### ASNC2015 General Education Information

**Statement of Need**

In order to maintain competence and improve performance, imaging professionals must assimilate and integrate knowledge spanning multiple areas, including clinical data, technical aspects of imaging, and appropriate application of imaging (e.g., clinical guidelines and appropriate use criteria). Each of these areas is constantly evolving, particularly as innovative technologies and novel pharmacologic agents are introduced. ASNC2015 is an educational activity designed to help imaging professionals obtain the latest information in clinical practice and review cutting-edge scientific advances in nuclear cardiology and cardiac imaging.

**ASNC2015 Knowledge Gaps**

The four knowledge gaps identified for ASNC2015 are: **Reporting, AUC, Radiation Safety, and Clinical Protocols.** These gaps were shared with the tracks as part of the Program Committee Conference call and were to be thought of when developing their topic selections.

<table>
<thead>
<tr>
<th>Identified Need</th>
<th>Expected Outcomes/Desired Results</th>
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<tr>
<td>Learners must need to be proficient in understanding the fundamentals of nuclear cardiology to pass the board exam and recertification exam. Source: CBNC, <a href="http://www.cbnarc.org/theexam/outline.cfm">http://www.cbnarc.org/theexam/outline.cfm</a></td>
<td>Physicians will gain knowledge and skills (competence change) to pass the board or recertification exam in nuclear cardiology and appropriately treat patients on their specific needs (performance change).</td>
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<td>2012 Certification – Gaps (Confidential Data from CBNC) 25% percent of applicants to the CBNC board certification failed the physics and instrumentation part of the exam 23% of applicants to the CBNC board exam failed the Radiopharmaceuticals section of the exam; 31% of applicants to the CBNC board Exam failed the radiation safety section of the exam; 21% of board exam registrants failed the NC Diagnostic test section of the exam; 27% of registrants failed the General Cardiology Imaging Interpretation section of the exam; 17% of CBNC certification exam takers failed the Risk Stratification part of the exam; 19% of CBNC certification registrants failed the MPI section of the exam; 21% of board exam registrants failed the VFI section of the exam; 24% of board exam takers failed the Myocardial Viability of the exam</td>
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<tr>
<td>2012 Recertification – Gaps (Confidential Data from CBNC) 30% of recertifiers failed the physics and instrumentation section of the exam; 22% of board exam recertifiers failed the radiopharmaceuticals part of the exam; 29% of recertifiers failed the radiation safety section of the exam 19% of recertifiers failed the nuclear cardiology protocols and procedures section of the exam; 28% of recertifiers failed the general cardiology in imaging section of the exam; 20% of board exam recertifiers failed the risk stratification section of the exam; 18% of CBNC recertification board exam takers failed the MPI interpretation section of the exam 21% of CBNC recertifiers failed the VFI part of the exam 25% of recertifiers failed the Myocardial Viability section of the exam</td>
<td>Attendees will gain knowledge and skills (competence change) necessary to use the updated ACC/ASNC Appropriate Use Criteria for MPI to treat special populations and improve patient health (performance change). Physicians should be implementing</td>
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<td>A peer review article published in 2009 study concluded that 14.4% of a total of 6,351 patients in a clinical study were inappropriately tested despite published guidelines on Appropriate Use Criteria for MPI. Source: <a href="http://jacc.sciencedirect.com/pii/S0735109709029502">J Am Coll Cardiol. 2010 Jan 12;55(2):156-62</a></td>
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<td>Physicians are not fully aware of best practices as outlined in ASNC’s published Clinical Guidelines on Appropriate Use Criteria for MPI:</td>
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ASNC guidelines and clinical updates include standardized nuclear cardiology protocols. Providers performing nuclear cardiology procedures need to reevaluate skills and competency in applying current guideline-based protocols. 

Source: [http://www.asnc.org/content_184.cfm?navID=73](http://www.asnc.org/content_184.cfm?navID=73)


### The IAC published an article in 2011 on the nuclear cardiology lab accreditation process showing that many labs fail compliance with IAC standards and are cited for errors in nuclear cardiology imaging procedures and protocols (stress protocols, clinical protocols, organizational issues and reporting), in spite of clinical guidelines indicating specific physician performance standards. 

3) [http://www.asnc.org/section_73.cfm](http://www.asnc.org/section_73.cfm)

### Attendees will gain knowledge and skills (competence change) necessary to use the ACC/ASNC Appropriate Use Criteria (IAC uses ASNC’s AUC to set up QC protocols) to perform appropriate NC cardiac procedures (performance change). The ASNC guidelines for reporting include over 200 elements that are recommended for complete and comprehensive reporting. Elements are routinely left off of reports. Cardiologists and other health care providers need to increase their competence in applying these Standardized Reporting of Radionuclide Myocardial Perfusion and Function guidelines (competence change). Improved nuclear cardiology reports lead to improved interpretation and help referring physicians manage and treat patients. While an adequate report does not improve diagnosis, it can yield improvements in patient management as the referring physician is better able to understand what the nuclear cardiologist is reporting (performance change).

### Recommendations by the American College of Cardiology Foundation/American Heart Association (AHA)/American College of Physicians Task Force on Clinical Competence and Training deems it possible for possible to maintain a quality of training while creating opportunities to develop expertise in more than 1 modality over the course of a fellowship. However, at present, only a few training programs have been able to establish

### By gaining education in more than one imaging modality (competence change), it will allow for the physician to understand the unique advantages and limitations of each modality and appropriately treat patients on their specific needs.

| Improvements in cardiovascular imaging technology and their application, coupled with increasing therapeutic options for cardiovascular disease, have led to an increase in use of cardiovascular imaging. At the same time, the armamentarium of noninvasive diagnostic tools has expanded with innovations in new contrast agents, molecular radionuclide imaging, perfusion echocardiography, computed tomography for coronary angiography and calcium scoring, and magnetic resonance imaging for myocardial structure and viability. As the field of Cardiac Computed Tomography (CCT) continues to advance along with other imaging modalities, the healthcare community needs to understand how to best incorporate this technology into daily clinical care (competence gap). Inappropriate use of CCT may be potentially harmful to patients and generate unwarranted costs to the health care system, whereas appropriate procedures should likely improve patients’ clinical outcomes. The release of updated Appropriate Use Criteria for Cardiac Computed Tomography in 2010 (knowledge gap) confirms the need for an educational program that updates imaging professionals on the appropriate application of CCT. 
Source: ACCF/AHA Competence Statement on Cardiac Imaging with CT and Magnetic Resonance.
Source: ACCF/SCTT/ACR/ASE/ASNC/SCMR 2010 AUC for cardiac CT (Taylor) | Physicians will gain knowledge and skills (competence change) for employing appropriate use of cardiac CT for the prevention, diagnosis and management of patients. Radiation exposure may also be reduced in patients with possible or documented cardiac disease simply by reducing inappropriate testing or selecting appropriate imaging protocols (performance change). |
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| Appropriate Use Criteria has been developed for the application of SPECT and PET modalities; however, they are not adequately followed. SPECT and PET MPI can be used to guide patient management in coronary disease, however, appropriate use criteria is not being followed. 
| Recent article published on JAMA has demonstrated underutilization of current and standard practices that reduce radiation exposure in patients as well as gaps in radiation safety knowledge among practicing NC physicians. 
Source: Radiation Safety in Nuclear Cardiology: Current Knowledge and Practice—Results from the 2011 American Society of Nuclear Cardiology (ASNC) Member Survey. JAMA Internal Medicine June 10, 2013, Vol 173, No. 11 | Physicians should know standard protocols and procedures to reduce radiation exposure on patients. |
| Physicians are consistently being cited for errors in PET imaging protocols and procedures and are failing to follow appropriate nuclear cardiology lab accreditation standards. IAC has recently published the 2012 IAC Standards and Guidelines for Nuclear/PET Accreditation. | Physicians should know standard protocols and procedures on PET imaging. |
| Results from the ASNC 2012 Innovation Summit meeting highlighted current gaps in the Nuclear Cardiology environment, see below: 

**Educational Needs:** 
Radiation: 
Dual Isotope should not be used. 
Thallium studies should not be done. Not optimal for the patient. Stress/Rest is more optimal than Rest/Stress. 
Dosing. | Physicians should know nuclear cardiology treatment standards to diagnose, manage and treat patients with CVD. |
Appropriate Use
Attenuation Correction:
This will improve the quality of the image which improves diagnosis and treatment. Attenuation correction is hardly used. 74% don’t use and 68% don’t use the new software, all of which reduces radiation to the patient. New equipment is available that reduces imaging time and has increased sensitivity. CZT technology. Rest/Stress. Stress only. This is a new option physicians need to learn more about.
Lack of knowledge of the new technologies available and education on how to use them.
New imaging agents: Flurpiridaz agent in studies. Better disparity. Improves diagnostic accuracy and prevents coronary angiography and therefore improves the quality of care. ADMIRE HF trial.
The real world value of Nuclear Cardiology Stress Myocardial Perfusion Imaging vs. ETT in the ED Setting: Cardiac event rates are significantly less when perfusion imaging was done first across all risk groups.

Changes to physician behavior are not enough. Changes need to be linked to outcomes.
Source: 2012 ASNC Innovation Summit Minutes