Statement of Need
Radionuclide-based cardiac imaging studies, including myocardial perfusion imaging (MPI), play an important role in the diagnosis and management of patients with known or suspected heart disease. Today more than 5000 laboratories are performing an estimated 8 million myocardial perfusion studies of which 58% use pharmacological stress agents, either alone with exercise. [DAIC 2013] A large body of scientific evidence exists on the clinical value of MPI, based on studies performed on many thousands of patients. These studies are highly sensitive and specific for the diagnosis, prognosis, and treatment response of coronary artery disease, as well as for selection of patients who may benefit from other types of intervention, including revascularization and device therapy. The value and justification of MPI for risk assessment is based on large observational outcome studies. As a result of the recognized clinical value and cost-effectiveness of these studies, they have been incorporated into many ACC/American Heart Association (AHA)/ASNC clinical management guidelines.

Nuclear cardiology is an evolving field with continuing advances in software, instrumentation and radiopharmaceuticals to provide high quality clinically relevant information for patient care. These advances require those involved in the providing nuclear cardiology studies to be continuously updated to ensure that the procedures are used appropriately and safely and that recent clinical and technological advances are incorporated in a timely manner to continue to improve the image quality and interpretation to provide the best clinical care.

ASNC2017 Knowledge Gaps The four knowledge gaps identified for ASNC2017 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.

(1) State the professional practice gap(s) of your learners on which this activity is based? (Max 100 words):
1 a. What “is” the current state of practice?
2013 Certification – Gaps (Confidential Data from CBNC)
21% percent of applicants to the CBNC board certification failed the physics and instrumentation part of the exam
17% of applicants to the CBNC board exam failed the Radiopharmaceuticals section of the exam; 32% of applicants to the CBNC board Exam failed the radiation safety section of the exam; 24% of board exam registrants failed the NC Diagnostic test section of the exam; 22% of registrants failed the General Cardiology Imaging Interpretation section of the exam; 25% of CBNC certification exam takers failed the Risk Stratification part of the exam; 20% of CBNC certification registrants failed the MPI section of the exam; 22% of board exam registrants failed the VFI section of the exam; 23% of board exam takers failed the Myocardial Viability of the exam

2013 Recertification – Gaps (Confidential Data from CBNC)
22% of recertifiers failed the physics and instrumentation section of the exam; 15% of board exam recertifiers failed the radiopharmaceuticals part of the exam; 24% of recertifiers failed the radiation safety section of the exam
27% of recertifiers failed the nuclear cardiology diagnostics section of the exam; 18% of recertifiers failed the general cardiology in imaging section of the exam; 23% 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
19% of CBNC recertifiers failed the VFI part of the exam
28% of recertifiers failed the Myocardial Viability section of the exam

1b What “should be” the state of practice?
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).

2a. What “is” the current state of practice?
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: J Am Coll Cardiol. 2010 Jan 12;55(2):156-62

Physicians are not fully aware of best practices as outlined in ASNC’s published Clinical Guidelines on Appropriate Use Criteria for MPI:
Source: http://www.asnc.org/content_184.cfm?navID=73

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

2b What “should be” the state of practice?

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 protocols that result in lower radiation doses.
Physicians should be able to operate with best practice protocols that would allow them to: 1) distinguish artifacts from true medical abnormalities, 2) best utilize software/hardware tools in cardiac imaging to improve image interpretation, 3) produce accurate reports with true positive and true false positives, 4) follow best treatment guidelines for asymptomatic and symptomatic patients.
The ASNC imaging guidelines include specific protocols that should be followed for nuclear cardiology procedures. Nuclear Cardiology Healthcare providers need to increase their competence in applying these protocols to every day practice (competence change) in order to appropriately treat patients (performance change).

3a. What “is” the current state of practice?

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 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 multimodality cardiovascular imaging training, resulting in a gap in education.
Source: Training in Multimodality Imaging: Challenges and Opportunities William A. Zoghbi, and Jagat Narula J. Am. Coll. Cardiol. Img. 2009;2;249‐250

3b What “should be” the state of practice?

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 (performance change.)

4a. What “is” the current state of practice?

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

4b What “should be” the state of practice?

Physicians should know standard protocols and procedures to reduce radiation exposure on patients (competence change).