SCANNER

THE OFFICIAL NEWSLETTER OF THE AMERICAN COLLEGE OF NUCLEAR MEDICINE

ACNM/SNMMI Mid-Winter Meeting Program Preview

ACNM's 40TH Anniversary Meeting

Amol Takalkar, MD, MS, FACNM

Amol Takalkar, MD, MS, FACNM

As has been customary over the past few years, the ACNM will hold its Annual Meeting with the SNMMI Mid-Winter meeting in February 2014 in the beautiful city of Palm Springs, California. The meeting will be held from Feb 6 through 9, 2014, and the ACNM portion of the meeting will be all day Thursday, February 6, 2014.

This is the 40th Anniversary Meeting for ACNM, and we are excited to have a great program that goes well with the objectives and mission of ACNM. We will start with a plenary session given either by Congressman Raul Ruiz or one of his designees. Rep. Ruiz represents Palm Springs (CA-36), is a physician and is a first-term Congressman, and we are really excited to have him or his designee (their schedule permitting) to give their take on the Healthcare Reform and SGR with its impact on imaging in general—and maybe a bit of emphasis on nuclear medicine as well. We are also expecting to have 2 sessions on radiation injury preparedness and emergency response to radiation injury from the Radiation Emergency Assistance Center / Training Site (REAC/TS). This would be the first time that REAC/TS folks would be coming to give sessions at our meetings. We will also have great talks for the junior faculty on topics like "Starting a new job: What else do you need other than residency training" and "Nuts & Bolts of Clinical Research – For the New Faculty." The former talk will be given by Rusty Lavely, MD, past chair of the YPC and currently

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Letter from the President

Hossein Jadvar, MD, PhD, MPH, MBA, FACNM

Hossein Jadvar, MD, PhD, MPH, MBA, FACNM

The ACNM Board of Directors met during the SNMMI Annual Meeting in Vancouver, British Columbia. During this meeting, other than dealing with the usual administrative issues and reports, the board focused on the ACNM Management Contract, Membership Committee activities and the plans for the ACNM Annual Meeting, to be held in conjunction with the SNMMI Mid-Winter meeting as in the past few years.

The board approved a new three-year management contract with the SNMMI for a reduced fee. Two features of the new contract are that the cost is lower and that it is one year longer, so that the college can have some more time to focus on areas of strategic growth rather than soon again focusing back on negotiating a new management contract. However, as I mentioned in my last report, the college needs to increase revenue to meet its financial obligations with regards to payment of the remaining contract period, and we need to be on solid financial ground for the new contract period.

The Membership Committee, chaired by Simin Dadparvar, MD, FACNM, is hard at work to enhance retention of current members and grow the membership. On that front, a letter has been drafted with the help of Bennett Greenspan MD, FACNM, that will be sent to all college fellows to encourage them to remain with the college or renew their memberships if their memberships have lapsed. The status of fellowship is one of the most valuable benefits provided by the college, as it is recognition of individual accomplishment, and lends authority to those selected as fellows. As Ben mentions in his drafted letter with the honor of Fellowship, comes obligation. Fellows are expected to continue as active members of the college upholding its values and the nuclear medicine community as a whole. The Membership Committee, with the help our manager, is also planning for an active and engaging membership drive this year that also coincides with the 40th Anniversary of the college. Both domestic and international physicians and scientists will be invited to join. Moreover, an invitation letter is planned for distribution to the SNMMI members that will be signed by both me and Gary Dillehay, MD, FACR, FACNM, who is the current SNMMI president. The international residents may join the NMRO with a membership fee of $25 and will have online access to the journal of the college, *Clinical Nuclear Medicine*. We are optimistic that with the energy and commitment of

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all our board members, fellows, and the current membership—in association with the outstanding support of the SNMMI management team and leadership—we can grow our membership base, offer unique value proposition and benefits, and financially stabilize the college. With this we hope that even more can be done and offered as new benefits while contributing meaningfully and significantly to the nuclear medicine landscape.

With regards to the ACNM Annual meeting, the Program Committee, chaired by Dr. Amol Takalkar, is off to a very good start, and I know that the team is hard at work to finalize the program. We are giving you a preview in this Scanner issue and will offer another look in the next issue. I wish everyone a wonderful fall and look forward to meeting you in person in the near future.

NMRO Update

Erica Cohen, DO, MPH, CCD
NMRO President

Erica J. Cohen, DO, MPH, CCD

The NMRO had a great time at the Annual Meeting in Vancouver. This year's Annual Networking Luncheon topic was Government Relations and Politics, with guest speakers Dr. Robert Henkin, Sue Bunning and Dr. Erin Grady. It was a very informative event with a lot of audience participation and interaction. We are hopeful that residents will increase their involvement in local and national politics, and we have added a Government Corner to our quarterly Scintillator newsletter. Another exciting event at the Annual Meeting was the first-ever Residents & Young Professionals Networking Happy Hour. We had a great turnout and plan to continue this event at future meetings as a collaborative effort with the Young Professionals Committee.

NMRO, YPC and other groups also recently drafted a letter to the ACGME requesting a revision of the individualized case logging system, which is very time-consuming and takes residents away from their clinical duties. We are hopeful that the ACGME will allow bulk case logging for cardiac, pediatric and PET exams.

Our next Virtual Journal Club is coming up in September and will focus on nuclear medicine training pathways. This event will be hosted by Dr. Anthony Fotenos, the current ACNM Intern. Please encourage your residents to participate in this discussion. Just like all of the other benefits of NMRO, participation is **FREE**!

If you're a resident or affiliated with a residency program, we would encourage membership. Residents can visit www.acnmonline.org and click on the "Residents" tab to apply for NMRO membership.

Do You Have Research You Would Like to Present in Palm Springs, California? Send Us Your Abstracts!

The American College of Nuclear Medicine invites the submission of original abstracts for the Annual Meeting, held in conjunction with the Mid-Winter Meeting, February 6 – 9, 2014, in Palm Springs, CA.

Papers on all aspects of clinical and basic science in nuclear medicine, correlative imaging in radiology, nuclear cardiology and radiation oncology will be considered. The accepted presentations will be in oral and poster format.

A panel of physicians will judge the young investigator's posters, and the authors of the best submissions will be presented with their awards during a special banquet on Thursday evening. The presenter must be in attendance at the meeting to be eligible for an award. There will be three Best Assay Awards, each for $500 and two Travel Grants each for $750.

Abstracts must be submitted via e-mail to Delicia Hurdle at dhurdle@snmmi.org. The author's names and affiliations should be included with the title of the abstract. For more information regarding the abstract submission guidelines and submission form, please visit the ACNM website at www.acnmonline.org. **The deadline is Friday, November 15, 2013.**

Let Us Know Your Opinions!

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.

A Fairytale: A Commentary on Quality

Robert E. Henkin MD, FACNM, FACR
Professor Emeritus of Radiology
Loyola University Chicago

Robert E. Henkin
MD, FACNM, FACR

Once upon a time in a galaxy far, far away there existed a planet with a kingdom. This kingdom was wealthy because of the industrious nature of the subjects and the benevolence of the monarch. For a number of years the Monarch had cared for the health of his subjects by ensuring that the physicians of the kingdom were paid for their services. The healthcare delivered to the people was judged to be the finest on the planet. Numerous advances were made in medicine, including the cure of many diseases, vaccination programs on the planet and other significant items. After a time a new monarch came to rule, Queen Medi.

Queen Medi was educated in statistics and business methods. After many years of study, the queen decided that she could improve the health care of the planet and decrease the costs of care by applying these methods to medicine. In order to ensure that these measures could be implemented, physicians were required to submit more and more data to the central government. As the data submission requirements grew greater physicians were able to spend less and less time with their patients. The continuing requirements for data submission meant that physicians became confused as to what their responsibilities were. Data became more important than patients as physician reimbursement was tied to data submission. Patients became dissatisfied with their care and the "quality" began overall to decrease. Queen Medi became aware of this trend in health care and decided that steps must be taken to improve the quality of care.

The Queen brought her advisers together, the statisticians and more and more business methods people. It was decided that more data points were necessary to improve quality. The requirements for more data submission lead to further decrease in quality of care. Once again physicians began to value the quality of data they submitted higher than the patients they cared for. A surprising understanding began to grow among physicians, the more data submitted, the less quality they could practice. As time with patients grew less and less the understanding of those patients and their issues also decreased.

The Queen's advisors urged her to focus on outcomes of care. Everyone agreed that this was a great idea. Clinical specialties quickly adapted to this and were able to demonstrate outcomes of care. The laboratory specialties found the measurement of quality, beyond the precision and accuracy of their testing could not be measured. In her the anger queen decided that these laboratory specialties should be paid less than they were in the Past. Soon these laboratory specialties began to disappear and the overall quality of care deteriorated further.

This is quite a fairytale, but is it really a fairytale? For those of us practicing variants of laboratory medicine the issue of quality has been very vexing. How does one measure the outcome of a procedure that leads to a diagnosis when that test is only one of a number of factors involved in making the diagnosis or determining the therapeutic regimen? Outcome measures for imaging is in its infancy and not in routine use anywhere today. How do we contribute to the outcome of care? We have yet to find a methodology that allows the measurement of this contribution.

What is it that makes for quality in imaging? First of all is to ensure the imaging device is operating correctly and according to the manufacturer's specifications. In nuclear medicine the concepts of quality control are firmly established and have been in place for over 50 years now. A departmentwide QA program is an essential for maintaining quality. Such a program needs oversight to ensure that all devices are functioning correctly as well as ensuring that devices such as PACS and dictation systems are also operating correctly. The second element for quality in NM is the imaging protocol. There are many standardized protocols available from reputable sources including SNMMI for imaging virtually any organ. While tailoring of protocols is acceptable for individual laboratories, the tailoring should start from an accepted protocol.

Once the technical side of imaging is standardized the physician component is added. Interpretation cannot be standardized, but quality is dependent on several factors. The first of these is adequate training in an ABMS accepted program. After Board Certification participation in scientific meetings and self-education is critical. Two additional features are important to maintain physician quality. The first of these is participation in a phantom program where anthropomorphic phantoms with unknown lesions are imaged and then reported by the physician. The laboratory's score on these phantom studies and ranking versus other participants should be reported. Lastly nothing beats an onsite inspection to judge the overall practice quality.

Early efforts at ensuring quality revolved mainly about the AMA's PCPI program. This program attempted to ensure quality by having physicians complete essentially check lists that certified the contained items, thought to be essential to quality in a given clinical scenario, were performed (e.g., comparison with previous studies or other studies). This has evolved into the current Medicare program's PQRS program where physicians now report their efforts to Medicare and receive a bonus in payment for their compliance. This program is about to undergo significant change. As with so many Federal programs this one has transformed from carrot to a stick program. Physicians who do not participate in this program during 2013 will not be able to participate in 2015. These physicians will not only be unable to participate but will have 0.5% of Medicare payments withheld. Over succeeding years these payments will further decrease for nonparticipants.

The surgeons have addressed quality in a different fashion. They have developed a technique called "registries." This approaches the quality problem by having surgeons report the outcome of all their surgical procedures to a central compiling source. From this data surgeons can see how they are performing versus other groups and metrics derived from the overall data. This works well for surgery, but it is unclear whether this methodology can work for other areas of medicine and the process is quite expensive.

It has become evident to many that simply completing checklists is no assurance of quality, and even Medicare is coming to see this. While like a speeding freight train the PQRS program is going ahead, at the same time Medicare has opened the door on a new quality program. As Physician

(*Continued on page 6. See* ***Commentary on Quality****.*)

Government Relations Corner

Erin Grady, MD, CCD

Erin Grady, MD, CCD

This quarter, there are a number of topics of interest that will directly affect the way we practice nuclear medicine.

• CMS Medicare Physician Fee Schedule & HOPPS 2014 Proposed Rules

On July 9, the CMS released the HOPPS proposed rule. A number of changes are proposed, including many that may affect the practice of nuclear medicine. In particular, some of the proposed items include "packaging" of 7 new categories, one of which is radiopharmaceuticals. This means that the OPPS will be included in the fees for the primary service. It remains to be seen if separate payments will be given if they are reported in a claim. One item of note is myocardial perfusion imaging (MPI) and packaging of the stress tests and stress agents into the code for stress MPI. It is clear that CMS is committed to bundling payments, not just in nuclear medicine but in many aspects of medicine as a whole.

Quality reporting programs are another item that will deserve careful attention. Failure to adhere to quality measures will yield a reduction in payment. The draft rule proposes to implement a section of the American Taxpayer Relief Act of 2012 related to clinical data registry participation and successful participation in the Physician Quality Reporting System (PQRS). CMS is also poised to increase requirements to successfully report in PQRS. The draft rule states providers must report on nine measures (increased from three), and these measures must cover three domains in the National Quality Strategy. CMS states that the agency needs "to collect enough quality measures data to better capture the picture of care." Quality is no doubt an important topic for good patient care, but how we define it will be very important (see Dr. Henkin's article "A Fairy Tale" on page 3).

Click here to view the executive summary of the OPPS proposed rule (starting on page 7), or **here** for the full proposed rule, and **here** for the Medicare Physician Fee Schedule.

• SGR Bill

The Medicare Sustainable Growth Rate (SGR) or "doc fix" is up for review again. This go-round, the new proposal will focus heavily on quality measures that would reward physicians for the quality of care they provide to Medicare beneficiaries. The proposed legislation would provide an update of 0.5 percent to the single conversion factor for 2014 through 2018. At the time of this newsletter deadline, this bill has made it out of committee. We'll keep you updated on any important changes that may occur in the next newsletter(s). For more on this topic, **click here**.

• CMS Amyloid Imaging Decision Memo

On July 3, the CMS released their proposed decision summary on how PET Aβwill be reimbursed. They propose to cover one scan per patient through a coverage with evidence development (CED) pathway. If you would like to learn more about the full proposed decision, **click here**. The ACNM has submitted a letter asking CMS to reverse their position of the proposed rule. The letter suggests that a PET Aβscan leads to better health outcomes for patients, especially in the case of a differential diagnosis which can prevent patients from being subjected to inappropriate medications and costs.

Focus on the Fellow: Five questions with Dr. Lorraine Fig, MD, MPH, FACNM

Erin Grady, MD, CCD, with the help of Lorraine Fig, MD, MPH, FACNM

Lorraine Fig, MD, MPH, FACNM

In this issue, we will focus on Dr. Lorraine Fig, who is truly an influential member of the specialty of nuclear medicine, although she herself might never tell you this outright. She is a dedicated practitioner and teacher of nuclear medicine. Her honors, invited lectures and publications span several pages of her curriculum vitae. Her involvement also spans many organizations, some of which include the ACNM, SNMMI, ACGME, RSNA, ACR, ICANL and many others. I should also point out that she is not just a member of these groups; she is a very productive advocate for nuclear medicine and its quality practice. She is definitely someone I admire, respect and appreciate. She was kind enough to answer these questions:

EG: What got you interested in nuclear medicine?

LF: It's a rather circuitous story. I did not initially have any plans to enter into the field. The first time I saw a nuclear medicine scan was in medical school at the University of Cape Town, South Africa, when we were shown a life-sized rectilinear image of an I-131 Rose Bengal liver scan. This was in the early 1970s, several years before the use of CT scans, so I was impressed with an image that could show hepatic structure and function. I filed this information away deep in my brain and didn't give nuclear medicine any thought at all as a training pathway. My career took some detours when I immigrated with my family to the U.S., arriving in Ann Arbor, MI, in late 1979. After obtaining a Master of Public Health degree at the University of Michigan, I was interested in returning to clinical medicine, but very unsure of which discipline would be best for me. My husband (Brahm Shapiro, an endocrinologist and nuclear medicine physician) suggested applying to nuclear medicine and this turned out to be great advice. I was so fortunate that Dr. William Beierwaltes, chief of nuclear medicine at the University of Michigan and a pioneer in the field, offered me an opportunity to enter the training program, for which I will always be grateful. I loved nuclear medicine from the first day of residency and still do!

EG: What was the best advice you received when you were just starting out as an attending?

LF: I've been lucky to work with amazing people in nuclear medicine. I owe an incredible debt to the clinical teachers and mentors who taught me nuclear medicine and showed me how to negotiate my career. Two pieces of advice from my mentor, Milton D. Gross (chief of nuclear medicine at

*(Continued on page 7. See **Focus on the Fellow**.)*

Nuclear Medicine Guidelines: Gastric Emptying

Herbert A. Klein, MD, PhD

Herbert A. Klein, MD, PhD

For the next two issues, we are pleased to have a series by Herb A. Klein, MD, PhD, from the Division of Nuclear Medicine Department of Radiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, discussing guidelines in nuclear medicine.

As the third of a series on nuclear medicine guidelines, this article will discuss the SNMMI guideline for adult solid meal gastric emptying (1).

Nuclear medicine gastric emptying studies are a useful, physiologic, noninvasive and quantitative method of evaluating patients for gastroparesis, recent eating, caffeine and alcohol may interfere, as may certain medications, such as opiates. A prescribed meal with Tc-99m bound firmly to a solid substance is ingested by the patient, with or without liquids, followed by anterior and posterior imaging of the abdomen at specified intervals and determination of percentages of emptying, based on the decay-corrected geometric mean of the image counts taken at chosen time-points (or, in earlier methods, the half-time of emptying). The test is also of value to diagnose abnormally rapid gastric emptying, which can present with similar symptoms.

A number of different media have been used, such as whole eggs cooked with added Tc-99m SC, with the requirement that good binding of the tracer to the solid could be demonstrated. An early method (2) using in vivo tagging of chicken liver with Tc-99m sulfur colloid, based in phagocytosis by Küpffer cells, illustrates the importance that was placed on that requirement. In time, it was realized that such an elaborate procedure was not necessary.

The new guideline is a joint effort of SNMMI and the American Neurogastroenterological and Motility Society. Interdisciplinary collaboration, with shared viewpoints, is very desirable. Another positive feature is the simple fact of standardizing the procedure. "If another meal is used, the reference values cited for this standardized meal to not apply." The meetings on which the consensus guideline was based included a patient advocacy group and, as reported by Maurer (3), there was "a plea from frustrated patients who could not get [gastric emptying] results performed and interpreted in a standard manner."

The chosen radiopharmaceutical is an egg-white-based omelet, cooked after addition of Tc-99m SC, as a component of a meal of about 255 calories. Egg-white preparations are preferred to whole eggs because of their low fat content. Superior binding has also been reported (4).

Normal ranges, as percentages of gastric retention, are lower limits of 70% at 30 min and 30% at 60 min, and upper limits of 90% at 60, 60% at 120, 30% and 180 and 10% at 240 min. Half-times of emptying are computed by most quantitative programs, and normal ranges may be given, but their use is not recommended by the guidelines. Unlike ventilation/perfusion scanning, the diagnostic standards were determined by study only of normal subjects (5), presumably because of the difficulty of defining abnormal subjects by means of some "gold standard" other than the gastric emptying test itself. The normal upper limit of gastric retention was defined as the 95th percentile of the study group.

For a study to be considered unequivocally normal, all percentages should be normal, although the clinical importance of delayed emptying observed at only certain time points is unknown. The 240 min result is considered to be "the best discriminator between normal and abnormal results." Thus, a patient is studied for a longer period of time than many departments have conventionally done. One recent study (6) suggests that the test may be shortened to 2 hours if the gastric emptying is then better than 55% or worse than 35%, judging such results to be normal or abnormal, respectively. Pending further work, it may be prudent to follow the SNMMI protocol, however.

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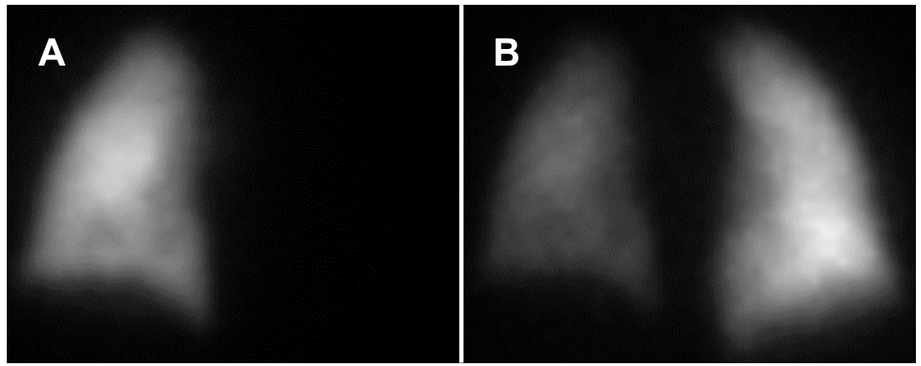
Challenge Case

Anthony Fotenos, MD, PhD and Rathan Subramaniam, MD, PhD, MPH



A 28-year-old man was admitted through the ED for dyspnea and referred for ventilation perfusion imaging to evaluate for pulmonary embolism. The figure shows posterior planar views of lung perfusion following two injections of Tc-99m MAA, one into the left upper extremity (A) and the second, a few hours later, into the right upper extremity (B). Ventilation imaging with Xenon-133 was normal (not shown). The patient had a history of tricuspid atresia, dextro-transposition of the great arteries, severe pulmonary stenosis, bilateral modified Blalock-Taussig shunting, bilateral bidirectional Glenn shunting, and extracardiac lateral tunnel Fontan shunting, all completed by age 5. Match the three kinds of congenital cardiac shunt repairs to the normal patterns of post-operative lung perfusion listed below.

Surgical shunt:	**Normal lung perfusion to the left, right, or both lungs following venous injections of Tc-99m MAA into the left upper, right upper, and lower extremities:**
1. Bilateral bidirectional Glenn + extracardiac Fontan	A. Left, right, both
2. Original Glenn + original Fontan	B. Right, right, left
3. Bidirectional Glenn + extracardiac Fontan	C. Both, both, both

*(Continued on page 8. See **Challenge Case**.)*

*(**Commentary on Quality**. Continued from page 3.)*

Practice Guidelines come into greater and greater use, Medicare announced that in the future these guidelines will have to contain quality metrics that can be measured. No one has quite figured out the best way to accomplish this yet, and it is at this time a work in progress.

Unfortunately, none of these measures are accepted for quality in the non-imaging world. One the priorities for our societies should be recognition of participation in national quality programs as part of the assurance of quality in imaging. If laboratories are participating in national programs that measure the integrative aspects of technical and physician efforts one can insure that the practice is producing the best quality studies for patients possible. Use of an outcome measure for imaging is very problematic as we cannot tell what happens to the end product of our efforts. Did the clinician understand and properly integrate the information we provided into the care of the patient? This alone makes outcomes measures for imaging problematic. The steps described above ensure that a given laboratory can produce the quality and trusted physician report needed for patient management. Penalizing imaging without taking into account quality programs is bad public policy.

Calendar of Events

• SNMMI Southeastern Chapter - 2013 Annual Meeting
Charlotte, North Carolina
Oct 10, 2013 - Oct 13, 2013

• XV ISCORN meeting
Varese, Italy
Oct 15, 2013 - Oct 17, 2013

• 38th Annual Western Regional Meeting
Pasadena, California
Oct 24, 2013 - Oct 27, 2013

• Northeast Regional Meeting, SNMMI
Mystic, Connecticut
Oct 25, 2013 - Oct 27, 2013

• SNMMI Central Chapter - 2013 Fall Educational Symposium
Bloomington, Minnesota
Oct 25, 2013 - Oct 27, 2013

• 2013 IEEE Nuclear Science Symposium and Medical Imaging Conference
Seoul 135-731, Korea
Oct 26, 2013 - Nov 2, 2013

• Advanced Molecular Imaging and its Clinical Translation Course
Boston, Massachusetts
Oct 27, 2013 - Oct 30, 2013

• RSNA 99th Scientific Assembly and Annual Meeting
Chicago, IL
December 1-6

• Mickey Williams Memorial Meeting - Back to Basics 2013
Duarte, California
Dec 7, 2013

• SPIE BiOS 2014
San Francisco, California
Feb 1, 2014 - Feb 6, 2014

• SNMMI 2014 Mid-Winter Meeting & ACNM 40TH Annual Meeting
Palm Springs, California
Feb 6, 2014 - Feb 9, 2014

• SPIE Medical Imaging 2014
San Diego, California
Feb 15, 2014 - Feb 20, 2014

*(**Focus on the Fellow**. Continued from page 4.)*

the Ann Arbor VA Hospital) have stood out as touchstones:

Firstly, the concept of "Baby Steps." In other words, don't change or implement too much too quickly. For example, when starting a new job don't modify all the protocols and routines immediately. It is better to watch, listen and learn, then proceed very slowly and stepwise in making any changes, simultaneously getting feedback from all the stakeholders.
The second wise counsel was, "You can catch more flies with honey than vinegar." What great advice--it's a concept I have striven to follow throughout my career. I truly believe it's easier to persuade people by using polite, reasoned argument than being angry or confrontational.

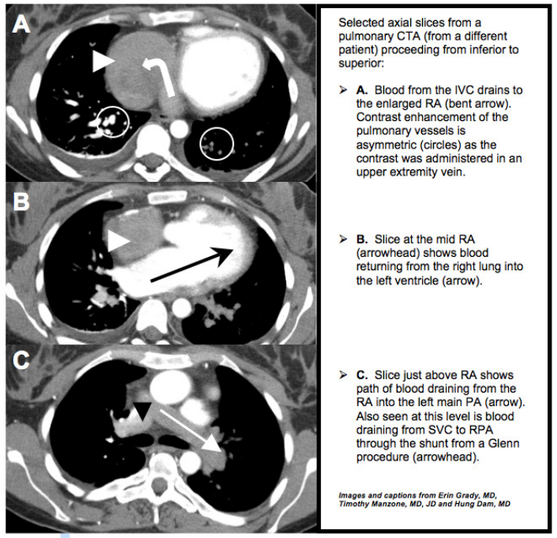
EG: What gives you the most career satisfaction?
LF: I'm most satisfied when I can help people. This falls into two categories: interactions with patients and students. I love the clinical contribution I strive to make from scan interpretation and managing therapy patients. I also greatly enjoy teaching students at many levels (high school students, medical students and residents/fellows) and I especially like being able to pass along a piece of knowledge that was taught to me by one of my own teachers. For me, it's a way to relate to my teachers and honor them. I also get great satisfaction when a former student says to me "I remember when you taught me that ...". It's a "connect-the-dots" moment for me.

EG: Can you give some background on your involvement with ACNM, including your president's award?
LF: I first joined the American College of Nuclear Physicians (a forerunner organization of ACNM) in 1991 but did not become active or even a regular member until 2006, when I decided to rejoin and increase my involvement in the organization. I had become increasingly aware of the vital role ACNM plays in providing additional representation to a variety of governmental and nonprofit organizations. In fact, the same year I rejoined, I was appointed ACNP's representative to the Board of the Intersocietal Commission for the Accreditation of Nuclear Laboratories (ICANL, now IAC Nuclear/PET). From 2007 to 2012, I served on the ACNM Board of Directors, which included the rather unsettled period of the merger between ACNP/ACNM, and a search for ACNM management alternatives. In 2010, I was honored to be designated as an ACNM Fellow, and in 2012 Munir Ghesani, MD, at that time ACNM president, surprised me with the President's Award. I would like thank the ACNM for these honors that have been very meaningful to me, and greatly appreciated.

EG: What do you think that ACNM should do to improve its value for its members?
LF: ACNM already provides many benefits for its members, both tangible and less observable. Clearly, the most important material benefit is the Clinical Nuclear Medicine journal subscription accompanying our membership. Another major benefit is the superb and varied education programming presented by ACNM at the joint SNMMI/ACNM Midwinter Meeting. Mentorship for trainees and the excellent NMRO and its activities such as the Virtual Journal Club, among others are tangible benefits to our residents.

I believe, however, that the intangible value of ACNM in promoting the interests of physicians (and scientists) through separate, independent representation is not obvious to the nuclear medicine community at large. If we are to bring in new members, as we must in order to survive, we have to find a way to articulate and widely publicize this vital aspect of our mission.

(**Challenge Case**. *Continued from page 6.*)



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Answer: 1A, 2B, 3C

Discussion:

Patients with repaired congenital heart disease are increasingly encountered in the routine adult health care setting. Because venous return to the lungs occurs passively in these patients, they are at risk for thromboembolic events, which may be unilateral.

Total cavo-pulmonary circulation represents a common endpoint for many congenital cardiac repairs and may alter the expected pattern of lung perfusion.

Glenn shunts connect the superior vena cava (SVC) to the pulmonary artery (PA) in three variations:

1) Right SVC to bilateral PA (bidirectional Glenn, most common)
2) Right SVC to right PA (original Glenn)
3) In patients with variant persistent left SVCs, right SVC to right PA and left
   SVC to left PA (bilateral bidirectional Glenn, as in this challenge case).

Fontan shunts connect the IVC to the pulmonary artery in two variations:
1) IVC to bilateral PA (most common)
2) IVC to left PA (original Fontan)

Knowledge of this surgical is crucial for accurate interpretation of ventilation perfusion imaging. In this case, we reported that our patient had "normal ventilation and postsurgical right upper extremity-to-right lung and left upper extremity-to-left lung perfusion," suggesting pulmonary embolism was a very unlikely cause for his symptoms.

A quality history is also important as this can save the otherwise "intermediate probability" V/Q patient from getting a further non-diagnostic CTA (pictured below) and the associated radiation dose.

Letter to the Editor— Progress in LEU Production of Medical Isotopes

Contributed By: Ira Goldman, Project Director, Strategic Supply for Lantheus Medical Imaging, Inc.

In recent years, industry has faced an array of challenges in order to provide a reliable and stable supply of technetium-99m (Tc-99m) to the nuclear medicine community. The primary problem has involved the supply of molybdenum-99 (Mo-99) for production of Tc-99m generators.
In addition, industry is now faced with both the challenge and the opportunity of converting to the use of Mo-99 produced from Low-Enriched Uranium (LEU) targets. This is to support the U.S. and foreign government's global nuclear security strategy — as declared at the 2012 Nuclear Security Summit in Seoul, South Korea — encouraging the reliable supply of medical radioisotopes produced from non-Highly Enriched Uranium (HEU) sources.

Mo-99 can be produced using targets made of either HEU (directly usable in nuclear weapons), which are enriched to 20% or greater Uranium-235 content, or LEU, uranium enriched to less than 20% Uranium-235. Currently, most of the Mo-99 supply imported into the U.S. is from nuclear reactors that primarily use HEU targets.

Lantheus Medical Imaging (Lantheus) has aggressively undertaken several key initiatives to implement a diversified and balanced supply chain of Mo-99. As such, we have secured numerous partnerships and agreements with suppliers and partners worldwide to maximize access to this important medical isotope. Our Mo-99 supply chain includes four processing facilities and seven reactors on four continents through our contracts with the ANSTO Health (Australia), the Institute for Radioelements (Belgium), Nordion (Canada), and NTP Radioisotopes Pty. (South Africa).

As a global leader in the medical imaging industry, Lantheus has been working closely with the U.S. Department of Energy and LEU Mo-99 suppliers NTP and ANSTO Health as part of the Global Threat Reduction Initiative to convert to the use of Mo-99 produced from non-HEU sources. As a result, we were the first U.S. manufacturer to institute the commercial use of LEU Mo-99 in our TechneLite® (Technetium Tc 99m Generator) in 2010.

This year, there has been important and significant progress supporting the conversion to LEU. On January 2, 2013, President Obama signed into law the American Medical Isotopes Production Act (AMIPA) as part of the 2013 National Defense Authorization Act. The AMIPA encourages U.S. domestic production of LEU Mo-99 and provides for the eventual prohibition of the export of HEU from the U.S.

Additionally, the Centers for Medicare and Medicaid Services (CMS) stipulated in the 2013 final payment rules for the Hospital Outpatient Prospective Payment System that CMS will provide an additional $10 per dose reimbursement for every Tc-99m dose produced from non-HEU sourced Mo-99.

In January 2013, Lantheus began offering a LEU TechneLite® generator as part of the company's nuclear imaging product portfolio. Lantheus' LEU TechneLite® generator is the first technetium-99m generator in the U.S. with at least 95% LEU-produced Mo-99 content, which is compliant with the new reimbursement requirements under the CMS 2013 rules. This LEU generator is manufactured weekly by Lantheus.

While there has been great progress made to date, the market has not yet fully embraced LEU generators. Lantheus has put into place proactive initiatives to identify and mitigate end-user concerns, including a pilot program for implementation and management of LEU TechneLite® generators/unit doses. Through our pilot program, we are capturing key lessons to provide guidance to customers on how to track, manage, and obtain reimbursement.

Lantheus is committed to continue working with the U.S. and foreign governments, suppliers and the medical imaging community, including medical societies such as the Society of Nuclear Medicine and Molecular Imaging, the American Society of Nuclear Cardiology and others, to drive adoption of LEU generators.

Lantheus will have access to increasing quantities of LEU-produced Mo-99, including when IRE converts to LEU production by 2016, and we are moving closer to our goal of eventually eliminating HEU-sourced Mo-99 from our supply chain while at the same time providing a secure and reliable supply of Tc-99m to our customers and the patients we serve.

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.

(***Mid-Winter Meeting***. *Continued from page 1.*)

enjoying a successful private practice in nuclear medicine. The latter topic will be discussed by Pradeep Garg, PhD, who was involved with the nuclear medicine centers at Duke, Yale and Wake Forest over the past three decades and is currently the executive director of the Louisiana Molecular Imaging Center. We will continue having a session by Jay Harolds, MD, FACNM, on a leadership-related topic. He will be focusing on "Getting the Right Job Under Tough Circumstances" at this meeting, with an emphasis on the tough job market for nuclear medicine physicians as well as technologists. There will also be the traditional resident presentations, with best essay awards being presented at the ACNM gala dinner celebrations. Most of the program has been finalized, although some speakers and topics are subject to change as we are still awaiting final conformation.

The rest of the Mid-Winter Meeting appears to be equally exciting, with quality talks and great speakers. The Correlative Imaging Council (CIC) of the SNMMI will continue to conduct the CT case review sessions but will also add MRI case reviews to the mix this time. So although 100 cases will again be reviewed over the course of two days, these will not all be CT cases but will also include MRI cases, and the certificate is expected to state the same. It is exciting time for hybrid imaging and the CIC is being proactive by initiating MRI case reviews well in advance before formal guidelines of the requisite training are put forth by the respective professional societies. By starting early, we hope that nuclear medicine professionals will be well prepared to effectively use the new hybrid PET/MRI modality when it potentially becomes a routine clinical tool in the future. So in addition to this, there are several sessions that will enhance MRI education including a session on PET-MRI focusing on basic science to clinical application and multimodality imaging with PET/MR to characterize CNS diseases.

Sessions focusing on newer developments are also expected to deliver cutting-edge information to the Nuclear Medicine practitioner. There will be sessions dedicated to radium-223 dichloride (Xofigo), the recently FDA approved alpha-particle radionuclide therapy for castration resistant metastatic prostate cancer with bone predominant disease. Xofigo has shown to offer a survival benefit to patients and hence is not palliative and has opened an exciting era of radionuclide therapy. Other sessions focusing on recent developments will discuss lymphoscintigraphy (with recent FDA approval of Lymphoseek) as well as emerging radioligands and future targets for CNS imaging. In addition to oncological and neurological applications related to molecular imaging, there will be dedicated sessions focusing on cardiac imaging and infection imaging. Hybrid imaging will also be the focus in sessions dedicated to SPECT/CT from the clinician as well as technologist perspectives. Additionally, mIBG diagnosis and therapy will also be emphasized with mention of the up and coming concept of Theranostics. Response assessment remains an important and unresolved issue that the meeting will also touch upon.

Lastly, there are expected to be sessions covering more universal considerations like sustaining education and practice in today's environment since that remains fiscally challenging with more regulations. Job opportunities for the technologists and the role of Nuclear Medicine Advanced Associates (NMAA) in the enlarging role of PET/CT in nuclear medicine and molecular imaging will also be addressed.

In summary, I believe the program is very exciting and offers wholesome coverage of issues that are extremely pertinent to the practice of nuclear medicine in current times. The speakers are expected to be excellent and the topics are very relevant and we hope to have an excellent scientific program. See you all in Palm Springs in February 2014!

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