

A National Job Analysis Study of Pulmonary Function Technologists



Executive Summary

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 started in 2020 and finished in 2021. 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 September of 2022. Multiple-choice items, each with four options, will continue to be the basis for assessment with this examination. The assessment instrument is titled the Pulmonary Function Technologist Examination. CPFT and RPFT levels of proficiency are associated with two scores.

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 analyses. The Committee developed task statements and items to collect background information about respondents. The Committee developed sampling plans for survey distribution after consulting with National Board for Respiratory Care (NBRC) staff. After survey response analyses were completed by the NBRC, the Committee created exclusion rules by which tasks were classified as critical or not critical. The Committee specified item distributions by content domain, cognitive level, and patient type for the examination. The intent will be to follow these specifications when assembling forms of the examination starting in September of 2022.

An invitation asking potential respondents to participate in the online survey was electronically mailed to 7,034 credentialed pulmonary function technologists. A total of 1,652 members of the Management section and 985 members of the Diagnostics section of the American Association of Respiratory Care (AARC) also received access to the survey. The message sent to each AARC membership group encouraged recruitment of other technologists. Additionally, the final page of the survey permitted respondents 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 942 chose to provide usable responses in time for the analysis. The approximate response rate among potential respondents was 10%.

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 97.9% 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 .997; therefore, the same results were highly probable among other potential samples from the population. The lowest coefficient alpha value among the content areas was .932 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 subgroups (for example, regions, settings) 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 274 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 16 rules. Tasks that were labeled as critical had to survive each rule. Applying the exclusion rules retained 185 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 consensus 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 job 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.