

# Practice of Respiratory Therapists in Pennsylvania: A Statewide Survey

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**BACKGROUND:** The Pennsylvania Respiratory Research Collaborative formed in January 2017 for the purpose of providing mentorship and opportunities to participate in statewide research, quality improvement, and evidence-based practice projects. The inaugural project was designed to investigate and describe the practice of respiratory therapy in Pennsylvania. **METHODS:** A survey related to the practice and business of in-patient respiratory therapy departments was developed and sent to managers/directors of every hospital within the state of Pennsylvania. The survey period was October 2017 to April 2018. Pennsylvania hospitals were contacted to ask the respiratory therapy manager/director to complete the electronic survey. One hundred eighty-eight hospitals with in-patient respiratory therapy departments were contacted; direct information for the respiratory therapy manager/director was obtained for 159 hospitals. **RESULTS:** Of the 159 hospitals sent the survey, 101 (63.5%) responded. Of the respondents, 52% were academic medical centers. For staff positions, 50% prefer a bachelor's degree, and 77.3% prefer the Registered Respiratory Therapist certification. However, managers are only able to hire preferred candidates 50% of the time. Clinical ladders are utilized in 29% of the responding institution, and protocols are utilized in 74% of hospitals, with the most common being ventilator (92%), bronchodilator (79%), airway clearance (56%), hyperinflation (41%), and disease-specific (23%). Respiratory therapists in 84% of the hospitals perform non-traditional procedures, with the most common being electrocardiography (35%), advanced procedures including intubation (20%), arterial line placement (14%), blind bronchoalveolar lavage (14%), and electroencephalography (12%). Respiratory therapists are utilized in alternative roles in 42% of hospitals. The most common alternative roles are patient educator (29%), out-patient clinics (21%), patient navigators (19%), transport (14%), extracorporeal membrane oxygenation (6%), case managers (5%), research (5%), and telehealth (2%). **CONCLUSIONS:** The practice of respiratory therapy in the state of Pennsylvania varies greatly, with a small number of hospitals practicing at the top of their license. Additional research is needed to understand variations in practice. *Key words:* respiratory therapist; professional practice; clinical protocols; professional role; hiring preferences. [Respir Care 0;0(0):1-●. © 0 Daedalus Enterprises]

## Introduction

The Pennsylvania Respiratory Research Collaborative formed in January 2017 for the purpose of providing

mentorship and opportunities to participate in statewide research, quality improvement, and evidence-based practice projects. For the Pennsylvania Respiratory Research

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Collaborative to accomplish its purpose, it was necessary to gain a more complete understanding of the practice of respiratory therapy in the state of Pennsylvania. As the roles and responsibilities of the respiratory therapist can vary between institutions, understanding the heterogeneity with the field would help facilitate future collaborative efforts. The objective of this project was to investigate and understand the varying roles and practice of respiratory therapists in Pennsylvania. To our knowledge, this is the first survey of its kind to be sent to respiratory care department leaders.

### Methods

We developed an electronic survey instrument, using REDCap (Research Electronic Data Capture, Vanderbilt University, Nashville, Tennessee) secured through the Children's Hospital of Philadelphia network. We identified 192 hospitals in Pennsylvania. The survey link, targeted to the leadership of respiratory therapy departments, was distributed via email in October 2017. One response was allowed per hospital. This project was exempt by the Children's Hospital of Philadelphia's Institutional Review Board.

The survey consisted of 31 basic questions and, based on the respondents' answer, could include up to 50 questions using a branching logic format. The questions covered demographics of the institutions as well as clinical practice, hiring preferences, and professionalism metrics for the respiratory therapy departments. Questions on hiring preferences pertained to all bedside staff positions (not leadership positions) and were not specific regarding new graduate hire or experienced respiratory therapists. The highest degree earned was requested to inform existing staff mix.

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### QUICK LOOK

#### Current knowledge

The practice of respiratory therapy across the state of Pennsylvania varies significantly. This ranges from therapists practicing to the full extent of their license to therapists acting primarily under physician direction. The explanation for this variation in practice includes history, institutional culture and individual initiative.

#### What this paper contributes to our knowledge

Respiratory care practice varies widely across the state of Pennsylvania from community hospitals to academic medical centers. Over two-thirds of respondents performed non-traditional roles and in half of hospitals worked in alternate roles. Advanced practices including intubation, arterial catheterization and blind bronchoalveolar lavage were accomplished by a 20% of respondents. Protocols are widely used, although advanced procedures are more frequently utilized in nonacademic centers.

Dropdown menus with common respiratory therapist-driven protocols, advanced procedures, and alternative roles were provided for questions regarding practice. For questions regarding protocols, branching logic was put in place to trigger additional question with dropdown menus to further reveal the types of protocols used for mechanical ventilation and for therapy-specific and disease-specific care.

Comparisons were made between academic and nonacademic hospitals because in nonacademic hospitals there are fewer physician trainees requiring educational experience with procedures and management of patients. In light of this, we hypothesized that respiratory therapist autonomy and practice would differ between these types of institutions. Categorical data are presented as numbers (%) and continuous data as means  $\pm$ SD. Data were analyzed using SPSS 25.0 (IBM, Armonk, New York). Chi-square tests and paired *t* tests were performed for categorical and continuous data, respectively, to compare hospitals with academic affiliation to those without.  $P < .05$  was considered statistically significant.

### Results

Of the 192 hospitals in the state, 188 were identified as having in-patient respiratory therapy departments and were contacted to acquire a leadership point person to whom we could send the electronic survey link. We were able to acquire contact information for department leadership for 159 hospitals. The survey was distributed to these 159

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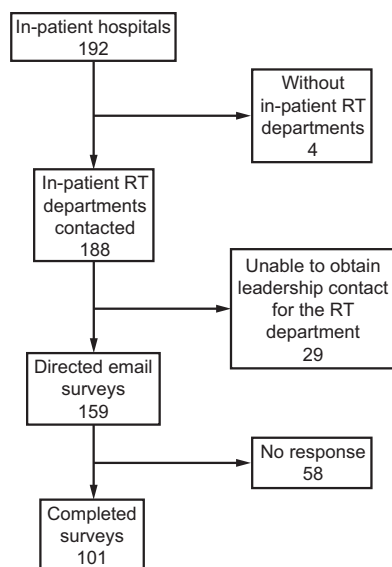


Fig. 1. Flow chart. RT = respiratory therapy.

Table 1. Demographics of Academic vs Nonacademic Hospitals

Demographic	Academic	Nonacademic	<i>P</i>
Beds, <i>n</i>	323 ± 226	138 ± 101	< .001
ICU beds, <i>n</i>	40 ± 37	14 ± 9	< .001
Respiratory therapists, <i>n</i>	45 ± 36	22 ± 11	< .001
Full-time employees, <i>n</i>	35 ± 31	15 ± 9	< .001
Leadership, <i>n</i>	3.6 ± 3	2 ± 1.5	.003
Clinical ladder, <i>n</i> (%)	21 (72)	8 (17)	< .001
% AARC membership	55.2 ± 28	57.6 ± 28	.72

Data are presented as mean ± SD unless otherwise noted. There were 53 respondents from academic hospitals and 48 respondents from nonacademic hospitals.

institutions, and we received 101 (63.5%) responses (Fig. 1). Approximately half of the respondents were academic medical centers (*n* = 53). The descriptions and demographics of respondent hospitals are shown in Table 1; academic affiliated hospitals were more likely to have a greater number of hospital and ICU beds, more respiratory department leadership positions, and clinical ladders. Hiring practice preferences showed 50% of leadership prefer to hire respiratory therapists with a bachelor's degree, and 77.3% preferred therapists to have the Registered Respiratory Therapist (RRT) credential. Academic hospitals were more likely to prefer advanced degrees and credentials (Table 2). Departments preferring bachelor's degrees reported that they can only hire a respiratory therapist with a bachelor's degree 50% of the time. However, those preferring candidates with the RRT or with advanced credentials (eg, RRT-NPS or RRT-ACCS) are able to hire these individuals 85% of the time.

Table 2. Preferred Hiring Degree or Credential

Preferred Degree/Credential	Academic	Nonacademic	<i>P</i>
Associates degree	22 (41.5)	26 (55.3)	< .001
Baccalaureate degree	30 (56.6)	20 (42.5)	< .001
RRT	41 (77.3)	38 (80.8)	< .001
RRT-NPS/RRT-ACCS	3 (5.6)	3 (6.4)	< .001

Data are presented as no. (%). There were 53 respondents from academic hospitals and 47 respondents from nonacademic hospitals.

RRT = Registered Respiratory Therapist  
NPS = Neonatal and Pediatric Specialist  
ACCS = Adult Critical Care Specialist

Table 3. Breakdown of Protocol Types

Protocol Type	Academic	Nonacademic	<i>P</i>
Protocols	41 (54.7)	34 (45.3)	.35
Disease-specific	10 (58.8)	7 (41.2)	.60
Asthma	8 (57.1)	6 (42.9)	.74
Bronchiolitis	4 (57.1)	3 (42.9)	.82
COPD	6 (54.5)	5 (45.5)	.91
Ventilator	36 (52.2)	33 (47.8)	.81
Weaning	33 (52.6)	31 (48.4)	.70
Overall management	14 (51.9)	13 (48.1)	.89
Mode-specific	7 (70)	3 (30)	.26
ARDS	13 (61.9)	8 (38.1)	.36
Bronchodilator	32 (54.2)	27 (45.8)	.77
Airway clearance	24 (57.1)	18 (42.9)	.48
Hyperinflation	16 (51.6)	15 (48.4)	.85

Data are presented as no. (%).

Table 4. Breakdown of Procedures Performed by Respiratory Therapists

Procedure	Academic	Nonacademic	<i>P</i>
Intubation	5 (29.4)	12 (70.6)	.032
Blind bronchoalveolar lavage	10 (83)	2 (16.7)	.03
Arterial line placement	3 (25)	9 (75)	.038
Electroencephalography	5 (50)	5 (50)	.84
Electrocardiography	11 (36.7)	19 (63.3)	.032

Data are presented as *n* (%).

In relation to the clinical practice of the respiratory therapist, use of protocols was reported in 74% of hospitals. A more detailed analysis of the types of protocols utilized indicates that there is no difference in protocol use between academic and nonacademic hospitals (Table 3). Of the 55% of hospitals that reported performing advanced procedures, nonacademic hospitals were more likely to perform advanced procedures than academic hospitals (Table 4). Forty-two hospitals reported having respiratory therapists in alternative roles within the hospital (Table 5).

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Table 5. Alternative Roles for Respiratory Therapists

Alternative Role	Academic	Nonacademic	<i>P</i>
Case manager	2 (100)	0 (0)	.18
Patient educator	9 (75)	3 (25)	.10
Discharge coordinator	2 (100)	0 (0)	.18
Patient navigator	5 (62.5)	3 (37.5)	.58
Research	2 (100)	0 (0)	.18
ECMO	4 (100)	0 (0)	.055
Transport	6 (100)	0 (0)	.02
Telehealth	1 (100)	0 (0)	.34
Outpatient clinics	4 (50)	4 (50)	.86

Data are presented as *n* (%).

ECMO = extracorporeal membrane oxygenation

## Discussion

In this survey, we found a wide variation in the practice of respiratory therapy in the state of Pennsylvania. We interpret this survey with the intention of elevating the practice of respiratory therapists in Pennsylvania to have the ability to function at the top of their license. The current Pennsylvania respiratory therapy licensure requirements are for an associate's degree from a CoARC-accredited respiratory therapy program and a passing score on the Certified Respiratory Therapist entry-level examination from the NBRC. From a clinical practice standpoint, 74% of hospitals use protocols of some kind, indicating the desire for respiratory therapist autonomy, however only 55% perform advanced procedures. This difference may be the result of a financial impact because protocols and pathways reduce unnecessary care, thus reducing costs while hospitals are unable to charge for a procedure (eg, intubation, arterial line) that is not performed by a physician or physician extender. Twenty-nine percent of hospitals promote professionalism through the use of clinical ladders. However, 50% prefer bachelor's degrees and 77.3% prefer the RRT certification. The development of clinical ladders for professional advancement may assist in recruiting and retaining respiratory therapists with higher degrees and credentials. Previously published research suggests that sustaining professional relevance and growth is a current concern within the profession.<sup>1-4</sup> The differences between the academic and nonacademic institutions validated the perceptions of the differences of respiratory therapy practice by hospital type. We observed an increased level of professional development in the academic centers, with a greater preference for higher degree, credentials, clinical ladders, and implementation of more respiratory therapist-driven protocols of all kinds compared to nonacademic centers, whereas nonacademic centers allowed respiratory therapists to perform more advanced procedures compared to academic centers. This finding

suggests opportunities for our state to enhance perceptions of the profession, and the number of protocolized treatments and procedures provided by respiratory therapists also highlight the importance of the care that respiratory therapists provide to patients.<sup>2,3,5,6</sup>

As health care has changed in the last decade, it has been suggested that there is a need for respiratory therapy to transition from the associate's degree to the bachelor's degree for entry into practice.<sup>2,4</sup> A survey by Smith et al<sup>4</sup> of practitioners in the state of New York reported that without advancement we are at risk of losing people from the profession. The most important incentives for retention of practitioners were professional growth and expanded scope of practice.<sup>4</sup> Our survey indicates that a bachelor's degree is preferred by half of the department leadership, although they are unable to find enough qualified candidates. Our data supports the idea that hospitals have room to grow in relation to the practice of respiratory therapy, such as with expansion of respiratory therapist-driven protocols, clinical ladders, and alternative care roles.<sup>4,5,7-9</sup> Nontraditional procedures performed by respiratory therapists opens yet another avenue to display our value. Exploring opportunities to expand professional roles for respiratory therapists within health systems may have a major impact on the profession as a whole.<sup>4,5</sup>

This survey differs from other surveys with regard to state-level practice because it seeks to determine what current practice is from the perspective of department leadership. The survey from Smith et al<sup>4</sup> showed the viewpoint of the practitioners within the state of New York and their desire for advancement of the profession. As we know, there is a dearth of research focusing on how the respiratory therapy profession is driving our sustainability, creativity, and innovation. The Pennsylvania Respiratory Research Collaborative is the first state collaborative of its kind to pool the resources of the state respiratory community to begin to develop this evidence and to utilize it to encourage respiratory therapists in Pennsylvania to practice at the top of their license. Next steps for the collaborative are to develop prospective projects from baseline survey data collected to drill down for more granular information in specific areas such as degree differences and the use of protocols and pathways and to develop statewide benchmarking for common initiatives.

## Limitations

This study had several limitations. First, just over half of the hospitals contacted in the state responded to the survey. Second, we were unable to obtain leadership contacts for 15% of hospitals. Lastly, these results report only the incidence of occurrences of practice; more research is needed to determine the quality of protocol use and evidence-based practice overall to determine the overall quality of

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respiratory therapy practice within Pennsylvania. Future research should engage the departments that perform common protocols and procedures and further investigate quality compared to other disciplines as well as patient outcomes from advanced respiratory therapist involvement in their care.

### Conclusions

This is the first investigation completed by the nascent Pennsylvania Respiratory Research Collaborative. We observed that the practice of respiratory care varies greatly within Pennsylvania hospitals and that protocols are widely used throughout the state with no difference in hospital affiliation, although advanced procedures are more commonly performed by respiratory therapists in nonacademic institutions.

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