What is involved in carrying out a Practice Analysis?

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Part 1

Every five years, the CBNC commissions a national practice analysis study to identify: (a) the professional responsibilities and knowledge required for the competent practice of nuclear cardiology, and (b) the changes that had occurred in professional practice since the last practice analysis study. The procedures used in conducting the practice analysis study involve an interactive process that combine:

- the practice analysis expertise of psychometric testing professionals;
- the professional knowledge of a task force comprised of prominent and experienced nuclear cardiology practitioners; and,
- the judgments of a nationwide sample of physicians practicing nuclear cardiology.

The design and implementation of the CBNC practice analysis study begins with the following steps:

First, a Practice Analysis Task Force, comprised of well-respected physicians with significant experience practicing nuclear cardiology, is selected to be representative of the universe of practitioners with respect to gender, ethnicity, geographic region, medical specialty and practice setting. The first role of the task force is to participate in the development of the practice analysis survey instrument to ensure that the full range of responsibilities and knowledge areas pertinent to the practice of nuclear cardiology was comprehensively and accurately represented. Specifically, the task force reviews draft versions of the survey instrument, assists with the interpretation of the survey data, and develops examination specifications based on the results of the survey.

A final draft survey instrument is then created based on the most recent survey well as the current examination content outline. The draft survey instrument lists the specific professional responsibilities associated with the practice of nuclear cardiology and the knowledge areas that must be mastered in order to competently carry out these responsibilities. Also included are demographic questions to describe the survey sample and provide a basis for identifying differences in subgroup responses.

The draft survey instrument is mailed to members of the task force accompanied by a set of review guidelines and possible rating scales. Task force members are asked to:

- add any important responsibilities or knowledge areas not included on the draft survey instrument;

- delete any responsibilities or knowledge areas not directly related to the practice of nuclear cardiology;
- eliminate overlapping knowledge areas; and,
- revise and update terminology, as needed.

Once the instrument is finalized, surveys are sent to nuclear cardiology physicians drawn from the American College of Cardiology (ACC) and American Society of Nuclear Cardiology (ASNC) member databases, to query both those certified by CBNC those who are not certified by CBNC.

Part 2

The intermediate steps in carrying out a practice analysis involve review and analysis of the survey results data by the CBNC Practice Analysis Task Force. By means of a scientific process, the task force examines the survey responses, determines the examination specifications and finalizes the examination blueprint:

First, the demographic characteristics of the survey sample (see below) are tabulated and analyzed.

- Gender of Respondents
- Age of Respondents
- American Board of Medical Specialties/Board of Osteopathic Specialties Certifications Held by Respondents
- Years of Experience Practicing Nuclear Cardiology
- Geographic Representation of Respondents
- Percentage of Professional Time Devoted to Nuclear Cardiology
- Primary Practice Setting
- Field in Which the Majority of Professional Time is Spent

The task force then makes decision rules for determining which responsibility statements attained scores denoting sufficient importance to be considered part of the scope of practice to be assessed on a nuclear cardiology certification examination. Although they adopt this decision rule as a general guideline, task force members discuss each responsibility statement contained in the survey regardless of score.

After the most important responsibility statements have been identified, the task force links them to four major responsibility dimensions that broadly encapsulate the responsibilities of a nuclear cardiology practitioner. These dimensions include:

- selection of diagnostic tests;
- performance and quality control of diagnostic tests;
- interpretation of diagnostic tests; and
- integration of the results of diagnostic tests with other patient information.

The final result is the formulation of a responsibility matrix which represents the primary step in the development of the examination specifications; knowledge statements deemed important enough for inclusion on the examination by the task force are linked to the same responsibility dimensions. The four major responsibility dimensions, therefore, serve as a medium to connect the responsibility statements to the knowledge statements.

As with the responsibility statements, the Practice Analysis Task Force develops decision rules for determining which knowledge areas are of sufficient importance to be considered for inclusion on the CBNC certification examination. The task force members must agree on the decision rules for determining which knowledge areas are utilized at a level of sophistication appropriate for inclusion on the CBNC certification examination.

Once these two areas have been defined, the content outline of the exam – the subjects to be tested and in what percentage of the exam – can be identified.

Part 3

The last phase of a practice analysis is the determination of the content. Once the CBNC Practice Analysis Task Force has defined that responsibility statements and knowledge areas of the exam, discussed in the last issue, the content outline of the exam – the subjects to be tested and in what percentage of the exam – can be identified.

A question on the survey instrument lists the knowledge areas covered on the current CBNC certification examination and the percentage of the examination devoted to each topic. Respondents are asked to indicate whether these percentages are appropriate in relation to the current practice of the profession or if not, to indicate whether they should be increased or decreased. Recommendations from survey respondents regarding the proportion of the examination to be devoted to the various knowledge areas serve as a guide to the task force in revising the examination specifications.

The table below shows the major knowledge areas that the task force agreed in the last practice analysis should be covered on future examinations as well as and the percentage of overall examination content that should be devoted to each.

Final Examination Content

Knowledge area		% of exam
I.	Physics and Instrumentation	10
II.	Radiopharmaceuticals	8
III.	Radiation Safety	10
IV.	Nuclear Cardiology Diagnostic Tests and Procedures/Protocols	15
V.	General Cardiology as it Relates to Image Interpretation	10
VI.	Risk Stratification	10
VII.	Myocardial Perfusion Imaging Interpretation	22
VIII.	Ventricular Function Imaging	10

IX. Myocardial Viability	5

The examination specifications are derived from the practice analysis survey data combined with the expert, professional judgment of the task force.

The task force uses the decision rules detailed in the last article as guidelines to determine which subknowledge areas should be included on the examination specifications. After the subknowledge areas are selected, the task force links each subknowledge area to four major responsibility dimensions (i.e., selection of diagnostic tests, performance and quality control of diagnostic tests, interpretation of diagnostic tests, and the integration of the results of diagnostic tests with other patient information). The cognitive level (i.e., recall; application; analysis and synthesis) at which each knowledge area is to be assessed is also determined.

The task force also determines the types of stimuli to be included on the examination. After reviewing the number of questions related to exhibits from each of the previous years' examinations and considering the scope of knowledge to be assessed, the task force decides on the percentage of examination questions that should be based on exhibits, including images, graphs, charts, diagrams and other figures.

CBNC's practice analysis is a complex process that takes approximately eight months to complete. The primary purpose of the study is to delineate the scope of practice for nuclear cardiology practitioners and define a body of professional knowledge judged by experts within the field to be an important prerequisite to performing at a level of basic competence. The linkage of the CBNC examination specifications to the findings of the practice analysis studies serves as evidence of the content validity of the examination in nuclear cardiology.