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# A National Job Analysis Study of Pulmonary Function Technologists

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**Conducted for the**

**Prepared by**

**Robert C. Shaw, Jr., PhD**
**Program Director, Psychometrics**

**and**

**Jennifer L. Benavente, BA/BEd**
**Research Assistant**

www.goAMP.com

# Executive Summary

## *Conceptual Model Change*

Prior to this study, results of internal trending research led NBRC trustees to conclude that the scope of content over which entry level and advanced level technologists were assessed had substantially converged. The degree of convergence was sufficient to change the conceptual model on which assessments by multiple-choice examination were based. The previous two job analysis studies had been based on responses to task lists presented in two contexts - entry level and advanced level, which meant that two sets of data were collected about each task. The change in testing model dictated that the task list should be presented in one context, that of a pulmonary function technologist without reference to the entry level or the advanced level, which resulted in one set of data for this study.

Candidates for the entry level (CPFT) and advanced level (RPFT) credentials will be assessed over the same content when a new examination that contains 100 items is implemented in June of 2015. Multiple-choice items, each with four options, will continue to be the basis for competency assessment on this examination. CPFT and RPFT levels of proficiency will be associated with two scores on the new examination. The assessment instrument will be labeled the Pulmonary Function Technologist Examination.

## *Details about the 2013 Study*

This job analysis study was conducted to identify critical tasks performed by pulmonary function technologists who practiced in the United States. Study results will influence examination content for ongoing CPFT and RPFT credentialing programs of the National Board for Respiratory Care (NBRC). The job analysis study was conducted in 2013.

Members of the job analysis committee supervised the study and made the decisions affecting data gathering and results evaluation. Committee members represented various regions and practice settings across the country.

The survey study was conducted in phases including development, distribution, and response analysis. The Committee developed task statements and items to collect background information about respondents. The Committee developed sampling plans for survey distribution after consulting with Applied Measurement Professionals, Inc. (AMP) staff. After survey response analyses were completed by AMP, the Committee created exclusion rules by which tasks were classified as critical or not critical. The Committee also specified item distributions by content domain and cognitive level for a test specifications table. The intent will be to follow these specifications when assembling forms of the examination starting in June of 2015.

An invitation asking potential respondents to participate in the online survey was electronically mailed to 6,561 credentialed pulmonary function technologists. A total of 2,657 members of the Diagnostics and Management sections of the American Association of Respiratory Care (AARC) also received the e-mail invitation. The message sent to each AARC membership group encouraged recruitment of other technologists. Additionally, the final page of the survey permitted responents to send an email containing the survey link to other technologists. Hence, the response rate among those who were solicited could only be estimated. A volunteer sample of 1,224 chose to provide usable responses in time for the analysis. The approximate response rate among registrants was 15%.

The electronic survey was set up to require a response to each task on a page before progressing to the next page of tasks. After respondents had rated each task, at least 94.0% found that the list of tasks had adequately covered the scope of their job activities. The lowest intraclass correlation value among the domains under which tasks were organized was .998. Therefore, the same results were highly probable among other potential samples from the population. The lowest coefficient alpha value among the content areas was .948 indicating tasks within each content domain had received ratings that were highly consistent.

The Committee assessed the degree to which the study sample had represented known subsgroups (for example, by region, by institutional setting) within the population of technologists. Committee members detected no disproportionate representation. Still, the Committee decided to use a task exclusion method that would give sample subgroups opportunities to exclude tasks in case representation bias was present, but undetected by the Committee.

After examining task-rating results, the Committee established exclusion rules designed to narrow the full list of 275 tasks to a subset of those tasks that were critical to competence. The concept of criticality subsumed two attributes, the extent of practice among the respondents and the importance to practice. A rule was created for extent and importance based on responses from the whole sample. Additional rules were based on importance among subgroups of the sample for a total of 14 rules. Tasks that were labeled as critical had to survive each rule. Applying the exclusion rules retained 213 tasks across 3 content areas. Subsumed under these major content areas were 9 sub-domains for which examination items were specified.

Committee members assigned cognitive complexity designations by concensus to each critical task according to their perceptions of the mental process by which practitioners behaved competently. Hence, items linked to these tasks will be expected to closely align with the complexities of competencies. The Committee was confident that candidates' scores should reflect critical job content associated with the demands of the job when an examination comprised of multiple-choice items are developed to the new specifications.