



*APPLIED MEASUREMENT PROFESSIONALS, INC.*

# **A National Job Analysis of the Critical Care Nurse Specializing in Cardiac Surgery**

Conducted for the

**American Association of Critical-Care Nurses  
Certification Corporation (AACN-CC)**

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## Executive Summary

The purpose of this study was to identify the responsibilities of critical care nurse professionals specializing in cardiac surgery as a first step in the development of a job-related certification examination. The American Association of Critical-Care Nurses-Certification Corporation (AACN-CC) requested the services of Applied Measurement Professionals, Inc. (AMP) to design and conduct a study which would provide the support necessary to develop specifications upon which a content valid certification examination could be built. AACN-CC identified the need to ensure that the examination specifications would be representative of critical care nurse professionals who specialize in cardiac surgery.

AACN-CC appointed a Practice Analysis Committee (PAC) to conduct the activities necessary to identify cardiac surgery nurse practitioners' responsibilities and develop examination specifications. The diversity of this group was reflective of the cardiac surgery specialty and all PAC members had demonstrated expertise in this area of critical care nursing.

The study involved development of a practice analysis survey, distribution of that survey to practitioners via the web, and an analysis of the responses. Test specifications for the nurse specializing in cardiac surgery were developed on the basis of these data.

The PAC met during February 2004 to initiate the following six tasks:

1. Developing a sampling plan
2. Identifying tasks for the survey instrument
3. Identifying classifications of core tasks
4. Determining the rating scales
5. Determining the relevant demographic variables of interest
6. Integrating demographics, rating scales, and tasks into a survey instrument

A total of 1,695 surveys were e-mailed to professionals in cardiac surgery. After reducing the sample size for undeliverable e-mail addresses (n=172), it was determined that twenty-five percent of the sample responded with surveys that were suitable for analysis (n=380). The responses to the demographic questions indicated that there were sufficient numbers of respondents in relevant groups for subsequent analysis. Approximately 99 percent of the respondents felt that the practice analysis survey at least adequately addressed the responsibilities of the cardiac surgery nursing profession. In addition, respondents used all rating scales with an acceptable level of reliability.

During two web-based meetings of the PAC in late June and early July 2004, decision rules were adopted and used to determine which tasks were appropriate for assessment, and therefore for inclusion in the final Test Content Outline. Application of the decision rules resulted in retention of 43 tasks. It was determined that a total of 75 multiple-choice items would be sufficient to assess the tasks of the cardiac surgery specialty.

The AACN-CC Cardiac Surgery Subspecialty Examination Committee will use the resulting Test Specifications in building the specialty examination, and all items appearing on an examination will be linked to the specifications based on the unanimous agreement of the committee. In addition, the detailed Test Content Outline will be made available to candidates and education providers for use in preparing to attempt certification.

## Introduction

The purpose of this study was to identify the responsibilities of nurse professionals who specialize in cardiac surgery as a first step in the development of a job-related certification examination. The American Association of Critical Care Nursing-Certification Corporation (AACN-CC) requested the services of Applied Measurement Professionals, Inc. (AMP) to design and conduct a study which would provide the support necessary to develop specifications upon which a content valid certification examination could be built.

The AACN-CC appointed a Practice Analysis Committee (PAC) to conduct the activities necessary to identify the responsibilities of nurses who specialize in cardiac surgery and develop examination specifications. The PAC was reflective of the nursing profession in all relevant respects, for example: geographic, professional area and level of responsibility, educational background, gender, and work setting. All PAC members had demonstrated expertise in the cardiac surgery specialty area of critical care nursing. The composition of the PAC is shown in *Figure 1*. AMP is grateful to these committee members for their guidance and expertise, as well as the time committed to this project. Without the Practice Analysis Committee's effort and expertise, this project would not have been accomplished.

Ginger Braun, RN, CNS, MSN, CCRN
Kim Cameron, RN, MSN, DSN
Josephin Jacavone, RN, MS, CCRN
Nancy Munro, RN, MN, CCRN, ACNP
Linda Prinkey-Briggs, RN, MSN, CCRN
Sue E. Sendelbach, RN, PhD, CCNS

**Figure 1. AACN-CC Cardiac Surgery Subspecialty Practice Analysis Committee**

In the next section of this report, the methodology of the study is discussed. In particular, the design of the survey instrument is described, including the method of defining tasks, rating scales, and demographic questions. Also discussed in the methodology section is the sampling plan. The results section of this report discusses the respondents and their demographic responses, the adequacy of the instrument, and a summary of the responses. The final section of this report discusses the development of the test specifications based on these data. Several appendices provide details used to substantiate the discussion.

## Methodology

The Practice Analysis Committee considered various resource materials that could be useful in gaining an understanding of the responsibilities of professionals in critical care nursing specializing in cardiac surgery. The primary resource was a listing of key content areas and related nursing skills and competencies associated with cardiac surgical nursing. This list was compiled by AACN Certification Corporation staff utilizing the most prominent acute and critical care nursing resource materials published within the past five years, as well as referencing journal articles during the same time period. Other materials assembled prior to the first meeting of the PAC included orientation materials, a draft of rating scales used for practice analysis, and a time line for conducting the practice analysis. Background information was provided regarding both the practice analysis process (and its relationship to the examination development process) and AACN-CC's role in the development of a critical care nursing subspecialty examination focusing on cardiac surgery. Six major tasks were initiated during the Practice Analysis Committee meeting held in February 2004. These steps included:

1. Developing a sampling plan
2. Identifying tasks for the survey instrument
3. Identifying classifications of core tasks
4. Determining the rating scales
5. Determining the relevant demographic variables of interest
6. Integrating demographics, rating scales, and tasks into a survey instrument

A summary of each activity follows.

### *1. Developing a sampling plan*

The PAC considered various methods of identifying individuals who consider themselves to be professionals in critical care nursing, with an emphasis in cardiac surgery, or who would be knowledgeable about the duties of professionals in this specialty. Following discussion, the focus centered on the primary source of contact being those currently included in the membership and certificant roster of the American Association of Critical Care Nurses.

### *2. Identifying tasks for the survey instrument*

A draft task list was thoroughly discussed during the meeting. Tasks representing individual job responsibilities were modified, added, and removed. At the conclusion of the first meeting, a draft survey that included 97 tasks was sent for review by the committee. After review of the draft task list, the PAC authorized production of the final task list. The final task list included 97 tasks, shown in printed format in Appendix A. This survey was conducted exclusively via the web.

### *3. Identifying major classifications of tasks*

The committee identified examination domains, under which the 97 tasks were categorized into subcategories. The major domains and subcategories were as follows:

1. Problems
  - a. Cardiac Surgery
  - b. Pulmonary
  - c. Endocrine
  - d. Hematology
  - e. Neurology
  - f. Gastrointestinal
  - g. Renal
  - h. Multisystem
  
2. Nursing Interventions

#### 4. *Determining the rating scales*

The committee discussed the advantages and disadvantages of various rating scales which could be used in responding to the tasks. The PAC decided two scales would be best to determine both the frequency and the significance of each task. The frequency and significance scales adopted by the PAC are shown below; the instructions for respondents for use of the scales are included in the directions section of the survey instrument as shown in Appendix A.

**For each patient problem, we are asking you to respond to two questions: the first asks how frequently you personally care for patients with each problem; the second asks for your judgment about the significance of each patient problem to your personal practice. \*\***

**Frequency**

0 = Never

1 = Rarely

2 = Occasionally

3 = Often

**Significance**

1 = Minimal

2 = Moderate

3 = High

4 = Very High

\*\*This wording was adjusted for tasks pertaining to nursing interventions.

#### 5. *Determining the relevant demographic variables of interest*

The committee identified eleven relevant and important demographic survey variables pertaining specifically to the respondent and his or her background, and an additional ten variables pertaining to the respondents' practice (21 demographic variables total). Since this was a national job analysis, it was important to identify the respondents' geographic regions of employment. Other demographic questions were written to assess characteristics of the representativeness of the respondents,

including highest degree in nursing, certifications held, AACN membership status, years of RN experience, years of critical care nurse experience, years of cardiac surgery experience, way they learned to care for cardiac surgery patients, gender, racial/ethnic background, and age. Questions written to assess characteristics of the representativeness of the respondents' practice included primary clinical employment setting, number of beds, number of cardiac surgeries performed each year (by facility), community size, primary position, hours spent in acute/critical care nursing practice, primary area where currently employed, percentage of time spent delivering care to acutely or critically-ill patients, percentage of patients in specified age groups, and percentage of patients in specified categories of care. Demographic questions are included in Appendix A of this report, the survey instrument.

#### *6. Integrating demographics, rating scales, and tasks into a survey instrument*

After the first meeting, all components of the survey (demographics, rating scales, and tasks) were combined and designed into a draft survey instrument. As a pilot test, this draft was e-mailed to the PAC. Responses from the committee were received for this pilot test. Following a review of the comments with the AACN-CC certification director, a final draft of the survey was prepared. The final survey was distributed via e-mail according to the sampling plan on April 28, 2004.