

Cardiovascular and Pulmonary Physical Therapy Specialty Practice: Determining the Current Status

Anne K. Swisher, PT, PhD, CCS; Alexandra Sciaky, PT, MS, CCS;
Angela Abeyta Campbell, PT, DPT, CCS; John D. Lowman, PT, PhD, CCS

ABSTRACT

Cardiopulmonary physical therapy was the first recognized clinical specialty within physical therapy in 1978. Since that time, clinical practice in cardiovascular and pulmonary physical therapy has changed dramatically. In order to maintain currency in this field, the American Board of Physical Therapy Specialties requires that a practice analysis be performed at least every 10 years. This paper reports the process of the most recent practice analysis in cardiovascular and pulmonary physical therapy which led to the 2007 version of the *Description of Specialist Practice: Cardiovascular and Pulmonary*.

INTRODUCTION

It is important for professions to define unique bodies of knowledge; however, those definitions require periodic reassessment to verify that actual practice matches the proposed standard. Currently, there are 8 areas of physical therapy practice that have been defined to contain a specialized knowledge base and skill set. This paper describes the process and outcomes of the cardiovascular and pulmonary physical therapy specialty practice analysis performed by the Cardiovascular and Pulmonary Specialty Council and reported to the American Board of Physical Therapy Specialties in the form of the *Description of Specialist Practice: Cardiovascular and Pulmonary* published in 2007.

HISTORY OF SPECIALIZATION

In 1975, the House of Delegates of the American Physical Therapy Association approved the concept of specialization and created the Task Force on Clinical Specialization. The task force was charged with identifying and defining physical therapy specialty practice areas and with developing the structure for and functions of a board-certified process. The document developed by the task force, *Essentials for Certification of Advanced Clinical Competence in Physical Therapy*, was adopted by the House of Delegates in 1978. At that time, the House recognized 4 specialty areas: cardiopulmonary, neurology, orthopaedics, and pediatrics. In 1979, the House appointed the Commission for the Certification of Advanced Clinical Competence.

Specialty councils for each of the 4 specialty areas were appointed by the commission and charged with the development of competencies unique to the advanced clinician in their respective areas. In 1980, the commission became the Board of Certification of Advanced Clinical Competencies (BCACC). The House of Delegates recognized 2 more specialty areas that same year: sports and clinical electrophysiology. In 1985, the *Essentials for Certification of Advanced Clinical Competence in Physical Therapy* was revised by the House of Delegates and the title was changed to *Essentials for Certification of Physical Therapist Specialists*; BCACC was renamed the American Board of Physical Therapy Specialties (ABPTS) and the first specialty examination was administered in cardiopulmonary physical therapy that same year. The specialty area of geriatrics was approved in 1989. In June of 2006, the APTA House of Delegates approved Women's Health as the newest area of physical therapist specialty practice.

HISTORY OF SPECIALIZATION IN CARDIOVASCULAR AND PULMONARY PHYSICAL THERAPY

Work on the specialization process in cardiopulmonary physical therapy began in 1976 at the Combined Sections Meeting in St Louis, Missouri. The first Cardiopulmonary Section chair, Scot Irwin, MA, PT, CCS, led a group discussion concerning the concept of specialization and the specifics of advanced clinical competence in cardiopulmonary physical therapy. In 1979, Bob Huhn, PT, as Cardiopulmonary Section Chair, appointed Marcia Pearl, PT and Sue Gibson, PT, co-chairs of the Competency Committee. They enlisted the help of Pamela Catlin, EdD, PT as a consultant and among them created the format and much of the competency content printed in the first version of *Physical Therapy Advanced Clinical Competencies: Cardiopulmonary*.¹

Following minor revisions by the Cardiopulmonary Specialty Council (CSC) in August 1983, BCACC gave approval to *Physical Therapy Advanced Clinical Competencies: Cardiopulmonary*. The Cardiopulmonary Specialty Council was the first council to identify and define advanced skills, establish minimal criteria, and prepare a certification examination. In 1985, the first specialty examination was administered by ABPTS in the area of cardiopulmonary physical therapy. In 1986, the CSC revised and validated the patient care competency,² which was subsequently approved by ABPTS in 1987.

In January 1994, the CSC performed a practice analysis. Section members were surveyed to validate existing com-

Address correspondence to: Anne K. Swisher,
Division of Physical Therapy, West Virginia University,
PO Box 9226, Morgantown, WV 26506-9226
(aswisher@hsc.wvu.edu).

petencies and identify new ones. The resulting *Description of Advanced Clinical Practice*³ was approved, with revisions, by ABPTS in November 1996.

In January 2005, the Cardiovascular and Pulmonary Specialty Council began the process of specialty practice revalidation for the second time. A project team was created to represent cardiovascular and pulmonary specialty practice across diverse age, practice setting, geographic regions, and length of time as a Specialist. This project team met to create a survey to validate the state of specialist practice in cardiovascular and pulmonary physical therapy. Both specialist and nonspecialist Section members were surveyed and the results were analyzed to create the *Description of Specialty Practice: Cardiovascular and Pulmonary Physical Therapy*.⁴ This document was approved by ABPTS in February 2007.

PRACTICE ANALYSIS

The goal of the practice analysis was to revalidate and revise the description of cardiovascular and pulmonary specialty practice for publication in 2007. The revision was based on the expanded practice of cardiovascular and pulmonary physical therapy over the past 10 years and served to bring the *Description of Specialty Practice* (DSP) in alignment with the *Guide to Physical Therapist Practice*.

A task force was formed that included members of the cardiovascular and pulmonary specialty council, current cardiovascular and pulmonary specialists (CCS) chosen to represent a variety of geographic areas, practice settings and experience, and a paid consultant. Members of this project team included: Alexandra Sciaky, PT, MS, CCS project coordinator; Angela Abeyta Campbell, PT, DPT, CCS; Anne K. Swisher, PT, PhD, CCS; John D. Lowman, PT, PhD, CCS all members of the Cardiovascular and Pulmonary Specialty Council. The Subject Matter Expert (SME) group consisted of Anne Mejia Downs, PT, MPH, CCS; Kris Ishii, PT, MS, CCS; Ana Lotshaw, PT, MS, CCS; Susan Butler McNamara, MMSc, PT, CCS and Heidi Hahn Tymkew, PT, DPT, CCS. Laurita M. Hack, DPT, MBA, PhD, FAPTA served as the consultant.

Survey Development

The project team used work-ahead assignments followed by a conference call meeting to identify competency statements that described the practice process as well as current best practice and knowledge and skills specific to cardiovascular and pulmonary specialty practice. The group examined the current *Description of Specialist Practice: Cardiopulmonary* for existing competencies in order to determine if they were important to practice and if they continued to be at the advanced level, as well as including new competencies of the advanced practitioner. This data was used in the development of the pilot survey. The survey evaluated the importance of the competency, frequency with which practitioners performed the activity, and level of judgment required to perform the task (see Appendix for rating scales). Areas included basic science knowledge, specific tests and measures, and interventions used by the cardiovascular and pulmonary specialist, and

other professional roles in consultation, education, critical inquiry (scholarship), and administration. The survey also contained recommended weighting of content areas to be covered on the specialty exam, as well as demographic information.

Pilot testing

The proposed survey was submitted to ABPTS for approval prior to pilot testing and revision. Pilot testing was completed in the summer of 2005 with a small group of cardiovascular and pulmonary clinical specialists. The pilot survey included assessment of the importance of each competency as well as an assessment of the frequency with which practitioners perform each task/activity. An assessment of the level of judgment required to perform the skills was also included. Based on the results and feedback on the pilot survey, a final survey format was generated and submitted to ABPTS for approval. The purpose of the pilot survey was to insure clarity of the survey questions, identify any new competencies that should be incorporated into the final survey, and determine if the final survey should be subdivided. The sample size target was 30 individuals from diverse geographic and demographic populations. Using input from the project team, the APTA specialist certification department provided services related to selecting the sample and administering the survey. On-line electronic administration of the survey as well as a hard copy version of the survey was offered. The APTA specialist certification department completed data entry and preliminary data analysis.

After the initial deadline for return of the pilot survey, the SME group met and reviewed results for the first 8 participants. The task force felt that the low response rate (27%) did not warrant any changes to the survey. It was noted that the majority of respondents were primarily in academic settings, resided in the northeast region, and were more recent specialists. The group felt there was a need to expand the pilot group to provide better representation of clinicians, more seasoned specialists, and physical therapists practicing outside of the northeastern United States. Personal email or telephone contacts to both first-round and new potential subjects were made by members of the SME group. Participants were offered both electronic and paper versions, subject to their preference. Participants were asked to complete the survey by December 5, 2005. A 50% response rate, or 15 respondents, was the target for the pilot testing.

Following receipt of 16 pilot surveys, the SME group and Council members met to review the results. The group reviewed the survey results to determine if any of the items should be removed or edited. The group's consensus was to keep all items with 2 modifications. One item was recommended for deletion from the final study due to the SME group's opinion that it was entry-level practice. However, feedback from ABPTS later led to reconsideration of the deletion and the item was kept in the final survey. Word-ing of 1 other item was changed to better reflect contemporary terminology. The group felt the pilot study reflected adequate diversity of respondents and was representative.

Final Survey Administration

In August 2006, the full survey was distributed to 95% of all ABPTS certified cardiovascular and pulmonary clinical specialists and an equivalent number of nonspecialist APTA Cardiovascular and Pulmonary Section members (n = 198 total; n = 99 per group). The survey was distributed in both paper and electronic formats. Follow-up telephone calls or emails were made by the Council members to persons who had not returned the surveys by the due date in order to boost response rate.

DEMOGRAPHICS OF RESPONDENTS

The final return was a total of 89 respondents (50 CCS and 39 nonspecialist section members) for a total response rate of 45%. A decision was made to include only the specialists' demographic information for the DSP, as this document describes specialists' practice. The specialist pool was 70% female and 82% Caucasian. Mean age was 44 years old, with a range of 31 to 62 years. Most specialists practiced either in acute care hospitals (54%) or academic institutions (30%). The most common entry-level physical therapist education was at the baccalaureate level (54%), however, 32% held masters entry-level educational degrees. Almost half (48%) reported holding post-professional degrees. Mean years of practice in physical therapy were 21, with a range of 8 to 39 years. Mean years of cardiovascular and pulmonary practice was 6, with a range of 3 to 7 years.

PROCESS OF DATA INTERPRETATION

The revalidation task force met again to review the survey results and create decision rules for data interpretation. The data were sorted 3 ways: responses of the Cardiovascular and Pulmonary Clinical Specialists (CCS), responses of the Cardiovascular and Pulmonary Section members who were not Clinical Specialists (non-CCS), and pooled data (CCS plus non-CCS). Since all survey items except the demographics were ordinal data, the responses were analyzed using frequency distributions. Three survey sections were analyzed separately and are described in the following sections.

Section One (Knowledge Areas)

Respondents were asked to rate each item pertaining to foundational and clinical knowledge in the survey for frequency (never to daily), importance (not important to very important), and level of judgment (recall to analysis) (see Appendix). In this section, items on the survey were included in the final DSP if at least 75% of the combined group of respondents rated the item to be: at least *moderately* important and at least *application* level of judgment, and performed at least *weekly*. In cases where the item met inclusion criteria for importance and level of judgment, but was rated as being performed less than weekly, the survey statement was included in the DSP but would correspond with fewer examination items. In the event of significant discrepancy between CCS and non-CCS subgroups ratings of a survey item, the SME group came to consensus as whether to keep or discard an item. Also, if

all but 1 item was thrown out in a specific category of the survey, the SME group made a consensus judgment about retaining or discarding the item.

Section Two (Professional Roles and Responsibilities) and Section Three (Practice Expectations in the Patient/Client Management Model)

In these sections, respondents were asked to rate all items for frequency, importance, and level of mastery (from advanced beginner to expert). Items from this section of the survey were included in the final DSP if at least 75% of the combined group of respondents rated the item as at least *moderately* important, required a level of mastery of at least *proficiency*, and was performed at least *weekly*. Similar to section 1, those items that met criteria for importance and level of mastery but were rated lower on frequency were retained for the DSP but correspond to fewer examination items. The same process of discussion was used to reach consensus regarding inclusion or exclusion of any items where there was discrepancy between CCS and non-CCS subgroups.

Section Four (Recommendations for Specialty Exam Content)

In this section, respondents were asked to recommend percentages of the Cardiovascular and Pulmonary Clinical Specialist's examination for a total of 18 categories. These categories corresponded to the elements of the patient/client management model⁸ used to create the survey tool. Since the responses in this section represented continuous data, mean percentages for each category were calculated for the combined group of respondents. Initially, the total of the means for each category equaled 101%. The SME group adjusted the percentages slightly based on results of the preceding sections. Next, the 18 original categories were combined into 8 final categories. These 8 categories would be used to sort the examination items and ensure appropriate weighting of the examination. Minor adjustments to category weightings were made based on subsequent review of items in the exam item bank. These revisions were felt to be consistent with the results of the survey and agreed upon by members of the advisory group, the Cardiovascular and Pulmonary Specialty Council and the American Board of Physical Therapy Specialists. The final examination template is found in the table.

Frequency of specific medical diagnoses seen by specialists

In the final portion of the survey, respondents were asked to rate how often in the preceding 2 years they had treated a patient with each of the listed medical diagnoses. The ratings were "never", "rarely" (less than 10), "moderately" (10 to 50) and "frequently" (more than 50). As the DSP is meant to reflect the state of Cardiovascular and Pulmonary Specialist practice at the time of revalidation, only data from the specialist respondents were used. Responses were grouped into 2 hierarchical lists for cardiovascular diagnoses and pulmonary diagnoses.

Table1. Final Examination Content Outline

<u>Category</u>	<u>Percentage of Exam</u>
- Professional behaviors: Leadership, Education, and Administration	10
- Consultation	4
- Evidence-based practice	10
- History taking and systems review	10
- Tests and measures	10
- Evaluation (diagnosis, prognosis and outcome determination)	30
- Interventions (procedural interventions; coordination, communication and documentation)	12
- Foundational, clinical and behavioral sciences	14
TOTAL	100

Items were divided into the categories of “frequently seen,” “occasionally seen,” and “rarely seen.” The SME group came to consensus on the following operational definitions of frequent, occasional or rare diagnoses seen by specialists. “Frequent diagnoses” were those where at least 50% of specialists responded that they had seen at least 10 patients with the diagnosis in the past 2 years. Diagnoses were categorized as “occasional” if 21% to 49% of specialists responded that they had seen at least 10 patients with the diagnosis in the past 2 years. “Rare diagnoses” were those where less than 21% of specialists reported seeing at least 10 patients with the condition in the past 2 years. The frequency ratings for medical diagnoses will serve as a guide to item writing and management to ensure accurate representation of a typical Cardiovascular and Pulmonary Clinical Specialist’s caseload.

DISCUSSION AND RECOMMENDATIONS

This paper describes the process of revalidating Cardiovascular and Pulmonary Specialist practice in physical therapy. Utilizing the processes we have described to create and analyze a survey has led to a snapshot of the specialty area. Along the way, we have discovered the evolution of practice in the course of 10 years. In comparison to the 1997 document, we have seen changes in overall physical therapist practice as well as the role of the specialist.

The current analysis used the *Guide to Physical Therapist Practice*,⁸ the *Normative Model of Physical Therapist Education*⁶ and the *Core Values*⁷ documents to reframe cardiovascular and pulmonary specialty practice. Some of these changes were primarily terminology (eg, “treatment” became “intervention”) but many reflect new roles of the entry-level physical therapist. For example, the category of “screening” in the DACP was integrated into “systems review.” Whereas screening may have been considered specialist practice 10 years ago, systems review has become an expectation of all graduating physical therapists.

Another substantive change in the current DSP was a broader focus of specialist practice across care settings. Whereas the 1996 DACP focused on the acute care hospital environment, the DSP now describes specialist practice in more diverse care settings and better describes

the specialist’s role in prevention and wellness. A similar change is the shift away from focusing on care for persons with primary cardiac or pulmonary disease to approaching the cardiovascular and/or pulmonary implications of many other diseases and conditions.

Other changes included a shift from lists of individual procedures to groupings of tests/measures or interventions into broader categories. Finally, there has been a change in the name of the Section and the Specialty from “cardiopulmonary” to “cardiovascular and pulmonary” that reflects a growing emphasis on vascular issues.

Aspects of clinical practice that have been determined to no longer represent advanced practice

Over the past 10 years, there has been growing emphasis on cardiovascular and pulmonary issues in entry-level physical therapist education. These changes are reflected in the Commission on Accreditation of Physical Therapist Education (CAPTE)’s *Evaluative Criteria*⁵ as well as the *Normative Model of Physical Therapist Education*.⁶ Thus, it is clear that many tests and measures or specific interventions are no longer considered specialist-level practice. This was seen in the number of specific items in sections 2 and 3 that were excluded from the DSP. It is certainly encouraging that all physical therapy graduates must be competent in these areas and the specialist can now practice at higher levels, with higher complexity issues or in a more integrative fashion. For example, it was seen that physical performance of many specific techniques are no longer considered specialist practice, but the interpretation and integration of test findings or intervention techniques represents the skill of the specialist. Several specific intervention techniques that formed the core of the 1997 document were seen to only marginally meet inclusion criteria for the DSP.

One major change was seen in the area of research content. In the 1997 DACP, the expectation was for the specialist to have knowledge of specific statistical tests or the ability to state a hypothesis. In the most recent survey results, this content was clearly seen to be entry-level, as the knowledge of research processes are subsumed in evidence-based practice. The specialist is expected to build upon entry-level knowledge in research and to use the

information to make the most appropriate, most efficient, and/or most effective patient care management plan and document appropriate outcomes.

New competencies that have been added to the DSP

Once again, the existence of key documents in the profession have changed the DSP to now reflect a broader scope of practice and raised the level of specialist practice. The DSP now contains elements of diagnosis and prognosis that are far beyond the 1996 DACP. The addition of an entire section related to the *Core Values*⁷ is new and represents the professional behaviors expected of a specialist. The only significant addition to the competencies reflecting changes in medical practice is the competency related to advanced hemodynamic monitoring and support devices (eg, left ventricular assist devices, non-invasive mechanical ventilation). Although not currently a frequent part of specialist practice, it is clear that efficient and effective intervention for patients supported by these devices represents specialist practice.

Specific content related to vascular disease and management of patients with vascular conditions was included on the initial survey. These included items such as edema management and volumetric measurements. However, these items were not found to be a frequent or important aspect of specialist practice. Thus it appears that other specialists are managing this condition and perhaps the inclusion of edema as a Cardiopulmonary Practice Pattern in the *Guide to Physical Therapist Practice*⁸ is not reflected in routine cardiovascular and pulmonary specialist practice.

CONCLUSIONS

The Cardiovascular and Pulmonary Specialty Council recommends the process and products of the practice analysis as representative of the true state of specialist practice in 2006. This confidence is based upon several factors. Chief among these is the skill and integrity of the people involved in the current and previous practice analyses. Another strength of this process was the sample for the final analysis. The overall response rate of 45% represented a significant commitment on the part of individuals to thoughtfully consider specialist practice. In addition, the demographics of CCS respondents corresponded very closely to APTA's analysis of specialist applicants from 2001-2003 in the areas of educational degrees, type of practice facility, sex, ethnicity, and age. The Council feels that the data used to create the DSP represents an appropriate demographic pool.

In order to assist others through this very involved process, several recommendations are offered for consideration. First is the need to be very selective in the development of the survey instrument. Feedback from follow-up mailings and telephone contacts with respondents identified that the survey needed to be more manageable in length. Related to this issue, the online version of the survey initially had a few problematic areas which prevented respondents from completing the survey in multiple rather than a single session. This was corrected, but issues remained regarding the ease of viewing survey

sections. More work is needed to make the mailed and online versions of the survey shorter and user-friendly for respondents. Such efforts are likely to enhance response rates with subsequent surveys.

In conclusion, the Council is pleased and proud of the outcome of this long, work-intensive process and has great confidence that the state of cardiovascular and pulmonary specialty practice in 2006 is accurately reflected in the *Description of Specialist Practice: Cardiovascular and Pulmonary*.

REFERENCES

1. American Physical Therapy Association. *Physical Therapy Advanced Clinical Competencies: Cardiopulmonary*. Manhattan Beach, Calif: Cardiopulmonary Specialty Council; 1984.
2. American Physical Therapy Association. *Cardiopulmonary Patient Care Competency, Revised Edition 1987*. Manhattan Beach, Calif: Cardiopulmonary Specialty Council; 1988.
3. American Physical Therapy Association. *Description of Advanced Clinical Practice: Cardiopulmonary Physical Therapy*. Alexandria, Va: Specialty Council on Cardiopulmonary Physical Therapy; 1997.
4. American Physical Therapy Association. *Description of Specialty Practice: Cardiopulmonary Physical Therapy*. Alexandria, Va: Cardiovascular and Pulmonary Specialty Council; 2007.
5. American Physical Therapy Association. *Evaluative Criteria for Accreditation of Educational Programs for the Preparation of Physical Therapists*. Alexandria, Va: January 1, 2006.
6. American Physical Therapy Association: *A Normative Model of Physical Therapist Professional Education: Version 2004*. Alexandria, Va: American Physical Therapy Association; 2004.
7. American Physical Therapy Association: *Professionalism in Physical Therapy: Core Values*. Alexandria, Va: American Physical Therapy Association; 2003.
8. *Guide to Physical Therapist Practice*. Alexandria, Va: American Physical Therapy Association; 1998.

Appendix follows on page 16.

Appendix. Rating Scales Used For Survey

Frequency: *How frequently does the Cardiovascular and Pulmonary Clinical Specialist use this knowledge area?*

- 0 = never
- 1 = less than once a month
- 2 = monthly
- 3 = weekly
- 4 = daily

Importance: *Regardless of the frequency of occurrence or prevalence, how important is this knowledge area to practice as a Cardiovascular and Pulmonary Specialist?*

- 0 = not important
- 1 = of little importance
- 2 = moderately importance
- 3 = very important

Level of Judgment: *Which of the following statements best describes the level of judgment Cardiovascular and Pulmonary clinical specialists exercise when they use information from this knowledge area?*

- 0 = do not use in their work
- 1 = recall: requires ability to recall or recognize specific information only.
- 2 = application: requires ability to comprehend, interpret or apply knowledge to new or changing situations.
- 3 = Analysis: requires ability to analyze information, to put information together to arrive at a solution, and/or to evaluate the usefulness of the solution.

Level of Mastery: *What skill level would a Cardiovascular and Pulmonary specialist demonstrate while performing this activity?*

- 1 = advanced beginner
- 2 = competent skill level
- 3 = proficient skill level
- 4 = expert skill level

Cardiovascular & Pulmonary Section Research Grant for \$2,500 *Call for Proposals*

To stimulate well-defined research studies, the Cardiovascular and Pulmonary Section will provide a research grant award to support a study relevant to cardiovascular and pulmonary practice. For the year 2008, the Section will be able to fund one proposal for up to \$2,500. To be eligible, you must be a Cardiovascular and Pulmonary Section member, and the research must be directly related to cardiovascular and pulmonary physical therapy. Graduate student members may apply and use the funding to defray the costs associated with thesis or dissertation research. The funding may be used to assist with travel to present research findings. The award will not include overhead or indirect costs. Grant recipients must submit an interim progress report by February 1 of the funding year. In addition, upon completion of the study, a manuscript/report must be submitted for publication in *Physical Therapy* or the *Cardiopulmonary Physical Therapy Journal*.

The research proposal should include a title page, specific aims, summary of relevant literature, and proposed methodology including design, description of subjects, instrumentation, procedures and proposed analysis. To apply, submit your proposal (not to exceed 5 pages), abbreviated curriculum vitae/resume (not to exceed 2 pages) and proposed budget electronically as a Word or Adobe Acrobat file to:

Christine R. Wilson, PhD, PT
Chair, Research Committee
Physical Therapy Department
University of the Pacific
3601 Pacific Avenue
Stockton, CA 95211
cwilson@pacific.edu

For further information, contact Dr. Wilson at 209-946-2397 or cwilson@pacific.edu

Deadline for submission is May 1, 2008