org/mwm2015

Abstract submission deadline: Thursday, December 4, 2014