CSRC Position Paper for RRT as Minimum Requirement for Licensure

Citations
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Creating a Vision for Respiratory Care in 2015 and Beyond

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The respiratory care profession is over 60 years old. Throughout its short history, change and innovation have been the terms that best describe the development of the profession. The respiratory therapist (RT) of today barely resembles the clinicians of 60 years ago, and the future role of the RT is clearly open to debate. Medicine is continually changing, with new approaches to disease management emerging almost daily. Third-party payers are challenging payment for iatrogenic injury, manpower issues are affecting all disciplines in medicine, and the nonphysician and physician work force is aging. These factors make us question what the respiratory care profession will look like in the year 2015. To address this issue the American Association for Respiratory Care established a task force to envision the RT of the future. The goal is to identify potential new roles and responsibilities of RTs in 2015 and beyond, and to suggest the elements of education, training, and competency-documentation needed to assure safe and effective execution of those roles and responsibilities. We present the initial findings of that task force. *Key words: respiratory care, respiratory therapist, iatrogenic injury, manpower, education, training, competency*. [Respir Care 2009;54(3):375–389. © 2009 Daedalus Enterprises]

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Introduction

The profession of respiratory care was officially established over 60 years ago.[1] During the early years, respiratory therapists (RTs) were referred to as oxygen technicians, and most of their activities involved moving cylinders of compressed gas and administering oxygen via nasal catheter or oxygen tent.[2] Most oxygen technicians were trained on the job, although brief training programs began to appear in the late 1940s and 1950s.[3]

Today the profession hardly resembles what it was in the 1940s. RTs provide direct care, patient education, and care coordination. They practice in acute care facilities, long-term acute care facilities, skilled nursing facilities, assisted-living centers, subacute care units, rehabilitation centers, diagnostics units, and in the home.[4] RT training has also dramatically changed. Current accreditation standards require RTs to have, at minimum, an associate degree from an accredited program.[5] Legal requirements to practice respiratory therapy have also dramatically changed. All 48 contiguous states now legally recognize RTs. Limited permits or state licenses are now required in all states except Alaska and Hawaii, which have no statutory authority over the practice of respiratory therapy. Most states that have a licensure requirement also require continuing education.

The future role of the RT is clearly open to debate. Medicine is continually changing, with new approaches to disease management emerging almost daily. Third-party payers are challenging payment for iatrogenic injury and some established therapies. Manpower issues, including aging of the workforce, are affecting all medical disciplines. These factors make us question what the respiratory care profession will look like in the year 2015.

To address this issue the American Association for Respiratory Care (AARC) established a task force to "envision the RT of the future." The goal is to identify potential new roles and responsibilities of RTs in the year 2015 and beyond, and to suggest the elements of education, training, and competency-documentation needed to assure safe and effective execution of those roles and responsibilities. It was decided to hold a series of 3 conferences (Table 1). Here we present the findings of the first conference.

Table 1. Content Outline of the 3 AARC Task Force Conferences on the Future of the Respiratory Care Profession

Conference	Objectives
1	To identify the emerging values of the United States' evolving health-care delivery system. To define potential new roles and responsibilities of RTs in 2015 and beyond.
2	To identify the skills, knowledge, attributes, education, and competency-documentation that RTs will need for the new roles and responsibilities.
3	To determine how we get to where we'll need to be to prepare RTs for the new roles and responsibilities, with minimal impact on the workforce.

RT = respiratory therapist

Methods

In the spring of 2007 the AARC executive office formed a task force of 15 individuals with knowledge of the respiratory care profession, respiratory care education, and health-care policy, consumers of respiratory care, and 3 AARC executives (Appendix 1). These individuals were selected based on their long-term commitment to and knowledge of the respiratory care profession, as evidenced by the elected positions they held and their work history, their commitment to research and education, or their personal experiences receiving respiratory care. In addition, individuals were selected to represent stakeholders in the profession, which were identified as employers, employee groups, foundations, professional associations, state and federal government agencies, education institutions, health-care delivery systems, and the public. These individuals participated in a series of telephone conference calls and e-mail discussions at least monthly, culminating in a 1-day face-to-face meeting in the fall of 2007. These discussions focused on designing a 3-day conference to address these questions:

- What are the emerging values of the United States' evolving health-care delivery system?
- How does the evolving system relate to the context of diagnosis, treatment, and management of patients with respiratory disorders?
- What responsibilities should RTs assume to assure adequate access, efficiency, and quality of respiratory care services?

Dr Kacmarek has had relationships with Space Labs, Puritan Bennett, Maquet, Cardinal Health, Newport Medical, Hamilton Medical, Respironics, General Electric, and Dräger. Dr Kageler has had relationships with Nurtur. Dr O'Neil has had relationships with Genentech, National Institutes of Health, the Betty and Gordon Moore Foundation, the Californian Health Care Foundation, the California Endowment, the Blue Cross/Blue Shield Association, and the Pew Charitable Trusts. Dr Durbin has had relationships with Kimberly Clark and Masimo.

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Table 2. Conference 1 Program

Topic	Speaker(s)
Welcome and Introductory Remarks	Sam P Giordano MBA RRT FAARC, American Association for Respiratory Care
Overview of Process and Introduction of Participants	Charles G Durbin Jr MD FAARC, University of Virginia, Charlottesville, Virginia John R Walton MBA RRT FAARC, Resurrection Health Care, Chicago, Illinois
A Vision of the Health-Care System in 2015 and Beyond: Planning Assumptions and Questions To Be Addressed	Charles G Durbin Jr MD FAARC, University of Virginia, Charlottesville, VA John R Walton MBA RRT FAARC, Resurrection Health Care, Chicago, Illinois
Current Status and Evolution of the Health Care System	Edward H O'Neil PhD MPA, Center for the Health Professions, San Francisco, California Gordon D Rubenfeld MD MSc, University of Toronto, Toronto, Ontario, Canada
Current Status of Respiratory Care Within the Health Care System	Patrick J Dunne MEd RRT FAARC, Healthcare Productions, Fullerton, California
What Respiratory Patients Need	John W Walsh, COPD Foundation and Alpha-1 Foundation, Miami Florida
Special Considerations That Impact Health Care and Respiratory Therapy Demand in the Military	Col Michael J Morris MC USA, Brooke Army Medical Center, Fort Sam, Houston, Texas
Public Health	Judy Blumenthal PhD, United States Department of Health and Human Services, Washington DC
Current and Future Human Resource Issues	William H Dubbs MEd MHA RRT FAARC, American Association for Respiratory Care
The Impact of Biomedical Innovation on the Responsibilities of the RT	Neil R MacIntyre MD FAARC, Duke University, Durham, North Carolina
What Should RTs Be Doing in the Future?	John R Walton MBA RRT FAARC, Resurrection Health Care, Chicago, Illinois
Role of the Future RT Across the Spectrum of Care	Robert M Kacmarek PhD RRT FAARC, Massachusetts General Hospital, Boston, Massachusetts
Disease Management: What Skills Do RTs Need?	Woody V Kageler MD MBA, Tarrant County College, Hurst Texas; and Nurtur, Dallas, Texas
Development of a Vision of the Future Role Description for RTs in 2015 and Beyond	Charles G Durbin Jr MD FAARC, University of Virginia, Charlottesville, Virginia John R Walton MBA RRT FAARC, Resurrection Health Care, Chicago, Illinois

- What responsibilities can RTs add or expand that will improve efficient utilization of respiratory care resources and management of patients with chronic respiratory diseases?
- The first of the 3 conferences was held in Dallas, Texas, on March 3–5, 2008 (Table 2). Appendix 2 lists the stakeholders who were invited to participate. Appendix 3 lists the 35 conference attendees. At the conclusion of the conference there was a lengthy discussion involving all the attendees, to develop the preliminary outline of the conference's findings. The conferences chairs, John Walton and Charles Durbin, prepared a summary of the conference findings, which was refined by the task force via e-mail correspondence and sent to all attendees for review and comment. Based on attendee feedback, a final summary of the conference findings was developed, which was approved by the planning committee and sent to all conference participants. The results section below is written as a consensus statement about the conference findings. The referenced supporting materials are detailed in the discussion section.

Results

Predicted Changes in Health Care

The following are general trends in health care that will affect the respiratory care profession.

Since the United States' population continues to age, more patients will be diagnosed with chronic and acute respiratory diseases. There will be increased accuracy of diagnosis. Treatment will be aimed increasingly at outpatient management, and avoidance of hospital admission will be a goal. Increasing numbers of comorbid conditions will be identified that require management/treatment. "Health promotion" rather than illness treatment will become the goal of care.

Cost increases for care will continue, and individual, corporate, and public payers will find it increasingly difficult to meet these expenses.

Personal electronic health records will be more widely accepted and used in all care settings, including the home.

Health-care consumers will pay a greater percentage of costs and will have new options for obtaining care. Retail health clinics and other mass-marketed care centers will stimulate consumer-driven cost competition.

Hospitals will continue to provide expensive, episodic care and will house cutting-edge respiratory life-support technology, but subacute and home care providers will continue to play important roles. The delivery of acute care will move progressively from the hospital to the patient's home. Subacute and chronic care will increase in volume and complexity.

The disconnect between prevention and acute-care treatment (specifically, in hospitals) will lessen but not disappear. The increased complexity of care will heighten the need for better communication among all care providers and between the patient and family members. Telemedicine and telecare will be increasingly used in all care settings. Medical care will undergo increasing scrutiny for quality, and this will increasingly be linked to reimbursement, with initiatives such as pay-for-performance.

New models of health-care delivery, such as "hospital at home," "medical home," and telemedicine, will emerge, with increasing emphasis on coordination of care throughout the health-care system, including patient homes. Reimbursement and costs will influence the development and success of these new models.

Changes in the Health-Care Workforce

There will be national and regional shortages of all types of providers, including those who frequently interact directly with patients, such as physicians, nurses, and RTs, and those who have less intense patient interaction, such as diagnostic and laboratory technicians. There will be long-term competition for all advanced skilled workers throughout the United States economy. The rise in clinical demand will increase the number of jobs faster than the health-care workforce enlarges. This imbalance between the number of jobs and number of available workers will be aggravated by the aging and retirement of current providers. Less popular work hours (eg, night shift and weekends) in in-patient and other settings will dissuade some individuals from pursuing health-care careers. Shortages of teaching faculty and the limited number of programs will limit the number of entrants to and graduates from schools of allied health professions. Clinical sites are limited in number and variety. They will need to be expanded to include new venues, such as office practices and patients' homes. New information and education technologies will challenge traditional education. Care-delivery organizations will find reinvestment in education an attractive way to secure workers, reduce orientation time, and provide education and career ladders for employees.

Changes Expected in Respiratory Care

The science of respiratory care will continue to evolve and increase in complexity. Clinical decisions will become increasingly data-driven. Respiratory care will be an important part of care in all venues. Scientifically supported algorithms (protocols) will be the most common way to deliver respiratory care. This will stimulate an even greater need for RTs to be involved in research and will require the average RT to be adept at understanding the practical ramifications of published research.

Care teams will become the standard for health-care delivery in and outside the hospital. Team members will have different roles and responsibilities at different times, but respect and collaboration will be the hallmark of effective team functioning. Patients and their families will be important members of the health-care team and must be informed, empowered, and engaged in personal health management.[6]

Cultural differences among patients will require the RT to develop new skills and adopt various approaches to care for different groups.

Information management will become an important tool in choosing therapies and evaluating their effects. New respiratory life-support technologies will be developed and deployed. Research by the respiratory community on new technologies' clinical and cost effectiveness will be necessary. Changes in the reimbursement system will be very important drivers of changes in health care and disease management. Public health issues, military, and disaster-response concerns will continue and require new skill sets for RTs. RTs' knowledge, socialization, training, and skills will need to be aligned with the factors and changes detailed above.

Discussion

Drivers of Health-Care Change

Five interrelated drivers will shape most of the reality for health care and respiratory care over the next decade and a half (Table 3).

Cost of Care. The United States' approach to organizing and delivering health-care services, more than 16% of the nation's total productive effort, is the most expensive in the world.[7] It amounts to about $2 trillion per year, making it the seventh largest economic undertaking in the world. Health care is the largest part of the public budget, and the

Table 3. Drivers of Change in Health Care

Cost of care
Demographics
Shift in the disease burden
Technology
Consumers of health care

trust fund that pays for Medicare Part A has only about 10 years of funding remaining. On the private side, corporations, which have been the backbone of the employer-based health insurance system, are reducing coverage for employee health care. Individuals fear the loss of health insurance and direct exposure to the cost of care—a fear that often requires them to stay in jobs they don't care for or flirt with financial disaster because of lack of proper health insurance.[7] Some third-party payers are proposing to eliminate payment for iatrogenic injury. These changes will require more efficient, effective, and safe care by all caregivers.

Demographics. The population is aging. As more of the people born after World War II (baby boomers) reach age 65, more clinical and financial stress will be placed on the health-care system. The good news is that the United States is aging at a slower rate than most of the nations we will compete with internationally,[8] but those nations have already brought their citizens into health-care-payment plans that incorporate some form of cost control.[9] Tension is building between the cost of health care and the increasing need for health care by the baby-boom generation. Another demographic trend that is easily missed is population growth. Between 2000 and 2025 the United States population is projected to grow by almost 20%.[9] This is already generating a growing demand for new capacity, from hospital beds to new providers.

Shift in the Disease Burden. Disease burden will shift from acute disorders to chronic disease and disability. The United States population now lives 35 years longer than it did 100 years ago, which increases the likelihood of chronic disease. This will be multiplied by the aging baby-boom generation.[10] The real driver here is that, while the demands of disease and population are changing, the United States health-care system is still designed to provide acute care, and not to prevent or manage chronic disease. This mismatch is no small part of the cost and dysfunction of health care in this country.[10]

Technology. This driver has already reshaped most of society and the economy over the past 20 years. As information and communication technologies make their way into health care, they will change administrative functions first, then clinical work, and then (the most revolutionary change) the redistribution of knowledge from the experts, directly to the consumer/patient.[11] This change will accelerate over the next few years, as information technology merges with biomedical technology to produce care-management technology. With these tools, patients and their families will be more directly connected to the specialized knowledge of health care. The future will see a growing erosion of this professional monopoly, and, as the system is held accountable for new demands, technology will create new ways to organize, deliver, evaluate, and use the specialized knowledge that is at the core of health care.[11] Telemedicine and telecare will be increasingly utilized in all care settings.[12,13]

Health-Care Consumers. Certainly, quality and access are 2 important drivers. However, change will most likely be forced by the consumers of health care. As costs increase and public and private payers become less likely to cover desired services, individual and new groupings of purchasers will emerge to express their desires in the market.[14] They will look at quality (as best they can judge it), convenience, price, consumer satisfaction, and a host of other qualities that will affect their decision to purchase.[14]

Current Status of Respiratory Care Within the Health-Care System

Respiratory care is an important, integral part of the current health-care system because of the prevalence and seriousness of pulmonary disease, and because respiratory compromise is common with any severe major organ-system failure. Most respiratory care is provided in the acute care setting, the intensive care unit, and the emergency department, where necessary respiratory interventions are aggressive, often life-saving, and frequently include mechanical ventilation.[15,16] Many of these patients have comorbid conditions. In addition to treatment of exacerbations of chronic respiratory conditions, current respiratory care practice includes trauma patients and patients without a primary respiratory diagnosis but who suffer a secondary pulmonary complication.

Because of the high prevalence of several specific pulmonary conditions in the United States, the proportion of all acute-care patients with respiratory issues is large (Table 4), often involves hospitalization, and is responsible for a large majority of the respiratory care delivered.

Chronic obstructive pulmonary disease (COPD) is a very prevalent but treatable disease and has been diagnosed in at least 12–14 million individuals. Twelve million more may have undiagnosed COPD and continue to smoke despite increasing shortness of breath. This undiagnosed group will increase the need for respiratory care in the future.[27] COPD is now the forth leading cause of death in the United States. It is estimated that by 2020 it will be ranked third.[27]

Table 4. Common Respiratory Disorders and Associated Facts

Diagnosis	Number of Diagnosed Individuals	Estimated Undiagnosed Individuals	Estimated Cost of Care ($)	Facts
Chronic obstructive pulmonary disease	12 million	12 million	$37 billion (2004)	Fourth most common cause of death.[17,18]
Asthma	22 million	Unknown	$19 billion	Rising prevalence in younger individuals. Falling death rate: 4,000–5,000 deaths per year.[19]
Obstructive sleep apnea	18 million	Unknown	Unknown	Drowsiness causes 100,000 accidents and 40,000 injuries per year.[20,21]
Lung cancer	2.2 million	Unknown	Unknown	Falling incidence since 1994. 150,000 deaths in 2004.[22,23]
Interstitial fibrosis	200,000	Unknown	Unknown	Industrial exposure and idiopathic are common etiologies.[24,25]
Cystic fibrosis	30,000	Unknown	Unknown	Increasing diagnosis with neonatal screening.[26]

COPD treatment in 2004 cost over $37 billion, $21 billion of which was for hospital care.[28]

Asthma affects 22 million people in the United States. Nearly a half million patients with asthma are admitted to hospitals, at a cost of over $19 billion. Although the asthma death rate is declining, 4,000–5,000 people die from asthma each year.[27]

Obstructive sleep apnea remains an underdiagnosed respiratory disorder that impacts motor-vehicle safety, costing lives (as many as 1,500 deaths a years are caused by drowsy driving and industrial accidents) and reducing productivity. There may be as many as 18 million affected individuals, 6 million of whom have moderate-to-severe obstructive sleep apnea. The interactions between obstructive sleep apnea and other organ disorders are synergistic and greatly increase the overall health impact, morbidity, and mortality.[29-34]

Education of patients, professionals, and each other is an essential skill for RTs, and is important to reducing recidivism in patients with chronic respiratory diseases. Protocolized care (best practices),[35,36] disease management,[37-39] preventive care,[40] risk-factor modulation, disease self-management,[41] and smoking cessation are recognized methods to improve health and reduce costs. However, there are substantial financial and systemic barriers to applying those methods in respiratory practice.[42-46] A change in the reimbursement system could change the emphasis from acute (high-cost and high-risk) interventions to aggressive symptom management by the patient and the RT and should decrease the need for hospitalization.[47] That is, the location of care will shift from the acute-care setting to the home and other care sites. This shift is expected to expand reimbursement criteria for care provided in the home.

Potential Impact of Military and Public Heath System Changes on Respiratory Practice

The missions of the armed forces are diverse, including intervention in regional and local conflicts, provision of humanitarian aid on foreign soil,[48] responding to disasters,[49,50] and supporting nation-building. All military branches provide respiratory therapy services with medical reservists with RT credentials (or combat medical experience) or with individuals trained by their service branch. The goal of that experience is to develop a flexible individual who can deliver broad-based technical care, including respiratory care, and function in various roles, including the operating room, intensive care unit, battlefield, and the traditional hospital.[51] Few individuals with respiratory care training are regularly utilized by the armed forces. This need may expand if major conflicts emerge.

In the military health-care system, most respiratory care is delivered to dependents, noncombatants, and veterans, mostly by the Veterans Affairs hospital system, and the rest through insurance and health plans such as TRICARE[52,53] (formerly the Civilian Health and Medical Program of the Uniformed Services, or CHAMPUS), provided at civilian hospitals. An increase in the size or activity of the military would increase health-care demands and respiratory therapy opportunities.

In contrast to the armed services, the United States Public Health Service recognizes respiratory therapy as a profession and offers officer status to baccalaureate-level RTs in its commissioned corps. The United States Public Health Service, under the Department of Health and Human Services, includes over 6,000 qualified public health officials under the supervision of the Office of the Surgeon General. They provide various services to United States citizens, including responding to immediate and long-term

Table 5. Respiratory Therapist Work Force 2000–2016

Year	Number of Active Respiratory Therapists (according to)	
	State Licensure Boards	Bureau of Labor Statistics
2000	111,706	ND
2005	132,651	ND
2006	ND	122,000
2016	ND	145,000

ND = no data available

Table 6. Number of Respiratory Therapists per 100,000 Population

	RTs/100,000 population	Rank Among the 50 States
Top Five		
District of Columbia	56.0	1
Indiana	52.7	2
Ohio	46.2	3
Kansas	46.1	4
Nebraska	42.4	5
Bottom Five		
Wyoming	23.7	46
Alaska	22.9	47
New Jersey	22.8	48
Minnesota	22.5	49
Utah	20.0	50
United States mean	32.1	NA

RT = respiratory therapist
NA = not applicable

health needs, public-health promotion, disease-prevention programs, advancing public-health science, emergency-response assistance, and providing medical leadership to various components of the United States Government. The Public Health Service has 2 components: the commissioned corps, which is a career path with assignment changes and advancement; and civil service employees, who are stationary. Any change in the domestic mission of the United States Public Health Service, occurrence of a world or national disaster, or terrorist activity could increase the demand for health-care workers, alter RTs' job expectations, and create opportunities for RTs.

Current and Future Human Resource Issues

The number of active RTs in the workforce projected by the AARC 2005 human resources study was 132,651,[54] which is 19% greater than that in the 2000 AARC human resources study.[55] The United States Bureau of Labor Statistics reported that there were 121,000 RTs employed in 2006, and predicted a 19% increase in the need for RTs (to 145,000) between 2006 and 2016 (Table 5).[56] The Center for Health Workforce Studies reported in 2004 that RTs are unevenly distributed across the country; the highest density is in the District of Columbia (56/100,000 population) and the lowest density is in Utah (20/100,000 population), and the mean for the United States is 32/100,000 population (Table 6).[57] In 2005 the highest proportion of RTs (20.1%) worked in the Atlantic mid-coast and southeast area, and the lowest proportion (4.6%) worked in New England.[54] Seventy-four percent of RTs work at least part-time in acute care.[54] Sixty-one percent of RTs work in urban areas, and 38.5% work in rural areas.[54] The number of male RTs increased from 36% to 40% between 2000 and 2005.[54,55] The mean age of active RTs in 2005 was 45 years, and the mean years of experience was 19 years.[54,55] The average age of the RT in the workforce increased by 4.6 years between 2000 and 2005.[54,55] Very few RTs older than 65 years were actively practicing in 2005.[54]

The RT vacancy rate for budgeted positions in 2005 was 8.6% (10,000 positions), which is an increase from 5.9% in 2000.[54] The 2005 AARC human resources study projected a need for 171,684 budgeted positions in 2010.[54] In 2015 the projected budgeted RT positions will exceed 200,000 if the growth in new positions continues at the 2005 rate. A severe manpower shortage will result if RT retirees are not replaced by graduates from respiratory therapy programs.

Directors of respiratory therapy departments and schools find it difficult to fill vacant positions given the current manpower shortage of adequately prepared RTs. Accredited associate and baccalaureate/masters degree RT programs provided 24,150 graduates between 2004 and 2007 (an average of 6,048 graduates/y) (Table 7).[58] Advanced-level graduates composed 83.7% of the total in 2004, and 90.7% in 2007.[58] Only 9.5% graduated from one of the 53 baccalaureate or masters degree programs.[59] Graduates from accredited schools increased by 19% per year in 2005 and 2006, but decreased by 19% in 2007 (see Table 5).[49] Over the 10 years 2005 to 2015, 47.5% of program directors and 34.2% of directors of clinical education will retire from accredited respiratory therapy programs.[54] The loss of key program personnel in the near future is a serious problem that will require more graduates with baccalaureate and masters degrees to replace retired faculty members.

A steady influx of new respiratory therapy programs continued in 2008.[60] There are currently 34 entry-level, 341 advanced level, and 10 polysomnography programs that are accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) (this excludes the 48 programs that hold a Committee on Accreditation for Respiratory Care Letter of Review).[60] Of the 34

Table 7. Graduates From Associate Degree and Baccalaureate Degree CAAHEP Accredited Programs

	Number of Graduates				
Year	2004	2005	2006	2007	Total
Baccalaureate	445	486	591	569	2,091
Associate	4,634	5,570	6,612	5,241	22,083
Total	5,079	6,056	7,203	5,812	24,174

CAAHEP = Commission on Accreditation of Allied Health Education Programs

entry-level programs, only 8 are free-standing, without an advanced-level option. Five of those 8 plan to become 200-level programs.[60] The other three 100-level programs are located in areas that also have 200-level programs.[60] The Committee on Accreditation for Respiratory Care notified sponsoring agencies that a new CAAHEP accreditation standard will address only one entry level program (98% of all CAAHEP accredited programs are at the 200 level).[60] The 2008 Coalition for Baccalaureate and Graduate Respiratory Therapy Education roster lists 54 CAAHEP-accredited respiratory therapy programs, 53 of which award baccalaureate degrees, and 3 of which award masters degrees.[59]

The Role of the RT in Biomedical Innovation

The role of the RT and the development of biomedical innovations have advanced in parallel. The respiratory therapy profession began out of necessity. With the development of treatments for respiratory disease came the need for practitioners to administer those treatments. In the early years, RTs were referred to as oxygen technicians; they administered oxygen therapy, Schwartz rebreathing tube treatments, aerosols, and intermittent positive-pressure breathing, and performed arterial blood gas analysis and pulmonary function studies.[2]

Today, the RT's role is vastly different. RTs use sophisticated medical equipment, manage mechanical ventilators, and administer invasive and noninvasive mechanical ventilation in all care settings. RTs provide extracorporeal life support to critically ill neonatal, pediatric, and adult patients, and safely transport patients via ground and air. They perform numerous diagnostic studies, including sleep studies. They also provide the traditional forms of aerosol, oxygen, and bronchial-hygiene therapy, and patient education on these therapies. RTs have also become an integral part of care in the home and subacute settings.

The general forces that are driving change in health care also drive respiratory care, but the role of the RT in 2015 will also be driven by biomedical innovation and evidence-based medicine. The increasing sophistication of mechanical ventilators and clinical monitoring systems necessitates an even more sophisticated RT. Care of the critically ill mechanically ventilated patient will demand increased understanding of protocol-driven approaches to ventilatory support, many of which will be integrated into the mechanical ventilator.[61-64] Ventilation modes recently introduced in the United States challenge the historical approaches to ventilatory support. "Smart Care,"[61] adaptive-support ventilation,[59] proportional-assist ventilation,[63] and neurally adjusted ventilatory support[64] all require in-depth understanding of respiratory physiology and the response of the ventilator to changes in patient status. All of these modes are forms of closed-loop controlled, protocolized approaches to ventilatory support that will need to be mastered by the RT.

New bedside respiratory monitoring systems will most likely be in clinical use by 2015, and may provide data similar to that currently provided by expensive diagnostic equipment, such as computed tomography, that require patient-transport.[65] Electrical impedance tomography,[66] acoustic thoracic monitoring,[67] and optoelectronic plethysmography[68] are examples of bedside monitoring techniques that could move from the research laboratory to the bedside. RTs will need greater understanding of complex physiology and the application of these physiologic monitors.

Paralleling the development of ventilators and respiratory monitoring systems is the development of extracorporeal gas-exchange techniques. Simple, easy-to-operate life-support devices, from those that only remove CO_2,[69] to completely pump-less extracorporeal lung-assist devices,[70] to implantable oxygenators,[71] are being trialed today. Although extracorporeal gas exchange has been used primarily in neonates, these emerging devices and the increasing emphasis on these techniques in other age groups and diseases seem to forecast a need for all RTs to understand the physiology of extracorporeal gas exchange and the operation of these technologies.

There has been an explosion of new aerosol devices and expanded applications of aerosol therapy. Several new types of aerosol device have been released and more are expected to enter the market in the near future. Increasingly there is pairing of specific drugs with specific aerosol

systems.[72,73] However, the RT's largest challenge will be the diversity of diseases in which aerosol will be used. Several antibiotics are now commonly delivered via aerosol,[74,75] and there is trialing of aerosol administration of many drugs, including heparin for fibrosis[76] and asthma,[77] furosomide[78] and opioids for dyspnea,[79] insulin for diabetes,[80] calcitonin for osteoporosis,[81] luteinizing hormone and follicle-stimulating hormone for infertility,[82] human growth hormone for growth,[83] and interferons for hepatitis.[84] These new aerosol therapies will challenge the RT and require a broader knowledge of physiology, general medicine, and pharmacology.

Paralleling the expansion of aerosol delivery is the field of genomics and gene-replacement therapy. Gene polymorphisms may explain the variable response to β_2 agonists[85] and steroids,[86] and susceptibility to acute respiratory distress syndrome[87] and its associated mortality.[88] Much work is underway to develop aerosolized gene-replacement agents for genetic diseases such as alpha-1 antitrypsin deficiency[89] and cystic fibrosis.[90] Advances in gene therapy will also challenge the RT's knowledge base.

The RT in 2015 will have to be able to understand the scientific evidence. Health care in general is increasingly driven by the concept of evidence-based medicine. By 1996 over 1,000,000 randomized controlled trials had been published, many with conflicting results, and most forgotten or disregarded.[91] RTs will need to be able to analyze studies to determine if the findings are appropriate for their practice, and be able to critique the findings and apply them when appropriate. This will require a clear understanding of research methods and statistics.

Disease Management

With the increasing shortage of physicians[92] and nurses[93] there will be an increasing need for other providers to lead in the management of pulmonary disease. In addition, the United States population, which is currently over 300 million, is projected to be over 320 million by 2020.[94] More importantly, the population is aging,[8] so more chronic pulmonary disease (will be seen, which) will require more medical services. The ultimate drivers of the development of the health-care delivery system will probably be cost and quality.

The Disease Management Association of America defines disease management as "a system of coordinated health-care interventions and communications for populations with conditions in which patient self-care efforts are significant."[95] Disease management is an outgrowth of the managed-care model. The intent of disease management is to lower costs by educating and closely monitoring patients and reducing utilization of high-cost services such as hospital and emergency care. Three requirements of disease management are:

Table 8. Disease-Management Skills

Assessment
Physical examination and history
Family-assistance capabilities
Conditions in the home
Ability to distinguish between the important and the unnecessary
Ability to respond to assessment findings
Does the physician need to be contacted?
Should a protocol be initiated?
Critical thinking skills essential
Ability to communicate appropriately
Clarity and accuracy essential
Across all age groups and education levels
Accurate documentation is critical
Must have a command of the strengths and weaknesses of current research
Capable of applying standards and guidelines
Ability to deviate from guidelines when appropriate
Clear understanding of the financial aspects of the health-care business

- The program must be able to identify the patient population that needs to be included in the program.
- There must be accepted standards of care the program uses in its delivery of services. In the management of respiratory disease the National Institute of Health asthma guidelines are a good example.
- The program must be able to measure outcomes and costs.

For a disease-management company to be successful it must attract professionals with a broad base of knowledge and skills, beyond a single disease or organ system. Control of diagnosis and management is still the role of the physician, but the disease-management staff must manage relations with the physician's office and establish the disease-management company's role in patient care. Success in disease management requires staff with a variety of skills (Table 8). Fitting into the disease-management model will be a challenge for RTs. Their scope of knowledge and skill will need to expand and they will need to refine their critical thinking and communication skills, receive training in finance, and increase their ability to analyze the literature.

What Should the RT Do in the Future?

Price Waterhouse Coopers published in 2005 a report titled "HealthCast 2020: Creating a Sustainable Future,"[96] which contained the consensus opinions of 580 hospital executives, physician groups, payers, governments, medical supply companies, and employers, from 27 countries. In the principal scenario described in the report, most of the groups represented are facing rising health-care costs

Table 9. Key Points From the Price Waterhouse Coopers Health Research Institute Report "HealthCast 2020: Creating a Sustainable Future"[96]

Both private and government sources will be needed to fund health care.
Consumerism will change the way care is delivered.
Focus will shift to wellness and prevention.
Pay-for-performance will become the new paradigm.
Information technology will form the backbone of care.
Innovative, flexible care models will emerge.

and diminished resources, while demand continues to grow. The report's consensus was that consumerism, wellness, prevention, pay-for-performance, information technology, and innovative flexible care models are what are needed (Table 9).

Assuming that somehow our political and private agencies will find a way to resolve our financial dilemma, the following 5 trends can be viewed from the perspective of how the RT may help to solve these issues.

Consumerism. Several professionals have little direct patient-care contact and are seldom if ever involved in assisting patients or their families with health-care choices. This is not true for the RT, who should be able to meet the changing demands of the consumer.

Wellness and Prevention. A few professions focus primarily on treating the specific malady presented and currently have little training or ability to function in the role of wellness and disease prevention. This is not true for the RT. Current RT education does provide such training; however, future RT education will need to address this concern in greater scope and depth.

Pay for Performance. Though all professionals contribute to the expense of health care, some have little ability to modify their work patterns to provide good patient outcomes while improving efficiency. Clearly the provision of respiratory care affects patient outcomes, which has increasingly become a focus of respiratory care practice. Future RT education will need to focus more on avoiding iatrogenic injury and on improving patient outcomes.

Information Technology. Most professions are adapting to the advent of electronic health-care information, but few are fully prepared to embrace this new future. Respiratory care has always embraced innovation in technology and can be expected to continue to do so.

Flexible and Innovative Care. Those professions with a broader perspective on health care outside a specific technical arena would do well here.

Using these criteria, the RT would rank highly on meeting these objectives. Additional RT characteristics that fit especially well into these future needs include: comfort with information systems and other advanced and emerging technologies; ability to fluidly interact with patients, families, physician, and other professionals in all care sectors; availability to the consumer at all times and in many current health-care settings; flexibility in adapting to changing treatment modalities and taking on additional duties. The RT is properly positioned to assume this role in the future health-care system, but there are many challenges that must be met before the role can be assumed.

Summary

The health-care system in the United States is on the verge of dramatic change, driven largely by pressure to decrease costs and improve quality. These same forces also drive respiratory care, but the role of the RT in 2015 will also be driven by biomedical innovation and evidence-based medicine. The RT is in a unique position in the health-care system to assume the responsibilities emerging as the health-care system changes, but great challenges confront the profession if these roles are to be assumed. It will require the dedication and commitment of the entire profession if this change is to be achieved.

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Appendix 1

Members of the Task Force on the Future of Respiratory Care

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John R Walton MBA RRT FAARC

Appendix 2

Organizations Invited to Conference 1 on the Future of Respiratory Care

Allergy and Asthma Network - Mothers of Asthmatics
Alpha-1 Advocacy Alliance
Alpha-1 Foundation
American Academy of Family Physicians
American Academy of Pediatrics
American Association for Cardiovascular and Pulmonary Rehabilitation
American Association for Homecare
American Association for Homes and Service for the Aging
American Association of Community Colleges
American College of Allergy and Immunology
American College of Chest Physicians
American Health Care Association
American Hospital Association
American Lung Association
American Respiratory Care Foundation
American Sleep Apnea Association
American Society of Anesthesiologists
American Thoracic Society
Association of Schools of Allied Health Professions
Asthma and Allergy Foundation of America
Blue Cross
California Board for Respiratory Care
California Health Care Foundation
California Quality Collaborative
Center for Disease Control
Center for Health Professions
Centers for Medicare and Medicaid Services
Commission on Accreditation of Allied Health Education Programs
Committee on Accreditation of Respiratory Care
COPD Foundation
COPD-ALERT
Department of Defense Health Affairs
Health Resources and Services Administration/Department of Health and Human Services
Disease Management Association of America
Emphysema Foundation for Our Right to Survive
Federation of American Hospitals
Genetic Alliance
Health Professions Network
Healthcare Financial Management Association
Joint Commission
Leapfrog Group
Medical Group Management Association
National Association for Home Care and Hospice
National Association for Long Term Hospitals and Acute Long Term Hospital Association
National Association for Medical Direction of Respiratory Care
National Board for Respiratory Care
National Heart Lung and Blood Institute
National Home Oxygen Patients Association
National Network for Two-Year Colleges
North Carolina Board for Respiratory Care
Ohio Board for Respiratory Care
Pulmonary Fibrosis Foundation
Society of Critical Care Medicine
United Health Care
United States Office of Personnel Management
United States Public Health Service
Veterans Affairs Administration
Veterans Health Administration

Appendix 3

Attendees at Conference 1 on the Future of Respiratory Care

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William H Dubbs RRT MHA MEd FAARC, AARC Staff
Patrick J Dunne MEd RRT FAARC, Healthcare Productions, Inc
Charles G Durbin MD FAARC, Society of Critical Care Medicine
Robert J Floro RRT, The Joint Commission
Richard M Ford RRT FAARC, AARC Management Section
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Sam P Giordano MBA RRT FAARC, AARC Staff
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National Association for Medical Direction of Respiratory Care
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John R Walton MBA RRT FAARC, Resurrection Health Care
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Competencies Needed by Graduate Respiratory Therapists in 2015 and Beyond

Thomas A Barnes EdD RRT FAARC, David D Gale PhD,
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The American Association for Respiratory Care has established a task force to identify potential new roles and responsibilities of respiratory therapists (RTs) in 2015 and beyond. The first task force conference confirmed that the healthcare system in the United States is on the verge of dramatic change, driven by the need to decrease costs and improve quality. Use of evidence-based protocols that follow a nationally accepted standard of practice, and application of biomedical innovation continue to be important competency areas for RTs. The goal of the second task force conference was to identify specific competencies needed to assure safe and effective execution of RT roles and responsibilities in the future. The education needed by the workforce to assume the new responsibilities emerging as the healthcare system changes starts with a close look at the competencies that will be needed by graduate RTs upon entry into practice. Future specialty practice areas for experienced RTs are identified without defining specific competencies. We present the findings of the task force on the competencies needed by graduate RTs upon entry into practice in 2015. *Key words: respiratory care; respiratory therapist; manpower; education; training; competency; licensure; credentialing; accreditation; credentials; specialty; protocols.* [Respir Care 2010;55(5):601–616.

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Robert M Kacmarek PhD RRT FAARC has disclosed relationships with Covidien, Dräger, Hamilton, General Electric, Newport, and Maquet. Woody V Kageler MD MBA has disclosed a relationship with Nurtur. The other authors have disclosed no conflicts of interest.

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Introduction

The American Association for Respiratory Care (AARC), the professional organization for respiratory therapists (RTs), is sponsoring a project to help ensure the competency and future of the respiratory therapy workforce. The 2015 and Beyond project has brought together stakeholders representing employers, insurers, professional organizations, foundations, state and federal government agencies, patients and consumers, the education community, accrediting and credentialing agencies, and state licensure boards. This process is examining how the profession needs to change to meet the demands of patient care in the future. The 2015 conferences have assumed the difficult task of identifying changes needed to enable the current education system to produce RTs with the skills, knowledge, and competencies necessary to provide optimal care in 2015 and beyond. To achieve these goals, 3 conferences were developed. The first conference, Creating a Vision for Respiratory Care in 2015 and Beyond, held in March 2008, created a foundation for the following 2 conferences by projecting how the changing healthcare delivery system will need to respond to patient needs within the context of diagnosis, treatment, and management of patients with acute and chronic respiratory disorders.

The first conference[1] reported that healthcare in general is expected to undergo marked changes as the country adjusts to its increasing population, large numbers of Baby Boomers turn 65 years old,[2] and attempts are made to improve quality while decreasing the overall cost of healthcare. It is expected that there will be increased emphasis on managing chronic care, wellness, and prevention.[3] An increasing proportion of care in the future will be delivered in lower-cost environments.[4] The introduction of technology will provide greater access to knowledge and enable the public to make more informed choices about their healthcare.[5]

Maintaining a sufficient number of highly skilled healthcare workers will become an increasing challenge. Clinical demands will increase the need for highly skilled practitioners faster than the workforce can expand.[6] The aging of the current workforce will compound this problem. A shortage of respiratory therapy faculty may limit the numbers of students that can enter college and university programs.[6]

The information age of the future will be replete with changes in the scope of practice. The science of respiratory care will continue to expand at the same pace as medicine. Projections regarding the profession must incorporate new technology, new therapeutic approaches, and data-management skills, which the future RT will need to be successful in the workplace. Clinical decisions will be increasingly data driven; with evidence-based medicine guiding the activities of the therapist.[7] The need for therapists to be actively involved in research will continue to grow. The use of protocols to guide respiratory care within and outside the intensive care unit (ICU) will continue to expand.[1] Respiratory care technology will expand, and ven-

Table 1. Conference Program Presentations

Topic	Speaker(s)
Welcome and Introductory Remarks	Sam P Giordano MBA RRT FAARC, American Association for Respiratory Care
Outcomes of the First Conference	Robert M Kacmarek PhD RRT FAARC, Massachusetts General Hospital, Boston, Massachusetts John R Walton MBA RRT FAARC, Resurrection Health Center, Chicago, Illinois
Educating the Future Respiratory Therapist Workforce: Identifying the Options, Planning Assumptions, and Questions to Be Answered	Thomas A Barnes EdD RRT FAARC, Northeastern University, Boston, Massachusetts Woody V Kageler MD MBA, Tarrant County College, Hurst, Texas
Review of Competencies and Supporting Roles Defined in the First Conference	Thomas A Barnes EdD RRT FAARC, Northeastern University, Boston, Massachusetts
Delivery of Respiratory Therapy Via Protocol	Lynda T Goodfellow EdD RRT FAARC, Georgia State University, Atlanta, Georgia
Delivery of Respiratory Therapy to Critically Ill Patients	Robert M Kacmarek PhD RRT FAARC, Massachusetts General Hospital, Boston, Massachusetts
Delivery of Respiratory Therapy to Chronically Ill Patients	David L Vines MSHS RRT FAARC, Rush University, Chicago, Illinois
A View From the Top: How Healthcare Executive Decisions Impact Workforce Mix	Lynn LeBouef BSRC RRT, Tomball Regional Medical Center, Tomball, Texas
Historical and Present-Day Trends in Health Science Accreditation	David D Gale PhD, Eastern Kentucky University, Richmond, Kentucky
Current and Future Accreditation of Respiratory Therapists	Shelley C Mishoe PhD RRT FAARC, Committee on Accreditation of Respiratory Care
Current and Future Credentialing of Respiratory Therapists	Sherry L Barnhart RRT-NPS FAARC, National Board for Respiratory Care
Current and Future Licensing of Respiratory Therapists	Christopher H Logsdon MBA RRT, Ohio Board for Respiratory Care
Taxonomy of Entry and Advanced Level Competencies	Robert L Williams PhD, University of Georgia, Athens, Georgia

tilators will become more sophisticated and incorporate more closed-loop control modes of ventilation. Enhanced monitoring techniques will be incorporated into the basic operation of the mechanical ventilator.[1] An explosion of drugs delivered via aerosol and aerosol devices are on the verge of clinical availability.[1] Drugs affecting many organ systems as well as gene-replacement therapy will be delivered via aerosol.[8] Simpler and more efficient extracorporeal gas-exchange devices will continue to be developed. Care teams will become the standard for providing care in the hospital. These teams may frequently be led by therapists. Therapists will become increasingly involved in patient and staff education, disease management, and the provision of respiratory care in the home.

The second AARC conference, Educating the Future Respiratory Therapist Workforce: Identifying the Options, was similar in format to the first conference.[1] The goal of the second conference was to identify and reach a general agreement on the competencies required to fulfill the scope of practice described in the first conference for graduate RTs and the RT workforce. Graduate RTs are defined as those who begin practice immediately after completion of an accredited education program. The RT workforce is defined as practitioners with varying amounts of work experience and number of credentials. The assumption, taken by the second conference attendees, is that the workforce must be at least as competent as the new graduate RT in 2015. The third conference will be held in 2010. The goal of this conference will be to agree on a plan that ensures by 2015 the RT workforce and graduates of RT education programs have developed the competencies identified by the second conference.

Methods

The genesis, planning, and goals for the 3 AARC conferences on the future of respiratory care have previously been described.[1] The second conference, held in Dallas, Texas, on April 6-8, 2009, started with presentations (Table 1) designed to facilitate discussion from 42 stakeholder representatives in attendance (Appendix 1). Appendix 2 lists the stakeholders who were invited to participate in the conference by the Task Force on the Future of Respiratory Care (Appendix 3). The conference started with presentations about respiratory care practice, education, certification, licensure, and professional roles for the RTs in the future. Following the last presentation, 6 small groups, guided by a facilitator, identified graduate therapist and specialty competencies needed in 2015. The goal of the small groups was to identify the competencies needed by new graduate RTs in 2015 and to identify the minimum competencies required of experienced RTs. Each participant in the 6 small groups wrote, without speaking, on 5 × 8-inch index cards the competencies they thought were needed by graduates in 2015. The competency cards were then discussed, one at a time, and placed on a white sticky board. Similar items were grouped together and discussed until a consensus was reached on competencies that were needed by graduate RTs in 2015. The same consensus strategy was used in the small group meetings to identify specialty practice areas. Complete transcription of the competency statements generated in each small group were prepared overnight and distributed to the entire group on the last morning of the conference. In the plenary session, the composite of 6 small group clusters of competencies was presented on a large white board, discussed and refined until general agreement was reached. Next, small groups provided competency definitions in each major area. An edited version of the competencies developed during the conference was distributed to all conference participants. The conference attendees were asked to complete a Web-based survey designed to register their approval or disapproval with 73 competencies needed by graduate therapists and the RT workforce in 2015. The survey used a 5-category Likert design (5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree) to determine the extent of approval with the competency definitions. Point values for each Likert cat-

Table 2. Competency Area I: Diagnostics*

Descriptor	Definition
A. Pulmonary Function Technology	1. Perform basic spirometry, including adequate coaching, recognition of improperly performed maneuvers, corrective actions, and interpretation of test results.
	2. Compare and evaluate indications and contraindications for advanced pulmonary function tests (plethysmography, diffusion capacity, esophageal pressure, metabolic testing, and diaphragm stimulation) and be able to recognize normal/abnormal results.
B. Sleep	1. Compare and evaluate the indications and contraindications for sleep studies.
	2. Understand results in relation to types of respiratory sleep disorders.
C. Invasive Diagnostic Procedures	1. Explain the indications and contraindications, and general hazards and complications of bronchoscopy.
	2. Describe the bronchoscopy procedure and describe the respiratory therapist's role in assisting the physician.
	3. Monitor and evaluate the patient's clinical condition with pulse oximetry, electrocardiogram, exhaled gas analysis, and other related diagnostic devices.
	4. Perform arterial puncture and sampling and blood analysis.

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

Table 3. Competency Area II: Disease Management*

Descriptor	Definition
A. Chronic Disease Management	1. Understand the etiology, anatomy, pathophysiology, diagnosis, and treatment of cardiopulmonary diseases (eg, asthma, chronic obstructive pulmonary disease) and comorbidities. 2. Communicate and educate to empower and engage patients. 3. Develop, administer, and re-evaluate the care plan: a. Establish specific desired goals and objectives. b. Evaluate the patient. c. Apply a working knowledge of the pharmacology of all organ systems. d. Provide psychosocial, emotional, physical, and spiritual care. e. Education on nutrition, exercise, wellness. f. Environmental assessment and modification. g. Monitoring and follow-up evaluation. h. Development of action plans. i. Apply evidence-based medicine, protocols, and clinical practice guidelines. j. Monitor adherence through patient collaboration and empowerment, including proper and effective device and medication utilization. k. Implement and integrate appropriate patient-education materials and tools. l. Utilize appropriate diagnostic and monitoring tools. m. Document and monitor outcomes (economic, quality, safety, patient satisfaction). n. Communicate, collaborate, and coordinate with physicians, nurses, and other clinicians. o. Assess, implement, and enable patient resources support system (family, services, equipment, personnel). p. Ensure financial/economic support of plan/program and related documentation.
B. Acute Disease Management	1. Develop, administer, evaluate, and modify respiratory care plans in the acute-care setting, using evidence-based medicine, protocols, and clinical practice guidelines. 2. Incorporate the patient/therapist participation principles listed in chronic disease management (see IIA.).

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

egory were assigned only for data analysis purposes to determine the median approval level, and were not shown on the survey form. General agreement on competencies was determined by > 80% of the survey respondents indicating approval or strong approval of the item. The survey was available online to conference participants for 37 days. Three e-mail reminders were sent to improve the response rate.

Results

Large and small group meetings at the conference developed definitions of competencies needed by graduate therapists and the RT workforce in 2015 (Tables 2–11). The results reported are for graduate competency, with the understanding that the workforce must also have, at a minimum, the same knowledge, skills, and attributes. A Web-based survey designed to record approval or disapproval with the competency definitions was completed by 28 (76%) of 37 eligible conference participants (5 AARC staff members were excluded). An 80% or higher approval was used to determine general agreement on 69 of the 73 competency definitions on the survey (Table 12). Limited agreement was reached on 4 competency definitions that were approved by only 61–72% of the survey respondents (Table 13). The sense of the group was that, upon entry into practice in 2015, a graduate RT and RTs already in the workforce must possess 69 competencies in 7 major areas (see Tables 2–11):

Table 4. Competency Area III: Evidence-Based Medicine and Respiratory Care Protocols*

Descriptor	Definition
A. Evidence-Based Medicine	1. Review and critique published research. 2. Explain the meaning of general statistical tests. 3. Apply evidence-based medicine to clinical practice.
B. Respiratory Care Protocols	1. Explain the use of evidence-based medicine in the development and application of hospital-based respiratory care protocols. 2. Evaluate and treat patients in a variety of settings, using the appropriate respiratory care protocols.

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

Table 5. Competency Area IV: Patient Assessment*

Descriptor	Definition
A. Patient Assessment	1. Complete the assessment through direct contact, chart review, and other means as appropriate, and share the information with healthcare team members.
	2. Obtain medical, surgical, and family history.
	3. Obtain social, behavioral, and occupational history, and other historical information incident to the purpose of the current complaint.
B. Diagnostic Data	1. Review and interpret pulmonary function studies (spirometry).
	2. Review and interpret lung volumes and diffusion studies.
	3. Review and interpret arterial blood gases, electrolytes, complete blood cell count, and related laboratory tests.
C. Physical Examination	1. Inspect the chest and extremities to detect deformation, cyanosis, edema, clubbing, and other anomalies.
	2. Measure vital signs (blood pressure, heart rate, respiratory rate).
	3. Evaluate patient breathing effort, ventilatory pattern, and use of accessory muscles.
	4. Measure and document oxygen saturation with oximetry under all appropriate conditions (with or without oxygen at rest and during sleep, ambulation, and exercise).

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

Table 6. Competency Area V: Leadership*

Descriptor	Definition
A. Team Member	Understand the role of being a contributing member of organizational teams as it relates to planning, collaborative decision making, and other team functions.
B. Healthcare Regulatory Systems	Understand fundamental/basic organizational implications of regulatory requirements on the healthcare system.
C. Written and Verbal Communication	Demonstrate effective written and verbal communication with various members of the healthcare team, patients, families, and others (cultural competence and literacy).
D. Healthcare Finance	Demonstrate basic knowledge of health-care and financial reimbursement systems and the need to reduce the cost of delivering respiratory care.
E. Team Leader	Understand the role of team leader: specifically, how to lead groups in care planning, bedside decision making, and collaboration with other healthcare professionals.

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

- Diagnostics
- Disease management
- Evidence-based medicine and respiratory care protocols
- Patient assessment
- Leadership
- Emergency and critical care
- Therapeutics

Also identified in small group meetings at the conference were competencies in specialty areas of respiratory care practice where board certification examinations exist to document competency (Table 14). An attempt to reach general agreement on specialty areas of respiratory care practice needed in 2015 was not made.

Discussion

How Healthcare Executive Decisions Impact the Workforce

Almost a "perfect storm" was the descriptor used by a hospital chief executive at the second conference to describe the impact of the economy on healthcare delivery.[9,10] Many hospital administrators believe the healthcare financing system is broken. Medicare payments have been declining since 2000. To survive economic difficulties, hospitals are taking steps to increase productivity and enhance quality by consolidating staff functions (Table 15).[9] Due to the shortage of nurses, healthcare workers are being asked to take a larger supportive role as adjuncts to traditional nursing functions. Case management and disease management are examples where non-nursing staff, including RTs, have begun to assume new responsibilities. Understanding and implementation of evidenced-based protocols and best practices are important competencies for these expanded duties. Skills as patient educators and a perspective on healthcare outside of technical areas are needed to support these expanded responsibilities (see Table 3). Strategies for reducing healthcare costs, such as increasing productivity, consolidation of service lines, and a greater emphasis on wellness are needed.

The respiratory care profession is in a better position than most to assume new roles (eg, rapid response teams throughout the United States have an RT as one of only 3 or 4 team members). Respiratory distress has been reported to be the highest reason (36%) for rapid response calls.[11] Hospital administrators have observed that RTs can make a difference on a rapid response team by improving oxygenation and ventilation, thereby avoiding cardiac arrest and adding intensive care cost to the system.[11] Hospital administrators need a therapist who can follow the patient until discharge, provide patient education, de-

Table 7. Competency Area VI: Emergency and Critical Care*

Descriptor	Definition
A. Emergency Care	1. Perform basic life support (BLS), advanced cardiovascular life support (ACLS), pediatric advanced life support (PALS), and neonatal resuscitation program (NRP) according to American Heart Association (AHA) guidelines.
	2. Maintain current AHA certification in BLS and ACLS.
	3. Perform endotracheal intubation.
	4. Perform as a member of the rapid response team (medical emergency team).
	5. Participate in mass-casualty staffing to provide airway management, manual and mechanical ventilatory life support, medical gas administration, aerosol delivery of bronchodilators and other agents in the resuscitation of respiratory and cardiovascular failure.
	6. Provide intra-hospital transport of critically and chronically ill patients, provide cardiopulmonary life support and airway control during transport.
	7. Apply knowledge of emergency pharmacology and demonstrate ability to recommend use of pharmacotherapy.
B. Critical Care	1. Apply to practice knowledge, understanding, and analysis of invasive and noninvasive mechanical ventilators.
	2. Apply to practice all ventilation modes currently available on all invasive and noninvasive mechanical ventilators, as well as all adjuncts to the operation of modes.
	3. Interpret ventilator data and hemodynamic monitoring data, and calibrate monitoring devices.
	4. Manage airway devices and sophisticated monitoring systems.
	5. Make treatment recommendations based on waveform graphics, pulmonary mechanics, and related imaging studies.
	6. Apply knowledge, understanding, and analysis of use of therapeutic medical gases in the treatment of critically ill patients.
	7. Apply knowledge and understanding of circulatory gas exchange devices to respiratory therapy practice.
	8. Participate in collaborative care management based on evidence-based protocols.
	9. Deliver therapeutic interventions based on protocol.
	10. Integrate the delivery of basic and/or advanced therapies in conjunction with or without the mechanical ventilator in the care of critically ill patients.
	11. Make recommendations and provide treatment to critically ill patients based on pathophysiology.
	12. Recommend cardiovascular drugs based on knowledge and understanding of pharmacologic action.
	13. Use electronic data systems in practice.

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

velop a care plan, manage each case individually, and work with the physician to move the patient through the system as quickly as possible. In an environment of cost-containment, administrators will expect RTs to be comfortable with patient information, to know what to do with it, to adapt to a rapidly changing environment, and be willing to take on additional responsibilities. A competent RT workforce in 2015 and beyond must focus on: improving quality and reducing costs through utilization of evidence-based practice protocols and improving patient movement across the continuum of care. The workforce will soon be asked to assume new responsibilities, and RT graduates will enter a profession with an expanded scope of practice. The second AARC conference has identified 69 competencies that will be expected of the graduate RT in 2015 and beyond (see Tables 2–11).

Graduate Respiratory Therapist Competencies Needed in 2015

The second conference worked with the limitation of trying to achieve consensus among a large group of attendees. The decision to use a "general agreement" approach was deemed reasonable if a high threshold was used (> 80% approval for each competency definition). This strategy yielded 4 competency definitions (see Table 13) that received only "limited agreement" (approval by 61–72% of the attendees who completed the post-conference online survey). We believe that these 4 competency definitions were either too broad (in the case of IC5 Invasive Procedures and IVB4 Diagnostic Data) or fell into specialty practice areas (in the case of IA3 Cardiopulmonary Exercise Studies and IB3 Evaluate Sleep Study Results).

There was general agreement on the other 69 competencies needed by graduate RTs. The sense of the group was that graduates in 2015 must be better prepared to enter the workforce and provide basic and critical respiratory care than graduates of today. Graduate therapists must be able to fully operate ICU ventilators and discuss all commonly used modes of ventilation as well as their indications and limitations. They must be able to provide ventilator care based on protocols. Graduate RTs must be capable of operating and applying new approaches to patient monitoring that are currently being researched. They must fully understand the tenets of evidence-based medicine, including the ability to critically read and critique the medical literature and discuss the meaning of statistical

Table 8. Competency Area VII: Therapeutics*†

Descriptor	Definition
A. Assessment of Need for Therapy	Assess the need for therapies in all patient settings (acute, non-acute): 1. Medical gas therapy 2. Humidity therapy 3. Aerosol therapy 4. Hyperinflation therapy 5. Bronchial hygiene therapy 6. Airway management 7. Mechanical ventilation
B. Assessment Prior to Therapy	1. Review order or implement protocol. 2. Review patient history, laboratory results, imaging data. 3. Determine indications for therapy. 4. Interview and conduct physical examination of patient. 5. Determine appropriateness of order. 6. Determine need for physician communication.
C. Administration of Therapy	1. Select and assemble equipment. 2. Apply and administer therapy. 3. Educate and instruct patient. 4. Recognize and rectify equipment malfunction (troubleshooting). 5. Maintain infection control.
D. Evaluation of Therapy	1. Recognize complications and adverse affects. 2. Respond to complications. 3. Recommend therapy modifications. 4. Assess therapy effectiveness. 5. Document therapy.

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.
† See Tables 9–11 for application of competencies to respiratory care practice.

analysis. Therapists must have a broad understanding of pharmacology for all organ systems and a detailed knowledge of drugs delivered via the respiratory system. A working knowledge of the clinical management of all forms of cardiopulmonary disease is essential for all new graduates. They must have a working proficiency of sleep medicine, disease management, alternate-site respiratory care, and home care. Therapists must continue to be able to administer and interpret the results of basic respiratory care techniques, pulmonary function, radiographic, and laboratory studies. The graduate RT in 2015 must be proficient as a member of a care team and must understand leadership characteristics as well as be proficient in patient and staff education techniques and the provision of culturally sensitive care, and be ready to assume a patient advocate role when appropriate. The graduate therapist must be prepared to actively participate in planning patient care, by providing direction and input into the decisions regarding the provision of respiratory care in all care settings. Graduate RTs must understand that their role is to be an expert on respiratory care and they must possess the ability to consult on the provision of respiratory care. There was general agreement (70% strongly agreed, 23% agreed) among the conference participants that delivery of respiratory therapy via protocol would become more widely adapted by the RT workforce by 2015 (see Tables 4 and 12).

The Need for Delivery of Respiratory Therapy Via Protocol

The delivery of respiratory care via protocol is directly linked to evidence-based medicine and control of quality and cost of healthcare delivery.[1] The second conference took protocols a step further and identified the competencies needed to deliver respiratory care via protocol. RTs of 2015 should be able to explain the use of evidence-based medicine in the development and application of hospital-based respiratory care protocols, and be able to evaluate and treat patients in a variety of settings, using appropriate respiratory care protocols (see Table 4). Delivery of respiratory therapy via protocol has been defined by the AARC Protocol Implementation Committee as "Initiation or modification of a patient care plan following a predetermined, structured set of physician orders, instructions or interventions in which the therapist is allowed to initiate, discontinue, refine, transition, or restart therapy as the patient's medical condition dictates."[12] Protocols for delivery of respiratory therapy were first described by Tietsort in 1981, as a new therapy delivery system.[13] Nearly 3 decades later, the use of a comprehensive protocol service is considered an important characteristic of change readiness in RT departments.[14] The technology and medical advances that the RT will encounter in 2015 will require the ability to recommend changes in respiratory therapy protocols.[1] To do this, RTs will need to understand the principles of evidence-based medicine and to identify when protocols need to be updated based on the best evidence reported from randomized controlled trials.[15] Following established evidence-based medicine protocols does not remove the need for critical thinking and problem solving by RTs.[16]

Graduate therapists need to begin RT practice with excellent critical thinking skills, to deal with complex technology and protocols (see Tables 7 and 16). Problem solving skills are needed to calibrate, operate, and troubleshoot complex technology, such as microprocessor-driven, multimode mechanical ventilators and other sophisticated life-support equipment.[1] Patient management decisions must be made when using RT protocols such as evidence-based ventilator weaning.[16] When a patient fails a weaning trial, critical thinking decisions must include a search for other causes or complicating factors such as adequacy of pain control, appropriateness of sedation, fluid status, bronchodilator need, and control of myocardial ischemia and other disease processes

Table 9. Competency Area VII: Therapeutics - Application to Respiratory Care Practice*

Descriptor	Definition
A. Medical Gas Therapy	Apply knowledge, understanding, and troubleshooting skills to gas delivery systems for adult, pediatric, and neonatal patients. 1. High-pressure cylinders 2. Regulators and flow meters 3. Liquid-oxygen systems (stationary and portable) 4. Oxygen concentrators (stationary and portable) 5. High-flow air-entrainment systems (eg, Downs flow generator, Caradyne Whisper Flow, Maxtec) 6. Oxygen and air-flow-meter mixing systems (requires competence in algebra) 7. Air/oxygen blenders 8. Hyperbaric oxygen systems 9. Sub-ambient oxygen delivery systems (neonatal only) 10. Nasal cannulas 11. High-flow nasal cannulas (eg, Vapotherm, Aequinox, Maxtec) 12. Reservoir cannulas 13. Nasal masks 14. Non-reservoir masks 15. Reservoir masks 16. Air-entrainment masks 17. Hood/head-enclosures (neonatal only) 18. Aerosol mist tents 19. Transtracheal oxygen therapy 20. Nitric oxide therapy 21. Helium/oxygen therapy
B. Humidity Therapy	Apply knowledge, understanding, and troubleshooting skills to humidity therapy systems for adult, pediatric, and neonatal patients. 1. Unheated bubble humidifiers 2. Active and passive heat-and-moisture exchangers (HMEs) 3. Heated humidifiers for medical gas delivery systems via mask or tracheal catheter

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

that can affect discontinuation attempts.[1] Randomized controlled trials have established that the economic and clinical outcomes of mechanically ventilated patients managed under protocols by RTs were better than those of control patients managed with standard care.[17-19] The use of protocol-driven ventilator weaning by RTs has been shown to reduce use of mechanical ventilation, rate of early re-intubation, and ventilator-associated pneumonia.[20,21]

RTs in 2015 must assume greater responsibility for acute and chronic disease management (see Tables 3 and 6), in order to reduce the cost of healthcare.[22] The necessary critical thinking skills can be broken down into 3 domains: technology, patients, and clinicians (Table 17).[23] Further delineation of critical thinking skills needed by RTs has been identified by Mishoe, in 7 key areas: prioritizing, anticipating, trouble-shooting, communicating, negotiating, decision making, and reflecting (see Table 16).[23] A high level of critical thinking skills and the ability to apply the appropriate best-practice protocols was identified by both AARC conferences as a requisite for treatment of critically ill patients in ICUs and emergency departments.

Respiratory Care Delivered to Critically Ill Patients by Respiratory Therapists

Respiratory care delivered to critically ill patients by RTs was identified in the first conference as a major competency area.[1] The second conference explored in more detail the competencies needed by RTs in the future to deliver respiratory care to critically ill patients (see Table 7). Increasingly more sophisticated care and equipment is the hallmark of intensive care. The graduate RT must be prepared to enter this work environment as the expert on respiratory care and be ready to consult on the provision of respiratory care. This requires a working knowledge of the approaches used to provide mechanical ventilation to patients with various disease states (eg, chronic obstructive pulmonary disease, acute lung injury/acute respiratory distress syndrome, sepsis, trauma, postoperative care, asthma, and pneumonia).[18] Operational proficiency with a variety of mechanical ventilators used in adult and pediatric ICUs is essential. The graduate therapist must understand the differences among these ventilators, and be capable of

Table 10. Competency Area VII: Therapeutics - Application to Respiratory Care Practice*

Descriptor	Definition
C. Aerosol Therapy	Apply knowledge, understanding, and troubleshooting skills to aerosol systems for adult, pediatric, and neonatal patients. 1. Non-medicated (water/saline): Large-volume pneumatic nebulizers, via mask, T-piece, or tracheostomy collar; heated and unheated 2. For delivery of medication a. Small-volume pneumatic nebulizers for nebulization of liquids b. Intermittent c. Breath-actuated d. Nebulizers for bronchial challenge testing 3. Nebulizers for continuous nebulization 4. Ultrasonic nebulizers 5. Pressurized metered-dose inhalers 6. Inhalers and dry-powder inhalers 7. Nebulizers using porous membranes 8. Competency in pharmacology nomenclature, physiologic action, adverse effects, doses: a. Adrenergics b. Anticholinergics, cholinergics c. Decongestants, antimicrobials d. Mucolytic/proteolytics e. Pulmonary vasodilators 9. Peak flow meters and inspiratory flow meters 10. Mathematics required: competency in algebraic calculation of and modification of drug dosing: (1) based on weight of patient; (2) conversion of dosing based on mg, mL, and % strength or ratio
D. Hyperinflation Therapy	Apply knowledge, understanding, and troubleshooting skills to hyperinflation equipment for adult, pediatric, and neonatal patients. 1. Incentive spirometers (flow-based and volume-based) 2. Continuous positive airway pressure (CPAP) devices 3. Expiratory positive airway pressure (EPAP) devices 4. Intermittent positive-pressure breathing devices 5. Manual hyperinflation with bag-valve-mask devices

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

discussing the positives and negatives of each unit. They must have a working knowledge of common modes of ventilation currently available on all mechanical ventilators. Graduate therapists must be proficient in the operation of these modes and understand the physiology supporting the use of each mode so that they can lead discussions on appropriate application. They must have a working knowledge of the indications, contraindications, risks, and benefits of each mode of ventilation.[21]

RTs must be able to apply evidence-based protocols to the management of mechanically ventilated patients (eg, the Acute Respiratory Distress Syndrome Network protocol, see Table 7).[19] Critical thinking and communication skills to discuss their position on the care of patients during rounds and to advocate for the best approach to respiratory care for the specific patient are essential.[23] Interaction with the ICU patient care team requires an in-depth working knowledge of evidence-based medicine.[15] The large number of randomized controlled trials in respiratory critical care requires the graduate to have the ability to critically review the literature and to critique the statistical methodology used to evaluate study results.[13]

In addition to a working knowledge of classic invasive mechanical ventilation, the graduate therapist must possess the ability to differentiate between the indications for invasive and noninvasive ventilation and high-frequency oscillation. They must also recognize the indications for rescue therapies such as extracorporeal membrane oxygenation. The therapist should be relied upon as an expert source of information on when and how these techniques should be applied.[18]

Essential to the care of critically ill patients is a broad knowledge of the various approaches to monitoring. This includes laboratory, radiograph, computed tomography, and magnetic resonance imaging data, and bedside monitoring data (Tables 2 and 5).[1] The graduate therapist must be proficient in the monitoring of hemodynamics and must be able to evaluate pressure, flow, and volume waveforms to determine how the mechanical ventilator should be adjusted, and have the ability to recommend alternate modes

Table 11. Competency Area VII: Therapeutics - Application to Respiratory Care Practice*

Descriptor	Definition
E. Bronchial Hygiene Therapy	Apply knowledge, understanding, and troubleshooting skills to bronchial hygiene therapy for adult, pediatric, and neonatal patients. 1. Positioning for bronchial drainage 2. Chest percussion: manual and mechanical percussor 3. Vibratory continuous positive airway pressure (CPAP) 4. Expiratory positive airway pressure (EPAP) devices 5. External chest-wall-vibration devices 6. Assist physician in therapeutic bronchoscopy 7. Intrapulmonary percussive ventilation (IPV) 8. Cough-assist device (insufflator-exsufflator)
F. Airway Management	Apply knowledge, understanding, and troubleshooting skills to airway management for adult, pediatric, and neonatal patients. 1. Head-tilt chin-lift airway-opening maneuver 2. Oropharyngeal airway 3. Nasopharyngeal airway 4. Face mask and bag-valve-mask 5. Care of oral and nasal endotracheal tubes 6. Competency in advising discontinuance or change to alternative airway based on assessment/protocols 7. Care of tracheostomy tube (competency in advising decannulation or change to alternative airway based on assessment/protocols) 8. Care of tracheostomy "button" or valve 9. Assist physician in placing surgical or percutaneous tracheostomy tube. 10. Suction via artificial airway, operate suction system, select suction catheter.
G. Mechanical Ventilation	Apply knowledge, understanding, and troubleshooting skills to mechanical ventilation for adult, pediatric, and neonatal patients. 1. Incorporate the mechanical ventilation principles listed in critical care (see Table 7 VIB) 2. CPAP devices 3. Bi-level positive airway pressure (BiPAP) devices 4. Noninvasive-ventilation interfaces: nasal mask, nasal pillows, oro-nasal mask, full-face mask, helmet

* Upon entry into the workforce, a graduate respiratory therapist must possess all of these competencies.

of ventilation to improve patient-ventilator synchrony. The graduate therapist should be conversant in new monitoring technology.

In the ICU, a working knowledge of pharmacology is required: specifically, an understanding of drugs that affect the patient's interaction with the mechanical ventilator, and agents used to treat cardiovascular dysfunction. A highly proficient knowledge of drugs that affect the respiratory system is critical. A graduate therapist must be able to modify respiratory care based on integration of data from the patient, the ventilator, hemodynamic monitors, laboratory reports, and radiographs. Competency to practice respiratory therapy in 2015 and beyond will continue to be certified by credentialing and licensure boards to protect the public.

Credentialing of Respiratory Therapists to Certify Competency

Graduate RTs are currently required to take 3 examinations to become a registered RT (RRT).[25] First they must pass the CRT examination and be recognized as a Certified Respiratory Therapist. This examination is also used by most states as the state licensure examination. Upon successful completion of the CRT examination, graduate therapists are expected to take the RRT examination. The RRT examination is taken in 2 parts: a written multiple-choice examination, followed by a clinical simulation examination. Specialty credentialing is also currently available in pulmonary function technology, neonatal/pediatric respiratory care, and sleep-disorders testing and therapeutic intervention (see Table 14).[26]

While most graduates of respiratory therapy programs take the CRT examination, a smaller percentage take the RRT examination. As of 2008, 115,583 individuals have received the RRT credential, and 94,638 therapists hold the CRT credential (all RRTs also hold the CRT credential). The current 2-tier credentialing system and state laws that require successful completion of only the CRT examination for licensure offer insufficient incentives to graduating RTs to demonstrate competency in areas tested by the RRT examinations. In 2003, the AARC, the Commis-

Table 12. Competencies on Which General Agreement Was Reached by the Second Conference Attendees*

Competency Area†	Questions (n = 73)	Respondents (n, %)	Likert-Scale Scores (n, %)‡					Median	Min	Max	Total Score§
			Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree				
I. Diagnostics											
A. Pulmonary function technology‖	3	28 (76)	47 (56)	21 (25)	9 (11)	7 (8)	0 (0)	5	2	5	84
B. Sleep‖	3	28 (76)	30 (36)	43 (51)	5 (6)	6 (7)	1 (1)	4	1	5	84
C. Invasive procedures‖	5	28 (76)	100 (71)	27 (19)	9 (6)	3 (2)	1 (1)	5	1	5	140
II. Disease Management											
A. Chronic	3	28 (76)	64 (76)	18 (21)	1 (1)	1 (1)	0 (0)	5	2	5	84
B. Acute	3	28 (76)	41 (76)	10 (18)	5 (9)	0 (0)	0 (0)	5	3	5	84
III. Evidence-Based Medicine and Respiratory Care Protocols											
A. Evidence-based medicine	3	28 (76)	46 (55)	24 (29)	7 (8)	5 (6)	2 (2)	5	1	5	84
B. Respiratory care protocols	2	28 (76)	39 (70)	13 (23)	4 (7)	0 (0)	0 (0)	5	3	5	56
IV. Patient Assessment											
A. Patient assessment	3	28 (76)	68 (81)	11 (13)	5 (6)	0 (0)	0 (0)	5	3	5	84
B. Diagnostic data‖	4	27 (73)	74 (68)	21 (19)	8 (7)	5 (5)	0 (0)	5	2	5	108
C. Physical examination	4	27 (73)	104 (96)	4 (4)	0 (0)	0 (0)	0 (0)	5	4	5	108
V. Leadership											
A. Team member	1	28 (76)	24 (86)	3 (11)	1 (4)	0 (0)	0 (0)	5	3	5	28
B. Healthcare regulatory system	1	28 (76)	15 (54)	11 (39)	1 (4)	1 (4)	0 (0)	5	2	5	28
C. Written and verbal communication	1	28 (76)	26 (93)	2 (7)	0 (0)	0 (0)	0 (0)	5	4	5	28
D. Healthcare finance	1	28 (76)	16 (57)	8 (29)	3 (11)	1 (4)	0 (0)	5	2	5	28
E. Team leader	1	28 (76)	19 (68)	4 (14)	3 (11)	1 (4)	1 (0)	5	1	5	28
VI. Emergency and Critical Care											
A. Emergency care	7	27 (73)	139 (74)	37 (20)	9 (5)	4 (2)	0 (0)	5	2	5	189
B. Critical care	13	26 (70)	252 (75)	61 (18)	17 (5)	8 (2)	0 (0)	5	2	5	338
VII. Therapeutics											
A. Assessment of need for therapy	1	28 (76)	18 (64)	10 (36)	0 (0)	0 (0)	0 (0)	5	4	5	28
B. Assessment prior to therapy	6	28 (76)	128 (76)	37 (22)	3 (2)	0 (0)	0 (0)	5	3	5	168
C. Administration of therapy	5	28 (76)	121 (86)	19 (14)	0 (0)	0 (0)	0 (0)	5	4	5	140
D. Evaluation of therapy	5	28 (76)	116 (83)	18 (13)	1 (1)	5 (4)	0 (0)	5	2	5	140

* General agreement was defined as approval of > 80% of respondents to the second conference survey.
† See Tables 2–11 for definitions of competency areas.
‡ Likert scale: 5 = strongly agree, 4 =agree, 3 = undecided, 2 = disagree, 1 = strongly disagree. Likert category is the total for all questions in that competency area.
§ Total score = number of respondents × number of questions in that competency area.
‖ Includes one definition on which limited agreement was reached (see Table 13).

sion on Accreditation of Respiratory Care (CoARC), and the National Board for Respiratory Care (NBRC) recognized the RRT credential as the "standard of excellence" for RTs. At the request of the AARC and CoARC, the NBRC approved a policy on January 1, 2005, that requires graduates of registry-eligible programs to complete the CRT and RRT examinations within 3 years of graduation.[25] Accreditation of RT education programs is also fundamentally important to assure that graduate RTs are ready to enter the RT workforce.

Respiratory Therapy Accreditation to Assure Graduate Respiratory Therapist Competency

The respiratory therapy education system has relied on accreditation to validate the quality of programs. Graduation from an accredited program is a requirement for licensure in many states, and is required to take certification and registry examinations. CoARC's mission is to promote quality respiratory therapy education through its accreditation services. CoARC indicates that accreditation provides consumer protection, advances and enhances the profession, and protects against compromise of education quality. Effective November 2009, CoARC separated from the Commission for Accreditation of Allied Health Education Programs to become a freestanding accrediting organization for respiratory therapy programs.[27] The sponsoring and participating organizations (Table 18) have agreed to continue their supporting roles of CoARC.

CoARC accreditation standards focus on outcomes such as student pass rates on credentialing examinations, rate of postgraduate employment, employer satisfaction with grad-

Table 13. Competencies on Which Limited Agreement Was Reached by the Second Conference Attendees*

Competency Area†	Respondents (*n*, %)	Likert-Scale Scores (*n*, %)‡					Median	Min	Max
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree			
I. Diagnostics									
A. Pulmonary function technology									
3. Evaluate and interpret the results of a cardiopulmonary exercise study.	28 (76)	7 (25)	11 (40)	5 (18)	5 (18)	0 (0)	4	2	5
B. Sleep									
3. Evaluate sleep study results to determine possible therapies	28 (76)	5 (18)	15 (54)	2 (7)	5 (18)	1 (4)	4	1	5
C. Invasive Procedures									
5. Describe indications and contraindications for open lung biopsy, mediastinoscopy, and transthoracic needle biopsy, and recognize abnormal results.	28 (76)	7 (25)	10 (36)	7 (25)	3 (11)	1 (4)	4	1	5
IV. Patient Assessment									
B. Diagnostic data									
4. Review and interpret imaging studies, including radiograph, computed tomogram, ventilation/perfusion scan, and magnetic resonance imaging scan, as derived from reports, and, where possible, direct inspection of studies.	27 (73)	11 (41)	7 (26)	4 (15)	5 (18)	0 (0)	4	2	5

* Limited agreement was defined as approval of > 61% and < 72% of respondents to the second conference survey.
† See Tables 2–11 for definitions of competency areas.
‡ Likert scale: 5 = strongly agree, 4 =agree, 3 = undecided, 2 = disagree, 1 = strongly disagree. Likert category is the total for all questions in that competency area.

Table 14. Specialty Areas Identified in Small Group Sessions

Specialty Area	Credential	Certification Board
Neonatal-Pediatric Specialist	RRT-NPS, CRT-NPS	NBRC
Certified/Registered Pulmonary Function Technologist	CPFT, RPFT	NBRC
Sleep Disorders Specialist	RRT-SDS, CRT-SDS	NBRC
Adult Critical Care Specialist (Likely available in the 4th quarter of 2011)	(Not determined)	NBRC
Registered Polysomnographic Technologist	RPSGT	BRPT
Asthma Educator (Certified)	AE-C	AAE
ECMO Specialist	Institutional Guidelines	ELSO
Certified Cardiographic Technician	CCT	CCI
Registered Cardiovascular Invasive Specialist	RCIS	CCI
Registered Cardiac Sonographer	RCS	CCI
Certified Clinical Exercise Specialist	CCES	ACSM
Certified Hyperbaric Technologist	CHT	NBDHMT

NBRC = National Board for Respiratory Care
BRPT = Board of Registered Polysomnographic Technologists
AAE = Association of Asthma Educators
ELSO = Extracorporeal Life Support Organization
CCI = Cardiovascular Credentialing International
ACSM = American College of Sports Medicine
NBDHMT = National Board of Diving and Hyperbaric Medicine Technology
ECMO = Extracorporeal Membrane Oxygenation

uates, and student satisfaction with the program.[27] These are important measures. However, changes in the health-care system may impose additional demands on education programs for RTs (see Tables 2–11). Drivers of these

Table 15. Impact of Economy on 568 Hospitals: Dealing With the Poor Economy[9]

Strategy	Selected This Option (%)
Cut administrative costs	59
Reduce staff	53
Reduce services	27
Divest assets	12
Consider merger	8

changes include: the cost of healthcare; changing demographics of the population; technology advances; consumerism in healthcare; and shifts in the disease burden. As noted in the report to U.S. Secretary of Education (2005-2009) Margaret Spellings, "A Test of Leadership: Charting the Future of United States Higher Education," the country desires "a higher-education system that gives Americans the workplace skills they need to adapt to a rapidly changing economy."[28] A clear vision of the transition from graduate RT to practicing registered RT to expertise in a respiratory care specialty area is needed for the profession to adapt to a rapidly changing economy.

The Transition From Graduate Therapist to Specialty Practice

General agreement was reached by those attending the conference that the terms "entry-level" and "advanced-level" do not sufficiently describe the competencies needed by the respiratory therapy profession. "Graduate therapist" was strongly supported as the descriptor that should be used to describe new RT graduates from education programs in 2015 and beyond. CoARC has announced that starting in 2010 they will accredit only RT programs whose students are eligible for the NBRC RRT examinations.[27] The assumption is that quality programs graduate students who will be successful in obtaining the RRT credential shortly after graduation. A "graduate therapist" was defined as a person who has graduated from a CoARC-accredited program but has not passed the RRT examinations. The transition into the workforce can best be described as moving from graduate therapist to registered RT to obtaining competence in one or more specialty areas of practice (see Table 14). An experienced RT can practice without specialty credentials in any area of respiratory care. However, market forces drive consumers to seek credentialed specialists. The importance of documenting competence and quality of care by administering national board specialty certification examinations has been in place since 1917, when the American Board for Ophthalmic Examination was incorporated.[29] The concept of more experienced RRTs working in specialized areas such as neonatology and pediatrics, pulmonary function technology, and extracorporeal life support dates back to the introduction of the NBRC Certified Pulmonary Function Technologist (CPFT) examination in 1984, the Registered Pulmonary Function Technologist (RPFT) examination in 1987, the

Table 16. Critical Thinking Skills

Prioritizing
Arrange scheduled work to treat the most critical or unstable patients first.
Adjust to unexpected circumstances.
Make rapid adjustments to the work schedule.
Respond quickly to a changing situation.
Solve problems while completing other tasks.
Anticipating
Think ahead to avoid problems.
Recognize the early signs of a changing situation.
Continually assess situations.
Foresee adverse outcomes.
Restock supplies prior to depletion.
Troubleshooting
Locate and correct technical problems.
Find lost equipment.
Teach staff to troubleshoot equipment.
Communicating
Gather and give information: verbal, non-verbal, and written.
Establish working relationships with others.
Modify communication dependent on the practitioner and the situation.
Deliver the appropriate message with clarity, professionalism, and good timing.
Speak with appropriate intonation, facial expression, and body language.
Negotiating
Negotiate a change in behavior.
Mandate a needed change in behavior when negotiation is inappropriate.
Use managers and supervisors appropriately to counsel staff on changes in behavior.
Present a suggestion in the form of a question.
Avoid negotiating to a breaking point.
Negotiate with veracity for emergency situations worked outside of medical orders.
Decision Making
Reach a judgment or conclusion.
Make a decisions during grand rounds or when using protocols.
Ask questions and share information before making a decision.
Rely on common sense, gut feelings, intuition.
Make decisions based on experience.
Use trial and error when no evidence is available.
Reflecting
Reflect on work, patients, decisions, profession.
See multiple perspectives.
Accept that there is no solution at times.
Develop coping mechanisms.
Find greater compassion for patients
Develop a broader context of healthcare: costs, services, reform, restructuring.

Table 17. Critical Thinking Domains

Technology
Malfunctions
Shortages
Recommending appropriate equipment
Modifying for novel care
Patients
Rare diseases
Neonatal delivery and transport
Emergencies
Assessments
Modification of therapy
Unexpected responses to therapy
Problems
Multiple patients demanding time
Mistakes
Responding to questions
Clinicians
Communicating with nurses, physicians, and others
Medical orders do not coincide with care plan
Conflicting requests
Unclear orders
Decision making
Making recommendations
Multi-tasking

Table 18. Sponsors and Representatives of the Commission for Accreditation of Respiratory Care

Organizations	Representatives (*n*)
American Association for Respiratory Care*	6
American Society of Anesthesiologists*	2
American College of Chest Physicians*	2
American Thoracic Society*	2
American Society of Allied Health Professions†	1
National Network of Health-Career Programs in Two-Year Colleges†	1
At-large members	2
Public members	1
Immediate past commission chair	1
Total	18

* Sponsors
† Organization invited to send a representative.

Neonatal and Pediatric Specialist (NPS) examination in 1991, the Sleep Disorders Specialist (SDS) examination in 2008, and the future Adult Critical Care examination scheduled for 2011. The NBRC reports that as of 2008 they have certified 13,311 RTs in pulmonary function technology and 10,440 RTs in neonatology and pediatrics.[25] The NBRC uses a 5-step process to develop a new specialty examination: (1) Viability study with a favorable conclusion; (2) National personnel survey to determine if a sufficiently large population of potentially credentialed practitioners exists; (3) National job analysis study; (4) Development of test specifications and multiple, parallel forms of the specialty examination; and (5) Validation of the new specialty examination to ensure statistical evidence exists between practitioners' examination scores and the tasks assessed on the examination.[26]

Summary

The role and responsibilities of the RT workforce will change substantially in the near future, in response to major changes in the United States healthcare system. The second AARC conference has reached general agreement on the competencies needed by graduate therapists entering the RT workforce in 2015. The next conference, to be held in 2010, will determine how the education system, program accreditation, and licensure will need to change to prepare for the competencies required of the RT workforce in the future and how this can be accomplished with minimal impact on the workforce.

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Appendix 1 Attendees at the Second Conference on the Future of Respiratory Care

Ade Adesanya MD, Society of Critical Care Medicine
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Sherry L Barnhart RRT-NPS FAARC, National Board for Respiratory Care
Will D Beachey PhD RRT FAARC, Committee on Accreditation of Respiratory Care
Hugh W Bonner PhD, Association of Schools of Allied Health Professions
Kent Christopher MD, AARC Board of Medical Advisors
William Croft MS RRT-NPS, North Carolina Board for Respiratory Care
William H Dubbs RRT MHA MEd FAARC, AARC Staff
Edna Fiore, Emphysema Foundation for Our Right to Survive
Sondra Flemming MSc RN, National Network of Health Career Programs in Two-Year Colleges
David D Gale PhD, Association of Schools of Allied Health Professions
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Kathy J Rye EdD RRT FAARC, Committee on Accreditation of Respiratory Care
David C Shelledy PhD RRT FAARC, Association of Schools of Allied Health Professions
Thomas J Smalling PhD RRT RPFT RPSGT FAARC, Committee on Accreditation of Respiratory Care
Charles B Spearman MSEd RRT FAARC, California Board for Respiratory Care

Gary A Smith FAARC, National Board for Respiratory Care
Alvin V Thomas MD, American College of Chest Physicians
Mark W Thomas MS RPh, American Society of Health System Pharmacists
David L Vines MSHS RRT FAARC, Rush University
John W Walsh, COPD and Alpha-1 Foundation
John R Walton MBA RRT FAARC, Resurrection Health Care
Jeffrey J Ward MEd RRT FAARC, AARC Education Section Chair
Robert L Williams PhD, University of Georgia

Appendix 2 Organizations Invited to the Second Conference on the Future of Respiratory Care

Allergy and Asthma Network - Mothers of Asthmatics
Alpha-1 Foundation
American Academy of Family Physicians
American Academy of Pediatrics
American Association for Cardiovascular and Pulmonary Rehabilitation
American Association for Homecare
American Association for Homes and Service for the Aging
American Association for Respiratory Care
American Association of Community Colleges
American Association of Critical Care Nurses
American College of Allergy and Immunology
American College of Chest Physicians
American College of Physicians
American Health Care Association
American Hospital Association
American Lung Association
American Respiratory Care Foundation
American Sleep Apnea Association
American Society of Anesthesiologists
American Society of Health System Pharmacists
American Thoracic Society
Association of Asthma Educators
Asthma and Allergy Foundation of America
Blue Cross
California Board for Respiratory Care
California Health Care Foundation
California Quality Collaborative
Catholic Health Association of the United States
Center for Disease Control
Center for the Health Professions
Centers for Medicare and Medicaid Services
Commission on Accreditation of Allied Health Education Programs
Committee on Accreditation of Respiratory Care
COPD Foundation
COPD-ALERT
Department of Defense Health Affairs
Dallas-Fort Worth Business Group on Healthcare
Disease Management Association of America
Emphysema Foundation for Our Right to Survive
Federation of American Hospitals
Genetic Alliance
Healthcare Financial Management Association
Leapfrog
Medical Group Management Association
National Board for Respiratory Care
National Association for Home Care and Hospice
National Association for Long Term Hospitals and Acute Long Term Hospital Association
National Association for Medical Direction of Respiratory Care
National Heart Lung and Blood Institute
National Home Oxygen Patients Association
National Network of Health Career Programs in Two-Year Colleges
New York State Board of Respiratory Therapy
North Carolina Board for Respiratory Care
Ohio Board for Respiratory Care
Pulmonary Fibrosis Foundation
Robert Wood Johnson Foundation
Society of Critical Care Medicine
Society of Hospital Medicine
Texas Department of State Health Services - Respiratory Therapy Program
Association of Schools of Allied Health Professions
The Joint Commission
US Department of Health and Human Services
US Department of Health and Human Services/Health Resources and Services Administration
United States Office of Personnel Management
United Health Care
United States Public Health Service
Veterans Administration

Appendix 3 Task Force on the Future of Respiratory Care

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Respiratory Care

This section contains information about respiratory care services and program coverage (*California Code of Regulations* [CCR], Title 22, Section 51082.1).

Respiratory Care Services

Respiratory care practitioner services are medically necessary services rendered within the scope of practice of a respiratory care practitioner under the supervision of a physician. The services must be for the therapy, management, rehabilitation, diagnostic evaluation and care of patients with deficiencies and abnormalities which affect the pulmonary system and associated aspects of cardiopulmonary and other systems functions. These services include, but are not limited to:

1. Direct and indirect pulmonary care services

2. Direct and indirect respiratory care procedures, including the administration of pharmacological, diagnostic and therapeutic agents necessary to implement treatment, disease prevention, pulmonary rehabilitation or diagnostic regimen prescribed by a physician and surgeon

3. Observation and monitoring of signs and symptoms, general behavior and physiological responses to respiratory care treatment and diagnostic testing

4. Diagnostic and therapeutic services which may include:

   - Administration of medical gases (except general anesthetics), aerosols, humidification and environmental control systems
   - Pharmacologic agents related to respiratory care procedures
   - Mechanical or physiological ventilatory support
   - Bronchopulmonary hygiene
   - Cardiopulmonary resuscitation
   - Maintenance of natural airways
   - Insertion without cutting tissues and maintenance of artificial airways
   - Diagnostic and testing techniques required for implementation of respiratory care protocols
   - Collection and analysis of blood specimens, and specimens from the respiratory tract
   - Analysis of blood gases and respiratory secretions

Program Coverage

The following coverage limitations and billing requirements apply to respiratory care services.

Outpatient Setting

"Respiratory care is covered as a physician service. Respiratory care is subject to authorization except when personally rendered by the physician. Authorization requests shall include clinical justification for the services and the nature, frequency and expected duration of the respiratory care." (CCR, Title 22, Section 51305[g])

The term "personally rendered by the physician" must include all of the following service conditions:

- The service is rendered directly by a physician or a respiratory therapist or a nurse (trained in respiratory treatment administration) or staff under physician supervision.
- The service is medically necessary.
- The service is additional to separately identifiable Evaluation and Management (E&M) services performed by the physician.
- The physician is present.

Authorization is required if respiratory care is the only service rendered, the physician is not in the office or the service is performed in an outpatient facility by other than the physician as part of a prescribed treatment program. The physician may also bill for any medication or other consumable supplies.

Inpatient Setting

Respiratory care is not covered as a separately billable physician service for recipients in Nursing Facility (NF) Level A or B, subacute care facility or inpatient locations because the care is administered by facility personnel using facility equipment. Reimbursement is included in the per diem rate paid to a long term care facility or in the institutional revenue codes of hospitals.

Exception: Ventilator management services are reimbursable to physicians in an inpatient setting. Refer to "Ventilator Management Services" on a following page.

Pulmonary Rehabilitation

Pulmonary rehabilitation services are not covered; however, services such as spirometry (identified and separately billed) may be reimbursable subject to review and medical necessity.

Claim Submission

Use CPT-4 codes 94640 – 94668 to bill all routine services of respiratory care, including intermittent positive pressure breathing. When appropriate, the claim must include the approved *Treatment Authorization Request* (TAR) Control Number, the rendering provider number and, in the *Remarks* field (Box 80)/*Reserved for Local Use* field (Box 19) of the claim, the name and title of the rendering provider and physician's signature. CPT-4 codes 94010 (spirometry, including graphic record, total and timed vital capacity, expiratory flow rate measurement[s], with or without maximal voluntary ventilation) and 94060 (bronchodilation responsiveness, spirometry as in 94010, pre- and post-bronchodilator administration) are not reimbursable on the same date of service.

CPT-4 codes 94011 (measurement of spirometric forced expiratory flows in an infant or child through 2 years of age) and 94012 (measurement of spirometric forced expiratory flows, before and after bronchodilator, in an infant or child through 2 years of age) are not reimbursable on the same date of service.

Note: CPT-4 code 94799 (unlisted pulmonary service or procedure) is not to be used to bill for routine respiratory care procedures, whether delivered on a single occasion or during a prolonged course of treatment.

Frequency Restrictions

Code 94640 (pressurized or nonpressurized inhalation treatment for acute airway obstruction or for sputum induction for diagnostic purposes) is limited to six in 30 days, and code 94642 (aerosol inhalation of pentamadine for pneumocystis carinii pneumonia treatment or prophlyaxis) is limited to one in 30 days.

Respiratory Care Practitioner Services

Respiratory care practitioners may be reimbursed for the following CPT-4 codes:

31500/AG	94003	94645	94770 **
36600/AG	94010 **	94660	99070
82375 **	94011	94662	99202
86490 **	94012	94664	99212
86510 **	94013	94667	
86580 **	94060 **	94668	
90645 – 90648	94150 **	94680 **	
90655 – 90658	94200 **	94681 **	
90669	94250 **	94690 **	
90670	94400 **	**94726** *	
90732+	94450 **	**94727** *	
92950	94620 **	**94728** *	
93005	94640	**94729** *	
93041	94642	94750 **	
94002	94644	94760	

\+ This code requires modifier SL (state-supplied) and/or modifier SK (member of high-risk population) and medical justification in the recipient's medical record. Modifier SL is also required when billing for Vaccines For Children (VFC) vaccines. Providers billing with modifier SL must include the age of the recipient. See the *Modifiers* section in the appropriate Part 2 manual for more information.

* These codes require a *Treatment Authorization Request* (TAR) to be a benefit for the respiratory therapist. These codes are also split-billed and must use modifier 26, TC or ZS.

** These codes have both a technical and professional component, but only the technical component may be billed by the respiratory care practitioner. Modifier TC must be used when billing these codes.

Respiratory care practitioner services require a physician's written order or prescription. This information should be retained in the patient's medical records.

Evaluation and Management Frequency Limitations

Evaluation and Management CPT-4 code 99202 (office visit, new patient, level 2) may be billed by a respiratory care practitioner once every three years; however, the recipient must not have been seen for any reason during the preceding three-year period by the same respiratory care practitioner. CPT-4 code 99212 (office visit, established patient, level 2) may be billed by a respiratory care practitioner once in six months by the same provider, for the same recipient, with authorization.

Authorization for Injection Codes

Respiratory care codes require authorization when billed by a respiratory care practitioner except for CPT-4 codes 90646, 90655 – 90658 and 90732. All respiratory care *Treatment Authorization Requests* (TARs) must be submitted to the Sacramento Medi-Cal Field Office. A copy of the prescription, signed by the physician ordering the respiratory services, must accompany the TAR.

Injection Codes

The following are the only injection codes reimbursable when billed by a respiratory care practitioner.

CPT-4 Code	Description
90645	Hemophilus influenza b vaccine (Hib), HBOC conjugate (4 dose schedule), for intramuscular use
90646	Hemophilus influenza b vaccine (Hib), PRP-D conjugate, for booster use only, intramuscular use
90647	Hemophilus influenza b vaccine (Hib), PRP-OMP conjugate (3 dose schedule), for intramuscular use
90648	Hemophilus influenza b vaccine (Hib), PTP-T conjugate (4 dose schedule), for intramuscular use
90655	Influenza virus vaccine, split virus, preservative free, when administered to children 6 – 35 months of age, for intramuscular use
90656	Influenza virus vaccine, split virus, preservative free, when administered to individuals 3 years and older, for intramuscular use
90657	Influenza virus vaccine, split virus, when administered to children 6 – 35 months, for intramuscular use
90658	Influenza virus vaccine, split virus, when administered to 3 years of age and older, for intramuscular use
90662	Influenza virus vaccine, split virus, preservative free, enhanced immunogenicity via increased antigen content, for intramuscular use
90669	Pneumococcal conjugate vaccine, polyvalent, when administered to children younger than 5 years, for intramuscular use
90670	Pneumococcal conjugate vaccine, 13-valent, for intramuscular use
90732	Pneumococcal polysaccharide vaccine, 23-valent, adult or immunosuppressed patient dosage, when administered to 2 years or older, for subcutaneous or intramuscular use

Note: Providers must use modifier SK to indicate that the recipient meets Medi-Cal program criteria for high risk for the disease preventable by the vaccine. Providers must also document in the written patient care record what criteria are met to justify the immunization. Additionally, vaccine procedure codes must be billed with modifier SL if the vaccine has been supplied by the VFC program.

Technical Component

Respiratory care practitioners will be reimbursed only for the technical component (modifier TC) for services that have both a professional and technical component. Services requiring Clinical Laboratory Improvement Amendment (CLIA) certification may only be billed by providers with the appropriate certification.

Note: Respiratory care practitioner services are included in the reimbursement for inpatient hospitals, NF-A, NF-B, and pediatric and adult subacute care facilities, and are not separately reimbursable.

Billing Individual or Group Provider Number

Respiratory care practitioners may bill as individuals or as group providers. Individuals must be licensed by the Respiratory Care Board of California and comply with applicable standards in CCR, Title 22, Section 51225.5.

In addition, providers billing with a group provider number must enter the individual provider number for the provider rendering the service in the *Other Physician ID* field (Box 78)/*Reserved for Local Use* field (Box 19) of the claim.

Incentive Spirometry

Incentive spirometry for hospital inpatients is not separately reimbursable from hospital charges.

Inpatient Services

Initial instructions and management may be provided by respiratory care practitioners for the recipient and nursing personnel and is included in the hospital per diem reimbursement rate. Separate billing and reimbursement will be denied. Subsequent administration of inpatient incentive spirometry may be assumed by the recipient or nursing personnel as part of the hospital services reimbursed as part of the per diem reimbursement.

Outpatient Services

Outpatient claims involving incentive spirometry by respiratory care practitioners require an approved TAR and may be subject to audit and recoupment if not supported by sufficient medical justification.

Ventilator Management Services

Ventilator management services (CPT-4 codes 94002 and 94003) are reimbursable to physicians in an inpatient setting. Reimbursement for these codes will be adjusted or denied, however, if reimbursement for the following CPT-4 and HCPCS codes is made to the same provider, for the same recipient and date of service. For the purpose of Medi-Cal, ventilator management is not just writing orders, but includes actually adjusting the ventilator settings for the 24 hours being billed.

Code	Description
99221 – **99233**	Evaluation and Management (E&M) services
99251 – 99275	Inpatient consultation services
99281 – 99288	Emergency department services
99291 or 99292	Critical care services
99295 – 99298	Neonatal intensive care services
99356 – 99359	Prolonged physician services
99460 – 99462	Newborn care services
99464 or 99465	Newborn care services
99477	Initial hospital care, per day
Z0100 – Z0108	Neonatal intensive care services

Reimbursement for codes 94002 (ventilation assist and management, initiation of pressure or volume preset ventilators for assisted or controlled breathing, first day) and 94003 (...subsequent days) will be denied if anesthesia services (CPT-4 codes 00100 – 01999) are billed for the same time period. Claims must show that ventilator and anesthesia services were performed at different times. When billing for both ventilator management and anesthesia services for the same provider, same recipient and date of service, providers must document the times of the anesthesia services and the times of ventilator management in the *Remarks* field (Box 80)/*Reserved for Local Use* field (Box 19) of the claim.

2011 Report on Accreditation in Respiratory Care Education

Commission on Accreditation for Respiratory Care

March 24th, 2012

This document is intended as a supplement to the 2011 CoARC Newsletter available at www.coarc.com.

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INTRODUCTION

It is my great pleasure to provide to you, on behalf of the Board of Commissioners and Executive Office Staff of the Commission on Accreditation for Respiratory Care (CoARC), the *2011 Report on Accreditation in Respiratory Care Education.* The CoARC has developed this report to provide critical data in the following three areas:

- Descriptive statistics of CoARC Programs as of December 31, 2011;
- Accreditation actions taken in 2011; and
- Aggregated statistics of graduate, enrollment, and outcomes data.

This is the first edition of this report. It presents information on accreditation actions and accredited programs on an annual basis. The decisions presented in this report were all made at CoARC Board meetings that occurred in March, July, and November 2011. There were a total of 93 accreditation visits in 2011 involving 66 volunteers. The level of commitment from these volunteers is remarkable and truly appreciated. The CoARC expresses its gratitude to each of them for sharing their time and talent in the critically important work of ensuring the quality of accredited professional degree programs and applicant programs in respiratory care.

In 2011, the CoARC began collecting annual report data using its new annual reporting tool developed and maintained by Liaison International. The Annual Report of Current Status (RCS) was completed by a total of 440 programs. We would also like to acknowledge the considerable efforts of these programs in completing the important information encompassed by the RCS. The charts included in this report are designed to provide aggregated information on accredited respiratory care educational programs and graduates that can be used by the profession and the public to evaluate local, state, regional, and national needs. Beginning with the 2012 Report, the CoARC will be able to compare data year-to-year and note significant changes.

In conclusion, I hope you agree this report serves as a valuable communications tool that will prove useful to accredited programs, the public, and the profession. Please feel free to share suggestions for improvements or changes by contacting our Executive Director, Tom Smalling, PhD, RRT, FAARC, at tom@coarc.com.

Thank you for your support,

S. P. Mikles

Stephen P. Mikles, EdS, RRT, FAARC,
President

MISSION AND SCOPE

The mission of the Commission on Accreditation for Respiratory Care (CoARC) is to serve the public by ensuring high quality respiratory care education through accreditation services.

CoARC accredits first professional respiratory care degree programs at the Associate, Baccalaureate, and Master's Degree level in the United States and internationally. The CoARC also accredits professional respiratory care degree programs offering certificates in polysomnography.

THE VALUE OF PROGRAMMATIC ACCREDITATION

Accreditation provides consumer protection, advances and enhances the profession, and protects against compromise of educational quality. Accreditation also assists in the further improvement of these educational programs as related to resources invested, processes followed, and outcomes achieved.

CoARC is responsible for evaluating respiratory care educational programs and publicly recognizing those which meet agreed-upon standards of quality, i.e., the *Accreditation Standards for the Profession of Respiratory Care* (the "*Standards*"). CoARC only accredits degree-granting, post-secondary programs throughout the U.S. and internationally that prepare graduates for entry into practice as respiratory therapists. Respiratory therapists are members of a team of health care professionals working in a wide variety of clinical settings to evaluate, treat, and manage patients of all ages with respiratory illnesses and other cardiopulmonary disorders.

HISTORICAL BACKGROUND

The Medical Society of the State of New York formed a Special Joint Committee in Inhalation Therapy on May 11, 1954. One of its purposes was "... to establish the essentials of acceptable schools of inhalation therapy (not to include administration of anesthetic agents) ..." In June 1956, the House of Delegates of the AMA adopted its Resolution No. 12, introduced by the Medical Society of the State of New York. The delegates "Resolved, that the Council on Medical Education and Hospitals is hereby requested to endorse such or similar 'Essentials' and to stimulate the creation of schools of inhalation therapy in various parts of these United States of America." A report entitled, "Essentials for an Approved School of Inhalation Therapy Technicians," was adopted by sponsor participants (AAIT, ACCP, AMA, and ASA) at an exploratory conference in October 1957. The AMA's House of Delegates granted formal approval in December 1962. The first official meeting of the Board of Schools of Inhalation Therapy Technicians was held at AMA's Chicago headquarters on October 8, 1963.

The Joint Review Committee for Respiratory Therapy Education, the successor group to the Board of Schools came into being on January 15, 1970 as a recommending body to the Committee on Allied Health Education and Accreditation (CAHEA). The JRCRTE was dissolved in 1996 and the Committee on Accreditation for Respiratory Care became its successor organization, as a recommending body to the newly formed Commission on Accreditation for Allied Health Education Programs (CAAHEP). In 2008, the Committee on Accreditation for Respiratory Care began the process of becoming an independent accrediting body: the Commission on Accreditation for Respiratory Care (CoARC). The Commission on Accreditation for Respiratory Care became a freestanding accreditor of respiratory care programs on November 12, 2009.

For the past 25 years, CoARC has used an outcomes-centered approach to its accreditation review process. This approach focuses on a specific set of outcomes which include the following: a) Graduate performance on the national credentialing examination for entry into practice; b) Programmatic retention/attrition; c) Graduate satisfaction with program; d) Employer satisfaction with program; and e) Job placement. The CoARC routinely monitors the program's outcomes results in relation to the thresholds via an Annual Report of Current Status (RCS). Any program not meeting all the thresholds must document in the RCS a detailed analysis of each deficiency and provide a specific action plan to address that deficiency.

PROGRAMS BY COARC LEVEL

CoARC accredits first-professional[1] respiratory care degree programs and program options[2] at the Associate, Baccalaureate, and Master's Degree level in the United States and internationally. The CoARC also accredits professional respiratory care degree programs offering certificates in polysomnography. Programs are categorized into one of four levels and are assigned a unique 6-digit number:

1. **(100-level):** Programs that prepare graduates with demonstrated competence in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains of respiratory care practice as performed by Certified Respiratory Therapists (CRTs). 100-level program provides graduates have the opportunity to earn the National Board for Respiratory Care (NBRC) Certified Respiratory Therapist (CRT) examination. Note: CoARC is discontinuing accreditation of 100-level programs. Students enrolled in a 100-level program must graduate by December 31, 2012, to be recognized as graduates of a CoARC-accredited program. All 100-level programs must voluntarily withdraw effective December 31, 2012;

2. **(200-level):** Programs that prepare graduates with demonstrated competence in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains of respiratory care practice as performed by Registered Respiratory Therapists (RRTs). 200-level program graduates have the opportunity to earn both the NBRC CRT credential and RRT credential. The CRT credential is a prerequisite for admission to the Registry Examination;

3. **(300-level):** A U.S. or International satellite campus geographically separate from the main program at which didactic, laboratory, and clinical instruction occurs for all or some of the 200-level students are enrolled;

4. **(400-level):** Programs that prepare sleep disorder specialists with demonstrated competence in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains of polysomnography practice as performed by sleep disorder specialists (SDS). 400-level program graduates have the opportunity to earn both the NBRC SDS credential and Board of Registered Polysomnographic Technologists (BRPT) Registered Polysomnographic Technologist (RPSGT) credential.

As of December 31, 2011, there were a total of 451 programs and program options under an accreditation review by CoARC. These programs are sponsored by public and private higher education institutions as well as two programs sponsored federally by the U.S. Army and Air Force.

Of these 451 programs, a total of 43 programs held a Letter of Review (pre-accreditation status)[3] signifying that a program seeking Initial Accreditation has demonstrated sufficient compliance with the accreditation *Standards* through a self-study and other documentation. Further, there were a total of 3 programs that received an Approval of Intent- the approval of an application which is the first step in developing an accredited program. As mentioned previously, the CoARC also accredits sleep disorders specialist programs as add-on program options to accredited respiratory care programs. There were 7 such accredited program options with 1 receiving an Approval of Intent. There were also a total of 19 domestic satellite campuses and one international satellite program (National Institute for Specialized Health located in Riyadh, Saudi Arabia).

[1] A *First-Professional Degree Program* is an educational program designed to provide students who possess no prior competence in respiratory care, with the knowledge and clinical skills required to function competently as a registry-eligible respiratory therapist [see CoARC Policy 12.02.]

[2] Program options include domestic satellites, international satellites, and sleep disorders specialist add-ons- each of which is assigned a separate CoARC program number.

[3] As of March 24, 2012, CoARC replaced the term *Letter of Review* with *Provisional Accreditation.*

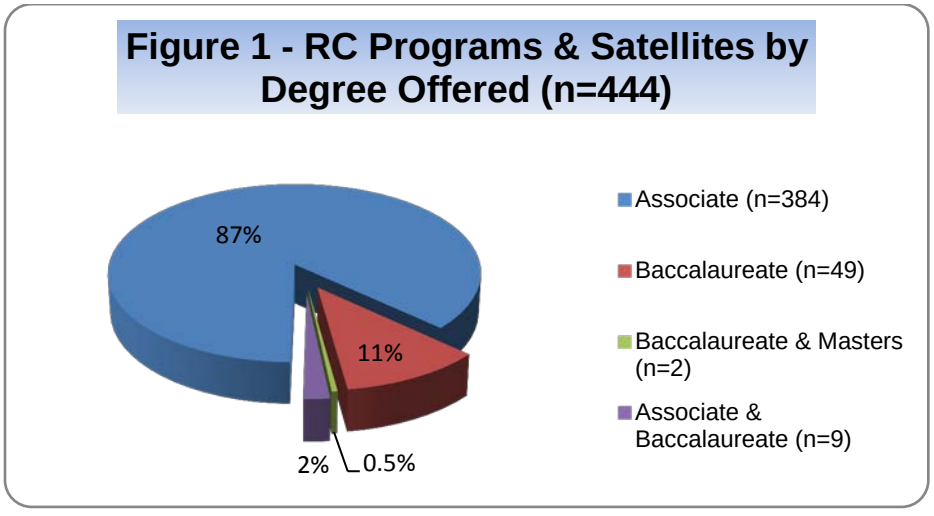
Table 1 (below) provides a breakdown of program numbers by CoARC level.

Table 1 – Program Numbers by CoARC Level as of December 31, 2011 (n=451)				
	100-level	200-level	300-level	400-level
Accredited	5	376	20	7
Letter of Review	N/A	43	N/A	N/A
Approval of Intent	N/A	3	N/A	1
Letter of Intent	3– applications in progress		N/A	1

PROGRAMS BY DEGREE OFFERED

CoARC accredits first professional respiratory care degree programs at the Associate, Baccalaureate, and Master's Degree level in the United States and internationally. Programs accredited by the CoARC are located in institutions which are accredited by a regional or national accrediting agency that is recognized by the U.S. Department of Education (USDE) and authorized under applicable law or other acceptable authority to award graduates of the program an associate or higher degree at the completion of the program (*CoARC Standard 1.01*).

As of December 31, 2011, there were a total of 444 respiratory care programs and satellites. Of these, 384 (87%) offer the Associate degree upon graduation and 49 (11%) programs offer the Baccalaureate degree. Nine programs (2%) offer both the Associate degree and Baccalaureate degree. Two programs (0.5%) offer the Baccalaureate and the Master's degree (Rush University and Georgia State University). Seven institutions offer a certificate upon completion of the sleep specialist program option.

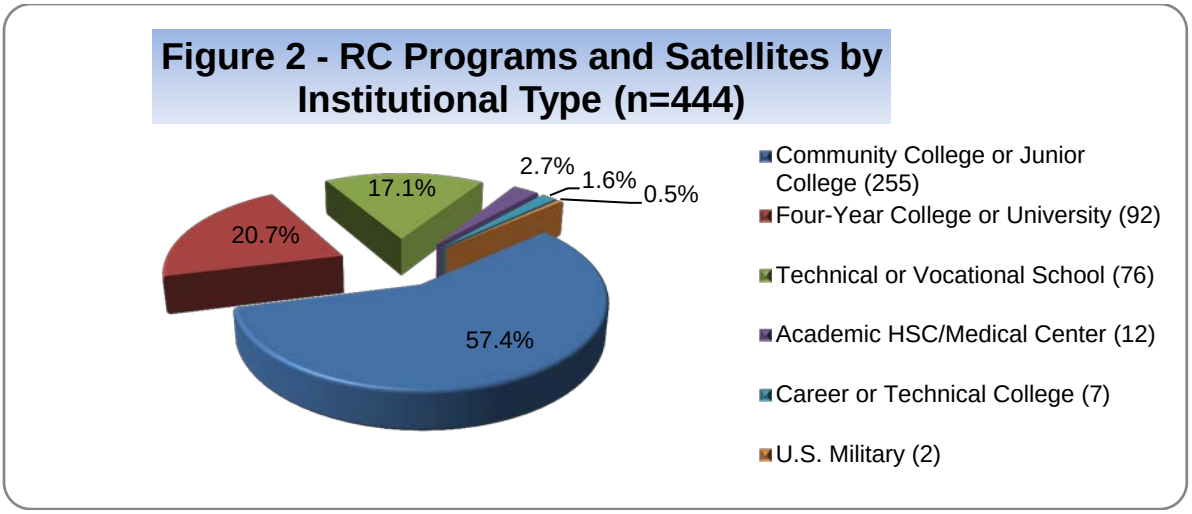


CoARC further categorizes programs into one of 14 possible degree types/combinations. **Table 2** provides a breakdown of program numbers by degree and accreditation status. The Associate of Science (AS) degree accounted for the largest (58%) of the degree types offered in 2011.

Table 2 – RC Programs and Satellites by Degree as of December 31, 2011 (n=444)		
	Letter of Review (n=43)	Accredited (n=376)
Associate of Science (AS)	21	235
Associate in Applied Science (AAS)	17	106
Associate in Specialized Technology (AST)	3	
Associate in Occupational Studies (AOS)	1	1
Bachelor of Science/Masters of Science (BS/MS)	1	1
Bachelor of Science (BS)		49
Associate of Science/ Bachelor of Science (AS/BS)		4
Associate in Applied Science/ Bachelor of Science (AAS/BS)		5

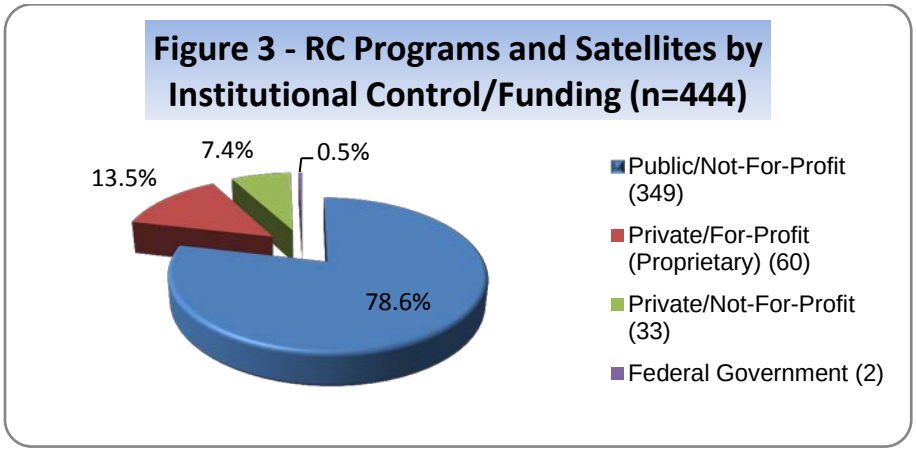
PROGRAMS BY INSTITUTIONAL TYPE

CoARC assigns programs to one of six categories that define the type of institution sponsoring the respiratory care program. These categories are: (1) Academic HSC/Medical Center; (2) Career or Technical College; (3) Community College or Junior College; (4) Four-Year College or University; (5) Technical or Vocational School, and (6) U.S. Military. As of December 31, 2011, there were 255 respiratory care programs and satellites offered at a community or junior college. This category was the largest (57%) of all the categories. Ninety-two (21%) programs were offered at a Four-Year College or University. Seventy-six (17%) programs were offered at a Technical or Vocational School. Twelve (3%) programs were offered at an Academic Health Sciences Center/Medical Center. Seven (2%) programs were offered at a Career/Technical College. Programs offered at a U.S. Military facility accounted for the fewest (0.5%). Figure 2 illustrates these categories.



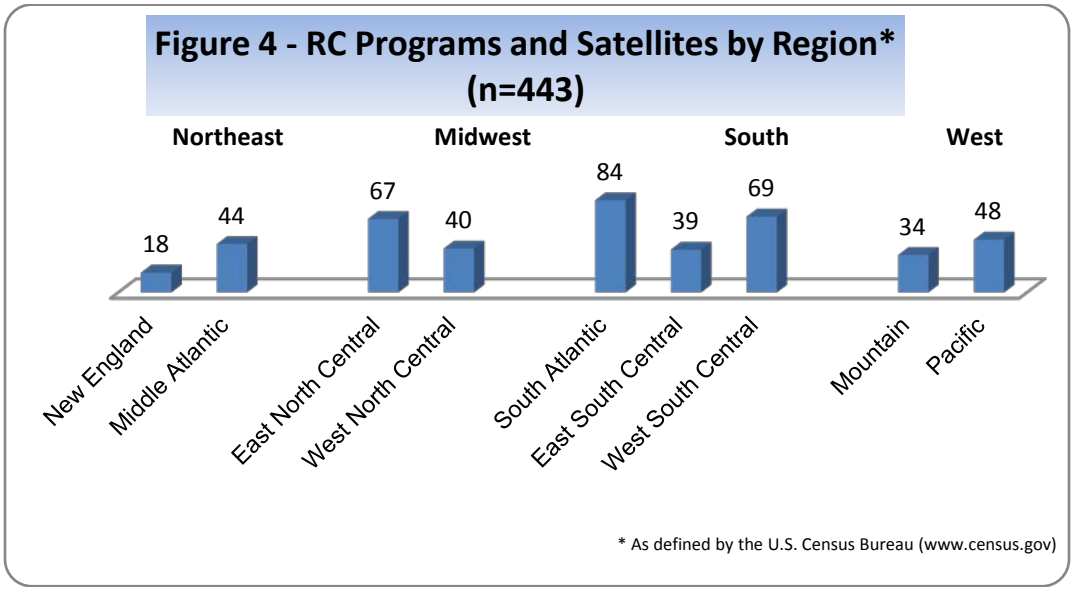
PROGRAMS BY INSTITUTIONAL CONTROL/FUNDING

CoARC assigns programs to one of four categories based on whether an institution is operated by publicly elected or appointed officials and derives its major source of funds from public sources (Public/Not-For-Profit), by privately elected or appointed officials and derives its major source of funds from private sources (Private/Not-For-Profit or Private/For Profit), or by a branch of the Armed Forces and derives its major source of funds from federal appropriations (Federal Government). As of December 31, 2011, 349 (79%) institutions sponsoring a respiratory care program were operating under a Public/Not-For-Profit status. Sixty (13.5%) institutions were operating under a Private/For-Profit (Proprietary) status. Thirty-three (7%) institutions were operating under a Private/Not-For-Profit status. Two (0.5%) of institutions were controlled and funded by the Federal Government. Figure 3 illustrates these categories and results.



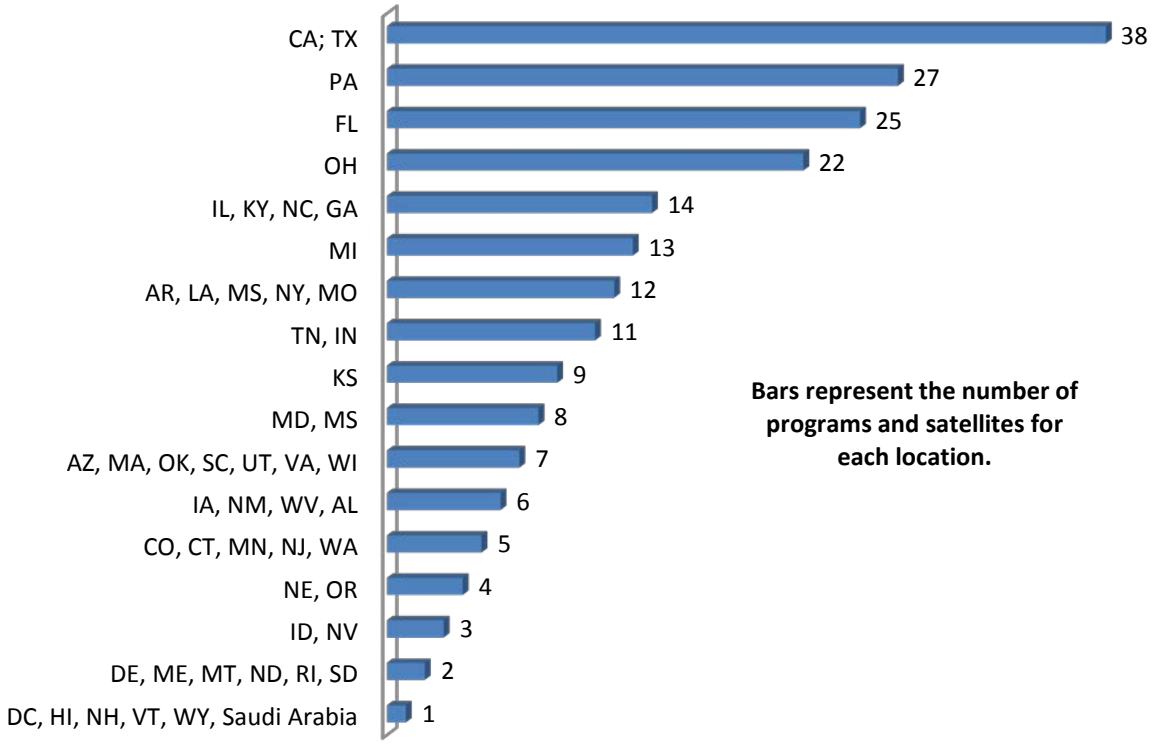
PROGRAMS BY GEOGRAPHIC LOCATION

CoARC tracks the official address (street, city, state, and zip code) of each program and satellite option. Figure 4 illustrates the number of programs and satellites by region*. Sixty-two (14%) are located in the Northeast. One hundred seven (24%) are located in the Midwest. One hundred ninety-two (43%) are located in the South. Eighty-two (19%) are located in the West.



Respiratory care programs are located in every state except Alaska. Figure 5 provides a breakdown from largest to smallest, of the number of respiratory care programs and satellites in each state (and includes the one program satellite located in Riyadh, Saudi Arabia.) The two states with the largest number of programs and satellites are Texas and California- each with 38. States with only one program include Wyoming, Vermont, New Hampshire, Hawaii, and the District of Columbia. Not included in Figure 5 are the 7 sleep disorders specialist program options which are located in New York, Florida, Alabama, Texas, Ohio, Indiana, and Georgia.

Figure 6 - Respiratory Care Programs and Satellites by Geographic Location (n=444)



ACCREDITATION DECISIONS

CoARC makes most accreditation decisions during its Board meetings three times per year (typically in March, July, and November.) The statuses of Administrative Probation, Voluntary Withdrawal of Accreditation and Voluntary Inactive Accreditation do not require a vote by the CoARC Board and are handled by the Executive Office throughout the year.

Table 3 is a summary of accreditation actions taken in 2011. The three columns (March, July, and November) correspond with the number of specific actions taken during each of CoARC's meeting. Note: This summary only includes substantive change actions if the program was placed on a meeting for full Board consideration.

Table 3 – Summary of CoARC Accreditation Actions for 2011

Commission Actions	March 2011	July 2011	Nov 2011	Total
Letter of Intent (LOI) Application - In Progress	5	1	4	**10**
Approval of Intent (application approved)	5	7	0	**12**
Letter of Review (pre-accreditation status)	2	3	8	**13**
Initial Accreditation – Base Program	1	7	7	**15**
– Satellite Option	0	0	0	**0**
– Sleep Disorders Specialist Option	0	0	0	**0**
Continuing Accreditation – Base Program	6	30	20	**56**
– Satellite Option	0	2	1	**3**
– Sleep Disorders Specialist Option	0	1	2	**3**
Probationary Accreditation	0	2	1	**3**
Withdrawal of Accreditation – Involuntary	1	0	0	**1**
Substantive Change*	0	0	3	**3**
Voluntary Withdrawal*	2	5	4	**11**
Total Number of Accreditation Actions taken in 2011 *Substantive Changes and Voluntary Withdrawals not included				**130**

CoARC has processes that call for CoARC to inform the public about its accreditation decisions. One of the ways CoARC does this is to provide the public with information about the accreditation decision process. CoARC provides the public with a description of the nature and scope of CoARC accreditation activity as well as the importance and value of accreditation (http://www.coarc.com/46.html). CoARC also provides the public with detailed descriptions of its accreditation policies and procedures by publishing its Accreditation Policies and Procedures Manual (http://www.coarc.com/31.html). In addition, CoARC provides a list of programs scheduled to be reviewed prior to each Board meeting as well as the final accreditation actions taken following each meeting (http://www.coarc.com/11.html).

The following section lists the specific accreditation actions taken by the CoARC Board during 2011.

Approval of Intent Granted

Approval of Intent is an authorization by CoARC indicating that a sponsoring institution's plan to start a Respiratory Care program is acceptable and that the sponsor may submit a Self-Study Report (SSR).

		Effective
200597- Concorde Career College-Dallas (LOI 1-20-2011)	Dallas, TX	03-05-2011
200598- Hutchison Community College (LOI 10-20-2010)	Hutchison, KS	03-05-2011
200599- New England Institute of Tech (LOI 9-24-2010)	Warwick, RI	03-05-2011
200600- Sullivan Resp. Care Consortium (LOI 9-17-2009)	Loch Sheldrake, NY	03-05-2011
200601- Virginia College at Austin (LOI 7-7-2009)	Austin, TX	03-05-2011
200602- American Institute College (LOI 1-19-2011)	Celebration, FL	07-18-2011
200603- Concorde Career Institute-Orlando (LOI 1-20-2011)	Orlando, FL	07-18-2011
200604- Jefferson College (LOI 3-14-2011)	Hillsboro, MO	07-18-2011
200605- Mid-South Community College (LOI 3-30-2011)	W. Memphis, AR	07-18-2011
200606- Pima Medical Inst-Houston (LOI 1-7-2011)	Houston, TX	07-18-2011
200607- San Joaquin Valley Coll-Temecula (LOI 9-17-2009)	Temecula, CA	07-18-2011
200608- YTI Career Institute-Altoona (LOI 12-07-2010)	Altoona, PA	07-18-2011

Letter of Review Granted

This status signifies that a program seeking Initial Accreditation has demonstrated sufficient compliance with the *Standards* through the Letter of Review Self Study Report (LSSR) and other documentation. The conferral of a Letter of Review authorizes the sponsor to admit its first class of students. The conferral of Letter of Review status denotes a developmental program, in which assurances are expected to be provided that the program may become accredited as programmatic experiences are gained, generally, by the time the first class has graduated.

		Effective
200590- Penn Commercial Business/Tech (AOI 4-15-2010)	Washington, PA	03-05-2011
200596- Platt College – Alhambra (AOI 12-1-2010)	Alhambra, CA	03-05-2011
200593- Concorde Career Inst-San Antonio (AOI 12-31-2010)	San Antonio, TX	07-18-2011
200597- Concorde Career College-Dallas (AOI 3-11-2011)	Dallas, TX	07-18-2011
200601- Virginia College – Austin (AOI 3-11-2011)	Austin, TX	07-18-2011
200595- Missouri State University-W Plains (AOI 12-1-2010)	West Plains, MO	11-19-2011
200598- Hutchison Community College (AOI 3-11-2011)	Hutchison, KS	11-19-2011
200599- New England Institute of Tech (AOI 3-11-2011)	Warwick, RI	11-19-2011
200603- Concorde Career Institute-Orlando (AOI 7-18-2011)	Orlando, FL	11-19-2011
200604- Jefferson College (AOI 7-18-2011)	Hillsboro, MO	11-19-2011
200605- Mid-South Community College (AOI 7-18-2011)	W. Memphis, AR	11-19-2011
200606- Pima Medical Inst-Houston (AOI 7-18-2011)	Houston, TX	11-19-2011
200607- San Joaquin Valley College (AOI 7-18-2011)	Temecula, CA	11-19-2011

Initial Accreditation Granted

This status is conferred for a limited defined period of time (five years) to a developing program that, at the time of the initial site visit, has demonstrated compliance with the *Standards*. At the end of the allotted time, the CoARC may confer either Continuing Accreditation or Withhold of Accreditation.

		Initial End Date
200553- St. Louis College of Health Careers (LOR 5-23-2008)	Fenton, MO	03-31-2016
200527- South Texas College (LOR 1-24-2007)	McAllen, TX	07-31-2016
200541- Southern W Virginia CC (LOR 8-8-2007)	Williamson, WV	07-31-2016
200542- Carrington College California (LOR 6-19-2007)	Pleasant Hill, CA	07-31-2016

200548- Elizabethtown Community College (LOR 1-9-2008)	Elizabethtown, KY	07-31-2016
200550- Walters State Community College (LOR 3-13-2008)	Morristown, TN	07-31-2016
200552- Pima Medical Institute-Renton (LOR 3-26-2008)	Renton, WA	07-31-2016
200556- Mercyhurst College-North East (LOR 8-20-2008)	Erie, PA	07-31-2016
200538- Cisco College (LOR 6-20-2007)	Cisco, TX	11-30-2016
200549- Santa Fe Community College (LOR 5-16-2008)	Santa Fe, NM	11-30-2016
200554- American Career College-Anaheim (LOR 6-3-2008)	Anaheim, CA	11-30-2016
200555- N Michigan U/Marquette General (LOR 6-6-2008)	Marquette, MI	11-30-2016
200559- Concorde Career Institute-Miramar (LOR 5-22-2009)	Miramar, FL	11-19-2011
200560- Platt College (LOR 12-19-2008)	Moore, OK	11-30-2016
200561- Fortis College (LOR 2-17-2009)	Erie, PA	11-30-2016
200568- Stevens-Henager College (LOR 7-24-2009)	Boise, ID	11-30-2016

Continuing Accreditation Granted

This status is conferred when 1) an established, currently accredited program demonstrates continued compliance with the *Standards* following submission of a continuing self-study report and completion of an on-site visit, or 2) a program holding Initial Accreditation has demonstrated continued compliance with the *Standards* during the Initial Accreditation period. Continuing Accreditation remains in effect until the program withdraws from the accreditation process or until accreditation is withdrawn for failure to comply with the *Standards*.

		Next Re-evaluation
200132- Crafton Hills College	Yucaipa, CA	2021
200224- Medical College of Georgia	Augusta, GA	2021
200288- Southern Maine Community College	S. Portland, ME	2021
200512- CHI Institute-Franklin Mills Campus (Initial 9-2011)	Philadelphia, PA	2018
200532- Somerset Community College (Initial 9-2011)	Somerset, KY	2018
200543- US Air Force School of Health (Initial 5-2011)	Sheppard AFB, TX	2018
200010- Community College of Allegheny County	Pittsburgh, PA	2021
200044- Manchester Community College	Manchester, CT	2021
200050- St. Louis Community College-Forest Park	St. Louis, MO	2021
200071- Macomb Community College-Detroit Macomb	Clinton Township, MI	2021
200073- Kettering College of Medical Arts	Kettering, OH	2021
200090- Norwalk Community College/Norwalk Hospital	Norwalk, CT	2021
200110- Lane Community College	Eugene, OR	2021
200133- St. Alexius Med Ctr/University of Mary	Bismarck, ND	2021
200187- Bergen Community College	Paramus, NJ	2021
200202- Pima Community College-Tucson	Tucson, AZ	2021
200228- Prince George's Community College	Largo, MD	2021
200233- The University of Akron	Akron, OH	2021
200247- Youngstown State University	Youngstown, OH	2021
200255- Wallace State Community College	Hanceville, AL	2021
200258- Saint Paul College	Saint Paul, MN	2021
200287- Allegany College of Maryland	Cumberland, MD	2021
200298- Madisonville Community College	Madisonville, KY	2021
200305- University of Hartford	West Hartford, CT	2021
200309- Oregon Institute of Technology	Klamath Falls, OR	2021
200326- Eastern Gateway Community College	Steubenville, OH	2021
200357- Metropolitan Community College	Omaha, NE	2021
200359- Seminole State College	Sanford, FL	2021

200392- Bossier Parish Community College	Bossier City, LA	2021
200396- Northeast Iowa Community College	Peosta, IA	2021
200402- Dona Ana Community College	Las Cruces, NM	2021
200429- West Kentucky Comm & Tech College	Paducah, KY	2021
200460- Naugatuck Valley Community College	Waterbury, CT	2021
200468- The University of Montana-Missoula	Missoula, MT	2021
200505- Goodwin College (Initial 1-31-2012)	E. Hartford, CT	2019
200511- Idaho State University (Initial 1-31-2012)	Pocatello, ID	2019
300025- Monroe City Hall Annex (200392 satellite)	Monroe, LA	2021
300026- Learning Ctr for Rapides Parish (200392 satellite)	Alexandria, LA	2021
400247- Youngstown State University	Youngstown, OH	2021
200005- Chattanooga State Community College	Chattanooga, TN	2021
200084- Nassau Community College	Garden City, NY	2021
200095- HCCS-Coleman College	Houston, TX	2021
200121- Sinclair Community College	Dayton, OH	2021
200129- Mt. Hood Community College	Gresham, OR	2021
200134- Stony Brook University	Stony Brook, NY	2021
200142- Butte College	Oroville, CA	2021
200181- University of Alabama-Birmingham	Birmingham, AL	2021
200251- Louisiana State University	New Orleans, LA	2021
200263- Roane State Community College	Harriman, TN	2021
200294- Mott Community College	Flint, MI	2021
200299- Delaware Technical & Community College	Wilmington, DE	2021
200339- Bowling Green State U-Firelands College	Huron, OH	2021
200349- Berkshire Community College	Pittsfield, MA	2021
200358- Florence-Darlington Tech College	Florence, SC	2021
200378- Robeson Community College	Lumberton, NC	2021
200397- Frederick Community College	Frederick, MD	2021
200407- Catawba Valley Community College	Hickory, NC	2021
200461- Northeast Kentucky Consortium	Morehead, KY	2021
200504- U of Rio Grande/ Rio Grande CC/Buckeye Hills	Rio Grande, OH	2018
300009- Lorain Co Community College (Satellite)	Elyria, OH	2021
400134- Stony Brook University (Sleep Specialist Option)	Stony Brook, NY	2021
400181- University of Alabama-Birmingham (Sleep Specialist Option)	Birmingham, AL	2021

Probationary Accreditation

This is a temporary status conferred when an accredited program is not in compliance with one or more *Standards* and/or Policies following submission of one or more progress reports, and has not corrected deficiencies identified earlier by the CoARC Board. The program must file a Probation Report as directed by the CoARC Executive Office. However, if at any time during the year, the program is able to rectify all the deficiencies that resulted in Probationary Accreditation and achieve compliance with the *Standards*, the CoARC Board will consider removing the probationary status when review of the Probation Report so warrants. If compliance with the *Standards* is not demonstrated within one year, accreditation will be withdrawn. A program may remain on probation for no longer than one year without demonstrable and remarkable extenuating circumstances, in which case probation may be extended for an additional year. In no case will probation status exceed 2 years.

*This action does not become final until after the program has exhausted its rights to seek reconsideration (see CoARC Policy 1.07 – Reconsideration and Appeal).

		Effective*
200297- Lamar Institute	Beaumont, TX	07-18-2011
200543- United State Air Force	Sheppard AFB, TX	07-18-2011
200321- Florida A&M University	Tallahassee, FL	11-19-2011

Withdrawal of Accreditation - Involuntary

This status is conferred when a program is no longer in compliance with the accreditation Standards. Specific circumstances warranting a withdrawal of accreditation are described in Accreditation Policy 1.058. A program that has had its accreditation status withdrawn shall no longer be allowed to admit students.

*This action does not become final until after the program has exhausted its rights to seek reconsideration and to file an appeal (see CoARC Policy 1.07 – Reconsideration and Appeal).

		Effective*
100084- AMEDD Ctr & School - Army (Probation 7-18-2009)	Ft. Sam Houston, TX	03-05-2011
200486- Olive-Harvey College (Inactive 8-23-2010 & Admin Pro 3-1-2011)	Ft. Sam Houston, TX	07-18-2011

Voluntary Withdrawal

This status is conferred when a sponsor notifies CoARC that its program(s) be removed from the accreditation process.

		Effective
100049- Our Lady of Holy Cross/Ochsner College	New Orleans, LA	08-31-2011
200159- Triton College	River Grove, IL	09-01-2011
200473- Hannibal Career & Technical Ctr	Hannibal, MO	12-15-2011
200547- Career Technical College (LOR 10-16-2007)	Monroe, LA	01-05-2012
200594- Faulkner State Community College (AOI 12-1-2010)	Bay Minette, AL	10-31-2011
100092- Concorde Career College-N Hollywood	N. Hollywood, CA	05-07-2011
200056- University of Central Florida	Orlando, FL	07-01-2011
100183- Bossier Parish CC	Bossier City, LA	05-25-2011
200056- University of Central Florida	Orlando, FL	07-01-2011
200401- University of Arkansas-Texarkana	Texarkana, AR	06-27-2011
200414- Mississippi Gulf Coast CC	Gautier, MS	07-01-2011
200479- Everest Institute-DeKalb (LOR 1-31-2008)	Decatur, GA	02-22-2011

2011 ANNUAL REPORT OF CURRENT STATUS (RCS)

Overview

CoARC defines program outcomes as "performance indicators that reflect the extent to which the goals of the program are achieved and by which program effectiveness is documented. Examples include but are not limited to: program completion rates, job placement rates, certification pass rates, and program satisfaction" (*Standards, p.10*). Outcomes measures used by CoARC reflect metrics of program effectiveness and student achievement. CoARC uses an outcomes-centered approach to its accreditation review process. This approach focuses on a specific set of outcomes which include the following: a) Graduate performance on the national credentialing examination for entry into practice; b) Programmatic retention/attrition; c) Graduate satisfaction with program; d) Employer satisfaction with program; and e) Job placement.

CoARC believes that assessment, planning, implementation and evaluation of the educational quality of a respiratory care program (inclusive of distance education modalities and program options), that is broad-based, systematic, continuous and designed to promote achievement of program goals will maximize the academic success of the enrolled students in an accountable and cost-effective manner.

CoARC routinely monitors the program's outcomes results in relation to the thresholds via an Annual Report of Current Status (RCS). CoARC provides definitions of each of the minimum performance criteria in its *Interpretive Guidelines* (p.23), it *Accreditation Policies & Procedures* (p. 38), and on its website (http://www.coarc.com/15.html).

In May 2011, CoARC launched its online Annual RCS submission with a deadline of July 1st, 2011. In an effort to minimize potential reporting burdens to programs seeking and maintaining accreditation, CoARC redesigned its reporting tool. The main focus of this redesign was to simplify and increase the accuracy of data entry for programs. To achieve this goal, CoARC adopted a reporting system that is *driven by student data*. Programs can now capture and record cohort information that includes students' status from start to finish. Once a cohort has been created, and students for that cohort have been entered into the reporting system, the program can update the student status, such as graduation, attrition, credentials earned, and job placement. This student-specific information is then used to automatically generate aggregate programmatic outcomes data.

The outcomes will be updated on an annual basis following the submission and verification of each program's Annual RCS. CoARC works with programs throughout the data submission and validation phases to ensure that the performance data is accurate. In the future, CoARC will add overall employer and graduate satisfaction, as well as on-time graduation rates to the outcomes metrics reported to the public once a sufficient amount of aggregate data has been gathered and analyzed.

CoARC completed the verification of the outcomes data from the 2011 Annual Report of Current Status (RCS) in January 2012. A total of 440 programs and program options (98%) submitted annual reports in 2011. The remaining 11 new programs were not eligible to submit an annual report at the time of the July 1, 2011 deadline.

This data is self-reported by respiratory care programs to CoARC and reflects the aggregate data for the three-year time period being reported (January 1, 2008 through December 31, 2010.)

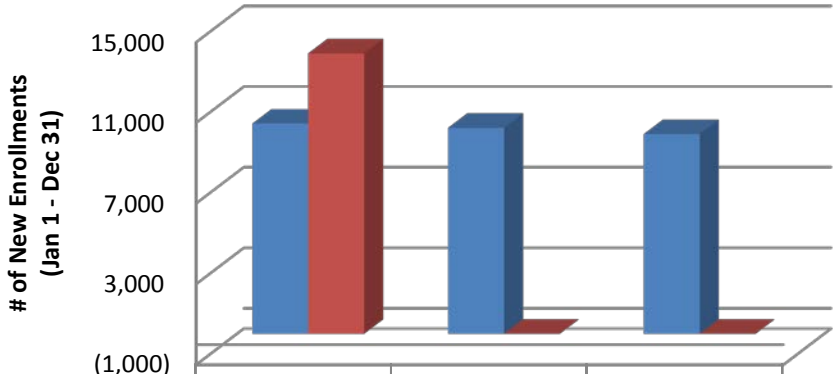
Total New Enrollments

2011 RCS data provides the total number of new program enrollees during the 3-year time period being reported (i.e., January 1, 2008 through December 31, 2010). This does not include students that were already enrolled in prior years. *Programmatic enrollment* begins at the point at which the respiratory student enrolls in the first core respiratory care course (non-survey) that is available only to students matriculated in the respiratory care program. This may be different than the enrollment or matriculation date determined by the institution. This definition is used only for calculating programmatic attrition and on-time graduation rates.

Figure 6 shows total new enrollments for 2008 through 2010. Enrollments for 2010 are compared to the total maximum annual enrollment capacity[4]. CoARC did not track maximum annual enrollment capacity for 2009 and 2008. The data shows 2010 new enrollments reaching 75% of capacity.

The average maximum annual enrollment capacity per program for 2010 was 32. The average number of new enrollments per program was 24 in 2010, 24 in 2009, and 23 in 2008. There was a 3% increase in new enrollments between 2008 and 2009 and a 2% increase between 2009 and 2010.

Figure 6 - Total New RC Program and Satellite Enrollments and Maximum Annual Enrollment Capacity (n=433)



	2010	2009	2008
Total New Enrollments	10,421	10,212	9,903
Max Annual Enroll Capacity	13,913	0	0

Not included in Figure 6 are the enrollment data for the 7 sleep specialist program options. There were a total of 33 new enrollments in 2010 with a maximum annual enrollment capacity of 102 (32%). In 2009, there were 59 new enrollments. In 2008, there were 57 new enrollments. The average number of new enrollments per program option in 2010 was 5 with an average maximum annual enrollment capacity per program of 15. In 2009 and 2008, the average number of new enrollments per program option was 8.

[4] The *maximum annual enrollment capacity* is defined as the maximum number of potential new students that can be enrolled in a calendar year (defined as January 1 through December 31). This number is established by CoARC and can only be increased upon approval of a substantive change in enrollment. Only base programs and program options with a status of Initial or Continuing Accreditation without any pending Progress Reports or on Administrative Probation are eligible to request an increase in their annual enrollment.

New RC Enrollments by Degree Offered

Table 4 – New RC Enrollments by Degree Offered (n=433)

Degree Offered	Max Annual Enroll Capacity		New Enrollments 2010		New Enrollments 2009		New Enrollments 2008	
	Total	Avg	Total	Avg	Total	Avg	Total	Avg
Associate only (n=373)	12,573	34	9,404	25	9,234	25	8,937	24
Associate & Baccalaureate (n=9)	202	22	116	13	95	11	112	12
Baccalaureate only (n=49)	1,064	22	839	17	819	17	810	17
Baccalaureate & Masters (n=2)	74	37	62	31	64	32	44	22

Table 4 shows the new annual respiratory care enrollments in relation to the degree offered. Programs offering only associate degrees accounted for 86.1% of the total number of programs submitting annual reports in 2011. There were 10,421 new students enrolled in 2010; of this total, 9,404 were enrolled in Associate degree programs. This represents the largest category (90.2%) and is a 1.8% increase compared to 2009. There was a 3.3% increase in new enrollments for this category between 2008 and 2009. New enrollments reached 75% of maximum annual enrollment capacity in 2010 for associate degree programs. The average number of new enrollments per program for this category was 25 in 2009 and 2010, and 24 in 2008.

Programs offering both associate and baccalaureate degrees accounted for 2.1% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 116 new students (1.1% of total) enrolled in programs that offered both an associate and baccalaureate degree. This represents a 22% increase from 2009. In contrast, there was a 15% decrease in new enrollments for this category between 2009 and 2008. New enrollments reached 57% of maximum annual enrollment capacity in 2010 for programs that offer both associate and baccalaureate degrees. The average number of new enrollments per program for this category was 13 in 2010, 11 in 2009, and 12 in 2008.

Programs offering only baccalaureate degrees accounted for 11.3% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 839 new students (8.1% of total) enrolled in Baccalaureate degree programs. This represents a 2.4% increase from 2009. There was a 1.1% increase in new enrollments for this category between 2008 and 2009. New enrollments reached 79% of maximum annual enrollment capacity in 2010 for baccalaureate degree programs. The average number of new enrollments per program for this category was 17 in 2008, 2009, and 2010.

Programs offering both baccalaureate and master's degrees accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 62 new students (0.6% of total) enrolled in programs that offered both a baccalaureate and master's degree. This represents a 3.1% decrease from 2009. In contrast, there was a 31.3% increase in new enrollments for this category between 2009 and 2008. New enrollments reached 84% of maximum annual enrollment capacity in 2010 for programs that offer both baccalaureate and master's degrees. The average number of new enrollments per program for this category was 31 in 2010, 32 in 2009, and 22 in 2008.

New RC Enrollments by Institutional Type

Table 5 – New RC Enrollments by Institutional Type (n=433)

Institutional Type	Max Annual Enroll Capacity		New Enrollments 2010		New Enrollments 2009		New Enrollments 2008	
	Total	Avg	Total	Avg	Total	Avg	Total	Avg
Community College or Junior College (n=250)	6,757	27	5,605	22	5,282	21	5,344	21
Four-Year College or University (n=91)	2,433	27	1,840	20	1,862	20	1,757	19
Technical or Vocational School (n=71)	4,057	57	2,534	36	2,680	38	2,433	34
Academic HSC/Medical Center (n=12)	249	21	193	16	172	14	158	13
Career or Technical College (n=7)	229	33	173	25	152	22	143	20
U.S. Military (n=2)	188	94	76	38	64	32	68	34

Table 5 shows the new annual respiratory care enrollments in relation to the institutional type. Programs offered in community or junior colleges accounted for 57.7% of the total number of respiratory care programs submitting annual reports in 2011. There were 5,605 new enrollments in 2010. This represents the largest category (54%) and is a 6.1% increase compared to 2009. In contrast, there was a 1.2% decrease in new enrollments between 2008 and 2009. New enrollments reached 83% of maximum annual enrollment capacity in 2010 for community colleges or junior colleges. The average number of new enrollments per program for this category was 22 in 2010 and 21 in 2008 and 2009.

Programs offered in four-year colleges or universities accounted for 21.0% of the total number of respiratory care programs submitting annual reports in 2011. There were 1,840 (17.7% of total) new enrollments in 2010. This represents a 1.2% decrease compared to 2009. In contrast, there was a 6.0% increase between 2008 and 2009. New enrollments reached 75.6% of maximum annual enrollment capacity in 2010. The average number of new enrollments per program for this category was 20 in 2009 and 2010 and 19 in 2008.

Programs offered in technical or vocational schools accounted for 16.4% of the total number of respiratory care programs submitting annual reports in 2011. There were 2,534 (24.3% of total) new enrollments in 2010. This represents a 5.4% decrease compared to 2009. In contrast, there was a 10.2% increase between 2008 and 2009. New enrollments reached 62.5% of maximum annual enrollment capacity in 2010. The average number of new enrollments per program for this category was 36 in 2010, 38 in 2009, and 34 in 2008.

Programs offered in academic HSC/medical centers accounted for 2.8% of the total number of respiratory care programs submitting annual reports in 2011. There were 193 (1.9% of total) new enrollments in 2010. This represents a 12.2% increase compared to 2009. There was an 8.9% increase between 2008 and 2009. New enrollments reached 77.5% of maximum annual enrollment capacity in 2010. The average number of new enrollments per program for this category was 16 in 2010, 14 in 2009, and 13 in 2008.

Programs offered in career or technical colleges accounted for 1.6% of the total number of respiratory care programs submitting annual reports in 2011. There were 173 (1.7% of total) new enrollments in 2010. This represents a 13.8% increase compared to 2009. A 6.3% increase occurred between 2008 and 2009. New enrollments reached 75.6% of maximum annual enrollment capacity in 2010. The average number of new enrollments per program for this category was 25 in 2010, 22 in 2009, and 20 in 2008.

Programs offered in the U.S. military accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 76 (0.7% of total) new enrollments in 2010. This represents an 18.8% increase compared to 2009. In contrast, there was a 6.3% decrease between 2008 and 2009. New enrollments reached 40.4% of maximum annual enrollment capacity in 2010. The average number of new enrollments per program for this category was 38 in 2010, 32 in 2009, and 34 in 2008.

New RC Enrollments by Institutional Control/Funding

Table 6 – New RC Enrollments by Institutional Control/Funding (n=433)

Institutional Control/Funding	Max Annual Enroll Capacity		New Enrollments 2010		New Enrollments 2009		New Enrollments 2008	
	Total	Avg	Total	Avg	Total	Avg	Total	Avg
Public/Not-For-Profit (n=345)	8,762	25	7,165	21	6,719	19	6,760	20
Private/For-Profit (Proprietary) (n=54)	4,207	78	2,685	50	2,948	55	2,638	49
Private/Not-For-Profit (n=32)	756	24	495	15	481	15	437	14
Federal Government (n=2)	188	94	76	38	64	32	68	34

Table 6 shows the new annual respiratory care enrollments in relation to the institutional control/funding. Programs under control/ funded by public/not-for-profit institutions accounted for 79.7% of the total number of respiratory care programs submitting annual reports in 2011. There were 7,165 new enrollments in 2010. This represents the largest category (68.8%) and is a 6.6% increase compared to 2009. In contrast, there was a 0.6% decrease in new enrollments for this category between 2008 and 2009. New enrollments reached 81.8% of maximum annual enrollment capacity in 2010 for programs under control/funded by public/not-for-profit institutions. The average number of new enrollments per program for this category was 21 in 2010, 19 in 2009, and 20 in 2008.

Programs under control/funded by private/for-profit (proprietary) institutions accounted for 12.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 2,685 (25.8% of total) new enrollments in 2010. This represents an 8.9% decrease compared to 2009. In contrast, there was an 11.8% increase for this category between 2008 and 2009. New enrollments reached 63.8% of maximum annual enrollment capacity in 2010 for programs under control/funded by private/for-profit (proprietary) institutions. The average number of new enrollments per program for this category was 50 in 2010, 55 in 2009, and 49 in 2008.

Programs under control/funded by private/not-for-profit institutions accounted for 7.4% of the total number of respiratory care programs submitting annual reports in 2011. There were 495 (4.8% of total) new enrollments in 2010. This represents a 2.9% increase compared to 2009. There was a 10.1% increase for this category between 2008 and 2009. New enrollments reached 65.5% of maximum annual enrollment capacity in 2010 for programs under control/funded by private/not-for-profit institutions. The average number of new enrollments per program for this category was 15 in 2010 and 2009, and 14 in 2008.

Programs under control/ funded by the federal government accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 76 (0.7% of total) new enrollments in 2010. This represents an 18.8% increase compared to 2009. In contrast, there was a 6.3% decrease for this category between 2008 and 2009. New enrollments reached 40.4% of maximum annual enrollment capacity in 2010 for institutions under control/funded by the federal government. The average number of new enrollments per program for this category was 38 in 2010, 32 in 2009, and 34 in 2008.

New RC Enrollments by State and Degree

Table 7 provides data on new respiratory care enrollments for 2008-2010 by state and degree offered.

Table 7 – New RC Enrollments by State and Degree (n=432)

State	Degree	Maximum Annual Enroll Capacity	New Enrollments 2010	New Enrollments 2009	New Enrollments 2008
AL (n=6)	**Total**	**203**	**143**	**155**	**144**
	Associate	150	81	96	89
	Baccalaureate	53	62	59	55
AR (n=11)	**Total**	**223**	**118**	**89**	**84**
	Associate	151	88	57	56
	Baccalaureate	72	30	32	28
AZ (n=7)	**Total**	**663**	**417**	**459**	**446**
	Associate	663	417	459	446
	Baccalaureate	0	0	0	0
CA (n=37)	**Total**	**2,092**	**1,619**	**1,630**	**1,508**
	Associate	2,070	1,605	1,622	1,497
	Baccalaureate	22	14	8	11
CO (n=5)	**Total**	**235**	**139**	**158**	**110**
	Associate	235	139	158	110
	Baccalaureate	0	0	0	0
CT (n=5)	**Total**	**113**	**101**	**89**	**85**
	Associate	95	85	79	69
	Baccalaureate	18	16	10	16
DC (n=1)	**Total**	**24**	**17**	**17**	**24**
	Associate	24	17	17	24
	Baccalaureate	0	0	0	0
DE (n=2)	**Total**	**35**	**28**	**31**	**25**
	Associate	35	28	31	25
	Baccalaureate	0	0	0	0
FL (n=24)	**Total**	**923**	**626**	**593**	**623**
	Associate	898	596	582	611
	Baccalaureate	25	30	11	12
GA (n=14)	**Total**	**335**	**263**	**257**	**252**
	Associate	245	182	180	165
	Baccalaureate	40	43	34	43
	Bacc & Masters	50	38	43	44
HI (n=1)	**Total**	**16**	**16**	**17**	**17**
	Associate	16	16	17	17
	Baccalaureate	0	0	0	0

IA (n=6)	**Total**	**128**	**115**	**99**	**87**
	Associate	128	115	99	87
	Baccalaureate	0	0	0	0
ID (n=3)	**Total**	**80**	**73**	**70**	**27**
	Associate	55	47	45	1
	Baccalaureate	25	26	25	26
IL (n=14)	**Total**	**431**	**316**	**334**	**289**
	Associate	407	292	313	289
	Bacc & Masters	24	24	21	0
IN (n=11)	**Total**	**237**	**230**	**214**	**203**
	Associate	207	200	184	173
	Baccalaureate	30	30	30	30
KS (n=8)	**Total**	**180**	**140**	**112**	**107**
	Associate	156	122	103	95
	Baccalaureate	24	18	9	12
KY (n=14)	**Total**	**282**	**205**	**171**	**231**
	Associate	267	205	160	218
	Baccalaureate	15	0	11	13
LA (n=12)	**Total**	**207**	**134**	**116**	**101**
	Associate	172	112	94	83
	Baccalaureate	35	22	22	18
MA (n=7)	**Total**	**139**	**123**	**118**	**118**
	Associate	139	123	118	118
	Baccalaureate	0	0	0	0
MD (n=8)	**Total**	**193**	**157**	**163**	**513**
	Associate	133	133	124	390
	Baccalaureate	60	24	39	33
ME (n=2)	**Total**	**34**	**36**	**34**	**35**
	Associate	34	36	34	35
	Baccalaureate	0	0	0	0
MI (n=13)	**Total**	**467**	**375**	**354**	**389**
	Associate	457	365	344	384
	Assoc & Bacc	10	10	10	5
	Baccalaureate	0	0	0	0
MN (n=5)	**Total**	**123**	**103**	**91**	**88**
	Associate	83	79	64	68
	Baccalaureate	40	24	27	20
MO (n=10)	**Total**	**377**	**216**	**243**	**177**
	Associate	353	203	230	166
	Baccalaureate	24	13	13	11
MS (n=8)	**Total**	**162**	**139**	**123**	**134**
	Associate	162	139	123	134

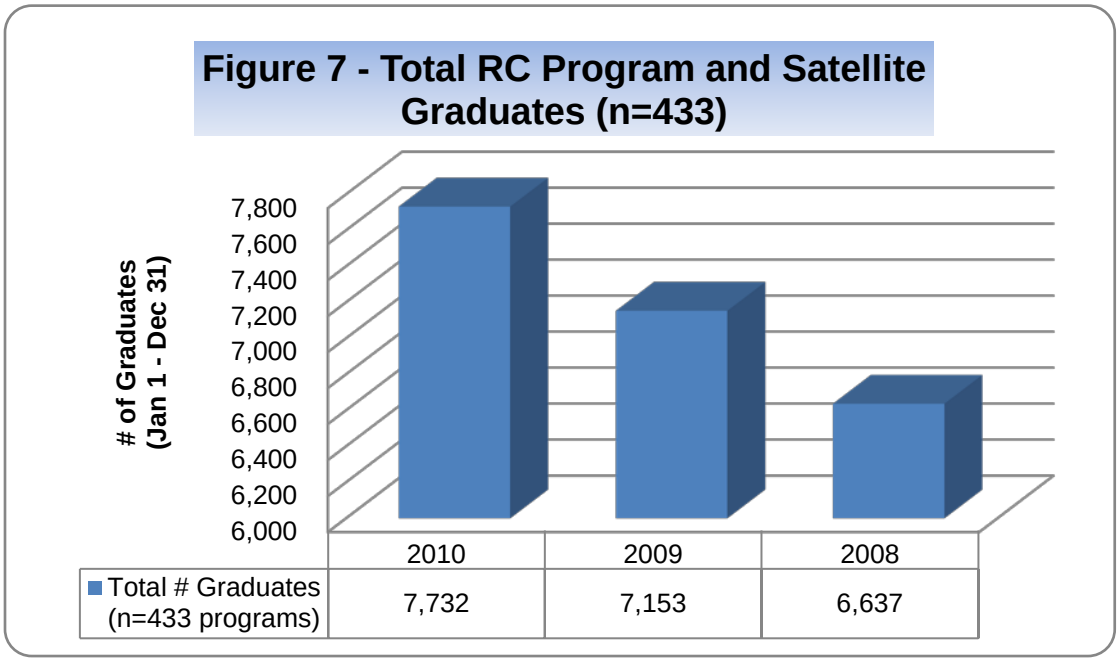
	Baccalaureate	0	0	0	0
MT (n=2)	**Total**	**31**	**28**	**28**	**23**
	Associate	31	28	28	23
	Baccalaureate	0	0	0	0
NC (n=14)	**Total**	**296**	**258**	**268**	**258**
	Associate	296	258	268	258
	Baccalaureate	0	0	0	0
ND (n=2)	**Total**	**24**	**16**	**22**	**24**
	Associate	0	0	0	0
	Baccalaureate	24	16	22	24
NE (n=4)	**Total**	**98**	**61**	**83**	**73**
	Associate	59	44	57	50
	Baccalaureate	15	6	11	11
	Assoc & Bacc	24	11	15	12
NH (n=1)	**Total**	**16**	**11**	**13**	**13**
	Associate	16	11	13	13
	Baccalaureate	0	0	0	0
NJ (n=5)	**Total**	**162**	**155**	**128**	**152**
	Associate	122	128	112	114
	Assoc & Bacc	40	27	16	38
NM (n=6)	**Total**	**173**	**112**	**92**	**111**
	Associate	173	112	92	111
	Baccalaureate	0	0	0	0
NV (n=3)	**Total**	**187**	**167**	**137**	**140**
	Associate	187	167	137	140
	Baccalaureate	0	0	0	0
NY (n=12)	**Total**	**429**	**345**	**325**	**306**
	Associate	355	273	263	243
	Baccalaureate	74	72	62	63
OH (n=22)	**Total**	**585**	**491**	**472**	**437**
	Associate	493	408	387	349
	Baccalaureate	92	83	85	88
OK (n=7)	**Total**	**157**	**121**	**120**	**88**
	Associate	157	121	120	88
	Baccalaureate	0	0	0	0
OR (n=4)	**Total**	**119**	**86**	**99**	**72**
	Associate	94	71	84	56
	Baccalaureate	25	15	15	16
PA (n=27)	**Total**	**706**	**478**	**422**	**440**
	Associate	608	398	348	367
	Baccalaureate	70	63	58	51
	Assoc & Bacc	28	17	16	22

RI (n=1)	**Total**	**24**	**21**	**26**	**21**
	Associate	24	21	26	21
	Baccalaureate	0	0	0	0
SC (n=7)	**Total**	**167**	**128**	**131**	**127**
	Associate	167	128	131	127
	Baccalaureate	0	0	0	0
SD (n=2)	**Total**	**24**	**20**	**16**	**23**
	Associate	24	20	16	23
	Baccalaureate	0	0	0	0
TN (n=11)	**Total**	**328**	**238**	**207**	**207**
	Associate	274	187	157	164
	Baccalaureate	54	51	50	43
TX (n=34)	**Total**	**1,244**	**814**	**790**	**886**
	Associate	1,107	693	682	780
	Baccalaureate	137	121	108	106
UT (n=7)	**Total**	**403**	**303**	**481**	**430**
	Associate	303	252	443	395
	Assoc & Bacc	100	51	38	35
VA (n=7)	**Total**	**320**	**265**	**180**	**194**
	Associate	290	239	153	173
	Baccalaureate	30	26	27	21
VT (n=1)	**Total**	**27**	**20**	**19**	**21**
	Associate	27	20	19	21
	Baccalaureate	0	0	0	0
WA (n=5)	**Total**	**152**	**132**	**125**	**141**
	Associate	152	132	125	141
	Baccalaureate	0	0	0	0
WI (n=7)	**Total**	**155**	**148**	**136**	**134**
	Associate	155	148	136	134
	Baccalaureate	0	0	0	0
WV (n=6)	**Total**	**139**	**117**	**121**	**94**
	Associate	109	107	95	64
	Baccalaureate	30	10	26	30
WY (n=1)	**Total**	**15**	**13**	**9**	**11**
	Associate	15	13	9	11
	Baccalaureate	0	0	0	0

Total Graduates

2011 RCS data (Figure 7) provides the total number of graduates during the 3-year time period being reported (i.e., January 1, 2008 through December 31, 2010). Graduation numbers include those students that graduate on-time as well as students graduating after their expected graduation date.

The average number of graduates per program was 18 in 2010, 17 in 2009, and 15 in 2008. There was a 7.8% increase in overall graduates between 2008 and 2009 and an 8.1% increase between 2009 and 2010.



Not included in Figure 7 are the graduate data for the 7 sleep specialist program options. There were a total of 45 graduates in 2010. In 2009, there were 40 graduates. In 2008, there were 50 graduates. The average number of graduates per program option in 2009 and 2010 was 6. In 2008, the average number of graduates per program option was 7.

RC Graduates by Degree Offered

Table 8 – RC Graduates by Degree Offered (n=433)						
Degree Offered	2010 Graduates		2009 Graduates		2008 Graduates	
	Total	Avg	Total	Avg	Total	Avg
Associate only (n=373)	6,919	19	6,353	17	5,858	16
Associate & Baccalaureate (n=9)	103	11	61	7	83	9
Baccalaureate only (n=49)	675	14	703	14	663	14
Baccalaureate & Masters (n=2)	35	35	36	36	33	33

Table 8 shows the number of respiratory care graduates in relation to the degree offered. Programs offering only associate degrees accounted for 86.1% of the total number of programs submitting annual reports in 2011. There were 7,732 graduates in 2010; of this total, 6,919 graduated from Associate degree programs. This represents the largest category (89.5%) and is an 8.9% increase compared to 2009. There was an 8.5% increase in graduates for this category between 2008 and 2009. The average number of graduates per program for this category was 19 in 2010, 17 in 2009, and 16 in 2008.

Programs offering both associate and baccalaureate degrees accounted for 2.1% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 103 graduates (1.3% of total) from programs that offered both an associate and baccalaureate degree. This represents a 68.9% increase from 2009. In contrast, there was a 2.7% decrease in graduates for this category between 2009 and 2008. The average number of graduates per program for this category was 11 in 2010, 7 in 2009, and 9 in 2008.

Programs offering only baccalaureate degrees accounted for 11.3% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 675 graduates (8.7% of total) from Baccalaureate degree programs. This represents a 4.0% decrease from 2009. In contrast, there was a 6.0% increase in graduates for this category between 2008 and 2009. The average number of graduates per program for this category was 14 in 2008, 2009, and 2010.

Programs offering both baccalaureate and master's degrees accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. In 2010, there were 35 graduates (0.5% of total) from programs that offered both a baccalaureate and master's degree. This represents a 2.8% decrease from 2009. In contrast, there was a 9.1% increase in graduates for this category between 2009 and 2008. The average number of graduates per program for this category was 35 in 2010, 36 in 2009, and 33 in 2008.

RC Graduates by Institutional Type

Table 9 – RC Graduates by Institutional Type (n=433)

Institutional Type	2010 Graduates		2009 Graduates		2008 Graduates	
	Total	Avg	Total	Avg	Total	Avg
Community College or Junior College (n=250)	4,143	17	3,994	16	3,776	15
Four-Year College or University (n=91)	1,361	15	1,275	14	1,278	14
Technical or Vocational School (n=71)	1,965	28	1,620	23	1,344	19
Academic HSC/Medical Center (n=12)	118	10	125	10	106	9
Career or Technical College (n=7)	125	18	124	18	130	19
U.S. Military (n=2)	20	10	15	8	3	2

Table 9 shows the number of respiratory care graduates in relation to the institutional type. Programs offered in community or junior colleges accounted for 57.7% of the total number of respiratory care programs submitting annual reports in 2011. There were 4,143 graduates in 2010. This represents the largest category (53.6%) and is a 3.7% increase compared to 2009. There was a 5.8% increase in graduates between 2008 and 2009. The average number of graduates per program for this category was 17 in 2010, 16 in 2009, and 15 in 2008.

Programs offered in four-year colleges or universities accounted for 21.0% of the total number of respiratory care programs submitting annual reports in 2011. There were 1,361 (17.6% of total) graduates in 2010. This represents a 6.8% increase compared to 2009. In contrast, there was a 0.2% decrease between 2008 and 2009. The average number of graduates per program for this category was 15 in 2010 and 14 in 2009 and 2008.

Programs offered in technical or vocational schools accounted for 16.4% of the total number of respiratory care programs submitting annual reports in 2011. There were 1,965 (25.4% of total) graduates in 2010. This represents a 21.3% increase compared to 2009. There was a 20.5% increase between 2008 and 2009. The average number of graduates per program for this category was 28 in 2010, 23 in 2009, and 19 in 2008.

Programs offered in academic HSC/medical centers accounted for 2.8% of the total number of respiratory care programs submitting annual reports in 2011. There were 118 (15.3% of total) graduates in 2010. This represents a 5.6% decrease compared to 2009. In contrast, there was a 17.9% increase between 2008 and 2009. The average number of graduates per program for this category was 10 in 2010 and 2009, and 9 in 2008.

Programs offered in career or technical colleges accounted for 1.6% of the total number of respiratory care programs submitting annual reports in 2011. There were 125 (1.6% of total) graduates in 2010. This represents a 0.8% increase compared to 2009. In contrast, a 4.6% decrease occurred between 2008 and 2009. The average number of graduates per program for this category was 18 in 2010 and 2009, and 19 in 2008.

Programs offered in the U.S. military accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 20 (0.3% of total) graduates in 2010. This represents a 33.3% increase compared to 2009. There was a 400% increase between 2008 and 2009. The average number of graduates per program for this category was 10 in 2010, 8 in 2009, and 2 in 2008. Note: The 2011 RCS did not capture data from the 100-level military programs since those programs voluntarily withdrew prior to the July 1, 2011 RCS submission deadline.

RC Graduates by Institutional Control/Funding

Table 10 –RC Graduates by Institutional Control/Funding (n=433)

Institutional Control/Funding	2010 Graduates		2009 Graduates		2008 Graduates	
	Total	Avg	Total	Avg	Total	Avg
Public/Not-For-Profit (n=345)	5,216	15	5,122	15	4,888	14
Private/For-Profit (Proprietary) (n=54)	2,144	40	1,669	31	1,411	26
Private/Not-For-Profit (n=32)	352	11	347	11	335	10
Federal Government (n=2)	20	10	15	8	3	2

Table 10 shows the number respiratory care graduates in relation to the institutional control/funding. Programs under control/ funded by public/not-for-profit institutions accounted for 79.7% of the total number of respiratory care programs submitting annual reports in 2011. There were 5,216 graduates in 2010. This represents the largest category (67.5%) and is a 1.8% increase compared to 2009. There was a 4.8% increase in graduates for this category between 2008 and 2009. The average number of graduates per program for this category was 15 in 2010 and 2009, and 14 in 2008.

Programs under control/funded by private/for-profit (proprietary) institutions accounted for 12.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 2,144 (27.7% of total) graduates in 2010. This represents a 28.5% increase compared to 2009. There was an 18.3% increase for this category between 2008 and 2009. The average number of graduates per program for this category was 40 in 2010, 31 in 2009, and 26 in 2008.

Programs under control/funded by private/not-for-profit institutions accounted for 7.4% of the total number of respiratory care programs submitting annual reports in 2011. There were 352 (4.6% of total) graduates in 2010. This represents a 1.4% increase compared to 2009. There was a 3.6% increase for this category between 2008 and 2009. The average number of graduates per program for this category was 11 in 2010 and 2009, and 10 in 2008.

Programs under control/ funded by the federal government accounted for 0.5% of the total number of respiratory care programs submitting annual reports in 2011. There were 20 (0.3% of total) graduates in 2010. This represents a 33.3% increase compared to 2009. The average number of graduates per program for this category was 10 in 2010, 8 in 2009, and 2 in 2008. Note: The 2011 RCS did not capture data from the 100-level military programs since those programs voluntarily withdrew prior to the July 1, 2011 RCS submission deadline.

RC Graduates by State and Degree

Table 11 provides data on respiratory care graduates for 2008-2010 by state and degree offered.

Table 11 –RC Graduates by State and Degree (n=432)

State	Degree	2010 Graduates	2009 Graduates	2008 Graduates
AL (n=6)	**Total**	**124**	**112**	**115**
	Associate	79	77	61
	Baccalaureate	45	35	54
AR (n=11)	**Total**	**62**	**61**	**45**
	Associate	48	40	32
	Baccalaureate	14	21	13
AZ (n=7)	**Total**	**341**	**334**	**290**
	Associate	341	334	290
	Baccalaureate	0	0	0
CA (n=37)	**Total**	**1270**	**1020**	**943**
	Associate	1262	1009	932
	Baccalaureate	8	11	11
CO (n=5)	**Total**	**116**	**80**	**76**
	Associate	116	80	76
	Baccalaureate	0	0	0
CT (n=5)	**Total**	**64**	**63**	**66**
	Associate	50	57	63
	Baccalaureate	14	6	3
DC (n=1)	**Total**	**11**	**20**	**15**
	Associate	11	20	15
	Baccalaureate	0	0	0
DE (n=2)	**Total**	**25**	**15**	**25**
	Associate	25	15	25
	Baccalaureate	0	0	0
FL (n=24)	**Total**	**486**	**442**	**362**
	Associate	475	422	351
	Baccalaureate	11	20	11
GA (n=14)	**Total**	**237**	**194**	**197**
	Associate	165	121	129
	Baccalaureate	37	37	35
	Bacc & Masters	35	36	33
HI (n=1)	**Total**	**11**	**14**	**14**
	Associate	11	14	14
	Baccalaureate	0	0	0
IA (n=6)	**Total**	**66**	**69**	**78**
	Associate	66	69	78

	Baccalaureate	0	0	0
ID (n=3)	**Total**	**32**	**36**	**21**
	Associate	10	12	6
	Baccalaureate	22	24	15
IL (n=14)	**Total**	**245**	**250**	**243**
	Associate	245	250	243
	Baccalaureate	0	0	0
	Bacc & Masters	0	0	0
IN (n=11)	**Total**	**174**	**163**	**141**
	Associate	146	139	119
	Baccalaureate	28	24	22
KS (n=8)	**Total**	**83**	**110**	**83**
	Associate	73	103	67
	Baccalaureate	10	7	16
KY (n=14)	**Total**	**160**	**170**	**139**
	Associate	146	158	133
	Baccalaureate	14	12	6
LA (n=12)	**Total**	**83**	**83**	**70**
	Associate	67	62	51
	Baccalaureate	16	21	19
MA (n=7)	**Total**	**104**	**72**	**71**
	Associate	104	72	71
	Bacc	0	0	0
MD (n=8)	**Total**	**110**	**96**	**106**
	Associate	87	69	83
	Baccalaureate	23	27	23
ME (n=2)	**Total**	**24**	**21**	**22**
	Associate	24	21	22
	Baccalaureate	0	0	0
MI (n=13)	**Total**	**277**	**235**	**234**
	Associate	274	235	234
	Assoc & Bacc	3	0	0
	Baccalaureate	0	0	0
MN (n=5)	**Total**	**65**	**70**	**67**
	Associate	46	48	46
	Baccalaureate	19	22	21
MO (n=10)	**Total**	**173**	**135**	**116**
	Associate	161	122	106
	Baccalaureate	12	13	10
MS (n=8)	**Total**	**96**	**91**	**89**
	Associate	96	91	89
	Baccalaureate	0	0	0

MT (n=2)	**Total**	**18**	**14**	**19**
	Associate	18	14	19
	Baccalaureate	0	0	0
NC (n=14)	**Total**	**182**	**165**	**182**
	Associate	182	165	182
	Baccalaureate	0	0	0
ND (n=2)	**Total**	**22**	**23**	**18**
	Associate	0	0	0
	Baccalaureate	22	23	18
NE (n=4)	**Total**	**57**	**47**	**61**
	Associate	40	34	41
	Assoc & Bacc	12	10	12
	Baccalaureate	5	3	8
NH (n=1)	**Total**	**11**	**11**	**11**
	Associate	11	11	11
	Baccalaureate	0	0	0
NJ (n=5)	**Total**	**92**	**106**	**118**
	Associate	76	87	101
	Assoc & Bacc	16	19	17
	Baccalaureate	0	0	0
NM (n=6)	**Total**	**72**	**79**	**64**
	Associate	72	79	64
	Baccalaureate	0	0	0
NV (n=3)	**Total**	**108**	**100**	**90**
	Associate	108	100	90
	Baccalaureate	0	0	0
NY (n=12)	**Total**	**244**	**240**	**226**
	Associate	183	181	177
	Baccalaureate	61	59	49
OH (n=22)	**Total**	**343**	**333**	**344**
	Associate	265	258	271
	Baccalaureate	78	75	73
OK (n=7)	**Total**	**104**	**90**	**86**
	Associate	104	90	86
	Baccalaureate	0	0	0
OR (n=4)	**Total**	**64**	**61**	**62**
	Associate	49	45	45
	Baccalaureate	15	16	17
PA (n=27)	**Total**	**289**	**343**	**306**
	Associate	229	284	255
	Assoc & Bacc	17	15	11
	Baccalaureate	43	44	40

RI (n=1)	**Total**	**14**	**20**	**15**
	Associate	14	20	15
	Baccalaureate	0	0	0
SC (n=7)	**Total**	**81**	**91**	**101**
	Associate	81	91	101
	Baccalaureate	0	0	0
SD (n=2)	**Total**	**13**	**21**	**18**
	Associate	13	21	18
	Baccalaureate	0	0	0
TN (n=11)	**Total**	**134**	**144**	**145**
	Associate	93	102	109
	Baccalaureate	41	42	36
TX (n=34)	**Total**	**623**	**693**	**516**
	Associate	533	599	413
	Baccalaureate	90	94	103
UT (n=7)	**Total**	**326**	**168**	**181**
	Associate	271	151	138
	Assoc & Bacc	55	17	43
	Baccalaureate	0	0	0
VA (n=7)	**Total**	**150**	**132**	**137**
	Associate	130	111	119
	Baccalaureate	20	21	18
VT (n=1)	**Total**	**14**	**18**	**12**
	Associate	14	18	12
	Baccalaureate	0	0	0
WA (n=5)	**Total**	**114**	**84**	**73**
	Associate	114	84	73
	Baccalaureate	0	0	0
WI (n=7)	**Total**	**109**	**98**	**113**
	Associate	109	98	113
	Baccalaureate	0	0	0
WV (n=6)	**Total**	**85**	**77**	**76**
	Associate	75	59	57
	Baccalaureate	10	18	19
WY (n=1)	**Total**	**7**	**11**	**12**
	Associate	7	11	12
	Baccalaureate	0	0	0

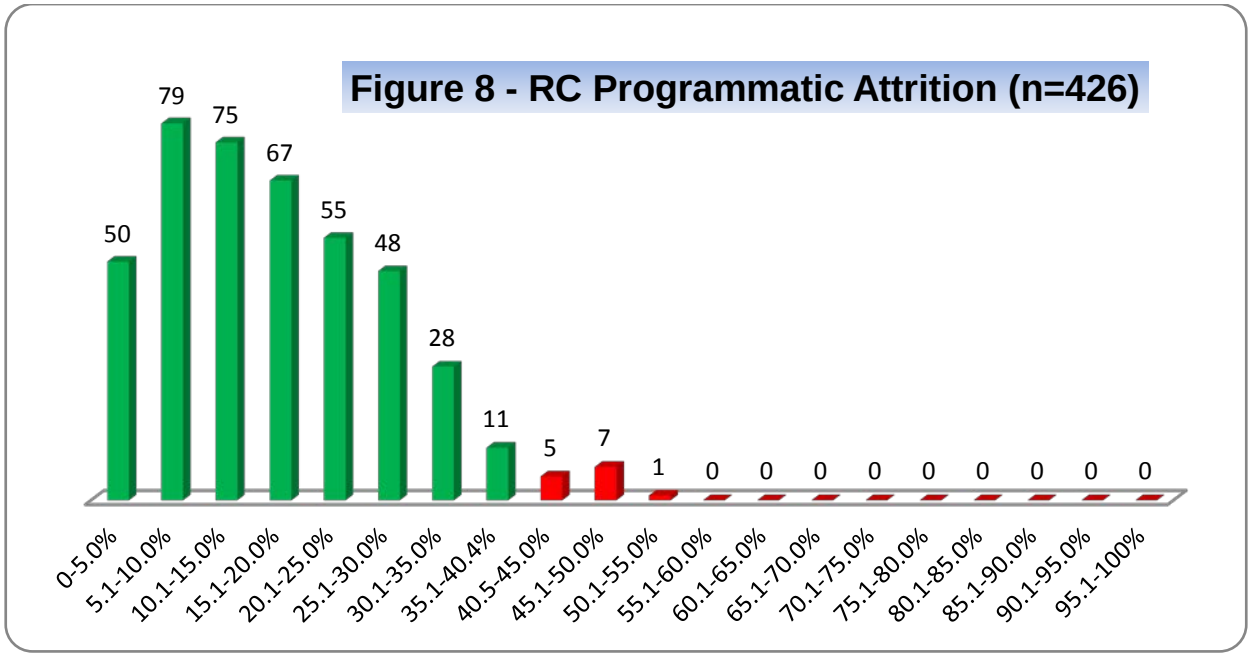
Overall Programmatic Attrition

Programmatic attrition is defined by CoARC as, "*Students formally enrolled in a respiratory care program that began fundamental (non-survey) respiratory care core coursework and have left for academic or non-academic reasons.*[5]" Students who leave the program with a full tuition refund, and those students transferring to satellites are not included in program attrition. Programmatic enrollment, as defined by CoARC, begins at the point at which the respiratory student enrolls in the first core respiratory care course (non-survey) that is available only to students matriculated in the respiratory care program. This may be different than the enrollment or matriculation date determined by the institution. This definition is used only for calculating programmatic attrition and on-time graduation rates.

Table 12 – RC Programmatic Attrition (n=426)

# of Programs Reporting Data	CoARC Threshold	Avg	Max	Min	# of Programs Above Threshold
n=426	40%	17.0%	52%	0%	13

2011 RCS data on programmatic attrition (Table 12 and Figure 8) show a total of 426 programs reporting programmatic attrition rates for 2008-2010. Seven new programs did not have any attrition data to report for 2008-10. The average attrition rate was 17% with the highest rate of 52% (n=1) and the lowest rate of 0% (n=16). A total of 13 programs (3.1% of total) reported attrition rates above the CoARC-established threshold of 40%. As per CoARC Standard 3.14, these programs began a dialogue with CoARC to develop an appropriate plan of action (i.e., a progress report) for program improvement.



Not included in Table 12 and Figure 8 are the attrition data for the 7 sleep specialist program options. There were a total of 7 program options reporting data in 2011. The average attrition rate was 10% with the highest rate of 30% (n=1) and the lowest rate of 0% (n=1). All 7 program options reported attrition rates below the CoARC-established threshold of 40%.

[5] This was the definition in use at the time of the submission of the 2011 RCS. The definition of attrition in use for the 2012 RCS (effective March 24, 2012) is "*Students formally enrolled in a respiratory care program that began fundamental (non-survey) respiratory care core coursework and have left for academic or non-academic reasons. Students who leave the program before the fifteenth calendar day from the beginning of the term with fundamental respiratory care core coursework and those students transferring to satellites are not included in program attrition.*"

Attrition by Degree Offered, Institutional Type, and Institutional Control/Funding

Table 13 – RC Programmatic Attrition by Degree Offered (n=426)	
Degree	**Avg Attrition**
Baccalaureate & Master's (n=2)	21.1%
Associate only (n=366)	17.8%
Baccalaureate only (n=49)	12.3%
Associate & Baccalaureate (n=9)	8.5%

Table 13 shows programmatic attrition data in relation to the degree offered. RC Programs offering both Baccalaureate & Master's degrees demonstrated the highest attrition rate (21.1%). RC Programs offering only the Baccalaureate degree demonstrated a lower attrition rate (12.3%) on average when compared to programs offering only the Associate degree (17.8%). RC Programs offering both the Associate & Baccalaureate degree demonstrated the lowest attrition rate at 8.5%.

Table 14 – RC Programmatic Attrition by Institutional Type (n=426)	
Institutional Type	**Avg Attrition**
Academic HSC/Medical Center (n=12)	24.3%
Community College or Junior College (n=246)	18.1%
Technical or Vocational School (n=68)	17.7%
Four-Year College or University (n=91)	13.3%
Career or Technical College (n=7)	12.7%
U.S. Military (n=2)	1.6%

Table 14 shows programmatic attrition data in relation to institutional type. RC Programs located in Academic HSC/Medical Centers demonstrated the highest attrition rate (24.3%). Attrition rates decreased to 18.1% on average for RC Programs located in Community Colleges or Junior Colleges. Attrition rates decreased slightly to 17.7% on average for RC Programs located in Technical or Vocational Schools. Four-Year Colleges or Universities demonstrated an attrition rate of 13.3% on average with the rate decreasing slightly further to 12.7% for Career or Technical Colleges. RC Programs located at U.S. Military facilities demonstrated the lowest attrition rate at 1.6%.

Table 15 – RC Programmatic Attrition by Institutional Control/Funding (n=426)	
Institutional Type	**Avg Attrition**
Private/For-Profit (Proprietary) (n=52)	17.7%
Public/Not-For-Profit (n=340)	17.3%
Private/Not-For-Profit (n=32)	13.2%
Federal Government (n=2)	1.6%

Table 15 shows programmatic attrition data in relation to institutional control/funding. Programs under control/funded by private/for-profit (proprietary) institutions demonstrated the highest attrition rate, on average, at 17.7%. Programs under control/funded by public/not-for-profit demonstrated a slightly lower attrition rate (17.3%) compared to the for-profit sector. Attrition rates were even lower, on average (13.2%) for programs under control/funded by private/not-for-profit institutions. RC Programs under control/funded by the federal government demonstrated the lowest attrition rate at 1.6%.

Overall Positive (Job) Placement

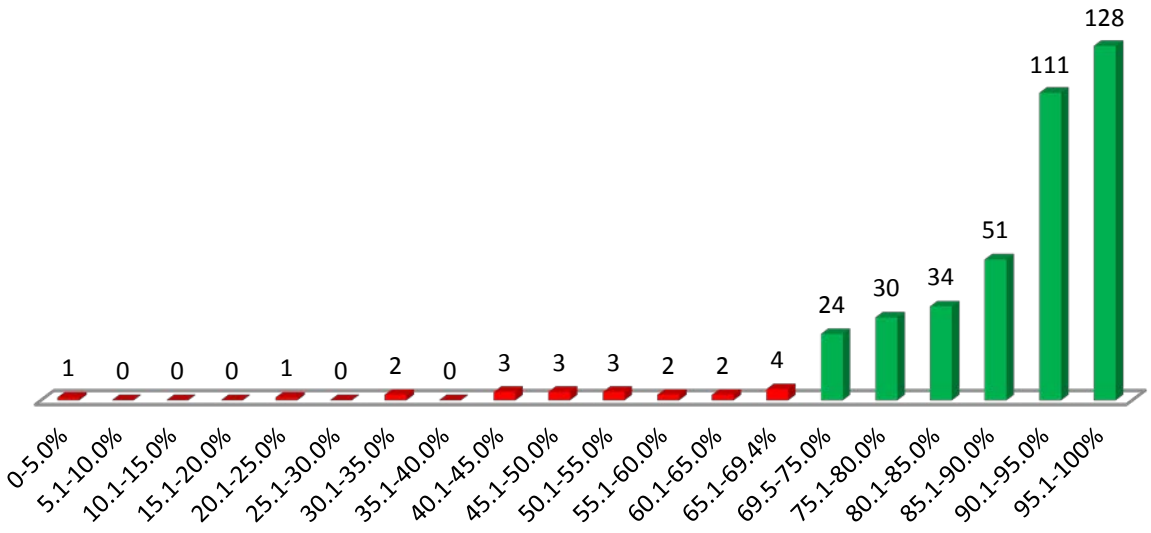
Positive (job) placement is defined by CoARC as, "*a graduate who within ten (10) months after graduation is: a. employed in respiratory care (i.e. full- or part-time, per diem, etc.), or b. enrolled full- or part-time in another degree program, or c. serving in the military, or d. employed in the polysomnography field (i.e. full- or part-time, per diem, etc. for graduates of the polysomnography option of programs offering the same).*[6]"

Table 16 – RC Positive (Job) Placement (n=399)

# of Programs Reporting Data	CoARC Threshold	Avg	Max	Min	# of Programs Below Threshold
n=399	70%	88.5%	100%	0%	21

2011 RCS data on positive placement (Table 16 and Figure 9) show a total of 399 programs reporting positive placement rates for 2008-2010. Thirty-four programs did not have any placement data to report for 2008-10. The average placement rate was 88.5% with the highest rate of 100% (n=64) and the lowest rate of 0% (n=1). A total of 21 programs (5.3% of total) reported placement rates below the CoARC-established threshold of 70%. As per CoARC Standard 3.14, these programs began a dialogue with CoARC to develop an appropriate plan of action (i.e., a progress report) for program improvement.

Figure 9 - RC Positive (Job) Placement (n=399)



Not included in Table 16 and Figure 9 are the placement data for the 7 sleep specialist program options. There were a total of 7 program options reporting data in 2011. The average placement rate was 92% with the highest rate of 100% (n=3) and the lowest rate of 76.9% (n=1). All 7 program options reported placement rates above the CoARC-established threshold of 70%.

[6] This was the definition in use at the time of the submission of the 2011 RCS. The definition for (positive) job placement in use for the 2012 RCS (effective March 24, 2012) is *"a graduate who within twelve (12) months after graduation is: a. Employed utilizing skills as defined by the scope of practice within the respiratory care profession. (i.e. full- or part-time, or per diem), or b. enrolled full- or part-time in another degree program, or c. serving in the military."*

Placement by Degree Offered, Institutional Type, and Institutional Control/Funding

Table 17 – RC Positive (Job) Placement by Degree Offered (n=399)	
Degree	**Avg Placement**
Associate & Baccalaureate (n=9)	96.9%
Baccalaureate only (n=48)	92.1%
Baccalaureate & Master's (n=1)	90.4%
Associate only (n=341)	87.7%

Table 17 shows positive (job) placement data in relation to the degree offered. RC Programs offering both Associate & Baccalaureate degrees demonstrated the highest placement rate (96.9%). RC Programs offering both the Baccalaureate and Master's degree demonstrated a lower placement rate (90.4%) on average when compared to programs offering only the Baccalaureate degree (92.1%). RC Programs offering only the Associate degree demonstrated the lowest placement rate at 87.7%.

Table 18 – RC Positive (Job) Placement by Institutional Type (n=399)	
Institutional Type	**Avg Placement**
U.S. Military (n=1)	100%
Academic HSC/Medical Center (n=10)	97.7%
Four-Year College or University (n=87)	91.4%
Career or Technical College (n=6)	89.0%
Community College or Junior College (n=238)	88.6%
Technical or Vocational School (n=57)	81.5%

Table 18 shows positive (job) placement data in relation to institutional type. RC Programs located at U.S. Military facilities demonstrated the highest placement rate (100%). Placement rates decreased slightly to 97.7% on average for RC Programs located in Academic HSC/Medical Centers. Placement rates decreased to 91.4% on average for RC Programs located in Four-Year Colleges or Universities. Career or Technical Colleges demonstrated a placement rate of 89.0% on average with the rate decreasing slightly further to 88.6% for Community Colleges or Junior Colleges. RC Programs located in Technical or Vocational Schools demonstrated the lowest placement rate at 81.5%.

Table 19 – RC Positive (Job) Placement by Institutional Control/Funding (n=399)	
Institutional Type	**Avg Placement**
Federal Government (n=1)	100%
Public/Not-For-Profit (n=330)	89.4%
Private/Not-For-Profit (n=27)	89.4%
Private/For-Profit (Proprietary) (n=41)	79.6%

Table 19 shows positive (job) placement data in relation to institutional control/funding. Programs under control/funded by the federal government demonstrated the highest placement rate, on average, at 100%. Programs under control/funded by public/not-for-profit and private/not-for-profit both demonstrated a placement rate of 89.4%, on average. RC Programs under control/funded by private/for-profit (proprietary) institutions demonstrated the lowest placement rate at 79.6%.

Overall CRT Credentialing Success

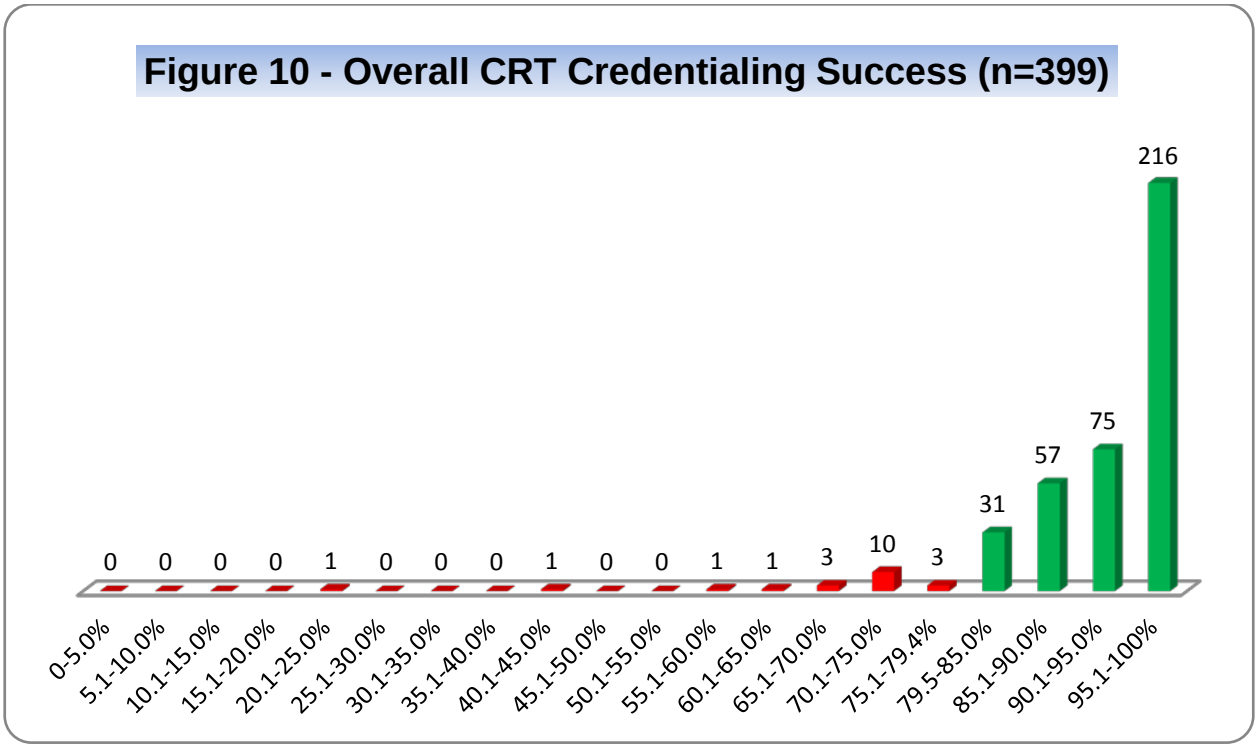
CRT Credentialing Success is defined by CoARC as, "*the percentage of graduates who obtain the CRT credential upon successful completion of the NBRC Entry-Level Examination (ELE) independent of the number of ELE exam attempts.*" The calculation is derived by dividing the total # of CRTs (numerator) by the # of graduates (denominator) in a three year reporting period. The Entry-Level Certified Respiratory Therapist (CRT) Examination administered by the National Board for Respiratory Care (NBRC) is designed to objectively measure essential knowledge, skills, and abilities required of entry-level respiratory therapists. Individuals holding the CRT credential are eligible to practice respiratory care as defined by their state's practice act.

Table 20 – Overall CRT Credentialing Success (n=399)

# of Programs Reporting Data	CoARC Threshold	Avg	Max	Min	# of Programs Below Threshold
n=399	80%	93.1%	100%	27.3%	20

2011 RCS data on CRT credentialing success (Table 20 and Figure 10) show a total of 399 programs reporting CRT credentialing success for 2008-2010. Thirty-four programs did not have any CRT credentialing success to report for 2008-10. The average CRT credentialing success rate was 93.1% with the highest rate of 100% (n=108) and the lowest rate of 27.3% (n=1). A total of 20 programs (5.0% of total) reported CRT credentialing success rates below the CoARC-established threshold of 80%. As per CoARC Standard 3.14, these programs began a dialogue with CoARC to develop an appropriate plan of action (i.e., a progress report) for program improvement.

Figure 10 - Overall CRT Credentialing Success (n=399)



CRT Credentialing Success by Degree Offered, Institutional Type, and Institutional Control/Funding

Table 21 – CRT Credentialing Success by Degree Offered (n=399)	
Degree	**Avg CRT Credentialing Success**
Associate & Baccalaureate (n=9)	97.5%
Baccalaureate & Master's (n=1)	97.1%
Baccalaureate only (n=48)	95.3%
Associate only (n=341)	92.7%

Table 21 shows CRT credentialing success data in relation to the degree offered. RC Programs offering both Associate & Baccalaureate degrees demonstrated the highest CRT credentialing success (97.5%). RC Programs offering both the Baccalaureate and Master's degree demonstrated a slightly lower credentialing success (97.1%) on average. Programs offering only the Baccalaureate degree demonstrated a credentialing success of 95.3%, on average. RC Programs offering only the Associate degree demonstrated the lowest credentialing success at 92.7%.

Table 22 – CRT Credentialing Success by Institutional Type (n=399)	
Institutional Type	**Avg CRT Credentialing Success**
Academic HSC/Medical Center (n=10)	98.4%
Four-Year College or University (n=87)	95.0%
Community College or Junior College (n=238)	93.3%
Career or Technical College (n=6)	91.8%
Technical or Vocational School (n=57)	88.8%
U.S. Military (n=1)	86.8%

Table 22 shows CRT credentialing success data in relation to institutional type. RC Programs located in Academic HSC/Medical Centers demonstrated the highest CRT credentialing success at 98.4%. CRT credentialing success decreased to 95.0% on average for RC Programs located in Four-Year Colleges or Universities. Community Colleges or Junior Colleges demonstrated a credentialing success of 93.3% on average with the rate decreasing slightly further to 91.8% for Career or Technical Colleges. RC Programs located in Technical or Vocational Schools demonstrated a credentialing success at 88.8%. RC Programs located at U.S. Military facilities demonstrated the lowest credentialing success at 86.8%.

Table 23 – CRT Credentialing Success by Institutional Control/Funding (n=399)	
Institutional Type	**Avg CRT Credentialing Success**
Public/Not-For-Profit (n=330)	93.8%
Private/Not-For-Profit (n=27)	93.1%
Private/For-Profit (Proprietary) (n=41)	88.0%
Federal Government (n=1)	86.8%

Table 23 shows CRT credentialing success data in relation to institutional control/funding. Programs under control/funded by public/not-for-profit institutions demonstrated the highest CRT credentialing success, on average, at 93.8%. This was followed by the private/not-for-profit sector at 93.1%. Programs under control/funded by private/for-profit (proprietary) institutions demonstrated a credentialing success at 88.0%, followed by the lowest credentialing success rate (86.8%) for programs under control/funded by the federal government.

Overall RRT Credentialing Success

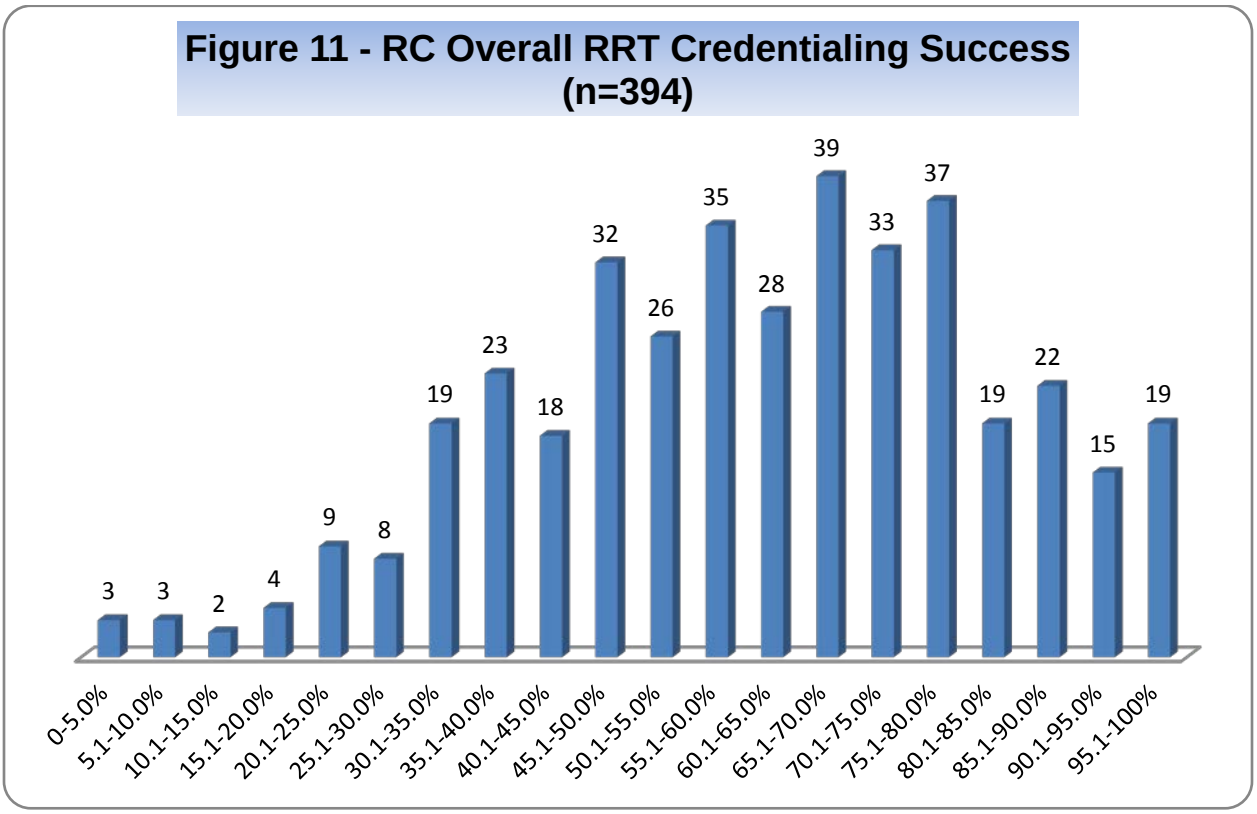
RRT Credentialing Success is defined as the percentage of graduates who obtain the RRT credential upon successful completion of the NBRC Written Registry Examination (WRE) and Clinical Simulation Examination (CSE) independent of the number of WRE or CSE exam attempts. The calculation is derived by dividing the total # of RRTs (numerator) by the # of graduates (denominator) in a three year reporting period. The Registered Respiratory Therapist (RRT) Examination administered by the National Board for Respiratory Care (NBRC) is designed to objectively measure essential knowledge, skills, and abilities required of advanced respiratory therapists. Note: Currently, this credential is not required by any state to enter practice. Graduates of CoARC-accredited programs can choose to forego the RRT examinations after earning the CRT credential. Programs are still required to provide RRT outcomes data on the RCS; however, no accreditation actions are taken based on RRT credentialing success. For more information related to this outcomes measure, download CoARC's March 13, 2010 position statement regarding exam-based outcomes measures available at www.coarc.com/15.html.

Table 24 – RC Overall RRT Credentialing Success (n=394)

# of Programs Reporting Data	CoARC Threshold	Avg	Max	Min	# of Programs Below Threshold
n=394	N/A	61.2%	100%	0%	N/A

2011 RCS data on CRT credentialing success (Table 24 and Figure 11) show a total of 394 programs reporting RRT credentialing success for 2008-2010. Thirty-nine programs did not have any RRT credentialing success to report for 2008-10. The average RRT credentialing success rate was 61.2% with the highest rate of 100% (n=7) and the lowest rate of 0% (n=3).

Figure 11 - RC Overall RRT Credentialing Success (n=394)



RRT Credentialing Success by Degree Offered, Institutional Type, and Institutional Control/Funding

Table 25 – RC RRT Credentialing Success by Degree Offered (n=394)	
Degree	**Avg RRT Credentialing Success**
Baccalaureate & Master's (n=1)	87.5%
Baccalaureate only (n=48)	73.1%
Associate & Baccalaureate (n=9)	69.1%
Associate only (n=336)	59.2%

Table 25 shows RRT credentialing success data in relation to the degree offered. RC Programs offering both Baccalaureate and Master's degrees demonstrated the highest RRT credentialing success (87.5%). RC Programs offering only the Baccalaureate degree demonstrated a lower credentialing success (73.1%) on average. Programs offering both the Associate & Baccalaureate degrees demonstrated a credentialing success of 69.1%, on average. RC Programs offering only the Associate degree demonstrated the lowest credentialing success at 59.2%.

Table 26 – RC RRT Credentialing Success by Institutional Type (n=394)	
Institutional Type	**Avg RRT Credentialing Success**
Academic HSC/Medical Center (n=10)	81.7%
Four-Year College or University (n=85)	67.7%
Community College or Junior College (n=236)	60.1%
Career or Technical College (n=6)	58.6%
Technical or Vocational School (n=56)	52.7%
U.S. Military (n=1)	52.6%

Table 26 shows RRT credentialing success data in relation to institutional type. RC Programs located in Academic HSC/Medical Centers demonstrated the highest RRT credentialing success at 81.7%. RRT credentialing success decreased to 67.7% on average for RC Programs located in Four-Year Colleges or Universities. Community Colleges or Junior Colleges demonstrated a credentialing success of 60.1% on average with the rate decreasing slightly further to 58.6% for Career or Technical Colleges. RC Programs located in Technical or Vocational Schools demonstrated a credentialing success at 52.7%. RC Programs located at U.S. Military facilities demonstrated the lowest credentialing success at 52.6%.

Table 27 – RC RRT Credentialing Success by Institutional Control/Funding (n=394)	
Institutional Type	**Avg RRT Credentialing Success**
Public/Not-For-Profit (n=327)	63.1%
Private/Not-For-Profit (n=25)	58.0%
Federal Government (n=1)	52.6%
Private/For-Profit (Proprietary) (n=41)	47.7%

Table 27 shows RRT credentialing success data in relation to institutional control/funding. Programs under control/funded by public/not-for-profit institutions demonstrated the highest RRT credentialing success, on average, at 63.1%. This was followed by the private/not-for-profit sector at 58.0%. Programs under control/funded by the federal government demonstrated a credentialing success at 52.6%, followed by the lowest credentialing success rate (47.7%) for programs under control/funded by private/for-profit (proprietary) institutions.

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I

112TH CONGRESS
1ST SESSION

H. R. 941

To amend title XVIII of the Social Security Act to provide for Medicare coverage of services of qualified respiratory therapists performed under the general supervision of a physician.

IN THE HOUSE OF REPRESENTATIVES

MARCH 8, 2011

Mr. ROSS of Arkansas introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committee on Ways and Means, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

A BILL

To amend title XVIII of the Social Security Act to provide for Medicare coverage of services of qualified respiratory therapists performed under the general supervision of a physician.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Medicare Respiratory Therapy Initiative Act of 2011".

SEC. 2. MEDICARE COVERAGE OF SERVICES OF QUALIFIED RESPIRATORY THERAPISTS PERFORMED UNDER THE GENERAL SUPERVISION OF A PHYSICIAN.

(a) IN GENERAL.—Section 1861 of the Social Security Act (42 U.S.C. 1395x) is amended—

(1) in subsection (s)(2)—

(A) by striking "and" at the end of subparagraph (EE);

(B) by adding "and" at the end of subparagraph (FF); and

(C) by adding at the end the following new subparagraph:

"(GG) respiratory therapy services which would be physicians' services if furnished by a physician (as defined in subsection (r)(1)) for the diagnosis and treatment of respiratory illnesses and which are performed by a respiratory therapist (as defined in subsection (iii)) under the general supervision of a physician and which the respiratory therapist is legally authorized to perform by the State in which the services are performed, but only if no facility or other provider charges or is paid any amounts with respect to the furnishing of such services."; and

(2) by adding at the end the following new subsection:

"Respiratory Therapist

"(iii) For purposes of subsection (s)(2)(GG) and section 1833(a)(1)(AA) only, the term 'respiratory therapist' means an individual who—

"(1) is credentialed by a national credentialing board recognized by the Secretary;

"(2)(A) is licensed to practice respiratory therapy in the State in which the respiratory therapy services are performed, or

"(B) in the case of an individual in a State which does not provide for such licensure, is legally authorized to perform respiratory therapy services (in the State in which the individual performed such services) under State law (or the State regulatory mechanism provided by State law);

"(3) is a registered respiratory therapist; and

"(4) holds a bachelor's degree.".

(b) PAYMENT.—Section 1833(a)(1) of such Act (42 U.S.C. 1395l(a)(1)) is amended—

(1) by striking "and" before "(Z)"; and

(2) by inserting before the semicolon at the end the following: "and (AA) with respect to services described in section 1861(s)(2)(GG) (relating to services furnished by a respiratory therapist) that are furnished by a respiratory therapist (as defined in

section 1861(iii)), the amount paid shall be equal to 80 percent of the lesser of the actual charge for the services or 85 percent of the fee schedule amount provided under section 1848 for the same services if furnished by a physician".

(c) EFFECTIVE DATE.—The amendments made by this section shall apply to services furnished on or after January 1, 2012.

○

California Respiratory Care Practitioner Workforce Study

Conducted for the Respiratory Care Board of California
by the Institute for Social Research
at California State University, Sacramento

Ernest L. Cowles, Ph.D., Director
Sandra J. Sutherland, Research Specialist
Ryan Eggers, Graduate Research Assistant
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June 2007

California Respiratory Care Practitioner Workforce Study

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- Stephanie Nunez – Executive Officer
- Christine Molina – Staff Services Manager

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- Janyth Bolden, RRT, RCP
- Carol Cole, MA, RRT
- Jeffrey Espinoza, RCP, RRT, RRT-NPS
- Anne Fascio, RCP, RRT-NPS
- Mark Goldstein, RCP, RRT
- Jill Henry, MA, RRT
- Lisa B. Miller, BA, RRT, AE-C
- Peggy Stulc, BA, RRT-NPS
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- Martin Rosenberg RCP, RRT
- James Roxburgh, RN, RCP
- Louis Sinopoli, EdD, RRT
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Chapter 1: Introduction

Study Background and Purpose

In April 2006, the Department of Consumer Affairs, Respiratory Care Board of California contracted with the Institute for Social Research (ISR) at the California State University, Sacramento to conduct a study to forecast the state's Respiratory Care Practitioner (RCP) workforce needs. The project involved conducting three surveys to gain a perspective on the current California RCP workforce and future workforce needs. The intent of these surveys was to collect information that, along with other demographic and economic data, could be used to develop a workforce supply model. The surveys also were designed to provide information to the Respiratory Care Board on issues relevant to its decision making regarding future RCP workforce needs.

The first of these surveys—the 2006 Respiratory Care Practitioner Survey—was administered to a sample of 3,000 California RCPs with active, clear licenses. The second survey, the 2007 Respiratory Care Practitioner Employer Survey, was distributed to a sample of 201 healthcare facilities, including general acute care hospitals, home medical device retailers, long-term care facilities, sub-acute care facilities and rehabilitation hospitals. The third survey, the 2007 Respiratory Care Educational Program Survey, was distributed to all California respiratory therapist educational programs.

Goals and Objectives

The overarching goal of the study was to provide information to the Respiratory Care Board on issues relevant to its decision making regarding future RCP workforce needs. To accomplish this goal, three major tasks were completed. First, surveys of three major stakeholder groups involved in the Respiratory Care workforce were completed and analyzed. These included surveys of Respiratory Care Practitioners, Respiratory Care Employers, and Respiratory Care Education programs. Second, a number of existing databases with information on the California population and relevant health care data were examined to provide a context and understanding of the environments in which the Respiratory Care profession currently operates and will operate in the future. Third, using the information collected in tasks one and two, a model was developed to forecast the future supply and demand for Respiratory Care professionals.

Study Organization

The study employed a multiple perspectives approach, collecting data on important issues from a variety of sources, and then synthesizing the results into a matrix containing key elements that impact those who work in the profession, those who employ respiratory care workers, and, in a broad sense, Californians who depend on this branch of health care. These elements then became the building blocks used to describe the profession and construct a model to forecast future workforce needs, supply and demand.

The study was initiated by a review of existing data, including the Respiratory Care Board's licensing database and other state health databases along with the findings from surveys conducted by the American Association of Respiratory Care. Early discussions by Expert Panels involving Respiratory Care Practitioners, (later by Educators and Employers) anchored the study by illuminating and correctly framing issues which were then transformed into survey questions. The first survey conducted was of licensed Respiratory Care Practitioners. Data received from this survey, augmented by other existing state health data, was later used to drive the design of the subsequent Employer and Educator surveys. With each of the surveys, follow up with some Expert Panel members was helpful in dealing with sampling issues and with interpretation of survey responses. The Respiratory Care Board and its staff similarly provided feedback and direction during the length of the study.

Once the surveys were completed, results were combined with demographic data from the California Department of Finance and the June 2006 Respiratory Care Board Licensing Database to fill out the important elements needed to create a model to forecast future workforce supply and demand.

Report Organization

This report is intended to provide a comprehensive source of information about the workforce study. Chapters 2 through 4 describe the methods and findings for each of the three surveys: Chapter 2 describes the practitioner survey, Chapter 3 describes the employer survey, and Chapter 4 describes the educator survey. Chapter 5 discusses key elements drawn from study findings which affect the respiratory care workforce. Chapter 6 describes the supply and demand models used to evaluate future workforce needs. Appendix tables provide descriptive responses for all survey items in the order they appear on the questionnaire forms. The appendix materials also include copies of the survey forms and accompanying correspondence.

Chapter 2: Respiratory Care Practitioner Survey

Major Goals

The RCP survey was designed to collect information about licensed RCPs in California. This included information regarding current workforce participation, job satisfaction, educational attainment and demographic characteristics. This information, along with other demographic and economic data, was used to develop a profile of the workforce and to create a workforce supply model. The survey was ultimately designed to provide information to the Board on issues relevant to its decision making regarding future RCP workforce needs.

Methodology

Sampling Design. The survey sample was drawn from a copy of the Board's licensing database containing information for all RCP licenses issued March 1, 1985 through June 6, 2006. This file contained 25,133 licensee records. Primary and renewal status fields were used to identify the sampling frame of 13,884 clear, active licenses. An Equal Probability of Selection Method (EPSEM) random sample of 3,000 cases was drawn from the sampling frame using SPSS Version 13.0. All clear, active licenses—including those with out of state addresses—were included in the sampling frame. Throughout this report, this group of RCPs with clear, active licenses will be referred to as active RCPs.

Table 2.1: Distribution of License-Status Categories*

	Number	Percent
Clear, active	13,884	55.2%
Temporarily suspended, denied or deficient	59	.2%
Delinquent	1,059	4.2%
Cancelled	8,606	34.2%
Inactive	771	3.1%
Revoked or surrendered	534	2.1%
Retired	98	.4%
Deceased	122	.5%
Total	25,133	100.0%

* Source: Licensing Database, June 2006, Respiratory Care Board of California

The anticipated response rate was one factor considered in choosing an appropriate sample size. Return rates for the American Association of Respiratory Care (AARC) 2000 and 2005 national surveys of respiratory therapists were 29% and 40% respectively. A sample of 3,000 California RCPs ensured that, with comparable response rates, the survey would produce results with approximately a 3% margin of error at the 95% confidence level.

Survey Development. An expert panel of nine RCPs from throughout the state was assembled in May 2006 to assist the ISR with the development of the survey instrument. Panel members were selected to provide perspectives from a wide spectrum of specialties and settings. The panel provided invaluable insight regarding important issues on which to focus and the correct framing of these issues. Based on recommendations from the expert panel and a review of the literature, a draft instrument was prepared and submitted to the Board and expert panel for review. In order to permit comparisons with national results, a number of questionnaire items were designed to be consistent with the 2005 AARC Human Resource Survey of Respiratory Therapists.

The draft survey was revised to reflect feedback from the Board and expert panel. The final survey is ten pages long and includes 55 questions. The first portion of the survey is made up of two different "branches"—one for those currently employed in respiratory care, and another for those not currently employed in respiratory care. Those currently employed in respiratory care were asked to provide a detailed description of the characteristics of their current respiratory care employment. Those not currently employed in respiratory care were asked to answer a shorter series of questions regarding the length of time they'd been away from the profession, the reasons for leaving respiratory care, and their intentions regarding future work in respiratory care. All respondents were asked to provide opinions about their most recent respiratory care position, describe their certification and education, and provide licensure and demographic information. A copy of the survey instrument is included in Appendix 1.

The survey was designed to accommodate the likelihood that a significant portion of the RCP workforce holds multiple respiratory care jobs. This possibility was suggested by a review of the 2005 AARC Human Resources Survey of Respiratory Therapists. While the AARC survey did not specifically ask respondents how many respiratory care jobs they were currently working, it did ask respondents working a second and/or third respiratory care job to indicate their hourly rate for these positions. It appears that approximately 25 percent of AARC respondents held more than one respiratory care position.[1] The distribution of multiple respiratory care positions in California appears to be very similar—22 percent of California RCPs reported working multiple respiratory care positions. Three levels of information were collected regarding respondents' current respiratory care employment:

- The most general level of information. Respondents were asked for an overall description of their current respiratory care employment situation, including the number of respiratory care positions they currently hold, the average number of work hours per week, and the number of weeks per year they work in respiratory care.

[1] This percent was computed using summaries of the AARC Human Resources Survey of Respiratory Therapists questions regarding primary position hourly wage, second job hourly wage, and third job hourly wage. Respectively, the number of respondents for these three items were 2633, 605, and 63 (Figures 5-7). This suggests that 23 percent (605/2633) held a second respiratory care job, and two percent (63/2633) held a third respiratory care job.

- More specific information for up to three current respiratory care jobs. Respondents were asked to describe work setting, number of years with employer, and weekly hours and pay rates for their primary respiratory care position, and if applicable, for their second and third respiratory care jobs. Respondents were instructed to define their primary respiratory care position as the job where they spend the most time.

- The most detailed information for their primary respiratory care position. The most detailed information was limited to respondents' primary respiratory care position. Respondents were asked to describe many characteristics of their primary position, including their job title, time base, schedule, position requirements, assignments, distribution of time, use of protocols, workload management, and procedures performed.

Data Collection. Each RCP selected for inclusion in the sample received up to four mailings. In late July 2006, all 3,000 RCPs in the sample were mailed a letter from the Board President. The letter described the study and let participants know that they had been selected for inclusion in the sample and would be receiving a survey packet in the mail in about a week. A week later the initial survey mailing was sent out. This mailing included the survey form, a business reply envelope, and a cover letter from the Board President describing the study and emphasizing the importance of their participation. The survey form included a study identification number, so that responses could be monitored. In early August, those who had not returned their completed survey were mailed a reminder postcard. In late August, those who had not returned their completed survey were mailed a second survey mailing including an updated letter from the Board President. Copies of all data collection materials are included in Appendix 1.

The survey form included a toll free number for comments and questions about the study. The ISR received over 50 calls from RCPs regarding the survey. Some wanted to make sure they should fill out the survey even though they weren't working in respiratory care. Others needed clarification about how they should answer particular questions—those regarding hours and pay were particularly problematic. A number of RCPs called to convey their concerns regarding the pressures facing RCPs and the changing nature of healthcare.

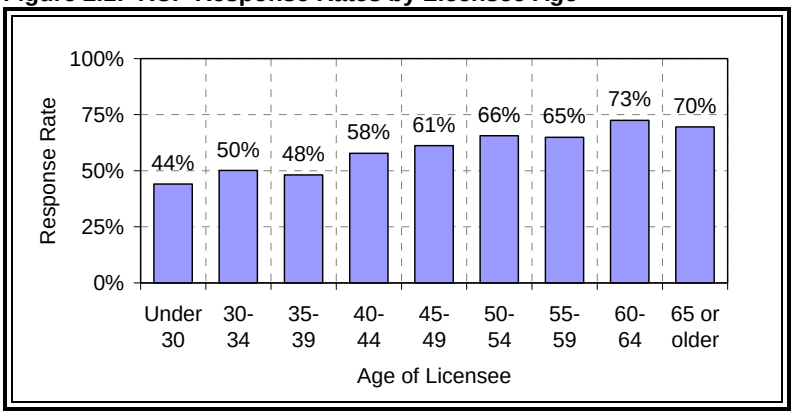
Response Rates. Completed questionnaires were received from 59% of the eligible RCPs to whom the survey was mailed. Of the 3000 surveys initial mailed, 75 were ineligible to participate—most because their mail was returned as undeliverable.

Table 2.2: Overall RCP Survey Response Rate

Surveys initially mailed		3,000
Ineligible records	Undeliverable	73
	Deceased	2
Eligible licensees		2,925
Survey respondents		1,715
Response rate		59%

Representativeness of the Sample. Study identification numbers were used to match survey responses back to the licensing database in order to evaluate potential response bias. This analysis found a linear relationship between RCP age and response rates. Younger RCPs were less likely to complete and return their survey than were older RCPs. For example, the response rate for RCPs less than 30 years old was 44%; while the response rate for those 65 years of age and older was 70 percent (Figure 2.1 shows response rates by age group).

Figure 2.1: RCP Response Rates by Licensee Age



This pattern is typical for survey research in general, and also is common for surveys focusing on a specific professional group. Older RCPs have been in the profession longer and are likely to be more vested in the profession than those who are beginning or mid-way in their careers. Younger RCPs, particularly those who have young children at home, may have a harder time fitting the survey into their busy schedules.

Table 2.3: Number of Licensees, Response Rates and Percent Distribution by Age and Region

		Number					Response Rate	Percent Distribution		
			Sample							
		Population	Total	Ineligible	Eligible	Respondents		Population	Sample	Respondents
Age	Under 30	1,376	248	12	236	104	44%	9.9%	8.3%	6.1%
	30-34	1,590	345	14	331	166	50%	11.5%	11.5%	9.7%
	35-39	1,703	379	13	366	176	48%	12.3%	12.6%	10.3%
	40-44	1,966	398	12	386	223	58%	14.2%	13.3%	13.0%
	45-49	2,385	529	8	521	319	61%	17.2%	17.6%	18.6%
	50-54	2,383	493	10	483	317	66%	17.2%	16.4%	18.5%
	55-59	1,615	375	2	373	242	65%	11.6%	12.5%	14.1%
	60-64	621	163	3	160	116	73%	4.5%	5.4%	6.8%
	65 or older	243	70	1	69	48	70%	1.8%	2.3%	2.8%
	Unknown*	2	--	--	--	4	--	--	--	.2%
	Total	13,884	3,000	75	2,925	1,715	59%	100.0%	100.0%	100.0%
Region	Central California	1,501	333	8	325	184	57%	10.8%	11.1%	10.7%
	Greater Bay Area	2,234	495	12	483	304	63%	16.1%	16.5%	17.7%
	Northern California	1,189	233	7	226	139	62%	8.6%	7.8%	8.1%
	San Diego/Inland Empire	3,437	692	18	674	391	58%	24.8%	23.1%	22.8%
	Southern California	4,817	1,090	22	1,068	605	57%	34.7%	36.3%	35.3%
	Out-of-state	706	157	8	149	88	59%	5.1%	5.2%	5.1%
	Unknown†	--	--	--	--	4	--	--	--	.2%
	Total	13,884	3,000	75	2,925	1,715	59%	100.0%	100.0%	100.0%

* Two license records are missing data of birth.

† Four surveys were returned with the identification numbers removed, which prevents responses from being linked to licensing records.

Approximately five percent of RCPs have mailing addresses outside California. If this group was less motivated to participate in the survey, it could potentially affect the accuracy of projections to the licensee population. Fortunately, the response rate for RCPs living out of state was virtually identical to that of those living in California. The analysis found no relationship between RCP residence outside California and response rates. In fact, although response rates varied somewhat by region—as shown in Table 2.3—the differences are not statistically significant (this was the case for both a simple Chi-Square test and for logistic regression including age and region).

Weighting for Age. In order to adjust for any potential response bias associated with the relationship between age and response rates, the survey data were weighted by age. Weighting the responses in this fashion reproduces the age distribution of the licensee population. This helps ensure that the responses of each age group are neither under- nor over-represented. Because the survey results were used to inform the supply and demand model for RCPs, it also seemed prudent to weight the survey results. Table 2.4 summarizes the process used to compute the values of the weighting variable.

Table 2.4: Age Distribution of Respiratory Care Practitioner Population of Valid Licensees, Sample and Survey Respondents

Age of Licensee*	Population		Sample		Unweighted Respondents		Respondents Weighted to Population Distribution		
	Number of cases	Percent	Number of cases	Percent	Number of cases	Percent	Weight	Number of cases	Percent
Under 30	1,130	8.1%	248	8.3%	104	6.1%	1.3462	140	8.2%
30-34	1,470	10.6%	345	11.5%	167	9.7%	1.0898	182	10.6%
35-39	1,723	12.4%	379	12.6%	176	10.3%	1.2102	213	12.4%
40-44	1,866	13.4%	398	13.3%	224	13.1%	1.0268	230	13.4%
45-49	2,343	16.9%	529	17.6%	320	18.7%	.9031	289	16.9%
50-54	2,408	17.3%	493	16.4%	318	18.5%	.9340	297	17.3%
55-59	1,851	13.3%	375	12.5%	242	14.1%	.9463	229	13.4%
60-64	767	5.5%	163	5.4%	116	6.8%	.8190	95	5.5%
65 or older	324	2.3%	70	2.3%	48	2.8%	.8333	40	2.3%
Total	13,882	100.0%	3,000	100.0%	1,715	100.0%	n/a	1,715	100.0%

* Source: Licensing database, Respiratory Care Board of California. Records for two licensees do not include data on date of birth.

Figures 2.2 and 2.3 illustrate the results of the weighting procedure by comparing the population age distribution to both the unweighted and weighted sample age distributions. The weighting procedure produces a sample age distribution that mirrors the population distribution. The findings presented in this chapter (as well as the summaries provided in Appendix 2) are based on weighted survey responses.

Figure 2.2: RCP Population and Unweighted Sample Age Distribution

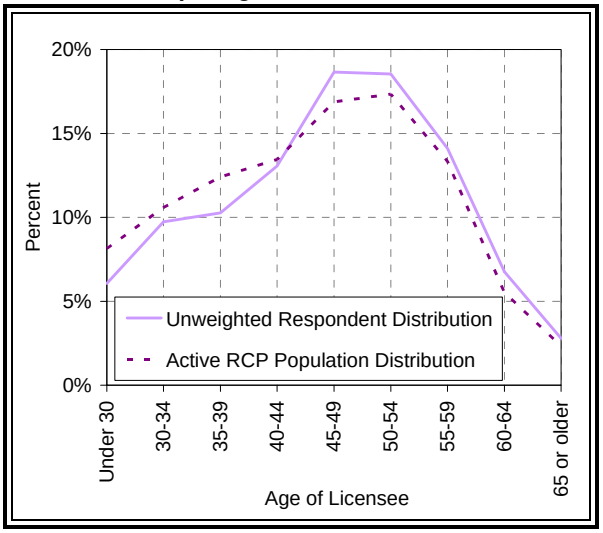
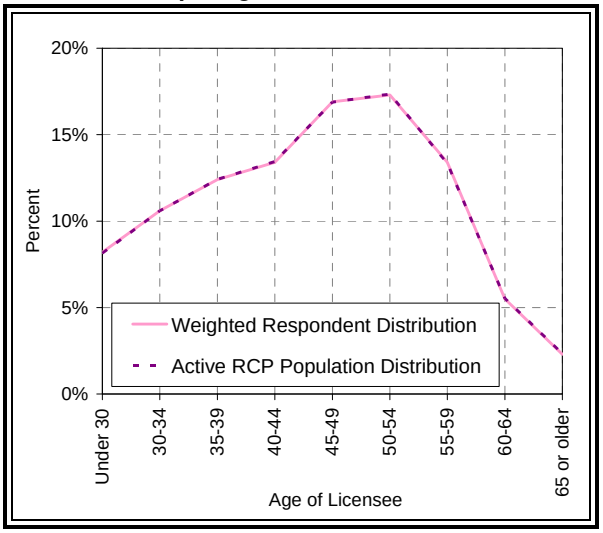


Figure 2.3: RCP Population and Weighted Sample Age Distribution



Precision of Estimates. Random selection of respondents, a sufficient sample size and high response rates all contribute to a sample's representativeness. The precision with which the RCP survey findings predict values for the RCP population is a function of the desired level of confidence and the number of cases generating a given sample value. With a 95% confidence interval—which means that 95 of a 100 random samples would produce values within the specified range—and approximately 1700 cases, ranges for the comparable respiratory care practitioner population would be within plus or minus 2.23% of the tabled values.

Table 2.5: Margin of Error for a Range of Sample Sizes

Sample Size	1,700	1,500	1,000	800	400	200
Margin of Error*	2.23%	2.39%	2.99%	3.36%	4.83%	6.88%

* With a 95% confidence interval, a 50% response distribution and a population of 13,844 licensees. With 1700 cases and a 99% confidence interval, the survey findings have a 3% margin of error.

Because of the detailed nature of the information collected for this survey, the number of cases varies depending on the particular question being described. For example, it was only appropriate to ask those currently employed in respiratory care to describe specific aspects of their respiratory care work, and only those not currently employed in respiratory care were asked about their reasons for not working in respiratory care. Furthermore, some questions only applied to respiratory therapists providing care in an inpatient setting; other items only applied to those employed in an acute care hospital. Because of this variation in the number of cases, it is useful to bear in mind that the precision of sample estimates decreases with sample size (see Table 2.5).

Data Editing. Completed surveys were analyzed for completeness and consistency, and when necessary, responses were edited for consistency. Some survey questions

required significant review in order to standardize responses into a format that would permit analysis. Because the survey form was not electronic (in contrast to the most recent AARC survey) and was self-administered, respondents were able to write in answer choices not initially included on the survey and explain situations not originally anticipated when the survey form was drafted. Some of the questions where this frequently happened deal with topics that have not been extensively studied previously—for example ventilator ratios—so this was not surprising. However, respondents' comments and descriptions regarding other topics, like work setting and pay rates—which might at first glance appear to be completely straightforward—revealed levels of complexity that the researchers weren't anticipating. Some of these more minor "wrinkles" are noted in Appendix 2. Other issues related to interpreting the survey results are described along with the findings.

Basic Data Considerations

In describing the RCP workforce, all licensees who returned a survey are included. However, within certain sections of the report, we highlight the sub-group of those not working in respiratory care or discuss comparisons between the working and non-working groups (comparisons between the working and non-working groups on all of the variables for which data was collected are provided in Appendix 2).

In the RCP survey, we have information on all of the active, "clear" licensees (these are RCPs with active, valid licenses) who returned a study questionnaire (n=1,715). However, within this group of responding licensees, two subgroups exist. The first of these groups is made up of those individuals who are currently working in the respiratory care profession. This group includes those working both full and part-time (n=1,548). The second group is comprised of a much smaller number (n=167) of individuals who are not currently working in respiratory care. Individuals in these two groups were distinguished by the answer they gave to the question, "Are you currently employed in respiratory care?"

Figure 2.4: Respiratory Care Employment

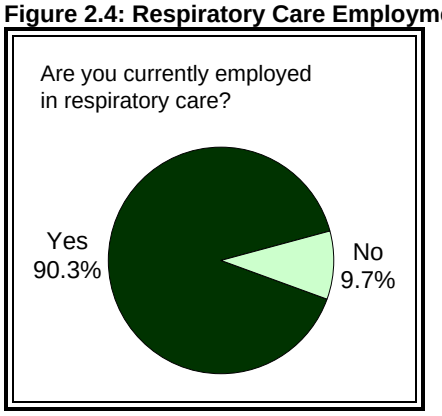


Figure 2.4 shows that 90.3 percent of the random sample of 1,715 RCPs reported being currently employed in respiratory care. The 95% confidence interval estimate for the

population is plus or minus 2.4 percent. So we estimate that between 87.9 and 92.7 percent of active RCPs are employed in respiratory care.

Finding out how many RCPs maintain an active, clear license but do not work in respiratory care was an important part of being able to accurately examine the supply of RCPs. It is common for profession-specific surveys of this nature to under-represent those not working in the profession. A number of factors can make them less likely to respond to the survey. The content is less salient for them than it is for those in the profession. They are also more likely to assume the survey doesn't apply to them. To counter this tendency, the importance of everyone's participation—including those who are retired, not presently working, working outside respiratory care, and working in respiratory care—was emphasized in the correspondence accompanying the survey mailings and in the introduction to the survey. Since we don't know how many of the total licensed population are working in respiratory care, we have no way to evaluate the representativeness of responses for the overall population of RCPs. Even with the added emphasis on their participation, it is possible that the response rate for those not working in respiratory care was lower than for those working in respiratory care. While this does not have significant implications for the descriptive findings (since most are restricted to one group or the other), it could be an important consideration for evaluating the adequacy of the supply of RCPs. The survey found that 9.7 percent of RCPs with active, clear licenses were currently not working in respiratory care. If this group was under-represented among respondents because their response rate was low, it could mean that the survey data understates the portion of licensees not working in the profession.

In reviewing the findings, the reader should keep certain data limitations in mind. First, this survey elicits perceptions from survey respondents. Such perceptions may or may not accurately reflect reality. For example, if a respondent says he/she is planning to leave respiratory care in the next five years, it does not necessarily mean that the individual will actually leave respiratory care in that time frame. Second, although the 59 percent response rate is quite satisfactory for a mail-out survey, and the total number of respondents is large enough to ensure a high level of confidence in the results, there is a possibility that those returning the survey are different than the general population of RCPs in ways that we are not able to detect. For example, those who put the time and effort into responding to the survey may be more vested in the future of the RCP profession than those who do not.

A Profile of the RCP Workforce

Who are the current RCPs?

A General Overview of the Workforce. Today's RCPs are predominantly Caucasian (70%; see Table 2.6) and have an average age of 45.4 years (see Figure 2.5). Individuals of Hispanic or Latino origin comprise about 16 percent of the population, while this ethnic group makes up about 35 percent (American Community Survey, 2005) of the California population. Although females make up slightly more than half (54%) of the RCPs, the gender imbalance between females and males in the profession is not as sizeable as is found in some health care professions such as nursing, in which females make up about 91 to 92 percent of the workforce (Survey of Registered Nurses in California 2004; Bureau of Labor Statistics, Women in the Labor Force 2006).

Table 2.6: Ethnic and Racial Distribution of California Respiratory Care Practitioners and California Population

		Respiratory Care Practitioners		California Population*
		Percent	Number of cases	
Race	American Indian or Alaskan Native	1.1%	17	.7%
	Asian or Pacific Islander	19.7%	306	12.8%
	Black or African American	6.1%	94	6.1%
	White or Caucasian	70.4%	1,095	60.9%
	Other race	--	--	16.4%
	Two or more races	2.7%	42	3.1%
	Total	100%	1,554	100%
Hispanic or Latino origin		16.0%	1,694	35.5%

* Source: 2005 American Community Survey

Figure 2.5: RCP Age Distribution

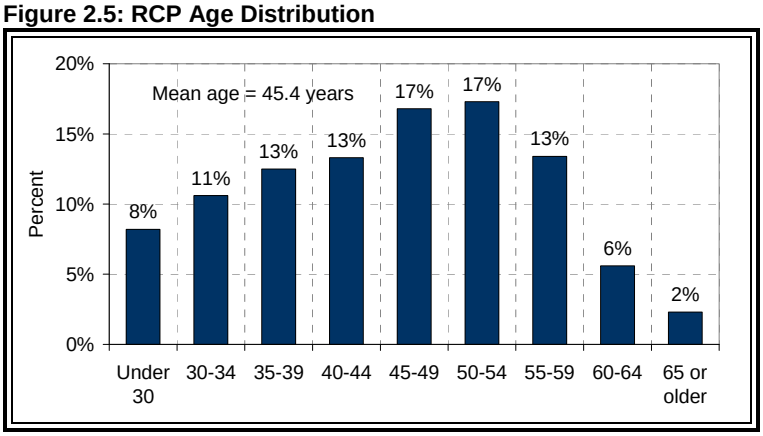


Figure 2.6: RCP Gender Distribution

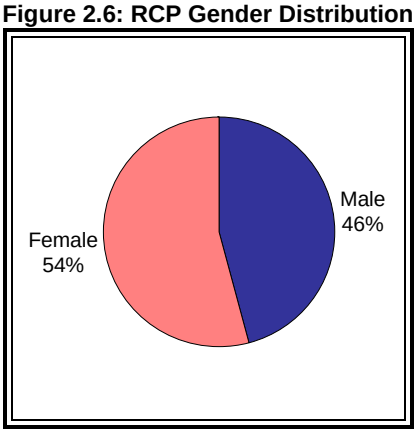


Figure 2.7: RCP Gender Percent Distribution by Year License Issued

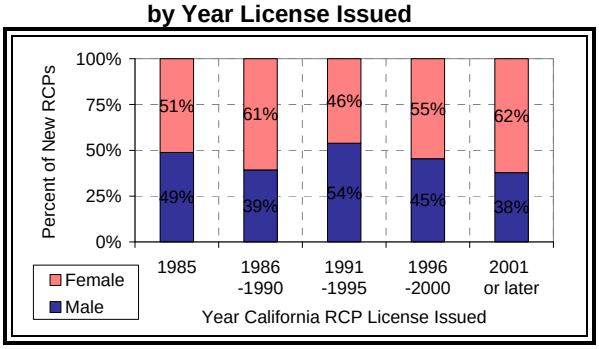


Figure 2.8: Number of RCP Respondents by Gender and Year Licensed

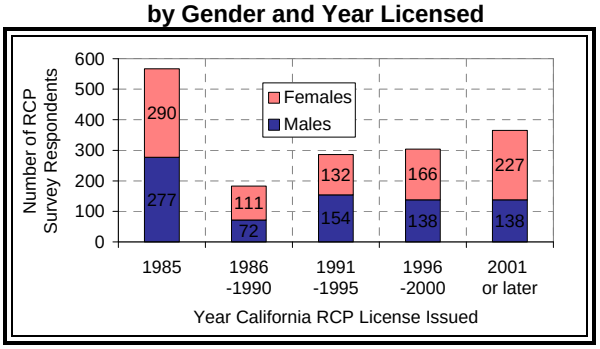
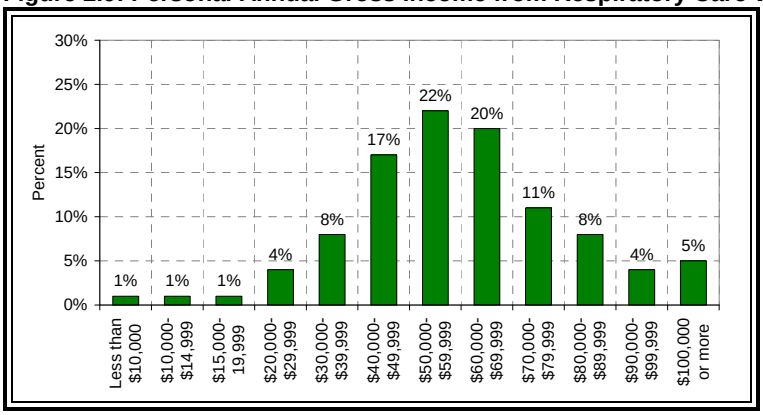


Figure 2.7 shows the gender distribution of respondents in relation to the year they were licensed. Forty-nine percent of respondents licensed in 1985 were male. During the next five years—from 1986 to 1990—the ratio of males to females drops, with males making up 39 percent of the new licensees. During the following five years—from 1991 to 1995—males outnumbered females among new RCPs. During the last ten years, there has been a decline in the percent of males among new licensees. It dropped to 45 percent during the period from 1996 to 2000 and then dropped to 38 percent during the period from 2001-2006. Focusing on the number of RCPs responding to the survey in each gender category and year category (Figure 2.8) suggests that during the last ten years, growth in the number of new licensees may be attributable to female RCPs, while the number of new male RCPs has remained flat. This may be a trend to consider for recruitment strategies.

Almost three-quarters (73%) of those currently working in respiratory care earned less than $70,000 per year, with the single largest income group, slightly more than one-fifth (22%) of working RCPs, earning between $50,000 and $59,000 per year (see Figure 2.9). Respondents' median income from respiratory care work for 2005 was $58,660. This number is noticeably higher than the overall median income for California, which was estimated to be $35,164 in 2005 (2005 American Community Survey, California population 25 years and over with earnings). Respondents' median income was also higher than the estimated median annual wage of $54,443 for California Respiratory Therapists (California Employment Development Department, Occupational Employment Statistics Survey, Third Quarter 2005).

Figure 2.9: Personal Annual Gross Income from Respiratory Care Work



The largest single percentage of those currently working in respiratory care obtained their licenses in 1985–when the RCP licensing requirement was implemented. The distribution of the number of years of employment in respiratory care mirrors this distribution closely. RCPs currently employed in respiratory care reported that they had been employed in respiratory care, on average, about 96 percent of the time since obtaining their license.

Figure 2.10: Year First Obtained California RCP License for RCPs Currently Working in Respiratory Care

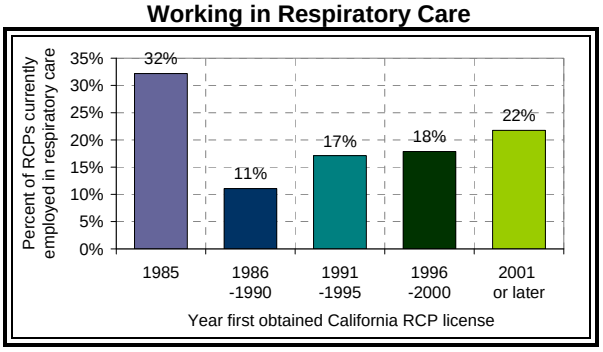
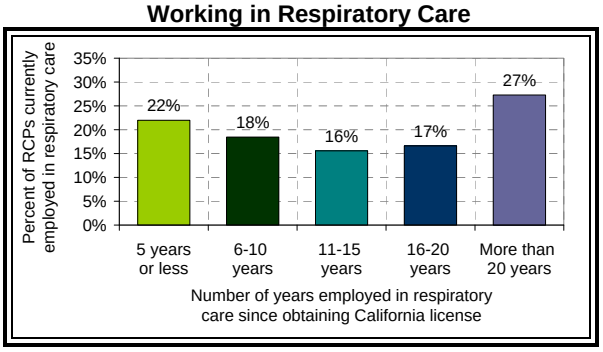
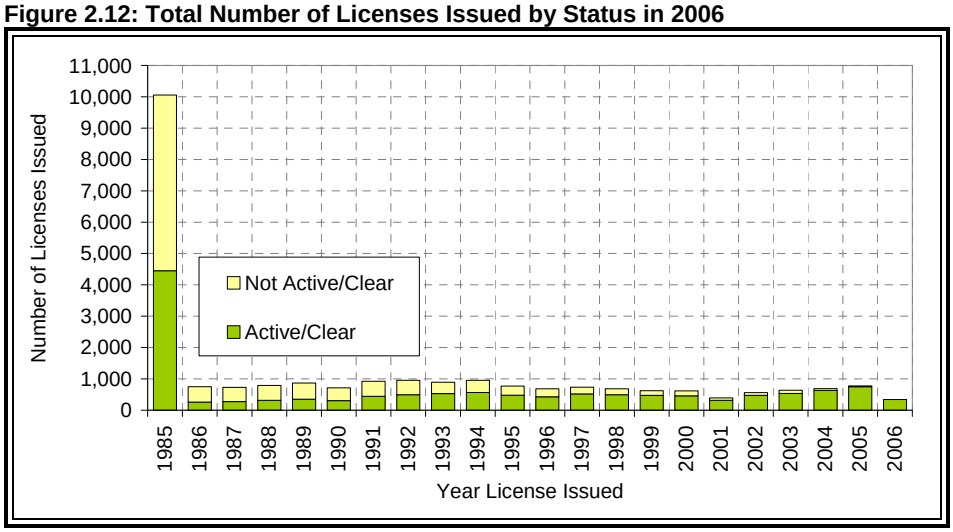


Figure 2.11: Years Employed in Respiratory Care for RCPs Currently Working in Respiratory Care



Of the initial group of RCPs licensed in 1985, 44 percent (4,447 individuals) still maintain current active licenses. Since 1985 and 1986, when there was a huge influx of individuals licensed, the volume of those getting their licenses in each of the successive years has remained nearly constant—ranging from a low of three percent to a high of eight percent of the previous year's total workforce. There was an increase in the number of licensees entering the profession in 2005/2006. (Additional analysis of the patterns of entrances and exits from the RCP profession is provided Chapter 6.)

Figure 2.12: Total Number of Licenses Issued by Status in 2006



Grouping RCPs currently employed in respiratory care by the region in which they work shows that the southern California employs the largest number of RCPs (see Table 2.7 for a breakdown by region):

- The largest percent (38%) of RCPs work in the Southern California region.
    - This equates to about 4,742 individuals holding licenses.
- The Northern California region has the lowest percentage (8.5%) of the workforce.
    - This equates to approximately 1,062 individuals.

Table 2.7: Regional Estimates of the Number of Respiratory Care Practitioners Employed in Respiratory Care, 2006

	Survey respondents		Estimated number of RCPs currently working in respiratory care*	
	Percent	Number	Percent	Number
Northern California	8.5%	132	8.5%	1,062
Greater Bay Area	18.5%	287	18.5%	2,314
Central California	10.9%	168	10.9%	1,356
Southern California	37.9%	587	37.9%	4,742
San Diego/Inland Empire	19.8%	306	19.8%	2,472
Out of state	4.4%	68	4.4%	550
Total	100.0%	1,548	73.0%	12,496

* The total for this column was obtained by multiplying the number of valid licenses in June 2006 by the percent of survey respondents currently working in respiratory care (13,844 x .9026 = 12,496). The regional distribution of survey respondents was then used to estimate the number of RCPs in each region who are currently employed in respiratory care.

Table 2.8 compares the distribution of the regions in which RCPs are working with the distribution of the California population. The distribution of RCPs and population are very closely matched, in fact they are nearly identical in three regions—Northern California, Central California, and Southern California. In the Bay Area, however, there is a slight deficit of RCPs. Twenty-one percent of the state's population lives in the Bay Area but 19 percent of the RCP workforce works in the region. The situation is reversed in the San Diego/Inland Empire region. Nineteen percent of the state's population lives in the region but it employs 21 percent of the RCP workforce.

Table 2.8: A Comparison of the Regional Workplace Distribution for RCPs Currently Employed in Respiratory Care with the Regional Distribution of California's Population

	RCPs Working in California		California Population*	
	Number	Percent	Number	Percent
Northern California	1,062	8.9%	3,284,502	8.8%
Greater Bay Area	2,314	19.4%	7,877,451	21.2%
Central California	1,356	11.4%	4,011,742	10.8%
Southern California	4,742	39.7%	14,829,816	39.9%
San Diego/Inland Empire	2,472	20.7%	7,191,729	19.3%
Total	11,946	100.0%	37,195,240	100.0%

* Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 1/1/2006.

Table 2.9 provides a more sensitive measure of the number of RCPs relative to the corresponding regional population. California's RCP-to-population ratios are remarkably consistent across regions.

- The lowest ratio of RCPs to residents is seen in the Greater Bay Area—29.4 per 100,000
- Southern California has 32 RCPs per 100,000 residents
- Northern California has 32.3 RCPs per 100,000 residents
- Central California has 33.8 RCPs per 100,000 residents
- The San Diego/Inland Empire region has the highest ratio of RCPs to residents--34.4 per 100,000

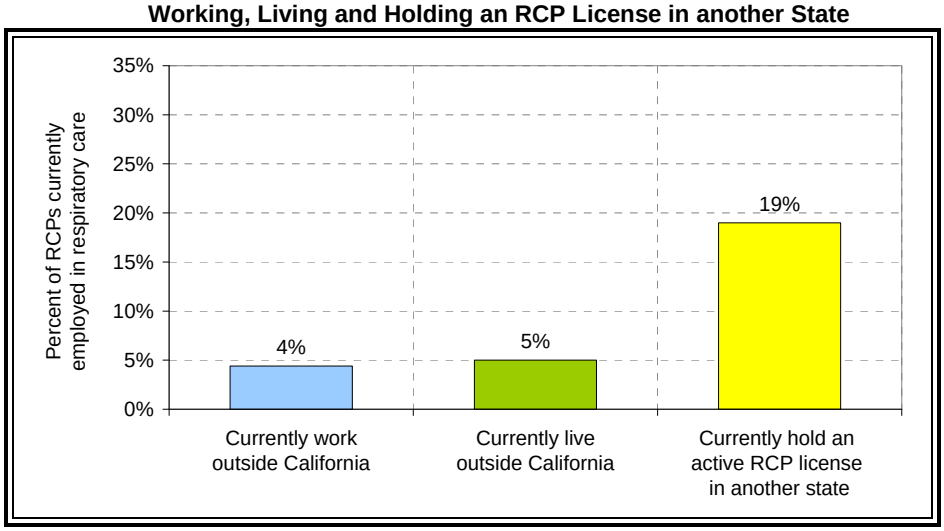
Table 2.9: Regional Estimates of the Number of Respiratory Care Practitioners Employed in Respiratory Care per 1000,000 Persons, 2006

	Estimated Number of RCPs Working in California	California Population*	Estimated Number of RCPs Working in California per 100,000 Persons
Northern California	1,062	3,284,502	32.3
Greater Bay Area	2,314	7,877,451	29.4
Central California	1,356	4,011,742	33.8
Southern California	4,742	14,829,816	32.0
San Diego/Inland Empire	2,472	7,191,729	34.4
Total	11,946	37,195,240	32.1

* Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 1/1/2006.

Yet another facet in understanding the California RCP workforce comes from an exploration of the domiciles of California licensed RCPs and the location of their work. Of the respondents working in respiratory care, 19 percent indicated they also maintained licenses in other states, while 81 percent stated that they held only California licenses. Five percent of those working in respiratory care live outside California and four percent are currently working outside California.

Figure 2.13: Percent of RCPs Currently Employed in Respiratory Care Working, Living and Holding an RCP License in another State



Ninety-five percent of respondents working in respiratory care both work and live in California. Four percent work and live outside California. A small number of RCPs live in one state and work in another.

Figure 2.14: In-and Out-of-State Work and Residence for RCPs Currently Employed in Respiratory Care

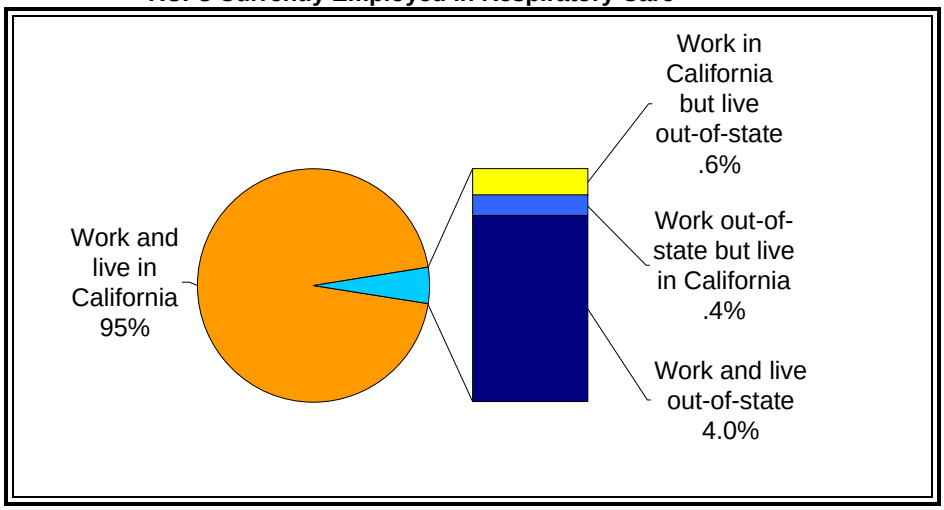


Table 2.10 puts these elements in the context of the total potential workforce (i.e., those with active licenses). In addition to the 9.7 percent not working in respiratory care, 3.9 percent of licensees were working outside California. This means that 13.6 percent of the potential workforce was not working in respiratory care in California.

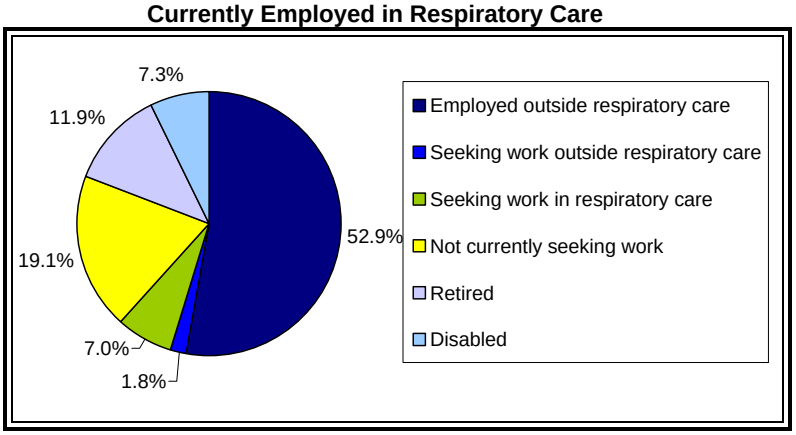
Table 2.10: Current Respiratory Care Employment Status, Location and Residence

			Respondent Percent Distribution	Estimated Licensed Population
Work in respiratory care	Work in California	Live in California	85.6%	11,857
		Live out-of-state	.7%	99
	Work out-of-state	Live in California	.4%	54
		Live out-of-state	3.5%	486
Do not work in respiratory care			9.7%	1,348
Total			100.0%	13,844

Extrapolating from the 9.7 percent of respondents not working in respiratory care to the total 2006 license base suggests that of the 13,884 active, clear licenses (i.e., the potential working pool), roughly 1,348 individuals are outside the current workforce. Of those outside:

- 52.9 percent have jobs outside respiratory care,
- 7.0 percent are seeking work within respiratory care,
- 1.8 percent are seeking work outside respiratory care,
- 19.1 percent are not seeking work,
- 11.9 percent are retired[2], and
- 7.3 percent are disabled.

Figure 2.15: Employment Situation for RCPs Not Currently Employed in Respiratory Care



[2] Note: This category includes only retirees who are maintaining an active license. Those who are officially classified in the retired status in the respiratory care licensing database were not included in the survey.

Figure 2.16: Overall Picture of Respiratory Care Employment Status, Including Location of Employment and Intentions Regarding Work in Respiratory Care for those Not Currently Employed in the Profession

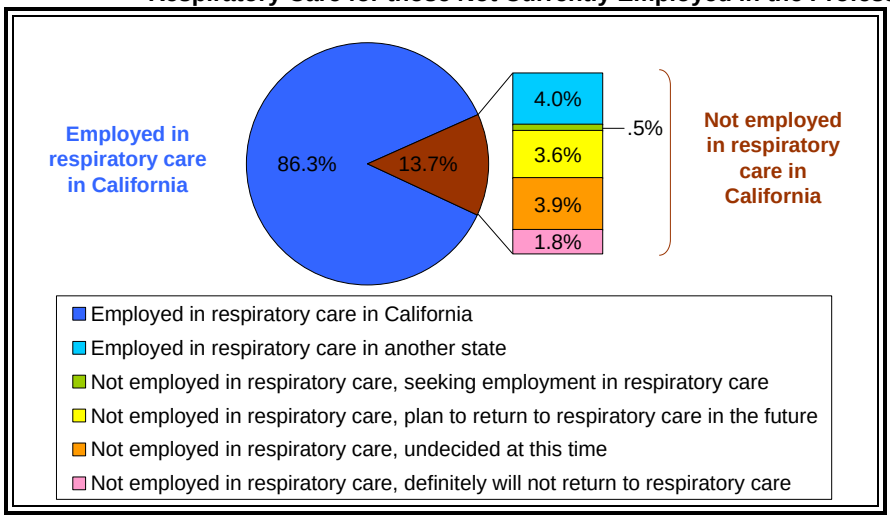


Table 2.11: Overall Picture of Respiratory Care Employment Status, Including Location of Employment and Intentions Regarding Work in Respiratory Care for those Not Currently Employed in the Profession

		Respondent Percent Distribution	Estimated Licensed Population
Currently employed in respiratory care	In California	86.3%	11,981
	In another state	4.0%	551
Currently not employed in respiratory care	Seeking employment in respiratory care	.5%	64
	Plan to return to respiratory care in the future	3.6%	493
	Undecided at this time regarding work in respiratory care	3.9%	546
	Definitely will not return to respiratory care	1.8%	249
Total		100.0%	13,884

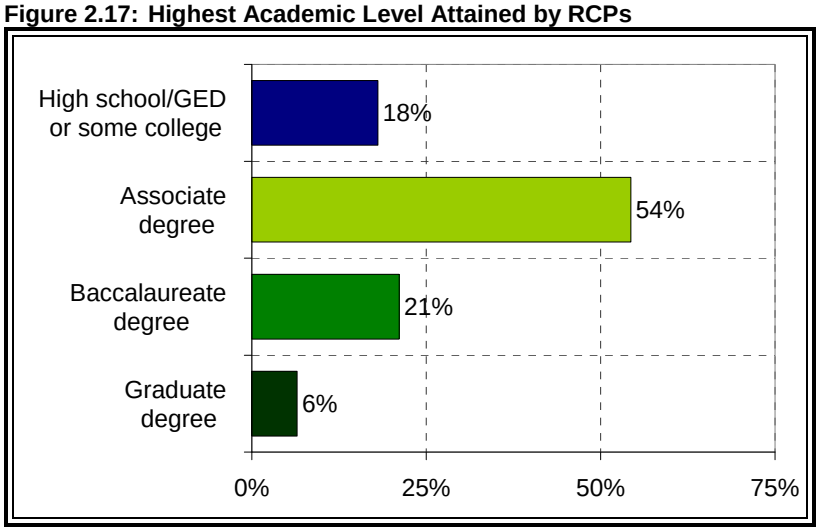
Key Finding

Under current conditions, the state effectively loses about 14 percent of its eligible workforce either because they are currently out of the workforce or because they work in another state. Within California, there are sizeable regional variations in the number of currently licensed RCPs, with the coastal population centers having many more in the profession. However, when "standardized" to the populations residing in those regions, the ratios of RCPs to population are remarkably similar. Finally, the age distribution of the RCP working population, coupled with the fact that such a large proportion of the workforce entered in the first two years of licensing suggests that a substantial portion of the workforce is likely to be leaving as this group "ages out" and enters retirement.

What does the educational background of current RCP licensees tell us?

Education of the Workforce. If we look at the education backgrounds of the current RCP workforce, we see that while slightly less than one-fifth have less than the two-year degree currently required, an even greater number have education preparation that exceeds the current requirements.

Figure 2.17: Highest Academic Level Attained by RCPs



- A little more than half (54%) of the RCPs responding to the survey had an Associate's Degree.
- Approximately 18 percent had some college or a high school education.
- About 21 percent had attained a Bachelor's degree.
- Six percent had completed a graduate degree at the Masters or Doctorate levels.
- About 23 percent of those responding indicated that they were currently pursuing a higher academic degree.

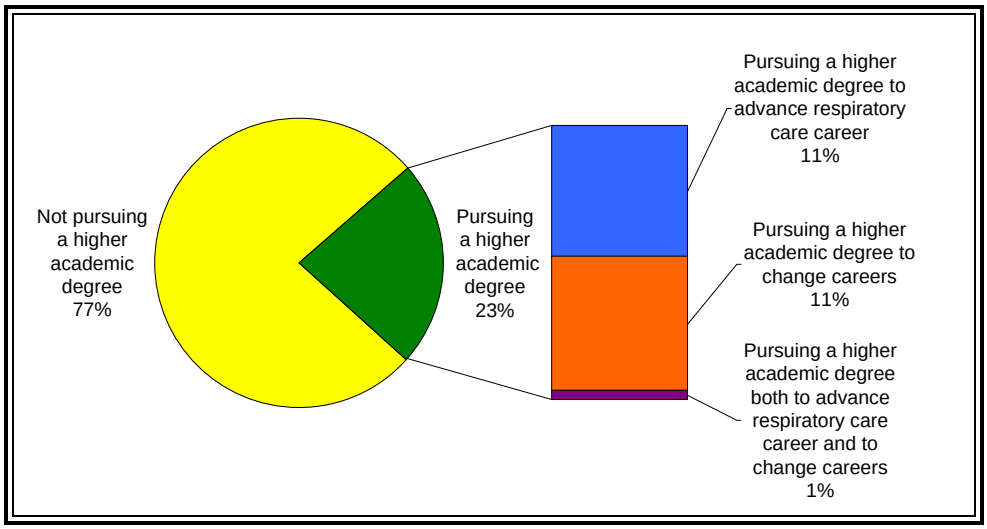
Due to the differential impact on the workforce between those working in respiratory care and those licensees not currently working in respiratory care, we decided to split the two groups for further analysis. As can be seen in Table 2.12, roughly 48 percent of those currently employed in respiratory care and pursuing a higher degree were doing so to advance their careers in respiratory care, while a nearly equal number were pursuing a higher degree to change careers. Ten percent noted they were doing it for both reasons (which may suggest they are open to whichever option provides them the best career opportunity).

Table 2.12: Reasons for Pursuing a Higher Academic Degree

	Currently employed in respiratory care		Not currently employed in respiratory care	
	Percent	Number of cases	Percent	Number of cases
Advance my respiratory care career	47.7%	163	23.3%	10
Change careers	49.4%	169	74.4%	32
Both (category added)	2.9%	10	2.3%	1
Total	100.0%	342	100.0%	43

Putting this into perspective, of the total licensees currently working in respiratory care, about 11 percent are pursuing a higher academic degree to move out of the respiratory care career path. An equal percentage stated that they are pursuing a more advanced degree to move ahead within the profession. While the pursuit of additional education to change careers does not imply that all 11 percent will be leaving respiratory care, it does suggest there is a significant group of RCPs currently working in respiratory care who are taking active measures with regard to a career change.

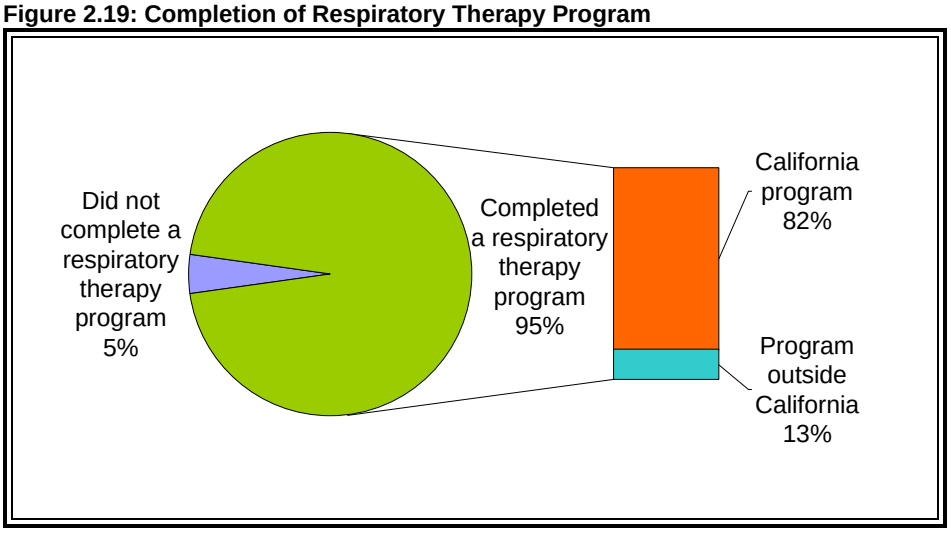
Figure 2.18: Reasons for Pursuing a Higher Academic Degree, for Respondents Currently Employed in Respiratory Care



Turning to the pursuit of education by those not currently working in respiratory care, we see about one-quarter (25.6%) of this group indicating they are pursuing a higher academic degree. Further, of this group of 43 individuals, ten (23.3%) indicate they are pursuing a higher academic degree to advance their respiratory care career, while 32 (74.4%) state they are pursing education to change careers (one individual indicated that he/she was doing it for both reasons). With the exception of the one individual doing both, the latter finding suggests that a sizeable majority of those not currently working are pursuing education without any plans to return to respiratory care work.

About 95 percent of RCPs have completed a Respiratory Therapy education program, and about four out of five (82%) completed their Respiratory Therapy education in California.

Figure 2.19: Completion of Respiratory Therapy Program



When asked how well their education program prepared them, the overwhelming majority of RCPs said their education program prepared them "extremely well" (29%) or "well" (61%). By contrast, about 11 percent indicated that their education program had not adequately prepared them.

Figure 2.20: RCP Respondent Evaluation of Their Own Education Program

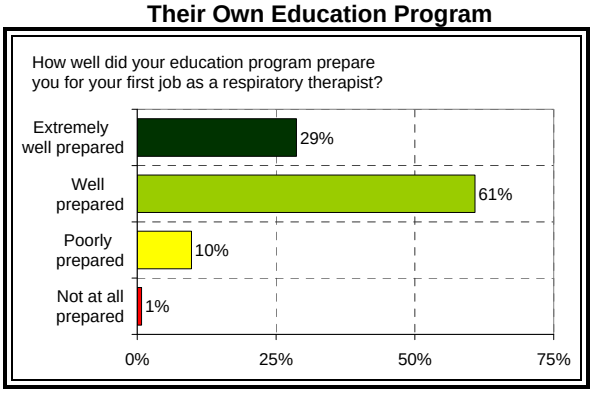
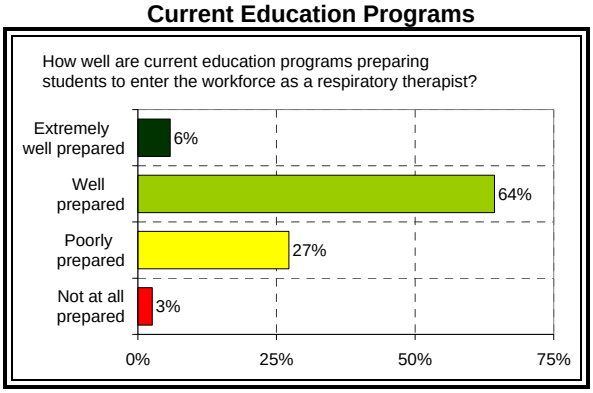


Figure 2.21: RCP Respondent Evaluation of Current Education Programs

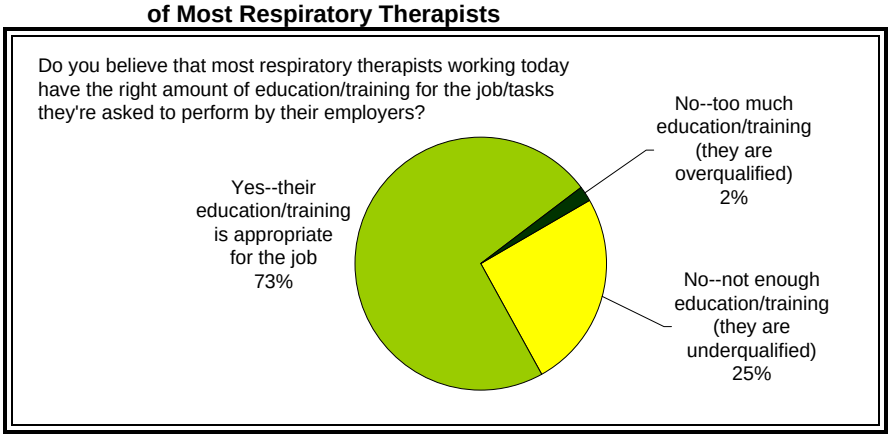


Interestingly, although strongly positive about their own educational preparation, RCPs were not as optimistic about how well current education programs were preparing students:

- Slightly more than 70 percent viewed current programs as preparing students as "extremely well" (5.8%) or "well" (64.3%),
- However, nearly 30 percent saw current programs as preparing students "poorly" (27.2%) or "not at all" (2.6%).

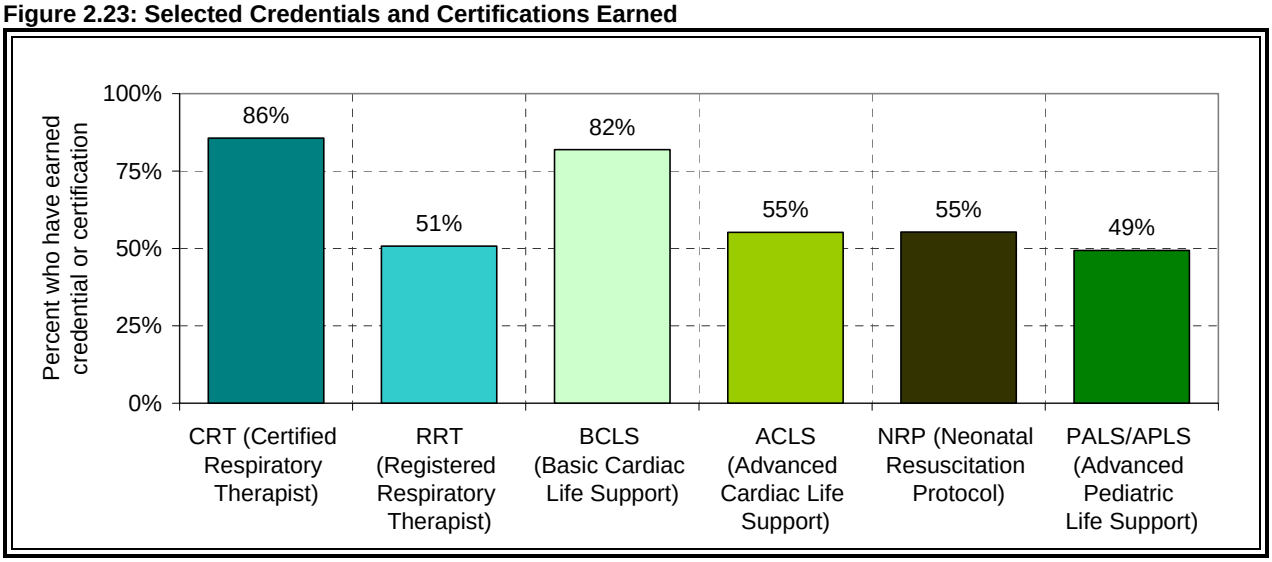
Reinforcing this somewhat negative view of the current educational preparation of RCPs, is the finding that slightly more than one-quarter (25.3%) of the respondents indicated that Respiratory Therapists did not have enough education/training (i.e., they are under qualified) in response to the question, "Do most Respiratory Therapists have the right amount of education/training of the respondents?" While it should be kept in mind that these are simply the perceptions of the RCP respondents and not necessarily the reality of the situation, the findings suggest that there is some concern among part of the RCP workforce about the level of preparation individuals are receiving for the job.

Figure 2.22: RCP Respondent Evaluation of Qualifications of Most Respiratory Therapists



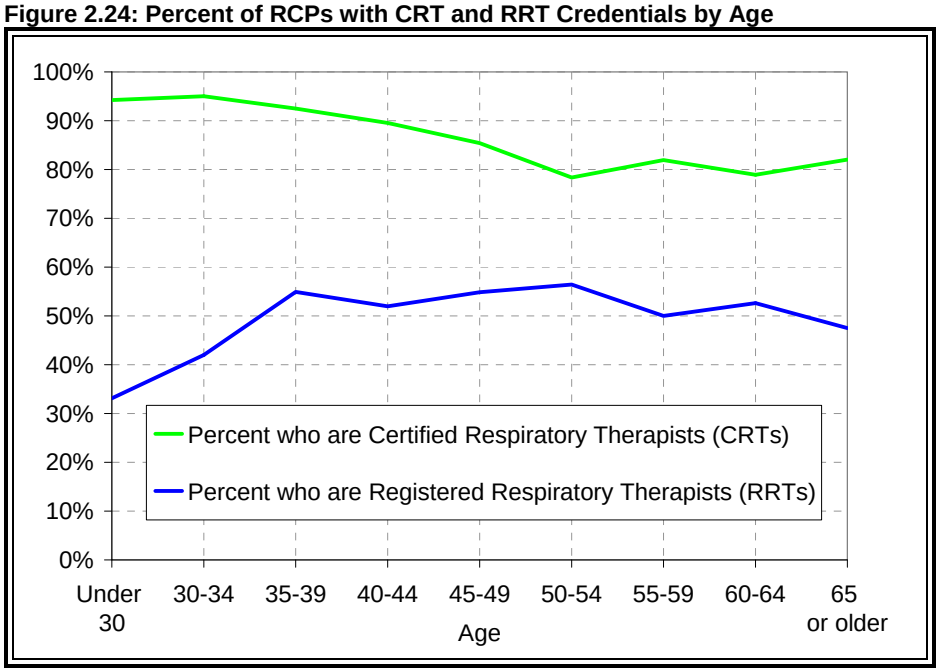
Credentials and Certifications. Respondents were asked to select the credentials and certifications they have earned from a list of 23 items. Two items of particular interest are the Certified Respiratory Therapist (CRT) and Registered Respiratory Therapist (RRT) credentials. Most RCPs (86%) have earned their CRT credential and just over half (51%) of all RCPs have earned their RRT credential.

Figure 2.23: Selected Credentials and Certifications Earned



The likelihood of having earned these credentials is related to RCP age, although the relationship is different for each. In general, the younger an RCP is, the more likely he/she is to have a CRT credential. More than nine out of ten RCPs under the age of 45 have their CRT. For the RRT credential the opposite is true, older RCPs are more likely to have their RRT than younger RCPs. Those between the ages of 35 and 54 are most likely to have their RRT credential.

Figure 2.24: Percent of RCPs with CRT and RRT Credentials by Age



Among the remaining items, four additional certifications are the clear leaders, being held by nearly half or more of all RCPs:

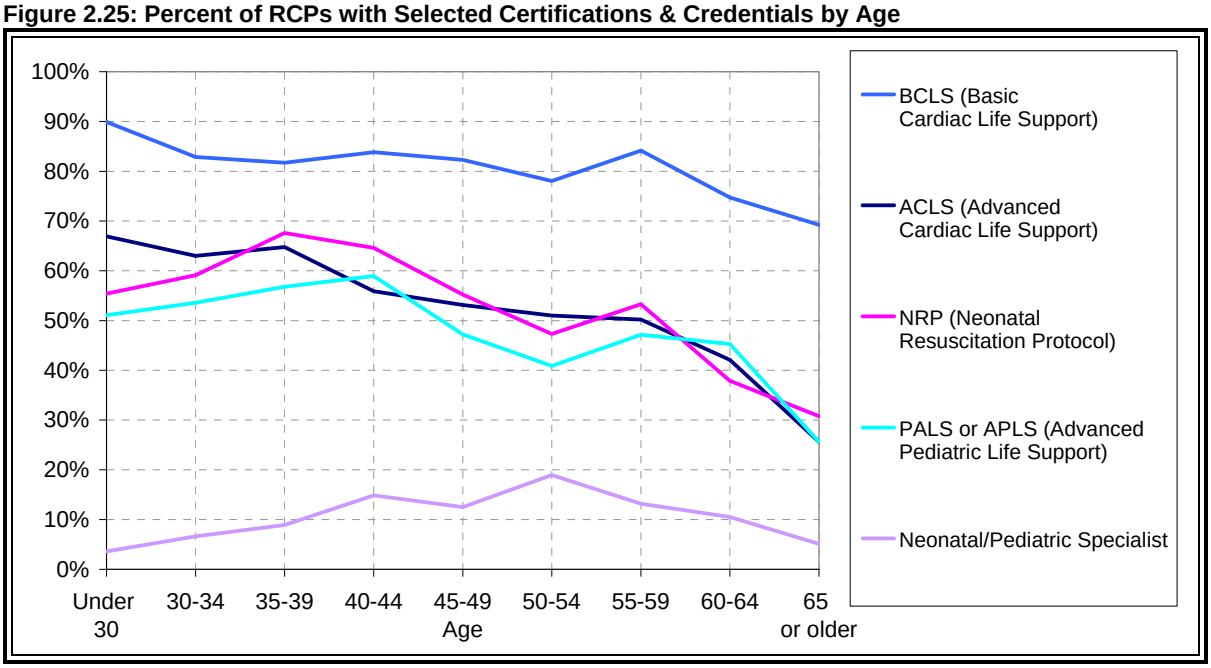
- 82 percent are certified in Basic Cardiac Life Support (BCLS)
- 55 percent are certified in Advanced Cardiac Life Support (ACLS)
- 55 percent are certified in Neonatal Resuscitation Protocol (NRP)
- 49 percent are certified in Advanced Pediatric Life Support (PALS or APLS)

A smaller group of RCPs—just 12 percent—have earned the Neonatal/Pediatric Specialist credential. There is a relationship between RCP age and the likelihood of earning these credentials and certifications. In general, younger RCPs are more likely to hold these certifications than older RCPs. The exception to this pattern is the Neonatal/Pediatric Care Specialist certification. This certification is more common among RCPs between the ages of 40 and 54.

In general there is little difference between the credentials and certifications held by those currently employed in respiratory care and those not currently employed in respiratory care. One interesting difference, however, is the fact that 12 percent of those not currently working in respiratory care are RNs, compared with just one percent

of those currently working in respiratory care. This underscores the frequency with which those who have left the profession (or are thinking of doing so) branch out into other health professions like nursing.

Figure 2.25: Percent of RCPs with Selected Certifications & Credentials by Age



It is also interesting to look at variations in credentialing and certification across work setting, job title and inpatient facility size, although the number of cases in many categories is very small, and should be interpreted with caution (See Tables 8-10).

- Nearly all RCPs working in accredited education programs have their RRT credential (95%).
- RCPs working in acute care hospitals are more likely to have their RRT credential (55%) than those in working in durable medical equipment, home care, long-term acute care, rehabilitation hospitals, sub-acute care or skilled nursing facilities (between 22 and 25%).
- RCPs who are Instructors, Educators, Directors, Managers, Supervisors and Clinical or Critical Care Specialists are also more likely to have their RRT credential than other RCPs.
- Three-fourths of Instructors and Educators have their RRT, and over half of Directors, Managers, Supervisors and Clinical or Critical Care Specialists have their RRT.
- RCPs in larger facilities are more likely to have their RRT credential than those in smaller facilities. More than two-thirds of RCPs in facilities with 400 or more beds have their RRT, compared with less than half of those (between 42 and 47%) working in facilities with fewer than 200 beds.

Table 2.13: Credentials and Certifications Earned by Work Setting

	Work Setting for Primary Respiratory Care Position							
	Acute care hospital	Durable medical equipment/ home care	Long-term acute care/ rehabilitation hospital/sub-acute care	Skilled nursing facility	Accredited education program	Manu-facturer/ distributor	Outpatient facility/ physicians office	Other setting
CRT (Certified Respiratory Therapist)	86.5%	86.5%	89.7%	85.7%	89.5%	60.0%	78.6%	88.0%
RRT (Registered Respiratory Therapist)	54.5%	21.6%	24.7%	--	94.7%	100.0%	46.4%	44.0%
Neonatal/Pediatric Specialist	13.4%	8.1%	4.1%	--	21.1%	20.0%	10.7%	4.0%
CPFT (Certified Pulmonary Function Technologist)	5.1%	2.7%	4.1%	--	10.5%	--	14.3%	8.0%
RPFT (Registered Pulmonary Function Technologist)	1.8%	--	1.0%	--	5.3%	--	7.1%	4.0%
R.EEG.T (Registered EEG Technologist)	.2%	--	2.1%	--	--	--	--	--
R.EP.T (Registered Electrophysiology Technologist)	--	--	1.0%	--	--	--	--	--
RPSGT (Registered Polysomnographic Technologist)	.4%	--	1.0%	--	--	--	7.1%	8.0%
CHT (Certified Hyperbaric Technologist)	.3%	--	--	--	--	--	3.6%	--
AE-C (Certified Asthma Educator)	.7%	--	--	--	10.5%	--	10.7%	--
LVN (Licensed Vocational Nurse)	.9%	2.7%	2.1%	--	--	--	--	4.0%
RN (Registered Nurse)	1.1%	--	--	14.3%	--	--	--	8.0%
EMT (Emergency Medical Technician)	4.7%	5.4%	2.1%	28.6%	5.3%	--	--	12.0%
Paramedic	.5%	--	--	--	--	--	--	12.0%
CCT (Certified Cardiographic Technician)	.2%	--	1.0%	--	5.3%	--	--	--
CCM (Certified Case Manager)	--	--	--	--	--	--	3.6%	--
BCLS (Basic Cardiac Life Support)	84.6%	56.8%	74.2%	71.4%	94.7%	80.0%	78.6%	68.0%
ACLS (Advanced Cardiac Life Support)	55.6%	43.2%	45.4%	57.1%	73.7%	40.0%	64.3%	64.0%
PALS or APLS (Advanced Pediatric Life Support)	53.9%	29.7%	28.9%	57.1%	36.8%	80.0%	17.9%	36.0%
NRP (Neonatal Resuscitation Protocol)	61.1%	37.8%	22.7%	14.3%	63.2%	80.0%	21.4%	32.0%
BTLS (Basic Trauma Life Support)	4.7%	5.4%	5.2%	--	--	--	--	8.0%
S.T.A.B.L.E	6.7%	2.7%	1.0%	--	5.3%	--	3.6%	--
Other	5.8%	2.7%	4.1%	--	10.5%	--	10.7%	12.0%
Number of cases	1314	37	97	7	19	5	28	25

Table 2.14: Credentials and Certifications Earned by Job Title

	Job Title for Primary Respiratory Care Position									
	Director/ Manager	Super-visor	Clinical Specialist /Critical Care	General Staff Therapist	Sleep Diagnos-tic Tech-nologist	PFT Diagnos-tic Tech-nologist	Other Diagnos-tic Tech-nologist	Instructor/ Educator	Disease Manager/ Patient Educator	Other position
CRT (Certified Respiratory Therapist)	83.8%	79.1%	88.5%	89.1%	84.0%	79.6%	100.0%	78.0%	81.3%	79.2%
RRT (Registered Respiratory Therapist)	56.3%	61.7%	57.4%	45.8%	52.0%	50.0%	33.3%	75.6%	43.8%	50.0%
Neonatal/Pediatric Specialist	16.3%	13.0%	19.6%	8.5%	12.0%	5.6%	33.3%	12.2%	12.5%	16.7%
CPFT (Certified Pulmonary Function Technologist)	10.0%	6.1%	2.1%	3.1%	20.0%	31.5%	--	7.3%	6.3%	--
RPFT (Registered Pulmonary Function Technologist)	2.5%	3.5%	.5%	.5%	16.0%	14.8%	--	2.4%	6.3%	--
R.EEG.T (Registered EEG Technologist)	--	1.7%	--	.3%	--	--	33.3%	--	--	--
R.EP.T (Registered Electrophysiology Technologist)	--	--	.3%	--	--	--	--	--	--	--
RPSGT (Registered Polysomnographic Technologist)	2.5%	.9%	.5%	--	20.0%	--	--	--	--	--
CHT (Certified Hyperbaric Technologist)	1.3%	--	.3%	.3%	--	--	--	--	--	4.2%
AE-C (Certified Asthma Educator)	--	1.7%	.8%	.3%	--	3.7%	--	4.9%	12.5%	--
LVN (Licensed Vocational Nurse)	--	--	.8%	1.2%	--	1.9%	--	--	6.3%	4.2%
RN (Registered Nurse)	1.3%	1.7%	.5%	1.2%	8.0%	--	--	2.4%	6.3%	--
EMT (Emergency Medical Technician)	5.0%	7.8%	5.2%	4.9%	--	--	33.3%	2.4%	6.3%	4.2%
Paramedic	1.3%	1.7%	1.3%	.1%	--	--	--	--	--	4.2%
CCT (Certified Cardiographic Technician)	1.3%	--	.3%	.3%	--	--	--	--	--	--
CCM (Certified Case Manager)	--	--	--	--	--	--	--	--	6.3%	--
BCLS (Basic Cardiac Life Support)	80.0%	87.0%	85.4%	82.8%	72.0%	83.3%	100.0%	82.9%	100.0%	70.8%
ACLS (Advanced Cardiac Life Support)	60.0%	62.6%	54.8%	55.4%	44.0%	55.6%	66.7%	53.7%	81.3%	45.8%
PALS or APLS (Advanced Pediatric Life Support)	36.3%	56.5%	59.0%	50.1%	36.0%	51.9%	33.3%	34.1%	37.5%	50.0%
NRP (Neonatal Resuscitation Protocol)	47.5%	65.2%	65.3%	56.4%	16.0%	46.3%	100.0%	58.5%	37.5%	45.8%
BTLS (Basic Trauma Life Support)	8.8%	8.7%	5.2%	3.6%	4.0%	1.9%	--	--	6.3%	8.3%
S.T.A.B.L.E	7.5%	7.8%	9.1%	4.6%	--	9.3%	--	--	--	4.2%
Other	8.8%	10.4%	5.2%	4.9%	8.0%	7.4%	--	4.9%	6.3%	12.5%
Number of cases	80	115	383	780	25	54	3	41	16	24

Table 2.15: Credentials and Certifications Earned by Inpatient Facility Size

	Number of Beds in Inpatient Facility							
	Fewer than 50 beds	50-99 beds	100-199 beds	200-299 beds	300-399 beds	400-499 beds	500-599 beds	600 or more beds
CRT (Certified Respiratory Therapist)	78.7%	88.6%	88.3%	84.7%	89.3%	81.6%	83.3%	88.2%
RRT (Registered Respiratory Therapist)	46.8%	42.0%	44.9%	59.4%	53.4%	69.6%	73.8%	67.6%
Neonatal/Pediatric Specialist	10.6%	9.1%	8.4%	18.8%	16.0%	12.8%	16.7%	11.8%
CPFT (Certified Pulmonary Function Technologist)	10.6%	8.0%	6.9%	2.6%	6.0%	4.8%	4.8%	1.5%
RPFT (Registered Pulmonary Function Technologist)	2.1%	3.4%	2.9%	1.0%	1.8%	.8%	2.4%	1.5%
R.EEG.T (Registered EEG Technologist)	--	--	.4%	.3%	--	--	--	1.5%
R.EP.T (Registered Electrophysiology Technologist)	--	--	--	--	--	--	--	--
RPSGT (Registered Polysomnographic Technologist)	--	1.1%	.7%	.3%	.4%	--	--	--
CHT (Certified Hyperbaric Technologist)	--	--	--	--	.7%	--	2.4%	1.5%
AE-C (Certified Asthma Educator)	--	--	--	--	1.4%	1.6%	--	1.5%
LVN (Licensed Vocational Nurse)	--	1.1%	1.1%	.3%	1.1%	.8%	--	4.4%
RN (Registered Nurse)	--	1.1%	1.5%	1.6%	1.1%	1.6%	--	--
EMT (Emergency Medical Technician)	4.3%	1.1%	5.1%	4.5%	5.7%	5.6%	4.8%	5.9%
Paramedic	--	--	.7%	.6%	.7%	--	--	1.5%
CCT (Certified Cardiographic Technician)	--	--	.4%	--	.4%	--	--	--
CCM (Certified Case Manager)	--	--	--	--	--	--	--	--
BCLS (Basic Cardiac Life Support)	83.0%	84.1%	85.0%	83.4%	84.3%	87.2%	97.6%	77.9%
ACLS (Advanced Cardiac Life Support)	61.7%	65.9%	58.0%	49.5%	56.6%	56.8%	57.1%	47.1%
PALS or APLS (Advanced Pediatric Life Support)	61.7%	52.3%	58.8%	53.7%	48.8%	57.6%	47.6%	47.1%
NRP (Neonatal Resuscitation Protocol)	76.6%	65.9%	66.8%	60.1%	60.9%	57.6%	52.4%	41.2%
BTLS (Basic Trauma Life Support)	4.3%	5.7%	3.6%	3.8%	5.3%	8.8%	2.4%	4.4%
S.T.A.B.L.E	14.9%	3.4%	8.0%	6.7%	5.7%	8.0%	9.5%	2.9%
Other	--	3.4%	8.8%	6.7%	4.3%	4.0%	4.8%	4.4%
Number of cases	47	88	274	313	281	125	42	68

Key Findings

Eighty-two percent of RCPs have met or exceeded the current educational two-year degree requirement. A little more than one-half of the RCPs have earned an Associate degree and a sizeable portion have gone beyond this with Bachelor's degrees (21%) or even Master's or Doctoral degrees (6.5%). Further, about one-quarter (23%) of the currently working RCPs are pursuing more education; however, about half of these individuals are doing so to change career paths.

About 95 percent of current RCPs have completed a Respiratory Therapy education program and the overwhelming majority (83%) believe their education gave them good preparation for the work they do. Interestingly, however, about 30 percent believe current education programs are not preparing students well, and about one-quarter indicate that Respiratory Therapists are not getting the needed level of education and training.

Eighty-six percent of the RCPs have earned their CRT credential, and just over half have obtained the RRT credential. Generally, the older RCPs have earned the RRT while younger workers are most likely to hold the CRT credential. Larger facilities are more likely to have greater percentages of RRT credentials than small ones. Beyond the CRT and RRT credentials, the most popular certification areas were those dealing with cardiac life support (BCLS, ACLS), advanced pediatric life support (PALS, APLS), neonatal resuscitation (NRP), and neonatal/pediatric specialist. There was little difference between those working in respiratory care and those not, except those not working were about 12 times more likely to be RNs. This lends support to the notion that those leaving the profession may be moving into other health care professions.

A Picture of the RCP Workplace

Where are RCPs employed?

Employment Setting. As can be seen in Table 2.16, the vast majority (86%) of currently employed RCPs indicated they work in acute care hospital settings. However, additional analysis of the places where RCPs are assigned suggests that these workplaces may be health care complexes where part of the facility may be dedicated to sub-acute care (such as long-term care or rehabilitation) as well as typical acute care units such as ICU or neonatal. Indeed, it was difficult disentangling the responses regarding the work setting, particularly because of those individuals who selected two or three work settings for their primary respiratory care position. In other words, the notion that an RCP works in one place for his/her primary position, then works at another if he/she happens to hold a second job probably does not accurately portray the range of work settings. Rather, many individuals work at more than one distinctive work setting within a principal job.

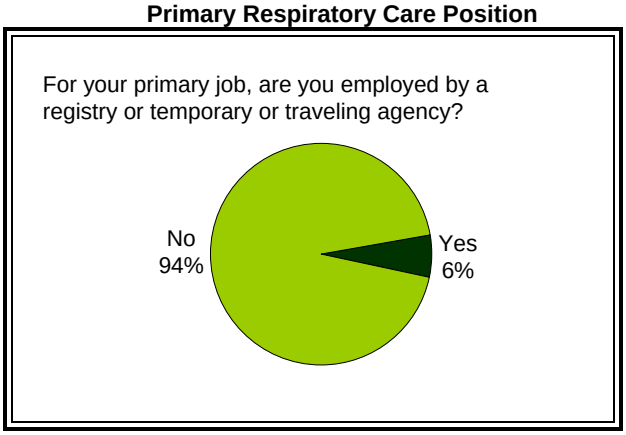
Table 2.16: Work Setting for Primary Respiratory Care Position

	Percent	Number of cases
Acute care hospital	86.1%	1,325
Durable medical equipment/home care	2.3%	36
Long-term acute care/rehabilitation hospital/sub-acute care	6.2%	96
Skilled nursing facility	.4%	7
Accredited education program	1.2%	19
Manufacturer/distributor	.3%	5
Outpatient facility/physicians office	1.8%	28
Other setting*	1.6%	25
Total	100.0%	1,540

* Includes Sleep Medicine, Transport, Research and Disaster Preparedness.

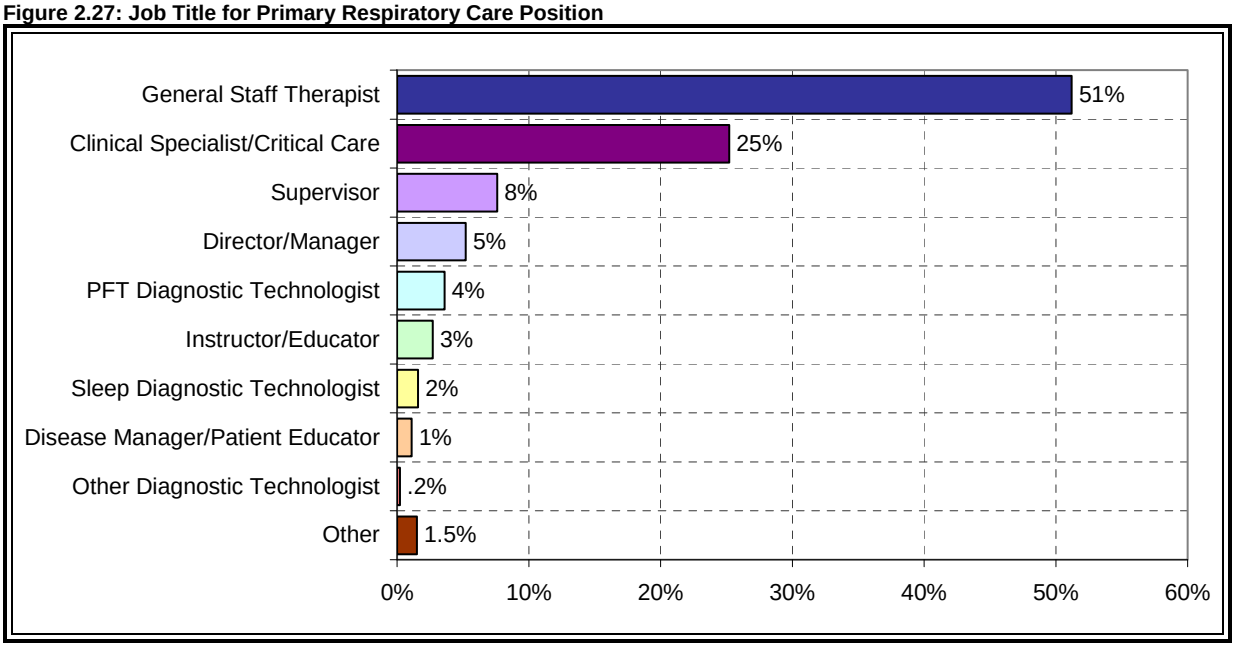
Registry/Agency Employment. Respondents were asked whether, for their primary position, they were employed by a registry or temporary or traveling agency. Six percent of respondents reported being employed by a registry or agency. Registry and agency employment is concentrated primarily in acute care hospitals: 6.6 percent of RCPs in acute care hospitals are registry or agency employees. Given the increasingly high-profile of registry and agency RCPs, this percentage was lower than expected. It is consistent, however, with findings from the acute care hospital employer survey—acute care hospital employers reported that eight percent of their FTEs were filled by registry or agency staff.

Figure 2.26: Registry/Agency Employment for Primary Respiratory Care Position



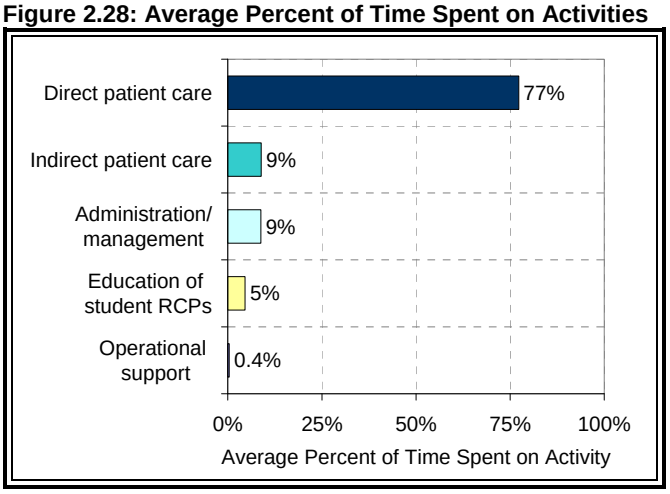
RCP Position Categories. Survey respondents were asked to select one of eight different categories (an "other" category was also provided) that best described the individual's job title. Figure 2.27 shows the distribution of job titles for respondents' primary respiratory care position. Most positions were clustered in four categories, with the largest group—51 percent—in the General Staff Therapist category. Twenty-five percent chose Clinical Specialist/Critical Care, eight percent selected Supervisor, and five percent selected Director/Manager.

Figure 2.27: Job Title for Primary Respiratory Care Position



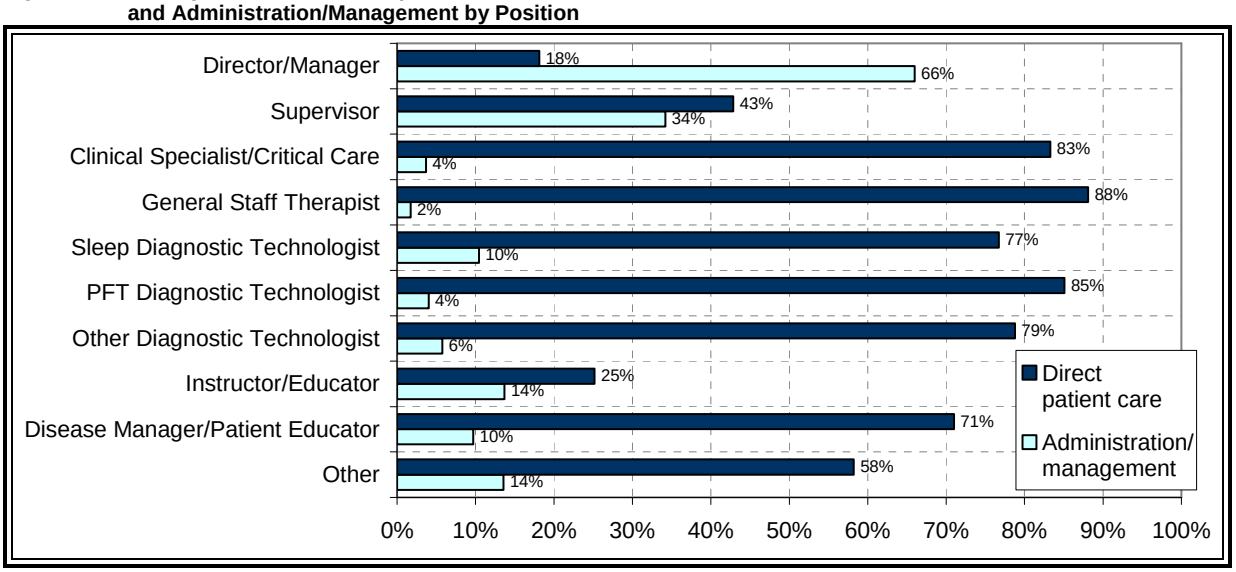
Distribution of Time across Activity Categories. Respondents were asked to describe, for their primary job, the approximate percentage of their time during a typical week spent on four categories of tasks (administration/management, direct patient care, indirect patient care, and education of student RCPs). Space was provided on the survey form for respondents to write-in other activities not included in these categories. These descriptions were reviewed, and when necessary, reallocated to the appropriate category (for example, meetings were included in administration/management, charting under direct patient care). An additional category was added to include the operational support activities described by respondents, such as troubleshooting computers, equipment maintenance and cleaning, and stocking supplies. Figure 2.28 shows that respondents reported spending by far most of their time (77%) on direct patient care. Nine percent of their time was spent on indirect patient care, and nine percent was spent on administrative and management activities. Five percent of their time was spent educating student RCPs.

Figure 2.28: Average Percent of Time Spent on Activities



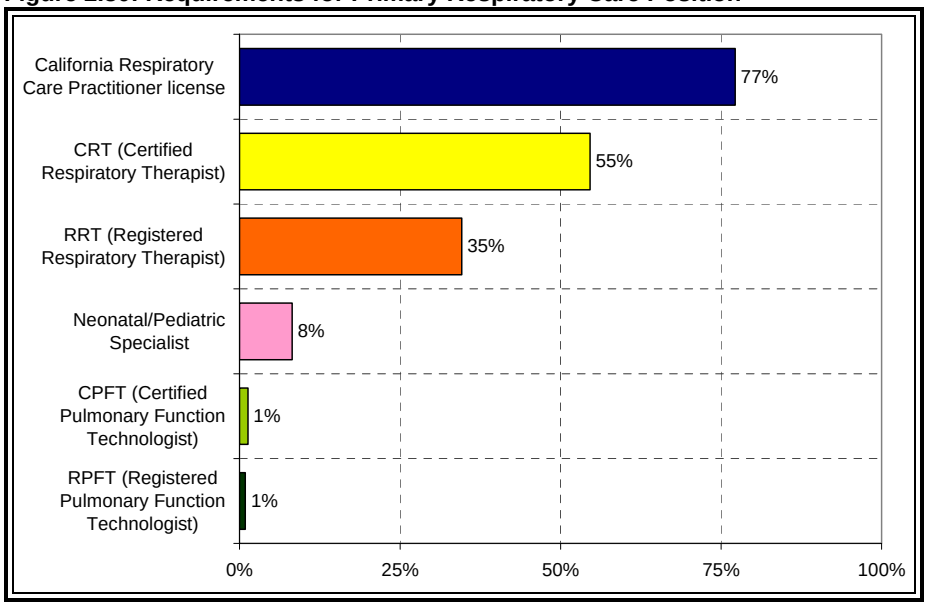
As would be expected, the distribution of time varies for RCPs in different positions. Directors and Managers spent most of their time on administration and management (66%) and relatively little on direct patient care (18%). Supervisors spent 43 percent of their time on direct patient care and 34 percent on administration and management. General Staff Therapists spent more of their time (88%) on direct patient care than any other position category.

Figure 2.29: Average Percent of Time Spent on Direct Patient Care and Administration/Management by Position



Job Requirements for Primary Respiratory Position. Respondents were asked to indicate the qualifications required for their primary job. Seventy-seven percent of respondents indicated that their position required a California RCP license.[3] Fifty-five percent of respondents reported that the CRT was required for their job, and 35 percent of respondents said the RRT was required.

Figure 2.30: Requirements for Primary Respiratory Care Position



[3] It should be noted that these responses describe survey information and in some cases may not reflect actual job requirements. The number of respondents who failed to report that their position required a California RCP license was puzzling. Analysis of these positions showed that many positions not requiring a California RCP license were located out of state, others were higher-level administrative positions, and still others were in manufacturing or distributing settings. However, even after taking these factors into account, it appears that some respondents' recollection of their position requirements was not entirely accurate.

Facility Size. Respondents whose primary work setting was an inpatient facility were asked to describe the number of beds in the facility. The distribution of facility size for RCP work setting varies depending on the type of facility. RCPs in acute care hospitals were much more likely to work in larger facilities than RCPs working in long-term acute care, rehabilitation hospitals, sub-acute care or skilled nursing facilities. Seventy percent of RCPs working in acute care hospitals were employed by facilities with between 100 and 400 beds. In contrast, 45 percent of RCPs working in long-term acute care, rehabilitation hospitals, sub-acute care or skilled nursing facilities were employed by facilities with fewer than 100 beds.

Figure 2.31: Number of Beds in Primary Work Setting by Facility Type

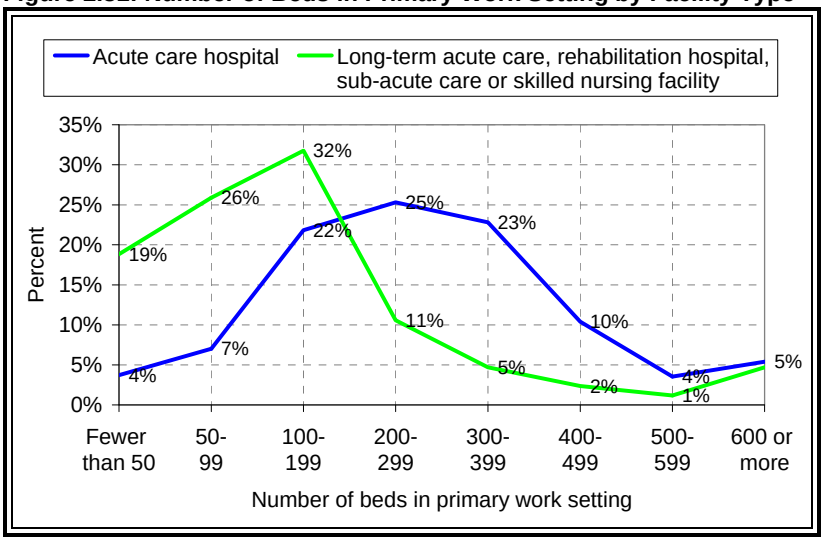
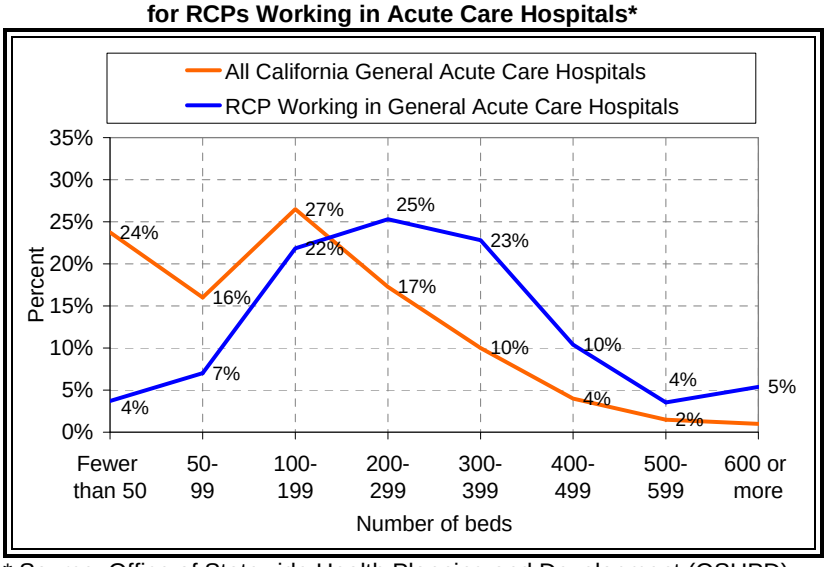


Figure 2.32: Comparison of the Distribution of the Number of Beds for All California General Acute Care Hospitals and for RCPs Working in Acute Care Hospitals*

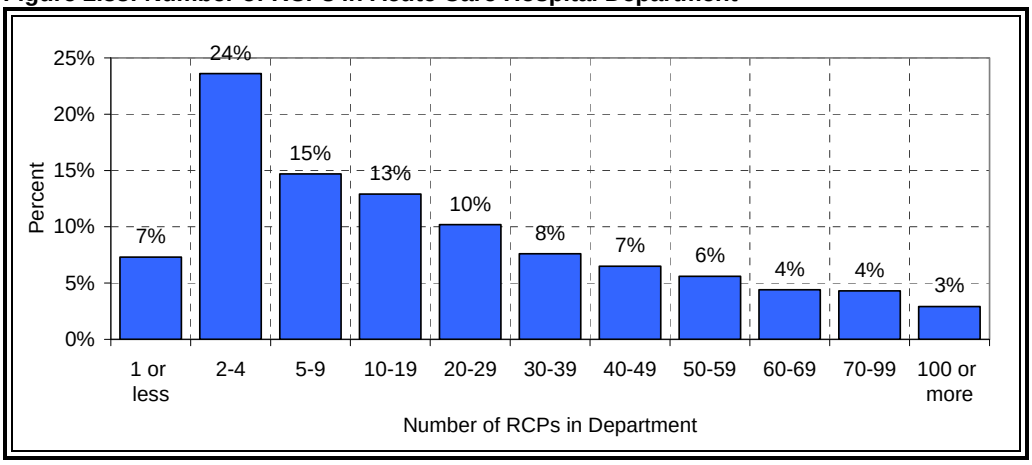


* Source: Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center, State Utilization Data File of Hospitals for Calendar Year 2005. Distribution includes all 400 open hospitals.

Comparing the distribution of all acute care hospitals in California with the distribution for RCPs working in hospitals suggests that RCPs were disproportionately concentrated in hospitals with 200 or more beds. Figure 2.32 displays information for the State Utilization Data File of Hospitals for Calendar Year 2005 from the Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center. Twenty-four percent of California's open hospitals in 2005 had fewer than 50 beds. In contrast, only four percent of RCPs worked in hospitals with fewer than 50 beds. The gap between hospitals and RCPs narrows as facility size increases to 100 to 199 beds, with more equal percentages of hospitals and RCPs working in hospitals (27% and 22% respectively). After that, the gap widens in the opposite direction, with a disproportionate number of RCPs working in hospitals with 200 to 399 beds.

Number of RCPs in Acute Care Hospital Department/Units. Respondents whose primary work setting was an acute care hospital were asked how many respiratory care practitioners were in the department or unit where they typically spend most of their time. Responses ranged from one to more than 100. Close to half of RCPs (46%) were in units with less than ten RCPs. The most common category, with almost one-fourth of respondents (24%), was units with between two and four RCPs.

Figure 2.33: Number of RCPs in Acute Care Hospital Department



The number of RCPs working in a department is related to some extent to the overall size of the hospital. RCPs working in hospitals with fewer than 100 beds rarely reported working in a department with more than 20 RCPs. And only among respondents working in the largest hospitals, with 500 beds or more, did a significant number report working in units with 70 or more RCPs. However, because the number of RCPs in a unit is so heavily influenced by the type of care provided in that unit, a significant number of respondents in large hospitals also reported working in units with between two and four RCPs. Unfortunately, because most respondents (74%) reported being assigned to multiple units, it is impractical to incorporate the type of unit into the analysis.

Table 2.17:Number of RCPs in Respondent's Acute Care Hospital Department/Unit by Facility Size

Number of RCPs in acute care hospitals department/unit	Number of beds in facility							
	Fewer than 50 beds	50-99 beds	100-199 beds	200-299 beds	300-399 beds	400-499 beds	500-599 beds	600 or more beds
1 or less	28.6%	8.2%	9.7%	7.3%	4.5%	5.0%	5.1%	1.6%
2-4	28.6%	32.9%	29.6%	20.3%	19.7%	19.8%	30.8%	11.1%
5-9	26.2%	22.4%	8.9%	15.0%	17.8%	14.9%	2.6%	15.9%
10-19	16.7%	20.0%	18.6%	9.8%	11.0%	6.6%	12.8%	7.9%
20-29	--	11.8%	16.2%	12.6%	4.9%	9.1%	5.1%	12.7%
30-39	--	2.4%	7.7%	9.1%	10.2%	7.4%	2.6%	3.2%
40-49	--	2.4%	2.4%	9.1%	9.5%	11.6%	5.1%	1.6%
50-59	--	--	2.8%	7.3%	6.8%	9.1%	5.1%	4.8%
60-69	--	--	2.8%	4.9%	9.1%	4.1%	7.7%	--
70-99	--	--	.4%	3.1%	6.1%	8.3%	20.5%	7.9%
100 or more	--	--	.8%	1.4%	.4%	4.1%	2.6%	33.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	42	85	247	286	264	121	39	63

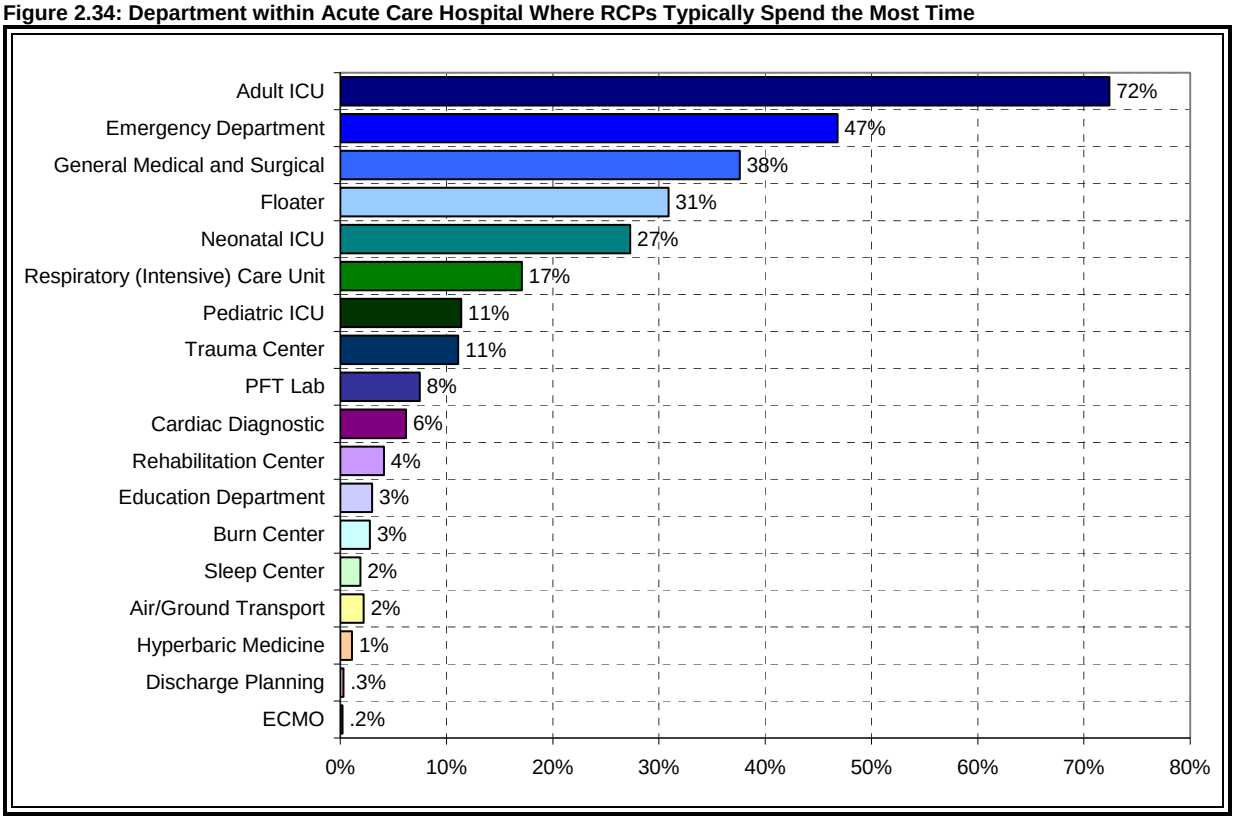
Facility Size and Positions. As shown in Table 2.18, there is surprisingly little difference among the various sized institutions with regard to the percentages of the various positions utilized. With the exception of small facilities (those with fewer than 50 beds), which appear to have a larger proportion of staff dedicated to Director or Manager positions (11%), most all facilities have between 75 and 85 percent of their staff positions committed to either Clinical Specialists/Critical Care or General Staff Therapist positions. In all facilities, the portion of General Staff Therapist positions usually runs 25 to 30 percent higher than the Clinical Specialists/Critical Care positions. Although, as the hospital facility grows larger, the portion of the staff identified as Clinical Specialists/Critical Care positions get larger. This is likely due to the greater specialization of units that occurs in the larger facilities. The notable exception to this in the survey data was the facilities that were 500 to 599 beds, which displayed a smaller portion of Clinical Specialists/Critical Care positions (23%) than all other sized facilities except the smallest sized facility group—facilities with less than 50 beds—which had a similarly sized portion of identified staff in this group.

Table 2.18: Job Title by Inpatient Facility Size

	Inpatient Facility Size							
	Fewer than 50 beds	50-99 beds	100-199 beds	200-299 beds	300-399 beds	400-499 beds	500-599 beds	600 or more beds
Director/Manager	10.6%	6.0%	4.5%	3.5%	2.1%	4.7%	2.3%	4.5%
Supervisor	4.3%	6.0%	8.2%	7.3%	8.1%	7.1%	11.6%	6.1%
Clinical Specialist/Critical Care	23.4%	23.8%	20.5%	26.7%	34.3%	32.3%	23.3%	45.5%
General Staff Therapist	48.9%	53.6%	57.1%	55.2%	50.2%	52.0%	60.5%	36.4%
Sleep Diagnostic Technologist	--	2.4%	1.5%	.3%	1.1%	--	--	1.5%
PFT Diagnostic Technologist	8.5%	4.8%	5.6%	3.2%	2.5%	.8%	--	1.5%
Other Diagnostic Technologist	--	1.2%	.4%	--	--	--	--	1.5%
Instructor/Educator	--	1.2%	1.5%	1.6%	1.1%	.8%	--	--
Disease Manager/Patient Educator	--	1.2%	--	1.3%	.7%	1.6%	--	--
Other	4.3%	--	.7%	1.0%	--	.8%	2.3%	3.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of cases	47	84	268	315	283	127	43	66

Acute Care Hospital Department/Unit Assignments. Respondents whose primary work setting was an acute care hospital were asked to indicate the type of department or unit where they typically spend most of their time. If respondents spent equal amounts of time in more than one type of department or unit, they were instructed to select more than one category. The Adult ICU was by far the most frequent assignment. Seventy-two percent of RCPs in acute care hospitals reported spending a significant portion of their time assigned to the Adult ICU. The Emergency Department was the next most common assignment, with 47 percent of respondents spending a significant part of their time there.

Figure 2.34: Department within Acute Care Hospital Where RCPs Typically Spend the Most Time



In addition to the eighteen units shown in Figure 2.34, space was also provided on the survey form for respondents to write-in other department or units where they were assigned. Eleven percent of respondents described assignments to other types of units. The most frequently mentioned were Labor and Delivery, Pediatric Unit, Bronchoscopy Lab, ABG Lab, Pulmonary Rehabilitation Department, and Sub-Acute Units.

Table 2.19 shows the number of departments or units where RCPs reported spending most of their time. Assignment to one or two departments or units was far less common than expected. Just 26 percent of RCPs working in acute care hospitals were assigned to one department or unit. Twenty percent were assigned to two units. This means that slightly over half (53%) of RCPs in acute care hospitals are assigned to three or more units. Since a distinct category was included for floaters (31% of respondents selected this assignment), this distribution actually understates to some degree the diversity of assignments for most RCPs in acute care hospitals.

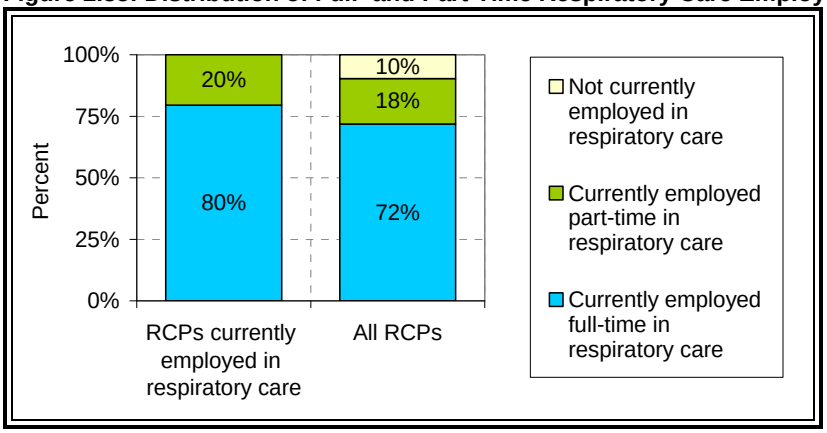
Table 2.19: Number of Acute Care Hospital Department/Units to which RCPs are Assigned

	Percent	Number of cases
One	26%	345
Two	20%	262
Three	20%	262
Four	16%	209
Five	10%	127
Six or more	9%	119
Total	100%	1,324

How do the hours and schedules affect the workforce?

Eighty percent of RCPs employed in respiratory care were working full-time; twenty percent were working part-time. In terms of the total potential workforce, 72 percent of licensees were employed full-time in respiratory care, 18 percent were employed part-time in respiratory care, and ten percent were not currently employed in respiratory care.

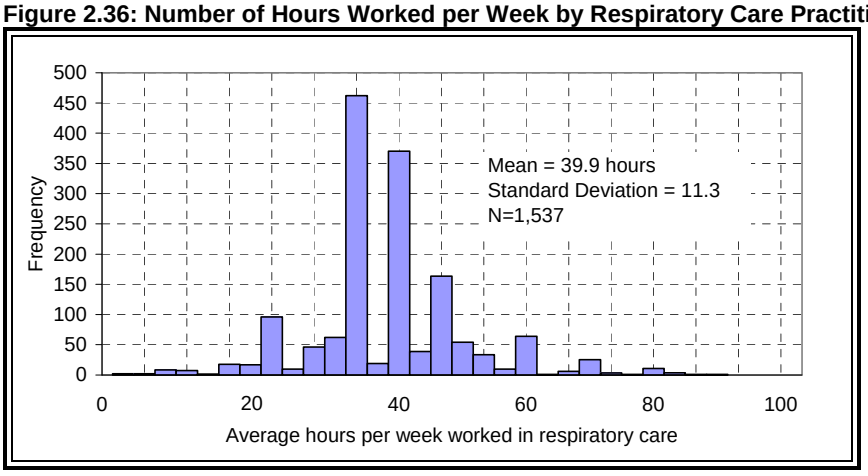
Figure 2.35: Distribution of Full- and Part-Time Respiratory Care Employment



The Interaction of Hours and Schedules. As with other health care professions, particularly in acute care settings, respiratory care must be provided on a continuous 24 hour, seven days per week basis. This means that RCPs work in a world of shifts and a world where weekends and holidays often are part of the normal work schedule. As displayed in Figure 2.36, there was a wide range of hours worked although the average number of hours worked per week was about 40.

- About 68 percent of those currently employed in respiratory care work between 28.5 hours and 51.1 hours per week
  - About one-third (33%) of the RCPs work within a range of 30 to 39 hours
  - Another one-third (33%) work 40 to 49 hours per week.

Figure 2.36: Number of Hours Worked per Week by Respiratory Care Practitioners



As would be expected, the number of jobs that the RCP holds affects the total number of hours he/she works in a week.

- For those holding one position (78% of those working) the average work week is about 38 hours,
- For those holding two positions (20% of those working) the average goes to about 46.5 hours per week,
- For those with three or more positions (a little more than 2% of those working) the average climbs to just under 51 hours per week.

Figure 2.37: Number of Respiratory Care Positions Currently Held

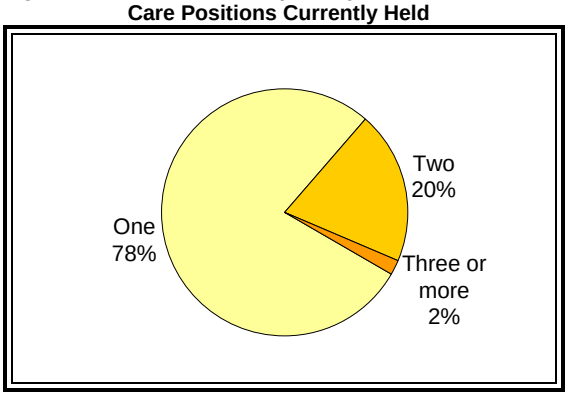


Figure 2.38: Mean Weekly Work Hours by Number of Respiratory Care Positions

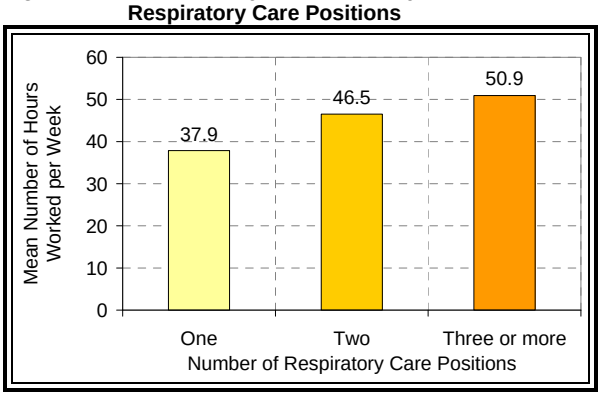
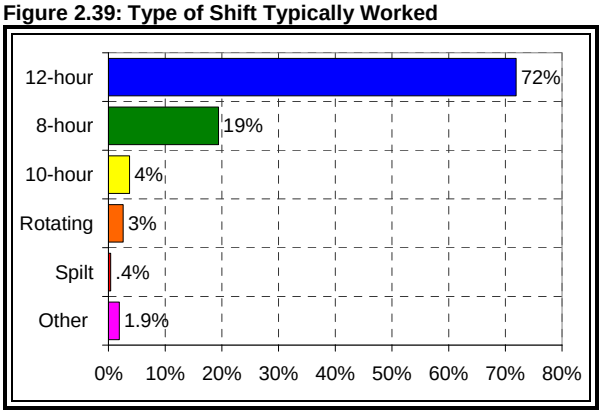


Figure 2.39: Type of Shift Typically Worked



Some interesting patterns emerged from a more in depth review of hours and schedules. The vast majority of those working in respiratory care (for all respiratory jobs) were working 12-hour shifts (72%). The second largest group of RCPs (19%) were working 8-hour shifts. A small percentage (4%) were working 10-hour shifts and another small group (3%) were on rotating shift schedules. The remaining group (.4%) of RCPs said they were on split shifts or on some other type of shift schedule (2%). When we look at the average number of hours worked by these shift groups, we see a statistically significant difference between the groups with regard to the number of average hours they work. As seen in Table 2.20, of those with identified shift patterns/lengths, individuals on rotating shifts worked, on average, the smallest number of hours per week (37.91) while those working 10-hour shifts worked the most (41.79).

The largest shift group, those working 12-hour shifts, worked a little more than forty hours (40.58) per week. Further, when we looked at the differences between RCPs who work as registry, temporary or traveler employees, and those who are regular employees, we saw no significant differences between the employee category and the number of hours worked (38.7 average hours per week for those working registry, temporary or traveler positions versus 40.0 for those working regular positions). It is worth noting that RCPs paid on an hourly basis (roughly 89.5% of the RCPs) work, on average, about 5.4 hours less per week than those RCPs (9.8% of the RCPs) paid a salary.

Table 2.20: Average Work Hours per Week by Type of Shift Typically Worked

	Mean	Standard Deviation	Number of cases
8-hour	37.91	11.32	294
10-hour	41.79	7.20	57
12-hour	40.58	10.98	1,101
Rotating (for example 8-hour/12-hour)	37.08	12.64	40
Spilt (for example 3-hour/4-hour)	40.56	19.08	7
Other shift	34.02	15.83	29
Total	39.90	11.20	1,529

Key Finding

Findings suggest that despite the 24-7 nature of respiratory care work and perceived staffing shortages, the majority of RCPs are not experiencing workweeks that differ substantially from the common standard of the 40-hour workweek. Moreover, there doesn't seem to be a significant difference in terms of the average hourly workweek between those who are in regular positions and those in registry, temporary, or traveler type positions.

Base, Differential and Overtime Hours and Rates. Respondents were asked to describe the number of hours they worked each week and their hourly pay rates in four different pay categories: base, differential, overtime, and on-call. They were asked to provide this information for each of their current respiratory care jobs. If they currently held more than three respiratory care positions, they were asked to provide information for the three respiratory care jobs where they spend the most time. Salaried employees were instructed to convert their salary to an hourly rate.

There are several factors that should be considered in evaluating the survey findings on hours and hourly pay by pay category. In general, this topic proved to be more complex than originally anticipated. A number of respondents called the toll-free study assistance line with questions on this section of the survey or wrote in notes describing the difficulty they were encountering in trying to describe their hours and rates. One respondent actually included part of his/her check stub along with the completed survey and wrote "if you can figure this out, congrats!" This respondent's check stub included six different pay rates: a regular rate, three types of overtime, a weekend shift differential, and a lump sum payment for working an extra shift.

Another complicating factor was the use of "blended" rates for 10 and 12-hour shifts. Some employers use these blended rates instead of traditional base and overtime rates. Designed to simplify some of the problems described in the previous paragraph, this approach pays a single rate for an entire shift that is higher than the base rate, but lower than a straight overtime rate. Since the survey form did not provide respondents with directions on how to handle this situation, there is an unknown amount of measurement error in these items.

Consistent reporting of on-call hours also was problematic for the relatively small group of RCPs paid to be on-call (just under 6% of respondents reported being paid for on-call hours). The primary difficulty here is one of distinguishing pay and hours for *being on call* from working *after being called in*. In light of this, a decision was made to limit the evaluation of how hours are distributed across settings and pay rates to base, differential and overtime hours.

Given these qualifications, responses on this topic provide a rich source of data. Most widely available data on pay and hours in respiratory care (for example, from the Bureau of Labor Statistics and the California Employment Development Department) simply describe the number of positions in various sectors and the average pay rates for these positions, but do not include information about the number of hours or the relative impact of differential and overtime rates on overall pay within a profession.

Depending on the primary objective, different approaches can be used to evaluate the distribution of the respiratory care workforce across settings. Understanding these distinctions helps explain some of the differences between existing information about respiratory therapists, such as the AARC surveys and United States Bureau of Labor Statistics (BLS) and California Employment Development Division (EDD) labor force data. A fundamental component of each approach is the "units of analysis" used:

- People. When a survey of individuals (in this case members of the respiratory care profession) is conducted and results are described in terms of the distribution of respondents, or generalized to a population of licensees, people are the units of analysis. This study uses this approach in describing most of the RCP survey results. This was also the approach used in the *2005 AARC Human Resources Respiratory Therapist Survey*.

- Positions. This is the approach used by the BLS and the EDD. The methodology used by these agencies counts jobs, not people. The same person could have five jobs for five different firms and for the purposes of these agencies, this counts as five different jobs. This approach does not differentiate between full and part-time positions. If a position is counted on the payroll, it is counted as employment.[4]

- Hours or Full-Time Equivalents (FTEs). This is arguably the most detailed approach. It is frequently used when collecting information from employers (this was how information was collected for this study's employer survey and for the *2005 AARC Human Resources Survey of Hospital Employers*). Because this approach counts the actual work hours required, it is not influenced by the number of hours being worked by an individual or the number of positions held by an individual. This approach seems particularly appropriate given that significant portions of the RCP workforce worked part-time in respiratory care (20%); held multiple positions in respiratory care (also 20%); and that second and third jobs were distributed across settings differently than primary positions (see Table 2.22).

[4] The standardized classification system used by EDD and BLS to collect information on occupations defines the occupation of "Respiratory Therapist" more narrowly than the actual scope of the profession. Several work settings and position categories generally regarded to be part of the profession are clearly not included in the standardized occupational classification for respiratory therapists. They are therefore not included in the counts or projections for the occupational classification. These include "Managers of Respiratory Therapists"—they are be classified in different occupations, for example, Medical and Health Services Mangers. Similarly, positions with accredited education programs, and manufacturers or distributors are not classified as respiratory therapists. It is uncertain how other more specialized positions such as diagnostic technicians and patient educators would be classified. This means that EDD LMID data under-represent the actual number of positions in California which require an RCP license.

The following table summarizes distributions across work settings using the three units of analysis described above. The table shows that profiles based on the distribution of respondents' primary position and the distribution of all work hours (first and third columns) are nearly identical. The profile based on the distribution of positions is a little different, primarily due to the setting and hours for second and third jobs (they were more likely than primary positions to be in non-acute care hospital settings and they were more likely to be part-time jobs).

Table 2.21: Percent Distribution by Work Setting for Primary Position, All Positions, and All Work Hours

	Percent Distribution for Different "Units of Analysis"		
	People: Respondents' Primary Position	**Positions: All Positions Held by Respondents**	**Hours: All Hours Worked by Respondents**
Acute care hospital	86.1%	81.6%	85.0%
Durable medical equipment/home care	2.3%	2.9%	2.4%
Long-term acute care/rehabilitation hospital/sub-acute care	6.2%	7.2%	6.8%
Skilled nursing facility	.4%	.7%	.5%
Accredited education program	1.2%	2.2%	1.4%
Manufacturer/distributor	.3%	.3%	.3%
Outpatient facility/physicians office	1.8%	2.4%	2.0%
Other setting	1.6%	2.6%	1.6%
Total	100.0%	100.0%	100.0%

Table 2.22 describes the people and position-based distributions and shows how column two of Table 2.21 was computed. The "people-based" distribution for respondents' primary position is very straight-forward, it's simply the percent of respondents indicating that their primary position is in a particular setting. The "position based" distribution results from summing the number of respondents across primary, second and third jobs. For example, adding the number of respondents with primary, second and third jobs in acute care hospitals (1325 + 212 + 12) we see that the survey respondents reported information on 1549 acute care hospital jobs. This represents 81.6 percent of the 1,897 jobs described by survey respondents.

Table 2.22: Number and Percent of Positions by Work Setting

	Number of Cases				Percent Distribution			
	Primary Position	Second Job	Third Job	Total	Primary Position*	Second Job	Third Job	Total†
Acute care hospital	1,325	212	12	1,549	86.1%	65.0%	36.8%	81.6%
Durable medical equipment/home care	36	14	6	55	2.3%	4.3%	17.8%	2.9%
Long-term acute care/rehab-ilitation hospital/sub-acute care	96	40	2	137	6.2%	12.2%	5.8%	7.2%
Skilled nursing facility	7	5	2	13	.4%	1.4%	5.9%	.7%
Accredited education program	19	20	2	41	1.2%	6.1%	5.9%	2.2%
Manufacturer/distributor	5	2		6	.3%	.5%	.0%	.3%
Outpatient facility/ physicians office	28	17		45	1.8%	5.3%	.0%	2.4%
Other setting	25	17	9	50	1.6%	5.1%	27.8%	2.6%
Total	1,540	326	32	1,897	100.0%	100.0%	100.0%	100.0%

* This is the source for the "people" column included in the previous table.

† This is the source for the "position" column included in the previous table. Summing the number of jobs over respondents produces a count of the number of positions.

The information in Table 2.22 can also be used to compute employment estimates for the respiratory care profession. On average, each respondent employed in respiratory care was currently working 1.23 respiratory care jobs. Earlier in this chapter (Table 2.11) we estimated that 86.3 percent of RCPs with active, clear licenses were employed in respiratory care in California. Combining these two pieces of information—that there were 11,981 RCPs employed in respiratory care in California, and that each RCP, on average, held 1.23 respiratory care jobs—produces an estimated 14,737 respiratory care positions in California.

11,981*	Estimated number of RCPs with active/clear licenses employed in respiratory care in California, June 2006
1.23†	Average number of respiratory care positions held by each RCP currently working in respiratory care
14,737‡	Estimated number of respiratory care positions in California, 2006
10,390	California Employment Development Department Occupational Estimate of Employment for Respiratory Therapists in California for first quarter 2006
71%§	Estimated percent of RCP positions included in EDD estimate

* 86.3% of 13,844 active, clear RCPs licenses

† 1,897 positions / 1,540 respondents

‡ 11,981 RCPs x 1.23 jobs-per-RCP

§ 10,390 positions / 14,737 positions

The California Employment Development Department Occupational Estimate of Employment for Respiratory Therapists in California for first quarter 2006 is 10,390. This suggests that EDD estimates and projections (due to occupational classification

definitions discussed earlier) include approximately 71 percent of the "real-world" jobs held by RCPs in California.

Table 2.23 provides a detailed picture of work hours across settings and pay categories. The averages include hours (for up to three jobs) for all RCPs currently working in respiratory care who reported work hour information. More than one-quarter (27 percent) of all RCP workforce hours were paid at a shift differential and worked in an acute care hospital. Slightly over seven percent of all RCP workforce hours were overtime hours in an acute care hospital.

Table 2.23: Mean Number of Hours and Distribution of Hours by Pay Category and Setting

		Base	Differ-ential	Over-time	Total
Mean number of hours worked per week	Acute care hospital	20.21	10.86	2.96	34.04
	Durable medical equipment/home care	.92	.00	.02	.95
	Long-term acute care/rehabilitation hospital/sub-acute care	1.86	.70	.16	2.72
	Skilled nursing facility	.16	.03	.00	.20
	Accredited education program	.53	.01	.00	.54
	Manufacturer/distributor	.14	.00	.00	.14
	Outpatient facility/physicians office	.75	.04	.01	.80
	Other setting	.50	.10	.04	.65
	Total	25.08	11.75	3.20	40.03
	Number of cases	1,481	1,481	1,481	1,481
Percent distribution of hours	Acute care hospital	50.50%	27.14%	7.40%	85.04%
	Durable medical equipment/home care	2.30%	.00%	.06%	2.37%
	Long-term acute care/rehabilitation hospital/sub-acute care	4.66%	1.75%	.39%	6.80%
	Skilled nursing facility	.41%	.08%	.01%	.50%
	Accredited education program	1.33%	.02%	.01%	1.35%
	Manufacturer/distributor	.34%	.00%	.00%	.34%
	Outpatient facility/ physicians office	1.86%	.10%	.03%	1.99%
	Other setting	1.26%	.26%	.10%	1.61%
	Total	62.66%	29.34%	7.99%	100.00%

Hourly Pay Rates. The average base pay rate for RCPs was $30.09 per hour. This is almost three dollars an hour higher than the $27.15 estimated mean hourly wage for Respiratory Therapists in California for first quarter 2006 prepared by the California Employment Development Department's (EDD) Labor Market Information Division (LMID). The difference is likely due, in large part, to the occupational classification for "Respiratory Therapist" used by EDD.

• Just under 75% of respondents reported working some hours at a base pay rate	• The average base pay rate was $30.09 per hour
• Approximately 44% of respondents reported working hours with shift differentials	• The average rate for hours with shift differentials was $32.71 per hour
• Thirty-four percent of respondents reported working paid overtime hours	• The average overtime rate was $46.31 per hour
• Six percent of respondents reported working paid on-call hours	• The average on-call rate was $15.35 per hour

Base pay rates for RCPs with one year or less of experience were $24.54. This is remarkably close to the average starting pay of $24.64 reported by acute care hospital employers for a new Certified Respiratory Therapist without experience. A linear regression analysis found that RRT credentialing influenced the relationship between years of experience and pay (Adjusted R Square = .169, df= 1365). Starting hourly base pay rates for RCPs with the RRT credential were on average $1.73 higher than rates for RCPs without the RRT credential, and the rate of increase in pay was greater for RCPs with the RRT credential than for those without the credential. Base pay rates for RCPs without the RRT credential increase an average of 22 cents an hour for every year of experience. Hourly base pay rates for RCPs with the RRT credential increase an average of 31 cents for every year of experience.

Figure 2.40: Predicted Hourly Base Pay Rates by Years in Respiratory Care and RRT Credentialing

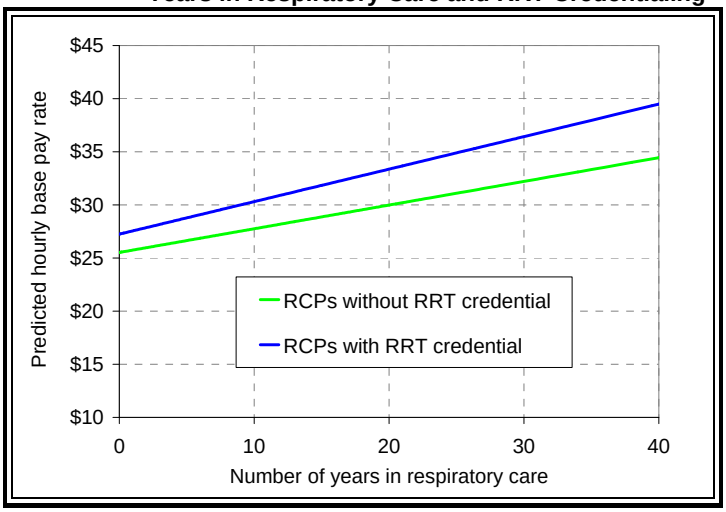


Table 2.24 shows the mean base pay rates across settings. Perhaps because of some of the problems discussed above, as well as because of the more confidential nature of financial information, fewer respondents provided information about pay rates than hours. This means that the number of cases for some categories is small and caution should be used in evaluating the averages for these categories. Base pay rates were surprisingly constant across settings. Base pay rates for RCPs working in long-term acute care, rehabilitation hospitals, sub-acute care and skilled nursing facilities were somewhat lower than other settings.

Table 2.24: Mean Base Pay Rates for Primary Position by Work Setting

	Mean Base Pay Rate	Number of cases
Manufacturer/distributor	$37.15	4
Accredited education program	$36.24	17
Other setting	$34.13	19
Durable medical equipment/home care	$31.73	32
Outpatient facility/physicians office	$30.67	27
Acute care hospital	$29.99	1,189
Long-term acute care/rehabilitation hospital/sub-acute care	$28.52	87
Skilled nursing facility	$28.25	6

Table 2.25 shows the mean base pay rates across work setting regions. Pay rates varied a great deal from one region to another. Rates were highest in the Greater Bay Area, where the average hourly base rate was $37.04. Northern California had the next highest rate, with an average of $30.90 an hour. Rates for the three remaining California regions were more tightly clustered. The average for the Southern California region was $28.95, with $28.12 in the San Diego/Inland Empire region, and $27.97 in Central California. RCPs working out of state had the lowest rate of $25.13 an hour.

Table 2.25: Mean Base Pay Rates for Primary Position by Work Setting Region

	Mean Base Pay Rate	Number of cases
Greater Bay Area	$37.04	229
Northern California	$30.90	104
Southern California	$28.95	470
San Diego/Inland Empire	$28.12	242
Central California	$27.97	138
Out of state	$25.13	54

Table 2.26 shows mean base, differential and overtime pay rates for acute care hospitals and long-term acute care, rehabilitation hospitals and sub-acute care facilities. Other work settings are not included in this table because the number of cases was too small to produce reliable measures. It appears that the shift differentials in long-term acute care, rehabilitation hospitals, and sub-acute care facilities were not as significant (about $1.38 per hour) as they were for acute care hospitals (about $2.82 per hour).

Table 2.26: Mean Hourly Pay Rates by Pay Category and Work Setting for Acute Care Hospitals and Long-Term Acute Care, Rehabilitation Hospitals and Sub-Acute Care Facilities

		Acute care hospital	Long-term acute care/ rehabilitation hospital/ sub-acute care
Mean Hourly Pay Rate	Base	$29.99	$28.52
	Differential	$32.81	$29.90
	Overtime	$46.73	$40.67
Number of cases	Base	1,189	87
	Differential	562	27
	Overtime	390	20

Key Findings

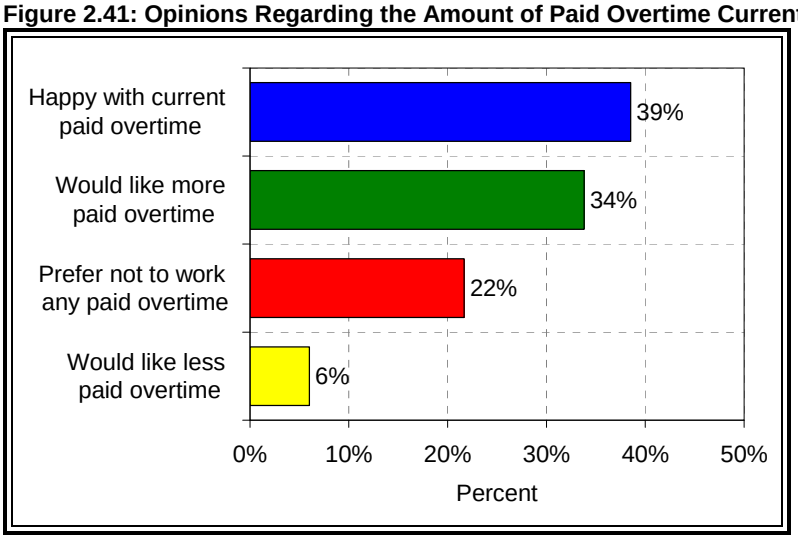
The average base pay rate for RCPs just starting out in the profession was $24.54. Pay rates increased with experience, and the overall average base pay rate for all RCPs working in 2006 was $30.09 per hour.

RCPs working for manufacturers or distributors had the highest average base pay ($37.15 per hour), followed by those working for educational programs ($36.24 per hour).

Base pay rates for RCPs working in long-term acute care, rehabilitation hospitals, sub-acute care and skilled nursing facilities were lower than other settings, with averages ranging from $28.25 to $28.52 an hour.

Satisfaction with Current Overtime Hours. Respondents were asked how they felt about the amount of paid overtime they were currently working. Twelve percent indicated they were not paid for working overtime. Of those who were paid for working overtime, most would like to maintain or increase their overtime hours. Thirty-eight percent are happy with the amount of overtime they were working and 34 percent would like to work more overtime. Some RCPs would like to decrease or do away altogether with their overtime hours. Twenty-two percent would prefer not to work any overtime and six percent would like to work less overtime.

Figure 2.41: Opinions Regarding the Amount of Paid Overtime Currently Working*



* For RCPs who were paid for working overtime

Delivery of Respiratory Care by Protocol. Respondents were asked whether they regularly delivered respiratory care by protocol for their primary position, and if so, how many protocols they routinely used.[5] More than half (58%) reported that they regularly delivered respiratory care by protocol. The number of protocols routinely used varies, but most RCPs using protocols used more than one. Thirty-four percent of RCPs delivering respiratory care by protocol used two or three protocols. Twenty-seven percent used four or five protocols. Thirty-one percent used more than five protocols.

Figure 2.42: Percent Distribution for Delivery of Respiratory Care by Protocol

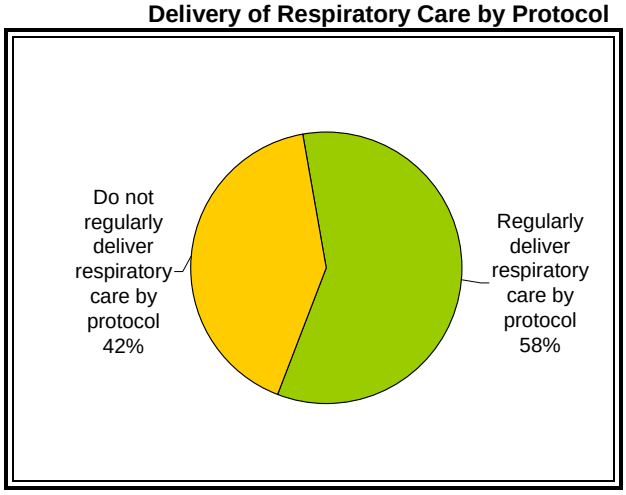
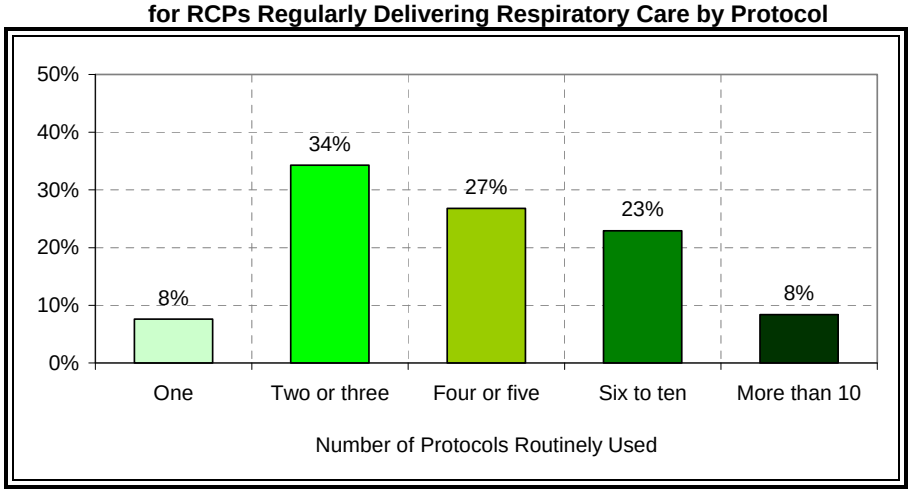


Figure 2.43: Number of Protocols Routinely Used, for RCPs Regularly Delivering Respiratory Care by Protocol



[5] Based on feedback from the expert panel, the *2005 AARC Human Resources Survey of Respiratory Therapists* question regarding delivery of respiratory care by protocol—which asked respondents whether they have *ever* delivered respiratory care by protocol—was modified. Ninety percent of AARC survey respondents indicated that they had delivered respiratory care by protocol at some time.

Use of protocols varied to some degree depending on work setting, position and facility size. Caution should be used due to the small sample sizes, but the findings suggest use of protocols may be more common in the home care setting and in long-term acute care, rehabilitation hospitals and sub-acute care facilities than in acute care hospitals. Clinical Specialists were somewhat more likely to use protocols than General Staff Therapists (63% and 59%, respectively). Delivery of respiratory care by protocol was more common in larger facilities. Slightly less than half of RCPs in facilities with fewer than 100 beds used protocols, compared with 60 to 70 percent of RCPs in larger facilities. It is interesting to note, however, the number of protocols used remains fairly constant across facility size.

Table 2.27: Use of Respiratory Care Protocols by Work Setting, Position and Facility Size

		For your primary job, do you regularly deliver respiratory care by protocol?			Percent Using Protocols	Average (Mean) Number of Protocols*	Number of cases
		Yes	No	Total			
Work setting	Acute care hospital	771	527	1,298	59%	5.7	588
	Durable medical equipment/home care	24	11	35	69%	10.1	18
	Long-term acute care/rehab-ilitation hospital/sub-acute care	59	32	91	65%	4.4	39
	Skilled nursing facility	2	5	7	29%	3.1	2
	Accredited education program	3	15	18	17%	5.6	2
	Manufacturer/distributor	0	5	5	0%	--	--
	Outpatient facility/physicians office	10	15	25	40%	6.6	7
	Other setting	9	13	22	41%	8.2	6
	Total	878	623	1,501	58%	5.8	661
Position	Director/Manager	39	38	77	51%	7.6	32
	Supervisor	66	44	110	60%	4.3	53
	Clinical Specialist/Critical Care	236	140	376	63%	6.3	181
	General Staff Therapist	453	315	768	59%	5.7	336
	Sleep Diagnostic Technologist	9	13	22	41%	5.5	6
	PFT Diagnostic Technologist	26	25	51	51%	4.8	20
	Other Diagnostic Technologist	1	2	3	33%	7.5	1
	Instructor/Educator	13	26	39	33%	3.7	9
	Disease Manager/Patient Educator	8	6	14	57%	12.3	7
	Other	14	9	23	61%	6.5	9
	Total	865	618	1,483	58%	5.8	654
Facility size	Fewer than 50 beds	28	34	62	45%	5.3	24
	50-99 beds	51	55	106	48%	4.1	37
	100-199 beds	158	136	294	54%	5.5	107
	200-299 beds	200	120	320	63%	6.3	156
	300-399 beds	187	101	288	65%	5.6	136
	400-499 beds	94	39	133	71%	5.6	82
	500-599 beds	27	18	45	60%	5.4	22
	600 or more beds	47	24	71	66%	6.6	36
	Total	844	583	1,427	59%	5.8	637

* For those using protocols.

Practices for Managing Workload: Concurrent Therapy and Triage. Respondents were asked whether they did concurrent therapy (initiate more than one treatment at a time) or routinely prioritized care (triage) in order to complete their workload for their primary position. The distribution of responses for the two practices are nearly identical. Sixty-four percent reported they did concurrent therapy in order to complete their workload and 65 percent reported that they routinely triaged in order to get their workload done. Evaluating both practices together (see Table 2.28) shows that a significant portion of RCPs—46 percent—report having to use both practices in order to complete their workload. Nearly forty percent used one practice or the other. The remaining twenty percent did not use either practice.

Figure 2.44: Use of Concurrent Therapy

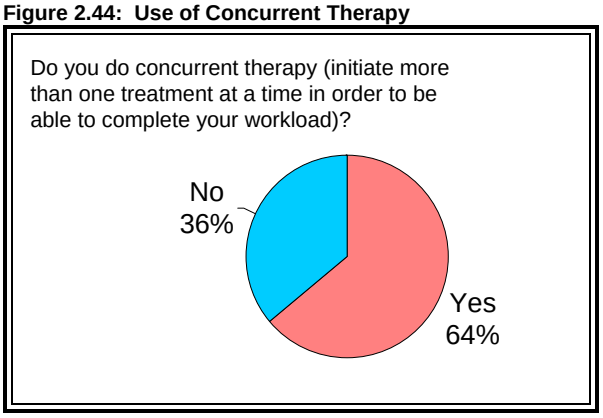


Figure 2.45: Use of Triage

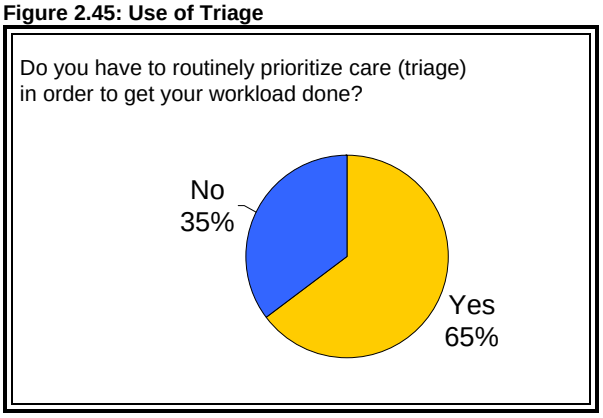


Table 2.28: Use of Concurrent Therapy and Triage to Manage Workload

	Percent	Number of cases
Use concurrent therapy and triage	46%	604
Use concurrent therapy only	19%	244
Use triage only	19%	243
Do not use either practice	17%	216
Total	100%	1,307

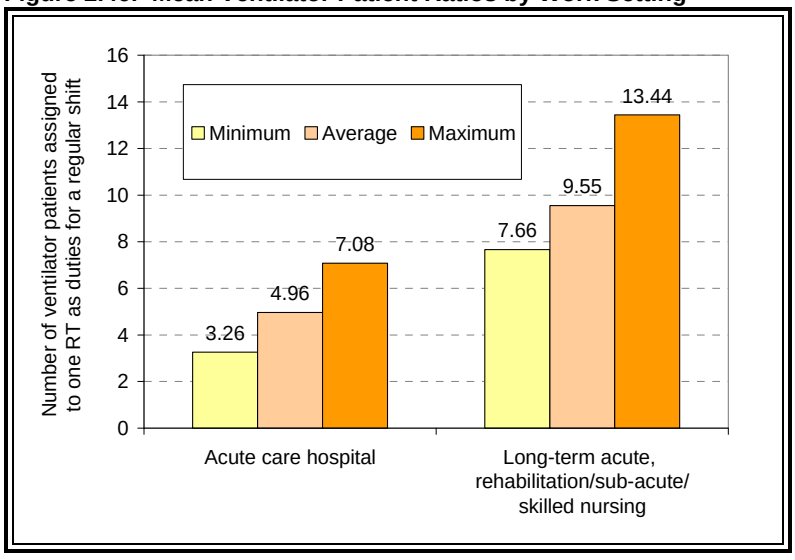
What is the ventilator assignments workload?

Respiratory Care Practitioner-to-Patient Ratios. Respondents were asked to describe the minimum, average, and maximum number of ventilator patients assigned to one respiratory therapist as duties for a regular shift. A wide range of ratios was reported, and respondents frequently indicated this question was difficult to answer because ratios vary considerably depending on patient acuity and staffing. Most RCPs working in an acute care hospital reported an average ratio between four and five ventilator patients. The average ratio was significantly higher—about ten ventilator patients per RCP—for those working in long-term acute care, rehabilitation hospitals, sub-acute-care and skilled nursing facilities.[6]

Thirteen percent of respondents working in acute care hospitals indicated they do not have a minimum ratio. For those with a minimum, it was usually between one and four patients. RCPs working in long-term acute care, rehabilitation hospitals, sub-acute-care, and skilled nursing facilities were much more likely to have a minimum ratio, and the minimums were significantly higher than in acute care hospitals. One-half of the RCPs in these settings reported minimum ratios of seven or more patients.

The maximum ratios for most RCPs working in acute care hospitals range from five to six patients, with an average of 7.08 patients. The maximum ratio for RCPs working in long-term acute care, rehabilitation hospitals, sub-acute-care and skilled nursing facilities was significantly higher (13.44 patients).

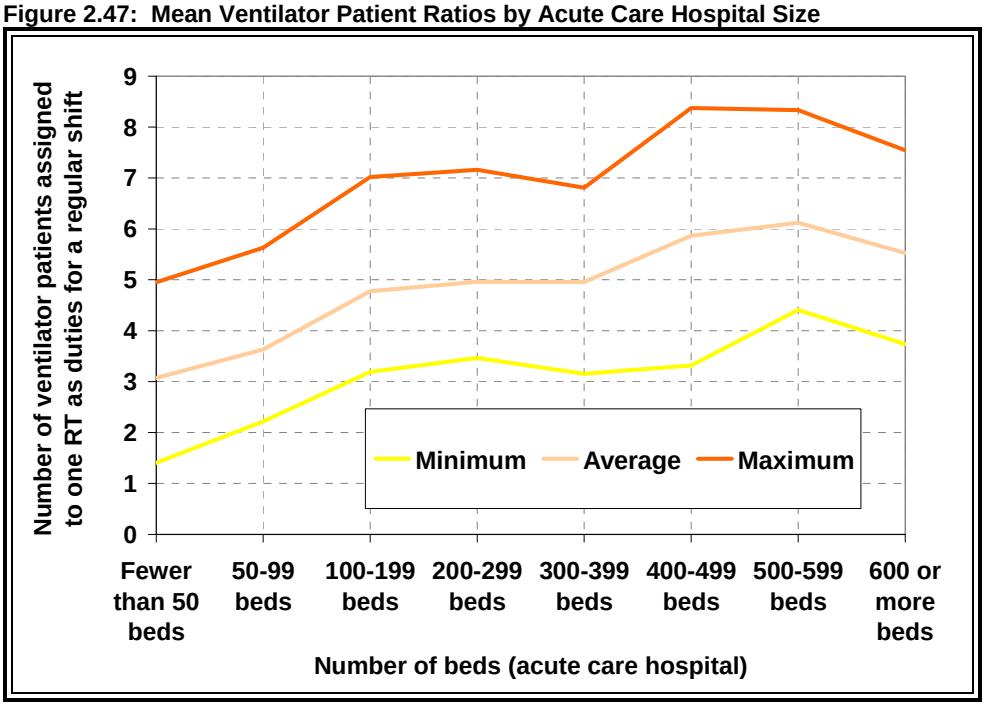
Figure 2.46: Mean Ventilator Patient Ratios by Work Setting



[6] Because the majority of RCPs working in the less common work settings (home care, education, manufacturer/distributor, outpatient facility and other setting) indicated that this question was not applicable to their situation, the number of cases in these settings is too small to analyze reliably.

There was a linear relationship between acute care hospital size and patient to RCP ratios.[7] Larger hospitals had significantly higher patient ratios than smaller hospitals. The mean for the "average" ratio in smaller hospitals (under 100 beds) was less than four patients, for medium-sized hospitals (100-399 beds) the average ratio was generally five patients, and for larger hospitals (400 beds or more) the average ratio was approximately six patients. The mean for maximum patient ratios followed a similar pattern. Maximums for smaller hospitals were between five and six patients, while for medium-sized hospitals the mean ratio was seven patients, and in the larger hospitals the maximum ratio was eight patients.

Figure 2.47: Mean Ventilator Patient Ratios by Acute Care Hospital Size



The department or unit within an acute care hospital where the respondent typically spends most of his/her time provides a rough indicator of patient acuity. Ratios across these units varied considerably. Average ratios were lowest for Sleep Centers and PFT Labs, with about four ventilator patients assigned to one RCP. Average ratios reported by RCPs working in General Medical and Surgical, Neonatal ICU, Adult ICU and Emergency Departments were generally between four and five patients. RCPs working primarily in Burn Centers and Cardiac Diagnostic units reported significantly higher average and maximum ratios than RCPs working in other types of units (these were the only units where a statistically significant difference was found).

While mean ratios provide an overall indicator of how many patients are being assigned to one RCP, it is also helpful to look at the distribution at various cut-off points (see Figures 2.49 and 2.50 and Tables 2.29-2.31).

[7] There are not enough cases to permit analysis of the relationship between facility size and patient ratios in other settings.

- A majority of RCPs working in Burn Centers and Emergency Departments reported average ratios exceeding four patients.
- Almost half of RCPs working in Adult ICUs and Neonatal ICUs reported average ratios exceeding four patients (48% and 45% respectively).
- More than eight out of ten RCPs working in Neonatal ICUs, Adult ICUs, Burn Centers and Emergency Departments reported that the maximum number of patients assigned to one RCP was more than four.

Figure 2.48: Mean Ventilator Patient Ratios by Acute Care Hospital Department/Unit

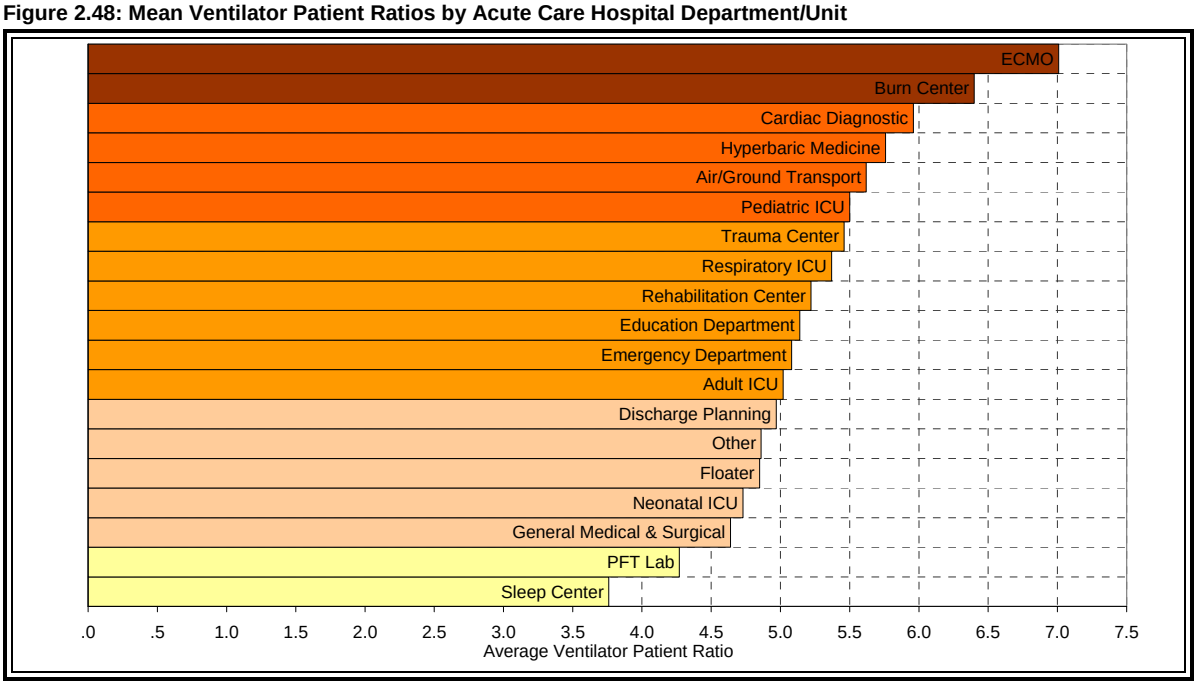


Figure 2.49: Percent of RCPs Reporting Average Ratios of More than Four Ventilator Patients to One RCP

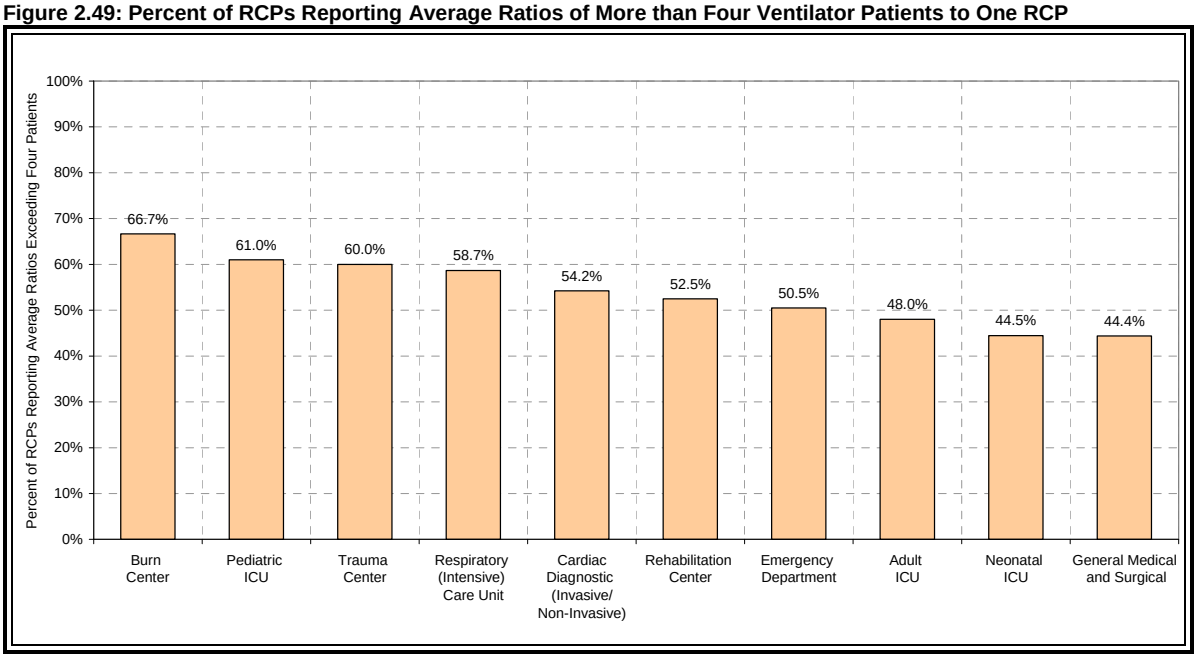
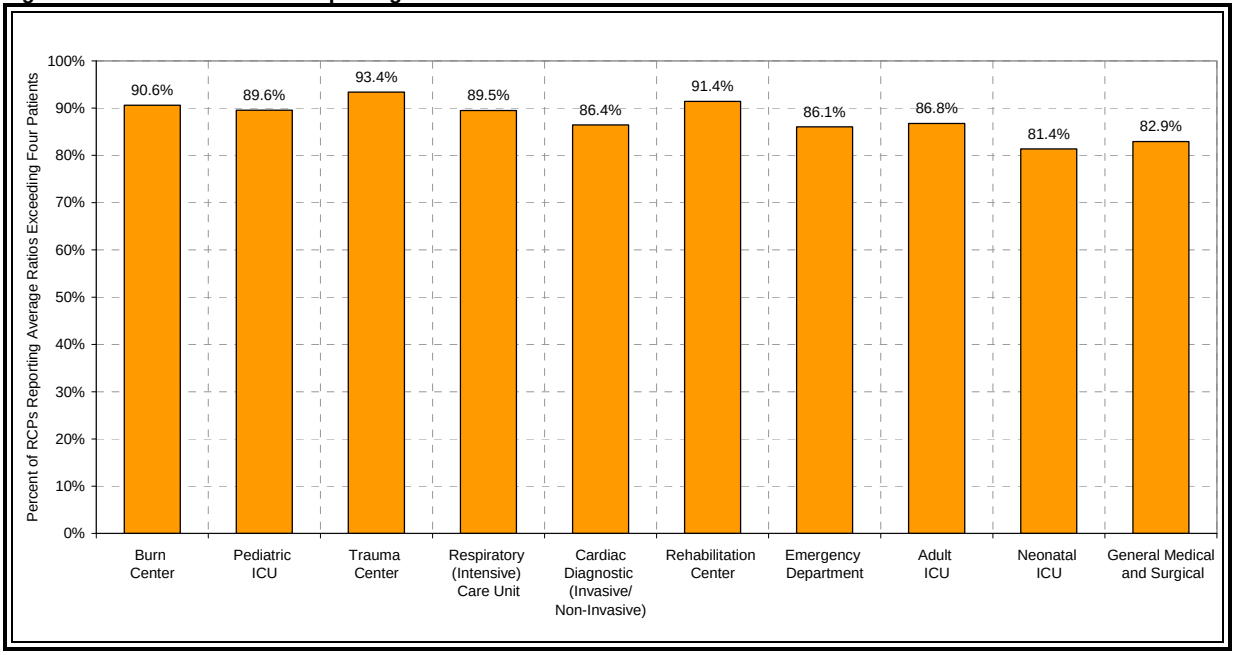


Figure 2.50: Percent of RCPs Reporting Maximum Ratios of More than Four Ventilator Patients to One RCP



Key Findings

RCPs described considerable variation in ventilator patient ratios depending on the type of facility in which they were working. Most RCPs working in an acute care hospital reported an average ratio between four and five ventilator patients. The average ratio was significantly higher—about ten ventilator patients per RCP—for those working in long-term acute care, rehabilitation hospitals, sub-acute-care and skilled nursing facilities.

Within the acute care hospital setting, RCPs working in larger hospitals described significantly higher ventilator patient ratios than smaller hospitals. The average ratio in smaller hospitals (under 100 beds) was less than four patients, for medium-sized hospitals (100-399 beds) the average ratio was generally five patients, and for larger hospitals (400 beds or more) the average ratio was approximately six patients.

RCPs working in Sleep Centers and PFT Labs described the lowest ratios, with about four ventilator patients assigned to one RCP. Average ratios reported by RCPs working in General Medical and Surgical, Neonatal ICU, Adult ICU and Emergency Departments were generally between four and five patients. RCPs working primarily in Burn Centers and Cardiac Diagnostic units reported significantly higher ratios than RCPs working in other types of units.

Table 2.29: Percent Distribution of Minimum Ventilator Patient-to-RCP Ratios by Work Setting, Job Title, Facility Size and Unit

		Minimum number of ventilator patients assigned to one RCP as duties for a regular shift								
		0-2	3-4	5-6	7-10	11 or more	Total	Number of cases	Mean	Number of cases
Work setting	Acute care hospital	46.1%	39.4%	10.9%	2.8%	.8%	100.0%	908	2.82	908
	Long-term acute/rehabilitation/sub-acute/skilled nursing	15.6%	14.1%	18.8%	31.3%	20.3%	100.0%	64	7.28	64
Facility size*	Fewer than 50 beds	95.7%	4.3%	.0%	.0%	.0%	100.0%	23	.69	23
	50-99 beds	78.2%	18.2%	3.6%	.0%	.0%	100.0%	55	1.52	55
	100-199 beds	56.4%	31.8%	7.8%	3.4%	.6%	100.0%	179	2.52	179
	200-299 beds	39.8%	42.7%	12.3%	3.8%	1.4%	100.0%	211	3.16	211
	300-399 beds	40.9%	46.3%	10.3%	2.5%	.0%	100.0%	203	2.87	203
	400-499 beds	36.9%	45.6%	15.5%	1.9%	.0%	100.0%	103	3.00	103
	500-599 beds	46.9%	37.5%	6.3%	3.1%	6.3%	100.0%	32	3.91	32
	600 or more beds	13.6%	70.5%	11.4%	4.5%	.0%	100.0%	44	3.66	44
Unit*	Adult ICU	44.7%	40.6%	10.7%	3.1%	.8%	100.0%	709	2.89	709
	Air/Ground Transport	26.3%	57.9%	10.5%	5.3%	.0%	100.0%	19	3.44	19
	Burn Center	34.5%	44.8%	13.8%	6.9%	.0%	100.0%	29	3.53	29
	Cardiac Diagnostic (Invasive/Non-Invasive)	40.0%	36.7%	18.3%	3.3%	1.7%	100.0%	60	3.46	60
	Discharge Planning	50.0%	50.0%	.0%	.0%	.0%	100.0%	2	2.47	2
	ECMO	.0%	50.0%	50.0%	.0%	.0%	100.0%	2	4.60	2
	Education Department	30.8%	50.0%	11.5%	7.7%	.0%	100.0%	26	3.25	26
	Emergency Department	47.4%	37.4%	11.1%	3.6%	.4%	100.0%	449	2.83	449
	Floater, go where needed, have multiple assignments	47.9%	39.6%	10.0%	2.5%	.0%	100.0%	280	2.61	280
	General Medical and Surgical	53.9%	32.6%	11.0%	2.2%	.3%	100.0%	362	2.42	362
	Hyperbaric Medicine	50.0%	20.0%	30.0%	.0%	.0%	100.0%	10	2.94	10
	Neonatal ICU	47.5%	39.1%	10.7%	2.7%	.0%	100.0%	261	2.61	261
	Pediatric ICU	37.3%	40.0%	17.3%	4.5%	.9%	100.0%	110	3.24	110
	PFT Lab	60.4%	26.4%	7.5%	5.7%	.0%	100.0%	53	2.28	53
	Rehabilitation Center	55.9%	26.5%	11.8%	.0%	5.9%	100.0%	34	2.93	34
	Respiratory (Intensive) Care Unit	36.5%	44.3%	16.2%	3.0%	.0%	100.0%	167	3.05	167
	Sleep Center	62.5%	25.0%	12.5%	.0%	.0%	100.0%	8	1.93	8
	Trauma Center	32.2%	45.2%	17.4%	5.2%	.0%	100.0%	115	3.26	115
	Other	50.5%	32.6%	10.5%	5.3%	1.1%	100.0%	95	2.84	95

* Restricted to acute care hospitals because the number of cases in other work settings is too small for analysis.

Table 2.30: Percent Distribution of Average Ventilator Patient-to-RCP Ratios by Work Setting, Job Title, Facility Size and Unit

		Average number of ventilator patients assigned to one RCP as duties for a regular shift							Mean	Number of cases
		0-2	3-4	5-6	7-10	11 or more	Total	Number of cases		
Work setting	Acute care hospital	6.6%	47.1%	35.3%	7.2%	3.7%	100.0%	1,016	4.96	1,016
	Long-term acute/rehabilitation/sub-acute/skilled nursing	2.7%	14.7%	14.7%	26.7%	41.3%	100.0%	75	9.55	75
Facility size*	Fewer than 50 beds	54.5%	36.4%	4.5%	.0%	4.5%	100.0%	22	3.07	22
	50-99 beds	30.0%	48.3%	15.0%	5.0%	1.7%	100.0%	60	3.63	60
	100-199 beds	9.7%	51.0%	30.1%	5.3%	3.9%	100.0%	206	4.78	206
	200-299 beds	2.1%	51.0%	37.0%	5.3%	4.5%	100.0%	243	4.97	243
	300-399 beds	2.6%	47.8%	38.6%	8.3%	2.6%	100.0%	228	4.95	228
	400-499 beds	.0%	46.3%	38.9%	9.3%	5.6%	100.0%	108	5.87	108
	500-599 beds	.0%	43.6%	38.5%	12.8%	5.1%	100.0%	39	6.12	39
	600 or more beds	.0%	20.0%	62.0%	16.0%	2.0%	100.0%	50	5.53	50
Unit*	Adult ICU	5.7%	46.3%	37.1%	7.2%	3.7%	100.0%	787	5.02	787
	Air/Ground Transport	4.5%	40.9%	50.0%	.0%	4.5%	100.0%	22	5.62	22
	Burn Center	.0%	33.3%	43.3%	16.7%	6.7%	100.0%	30	6.40	30
	Cardiac Diagnostic (Invasive/Non-Invasive)	6.8%	39.0%	37.3%	11.9%	5.1%	100.0%	59	5.96	59
	Discharge Planning	.0%	33.3%	66.7%	.0%	.0%	100.0%	3	4.97	3
	ECMO	.0%	.0%	50.0%	50.0%	.0%	100.0%	2	7.01	2
	Education Department	10.3%	31.0%	41.4%	13.8%	3.4%	100.0%	29	5.14	29
	Emergency Department	7.8%	41.6%	37.8%	8.2%	4.4%	100.0%	497	5.08	497
	Floater, go where needed, have multiple assignments	5.4%	44.6%	40.8%	7.0%	2.2%	100.0%	316	4.85	316
	General Medical and Surgical	9.4%	46.2%	34.3%	7.4%	2.8%	100.0%	394	4.64	394
	Hyperbaric Medicine	.0%	55.6%	33.3%	.0%	11.1%	100.0%	9	5.76	9
	Neonatal ICU	7.0%	48.5%	35.8%	6.0%	2.7%	100.0%	299	4.73	299
	Pediatric ICU	1.6%	37.4%	46.3%	8.9%	5.7%	100.0%	123	5.50	123
	PFT Lab	14.5%	49.1%	29.1%	.0%	7.3%	100.0%	55	4.27	55
	Rehabilitation Center	7.5%	40.0%	40.0%	5.0%	7.5%	100.0%	40	5.22	40
	Respiratory (Intensive) Care Unit	3.4%	38.0%	45.8%	9.5%	3.4%	100.0%	179	5.37	179
	Sleep Center	10.0%	70.0%	10.0%	10.0%	.0%	100.0%	10	3.76	10
	Trauma Center	3.8%	36.2%	45.4%	10.0%	4.6%	100.0%	130	5.46	130
	Other	14.6%	37.5%	35.4%	6.3%	6.3%	100.0%	96	4.86	96

* Restricted to acute care hospitals because the number of cases in other work settings is too small for analysis.

Table 2.31: Percent Distribution of Maximum Ventilator Patient-to-RCP Ratios by Work Setting, Job Title, Facility Size and Unit

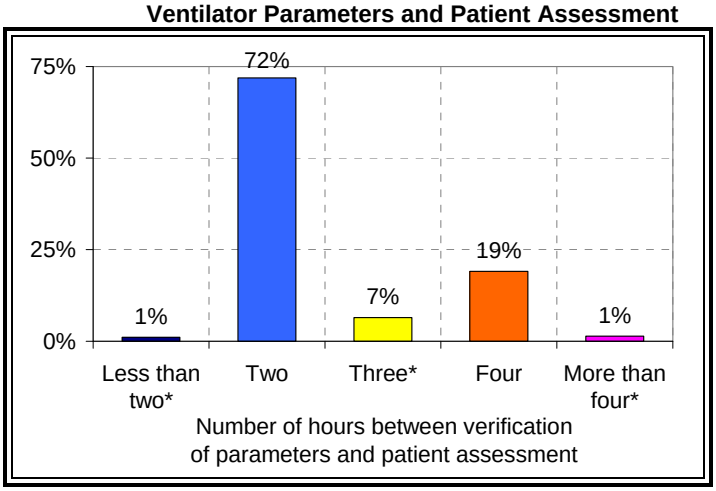
		Maximum number of ventilator patients assigned to one RCP as duties for a regular shift							Mean	Number of cases*
		0-2	3-4	5-6	7-10	11 or more	Total	Number of cases		
Work setting	Acute care hospital	.9%	14.1%	49.4%	23.0%	12.6%	100.0%	976	7.08	944
	Long-term acute/rehabilitation/sub-acute/skilled nursing	1.5%	2.9%	10.3%	25.0%	60.3%	100.0%	68	13.44	65
Facility size*	Fewer than 50 beds	21.7%	34.8%	34.8%	.0%	8.7%	100.0%	23	4.95	22
	50-99 beds	3.4%	28.8%	50.8%	11.9%	5.1%	100.0%	59	5.63	60
	100-199 beds	.0%	12.9%	49.5%	27.2%	10.4%	100.0%	202	7.02	194
	200-299 beds	.9%	10.6%	50.4%	24.8%	13.3%	100.0%	226	7.18	219
	300-399 beds	.0%	17.0%	50.4%	21.9%	10.7%	100.0%	224	6.82	216
	400-499 beds	.0%	5.0%	53.5%	18.8%	22.8%	100.0%	101	8.40	94
	500-599 beds	.0%	17.1%	42.9%	25.7%	14.3%	100.0%	35	8.33	31
	600 or more beds	.0%	5.9%	49.0%	31.4%	13.7%	100.0%	51	7.54	49
Unit†	Adult ICU	.6%	12.6%	50.1%	24.3%	12.5%	100.0%	771	7.12	745
	Air/Ground Transport	5.0%	10.0%	55.0%	30.0%	.0%	100.0%	20	6.06	20
	Burn Center	.0%	9.4%	25.0%	37.5%	28.1%	100.0%	32	8.93	30
	Cardiac Diagnostic (Invasive/Non-Invasive)	1.7%	11.9%	39.0%	27.1%	20.3%	100.0%	59	8.40	56
	Discharge Planning	.0%	.0%	50.0%	50.0%	.0%	100.0%	2	8.03	2
	ECMO	.0%	.0%	50.0%	.0%	50.0%	100.0%	2	8.41	2
	Education Department	3.3%	10.0%	43.3%	26.7%	16.7%	100.0%	30	6.84	27
	Emergency Department	1.0%	12.9%	46.1%	25.5%	14.5%	100.0%	495	7.22	476
	Floater, go where needed, have multiple assignments	1.7%	12.0%	48.7%	28.0%	9.7%	100.0%	300	6.91	291
	General Medical and Surgical	1.8%	15.2%	43.9%	26.9%	12.1%	100.0%	387	6.78	373
	Hyperbaric Medicine	.0%	14.3%	42.9%	28.6%	14.3%	100.0%	7	7.06	8
	Neonatal ICU	.0%	18.6%	49.1%	21.1%	11.1%	100.0%	279	6.96	271
	Pediatric ICU	.0%	10.4%	47.8%	25.2%	16.5%	100.0%	115	7.69	109
	PFT Lab	1.7%	13.6%	59.3%	16.9%	8.5%	100.0%	59	6.32	57
	Rehabilitation Center	.0%	8.6%	48.6%	25.7%	17.1%	100.0%	35	7.08	32
	Respiratory (Intensive) Care Unit	.0%	10.5%	48.6%	24.9%	16.0%	100.0%	181	7.29	170
	Sleep Center	.0%	20.0%	60.0%	20.0%	.0%	100.0%	10	5.44	10
	Trauma Center	.0%	6.6%	51.2%	26.4%	15.7%	100.0%	121	7.69	117
	Other	4.3%	14.1%	44.6%	23.9%	13.0%	100.0%	92	6.91	91

* The number of cases is slightly less for the mean than for the percentage distribution because cases with no maximum could not be included in computing the mean.

† Restricted to acute care hospitals because the number of cases in other work settings is too small for analysis.

Intervals for Verifying Ventilator Parameters and Patient Assessment. Respondents were asked how often they were responsible for verifying ventilator parameters and patient assessment for their primary job. The survey form included categories for every two hours and every four hours and allowed respondents to write-in another interval. The most commonly reported interval was every two hours. Seventy-two percent of RCPs were responsible for verifying ventilator parameters and patient assessment every two hours. Nineteen percent were responsible for verifying ventilator parameters and patient assessment every four hours. Very few RCPs reported an interval outside the two to four hour range.

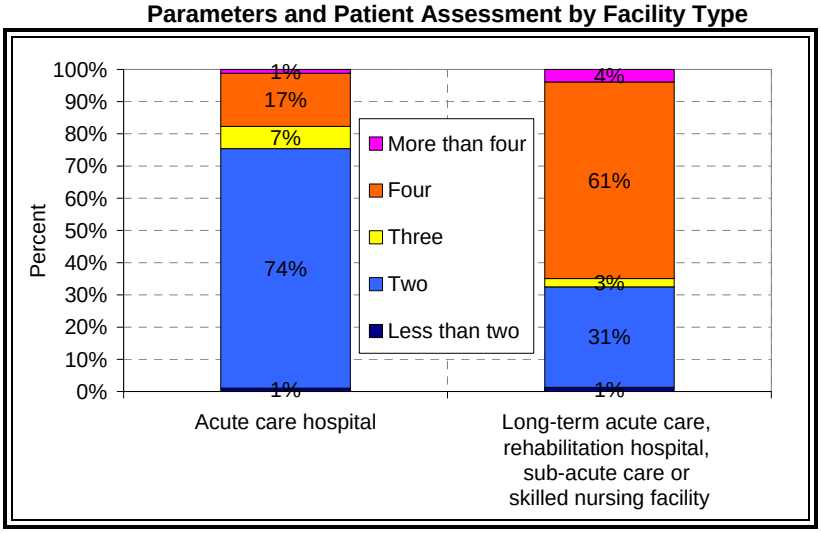
Figure 2.51: Number of Hours between Verifications of Ventilator Parameters and Patient Assessment



* Categories added based on write-in comments.

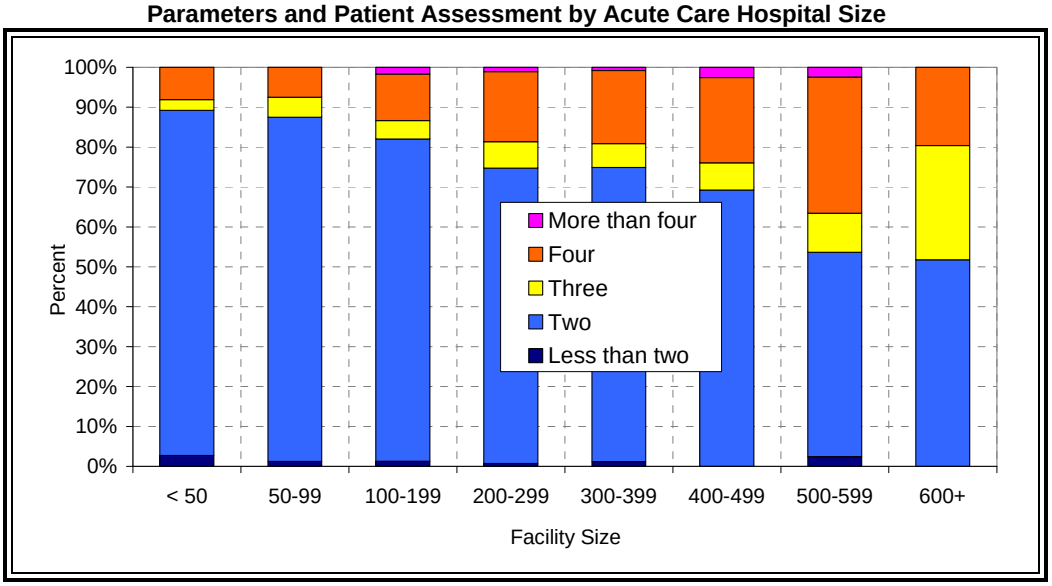
Respondents working in long-term acute care, rehabilitation hospitals, sub-acute care, and skilled nursing facilities reported longer intervals between verifications than those in acute care hospitals. More than two-thirds of respondents in the non-acute care hospital settings reported intervals of four hours or more.

Figure 2.52: Number of Hours between Verification of Ventilator Parameters and Patient Assessment by Facility Type



Responses suggest that the intervals between verifications increase with facility size. There were too few cases to include an analysis of long-term acute care, rehabilitation hospitals, sub-acute care, or skilled nursing facilities by size, so the analysis was limited to acute care hospitals. In smaller acute care hospitals, the number of hours between verifications was significantly shorter than in larger hospitals. Three and four hour intervals were more commonly used in hospitals with 200 or more beds.

Figure 2.53: Number of Hours between Verification of Ventilator Parameters and Patient Assessment by Acute Care Hospital Size



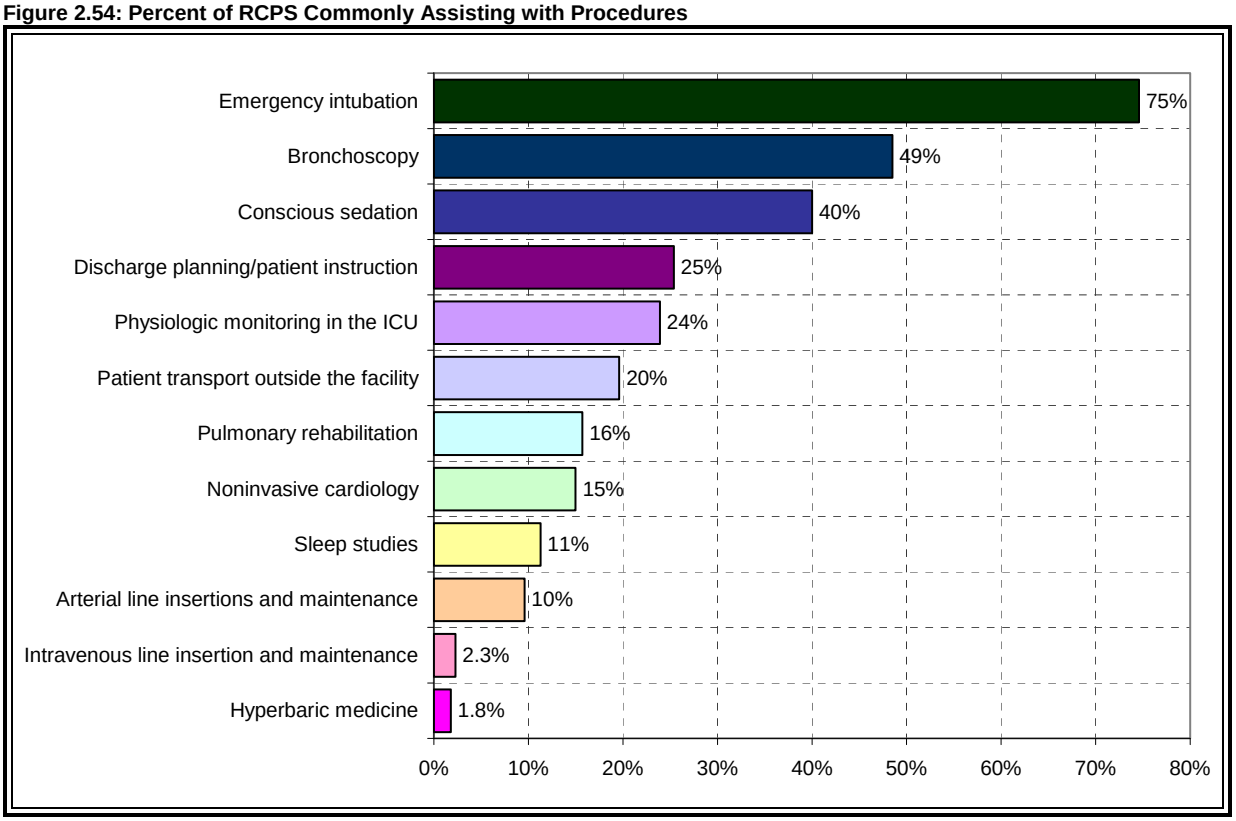
Key Findings

A majority of RCPs (72%) were responsible for verifying ventilator parameters and patient assessment every two hours. Nineteen percent reported a four hour interval.

While a two hour interval was the norm in acute care hospitals, RCPs working in long-term acute care, rehabilitation hospitals, sub-acute care, and skilled nursing facilities reported longer intervals between verifications than those in acute care hospitals. More than two-thirds of respondents in the non-acute care hospital settings reported intervals of four hours or more.

Medical Procedures in which RCPs Commonly Assist. The *2005 AARC Human Resources Survey of Respiratory Therapists* included a list of 14 medical procedures and asked respondents to select those in which they assist. Based on feedback from the expert panel during the survey development phase, the list was modified slightly to reflect regional differences in the delivery of respiratory care. Figure 2.54 shows the percent of respondents who reported commonly assisting with each procedure for their primary job. Emergency intubation was by far the procedure for which the largest number of RCPs assist. Three-fourths of RCPs commonly assisted with emergency intubations. Just under half of respondents (49%) assist with bronchoscopies. Forty percent of respondents commonly assist with conscious sedation.

Figure 2.54: Percent of RCPS Commonly Assisting with Procedures

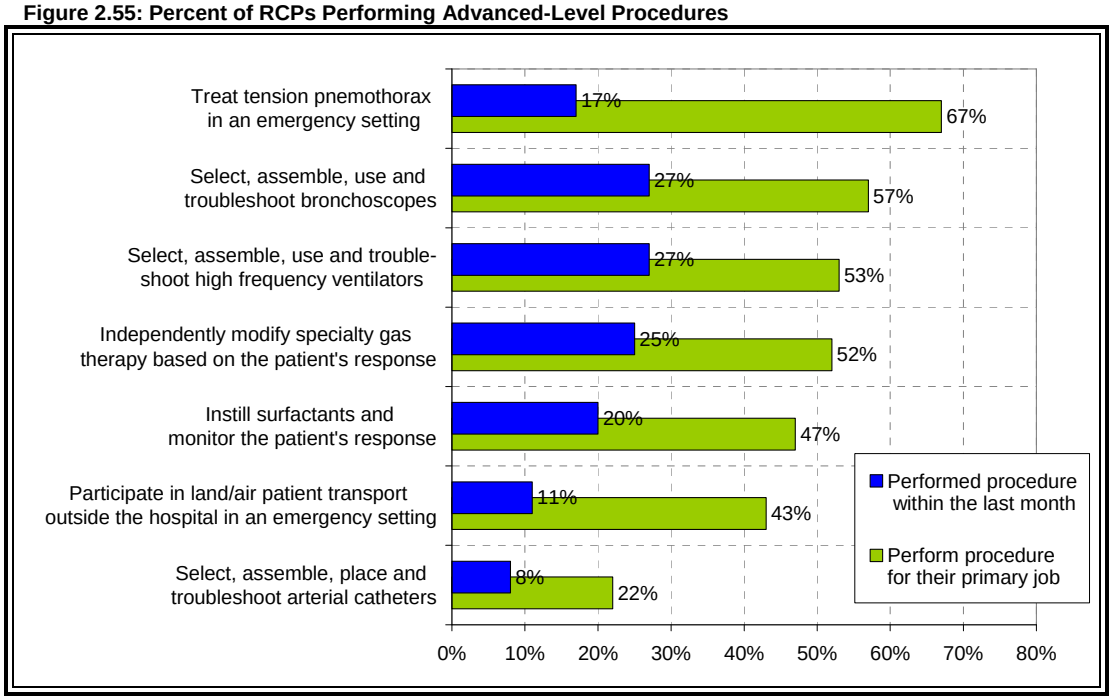


Key Finding

RCPs reported commonly assisting with a wide variety of medical procedures. Substantial numbers of RCPs reported assisting with three procedures in particular: emergency intubations (75%); bronchoscopies (49%); and conscious sedation (40%). Although not as widespread, it was not unusual for RCPs to report assisting with more specialized procedures such as sleep studies and arterial line insertions.

Advanced-Level Procedures. In order to identify a set of procedures associated with advanced-level practice, outlines for the RRT and CRT exams were compared and 31 procedures unique to the RRT exam were identified. During the survey development phase, the expert panel was asked to review and evaluate the level of practice for these 31 procedures. Based on their evaluation, seven procedures were selected as reliable indicators of advanced-level practice. The survey asked respondents to indicate when they last performed these procedures for their primary job. While there is a great deal of variation across procedures, responses show that they are performed by a significant number of RCPs.

Figure 2.55: Percent of RCPs Performing Advanced-Level Procedures



Treating tension pnemothorax in an emergency setting was the advanced-level procedure performed by the largest group of respondents. Two-thirds of respondents performed this procedure for their primary job. Perhaps in part because of setting differences, it was not the most regularly performed procedure; 17 percent of respondents had treated pnemothorax in an emergency setting within the last month. Three of the seven advanced-level procedures were performed in the last month by more than one quarter of RCPs and were performed by more than half of RCPs as part of their primary job. These procedures were

- Selecting, assembling, using, and troubleshooting bronchoscopes
- Selecting, assembling, using, and troubleshooting high frequency ventilators
- Independently modifying specialty gas therapy based on the patient's response

Nearly as many RCPs (47%) instill surfactants and monitor the patient's response. One in five performed this procedure within the past month. Selecting, assembling, placing, and troubleshooting arterial catheters was the least commonly performed advanced-level procedure. One out of five respondents performs the procedure for their primary job; eight percent had performed the procedure during the past month.

Job Satisfaction in Respiratory Care

A key factor in shaping a workforce are the "pulls" and "pushes" that attract individuals to an occupation, keep them in an occupation or make them want to leave the occupation. To address this dimension, several questions were included on the survey soliciting the respondents' perspectives on things they liked and didn't like about their job and reasons for thinking about leaving the profession (or reasons for leaving for those not currently in the profession).

How satisfied are RCPs with their Jobs?

Overall Job Satisfaction. The survey form included twelve factors related to job satisfaction. Respondents were asked to rate their level of satisfaction on each factor. Respondents also were asked to rate their overall level of satisfaction with their job. For several items, opinions varied significantly depending on whether respondents were currently working in respiratory care. Before examining these differences, let's look at the overall opinions of those currently working in respiratory care. Two-thirds (66%) of RCPs said they were either very satisfied or satisfied with their job overall. Nine percent were dissatisfied with their job overall, and two percent said they were very dissatisfied. The remaining 23 percent were neutral—neither satisfied nor dissatisfied (see Figure 2.56 below).

Figure 2.56: Overall Job Satisfaction for RCPs Currently Employed in Respiratory Care

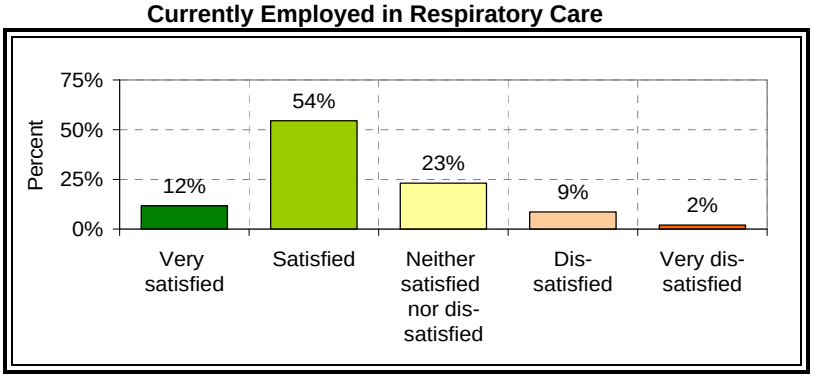


Figure 2.57 shows the distribution of responses for the six most positively rated aspects of respiratory care work. At least half of RCPs working in respiratory care were satisfied with these aspects of their jobs. The most positive ratings were assigned to RCPs' relationships with their co-workers. More than four out of five RCPs (81%) were satisfied with this part of their job—26 percent said they were very satisfied and 55 percent said they were satisfied. A majority of RCPs also were satisfied with their work schedule, physical work environment, quality of patient care, quality of management from immediate supervisors, and benefits.

In contrast, Figure 2.58 shows aspects of their jobs that RCPs were less happy with. The distribution for all six of these items was quite similar; none of the six stands out as the single biggest problem. More than thirty percent of RCPs were dissatisfied with their opportunities for advancement, job-related stress, general administration,

workload, salary, and involvement in decisions. It should be noted that, even for these relatively less positive items, those who were satisfied still outnumbered those who were dissatisfied (although, in the case of job related stress and opportunities for advancement, not by a very large margin).

Satisfied	Dissatisfied
• Relationships with co-workers	• Opportunities for advancement
• Work schedule	• Job-related stress
• Physical work environment	• General administration
• Quality of patient care	• Workload
• Management from immediate supervisors	• Salary
• Benefits	• Involvement in decisions

Figure 2.57: RCP Job Satisfaction Items with the Most Positive Ratings, for RCPs Currently Employed in Respiratory Care

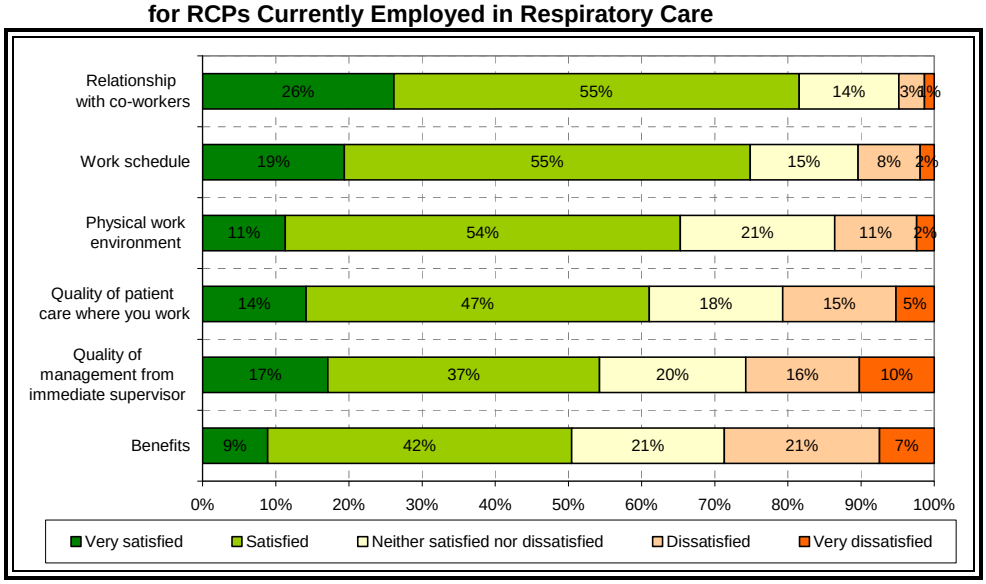
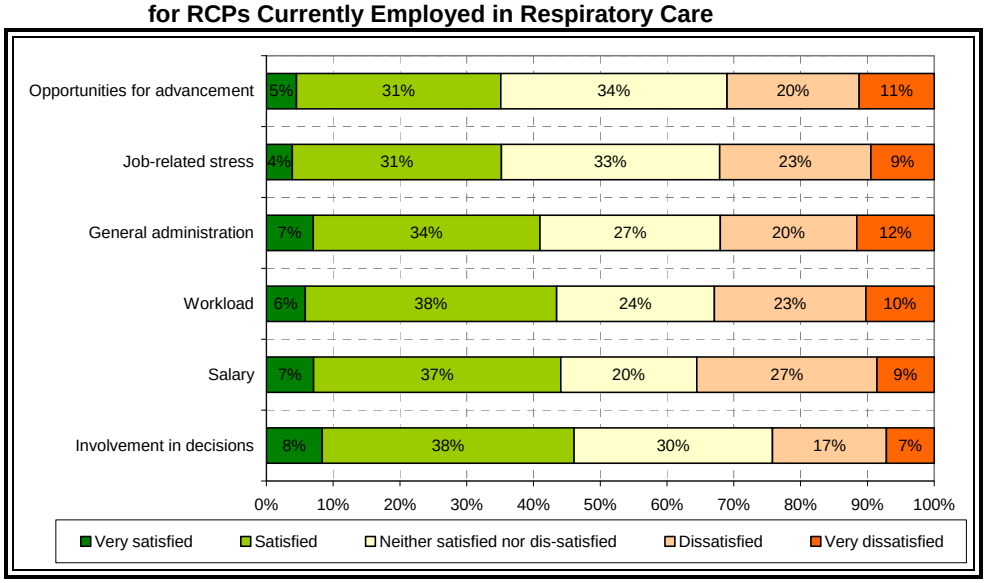


Figure 2.58: RCP Job Satisfaction Items with the Most Negative Ratings, for RCPs Currently Employed in Respiratory Care



Are workplace characteristics related to job satisfaction?

Variations in Job Satisfaction across Work Setting. RCPs working in three areas—durable medical equipment/home care, accredited education programs, and outpatient facility/physician offices—were significantly more satisfied with particular aspects of their jobs than RCPs working in other settings. Table 2.32 shows the percent of RCPs in each work setting who said they were either very satisfied or satisfied with aspects of their current job. RCPs working in an outpatient facility or physicians office were happier with their jobs than most other RCPs. Caution should be used since the number of RCPs working in this setting was small (between 27 and 28 respondents), but this group was more satisfied with their job overall, as well as with four facets of their work—including quality of care, general administration, involvement in decisions, and opportunities for advancement. RCPs working in the home care setting were more likely to say they were satisfied with their job overall, their workload, and involvement in decisions. RCPs working in educational programs were more satisfied with general facility administration and their involvement in decisions. It is interesting to note that RCPs in all three of these settings were more satisfied with their involvement in decisions than RCPs working in other settings.

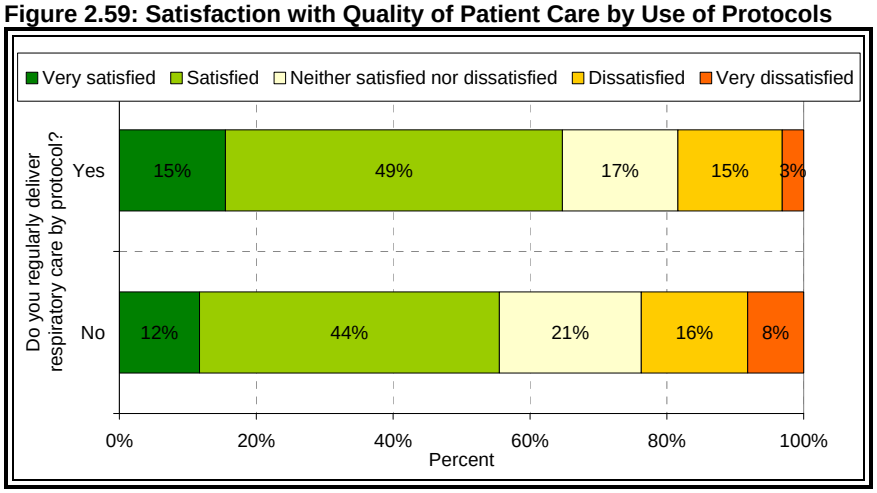
Table 2.32: Job Satisfaction by Current Work Setting

		Job Overall	Work-load	Quality of patient care	General admin-istration	Involve-ment in decisions	Oppor-tunities for ad-vance-ment
Percent very satisfied or satisfied	Acute care hospital	66%	42%	60%	40%	43%	33%
	Durable medical equipment/home care	83%	69%	75%	42%	67%	46%
	Long-term acute care, rehabilitation hospital, sub-acute care, skilled nursing facility	57%	38%	56%	38%	42%	30%
	Accredited education program	89%	44%	17%	67%	79%	50%
	Manufacturer/distributor	80%	40%	60%	60%	20%	40%
	Outpatient facility/physicians office	86%	59%	93%	63%	68%	64%
	Other setting	72%	60%	68%	42%	60%	29%
Number of cases	Acute care hospital	1,303	1,299	1,299	1,304	1,299	1,302
	Durable medical equipment/home care	36	36	36	36	36	35
	Long-term acute care, rehabilitation hospital, sub-acute care, skilled nursing facility	100	99	98	99	99	99
	Accredited education program	18	18	18	18	19	18
	Manufacturer/distributor	5	5	5	5	5	5
	Outpatient facility/physicians office	28	27	28	27	28	28
	Other setting	25	25	25	24	25	24

* "Boxed" percentages indicate work setting categories for which logistic regression analysis identified significantly higher levels of satisfaction ($p<.05$, with satisfaction variables collapsed to include "very satisfied" and "satisfied" categories).

Delivery of Respiratory Care by Protocol and Satisfaction with Quality of Patient Care. RCPs who reported routinely delivering respiratory care by protocol were significantly more satisfied with the quality of patient care where they worked. Sixty-five percent of RCPs who regularly used protocols were satisfied (includes very satisfied or satisfied response categories) with quality of patient care. In contrast, 54 percent of RCPs who did not regularly use protocols were satisfied with the quality of patient care.

Figure 2.59: Satisfaction with Quality of Patient Care by Use of Protocols



Workload Management Practices and Job Satisfaction. Two workload management techniques—concurrent therapy and routinely prioritizing care (or triage)—were related to overall job satisfaction and to satisfaction with three specific aspects of the job. RCPs who reported using either concurrent therapy or triage were significantly less satisfied and more dissatisfied with their job overall and with workload, quality of care, and involvement in decisions.

- Thirteen percent of RCPs who did concurrent therapy and 14 percent of those who triaged were dissatisfied (chose the “dissatisfied” or “very dissatisfied” category) with their job overall. In contrast, seven percent of those who did not do concurrent therapy and six percent of those who did not triage were dissatisfied with their job (see Figures 2.60 and 2.64).
- Twenty-six percent of RCPs who routinely prioritized care in order to manage their workload were dissatisfied with the quality of patient care where they worked (see Figure 2.66). Fewer RCPs who did not routinely triage—14 percent—were dissatisfied with the quality of patient care.
- The heavier demand placed on RCPs using these practices was reflected in satisfaction with their workload. Thirty-nine percent of those doing concurrent therapy and 44 percent of those doing triage were dissatisfied with their workload (Figure 2.61 and 2.65). RCPs who did not use these practices were less dissatisfied with their workload—24 percent of those who did not do concurrent therapy and 18 percent of those who did not triage were dissatisfied.

Figure 2.60: Satisfaction with Job Overall by Use of Concurrent Therapy

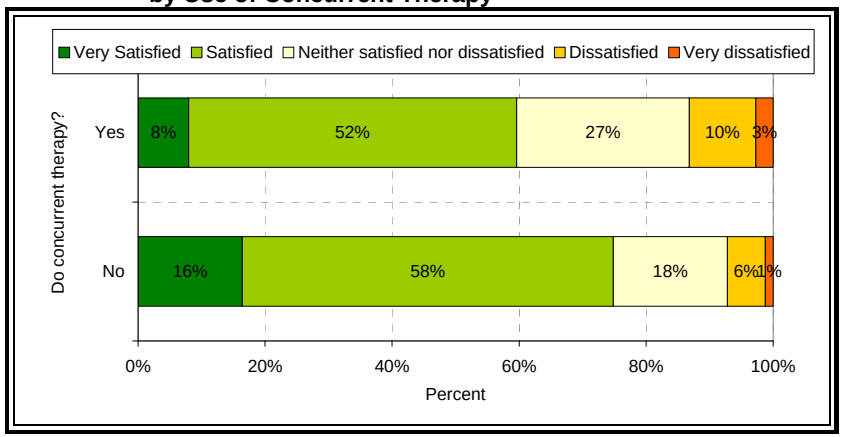


Figure 2.61: Satisfaction with Workload by Use of Concurrent Therapy

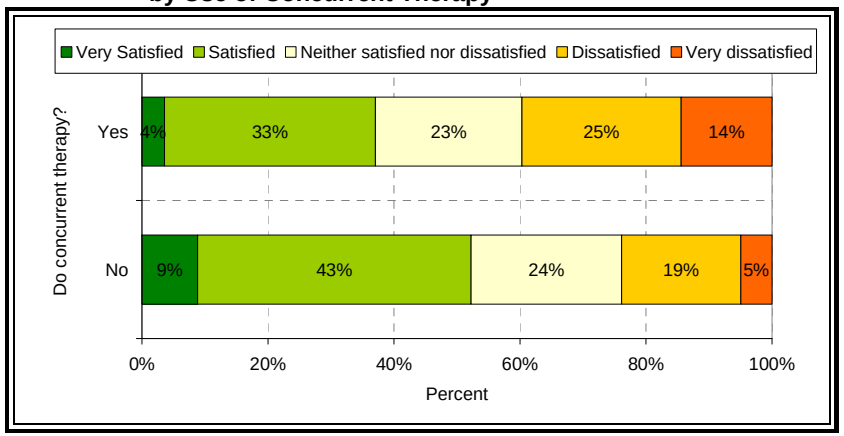


Figure 2.62: Satisfaction with Quality of Care by Use of Concurrent Therapy

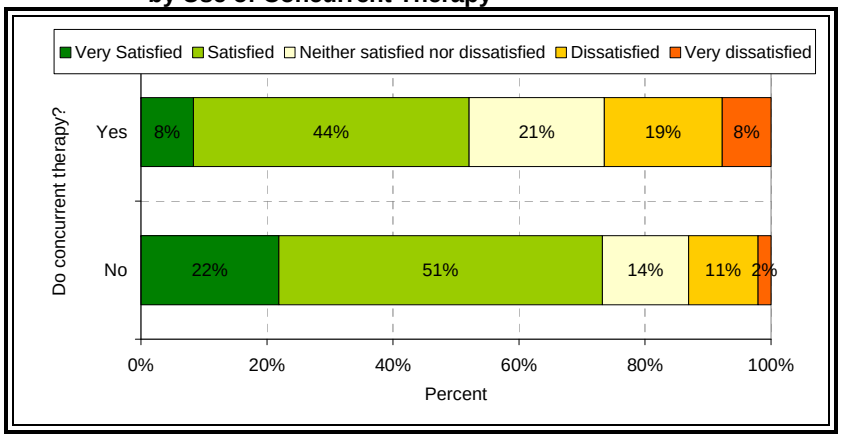


Figure 2.63: Satisfaction with Involvement in Decisions by Use of Concurrent Therapy

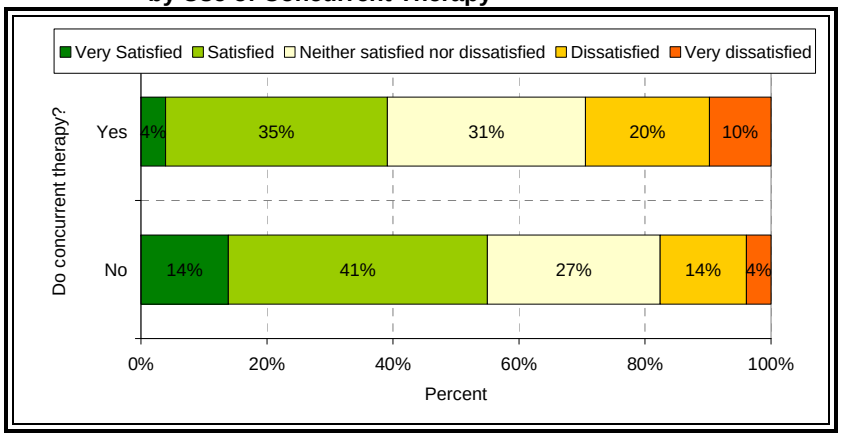


Figure 2.64: Satisfaction with Job Overall by Triage

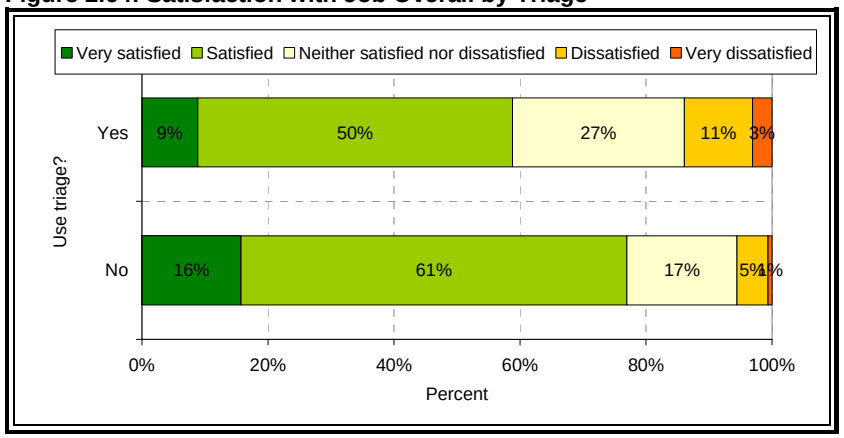


Figure 2.65: Satisfaction with Workload by Triage

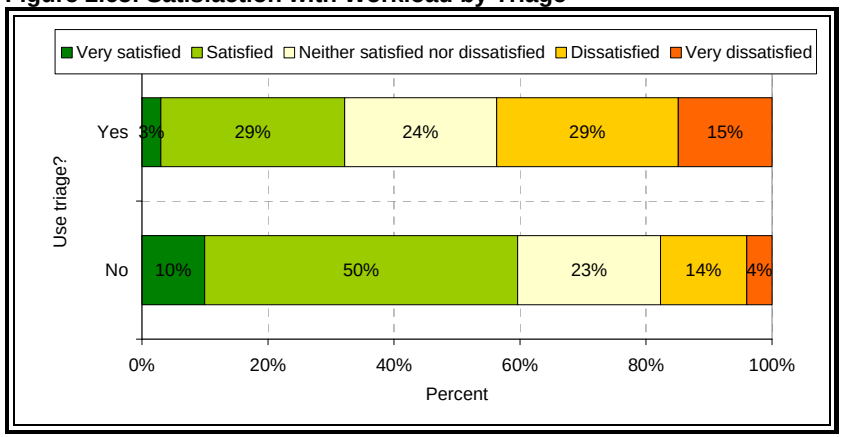


Figure 2.66: Satisfaction with Quality of Care by Triage

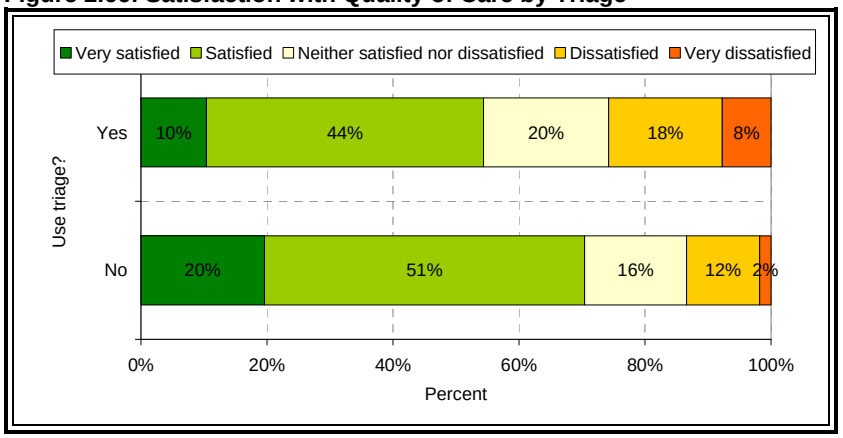
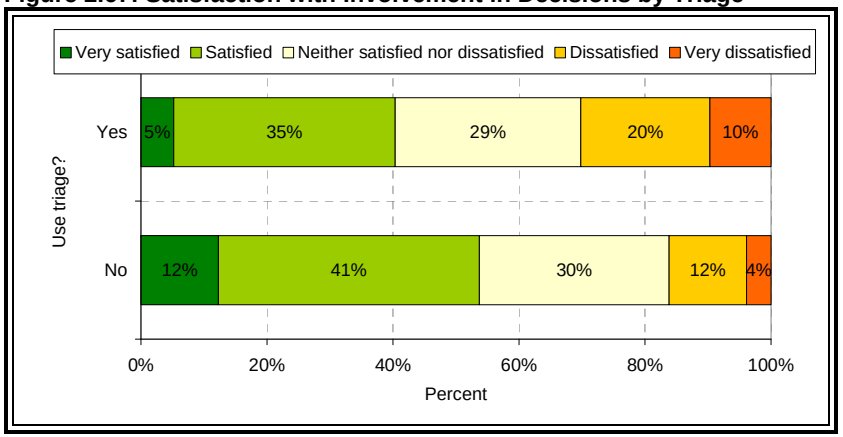


Figure 2.67: Satisfaction with Involvement in Decisions by Triage



Key Findings

Workplace policies—specifically, use of protocols, concurrent therapy, and triage—influenced how RCPs felt about their job and the quality of care they provided to patients.

Use of protocols was associated with higher levels of satisfaction with quality of patient care. Fifty-eight percent of RCPs reported routinely delivering respiratory care by protocol. These RCPs were significantly more satisfied with the quality of patient care. Forty-two percent of RCPs reported that they did not routinely deliver respiratory care by protocol. These RCPs were significantly less satisfied with the quality of patient care.

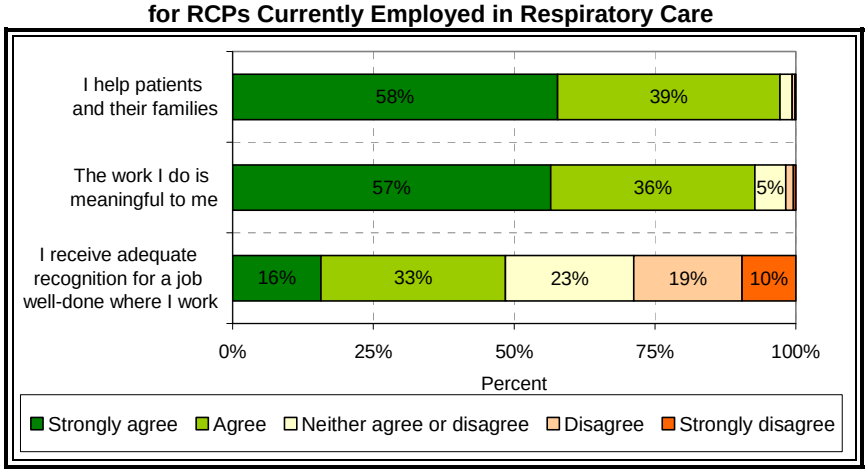
Use of concurrent therapy and triage was associated with lower levels of satisfaction with the quality of patient care. Additionally, use of both practices was also associated with lower levels of overall job satisfaction, satisfaction with workload, and involvement in decisions. This relationship is particularly important in light of the widespread use of both workload management practices—most RCPs (83%) reported routine use of one or both practices.

How rewarding is respiratory care?

Perceptions of Job Value and Recognition. The survey form included three statements designed to measure factors that make a health care job rewarding or unrewarding. Respondents were asked to rate their level of agreement with each statement for their most recent respiratory care work experience. Responses for two statements were overwhelmingly positive, but responses to the third statement were mixed. As levels of agreement for all three statements were very similar regardless of whether respondents were currently working in respiratory care, for simplicity's sake, the following discussion will focus on responses from those currently working in respiratory care.

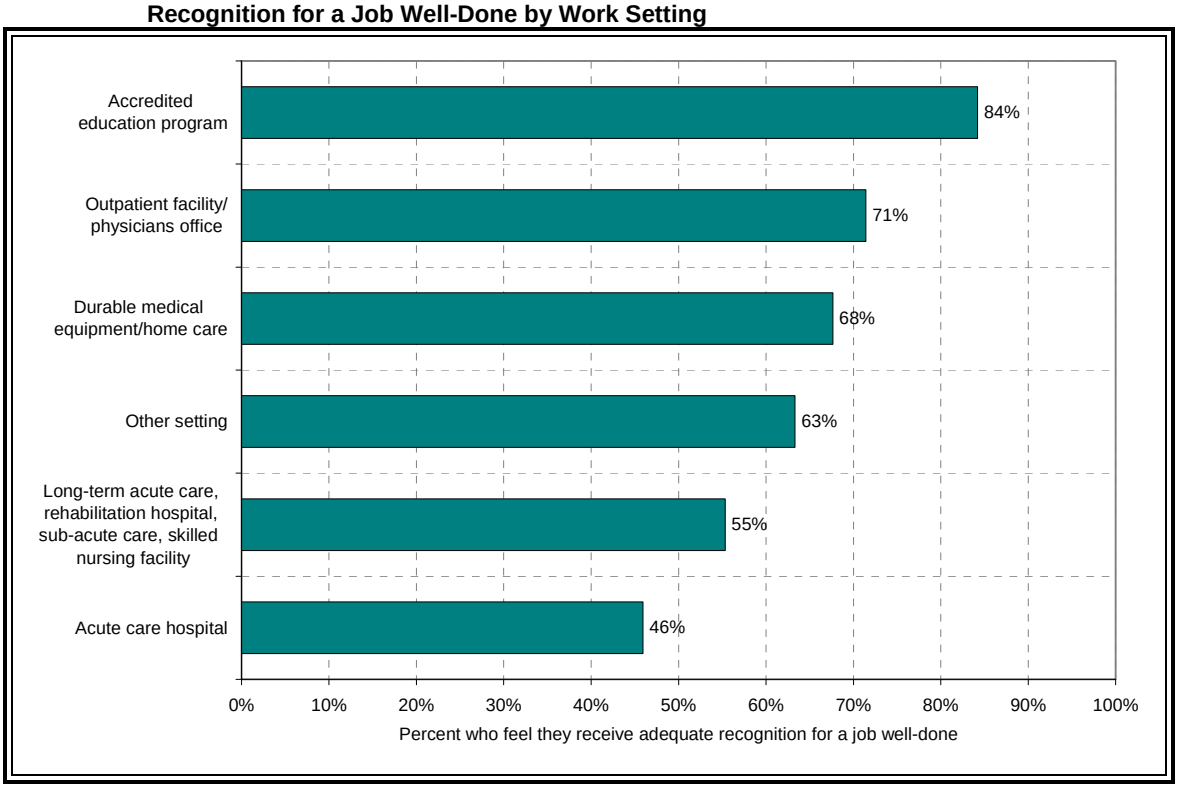
Virtually all RCPs agreed—and the majority *strongly* agreed—that they help patients and their families, and the work they do is meaningful. RCPs had mixed feelings about whether or not they receive adequate recognition for a job well-done. Just under half (49%) agreed that they receive adequate recognition, but 29 percent disagreed with this statement.

Figure 2.68: Level of Agreement with Statements about Most Recent Respiratory Care Work Experience, for RCPs Currently Employed in Respiratory Care



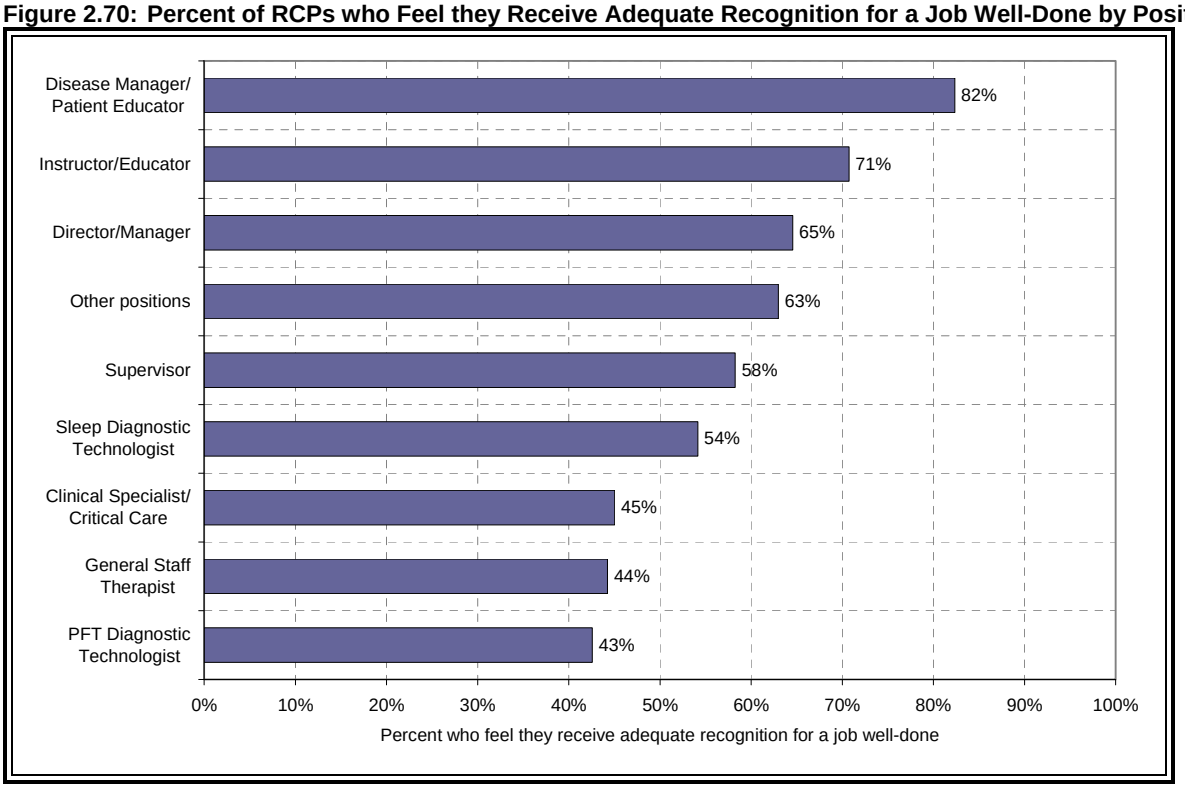
Feelings about recognition for a job well-done varied considerably across work settings and position categories. Figure 2.69 shows the percent of RCPs in each work setting who agreed or strongly agreed that they receive adequate recognition. RCPs working in accredited education programs, outpatient facilities or physician's offices, and in home care were more likely to feel they received adequate recognition than RCPs working in other settings. RCPs working in education programs felt the best about this aspect of their job—84 percent of them agreed or strongly agreed that they received adequate recognition. Close to seventy percent of RCPs working in outpatient facilities or physician's offices and home care felt they received adequate recognition (71% and 68% respectively). Figure 2.70 shows the percent of RCPs in each position category who agreed or strongly agreed that they receive adequate recognition. RCPs who indicated their position best fit in the Disease Manager/Patient Educator, Instructor/Educator, or Director/Manager categories were more likely than other RCPs to feel they received adequate recognition.

Figure 2.69: Percent of RCPs who Feel they Receive Adequate Recognition for a Job Well-Done by Work Setting



* Because the number of cases was small, categories for "Manufacturer/Distributor" and "Other" were combined for this distribution.

Figure 2.70: Percent of RCPs who Feel they Receive Adequate Recognition for a Job Well-Done by Position



* Because the number of cases was small, categories for "Other Diagnostic Technologist" and "Other" were combined for this distribution.

Employment outside Respiratory Care. Respondents currently employed in respiratory care were asked whether they currently held another job in a profession outside respiratory care. Twelve percent indicated that they currently had a job in another field. When asked to describe the reason they worked outside respiratory care, the largest group of respondents (39%) said they were dissatisfied with the salary available in respiratory care. Respondents could select more than one category, but none of the other reasons—including dissatisfaction with the profession, positions available, and benefits—were as significant a factor as salary. Respondents were also provided with an "other" category and asked to describe additional reasons for working in another field. Forty-five percent chose this category. They described a wide range of reasons for working another job outside respiratory care. The most common theme among these responses was enjoying their other work and the variety it provided.

Figure 2.71: Non-Respiratory Care Employment for RCPs Currently Employed in Respiratory Care

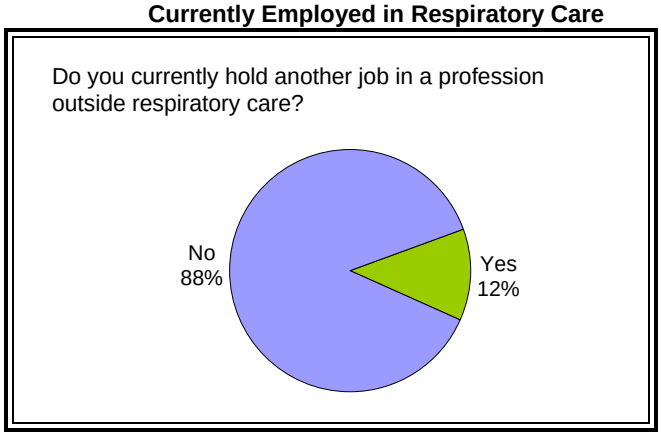
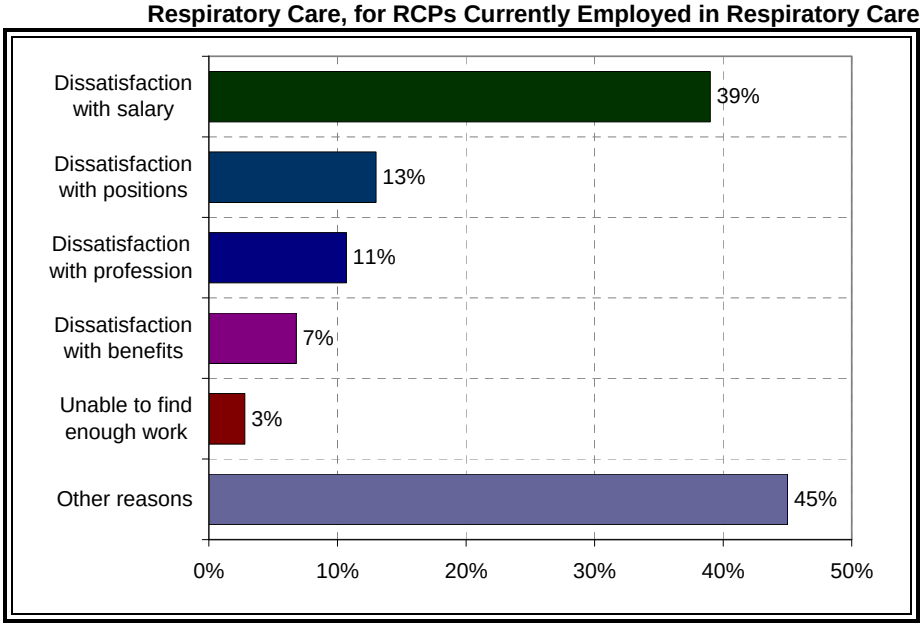


Figure 2.72: Reasons for Holding another Job in a Profession outside Respiratory Care, for RCPs Currently Employed in Respiratory Care



Why do people leave the respiratory care profession?

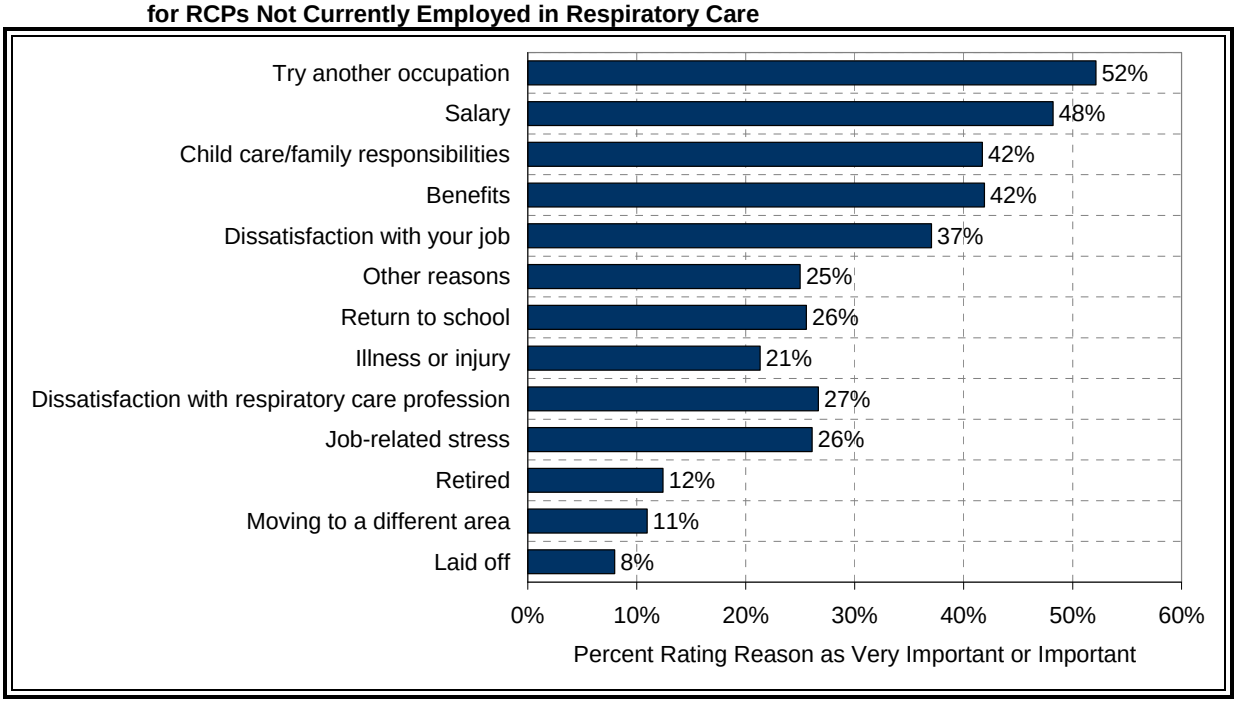
Views of Those Who Have Left Respiratory Care. One of the survey questions asked those individuals who have left respiratory care to rate the importance of nine factors in their decision to leave. Among the nine factors displayed in Figure 2.73, five factors stood out as predominate reasons (rated as Very Important or Important) why RCPs indicate they left the profession including:

- trying another occupation (52%),
- salary (48%),
- benefits (42%),
- child care/family responsibilities (42%), and
- job dissatisfaction (37%).

It is interesting that four of the five top reasons for leaving respiratory are directly related to the job itself, rather than external factors. In contrast, several factors seemed to have little impact on the decision to leave for a large majority of these RCPs. Among the factors having little impact were:

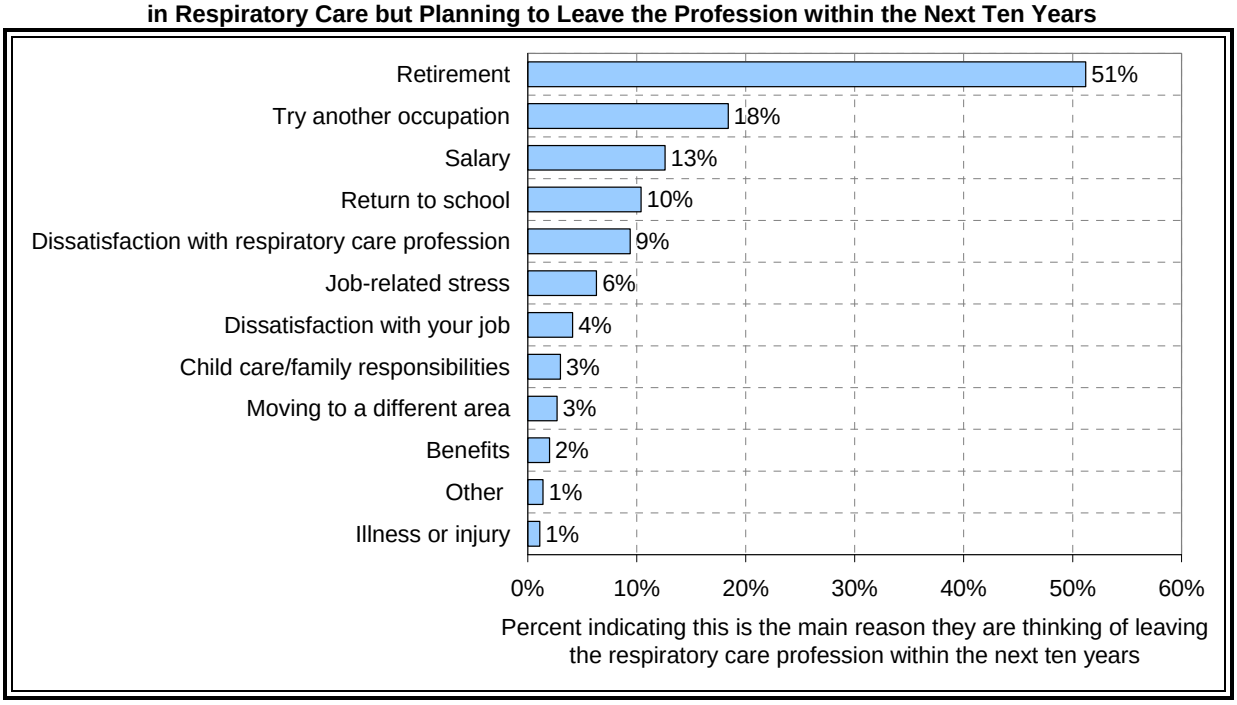
- retiring (12%)
- moving to a different area (11%), and
- being laid off (8%).

Figure 2.73: Importance of Factors in Decision to Leave Respiratory Care, for RCPs Not Currently Employed in Respiratory Care



Views of Those Still Working in Respiratory Care. A similar question[8] was asked of RCPs who are still working, but who indicated that they were planning on leaving respiratory care within the next ten years. Within the top five reasons given by this group, only two, "trying another occupation" and "salary", were the same as those indicated by RCPs who had already left respiratory care. Perhaps most striking and different than those already out of the workforce was the large percentage (51%) of RCPs who selected retirement as their motivation for leaving[9] (see Figure 2.74). This was selected by 326 of the 637 RCPs who answered this question. Extrapolating to the larger population, this would suggest that of the current 12,496 active licensees who are currently working in respiratory care, about 2,981 are considering leaving for retirement in the next ten years. Additional analysis conducted on this finding indicates that if we isolate the group of individuals who indicate they plan to leave the profession in the next five years, the percentage leaving for retirement is 57.4%. Extrapolated to the current population of active RCPs, the number of RCPs leaving the profession in the next five years will be about 18 percent of the current workforce (2,212 individuals) and within that group, about 1,270 are considering retirement.

Figure 2.74: Main Reason for Thinking of Leaving Respiratory Care, for RCPs Currently Employed in Respiratory Care but Planning to Leave the Profession within the Next Ten Years



[8] In this question, respondents were not asked to rank the importance, but rather to simply select the primary reason they were thinking about leaving respiratory care in the next ten years.

[9] Again this is probably explained by the fact that the group we examined who were not currently in the respiratory care profession still retained active licenses, and many of those not in the workforce and retired have simply let their licenses expire or have gone into the group designated in the licensing database as retired. Thus, this group is "underestimated" in the licensee base.

Views of the Two Groups on Key Job Elements. One final comparison was made between those currently working in respiratory care and those not presently in the profession based on a survey question that asked both groups to rate various dimensions of their most recent respiratory care position.[10] From this comparison, it was hoped that differences between those groups might help illuminate differences in "pushes" and "pulls" for staying in or leaving respiratory care. As seen in Table 2.33, the groups differed on a number of the dimensions related to their most recent respiratory care position. Among those differences, several stood out. Perhaps one of the most interesting was salary. Here 7.5 percent more of those not working in respiratory care were *satisfied* with their last respiratory care salary than those currently working in the profession. At the other end of the spectrum, 9.3 percent more of those currently working in respiratory care indicated more *dissatisfaction* with their salary. Statistical tests run on these findings indicate these are statistically significant differences (χ^2=3.461, p=.038 (Fischer's Exact Test for positive difference); χ^2=5.588, p=.01 (Fischer's Exact Test for negative difference).

Table 2.33: Satisfaction with Most Recent Respiratory Care Position by Current Respiratory Care Employment Status

	Percent who are satisfied or very satisfied			Percent who are dissatisfied or very dissatisfied		
	Employed in RC	Not employed in RC	Difference	Employed in RC	Not employed in RC	Difference
Salary*	44.0%	51.5%	**-7.5%**	35.4%	26.1%	**9.3%**
Benefits	48.1%	47.2%	0.9%	27.3%	27.6%	-0.3%
Work schedule*	74.6%	56.6%	**18.0%**	10.3%	20.8%	**-10.5%**
Physical work environment*	65.2%	56.3%	**8.9%**	13.6%	13.8%	-0.2%
Job-related stress	34.9%	30.5%	4.4%	31.9%	35.4%	-3.5%
Workload	43.2%	37.5%	5.7%	32.7%	38.1%	-5.4%
Quality of patient care where you work	60.3%	54.7%	5.6%	20.4%	19.1%	1.3%
Relationship with co-workers*	81.4%	68.4%	**13.0%**	4.8%	13.3%	**-8.5%**
Quality of management from your immediate supervisor*	53.8%	47.5%	6.3%	25.5%	33.8%	**-8.3%**
General administration of the facility, organization or agency where you work	40.7%	38.2%	2.5%	31.8%	33.2%	-1.4%
Involvement in decisions*	45.0%	36.6%	**8.4%**	23.7%	26.7%	-3.0%
Opportunities for advancement	33.8%	30.1%	3.7%	30.0%	36.3%	-6.3%
Your job overall*	66.1%	56.3%	**9.8%**	10.6%	20.0%	**-9.4%**

* Significant relationships (Fischer's Exact Test p< .05) are in boldface.

[10] For the group not currently working in respiratory care, this would have been the last position they held while working in the profession.

In all the other areas in which there were statistically significant major differences, those currently working in respiratory care were significantly happier (in most cases, both more satisfied and less dissatisfied) than those not working in respiratory care. These areas are summarized below:

More Satisfied

- work schedules
- physical work environment
- relationships with coworkers
- involvement in decisions
- job overall

Less Dissatisfied

- work schedules
- physical work environment
- relationships with coworkers
- quality of management from immediate supervisor
- job overall

Key Finding

Results would suggest that while those not working in respiratory care say salary is an important factor in leaving the profession, they are actually more satisfied with the salary (in their last position) than those still in respiratory care. Conversely, there are a number of other job related factors on which the group now outside respiratory care has significantly more negative views, i.e., less satisfaction and more dissatisfaction.

A Future Perspective

One of the key factors in developing projections about the future of the RCP workforce is to consider the entrance and exit of individuals from that workforce. Several pieces of information from the RCP survey are available to provide insight into this area.

How long do current RCPs plan on working?

Two separate survey questions asked currently working RCPs about their perceptions about leaving the profession. The first of these two questions asked, "How many years do you intend to remain in the respiratory care profession?" The second asked, "How many years do you plan to keep your California Respiratory Care Practitioner license?" The first question was expected to elicit a slightly more conservative estimate of the time remaining in the profession, as an RCP might plan to maintain a license even through he/she might not plan on working in respiratory care. For example, as in the case of an individual who was planning on trying a different career, but wanted the license as a fallback position.

A significant number of those currently employed in respiratory care—47 percent—reported that they intend to leave the respiratory care profession within the next ten years. On average, those currently employed in respiratory care intend to remain in respiratory care an average of 14 years.

Figure 2.75: Number of Years RCPs Currently Employed in Respiratory Care Intend to Remain in the Respiratory Care Profession

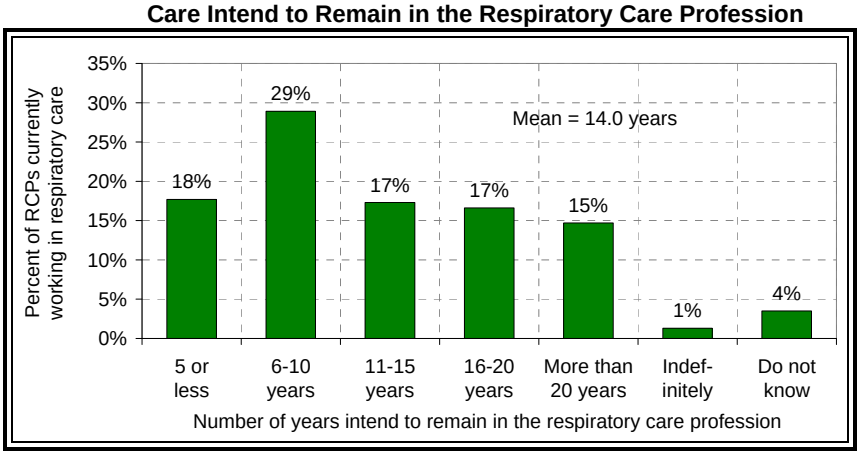


Figure 2.76 shows the distribution of the length of time RCPs employed in respiratory care intend to keep their California license active. They intend to keep their California license active slightly longer than they intend to remain in respiratory care—an average of 14.9 years.

Figure 2.76: Number of Years RCPs Currently Employed in Respiratory Care Intend to Keep their California RCP License Active

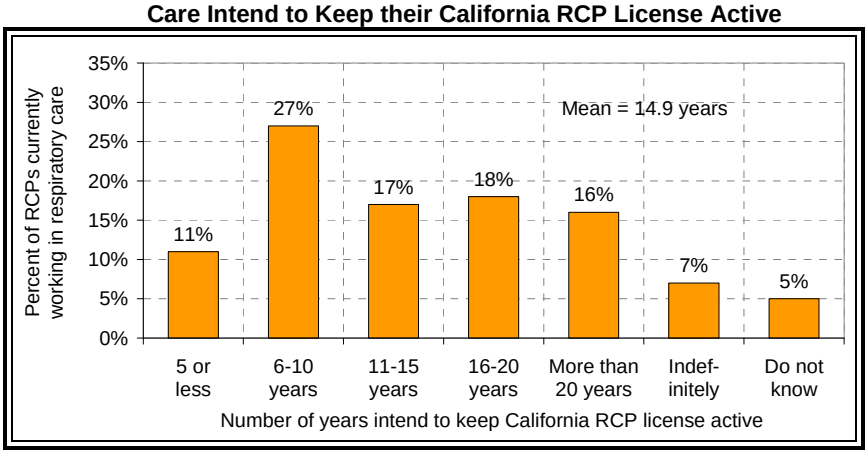
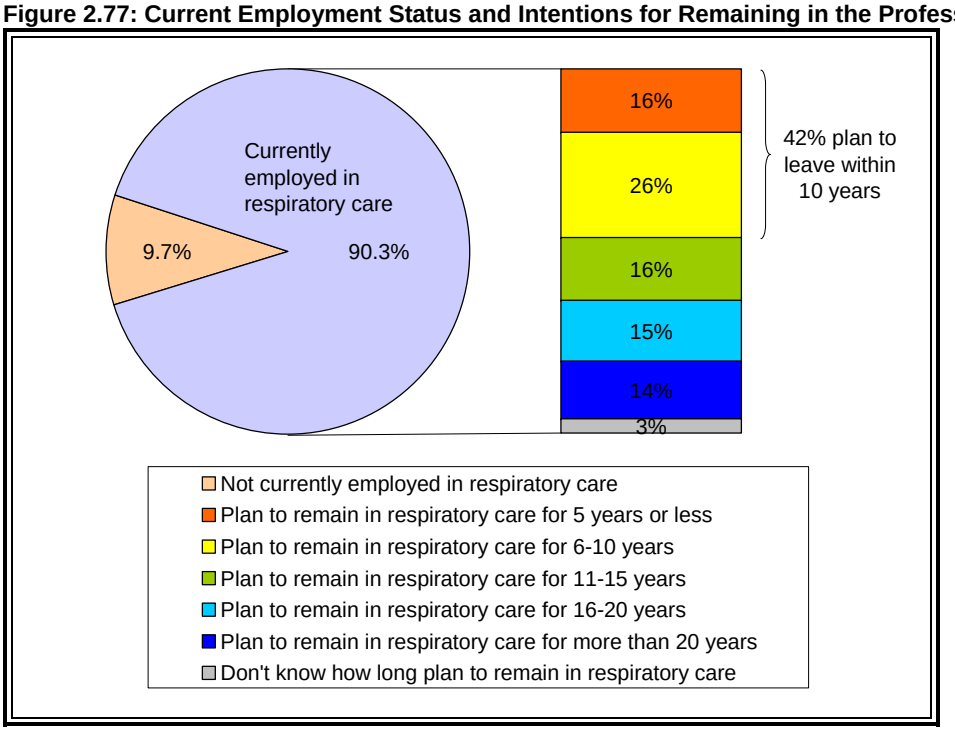


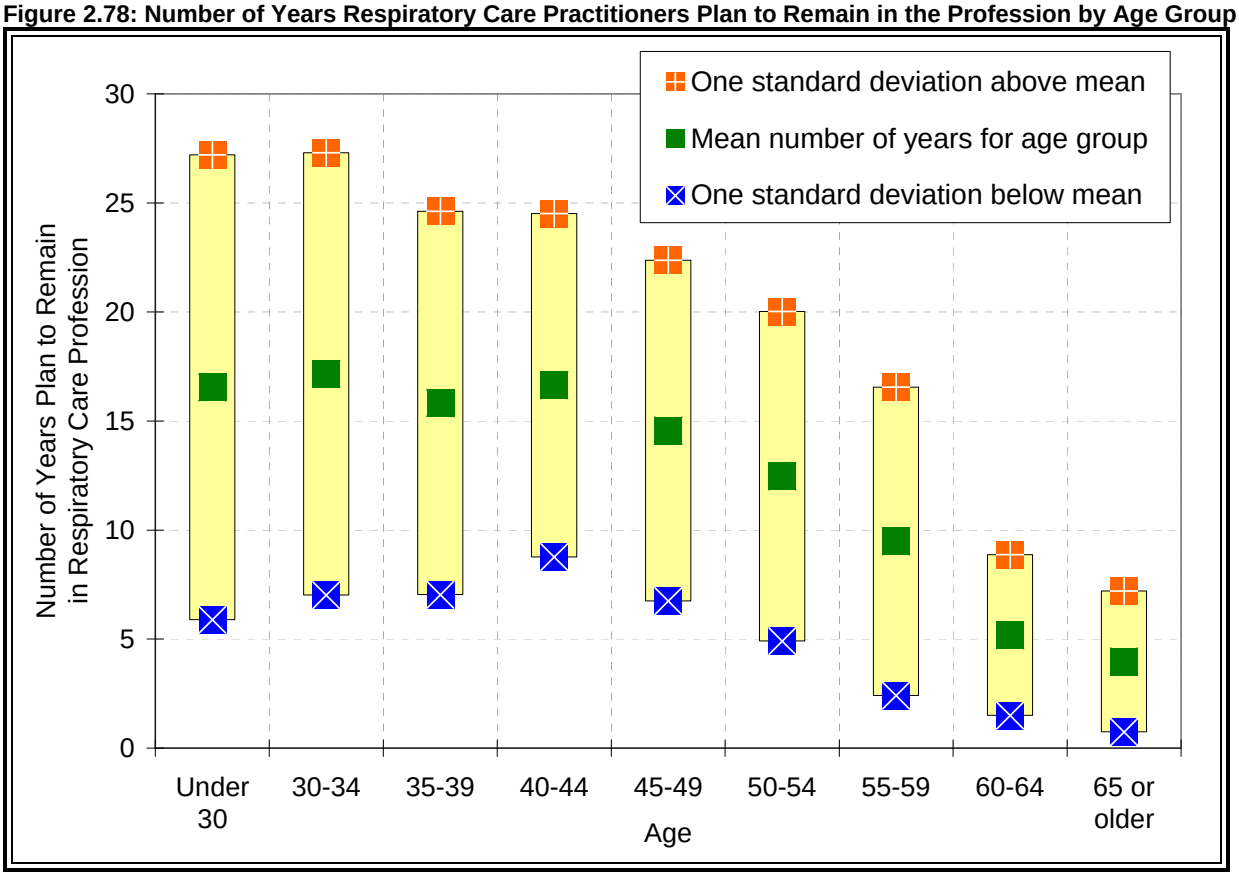
Figure 2.77 puts the intentions regarding remaining in the respiratory care profession in context for the potential workforce. Forty-two percent of all respondents indicated that they intend to leave respiratory care within the next ten years. Extrapolating to the 2006 license base suggests that of the 13,884 active, clear licenses (i.e., the potential working pool) 5,828 individuals intend to leave the profession during the next ten years. Thirty-nine percent of all respondents indicated that ten years from now, they do not intend to keep their California license active. Extrapolating to the same license base, 5,358 individual intend to move out of an active license status during the next ten years.

Figure 2.77: Current Employment Status and Intentions for Remaining in the Profession



The Relationship between Remaining in the Profession and Age. Those currently working in respiratory care and answering the question about how many years they intended to remain in respiratory care, on average (mean), plan to spend fourteen more years in the profession. However, as might be logically assumed, the years that RCPs think they will remain in the profession is determined, in part, by their age. For example, the youngest age category of respondents, those under 30, on average, estimate they will stay in the profession a little more than 16½ years, while the oldest age group, those over the age of 65 estimate they will be in the workforce a little less than 4 years (see Figure 2.78 for an overview of the distribution of time RCPs intend to remain in the profession by age category).

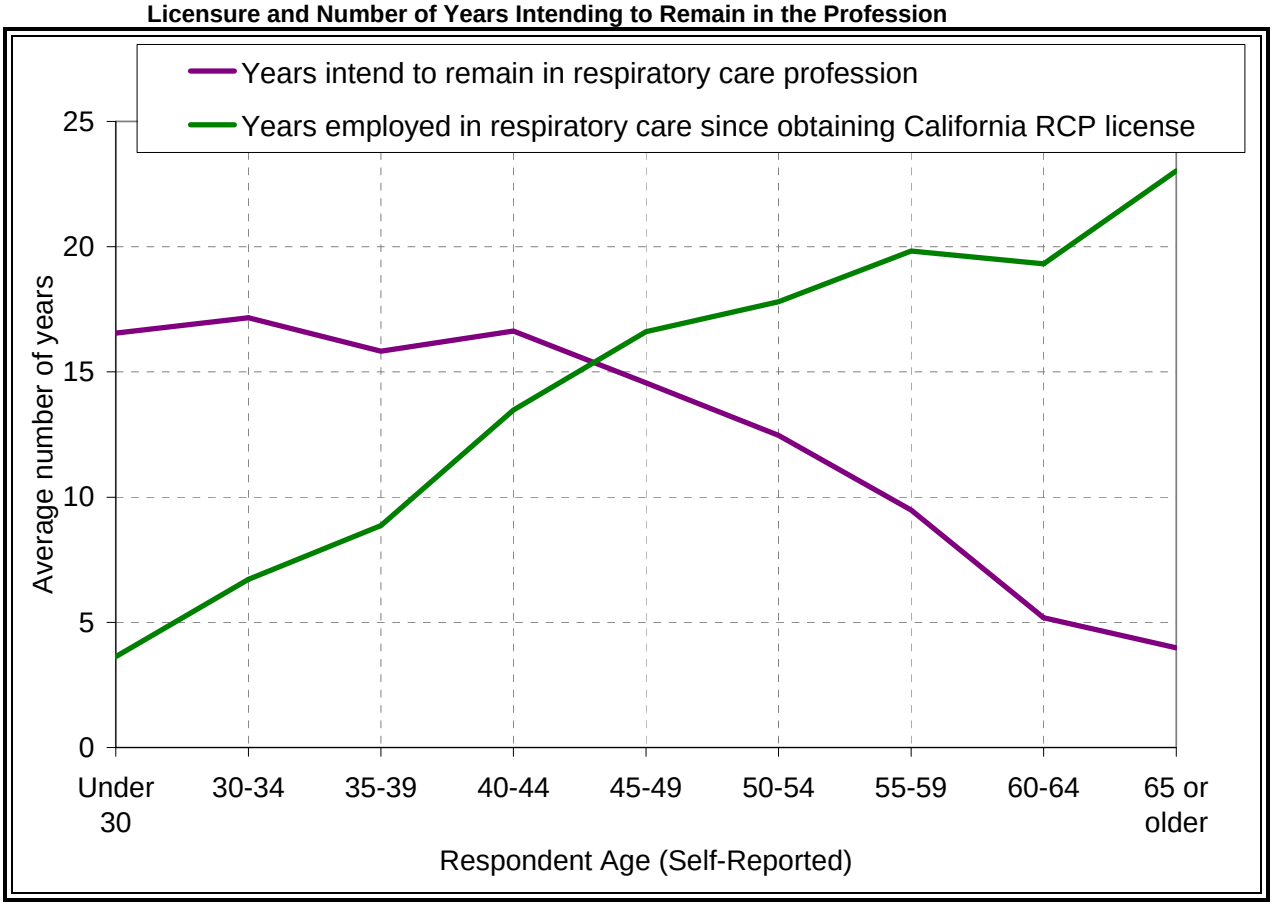
Figure 2.78: Number of Years Respiratory Care Practitioners Plan to Remain in the Profession by Age Group



Analysis of the differences between the nine age groups, confirms that age groups are statistically different (ANOVA, F ratio=26.71, sig.=.000) as to when they anticipate leaving the workforce. However, time in the work force is slightly more complex than it may first appear. First, there is considerable variation within the different age groups. For example, the under 30 group indicated that, on average, individuals would remain in the workforce about 16½ years. Yet, within that group, 68 percent fell between 5.9 years and 27.20 years in their estimates. Termed variance, this range suggests that there is a wide range of perceptions about how long this youngest group will continue in the profession. As we move into older age ranges, the variance of estimates grows smaller. However, in proportion to the average number of years RCPs plan to remain in the profession, there is less consensus among older workers. For example, as a group,

RCPs who are 65 and older, estimate they will remain in the workforce about 4 years more, however, they range in estimates from one-half year (.5) to 11 years, and again the range captured by 68 percent of the population (1 standard deviation) is between three-quarters (.74) of a year to 7.2 years.

Figure 2.79: Relationship between Age, Number of Years in Profession since Licensure and Number of Years Intending to Remain in the Profession



To provide a better perspective on the relationship between working in the profession and age, additional analysis was conducted to look at the relationship between the RCPs age, the amount of time they had been in the profession and their estimates of how much longer they would remain in the profession. Figure 2.79 vividly displays the relationship between the age of those working in respiratory care, the number of years they have been in the profession and the number of years they anticipate continuing to work. As displayed in the graph, there is a crossover point in the mid-forties when the time spent in the profession and the time they intend to spend working are approximately equal—13 to 14 years). In Figure 2.79, we can see from the distribution of RCPs by age that a fairly substantial and predictable drop in the years in which RCPs plan to work in the profession occurs once individuals reach their mid-forties.

Key Finding

To appreciate the impact of age on the future of the workforce, two factors should be kept in mind. First, the average (mean) age of the current RCP workforce is 45.4. Second, more than one-half (55%) of the RCPs surveyed were 45 or older and one-fourth of the RCPs surveyed were 54 or older. Essentially then, the combination of age and the time RCPs say they plan to remain in the profession suggests that the profession will loose a substantial proportion of working RCPs in the coming decade, and coupled with the fact that a large replacement group doesn't appear to be waiting in the wings, there could be a substantial impact on the size of the workforce. Coupled with this finding is the intuitive connection (confirmed by our analysis of certifications and credentials) that the workforce will lose not only workers, but will lose a disproportionate amount of its experienced workers with advanced skill sets.

Chapter 3: Respiratory Care Practitioner Employer Survey

Major Goals

The RCP employer surveys were designed to obtain information about the context in which respiratory care in California is provided. The objective was to focus on major RCP employers throughout the state.

Methodology

Sampling Design. Findings from the practitioner survey regarding the settings in which RCPs work were used to design the sample for the employer surveys. The RCP survey showed that acute care hospitals are the primary employers of RCPs in California. Eighty-five percent of all RCP hours were worked in acute care hospitals.

The State Utilization Data File of Hospitals for Calendar Year 2005 (from The Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center) was used to define the sampling frame for the acute care employer survey. This file contains information for all general acute care hospitals in California. The file contains a great deal of information about each hospital, including a code describing the principal service provided by the hospital. In order to maximize the efficiency of the sample by including hospitals most likely to employ RCPs, 16 facilities whose principal service was psychiatric, chemical dependency or "other services" were dropped. As there were 400 open hospitals, this left 384 hospitals eligible for inclusion in the initial sampling frame (see Table 3.1 below).

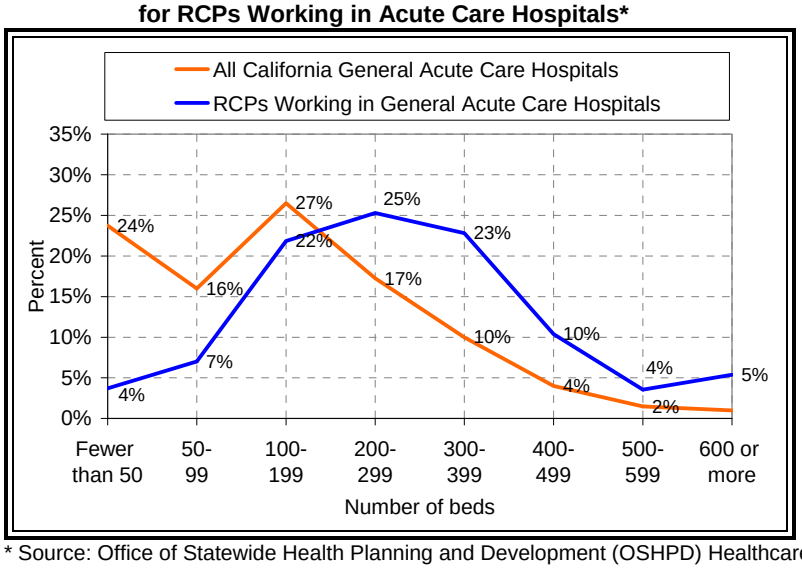
Table 3.1: Principal Service for All Open General Acute Care Hospitals, California 2005*

		Number of hospitals
Included in initial sampling frame (384 total)	General Medical/Surgical	349
	Long-Term Care (SN/IC)	16
	Physical Rehabilitation	8
	Developmentally Disabled	4
	Pediatric	7
Excluded from sampling frame (16 total)	Psychiatric	9
	Chemical Dependency (Alcohol/Drug)	1
	Other	6
Total		400

* Source: Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center, State Utilization Data File of Hospitals for Calendar Year 2005. Distribution includes all 400 open hospitals.

Results from the RCP survey showed that RCP employment was concentrated in medium and larger hospitals (See Figure 3.1). Two thirds of RCPs were employed in hospitals with 200 or more beds. In contrast, one-third of California's general acute care hospitals have 200 or more beds.

Figure 3.1: Comparison of the Distribution of the Number of Beds for All California General Acute Care Hospitals and for RCPs Working in Acute Care Hospitals*



* Source: Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center, State Utilization Data File of Hospitals for Calendar Year 2005. Distribution includes all 400 open hospitals.

In order to create an acute care employer sample that would be more representative of the RCP workplace than a simple random sample, the sampling frame was stratified to include all teaching hospitals and designated trauma centers. An EPSEM random sample of 32 hospitals was drawn from the remaining 315 hospitals (See Table 3.2).

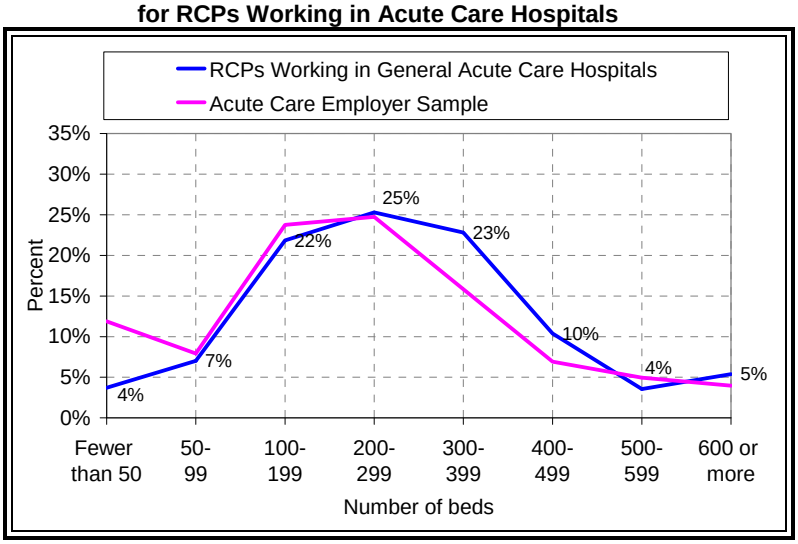
Table 3.2: Acute Care Employer Sample Selection Criteria

	Open Hospitals, Calendar Year 2005*	Sampling frame	Sample
Ineligible based on principal service provided	16	n/a	n/a
Teaching hospitals and trauma centers	15	15	15
Teaching hospitals	9	9	9
Designated trauma centers	45	45	45
Remaining hospitals	315	315	32
Total	400	384	101

* Source: Office of Statewide Health Planning and Development (OSHPD) Healthcare Information Resource Center, State Utilization Data File of Hospitals for Calendar Year 2005. Distribution includes all 400 open hospitals.

The resulting sample included a total of 101 hospitals. Figure 3.2 illustrates how the final sample distribution more closely approximates the distribution of RCP work setting.

Figure 3.2: Comparison of the Distribution of the Number of Beds for the Acute Care Employer Sample and for RCPs Working in Acute Care Hospitals



The RCP survey showed that 6.8 percent of all RCP hours were worked in long-term acute care hospitals, rehabilitation hospitals, and sub-acute care facilities. It was difficult to define a sampling frame for this employer category. OSHPD's Healthcare Information Resource Center maintains data on Long-Term Care Facilities (this was initially considered as a potential sampling frame). The problem was that Expert Panel members indicated most facilities in this category do not employ RCPs. For this reason, an alternative strategy was devised to identify potential RCP employers in this area. In order to avoid the impractical situation of contacting numerous facilities in order to reach one who employed RCPs, the research team began collecting data from acute care hospital survey respondents regarding the facilities to which they discharge patients requiring on-going respiratory care. We were surprised to find that acute care hospitals most often transfer patients requiring on-going respiratory care to *other general acute care hospitals*. Nearly all of the facilities that acute care hospitals reported discharging to were included in the acute care hospital sampling frame described earlier in this chapter. Several of the hospitals to which patients were discharged were included in the original acute care employer sample and participated in the survey. This means that the acute care employer survey findings describe a broader range of settings than was originally anticipated and include the perspectives of employers from long-term acute care hospitals, rehabilitation hospitals and sub-acute care facilities, as well as the perspectives of acute care employers. Further study would be necessary to properly investigate any differences in the practices and perspectives of employers in these different inpatient care settings.

The RCP survey showed that only 2.4 percent of all RCP hours were worked in durable medical equipment and home care settings. OSHPD's Healthcare Information Resource Center maintains data on Home Health Agencies and Hospices, and this was

initially evaluated as a potential sampling frame. However, Expert Panel members indicated that due to MediCare and Medicaid policies regarding respiratory services, most RCPs working in home care settings in California are employed by organizations licensed as Home Medical Device Retailers (HMDRs) by the California Department of Health Services (CDHS) Medical Device Safety Unit.

In January 2006, the CDHS Medical Device Safety Unit provided a list of all HMDRs and the commodities they provide. The list contained 643 HMDRs with current licenses to provide Respiratory Equipment/0_2 Supplies. The data did not include information on facility size, but the members of the study's Expert Panel indicated that RCP employment patterns for home care organizations are similar to those for acute care hospitals—larger facilities are more likely to employ RCPs. The California Association of Medical Product Suppliers (CAMPS) was identified as a subset of agencies that would be likely to include the largest HMDRs. CAMPS provided a copy of their membership list and it was cross-referenced with the HMDR commodity code list. As a proxy for stratification by facility size, separate EPSEM random samples were drawn within each CAMPS membership group. A random sample of 70 facilities was drawn from the 93 CAMPS membership facilities, and a random sample of 30 facilities was drawn from the 550 non-member facilities (See Table 3.3).

Table 3.3: Durable Medical Equipment/Home Care Employer Sample Selection Criteria

CAMPs membership	HMDRs licensed to provide respiratory equipment/supplies	Durable medical equipment/home care employer sample
Yes	93	30
No	550	70
Total	643	100

Survey Development. An Expert Panel of nine RCPs from throughout the state was assembled in January 2007 to assist the ISR with the development of the survey instruments for RCP employers and educational program directors. Panel members were selected to provide perspectives from a variety of work and program settings. Based on recommendations from the Expert Panel and a review of the literature, draft survey instruments for three employer categories—acute care employers, home care employers, and employers from "other" care settings (including long-term acute care, rehabilitation hospitals, sub-acute care, and skilled nursing facilities)—were prepared and submitted to the Board and Expert Panel for review.

The draft surveys were revised to reflect feedback from the Board and Expert Panel. The final surveys included between 34 and 35 questions, depending on the employer category. The surveys asked employers about their current respiratory care staffing situation as well as their anticipated patient and staffing trends in the next five years. The Expert Panel indicated that the ideal survey respondents—the people who would be able to provide the most accurate information about RCPs in their facility—were Respiratory Therapy Department Directors and Managers. In order to make the survey

process efficient and convenient for this group, data was collected via a web survey. After making initial phone calls to identify the appropriate respondent and obtain their contact information, potential respondents were sent an email containing a link to the survey and a unique password. Some respondents indicated that a hard-copy survey would be more convenient for them; they were faxed a copy of the survey form. The survey questions, along with responses to each item, are included in Appendix 4.

Response Rates. Of the 101 general acute care hospitals included in the sample, one was no longer operating and two indicated they did not employ RCPs. This reduced the number of eligible hospitals in the sample to 98. Completed surveys were obtained from 62 of these 98 hospitals—a response rate of 63 percent. Table 3.4 shows response rates by facility type as well as the distribution of participating hospitals.

Table 3.4: Response Rate for Acute Care Employer Survey by Facility Type

	Sample	Ineligible*	Eligible	Hospitals Completing Survey**	Response Rate
Teaching hospitals and trauma centers	15	0	15	8	53%
Teaching hospitals	9	0	9	6	67%
Designated trauma centers	45	2	43	31	72%
Remaining hospitals	32	1	31	17	55%
Total	101	3	98	62	63%

* One hospital was no longer operating. Two did not employ RCPs.

** One respondent provided information for two teaching hospitals.

Of the 100 HMDR facilities included in the sample, the research team was able to identify 61 facilities that employed RCPs. Completed surveys were obtained from 16 of these facilities—a response rate of 26 percent. Table 3.5 shows response rates by CAMPS membership. Twelve of the 16 surveys were completed by facilities who are CAMPS members. Table 3.5 also shows the percent of facilities reporting that they employed RCPs. If CAMPS membership was an effective proxy for size, then the findings suggest that larger DME/home care facilities were more likely to employ RCPs. Eighty-three percent of the 58 CAMPS member facilities screened for eligibility reported employing RCPs. In contrast, 52 percent of the 25 screened non-member facilities reported employing RCPs. The survey sample intentionally over-represented CAMPS facilities; weighting the survey results back to the actual distribution of CAMPS member facilities in the sampling frame produces an estimate that 56 percent of HDMRs licensed for respiratory equipment and/or supplies employed RCPs.[11]

[11] The sampling frame for HMDRs licensed to provide respiratory equipment and/or supplies included 93 CAMPS members and 550 non-members. Applying the percentages of RCP employment from the screened sample (83% and 52% respectively) to each facility category produces an estimated 77 CAMPS facilities who employed RCPs and 286 non-CAMPS facilities who employed RCPs (363 total). This yields an overall estimate that approximately 56 percent of all HMDRs (363 / 643) employed RCPs.

Table 3.5: Response Rate and Employment of RCPs for Durable Medical Equipment/Home Care Employers by Sampling Category

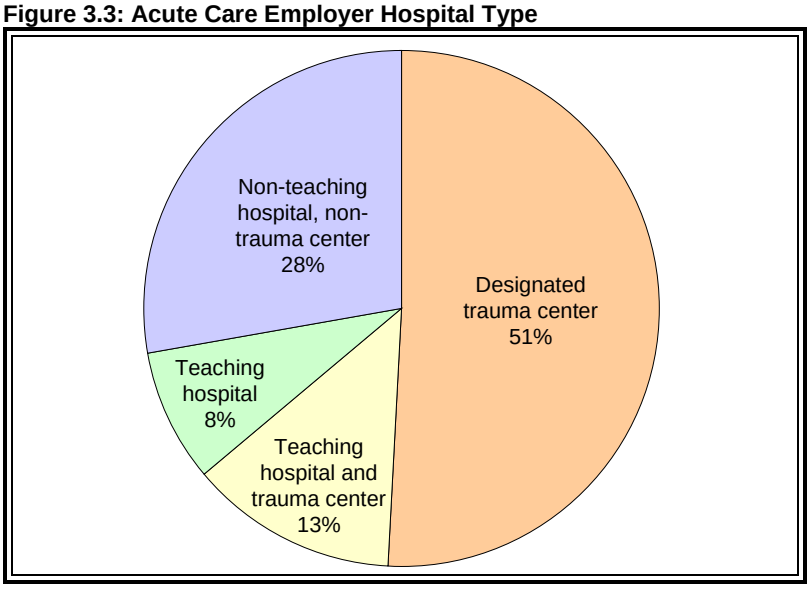
		CAMPS Member Facilities	Non-CAMPS Member Facilities	Total
Number of facilities in sample		70	30	100
Facility eligibility for inclusion in sample*	Unknown	10	5	15
	Ineligible	12	12	24
	Eligible	48	13	61
Number of eligible facilities completing survey		12	4	16
Response rate		25%	31%	26%
Employment of RCPs	Number of facilities where research team was able to determine whether facility employed RCPs	58	25	83
	Number of these facilities employing RCPs	48	13	61
	Percent of facilities employing RCPs	83%	52%	73%

* In some cases, the research team was unable to determine whether or not a facility employed RCPs—these are the facilities with unknown eligibility. Ineligible facilities included those who did not employ RCPs as well as facilities that were no longer open.

Analysis and Findings for Acute Care Employers

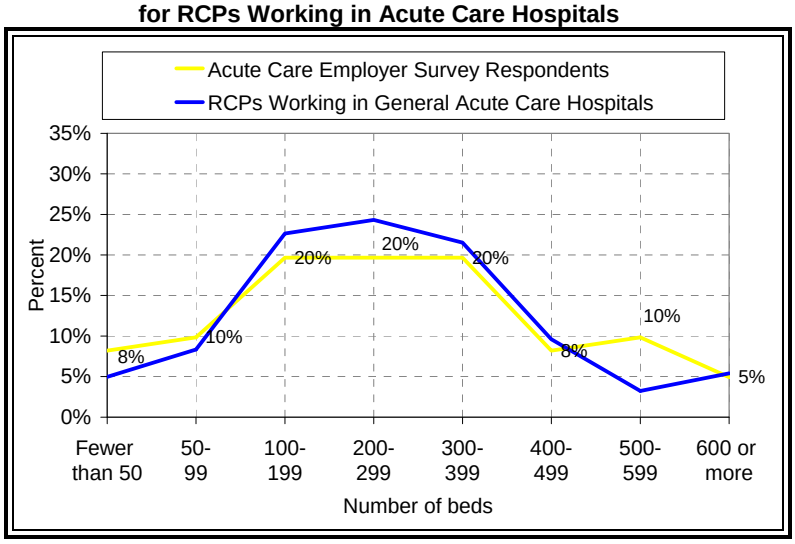
Facility Characteristics. As shown in Figure 3.3, fifty-one percent of the hospitals completing the acute care employer survey were designated trauma centers. The next largest category—hospitals that are neither teaching hospitals nor designated trauma centers—account for 28 percent of respondents. Thirteen percent are teaching hospitals and trauma centers, and eight percent are teaching hospitals.

Figure 3.3: Acute Care Employer Hospital Type



The acute care employer sampling design intentionally over-represented larger hospitals by focusing on teaching hospitals and trauma centers in order to more closely mirror the distribution of RCP work settings. As shown in Figure 3.4, which compares facility size for acute care employer respondents and RCP survey respondents, this approach was fairly successful. Hospital size varied widely, with teaching hospitals accounting for most of the larger facilities (eight of the nine hospitals with 500 or more beds are teaching hospitals).

Figure 3.4: Comparison of the Distribution of the Number of Beds for Acute Care Employer Survey Respondents and for RCPs Working in Acute Care Hospitals



Respondent Characteristics. Characteristics of the individuals completing the acute care employer survey indicate they were well qualified to provide information about RCPs in their facility. Most respondents (83%) were responsible for supervising all respiratory care staff in their facility. The remaining 17 percent either shared this duty or managed a portion of it. Two thirds described themselves as upper management and one-third categorized themselves as direct line supervisors (See Table 3.6).

Table 3.6: Acute Care Employer Respondent Responsibility for Supervising Respiratory Care Staff and Position Category

		Percent	Number of cases
Do you supervise all the respiratory care staff in your hospital?	Yes	83.3%	50
	No	16.7%	10
	Total	100.0%	60
Which of the following best describes your position type?	Human Resources	--	0
	Upper Management	66.7%	40
	Direct Line Supervisor	33.3%	20
	Total	100.0%	60

On average, respondents had worked for their facility for 15 years and had held their current position for just under six years (See Table 3.7). This suggests these individuals worked their way up to their current positions and that hiring for these positions tends to come from within the organization.

Table 3.7: Average Number of Years Acute Care Employer Respondents Have Worked for Current Employer and Held Current Position

	Mean	Median	Min-imum	Max-imum	Standard Deviation	Number of cases
How many years have you worked for your current employer?	15.01	15	0.50	35	10.56	61
How many years have you held this position with your current employer?	5.72	4	0.08	25	5.82	58

Ninety-five percent of the respondents were licensed RCPs. Of the three respondents who were not RCPs, one was an RN and the other two had their RRT credential. Sixty-four percent of respondents had earned their RRT credential. Sixty-two percent have an associate's degree, 43 percent have a bachelor's degree, and 18 percent have a master's degree (See Table 3.8).

Table 3.8: Acute Care Employer Respondent Licenses, Credentials, Certifications and Degrees

		Percent	Number of cases
Please indicate which of the following licenses, credentials, certifications, and degrees you have earned	California Respiratory Care Practitioner License	95.1%	58
	CRT	75.4%	46
	RRT	63.9%	39
	Neonatal/Pediatric Specialist	19.7%	12
	CPRT	16.4%	10
	RPFT	8.2%	5
	LVN	--	0
	RN	1.6%	1
	Associate's degree	62.3%	38
	Bachelor's degree	42.6%	26
	Master's degree or higher	18.0%	11

Current Respiratory Care Staffing. The average number of full-time equivalent (FTE) RCPs currently working at each facility was 40.4. Most (89%) of these FTEs are filled by permanent regular employees hired directly by the hospitals. Registry and traveler RCPs comprised a relatively small portion of staffing (See Table 3.9). RCPs identified as "registry" and "travelers" comprise only about 8.4 percent of the respondents' FTEs. Facilities using registry and traveler RCPs indicate they do so primarily to provide temporary staff until regular staff can be hired. Beyond temporary staffing until regular staff workers can be hired, the two other dominant uses of registry and travelers RCPs were to provide operational flexibility and cost savings. However, neither of these seemed to reflect an important reason for using these temporary workers. Over this past year, on average, about 10 percent of the FTE hours (perhaps as high as 20

percent if registry and travelers are excluded), needed for full staffing were vacant, implying that a shortage in RCPs in the workforce likely exists. The implications of this will be discussed further in Chapters 5 and 6.

Table 3.9: Present Respiratory Care Staffing for Acute Care Employers

	Mean Number of FTEs	Percent of FTEs at facility	Number of cases	Median	Min-imum	Max-imum
How many Respiratory Care Practitioner (RCP) FTEs does your facility currently have?	40.4	100.0%	61	36	1	103
How many of the total RCP FTEs are regular employees?	36.0	89.2%	61	32	1	98
How many of the total RCP FTEs are registry or travelers?	3.4	8.4%	61	0	0	43
How many of the total RCP FTEs are currently vacant?	4.1	10.2%	61	2	0	24
How many of the RCPs currently employed by your facility are RRTs?	22.6	N/A	59	18	0	78

Respondents were asked for general staff head count numbers. The facilities averaged 38.24 staff members at the beginning of the year and 39.4 at the end of the year–a general 3% growth in the amount of RCP staff over the past year. On average, facilities reported a loss of the 3.82 staff members per year (10% of their total staff). However, only 22 percent of those leaving employment were attributed to dismissals or terminations. The vast majority leaving employment did so through voluntary resignations which represented 78 percent of those who left employment. Stated differently, 90 percent of staff appear to have stayed with their employers in the past year (See Table 3.10).

Table 3.10: RCP Employment Transitions during the Past Year for Acute Care Employers

		Mean number of staff	Percent of total staff	Number of cases
Please fill out the following formula regarding the transition of RCPs in and out of employment with your facility in the past year	Total Staff Beginning of Year:	38.24	100.0%	56
	+ New Hires:	4.43	11.6%	56
	- Dismissals/Terminations:	0.84	2.2%	56
	- Voluntary Resignations:	2.98	7.8%	56
	= Total Staff End of Year:	39.40	103.0%	56

Key Finding

It appears RCP employers are currently running a deficit in staffing of about 10 percent and are using traveler and registry RCPs to fill another 8.4 percent of their current FTE need. In the past year, acute care facilities lost about 10 percent of their RCPs (7.8% through voluntary attrition; 2.2% from terminations/dismissals) but they were able to increase their staff size about three percent during the year through new hires.

Employers were asked about placement of RCPs within their facility. A large proportion of these facilities (82%) used RCPs in the Adult ICU section of their operations. On average, the greatest number of RCPs also were assigned to this unit, with an average 8.27 RCPs placed there. The next most heavily staffed department within these facilities was the General Medical and Surgical location. Seventy-five (75%) of the respondents said they used RCPs in this department, and on average, 7.65 RCPs were assigned to this area. With the exception of ECMO, all of the designated service areas were staffed by RCPs by at least a small number of acute care facilities (See Table 3.11).

Table 3.11: RCP Department/Unit Assignments for Acute Care Employers

In your hospital, please indicate the types of departments/units where respiratory care staff are assigned and the number of respiratory care staff that are assigned to this department to cover all shifts in a 24-hour day. (Please use FTEs, with 1.0 FTE as full time)	Hospital Responses					Number of RCP Staff Assigned				
	N	Yes	(%)	No	(%)	N	Mean	Min	Max	SD
Adult ICU	61	**50**	**(82%)**	11	(18%)	49	**8.27**	0.2	**40**	9.76
ABG Lab	61	29	(48%)	32	(52%)	24	4.00	1.75	27	6.01
Air/Ground Transport	61	13	(21%)	48	(79%)	12	2.72	1	12	3.07
Burn Center	61	6	(10%)	55	(90%)	6	1.67	1	3	0.82
Cardiac Diagnostic	61	13	(21%)	48	(79%)	9	1.83	1	3	0.79
Discharge Planning	61	2	(3%)	59	(97%)	2	1.50	1	2	0.71
ECMO	61	0	(0%)	**61**	**(100%)**	0	0.00	0	0	0.00
Education Department	61	21	(34%)	40	(66%)	21	1.19	0.5	3	7.15
Emergency Department	61	**46**	**(75%)**	15	(25%)	42	3.50	0.5	40	7.11
General Medical and Surgical	61	**46**	**(75%)**	15	(25%)	42	**7.65**	1	**44**	9.99
Hyperbaric Medicine	61	4	(7%)	57	(93%)	2	2.00	1	3	1.41
Neonatal ICU	61	35	(57%)	26	(43%)	33	5.14	0.5	27	5.85
Pediatric ICU	61	17	(28%)	44	(72%)	13	5.76	0.5	22	5.93
Pediatric Unit	61	31	(51%)	30	(49%)	29	4.27	0.5	40	7.50
PFT Lab	61	42	(69%)	19	(31%)	40	1.52	0.5	5	1.00
Rehabilitation Center	61	14	(23%)	47	(77%)	14	1.24	0.5	3	0.67
Respiratory Care Unit	61	12	(20%)	49	(80%)	12	6.48	1	27	9.92
Sleep Center	61	9	(15%)	52	(85%)	8	2.75	1	5	1.58
Trauma Center	61	20	(33%)	41	(67%)	20	6.17	0.5	40	11.16
Other	61	9	(15%)	52	(85%)	7	2.19	1	4	1.30

Survey respondents reported that the vast majority of RCPs work in a floater assignment. Specifically, 52 percent said that the RCPs at their facility are strictly floaters. When these facilities are combined with those who said their RCPs do a combination of both floater and permanent assignments, it is revealed that 89.8% are staffed by either a combination of floaters and permanent assignments or exclusively staffed by floaters (See Table 3.12). Given this information, it is likely that RCPs entering the workforce should be prepared to work in a variety of staffing locations.

Table 3.12: Permanent Assignment of RCPs to Units for Acute Care Employers

		Percent	Number of cases
Referring to staffing departments and units, are your RCP FTEs listed in question 3 permanently assigned to the units?	Yes, they are permanent assignments (for example, solely assigned or unit based)	10.2%	6
	No, they are floaters	52.5%	31
	No, they are staffed with a combination of permanent assignments and floaters	37.3%	22
	Total	100.0%	59

Respondents were asked to describe the percentage of time that RCPs at their facility spent with each of five age groups. More than a third of RCP time is spent with patients over 65 years of age, and on average, 60.7% of total RCPs time is spent with individuals 45 years old and older (See Table 3.13). Given that the California Department of Finance estimates that this is the fastest growing portion of the California population, this has important implications for future demand for RCP services.

Table 3.13: Distribution of Acute Care RCP Time Across Patient Age Categories

		Mean	Median	Min-imum	Max-imum	Number of cases
Please provide an estimate of the percentage of time that your respiratory care staff spends with each of these patient age groups	Under 5 years of age	12.97	10	0	75	60
	5 to 17 years of age	8.45	5	0	50	60
	18 to 44 years of age	17.87	15	0	71	60
	45 to 64 years of age	24.98	25	0	75	60
	65 years of age and older	35.73	38	0	85	60

Key Findings

- In terms of the number of facilities staffing units with RCPs and the number of RCPs assigned to those units, the majority of RCP services are used in Adult ICUs and General Medical and Surgical Units. Respiratory Care Units also have a high number of staff members assigned, but only 20 percent of acute care facilities have these units. Conversely, about 75 percent of the facilities report staffing Emergency Rooms with RCPs, but the average number of RCP staff assigned to these units is low.
- Slightly more than one-half of staffing is accomplished solely through floaters, while only about 10 percent of staff assignments are permanent.
- Over one-third (36%) of respiratory care services are provided to individuals 65 and older, and about 60 percent of services are provided to patients 45 years old and older.

Centralization of Respiratory Care Departments. Almost all (93%) of the hospitals that participated in the survey still structure respiratory care in terms of a traditional centralized department (See Table 3.14). This organizational structure also was predominant in the AARC study. This indicates that most hospitals have a respiratory care department and that RCPs are then either assigned to departments and units or work as floaters. While the variety of settings that RCPs work in is varied, it is always the respiratory care department that is responsible for RCPs duties and standards.

Table 3.14: Centralization of Respiratory Care Departments for Acute Care Employers

Which of the following models best describes the current organization of respiratory care services in your facility?	Percent	Number of cases
Model A: Most closely resembles a traditional centralized department. An administrative leader and medical director(s) supervise the work of therapists assigned to the department, as well as establish and monitor respiratory care standards. Respiratory care services throughout the facility are generally provided by this department.	93.4%	57
Model B: Also a centralized department providing limited support for delivery of respiratory care services. Administrative leadership and medical direction responsibilities are the same as described in Model A. However, some therapists have been decentralized. The work of these decentralized therapists is primarily supervised by a manager of the unit in which they are assigned, although leaders of the respiratory care department may also share responsibility.	3.3%	2
Model C: Respiratory care services are totally decentralized in that they are not supported by a central department. Responsibility for establishing and monitoring respiratory care standards principally resides with leaders of units in which respiratory care services are provided. Respiratory care services may be provided by therapists and/or other caregivers.	3.3%	2
Total	100.0%	61

RCP Staff Overtime. Hospitals reported that RCPs worked an average (mean) of 213.9 hours of overtime each month. The median number of over time hours (82.5) is much lower than the mean. This difference stems from the concentration of overtime hours in larger facilities. On average, facilities with less than 100 beds used a third of the hours that facilities with 100 to 199 beds used. Also, the larger the facility, the more overtime hours it used. While the entries for 300 to 399 beds and 500 to 599 beds are smaller, increasing capacity from the 200 to 299 beds level to 400 to 499 beds was associated with a marked increase. If the averages seen in 300 to 399 beds and 500 to 599 beds facilities rows are excluded (Table 3.15), then a correlation between facility size and overtime use becomes clear. It should be noted that one facility's observation of 5,000 hours was dropped from this portion of the analysis because it was five times as large as the next closest observation.

Table 3.15: Average Monthly RCP Overtime Hours for Acute Care Employers

		Mean	Median	Min-imum	Max-imum	Number of cases
During the past year, what were the average monthly number of overtime hours reported by respiratory care staff?		213.9	82.5	3	1000	54
Facility size	Fewer than 50 beds	36.7	35	25	50	3
	50 to 99 beds	48.0	48	36	60	2
	100 to 199 beds	167.8	200	20	478	8
	200 to 299 beds	395.4	800	48	1000	7
	300 to 399 beds	248.6	275	20	773	11
	400 to 499 beds	473.8	398	300	800	4
	500 to 599 beds	261.8	100	24	600	5
	600 or more beds	600.0	600	400	800	2

Note: An entry of 5,000 hours was excluded from this distribution because it was an extreme outlier

Difficulty Hiring Qualified RCPs. Generally, respondents reported difficulty hiring RCPs during the past three year period, with nearly eight out of ten indicating hiring difficulties. Upon closer inspection of those who had problems, more than one-half (58%) of these were smaller facilities—under 300 beds and less. Seventy-seven percent of facilities with less than 400 beds reported problems in hiring (See Table 3.16). Given that 46 percent of respondents who reported hiring difficulties also reported needing five months or longer to bring new graduates up to speed (See Table 3.18), smaller facilities would seem to be particularly negatively impacted by staff turnover.

Table 3.16: Difficulty Hiring RCPs During Past Three Years for Acute Care Employers

		Percent	Number of cases
In the past 3 years, have you encountered difficulties in hiring qualified respiratory care practitioners?	Yes	78.7%	48
	No	21.3%	13
	Total	100.0%	61

Respondents who encountered hiring difficulties were asked to evaluate the importance of a range of potential contributing factors. Although respondents, on average, felt that their benefits were comparable to surrounding facilities, they felt their wages were slightly lower than surrounding facilities (Table 3.17). There was an even split on opinions of how California RCP wages compare to that of other states. While the responses for this question are fairly even in each category, half of the responses focused on the two extreme answers–Most Important and Not Important.

Table 3.17: Importance of Factors for Difficulty Hiring RCPs for Acute Care Employers

Please rate the following factors that have created hiring difficulties	Most Important				Somewhat Important				Not Important			
	5		4		3		2		1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
There aren't enough Respiratory Care Practitioners in this area to fill available positions.	**19**	**(40%)**	14	(30%)	12	(26%)	1	(2%)	1	(2%)	47	4.04
There aren't enough qualified Respiratory Care Practitioners.	**22**	**(46%)**	12	(25%)	11	(23%)	1	(2%)	2	(4%)	48	4.06
There aren't enough Respiratory Care Practitioners being graduated from colleges where we hire.	13	(27%)	**14**	**(29%)**	11	(23%)	7	(15%)	3	(6%)	48	3.56
There aren't enough Respiratory Care Practitioners with the particular specialties/ certifications we need.	**15**	**(31%)**	8	(17%)	11	(23%)	9	(19%)	5	(10%)	48	3.40
Our salaries are below those offered by facilities in the surrounding area.	13	(27%)	12	(25%)	**15**	**(31%)**	3	(6%)	5	(10%)	48	3.52
Our benefits are less than are those offered by facilities in the surrounding area.	5	(11%)	8	(17%)	8	(17%)	**14**	**(30%)**	12	(26%)	47	2.57
Respiratory Care Practitioners are leaving this area to go to other job markets in the state where salaries or benefits are better.	**13**	**(27%)**	8	(17%)	9	(19%)	7	(15%)	11	(23%)	48	3.10

Forty-one percent of respondents reported that their new graduate hires averaged less than three months of training to get them up to speed on basic skills. However, nearly six in ten (59%) said that it took three months or longer to bring new graduates up to speed, and within this group, 42 percent reported that it took five months or longer(See Table 3.18). Interestingly, of those who reported taking longer then 5 months to bring new graduates up to speed, 20 of 26 respondents (77%) also reported providing a formal clinical program (See Table 3.26).

Table 3.18: Entry Level RCP On-the-Job Training Time for Acute Care Employers

		Percent	Number of cases
On average, how much time does it currently take for a typical new graduate hired as an entry-level employee to come up to speed on basic skills?	Less than two weeks	1.6%	1
	Two weeks to a month	8.2%	5
	Between one and two months	9.8%	6
	Between two and three months	21.3%	13
	Between three and four months	13.1%	8
	Between four and five months	3.3%	2
	Between five and six months	23.0%	14
	More than six months	19.7%	12
	Total	100.0%	61

Key Finding

A sizeable majority (79%) of acute care facilities report difficulties in hiring in the past three years. The difficulty seems to center on a general shortage of RCPs, a lack of qualified applicants and/or applicants with particular specialties. Despite having hiring problems, the large majority (74%) of acute care facilities do not pay bonuses to attract applicants, and only about one-half (52%) pay differentials for RRTs.

Pay, Bonuses and Incentives. The average (mean) starting wage for facilities responding to the survey was $24.64 (See Table 3.19). This average paralleled the RCP survey nicely, with only $.10 difference between the two survey findings, which helps validate the amount as an accurate reflection of RCP entry pay. When evaluated relative to facility size, acute care hospitals that are 100 beds and larger seem to pay an average of $3.00 per hour more then their smaller counterparts. Beyond that difference, the size of the hospital seems to have no impact on the starting wage for new RCPs.

Table 3.19: Acute Care Employer Average Starting Salary for New CRT

Approximately what is your starting salary for a new Certified Respiratory Therapist (without experience)?		Mean	Number of cases	Median	Min-imum	Max-imum	SD
Overall		$24.64	58	$23.49	$15.00	$36.68	$4.62
Facility size	Fewer than 50 beds	$21.50	5	$21.00	$15.00	$26.50	$4.85
	50 to 99 beds	$21.46	4	$21.42	$20.00	$23.00	$1.27
	100 to 199 beds	$25.71	12	$26.45	$20.37	$32.00	$4.18
	200 to 299 beds	$24.17	12	$23.20	$18.50	$32.00	$4.07
	300 to 399 beds	$26.49	11	$26.00	$20.00	$36.68	$5.36
	400 to 499 beds	$23.12	5	$25.90	$19.79	$26.80	$5.51
	500 to 599 beds	$24.75	6	$26.24	$15.00	$28.00	$5.36
	600 or more beds	$27.31	3	$26.93	$22.00	$33.00	$5.51

Despite the fact that nearly eight out of ten (79%) respondents reported that they had experienced difficulties hiring qualified RCPs, only 26 percent of the acute care hospitals used hiring bonuses as a way to solve that problem. Of the hospitals that reported having hiring difficulties, only 13 (27%) of those facilities were offering hiring bonuses. Conversely, 3 of the 16 (19%) respondents that said they do offer hiring bonus also said that they did not have hiring difficulties (See Table 3.20). Essentially, these results suggest little relationship between whether or not an acute care facility had hiring difficulties and whether they paid a hiring bonus. Facilities paying a hiring bonus were asked the approximate amount. Amounts ranged from $500 to $5,000; the mean (average) was $2,907.

Table 3.20: Acute Care Employer Use of Hiring Bonuses for New CRTs

Do you currently pay a hiring bonus for a new Certified Respiratory Therapist (without experience)?	Percent	Number of cases
Yes	26.2%	16
No	73.8%	45
Total	100.0%	61

A further illustration of the disconnect between hiring difficulties and salary was seen in the fact that 48 percent of the acute care hospitals were not paying a differential for RCPs who hold an RRT credential (See Table 3.21). Moreover, among the 52 percent of hospitals reporting a differential, it was fairly modest, averaging $1.39 per hour. In terms of the additional income an RCP receives from RRT credentialing, an RCP with his/her RRT makes, on average, $240.93 more per month or $2,891 more per year. Thus, it would appear that in the current work environment, there is only a modest financial incentive for RCPs to pursue the RRT credential.

Table 3.21: Acute Care Employer Pay Differentials for the RRT Credential

Setting experience aside, do you pay a differential for staff members who are RRTs?	Percent	Number of cases
Yes	51.7%	31
No	48.3%	29
Total	100.0%	60

Interestingly, hospitals do appear to use other incentives to encourage RCPs to pursue additional education. Nine out of 10 hospitals reported using some sort of incentive for RCPs to further their education (See Table 3.22). Of those who offered an incentive, 82 percent used a tuition reimbursement or payment method to encourage RCPs to obtain additional training or education. Another common practice–used by 64 percent of hospitals using some type of incentive–was giving RCPs paid time to attend training or class sessions.

Table 3.22: Acute Care Employer Use of Training and Education Incentives

Which if any, of the following incentives does your facility offer respiratory care staff who want to pursue additional training or education? (Please check all that apply)	Percent	Number of cases
Tuition	87.3%	48
Paid time to attend	63.6%	35
Pay differentials once the program is successfully completed	21.8%	12
Other	5.5%	3
Total	n/a	55

Perspectives on Education and Training. It appears that a solid majority (62%) of the responding hospitals believe that RCPs working today have an appropriate amount of education and training (See Table 3.23). However, about 37 percent said they are under-qualified; that is, they do not have enough education and training. It is also interesting to note that none of the respondents said RCPs had too much training and education. No pattern emerged from an analysis of responses regarding education and training relative to facility size. Essentially the size of the facility does not affect perception of the workforce qualifications.

Table 3.23: Acute Care Employer Perceptions of the Qualifications of Working Respiratory Therapists

Do you believe most respiratory therapists working today have the right amount of education/training for the jobs/tasks they're asked to perform by their employers?	Percent	Number of cases
No, too much education/training (they are over-qualified)	--	0
Yes, their education/training is appropriate for the job	62.30%	38
No, not enough education/training (they are under-qualified)	37.70%	23
Total	100.00%	61

Respondents were asked to evaluate how well new RCPs were prepared to enter the workforce. Seven out of ten felt that new graduates were well prepared (See Table 3.24). They were also asked what percentage of the new entry level RCPs they hire have the necessary educational background: respondents said that on average, 72 percent of new entry level RCPs have the necessary educational background.

Table 3.24: Acute Care Employer Opinions Regarding Preparedness of New RCPs to Enter the Workforce

Upon graduating, how well prepared are new RCPs to enter the workforce?	Percent	Number of cases
Extremely well prepared	1.7%	1
Well prepared	70.0%	42
Poorly prepared	26.7%	16
Not at all prepared	1.7%	1
Total	100.0%	60

While the majority of respondents felt new RCPs were well trained, about half (52%) believe that only some of the educational programs prepared new RCPs for respiratory care work. Only 10 percent of respondents felt few of the programs prepared students to be RCPs and 90 percent felt that some to all of the programs prepared students to be RCPs (See Table 3.25). Given that most facilities felt some educational programs prepare students well and that most of the entering students did have the right training, the programs that did not prepare students well to enter the workforce appear not to be producing the bulk of new graduates.

Table 3.25: Acute Care Employer Perceptions of California Respiratory Care Education Programs

In your opinion, which of the following statements best describes how well California respiratory care education programs are preparing new entry level RCPs for work they are required to do?	Percent	Number of cases
All programs adequately prepare new entry level RCPs	1.7%	1
Most programs adequately prepare new entry level RCPs)	36.7%	22
Some programs adequately prepare new entry level RCPs	51.7%	31
Few programs adequately prepare new entry level RCPs	10.0%	6
None of the programs adequately prepare new entry level RCPs	--	0
Total	100.0%	60

As mentioned during the earlier discussion of the amount of time it takes for new hires to get up to speed, 77 percent of respondents reported having a formal agreement to provide a clinical experience program at their facility, with five percent reporting an informal arrangement (See Table 3.26). Taken together, this suggests that 81 percent of the respondents provided some sort of clinical education to students in respiratory therapy educational programs. While the sizes of facilities that provided clinical experience were evenly distributed across facility size categories, none of the facilities without clinical education programs were larger than 300 beds. All of the larger hospitals reported providing a clinical education program.

Table 3.26: Acute Care Employer Agreements with Educational Programs to Provide Clinical Experience

Do you have agreements with educational program(s) to provide a clinical experience program at your facility?	Percent	Number of cases
Yes, we have a formal agreement with set requirements	77.1%	47
Yes, but we use an informal arrangement based on individual student needs	4.9%	3
No, we do not provide a clinical experience program	18.0%	11
Total	100.0%	61

Key Finding

Slightly less than two-thirds (62%) of employers believe RCPs have the appropriate training for the job, with more than one-third stating they are under qualified. On the other hand, a sizeable majority (70%) believes RCPs are prepared to enter the workforce upon graduating from their educational program; yet there seems to be a perception of unevenness in the quality of the education, with negative views of the education provided by some of the respiratory care educational programs.

When asked about possible changes to the educational requirements of RCPs, the employers were very positive in supporting the idea that a standard curriculum should be set as well as the implementation of a 3-year time limit for RRT credentialing (See Table 3.27). However, as noted previously, about one-half of employers do not offer a pay differential for the RRT credential, and those who do pay a relatively modest average increase of $1.39. Requiring that the RRT be the entry level credential for RCPs was also, on average, a supported idea to increase the quality of RCPs being produced, but was not met with the same enthusiasm as the other two possible changes.

Requiring a four-year degree to gain licensed status was not a supported approach to increasing the quality of RCPs being produced. It should be noted that 46.4% of respondents included their own thoughts on how to improve educational standards for RCPs in the future. Most of these responses described items that would be addressed if one of the previously stated changes were made. The most common response was the establishment of a standard for clinical hours or training in certain sectors of the hospital, which could be addressed through a standardized curriculum.

Table 3.27: Acute Care Employer Opinions About RCP Educational Requirements

	Yes	(%)	No	(%)	Total
Given your expectations for the Respiratory Care profession in the next five years, should the State establish a standard or model curriculum for respiratory care education programs?	48	(80.0%)	12	(20.0%)	60
Given your expectations for the Respiratory Care profession in the next five years, should progression to the RRT from the CRT be required within a designed timeframe such as 3 years?	40	(65.6%)	21	(34.4%)	61
Given your expectations for the Respiratory Care profession in the next five years, should the RRT be the entry level exam for licensure?	36	(59.0%)	25	(41.0%)	61
Given your expectations for the Respiratory Care profession in the next five years, should the entry level educational requirement for Respiratory Care Professionals be increased from the current 2-year degree to a 4-year (Bachelor's) degree?	18	(29.5%)	43	(70.5%)	61
Given your expectations for the Respiratory Care profession in the next five years, are there other education or training requirements that need to be changed?	26	(46.4%)	30	(53.6%)	56

Key Finding

A strong majority of RCP employers (80%) supported the idea that the State should establish a standard or model curriculum for respiratory care education programs. Nearly two-thirds of RCP employers (66%) supported the idea of requiring progression from the CRT to the RRT within a designated timeframe such as three years.

Difficulty Retaining Qualified RCPs. A little more than one-half (53%) of the facilities reported difficulty retaining qualified RCPs at their facilities (See Table 3.28). Of those encountering difficulty, salary was the most important reason identified (See Table 3.29). Relocating to a different location or taking a job closer to home was the second most important reason for loss of staff with most of the other listed reasons registering as only somewhat important. Respondents indicated that job related stress, trying another occupation, dissatisfaction with the profession, and retiring were not important reasons for leaving their facilities' employment.

Table 3.28: Difficulty Retaining Qualified RCPs for Acute Care Employers

In the past 3 years, have you encountered difficulties retaining qualified respiratory care practitioners?	Percent	Number of cases
Yes	52.5%	32
No	47.5%	29
Total	100.0%	61

Table 3.29: Importance of Factors for Difficulty Retaining RCPs, Acute Care Employers

Please rate the following factors that have been expressed to you by RCPs as the reason for leaving employment at your facility in the past 3 years	Most Important				Somewhat Important				Not Important			
	5		4		3		2		1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
Because of child care/ family responsibilities	2	(7%)	7	(23%)	6	(20%)	5	(17%)	**10**	**(33%)**	30	2.53
Moving to a different area/ taking job closer to home	7	(22%)	**12**	**(38%)**	7	(22%)	3	(9%)	3	(9%)	32	3.53
Because of job-related stress	3	(9%)	6	(19%)	5	(16%)	6	(19%)	**12**	**(38%)**	32	2.44
Due to illness or injury	1	(3%)	5	(16%)	**11**	**(34%)**	7	(22%)	8	(25%)	32	2.50
Salary	**12**	**(38%)**	7	(22%)	7	(22%)	3	(9%)	3	(9%)	32	3.69
Benefits	7	(22%)	1	(3%)	**12**	**(38%)**	5	(16%)	7	(22%)	32	2.88
Dissatisfaction with job	1	(3%)	7	(22%)	**8**	**(25%)**	**8**	**(25%)**	**8**	**(25%)**	32	2.53
Dissatisfaction with respiratory care profession	1	(3%)	5	(16%)	**9**	**(28%)**	8	(25%)	**9**	**(28%)**	32	2.41
Return to school	2	(6%)	4	(13%)	**10**	**(31%)**	7	(22%)	9	(28%)	32	2.47
Try another occupation	2	(6%)	1	(3%)	**10**	**(31%)**	**10**	**(31%)**	9	(28%)	32	2.28
Moving to another position in facility/organization	6	(19%)	4	(13%)	**12**	**(38%)**	3	(9%)	7	(22%)	32	2.97
Retired	0	(0%)	3	(9%)	9	(28%)	**10**	**(31%)**	**10**	**(31%)**	32	2.16
Other	**3**	**(75%)**	0	(0%)	0	(0%)	1	(25%)	0	(0%)	4	4.25

Terminations and Dismissals. A majority (73%) of the facilities indicated that they had terminated or dismissed an RCP during the previous year, but the average number of forced separations was fairly low. As shown in Table 3.30, only two percent of RCP staff turnover during the past year was due to involuntary separation. The leading reason for the termination or dismissal of an RCP was poor work habits which 75 percent of responding facilities identified as a reason for dismissal. About one-half of all facilities indicated they had dismissed individuals on these grounds during the prior year. About 36 percent of those dismissing RCPs said they did so due to violations of patient care protocol and another 36 percent of those reporting dismissals indicated that they were due to unacceptable knowledge of skill levels.

Table 3.30: Acute Care Employer RCP Terminations and Dismissals

		Percent	Number of cases
In the past 3 years, have you found it necessary to terminate or dismiss an RCP?	Yes	73.3%	44
	No	26.7%	16
	Total	100.0%	60
Please indicate which of the following have been reasons for termination or dismissal of RCPs in the past 3 years. (Please check all that apply)	Unacceptable work habits such as unexcused absenteeism, failure to complete assignments, poor interaction with staff or patients, etc.	75.0%	33
	Unacceptable levels of knowledge or skills	36.4%	16
	Violation of patient care protocols or hospital regulations	52.3%	23
	Total	n/a	44

Table 3.31: Mean Number of RCPs Dismissed by Reason for Dismissal, Acute Care Employers

	Mean	Number of cases
Number dismissed due to unacceptable work habits	2.26	31
Number dismissed due to unacceptable knowledge or skills	1.71	14
Number dismissed due to violation of patient care protocols or hospital regulations	1.91	23

* Two respondents indicating they had dismissed RCPs because of unacceptable work habits or unacceptable levels of knowledge or skills did not provide information on the number of RCPs dismissed for these reasons. This means the number of cases described in Table 3.31 is slightly lower than Table 3.30.

Key Finding

Although not as severe a problem as hiring, slightly more than one-half of the acute care employers indicated difficulties in retaining qualified RCPs during the previous 3-year period. Employers felt that salaries, benefits, employee relocations, or taking a job closer to home were the more important reasons for employees leaving.

Expectations for Future Facility Capacity. As may be expected with California's estimated population increases, 87 percent of the facilities answering the survey felt their facility's patient load would increase during the next five years (See Table 3.32). On average, those who predicted increasing patient loads felt it would increase by about 23 percent, or about 4.5% a year. Just under 10 percent of facilities believed the number of patients in their facilities would stay the same. The size and location of these particular hospitals did not suggest a reason why these facilities felt their patient loads would stay the same (See Table 3.33). Only two respondents indicated their patient loads would decrease, with one of these respondents explaining the reason was due to a planned closure of the hospital.

Table 3.32: Acute Care Employer Expectations for Future Facility Capacity

Overall, in the next five years, do you expect the number of patients in your facility to increase, decrease or remain the same?	Percent	Number of cases
We are expecting the number of patients in our facility to increase.	86.9%	53
We are expecting the number of patients in our facility to decrease.	3.3%	2
We are expecting the number of patients in our facility to remain about the same as we have currently.	9.8%	6
Total	100.0%	61

Table 3.33: Expected Percentage Increase or Decrease in Facility Capacity for Acute Care Employers

	Mean Percent Change	Number of cases
Please indicate the approximate percentage increase in patients that you are expecting to occur in the next 5 years	22.7	51
Please indicate the approximate percentage decrease in patients you are expecting to occur in the next 5 years	27.5	2

Expectations for Future RCP Staffing. Seventy-two percent of respondents were planning on increasing RCP staffing within the next five years, and nearly all (97%) of those predicting staff increases felt that their patient loads were increasing as well (See Tables 3.34 & 3.36). Somewhat surprisingly, 17 percent of those who believed patient loads would increase said they did not plan to increase staffing levels. Respondents saw increases in patient loads and increases in facility size as the two main drivers of the projected staffing increase.

In response to a question asking how much staffing would increase, respondents estimated about 17 percent in five years (See Table 3.35). This response was less than their projections for average patient increases. This suggests that RCP employers believe they can get more work out of their RCPs per patient or that the costs of additional staff can not be supported by the additional patients. Only two facilities said they were decreasing their RCP staff. These were the same two hospitals that projected patient decreases, and as stated before, one was a hospital that planned on closing.

Table 3.34: Acute Care Employer Expectations for Future RCP Staffing

Are you planning on increasing, decreasing or maintaining the current number of Respiratory Care staff at your facility within the next 5 years?	Percent	Number of cases
We are planning on increasing our current staff	72.1%	44
We are planning on decreasing our current staff	3.3%	2
We are planning on maintaining current respiratory care staffing levels	24.6%	15
Total	100.0%	61

Table 3.35: Expected Percentage Increase or Decrease in RCP Staffing for Acute Care Employers

	Mean Percent Change	Number of cases
Please indicate the approximate percentage increase in RCP staffing you are expecting to occur within the next 5 years	17.3	41
Please indicate the approximate percentage decrease in RCP staffing you are expecting to occur within the next 5 years	5.0	2

Table 3.36: Importance of Reasons for Increasing RCP Staffing, Acute Care Employers

How important is each of the following factors as to why you are planning on increasing the respiratory care staff in the next 5 years?	Most Important 5		4		Somewhat Important 3		2		Not Important 1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
Our general patient load is increasing in this facility	**27**	**(61%)**	14	(32%)	2	(5%)	0	(0%)	1	(2%)	44	4.50
The need for respiratory services is increasing within the existing departments/ units	**23**	**(52%)**	14	(32%)	5	(11%)	0	(0%)	2	(5%)	44	4.27
The facility is planning an expansion of its patient capacity	**27**	**(61%)**	7	(16%)	8	(18%)	2	(5%)	0	(0%)	44	4.34
The facility is planning on increasing the number of services or specialty departments/units	**19**	**(43%)**	11	(25%)	8	(18%)	5	(11%)	1	(2%)	44	3.95
The increasing use and/or sophistication of technology requires more respiratory care professionals	**17**	**(39%)**	10	(23%)	9	(20%)	5	(11%)	3	(7%)	44	3.75
Other	**4**	**(100%)**	0	(0%)	0	(0%)	0	(0%)	0	(0%)	4	5.00

Key Findings

- The overwhelming majority of acute care employers indicate they will need to increase their RCP staff in the next five years.
- Only three percent believe they will reduce staff in the next five years.
- A sizeable portion (62%) of acute care employers believe their current hiring difficulties will continue for the foreseeable future. The reasons for future hiring difficulties closely parallel reasons for current problems: a general lack of RCPs, a lack of qualified applicants, and a lack of applicants with the specialties needed. Additionally, employers indicate that salary competition with other employers in their area will be an important factor in making hiring a problem.

Expectations for Future Difficulties Hiring Qualified RCPs. Generally, most acute care hospitals (62%) felt they would have difficulty hiring new RCPs in the future. RCP employers felt these difficulties would result from a lack of supply of RCPs, whether qualified or unqualified (See Tables 3.37 & 3.38). (A more empirical study of this phenomenon is presented in Chapter 6.)

Table 3.37: Acute Care Employer Expectations for Future RCP Hiring

In the next 5 years, do you anticipate difficulties in hiring qualified Respiratory Care Practitioners?	Percent	Number of cases
Yes	61.7%	37
No	38.3%	23
Total	100.0%	60

Table 3.38: Importance of Factors for Future Hiring Difficulties, Acute Care Employers

Please rate the following reasons that you expect will create hiring difficulties	Most Important 5		4		Somewhat Important 3		2		Not Important 1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
There aren't enough Respiratory Care Practitioners in this area to fill available positions	**16**	**(42%)**	14	(37%)	6	(16%)	2	(5%)	0	(0%)	38	4.16
There aren't enough qualified Respiratory Care Practitioners	**17**	**(45%)**	12	(32%)	4	(11%)	5	(13%)	0	(0%)	38	4.08
There aren't enough Respiratory Care Practitioners being graduated from colleges where we hire	10	(26%)	**14**	**(37%)**	9	(24%)	3	(8%)	2	(5%)	38	3.71
There aren't enough Respiratory Care Practitioners with the particular specialties/ certifications we need	**13**	**(34%)**	8	(21%)	9	(24%)	6	(16%)	2	(5%)	38	3.63
Our salaries are below those offered by facilities in the surrounding area	13	(34%)	6	(16%)	**15**	**(39%)**	1	(3%)	3	(8%)	38	3.66
Our benefits are less than those offered by facilities in the surrounding area	7	(19%)	4	(11%)	**12**	**(32%)**	8	(22%)	6	(16%)	37	2.95
Respiratory Care Practitioners are leaving this area to go to other job markets in the state where salaries are better	7	(20%)	6	(17%)	**11**	**(31%)**	8	(23%)	3	(9%)	35	3.17

Analysis and Findings for Durable Medical Equipment/Home Care Employers

Respondent Characteristics. In most respects, the characteristics of durable medical equipment/home care employer respondents (who will be referred to as "home care" employers in the following discussion) were very similar to acute care employer respondents. Most home care employer respondents (87%) were responsible for supervising all respiratory care staff in their facility, and they were fairly evenly divided between upper management and direct line supervisors. Their educational attainment was also comparable to that of acute care employer respondents.

The managers and supervisors who completed the home care employer survey were less likely to be respiratory therapists than those who completed the acute care employer survey. About 40 percent of home care employer respondents were respiratory therapists, compared with 100 percent of the acute care employers. This was the only real difference between those responding to the two categories of employer surveys. Although home care employer respondents had, on average, less tenure with their current employers than acute care employer respondents—eight years vs.15 years—the fact that respondents within both groups had held their current position for similar lengths of time (seven years for home care and six years for acute care) indicates that respondents had the experience necessary to provide an informed perspective on employing RCPs in the home care setting.

The current RCP staffing situations described by home care employers were very consistent with those from the acute care employers. There appear to be few differences between these two settings. Most of the differences between the two types of employers would be expected given the nature of services each provides. Although the home care employers completing the survey varied a great deal in terms of size (see Table 3.39), they are smaller than the acute care hospitals. Two-thirds serviced fewer than 200 respiratory patients in a typical month. Twenty percent were fairly large, servicing 400 or more respiratory patients per month.

Table 3.39: Number of Patients Serviced by Home Care Employers in a Typical Month

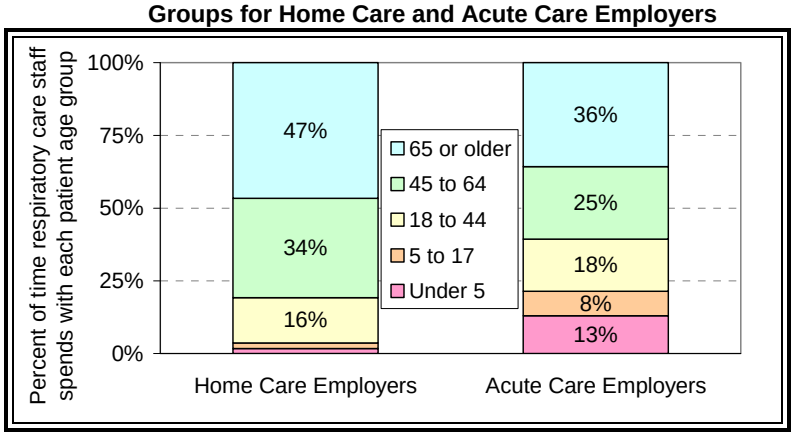
	How many patients does your facility service in a typical month?		How many patients with respiratory disorders does your facility service in a typical month?	
	Percent	Number of cases	Percent	Number of cases
1 to 99	26.7%	4	40.0%	6
100 to 199	20.0%	3	26.7%	4
200 to 299	13.3%	2	--%	0
300 to 399	20.0%	3	13.3%	2
400 to 499	--	0	6.7%	1
500 or more	20.0%	3	13.3%	2
Total	100.0%	15	100.0%	15

Current Respiratory Care Staffing. The average number of RCP FTEs for each home care employer was 1.8 (compared with about 40.4 for the acute care employers), but the percentage breakdowns in terms of regular employees, use of registry and travelers, and vacancies for the two types of employers were nearly identical. One notable difference in staffing was the use of overtime: home care employers reported more RCP overtime than acute care employers. Home care employers reported an average of 16.3 hours of overtime per RCP in a typical month while acute care employers reported an average of 5.3 hours. In terms of economies of scale, this makes sense, given that home care employers have fewer RCPs to fit into schedules and deal with scheduling conflicts than acute care employers.

	Home care employers	Acute care employers
Average RCP FTEs	1.8 FTEs	40.4 FTEs
Average monthly RCP overtime hours per RCP FTE	16.3 hours	5.3 hours

Age Distribution of Home Care RCP Patients. Not surprisingly, the ages of the patients that RCPs care for are distributed differently for home care employers than they are for acute care employers. Home care employers reported that their RCP time is heavily concentrated on caring for older patients (see Figure 3.5). Home care RCPs spent 47 percent of their time with patients 65 years of age or older and 34 percent of their time with patients between the ages of 45 and 64. Altogether, home care RCPs spent 81 percent of their time with patients 45 years of age and older. While a substantial portion of acute care RCP time was also spent with patients 45 and older—61 percent—there are clearly differences in the patient demographics of the two employer categories.

Figure 3.5: Distribution of RCP Time across Patient Age Groups for Home Care and Acute Care Employers



Key Finding

RCPs working in the home care setting spend significantly more of their time than RCPs working in acute care settings caring for patients 45 years of age and older. This has important implications since the "45 and older" category is California's fastest growing age group.

Perspectives on RCP Qualifications. Although the starting salary reported by home care employers for a new CRT was lower than the amount reported by acute care employers ($21.50 per hour and $24.64 per hour, respectively) they indicated that, for the most part, they do not hire new graduates and hire only RCPs with acute care experience. This policy is very likely related to home care employers' less favorable perception of how well prepared new RCPs are to enter the workforce. Four home care employers did not feel qualified to answer this question since they do not hire new graduates. Of the eleven employers responding, six (55%) said that new RCPs are poorly prepared to enter the workforce (in contrast, just 26% of acute care employers held the same opinion). Home care employers reported that, on average, about 46 percent of the new entry level RCPs they hire have the necessary educational background (this average was 73 percent for acute care employers).

Significantly fewer home care employers (19%) than acute care employers (82%) provided a clinical experience program. However employers in both settings did not differ in their evaluations of the qualifications of the workforce as a whole—only in their perceptions of new graduates.

	Home care employers	Acute care employers
Average starting salary for a new CRT	$21.50	$24.64
Percent who feel new RCPs are poorly prepared to enter the workforce	55%	26%
Percent of new entry-level RCPs hired with the necessary educational background	46%	73%
Percent providing a clinical experience program	18%	82%

Key Finding

Home care employers were less likely than acute care employers to feel new RCP graduates were prepared for the workforce. In fact, it was not uncommon for home care employers to make it a policy not to hire new graduates at all, and to only hire RCPs with acute care experience.

Opinions Regarding Possible Changes in RCP Education and Licensing. Nearly all home care employers (94%) believed the state should establish a model curriculum for respiratory care education programs and require a minimum number of clinical hours. There was very little consensus among home care employers regarding other possible changes to educational and licensing requirements. In general, they were less supportive than acute care employers of moving to a four-year degree, requiring the RRT within a designated timeframe, and making the RRT the entry level exam for licensure.

	Home care employers	Acute care employers
Entry-level requirements should be increased to a four-year degree	13%	30%
The state should establish a model curriculum for education programs	93%	80%
Progression to the RRT should be required within a designated timeframe	31%	66%
The RRT should be the entry level exam for licensure	33%	59%

Expectations for Growth during the Next Five Years. Home care employers are generally smaller than acute care employers, but their average expected growth rate in terms of patients over the next five years is more than twice that expected by acute care employers. Home care employers expected the number of patients their facilities service to grow by an average of 52 percent. The average for acute care employers was 28 percent.

This same pattern—to an even greater extent—was reported for expected growth of RCP staffing. The average expected increase in RCP staffing for home care employers was 66 percent, compared to a more modest 17 percent for acute care employers. Home care employers' expectations for rapid growth are likely major contributors to their anticipations for difficulties hiring qualified RCPs during the next five years. Two-thirds of home care employers anticipate difficulty hiring qualified RCPs. Significantly fewer acute care employers—38 percent—anticipated this would be a problem.

	Home care employers	Acute care employers
Expected percent increase in patients	52%	28%
Expected percent increase in RCP staffing	66%	17%
Percent of employers anticipating difficulties hiring qualified RCPs during the next five years	67%	38%

Key Finding

Home care employers' expectations for growth in RCP staffing over the next five years were more than double those of acute care employers. They also anticipate greater difficulty hiring qualified RCPs in the future. Both expectations are arguably related to the age distribution of the home care patient base. Home care employers are aware that the growth of the elderly population in California is expected to increase the prevalence of respiratory ailments and cardiopulmonary disease, which in turn will increase the demand for RCPs—particularly in the home care setting.

Chapter 4: Respiratory Care Educational Program Survey

Major Goals

The respiratory care educational program survey was designed to obtain information from program directors about their programs and the context in which they function. The objective was to gain an understanding of program director's perspectives on the current state of respiratory care education in California and their opinions about the future of respiratory care.

Methodology

Sampling Design. All California respiratory therapy educational programs were included in the sample.

Survey Development. An Expert Panel of nine RCPs from throughout the state was assembled in January 2007 to assist the ISR with the development of the survey instruments for RCP employers and educational program directors. Panel members were selected to provide perspectives from a variety of work and program settings. Based on recommendations from the Expert Panel and a review of the literature, a draft survey instrument was prepared and submitted to the Board and Expert Panel for review.

The draft survey was revised to reflect feedback from the Board and Expert Panel. The final survey included 45 questions. The survey asked program directors about their current program characteristics and expectations for the future, including changes in enrollment, faculty and demand for respiratory care. Data was collected via a web survey. After making initial phone calls to confirm email addresses, program directors were sent an email containing a link to the survey and a unique password. The survey questions, along with responses to each item, are included in Appendix 5.

Response Rates. Of the 30 programs included in the sample, one was no longer operating, reducing the number of eligible programs to 29. Completed surveys were obtained from 20 of these 29 programs—a response rate of 69 percent.

Analysis and Findings

Program Characteristics. Most of the respondents (65%) directed public community college programs. Six respondents (30%) directed programs in private two-year technical colleges, and one respondent directed a program housed within a private four-year university. Five programs (25%) were located in an educational institution with campuses outside California. Respondents were asked what year their program first started accepting students. In Table 4.1, the responses to this question have been collapsed into two categories. Fourteen of the 20 programs (70%) began before 1985.

The remaining six programs first started accepting students after 2000. Only four programs provided curriculum online, and the percentage of curriculum offered online for these programs was very low (between 1 and 5%).

Table 4.1: Educational Program Characteristics

		Percent	Number of cases
Please indicate the type of educational setting that best describes the institution in which your program is located	Public community college	65.0%	13
	Private two-year technical college/school	30.0%	6
	Private four-year college/university	5.0%	1
	Total	100.0%	20
Does the educational institution in which your program is located have campuses outside of California?	Yes	25.0%	5
	No	75.0%	15
	Total	100.0%	20
Please indicate the year your program first started accepting students	Prior to 1985	70.0%	14
	After 2000	30.0%	6
	Total	100.0%	20
Is your current program entry and/or advanced level?	Entry-level only	5.0%	1
	Advanced level only	85.0%	17
	Entry and advanced level	10.0%	2
	Total	100.0%	20

Respondent Characteristics. The educational leadership and experience levels of respondents indicate they were well qualified to provide information about their program and the respiratory care profession. All of the respondents were program directors; the length of time they'd held this position ranged from two years to over 30, with an overall average of 8.7 years. Respondents also had a great deal of experience in their profession, the average number of years they have worked in respiratory care was 23. All respondents had earned the RRT credential and all but one respondent was licensed as a California RCP. Eighteen of the 20 respondents (90%) had earned their bachelor's degree and over half (55%) had a master's degree or higher.

Table 4.2: Educational Program Respondent Years as Program Director and Years in Respiratory Care Profession

	Mean	Min-imum	Max-imum	Number of cases
Years in current position as program director	8.7	2	33	20
Year worked in respiratory care	23.2	4	40	20

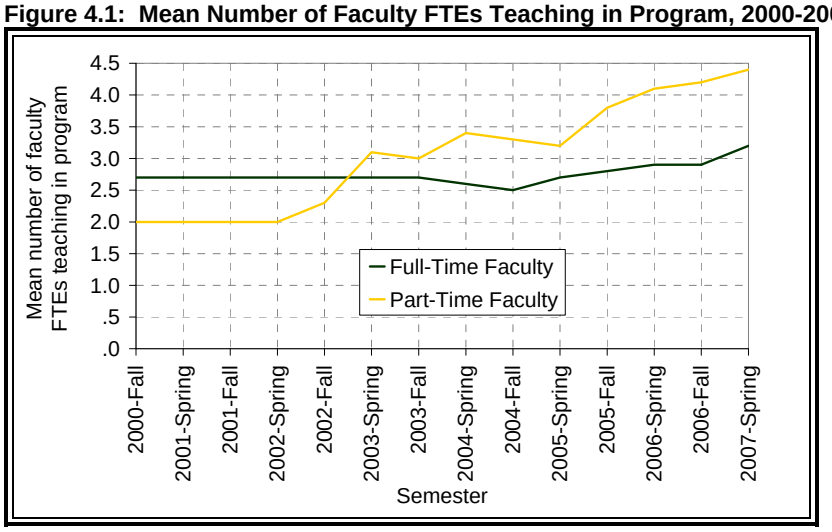
Table 4.3: Educational Program Respondent Licenses, Certifications, Credentials and Degrees

Please indicate which of the following licenses, credentials, certifications, and degrees you have earned	Percent	Number of cases
California Respiratory Care Practitioner License	95%	19
CRT	80%	16
RRT	100%	20
Neonatal/Pediatric Specialist	25%	5
CPFT	10%	2
RPFT	5%	1
RN	5%	1
Associate's degree	65%	13
Bachelor's degree	90%	18
Master's degree or higher	55%	11

Program Faculty. Respondents were asked to record the number of full- and part-time faculty FTEs teaching in their program since 2000. In Fall 2000, there was an average of 4.7 faculty FTEs in each program. Faculty positions were static until 2002, but since then, there has been consistent steady growth. By Spring 2007, the number of program faculty had climbed to an average of 7.6 FTEs—a growth rate of 61 percent.

Nearly all of this growth has been in new part-time positions. The average number of full-time faculty has remained quite constant over the last seven years. The average in Fall 2000 was 2.7; by Fall 2006 it had only increased to 2.9 (although there was a recent growth spurt in Spring 2007 to 3.2 full-time faculty). In contrast, average part-time faculty positions have more than doubled, increasing from 2.0 in Fall 2000 to 4.4 in Spring 2007. One program director, in responding to another survey question, expressed concern that the ratio of full-time to part-time faculty needs to be adjusted to be consistent with the state mandate for no more than 50% part-time to full-time faculty ratio.

Figure 4.1: Mean Number of Faculty FTEs Teaching in Program, 2000-2007



Student Admissions, Enrollments, and Graduations. Starting with the Fall 2000, respondents were asked to record the number of new admissions to their program at the beginning of each academic year, the number of students enrolled in their program at the end of the year, and the number graduating from their program. Information was collected separately for entry-level and advanced level programs. The six programs founded after 2000 were asked to provide information beginning with the semester they first accepted students. Since the surveys were completed in Spring 2007, data was not yet available for academic year 07/08 graduations.

Responses show that California respiratory care educational programs have grown substantially in size during the last seven years. Although there was a slight downturn for the first few years, since the 2002/03 academic year, there has been a steady increase in admissions and enrollment. In academic year 2000/01, an average of 28 new students were admitted to each advanced level program. By academic year 2007/08, the average had increased to 39.5. The increase was particularly steep for entry level programs, but since data was collected for just three entry-level programs, this may be a reflection of individual program patterns rather than an overall trend.

Attrition appears to be a significant factor for advanced level programs. During the past seven years, advanced level graduations averaged about 43 percent of admissions—less than half of the students admitted to the program graduated. In comparison, entry-level graduations averaged about 69 percent of admissions, (although again, with just three entry-level programs, this may reflect individual, rather than program-level, differences).

In part, because of this attrition, advanced-level graduations increased at a much lower rate than entry level-graduations. From 2001 to 2007, average advanced-level graduations increased by 1.6 students (from 14.6 to 16.2). During the same time period, average entry-level graduations increased by 37 students (from 16.5 to 47.5).

Figure 4.2: Average Annual Entry Level Program Admissions, Enrollments and Graduations, 2000-2007

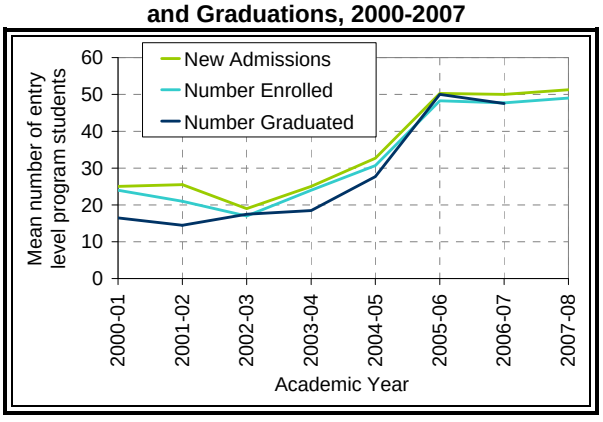
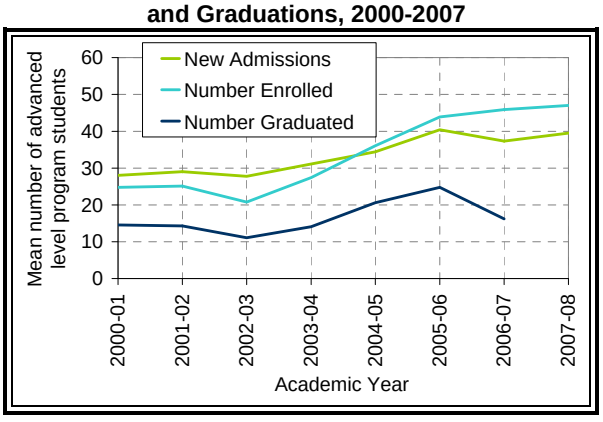
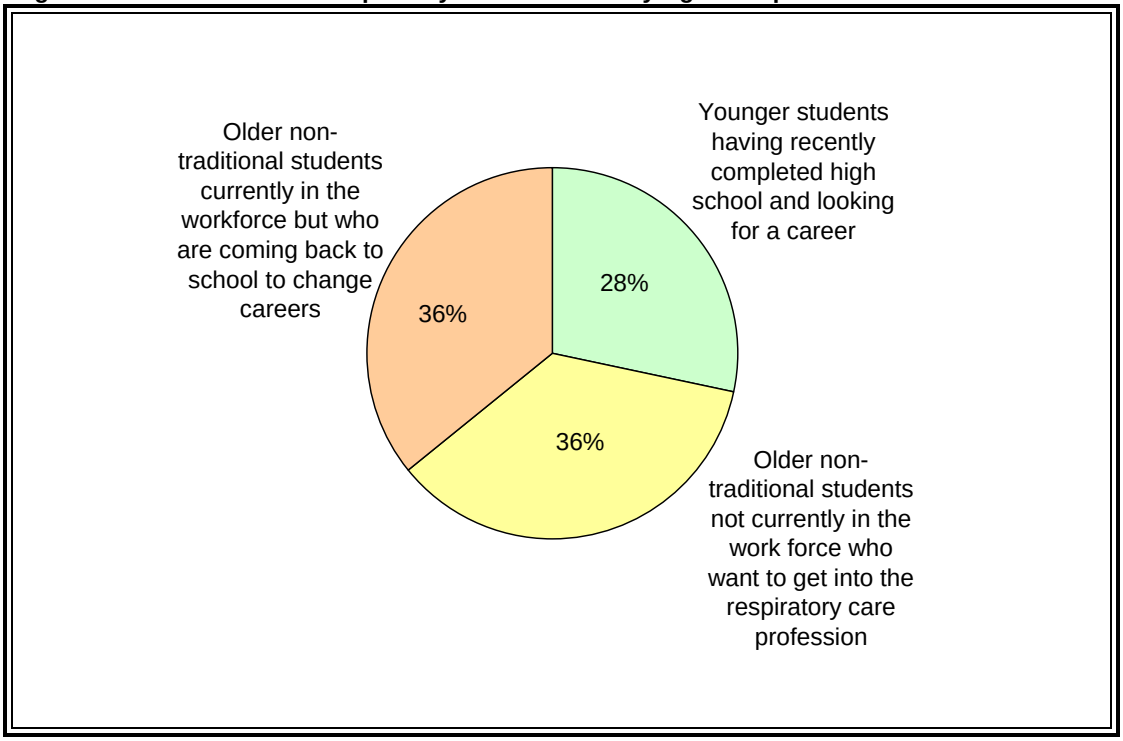


Figure 4.3: Average Annual Advanced Level Program Admissions, Enrollments and Graduations, 2000-2007



Characteristics of Students Entering Respiratory Care Educational Programs. Program directors were asked to categorize the percentage of students enrolled in their program during the past five years according to age group and career-track. They reported that students were fairly evenly divided into three groups. On average, across the programs, just 28 percent of students were described as younger students recently out of high school looking for a career. The remaining majority of students—72 percent—were older non-traditional students. This group was evenly split between those not currently in the workforce who want to enter the respiratory care profession and those who are going back to school in order to change careers.

Figure 4.4: Distribution of Respiratory Care Students by Age-Group and Career-Track



Respondents were also asked to describe the quality of students entering their program during the past five years. Sixty-one percent of the respondents answering this question felt the quality of students has improved (see Table 4.4). The remaining 39 percent felt the quality of the students has remained the same. None of the respondents indicated that the quality of students has declined.

Table 4.4: Quality of Students Entering Educational Program

In your experience during the past 5 years, which of the following best characterizes the quality of the students entering your program?	Percent	Number of cases
The quality of the students has improved	61%	11
The quality of the students has declined	--	0
The quality of the students has remained about the same	39%	7
Total	100%	18

Key Findings

- Although program enrollment has been growing steadily since 2002, student attrition between time of enrollment and graduation has resulted in only modest growth in the number of graduates produced by each program. This pattern has been particularly pronounced for advanced-level programs, which saw only 1.6 percent growth over the 7-year period.
- It is estimated by program directors that about 36 percent of students entering respiratory care programs are older non-traditional students coming back to school for a career change, and about 36 percent of students are older non-traditional students not currently in the workforce who want to get into respiratory care. While these individuals bring many positive qualities to the profession, they will have a shorter "career life" than students entering the profession at an earlier age.

Clinical Requirements. All respondents indicated that their programs have a formal clinical component. However, there were significant variations in terms of what this clinical component entailed. Table 4.5 describes the number of clinical hours required by each program (because entry-level program requirements were higher than a number of advanced-level programs, all program levels were included in the analysis). On average, the programs required 773 clinical hours. The most common range—required by six programs—was between 800 and 899 hours. The variations above and below these measures of central tendency were considerable. Seventeen percent of programs required less than 500 hours. The hours required by some programs (11%) were more than double that—they required 1200 clinical hours.

Table 4.5: Educational Program Clinical Hour Requirements

	Percent	Number of cases
Less than 500 hours	17%	3
500 to 799 hours	11%	2
800 to 899 hours	33%	6
900 to 999 hours	17%	3
1,000 to 1,199 hours	11%	2
1,200 hours	11%	2
Total	100%	18

In reviewing the data collected on clinical requirements, it is important to be aware of the approach the survey used to standardize the measurement of clinical time across programs. The need for standardization became evident during the survey development phase. The strategy adopted for the final survey form was to break the information down into two pieces. First respondents were asked how many clinical units were required for their program. Then they were asked how many clinical hours were required for each clinical unit. These two pieces of information were used to compute number of clinical hours. A great deal of variation was found in how programs structured the requirements. Some required fewer units, but with more hours per unit, while others required more units, but with fewer hours per unit.

Clinical Settings. Respondents were asked to describe the settings that provide clinical credit hours for their students. Nearly all of the programs reported clinical hours in teaching hospitals, but they also described a diverse group of additional settings (Table 4.6). Seventy-nine percent include clinical hours in sub-acute care facilities, long-term care facilities, or rehabilitation programs. A little over one-third of the programs include home care/durable medical equipment clinical hours. Clinical hours in stand alone diagnostic programs and stand alone sleep centers were each included by one-fourth of the programs.

Table 4.6: Educational Program Clinical Settings

Please select the type of settings that provide clinical credit hours for your students (select all that apply)	Percent	Number of cases	Percent	Number of cases
General acute care hospital	100.0%	3	94.7%	18
Acute care hospital that is a designated trauma center	100.0%	3	94.7%	18
Acute care hospital that is a teaching hospital	100.0%	3	94.7%	18
Sub-acute, long-term care or rehabilitation program	33.3%	1	78.9%	15
Stand alone hyperbaric medical program	--	0	5.3%	1
Stand alone diagnostic program (e.g., PFT lab)	33.3%	1	26.3%	5
Home care/durable medical equipment	66.7%	2	36.8%	7
Skilled nursing facility	66.7%	2	21.1%	4
Stand alone sleep center	33.3%	1	26.3%	5
Doctor's offices or clinic	--	0	15.8%	3
Other	--	0	21.1%	4
Total	N/A	3	N/A	19

Respondents also described a variety of additional settings, including rotations in acute care children's hospitals, long-term care children's hospitals, neuromuscular clinics, and cardiac catheterization labs, as well as perioperative and transport rotations. Some program directors indicated they plan to expand the range of settings, but to include the additional settings as electives, rather than requirements.

Accreditation. Program directors were asked a series of questions regarding the accreditation process and standards. In general, most respondents indicated that the current process and standards are appropriate. Eighty-five percent said the reaccreditation schedule was frequent enough to monitor program quality (Table 4.7). However, even several respondents who indicated the schedule was adequate added that the schedule should accommodate differences in program performance. As one respondent put it, "…if the program is competent the reaccreditation process is fine. If the program is poor, the reaccreditation time is too long." Other respondents indicated that a three-year interval was appropriate for initial accreditation, but because the profession changes rapidly, a ten-year cycle for continuing programs is too long. Several recommended a six year cycle, which would be consistent with the current community college accreditation cycle.

All respondents said the current reaccreditation standards appropriately address elements related to the quality of graduates. However, some program directors offered suggestions for modifications to these standards. The director from one program felt standards should be added in two areas. One standard should include feedback from both current and previous program graduates regarding the quality of instruction they received. A second standard would require more thorough interaction with clinical affiliates in order to assure that educational programs are overseeing students in an appropriate manner. Two program directors indicated that standards should be removed. One of these respondents emphasized the need for local, rather than national standards. The other indicated that finding and gaining cooperation from graduates six months after graduation is very difficult.

Table 4.7: Evaluation of Accreditation Process and Standards

		Percent			Number of cases		
		Yes	No	Total	Yes	No	Total
Do you believe the current reaccreditation process schedule is frequent enough to monitor program quality?		85%	15%	100%	17	3	20
Do you believe current accreditation site visits are comprehensive enough to monitor program quality?		90%	10%	100%	18	2	20
Initial accreditation standards*	Do you believe the current initial accreditation standards for respiratory care programs appropriately address the elements related to the quality of graduates?	94%	6%	100%	15	1	16
	Should any current initial accreditation standards be removed from the process?	13%	88%	100%	2	14	16
	Should any initial accreditation standards be added to the process?	25%	75%	100%	4	12	16
Current reaccreditation standards	Do you believe the current reaccreditation standards for respiratory care programs appropriately address the elements related to the quality of graduates?	100%	0%	100%	19	0	19
	Should any current reaccreditation standards be removed from the process?	10%	90%	100%	2	18	20
	Should any reaccreditation standards be added to the process?	5%	95%	100%	1	19	20

* The survey included an option for those who were not familiar with this part of the process. These responses are not included in this table.

Respondents were slightly more critical of the initial accreditation standards than they were of reaccreditation. One respondent said the current initial accreditation standards did not appropriately address the elements related to the quality of graduates. Two program directors felt standards should be removed. These were the same concerns expressed regarding reaccreditation and focused on the need for local, rather than national standards and the difficulty of finding and gaining cooperation from graduates six months after graduation. Four program directors believe initial accreditation standards should be added. They noted that new programs generally require a more detailed evaluation than established programs. Additional initial standards suggestions include:

- Require that on-site accreditation visits for new programs include visits to clinical sites. Meeting with representatives from clinical sites at school facilities was not always sufficient.
- Reinstate the minimum clinical hour component so that clinical hours are included at an appropriate level in new programs.
- Hold new programs to model standards, and only allow exceptions to these standards after the programs have established a satisfactory track record.
- Require the associate degree offered by private colleges to meet or exceed community college standards. This would solve the problem of some private college associate degrees not being accepted by many higher education systems.
- Require that a needs assessment of the community be conducted, including an evaluation of clinical training facility resources.

Key Findings

- Although program directors were generally comfortable with reaccreditation standards, they indicated that moving from a ten to a six-year cycle would be beneficial. Suggestions to adjust the frequency of reviews based on individual program performance were also included.
- While respondents generally approved of the accreditation standards, there were also a significant number of recommendations for improving initial accreditation standards. Many of the issues identified relate to clinical components and the need for greater uniformity and quality assurance.

Opinions about Educational and Licensing Requirements. Program directors were asked about their opinions regarding five possible modifications to current RCP education and licensing requirements. Their responses are summarized in Table 4.8. Support for three of the five modifications was strong:

- Nearly all program directors (90%) felt the state should require respiratory education programs to include a minimum number of clinical hours.
- Three-fourths of program directors said the RRT should be the entry-level exam for licensure.
- Seven out of ten program directors believe progression from the CRT to the RRT should be required within a designated timeframe.

Opinions regarding the two remaining possibilities were mixed, with a small majority favoring no change to the current requirements. Six out of ten directors said they did not believe entry level educational requirements should be increased to a four-year degree. Fifty-five percent said they did not believe the state should establish a standard or model curriculum for respiratory care education programs.

Table 4.8: Program Director Opinions about Educational Requirements

	Percent			Number of cases		
	Yes	No	Total	Yes	No	Total
Given your expectations for the respiratory care profession in the next 5 years, should the entry level educational requirement for Respiratory Care Practitioners be increased from the current 2-year degree to a 4-year (Bachelor's) degree?	40%	60%	100%	8	12	20
Given your expectations for the respiratory care profession in the next 5 years, should the State establish a standard or model curriculum for respiratory care education programs?	45%	55%	100%	9	11	20
Given your expectations for the respiratory care profession in the next 5 years, should the State require respiratory care education programs to include a minimum number of clinical hours?	90%	10%	100%	18	2	20
Given your expectations for the respiratory care profession in the next 5 years, should progression to RRT from CRT be required by the state within a designed timeframe such as 3 years?	70%	30%	100%	14	6	20
Given your expectations for the respiratory care profession in the next 5 years, should the RRT be the entry level exam for licensure?	75%	25%	100%	15	5	20
Given your expectations for the respiratory care profession in the next 5 years, are there other education or training requirements that need to be changed?	42%	58%	100%	8	11	19

A wide range of suggestions were made regarding changes for other education or training requirements. Some were requests for additions to the curriculum, including:

- Mandating certification in ACLS and RRP (in addition to BLS)
- Adding polysomnography services to the formal curriculum to accommodate the increase in this area
- Adding didactic and clinical smoking cessation/intervention to the curriculum

Several respondents focused on the importance of establishing clinical standards. This included the need for some schools to offer more clinical hours and more varied clinical experiences. Respondents also stressed the importance of requiring that the clinical component be provided by a clinical instructor (on site, choosing the patient experiences), rather than by a staff preceptor.

Two respondents described their preference for developing more four-year degree advanced practitioner programs to adequately address the body of respiratory therapy knowledge. One of these respondents described transitioning two-year programs to entry level and eventually requiring more extensive educational requirements for the advanced practitioner following their associate degree.

Key Findings

There was a divergence of opinions regarding possible changes in educational requirements for RCPs. A majority of programs did not support moving from a 2-year to a 4-year degree, nor establishing a mandated statewide curriculum. However, respondents offered strong support for:

- requiring a mandatory progression from CRT to RRT within three years of licensure and
- addressing the quantity and quality of the clinical component. In addition to requiring an adequate number of clinical hours, program directors stressed the importance of an on-site clinical instructor.

Feedback from Employers Regarding Graduates. The survey asked respondents to describe the kinds of complaints they hear from employers who hire their graduates—both in terms of their own graduates and graduates from other programs (see Table 4.9). In terms of graduates from other programs, all of the potential faults included on the survey appear to be problematic, to one degree or another, for employers, but three complaints were the most significant:

- Lack of knowledge of basic concepts of respiratory care (80%),
- Graduates have not been exposed to all of the technology that is currently available (75%), and
- Graduates don't have enough hands-on experience (70%).

Lack of exposure to all of the currently available technology was the most common complaint program directors reported hearing about graduates from their own programs. Other complaints respondents heard from employers about graduates included weak assessment skills, poor organizational skills, lack of time management skills, inability to complete a full workload, and unprofessional behavior. One area mentioned by several respondents was the importance of problem solving and critical thinking, particularly relating to the reason they are administering therapy, as opposed to just doing what an order says and not thinking about it.

Table 4.9: Educational Program Feedback from Employers about Program Graduates

	In your experience from discussions with employers who hire your graduates, which of the following are the complaints that you hear most often about students who graduate from:			
	Your program		Other programs	
	Percent	Number of cases	Percent	Number of cases
They lack basic skills (writing, math, reading, etc.)	5%	1	35%	7
They lack knowledge of basic concepts of respiratory care	15%	3	80%	16
They have not been exposed to all of the technology that is currently available	35%	7	75%	15
They don't have enough hands on (i.e., clinical) experience	20%	4	70%	14
They lack a good work ethic (punctuality, dependability, dedication, etc.)	20%	4	45%	9
They have unrealistic expectations of the work environment (pace of job, stress level, etc.)	20%	4	35%	7
They have unrealistic expectations of salary or benefits	5%	1	25%	5
Other	30%	6	25%	5
Total	N/A	20	N/A	20

Perceptions of Workforce Qualifications. Program directors were asked a series of questions about how well they feel California respiratory care education programs are preparing RCPs.

- Roughly two-thirds of program directors said that the education and training of most respiratory therapists is appropriate for the job. One-third of program directors said that most respiratory therapists working today are under-qualified (see Table 4.10).
- Respondents were asked to evaluate how well new RCPs were prepared to enter the workforce. Seventy-eight percent felt that new graduates were well prepared (See Table 4.11).
- The majority of program directors—65 percent—said that *most* educational programs adequately prepare new RCPs for respiratory care work (Table 4.12). Thirty-five percent said that *some* programs adequately prepare new entry level RCPs.

Table 4.10: Program Directors' Perceptions of the Qualifications of Working Respiratory Therapists

Do you believe most respiratory therapists working today have the right amount of education/training for the jobs/tasks they're asked to perform by their employers?	Percent	Number of cases
No, too much education/training (they are over-qualified)	--	0
Yes, their education/training is appropriate for the job	65%	13
No, not enough education/training (they are under-qualified)	35%	7
Total	100%	20

Table 4.11: Program Directors' Perceptions of the Preparedness of New RCPs to Enter the Workforce

Upon graduating, how well prepared are new RCPs to enter the workforce?	Percent	Number of cases
Extremely well prepared	--	0
Well prepared	78%	14
Poorly prepared	22%	4
Not at all prepared	--	0
Total	100%	18

Table 4.12: Program Directors' Perceptions of California Respiratory Care Education Programs

In your opinion, which of the following statements best describes how well California respiratory care education programs are preparing new entry level RCPs for work they are required to do?	Percent	Number of cases
All programs adequately prepare new entry level RCPs	--	0
Most programs adequately prepare new entry level RCPs)	65%	13
Some programs adequately prepare new entry level RCPs	35%	7
Few programs adequately prepare new entry level RCPs	--	0
None of the programs adequately prepare new entry level RCPs	--	0
Total	100%	20

Key Findings

A strong majority of educators indicated that graduating RCPs had the appropriate education and training for the job and were well prepared. Despite these generally positive views of the respiratory care graduates, educators questioned how well some education programs prepared students, with slightly more than two-thirds (68%) indicating that *most* programs prepare students adequately, but more than one-third (35%) maintaining that only *some* respiratory care education programs prepare students adequately.

Expectations for Program Growth. Program directors were asked whether they expected the number of students in their programs to increase, decrease, or remain the same over the next five years. One-half expected the number of students in their programs to increase, and one-half expected the number to remain the same. Those expecting an increase reported an average student increase of 24 percent above current enrollment. They were also asked a parallel question regarding their plans for increasing, decreasing, or maintaining the current number of faculty in their program. Sixty percent said they planned on increasing their faculty. The remaining programs all said they were planning on maintaining current faculty levels. The programs who were planning to increase faculty reported an average increase of 30 percent.

• Percent of programs expecting the number of students in their program to increase during the next five years:	50%	• Average percentage increase in students expected for these programs:	24%
• Percent of programs planning on increasing the number of faculty in their program over the next five years:	60%	• Average percentage increase in faculty planned for these programs:	30%

Respondents were asked to evaluate the importance of several factors for their expectations about the future capacity of their program.

- By far the most important factor for growth in the number of students was the increasing need for respiratory services. Eight out of ten respondents said this was the most important reason for an increase in the number of students in their programs (see Table 4.13). One program director attributed growth in enrollment at high quality programs to a decline in the quality of other programs.
- For programs that do not expect to increase their student numbers during the next five years, it appears that resources are the main restriction on growth. Nine out of ten programs said the available resources fit their current program

size (Table 4.14). The most significant limitation described was the number of students that area hospitals can accommodate.

- Responses from programs planning to increase faculty make it clear that the driving factor is the increasing need for respiratory services which, in turn, increases student enrollment. Nine out of ten programs said this was the most important reason for plans to increase the number of faculty teaching in their program (Table 4.15).

Table 4.13: Importance of Factors for Expected Student Increases

How important is each of the following factors as to why you are expecting the number of students in your program to increase in the next 5 years?	Most Important				Somewhat Important				Not Important			
	5		4		3		2		1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
The general student enrollment is increasing in the program	1	(11%)	7	(78%)	1	(11%)	0	(0%)	0	(0%)	9	4.0
The need for respiratory services is increasing, creating a greater demand for our graduates	8	(80%)	1	(10%)	1	(10%)	0	(0%)	0	(0%)	10	4.7
The institution is planning a general expansion of its student body	2	(20%)	2	(20%)	3	(30%)	1	(10%)	2	(20%)	10	3.1
We have more current student demand for respiratory care courses than we can presently satisfy	3	(30%)	3	(30%)	2	(20%)	1	(10%)	1	(10%)	10	3.6
There are more resources available which allows us to expand the program	4	(40%)	3	(30%)	1	(10%)	0	(0%)	2	(20%)	10	3.7
Other	1	(33%)	1	(33%)	0	(0%)	0	(0%)	1	(33%)	3	3.3

Table 4.14: Importance of Factors for Maintaining Current Student Enrollment in Program

How important is each of the following factors as to why you are expecting the number of students in your program to stay the same in the next 5 years?	Most Important				Somewhat Important				Not Important			
	5		4		3		2		1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
The general student enrollment is remaining static for this program	3	(30%)	3	(30%)	2	(20%)	2	(20%)	0	(0%)	10	3.7
The need for respiratory services is holding constant, so the demand for our graduates is holding steady	3	(30%)	1	(10%)	2	(20%)	3	(30%)	1	(10%)	10	3.2
The institution is planning to maintain the current size of its student body during the next 5 years	4	(40%)	1	(10%)	2	(20%)	0	(0%)	3	(30%)	10	3.3
Our current student demand for respiratory care courses is balanced with the number of courses we offer	4	(40%)	1	(10%)	2	(20%)	0	(0%)	3	(30%)	10	3.3
The available resources fit our current program size	9	(90%)	0	(0%)	1	(10%)	0	(0%)	0	(0%)	10	4.8
Other	1	(100%	0	(0%)	0	(0%)	0	(0%)	0	(0%)	1	5.0

Table 4.15: Importance of Factors for Expected Faculty Increases

How important is each of the following factors as to why you are expecting to increase the number of faculty members in the next 5 years?	Most Important				Somewhat Important				Not Important			
	5		4		3		2		1			
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	Mean
The general student enrollment is increasing in the program	9	(75%)	2	(17%)	1	(8%)	0	(0%)	0	(0%)	12	4.7
The need for respiratory services is increasing, creating a greater demand for our graduates	7	(64%)	3	(27%)	1	(9%)	0	(0%)	0	(0%)	11	4.6
The institution is planning a general expansion of its student body	3	(25%)	4	(33%)	4	(33%)	0	(0%)	1	(8%)	12	3.7
The program is planning on increasing the number of specialty courses/units available to students	3	(25%)	3	(25%)	3	(25%)	0	(0%)	3	(25%)	12	3.3
The increasing use and/or sophistication of technology requires more faculty	3	(25%)	3	(25%)	4	(33%)	0	(0%)	2	(17%)	12	3.4
Other	5	(83%)	0	(0%)	0	(0%)	0	(0%)	1	(17%)	6	4.3

Key Findings

- One-half of programs predicted growth in student enrollments of 24 percent. This growth is a direct product of the increasing need for respiratory care.
- The main restriction on program growth—cited as a limiting factor even for programs expecting to grow—appears to be the number of students that area hospitals can accommodate. When combined with program directors' emphasis on the importance of the clinical component, this restriction has important implications for the ability to meet future demand for RCPs.
- Taken together, this suggests that the nature of the relationship between the educational programs and hospitals may need to be re-evaluated. Several program directors felt that on-site clinical instructors (as opposed to staff preceptors) provide higher quality instruction and lessen demands on hospital staff. If the use of staff preceptors is widespread, and this is limiting hospital participation in clinical programs, increasing the use of on-site clinical instructors might be helpful.

Chapter 5: Elements Affecting the Future of the RCP Workforce

Separate surveys soliciting the perspectives of three key stakeholder groups, educators, RCPs and employers were conducted to collect information and perspectives about factors impacting the RCP workforce and influencing its future direction. One of the values of this approach is to provide multiple perspectives on issues that impact and are impacted by these stakeholder groups. This multiple perspectives approach permits a way not only to identify issues, but also to gauge the relative importance of these issues and ultimately to structure solutions to problems.[12] For example, if educators, RCPs and employers hold very different views about the need for additional educational requirements for the profession, before any strategy can be developed that addresses educational requirements, work must be done to reach a consensus on the problem. However, if all three groups hold similar views on the necessary education requirements for the profession, then the primary effort can focus on the development of requirements that meet the agreed upon standards.

Do stakeholders groups share common perceptions on important workforce issues?

Consensus and Disagreement. One of the overall positive findings of the study was the high level of agreement on most of the issues that the ISR was asked to investigate. This consensus appeared not only in terms of agreement as to whether an issue impacted the workforce, but the relative magnitude of that impact. For example, all three groups seemed to agree that RCPs have about the right amount of training and education to perform the tasks they're asked to do. In the remainder of this chapter, we consider the perspective of the key stakeholder groups on some of the prominent issues likely to impact the future of the workforce.

Perspectives on Important Issues

Are there enough RCPs?

The Adequacy of Current Staffing. Because there are no mandated staffing ratios for RCPs, it is difficult either to benchmark the profession in terms of present staffing levels or to project future needs. As a proxy, however, it is possible to use currently allocated FTEs as a marker against which vacancies can be assessed. Further, as will be detailed in Chapter 6, current staffing ratios can be determined in terms of RCPs per the California population base (e.g., number of RCPs per 100,000 Californians), and in terms of RCPs per specific patient groups (e.g., number of RCPs per patients aged 65 and older). Keeping this caveat in mind, information gathered from the surveys of RCPs, educators and employers all point to a current shortage of RCPs. For example, eight out of 10 employers (79%) stated that they had encountered difficulties in hiring qualified RCPs in the past three years. Further, a majority of employers indicated they expect hiring difficulties to continue into the future. As will be presented in Chapter 6,

[12] Cowles, E.L. and Sabath, M.J. (1996, September). Changes in the nature and perception of the long-term inmate population: Some implications for prison management. *Criminal Justice Review.*

the workforce model projections developed by the ISR suggest that the situation will continue to worsen considerably in the coming decades. As seen in the Employer data presented earlier (Chapter 3), employers indicated they are running about a 10.2 percent RCP vacancy rate. Additionally, they are filling about 8.4 percent of their FTE positions with temporary travelers or registry workers. The finding that 65% of employers indicate a primary reason for hiring temporary or registry workers is to provide a stopgap or temporary hire for a vacancy until they are able to recruit regular staff suggests that removal of these temporary employees from inclusion in calculations of unfilled positions may be warranted. If so, the true vacancy rate of regular RCPs may be running closer to 20 percent.

How can staff shortages be addressed?

The Use of Overtime to Create Supply. Beyond the use of registry and travelers, mechanisms to address the shortage likely include the regular use of overtime. Employers responding to the survey indicated an average (mean) monthly overtime of about 214 hours. Based on FTE staffing, this equates to slightly more than 5.4 hours of overtime per employee per month, a number somewhat less than 3.0 average hours of overtime per week derived from the results of the RCP survey for RCPs' primary position. However, beneath these generally apparently low amounts of overtime are some interesting factors. First, about 66 percent of RCPs indicated that they do not work any overtime in their primary position. This suggests that the remaining 34 percent probably put in considerable overtime, and categorized overtime hours seem to bear this out. While approximately 18 percent of RCPs maintained that they worked less than 10 hours of overtime a week, another 14 percent stated they worked 10 to19 hours of overtime in a week. Further, two percent (1.7%) of the RCPs indicated they put in 20 or more hours of overtime per week. These numbers become more significant given that about 10 percent of RCPs indicated they were salaried (not likely to receive overtime), and the overtime hours provided were only for a primary position—roughly 23 percent of RCPs indicate they hold two or more respiratory care positions. Clearly, a pyramid exists with regard to overtime—a third of the RCPs are carrying the bulk of the overtime. Given this phenomenon, even with a modest growth rate in the profession, it is clear that overtime will not be a viable supply for the needed FTE resources to meet the growing future demand for respiratory care services.

The Retention Issues. Another factor impacting the supply of RCPs is employee retention. In the current and anticipated period of increased patient demand, growth in the profession has to include not only increases to accommodate the increased patient load, but also to replace workers leaving the workforce. The base of the respiratory care profession is the clinician or RCP who provides patient care (including supervisors who maintain direct patient care workloads in addition to administrative duties). Once employed, most of these individuals may leave their position along one of three primary avenues.

The largest pathway for departure is one over which the profession has little control—retirement. Unfortunately, as detailed in the Workforce Projection Model (Chapter 6)

this is an "exit" stream which will become increasingly significant in the coming decade. Although health, economic conditions, job satisfaction and similar factors may alter the timing of retirement, our model estimates that the "working life" of an RCP effectively ends at 70, based on general retirement data and the very small portion of RCPs with active licenses who are working at this age. Currently 58 percent of the workforce is age 45 years old or older and 32 percent are in the 51 to 65 year old range. In the RCP survey, about 51 percent of those indicating they planned to leave the profession in the next decade stated their main reason for leaving would be retirement. With a substantial portion of the current workforce moving into retirement within the next two decades, replacing this portion of the existing workforce will become a critical issue that will need to be addressed before growth strategies can realistically be developed.

The second avenue through which individuals leave the profession is voluntary separation. Acute care employers indicated that they lost about 7.8 percent of their workforce in the previous year through voluntary resignations, and slightly more than one-half assert they have experienced difficulties retaining staff during the past three years. Keeping in mind that home care employers employ a small potion of the total RCP workforce, we see even higher rates of voluntary separation, about 15.7 percent. Some of the RCPs who voluntarily leave employment go to another California respiratory care employer, so their separation is not a net loss to the State's workforce, but many leave for other reasons. Within the three surveys, some consideration of voluntary separation was captured from three groups: active RCPs planning on leaving the workforce within 10 years, RCPs who already had left the workforce but retained their licenses, and employers who were asked to report on reasons for leaving that were reported by RCPs leaving within the past three years. Among the issues cited in their responses, salary emerged as important in all three perspectives. For the RCP group planning to leave the profession within 10 years, salary was less of a factor than it was for licensees who had left the profession and in terms of employers citing it as the reason they were given for employee departure. This may be due to a couple of factors. First, as noted above, over one-half of the RCPs planning to leave were planning to retire, whereas salary was only cited by 13 percent as an important reason they would be leaving. Obviously, salary wasn't a driving issue for this group. Second, disenchantment with salary likely brings a more immediate response. Stated differently, individuals who are looking out through a 10-year time horizon probably aren't saying, "I don't like my salary, and I'll be leaving the profession in five years because of it." Even those with a strategic plan for salary improvement such as returning to school will probably cite school as a reason for leaving rather than an underlying salary issue. However, the importance of salary as an issue given by RCPs who had left the profession and by employers reflecting staff comments likely reflects a more immediate connection between salary dissatisfaction and resignation. Forty-eight percent (48%) of those having left the profession cited salary as a very important or important reason, and 60 percent of acute care employers reported they had been told by departing employees that salary was a very important or important reason for those individuals' departure. The fact that only 44 percent of currently working RCPs stated they were satisfied or very satisfied with their salary suggests that salary will be an important

factor to address in managing RCP retention and maintaining staffing resources.

Beyond salary, the remaining top four of the five factors cited as most important (rated as important or very important reasons) for leaving by RCPs who had left the profession included trying another occupation (52%), benefits (41%) child care/family responsibilities (42%), and job dissatisfaction (37%). Interestingly, while employers similarly cited some of these as reasons (important or very important) they were given for resignations—benefits (25%) child care/family responsibilities (30%), and dissatisfaction with the job (25%)—these reasons were not as visible from the employers' perspective as they were for RCPs who were out of the occupation. These issues were even less apparent among current RCPs who said they planned to leave the profession within 10 years. For this group, only 18% said trying another occupation was a reason they were planning on leaving the profession. Much smaller percentages were cited for dissatisfaction with the job, child care/family responsibilities and benefits—4%, 3% and 3% respectively. It is likely that the contrasts between the RCPs who have already left the profession and those planning to leave the profession in the next 10 years point to underlying differences between these two groups that may be of importance in retention once salary has been considered. The overall "exit" rate (as measured by those dropping out of the license base) is about 4.1 percent, but as will be seen in Chapter 6, the exit rate—which generally hovers between three and four percent for younger working RCPs—begins to climb substantially for individuals once they reach at age 60. The importance given to retirement, trying another occupation, returning to school, etc., suggests differences between those acting upon a desire to leave the profession and those contemplating a departure in the next decade. These differences support the notion that differential strategies are appropriate in efforts to retain RCPs at different stages in their careers. For example, while perhaps common sense; these differences call for age-specific strategies for improving retention. Age differences become particularly relevant in light of the finding (discussed below) that educators are indicating that students currently in their education programs are predominately non-traditional older students returning to school.

A third avenue for RCPs to leave employment is through involuntary terminations or dismissals. This group represents a relatively small group of RCPs in the workforce pool. Information extracted from the acute care employer survey indicates that in the previous year employers terminated/dismissed about 2.2 percent of their employees (home care employers provided a somewhat higher termination rate of 7.7%). In terms of the reasons for dismissal, about three-quarters of the employers indicated they had dismissed RCPs for what might be termed "non-profession specific" reasons—unacceptable work habits, such as unexcused absenteeism, failure to complete assignments, poor interactions with staff or patients, etc. However, well over one-third (36%) indicated the "profession specific" reason of an unacceptable level of knowledge or skills, and one-half (52%) maintained that they had to terminate/dismiss employees for the "profession specific" reasons of violation of patient care protocols or hospital regulations.

Although the small percentage may seem insignificant in terms of total workforce impact, about 73 percent of acute care employers said they had to terminate/dismiss an RCP during the past 3-year period (a much smaller proportion of home care employers, 25%, said they had to terminate employees). Thus, for the major employer group—acute care facilities—it would appear than while termination/dismissal represents a small proportion of their workforce attrition, it is a widespread problem in terms of the number of employers it affects. As such, it has a noticeable impact on retention of the larger workforce.

Are the educational requirements for RCPs appropriate?

Adequacy of Current Education Requirements. As mentioned above in the illustration of the approach, there was a fairly high degree of consensus among the three groups as to whether RCPs had the right amount of education/training for the jobs/tasks they were asked to perform by their employers. About three-quarters (73%) of the RCPs themselves agreed that their education/training was appropriate, while a strong majority, albeit somewhat smaller percentage, of educators (65%) and employers (62%) agreed the education and training was appropriate. Moreover, when asked how well California respiratory care education programs were preparing new entry level RCPs for work, 64 percent of RCPs said students were being well-prepared, while about 70 percent of educators and employers thought they were well prepared. However, when employers and educators were asked to indicate how well education programs prepare *new entry level* RCPs, about 65 percent of educators said *most* programs adequately prepare *new entry level* RCPs, while 35 percent indicated *some* programs adequately prepare new RCPs. Employers were less charitable on this question, with only 37 percent saying *most* programs adequately prepare new entry level RCPs, 52 percent indicating *some* programs do, and 10 percent maintaining *few* adequate prepare new graduates. Thus, it would seem that the general issue is not one regarding whether the majority of graduating RCPs are qualified, but a question regarding whether some programs are doing an adequate job.

Given this apparent agreement that a portion of education programs are not meeting expectations regarding student preparation, answers to a question asking employers and educators whether the State should establish a standard or model curriculum for respiratory care education programs provided some insight into to a course of action to remedy the program. Educators were divided on the issue of a standardized curriculum, with a slight majority (55%) opposing such a step. On the other hand, employers seem to support the idea enthusiastically, with four out of five (80%) employers backing a standardized curriculum. Differences between the two groups may be explained by the notion that some educators are skeptical of externally imposed curriculum requirements (which they view as unwarranted control) for their programs. Further, a majority of educators opposed to a State mandated curriculum believed that the accreditation/reaccreditation process is sufficient to ensure program quality. Employers, however, have little vested interest in the education processes themselves and see State imposed standardization as a way of ensuring students from all institutions come to them educationally prepared. It is also interesting to note that while

educators are less supportive of a standardized curriculum, they strongly endorse (90% favor) the State requiring respiratory care programs to include a minimum number of clinical hours

Increasing Future Educational Requirements. Given the general satisfaction voiced about RCPs being well prepared, it was not entirely surprising that neither educators nor employers[13] favored increasing the entry-level educational requirement for RCPs from the current 2-year to a 4-year degree. A solid majority of educators (60%) did not favor increasing the requirement to a 4-year degree. Coupled with the belief that they are producing qualified graduates, a possible reason that respiratory care programs do not favor moving to a 4-year degree is because respiratory care programs are almost exclusively located at 2-year institutions. If the requirements are increased, educators may believe that respiratory care programs will be moving to 4-year institutions. An even larger majority of employers (71%) opposed raising the requirement. For employers, who again generally see RCPs as well qualified, the increase in education requirements to a 4-year degree may be rooted in economic and hiring factors. Already facing hiring difficulties and aware of salary dissatisfaction among RCPs, employers may see an increase to a 4-year degree as: 1) fueling a reduction in the supply of future RCPs due to fewer individuals being willing to embark on a longer course of study to enter the profession, and 2) diverting the supply of RCPs into other professional fields, particularly those such as nursing, which would be equivalent in terms of educational requirements, but offer better salaries in California (at the present time). Providing some support to the employers' latter concerns, nearly one-quarter (23%) of the RCPs surveyed are pursuing a higher academic degree, and about one-half (49%) state they are doing so to change careers.

On survey questions asking about making the RRT the entry-level credential for the respiratory care profession, employers seemed divided, with slightly more than one-half (54%) opposing a higher entry level credential and slightly less than one-half (46%) favoring the increase. By contrast, three quarters (75%) of the educators favored increasing the credential requirement to the RRT. However, both groups—66 percent of the employers and 70 percent of the educators—supported the State requiring progression to RRT from the CRT within a designed timeframe such as three years.

Can the number of individuals graduating from respiratory care educational programs be increased?

New RCPs in the Educational Pipeline. Another alternative solution is to produce a greater supply of new RCPs entering the workforce pipeline. Responses show that California respiratory care educational programs have grown substantially in size during the last seven years. Although there was a slight downturn for the first few years, since the 2002/03 academic year, there has been a steady increase in admissions and enrollment. Information received from respiratory care educators suggests that the small number of entry level programs have grown significantly in terms of students in the last seven years (i.e., since 2000). There has been a significant increase in the

[13] RCPs were not asked this question on their survey.

number of *new admissions* (a 13% per year gain), actual *enrollments* (a 13% per year growth rate) and in entry level *graduates* (a 23% percent per year jump). In academic year 2000/01, an average of 28 new students were admitted to each advanced level program. By academic year 2007/08, the average had increased to 39.5. However, attrition appears to be a significant factor for advanced level programs. During the past seven years, advanced level graduations averaged about 43 percent of admissions: less than half of the students admitted to the program graduated. In comparison, entry-level graduations averaged about 69 percent of admissions, (although again, with just three entry-level programs, this may reflect individual, rather than program-level, differences). In part because of this attrition, advanced-level graduations increased at a much lower rate than entry level-graduations. From 2001 to 2007, average advanced-level graduations increased by 1.6 students (from 14.6 to 16.2). During the same period, average entry-level graduations increased by 37 students (from 16.5 to 47.5).

Given the somewhat limited production of the advanced education programs of about 15 graduates on average per year, and the relatively small number of these education programs (30) in the State, it is clear that either the enrollment of individual programs will need to be increased significantly, or the number of RCP education programs will need to increase substantially if more RCPs are to be brought to the workforce through the education channel.

Chapter 6: Creating the Workforce Model

Major Goals

This chapter will discuss the portion of the RCP Workforce Study designed to project future supply and demand for Respiratory Care Practitioner license holders in California. The section consists of two parts: the Supply Model, which will provide estimates of future amounts of RCPs in the labor market, and the Demand Model, which will provide estimates of the future need for respiratory care services in California. By combining these models and their subsequent predictions, estimations can be made to forecast the need for use in future policy decisions.

Developing a Future Perspective

One of the key factors in developing projections about the future of the RCP workforce is to consider the entrance and exit of individuals from that workforce. Several pieces of information from the licensee database and from the RCP survey are available to provide insight into this area.

Is California's RCP Workforce growing or shrinking?

Creating a Simple System Model. Thinking of the RCP Workforce as a simple system model provides an early step in visualizing the trends impacting workforce size. It is relatively uncomplicated to look at the initial size of the workforce and then consider yearly "inflows", i.e., the number of new licensees each year, and "outflows", i.e., those leaving the licensee pool (See Figure 6.1). Using Table 6.1, if we start with the initial licensing year (1985), we see the creation of 42 percent of the size of the current workforce. The second year of licensing saw a substantial increase (about 74%) in the workforce. This brought the workforce to about 73 percent of its size at the time the study sample was drawn. Subsequently, as detailed in Table 6.1 (seen on next page), the changes in the workforce size have moderated to a constant level. New licensees have accounted for growth of about six percent per year on average over the preceding year. However, at the same time, the workforce has experienced an annual loss of approximately four percent of its size due to various forms of attrition. Taken together, the net impact of gains and losses on the workforce has been an average two percent growth during the past decade

Table 6.1: Summary of Respiratory Care Practitioner License Issue and Expiration Dates by Fiscal Year

	Valid licenses at beginning of year	New licenses issued during year	New licenses as a percent of valid licenses at beginning of year	Licenses expiring during year	Percent of valid licenses expiring during year	Net gain/loss from the beginning of year	Percent gain/loss from the beginning of year	Valid licenses at end of year	California Population*	Valid licenses per 100,000 population
FY 84/85	0	5,989	n/a	0	n/a			5,989	25,587,000	23.4
FY 85/86	5,989	4,442	74.2%	0	n/a	4,442	74.2%	10,431	26,113,000	39.9
FY 86/87	10,431	730	7.0%	796	7.6%	-66	-0.6%	10,365	26,742,000	38.8
FY 87/88	10,365	733	7.1%	123	1.2%	610	5.9%	10,975	27,388,000	40.1
FY 88/89	10,975	870	7.9%	376	3.4%	494	4.5%	11,469	28,061,000	40.9
FY 89/90	11,469	739	6.4%	605	5.3%	134	1.2%	11,603	28,771,000	40.3
FY 90/91	11,603	809	7.0%	541	4.7%	268	2.3%	11,871	29,558,000	40.2
FY 91/92	11,871	944	8.0%	551	4.6%	393	3.3%	12,264	30,143,000	40.7
FY 92/93	12,264	981	8.0%	546	4.5%	435	3.5%	12,699	30,723,000	41.3
FY 93/94	12,699	870	6.9%	588	4.6%	282	2.2%	12,981	31,150,000	41.7
FY 94/95	12,981	815	6.3%	613	4.7%	202	1.6%	13,183	31,418,000	42.0
FY 95/96	13,183	747	5.7%	619	4.7%	128	1.0%	13,311	31,617,000	42.1
FY 96/97	13,311	695	5.2%	608	4.6%	87	0.7%	13,398	31,837,000	42.1
FY 97/98	13,398	704	5.3%	583	4.4%	121	0.9%	13,519	32,207,000	42.0
FY 98/99	13,519	707	5.2%	630	4.7%	77	0.6%	13,596	32,657,000	41.6
FY 99/00	13,596	635	4.7%	542	4.0%	93	0.7%	13,689	33,140,000	41.3
FY 00/01	13,689	457	3.3%	490	3.6%	-33	-0.2%	13,656	33,753,000	40.5
FY 01/02	13,656	470	3.4%	524	3.8%	-54	-0.4%	13,602	34,441,561	39.5
FY 02/03	13,602	638	4.7%	454	3.3%	184	1.4%	13,786	35,088,671	39.3
FY 03/04	13,786	620	4.5%	418	3.0%	202	1.5%	13,988	35,691,472	39.2
FY 04/05	13,988	730	5.2%	468	3.3%	262	1.9%	14,250	36,245,016	39.3
FY 05/06	14,250	836	5.9%	512	3.6%	324	2.3%	14,574	36,728,196	39.7

Dot-com years begin →

Associate degree requirement →

* Data source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State.

Key Finding

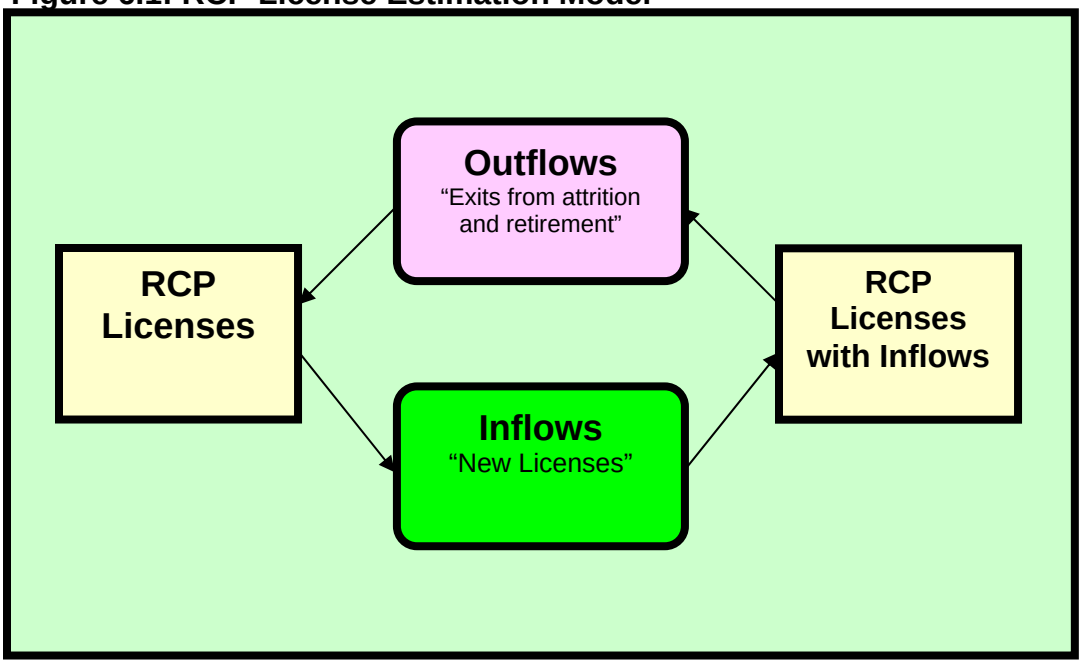
Once the initial influx of RCPs was licensed, the growth rate of the profession has fairly well matched the growth of the California population, even exceeding it during much of the 1990s. However, beginning at the turn of the 21st century, the State's growth rate began to outpace the growth of the profession.

How many RCPs will be available to fill California's respiratory care needs in the coming decades?

Key Elements of the Supply Model. While the exact number of RCPs currently employed in the workforce can be debated, the number of licensed individuals eligible to work in the labor market can be gauged very simply. Due to the unique requirements of this labor force needing to be licensed by the Respiratory Care Board of California in order to practice within the State, tracking the size and age demographic characteristics of the workforce as a whole becomes relatively easy. By using the Board's licensing database, the ISR is able to accurately describe and identify the RCP workforce's age characteristics for individuals currently holding a California respiratory care license. Secondly, by defining a model that relies on license projections (the only source of information that gives insights on the ages of those working in the field); this model can be easily adjusted to describe different market conditions if later deemed necessary.

We begin construction of the current supply (or pool) of eligible RCPs by including the number of licensed individuals in the database from a previous year. To this group, we add any individuals who have been newly licensed (**Inflows**), and then we subtract any individuals that lose or discontinue their licensed status (**Outflows**). As seen in Figure 6.1, the group of eligible individuals that can work in the respiratory field will always comprised of those who have a current valid license. This structure is similar to the one seen in the University of California, San Francisco (UCSF) study, *Forecasts of the Registered Nurse Workforce in California* (June 7, 2005), but will deviate in one small way which will be explained below.

Figure 6.1: RCP License Estimation Model



The ISR considered the **inflows** to be those individuals who gain a California license through any of the following mechanisms:

1) Individuals residing in California who graduate from a Board approved respiratory care school;
2) Individuals with respiratory care training or licenses from another state or country who obtain a California license; or
3) Individuals with non-active licenses who undergo a change in status of their license from expired to active (while rare, it would still be captured within the model).

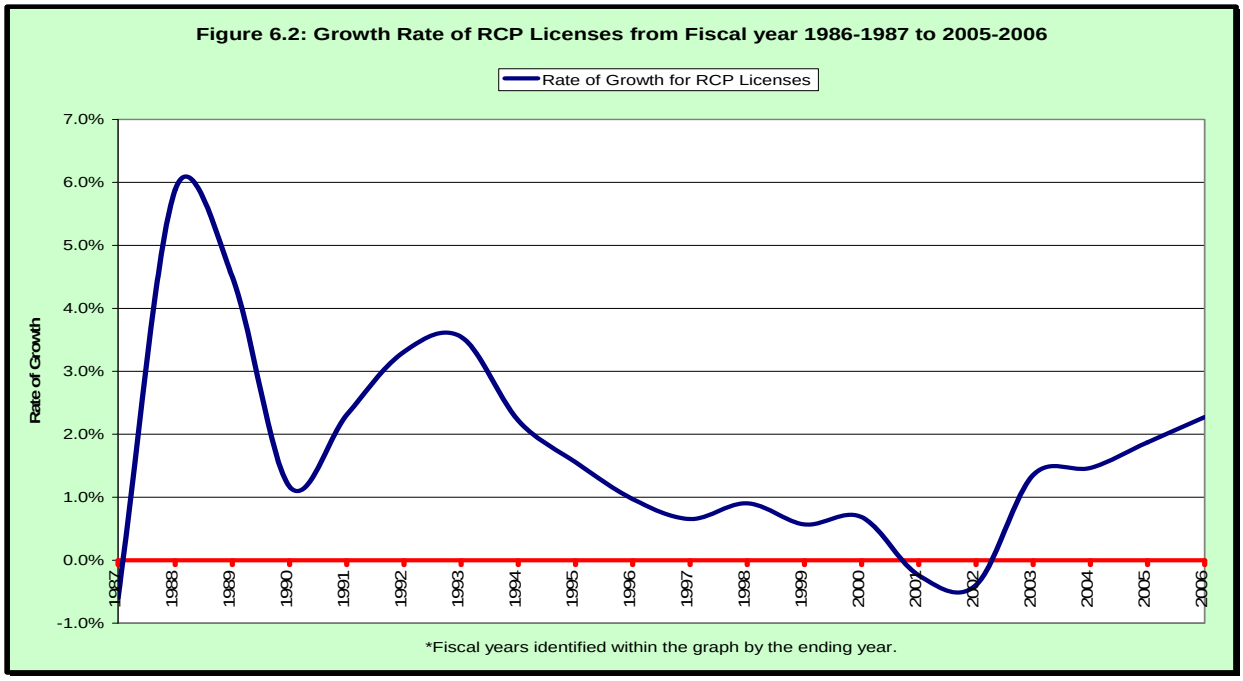
Outflows are characterized as any individual (as reflected by their license status) who goes from an "active" status to an "expired"[14] status or when an individual reaches a retirement age of 70[15].

In the UCSF nurses study, another possible source of outflows would be the "migration out of California," however, this would be conceptually wrong under normal economic supply model structures. Even though an RCP moving his/her residence out of California would limit his/her ability to practice in a California respiratory care facility, by keeping an active California Respiratory Care License he/she does have the possibility

[14] "Expired" status is a condition by which the Respiratory Care Board of California considers the license non-usable.
[15] The reason for the 70 years old retirement age is to be discussed later in the chapter in more detail. It is mainly a result of observed characteristic of those who have California Respiratory Care Licenses.

to return to the state and practice under the right conditions. Further, an individual might migrate from the state but continue working in California under several different scenarios. Since this potential for the individual to return is still possible, excluding him/her from any supply estimates could possibly bias the supply model by underestimating the number of future individuals holding licenses.

Creating Calculations Needed for the Supply Model. By using this framework and the Respiratory Care Board's licensing database, the total number of eligible workers in the RCP workforce can be determined for any period since 1985[16]. As seen in Figure 6.2, the number of licenses under this framework has grown at an average rate of 1.6% since fiscal year 1986-1987. Yet as shown in Figure 6.2, the largest rates of growth occur in the early years of the license's history. Since the1999-2000 fiscal year, the average rate of growth for RCP licenses has cooled to an average of about .7 percent, with most of the growth occurring in the early portion of that period. If the negative growth rates seen during the fiscal years of 2001-2002 and 2002-2003 were a result of the recessions occurring during that time, and the later fiscal periods of 2003-2004 through 2005-2006 are a signal of things to come, an average growth rate of 1.46 percent would be a more accurate representation of future growth. This far exceeds the projected average growth in the population of California of 1.04 percent, as proposed by the California Department of Finance for the period of 2005 to 2030[17].



[16] The requirement for RCPs to have a California Respiratory Care License was enacted in 1985.
[17] Information was obtained from the California Department of Finance Web Site under available "data files." Within this section of the web site projections for "Race / Ethnic Population with Age and Sex Detail, 2000–2050" can be found. The California file was the one which was utilized for this study.

However, all of these estimates ignore important age demographic characteristics within the active license population. Currently, 32 percent of the RCPs are in the 51 through 65 year old age bracket and will either be retired or be ready to retire within 15 years. This retirement assumption is supported by reviewing the current licensing data, which reveals only 1.5 percent of the current licenses in the database are held by individuals past the age of 65. Further, of the 216 licenses which are held by individuals older than 65, only 23 percent of these licensed RCPs are past the age of 70. By contrast, 43 percent of the licenses held by this 65 year old and older age group are possessed by individuals younger than the age of 68. Thus an assumption that the common social security benefits eligibility age is a reasonable cut off range at which individuals' age out of the workforce seems valid and was included in our forecasting model.

Creating Calculations Needed for the Supply Model: **Inflows**. While the current age sample of active licenses is a known quantity, the age characteristics of the inflows of these new license holders must also be determined. Based on the size and structure of the licensing database, we have used the fiscal year 1988-89 as the starting point to calculate averages and rates for two reasons. First, earlier years were deemed as misleading, due to the erratic differences between early years data caused by the high inflow of licenses at the point the licensing requirement was created. Second, using any set of later years would likely make the time interval too short for the purpose of accurate estimation (using short time periods can lead to results which do not characterize long term trends). Thus, the ISR chose to use the 1988-1989 to 2005-2006 fiscal years to create its base line growth rate for new licenses to be used in our model construction.

During fiscal years from 1988-1989 to 2005-2006, 13,271 new respiratory practitioner licenses were issued by the Respiratory Care Board of California. On average, 47 percent of those licenses were issued to individuals who were 30 years old and younger. Thirty-three percent (33%) of the licenses were issued to individuals between ages of 30 through 39, with the remaining 20 percent of new licenses being issued to individuals' aged 40 years old and older. By categorizing the age of the entering RCPs and creating *average proportions*[18] for the ages of RCPs as they enter the licensed RCP pool, these entering groups of RCPs can be appropriately placed within the known age ranges of the license population. This allows the model to account for the fact that not all new licenses are issued to individuals across a range of ages. Based on the age characteristics seen in the Respiratory Care Board of California's licensing database, the ISR has created eleven different age categories to describe the workforce: Under 25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, and 70 and older. The percentages of new RCPs entering the licensed pool under this structure are shown in Table 6.2:

[18] The concept of using average proportions comes from that fact that new licenses are awarded to people of different age groups. By finding a trend in the ages of individuals that receive these licenses, the ISR can make assumptions on the ages of the people who will receive licenses in the future.

Table 6.2: Rate of Entry of New RCPs by Age Group

Under 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
21.30%	25.70%	19.40%	14.00%	9.70%	5.90%	2.70%	1.00%	0.20%	0.10%

Per the ISR's analysis of the licensing database, less then .02% of new licenses were awarded to individuals 70 years and older; and therefore, this category is not included in the estimates of new licenses due to the extremely small number of individuals likely licensed at that age. Further the ISR model assumes that all licenses held by individuals 70 years and older are held by individuals who can no longer be counted on to be actively participating in the workforce.

Creating the Calculations Needed for the Supply Model: **Outflows**. To determine the rate by which licenses exit the population of RCPs in the workforce, the reported expiration dates contained in the Respiratory Care Board's licensing database were analyzed. While the database does have an "inactive" status for licenses that need additional requirements in order to practice, pin pointing specific dates for these "exits" is difficult. Further, the additional requirements needed to activate a license can be easily achieved within a year if labor market pressures are sufficient to warrant that change. Therefore, the reported expiration dates of licenses not renewed will serve as the exit points to mark an individual's leaving the workforce (supply). Summed over a year, then divided by the number of licenses at the beginning of the year provides a rate of exits for licenses for a specific year. When averaged over fiscal years 1988-89 to 2005-2006, an average exit rate of licenses is formed to represent RCPs leaving the license pool. These rates are listed below in Table 6.3:

Table 6.3: Rate of Exits by Age Categories

Under 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
4.00%	4.70%	4.70%	3.60%	4.10%	2.90%	4.00%	3.60%	8.50%	11.80%

Again, at age 70, the ISR model will "retire" all licenses and remove them from the license pool. While the ISR acknowledges that individuals do keep licenses past the age of 70, currently only a half of a percent of the active licenses are held by individuals in this age group. In the future, labor market conditions may be such that these individuals could be enticed to work beyond the age of 70 years old, but to expect that these individuals will serve as reliable source of workforce participation is unrealistic.

Creating the Calculations Needed for the Supply Model: **Future Estimates**. To calculate the expected number of yearly future licenses, each new year of licenses will be calculated independently, meaning both the new yearly license total and the existing set of licenses will have their age component and exit component calculated separately. The two calculations are done separately so that the individual age categories and corresponding rates (both the rate by which licenses enter to the next age category and

the rate by which they leave the license pool) do not mix as the model steps through the various years, polluting the calculations of past or future yearly numbers of RCPs. This approach should increase the accuracy of the forecasts while still maintaining the mathematical structure of the model for use in comparing estimates.

To begin the calculations for future license numbers, the model first determines the number of future licenses for a specified year. The "new license" forecasts will be based upon a display of different growth rates based on assumptions about the numbers of licenses entering the workforce (discussed in more depth later in this chapter). Next, using the age rates described earlier to characterize the ages of new licenses, the model will then calculate the ages of each new license population from fiscal years 2007-08 to 2029-2030. As the percentage of new licenses will be divided into age categories (described earlier), the ISR model assumes the ages of those licenses are evenly spread within each of the individual age categories. For example, if 50 licenses were projected to be produced in the 35 through 39 age category, then the model assumes that 10 of those licenses would be held by individuals 35 years old, 10 by 36 year olds, 10 by 37 year olds, 10 by 38 year olds, and 10 by 39 year olds. This even spreading of the license is constant across each age group, and due to the 5-year span of the age categories, one-fifth of each age category will enter the next higher age group each year. This is the same technique used in the UCSF nurses study. The logic behind it is that if the licenses are distributed evenly across the age category, then as a group the holders of those licenses will age evenly based on the size of that category. To accurately estimate those in the Under 25 age category, we must account for licenses that are awarded to individuals of 19 years of age and under, even though this is a very small percentage of the license population. From the first year in the model base, only 116 of the 13,271 licenses were 19 year old or younger. This represents less than 0.9% of the new licenses awarded, and thus would be merged into the Under 25 category, which in turn, is aged under the "one fifth rule" to simplify the calculations.

Projected ages for both new and current licensees are calculated before incorporating any exit flows. This ensures that licensees are appropriately distributed across age groups.[19] After this process is complete, the model will be used to calculate the number of exits from the eligible workforce for that year (i.e., licensed RCPs) by multiplying the previous year's final license totals by the exit rates shown earlier. In the first year, the model will then calculate the final adjusted license total for that year by subtracting the exits calculated for that year from the estimates of licenses by age category. To further ensure accuracy, from time period two and on, the model takes the past exits into account and ages them under the "one fifth" rule. For example, if we know that in

[19] Including exit flows before "aging" new licensees produces an error in the projections. To illustrate the error produced using this approach, if in a given year, 100 new licenses are awarded to RCPs between 25 and 29 years of age, and the calculations are done as a function of 100 x .8 x .953 (where 100 is the number of licensees in the age group, .8 is the proportion of licensees remaining in the age group after removing the 20 percent who have aged out of the group, and .953 is the proportion of licensees remaining in the age group after removing the 4.7 percent who have exited the licensing pool), then after five years, the incorrect method shows 25.76 licensees still in the "25 to 29" group when, in fact, none of the original 100 licensees actually remain in the group. For example:

$$[100 \times .8 \times .953 = 76.24 \times .8 \times .953 = 58.13 \times .8 \times .953 = 44.31 \times .8 \times .953 = 33.79 \times .8 \times .953 = 25.76]$$

period one, age category 25-29 has 100 licenses at the beginning of that period, then that period's exits will equal 4.7 (0.047 times 100) and the final adjusted total for that year will be 95.3. Because in period two, 20 licenses leave the 25-29 age range under the "one fifth" rule (remember that the model calculates ages in all time periods first) and 20 enter from the Under 25 group, 100 licenses are again in the 25 to 29 age group before exits are tallied. To calculate the final license number for period two, the model first takes into account the exits from the previous period. As the new 100-license number does not account for any exiting licenses in the past, it then takes the past year's exits and subtracts one-fifth of that number to find out how many of those exits should still be accounted for in this period. Next, the model will subtract that number (in this case is 4.7 times .8, equaling 3.76, which is the number to be subtracted) resulting in 100 minus 3.76 which is 96.34 licenses. Now since licenses also will exit in period two as well, the model calculates exits for this second time period based on this number (0.047 times 96.64 equaling 4.54) and subtracts it from the total resulting in a final number of licenses for period two of 92.1 licenses. After determining the license totals for each age group, the model then sums up the total licenses for the second period and for each new and existing license population, providing the estimate for that year. Given this model specification, two unknown factors are needed in order to predict future license totals; the number of new licenses for fiscal year 2007-2008 and the growth rate by which new licenses will grow into the future.

What will be the "Demand" for RCPs in the coming decades?

Key Elements of a Demand Model. In preliminary model construction, masked discharge data generated by the Office of Statewide Planning and Development (OSHPD) was examined as a means to determine the marginal demand[20] for respiratory care services given an increase in a population age demographic. By using this data we can develop estimates of how future increases in the California population would affect the number of respiratory care patients given a specific group of discharge types. After preliminary analysis using regression methods was completed, this approach to estimation was deemed inappropriate since the diagnostic codes could not be satisfactorily assigned to measure this effect. Secondly, regression modeling based purely on the number of discharges yielded results that were in sharp contrast to those suggested in theory and the RCP survey (i.e., estimates for the certain age categories indicated that a decrease in the number of discharges per year should occur when the number of residents within that category increased. Theory would suggest that more people, regardless of age, will always increase the number of patients that RCPs see). Further, most variables included in those initial models appeared as statistically insignificant.

In light of the inadequacy of normal regression techniques used to describe demand, the ISR used a combination of surveyed variables and raw population estimates to

[20] Marginal demand is an economic term used to describe the increase in demand, given an increase in another factor. In this case, marginal demand for respiratory care services would be the increase in services needed given an increase in certain segments of the California population.

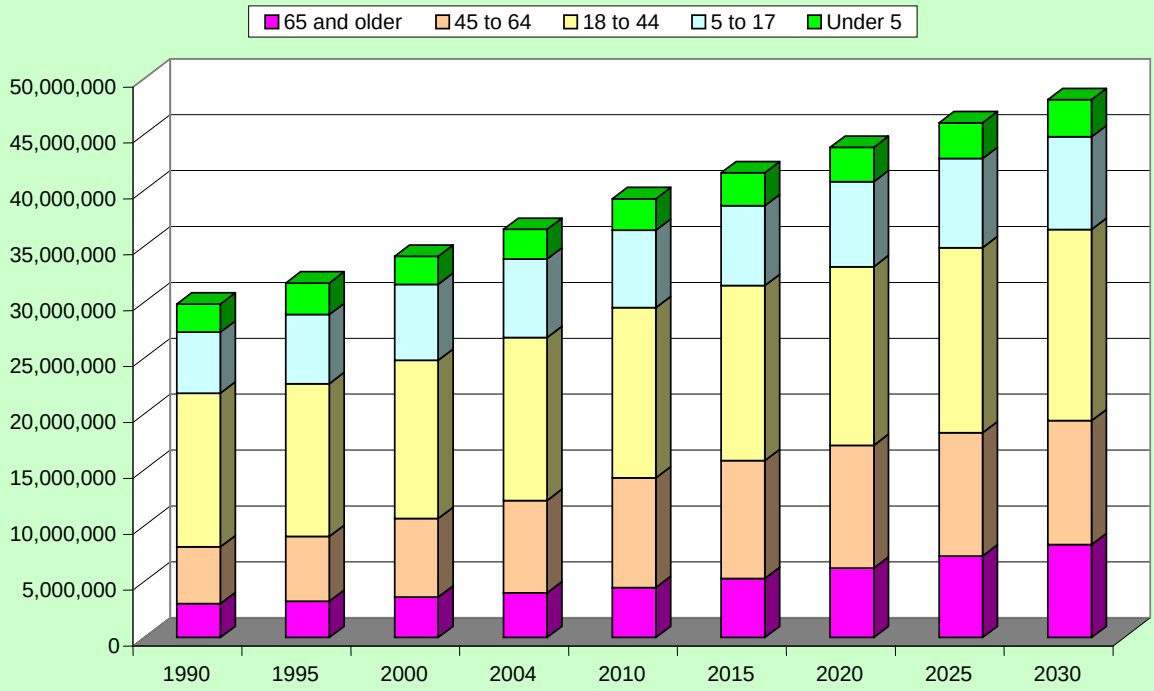
develop assumptions about the number of respiratory care licenses needed to provide current level of services in the future. By combining the known license quantity of 2007-2008 RCPs from the licensing database with the results from RCP Employer Survey question asking about the time spent with each age group, a fixed number of how many licenses are needed per an age category can be derived by year. Then by assuming future needs will be the same or similar to the current needs of each age group, these ratios can be assumed to remain the same within the model when estimating future demand based on changes in population.

Using this analytical framework, California Department of Finance population estimates will be used for the predicted age categories and total population numbers used to calculate the estimates of RCP licenses per 100,000 residents. These estimates can be found on the Department of Finance's web site and are projected to 2050; however, for this study we have elected to produce estimates only up to the year 2030. From 2007 to 2030, the Department of Finance predicts that California's population will increase at a yearly rate of approximately one percent. When the state's population was broken into age categories (in this case, Under 5, 5-17, 18-44, 45-64, and 65 and older), it was discovered that a major portion of this growth is fueled by the increased numbers of the "65 and older" segment of the population, which is predicted to increase at an average of 3.1 percent per year to 2030. Of the five groups, none of the three younger age category's yearly growth rates match the one percent yearly growth that the entire population is expected to exhibit, with the "Under 5" being the closest at .89 percent. The 45 to 64 age group is projected to slightly out pace the total projected average yearly rate by growing at a slightly larger rate of 1.1 percent per year.

Based on these changes in the predicted ages of Californian residents in the coming decades, it is easy to conclude that the respiratory care needs of that population will drastically change by 2030. When the stacked population estimates for the different age categories are plotted over time (seen in Figure 6.3), it is discovered that the two older age categories increase their share of the population greatly from 2010 to 2030. As seen in the ISR Employer Survey of Acute Care Hospitals, these two groups represent the largest users of RCP services within the California population. If, as shown in Figure 6.3, these segments of the population grow at faster rates then the other portions of the population, then the RCPs per 100,000 California residents' ratio will also need to increase. Thus, using basic RCPs per 100,000 California residents ratios would misrepresent California's needs in the future.

To provide more precise measures of how each age category utilizes RCPs, the RCP Employer Survey of Acute Care Hospitals will be utilized in order to provide information on the number of hours RCPs work and what percentage of time they spend with each of the age groups. Question 6 of the Respiratory Care Practitioner Employer Survey specifically asks each employer what percentage of time each RCP spends with the five age categories used in this study. If these proportions were held constant into the future, the ISR could estimate future demand for services by using this information as proxies for the demand for RCP services by age category. However, leaving these

Figure 6.3: California Population by Age Categories, 1990-2030



*Population numbers come from State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2000–2050. Sacramento, CA, July 2007. This is found on the department web site under data files.

estimates in their simple average form could bias the results of the model because the sample included not only different sized hospitals, but hospitals with different specialties (e.g., Children's Hospitals). To average the responses of specialty hospitals with the general acute care hospitals would not be appropriate, for although they represent a small portion of hospitals, information collected from the employer survey indicates that they are large employers of RCPs. To correct this problem, a "weighted average" will be used to generate the "percentage of time" spent by RCPs with each age group to estimate future demand. To do this, the ISR converted the FTE information gained in Question 1 of the Employer Survey to yearly hours worked by RCPs each facility. Then, by converting the monthly overtime hours worked in Question 5 of the employer survey into overtime hours for the year and combining that amount with budgeted FTE hours worked, we created an estimate of the total hours worked in the year by RCPs for each hospital.

Dividing the "total hours worked in a year" figure by the proportions identified in Question 6 of the Employer Survey, resulted in the approximate number of hours that each hospital uses providing respiratory care to each age category. By summing up each hospital's hours spent on providing care to each group, the total hours spent by the surveyed population for care in each age category is gained. Dividing those numbers by the surveyed hospitals' total hours worked by RCPs, provides weighted

rates for the time spent with each age group. The results of these weighted averages are displayed in Table 6.4:

Table 6.4: Percent of Time RCPs Spend with Patient Age Categories

Under 5	5 to 17	18 to 44	45 to 64	65 and older
17.16%	10.69%	19.53%	23.39%	29.22%

Once the proportion of time spent with different age populations is discovered, the current number of licenses can be separated into these proportions, in order to create a proxy of the current licenses used by each age group. This process is similar to thinking of the current license number as a total pool of resources to be used by the population and by separating that number into the proportions described above we are dedicating a specific number of licenses amounts to each age group. Then, taking that license usage number and dividing it by the current number of residents for a specific age group, we can identify a ratio of licenses used by age group. Assuming that this ratio represents the current level of care provided for each age group, by then holding this ratio constant in comparison to future population figures, estimates on the number of licenses demanded by each age category will be created that represent the demand for RCP services in the future. It should be noted that these figures assume that future demand preferences and usage will remain similar to that of the current economic environment. In no way would these figures capture any changes in the current structure or costs of the respiratory care field. These numbers should be looked at as figures that inform one of what should happen if current conditions hold into future. In conclusion, these numbers can then be compared with any of the supply model assumptions to calculate the differences in the number of licenses supplied and the number of licenses demanded by the respiratory care industry. As displayed in Table 6.5, the ratios for each age category were calculated as follows:

Table 6.5: The Current Ratio of RCP Licenses per 100,000 Persons by Age Category

Under 5	5 to 17	18 to 44	45 to 64	65 and older
92.4	22.3	19.2	37.6	102.0

Forecasting the State's RCP Workforce Needs

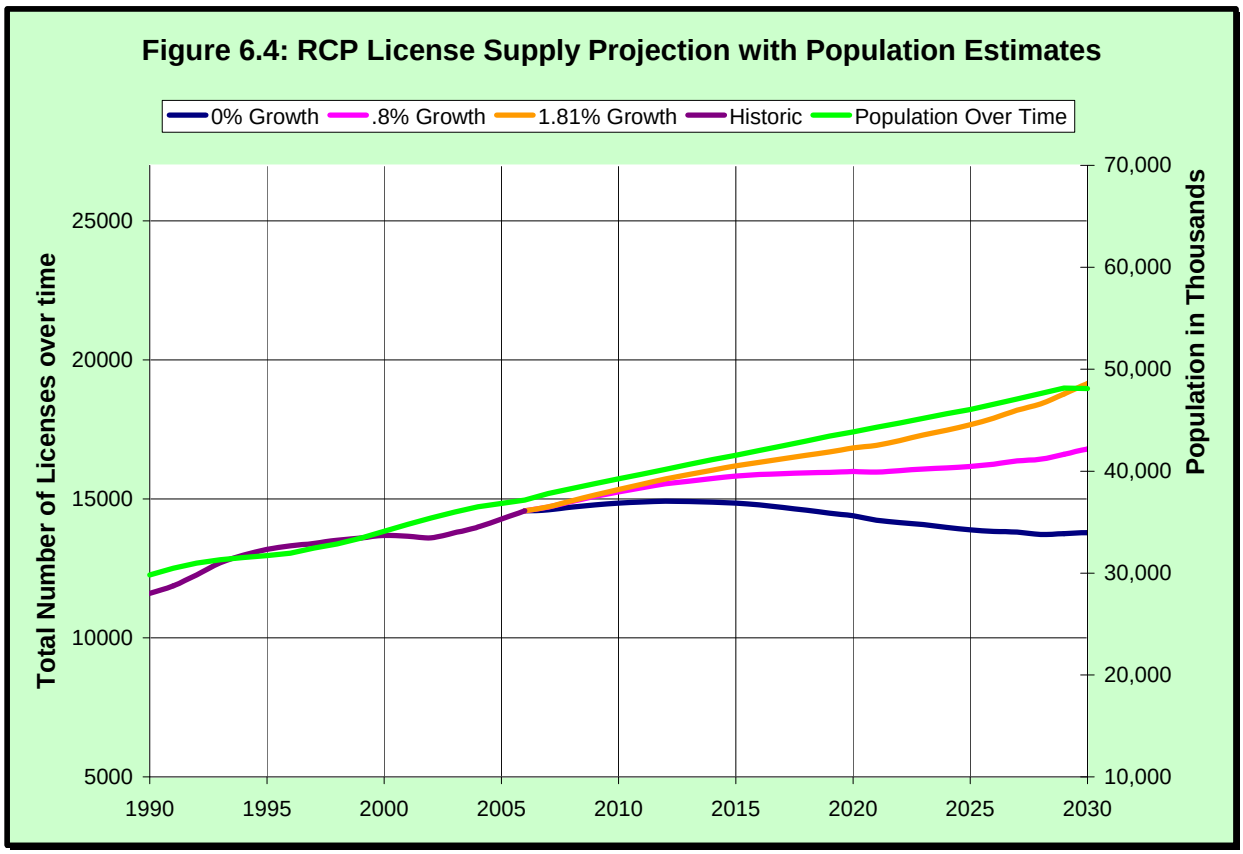
How much growth will need to occur to meet the needs for future RCP services?

Mid-Range, Best Case and Worst Case Scenarios. Given the model specification, three growth rate scenarios were chosen to forecast the possible range of needs for RCP services. These estimations are referred to as a "mid-range," "worst case," and "best case" scenarios. The first growth rate scenario (mid-range) of new licenses and 2006-2007 new license estimates were chosen based on the historic growth of new licenses

based on previous years and calculated from a base of the 2005-2006 new license totals. Under this scenario, new licenses would grow at a rate of .8 percent, resulting in 843 (specifically 842.64) for the base fiscal year 2006-2007. The second scenario (worst case) was based on the assumption that no growth would occur in the new license population and the average number of new licenses for 2006-2007 will equal the number of new licenses averaged during the 1988-1989 to 2005-2006 fiscal years period. Using this worst case scenario, the growth rate of new licenses would be set at zero and the 2006-2007 base new license total would be 747. The third scenario (best case) used a growth rate representing what is needed to maintain current RCP licenses in proportion to total population levels. Under this best case scenario, a growth rate of 1.81 percent was used resulting in a base year 2007 new license estimate of 853 (853.2) new licenses.

Using these scenarios, with their corresponding sets of assumptions, plotting the resulting estimates was a straightforward matter. As seen in Figure 6.4, projections for the different supply assumptions follow three different and distinct courses. As displayed in the graph, the growth in licenses under the 1.81 percent growth rate will

Figure 6.4: RCP License Supply Projection with Population Estimates

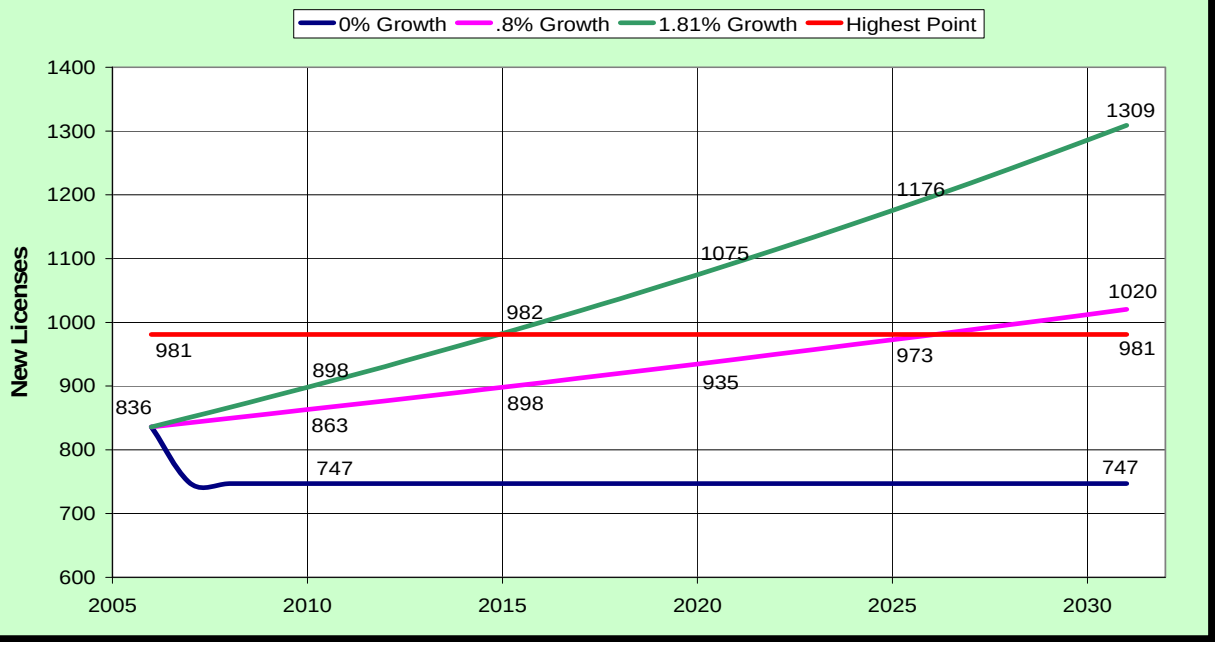


outpace the California population growth in the early years of the model's estimation, then falls below the California population growth rate (represented by the green line), and finally by 2030 the estimate exceeds it. This dip in total licenses occurs under all

three scenarios and is caused by the current ages of license holder in the RCP workforce. In the 2006-2007 fiscal year, 58% of the current licenses are held by individual 45 years and older. As seen in Figure 6.4, in 10 to 20 years this segment of RCPs starts retiring (**Outflow**) from the RCP licensed population faster than the projected entering licenses within the model. This leads to a period of projected depressed supply, which is represented in the horizontal paths that these estimates follow during these years. In the case of the other two growth scenarios, license totals level off much faster and growth comes to a halt as this retiring phenomenon affects their projections.

Upon seeing these results, we can conclude that to fully meet the future needs of the California population, current licenses must grow at a rate of 1.81% a year. Yet, this is not easily achieved given the practical issues in obtaining the necessary new licenses needed to achieve that goal. As seen in Figure 6.5, growth of new licenses under that scenario would need to grow beyond the largest number of new licenses that has ever occurred since licensing was initiated (excluding the first two years). To further illustrate the point, in the fiscal year 1992-1993, 981 new licenses were issued to RCPs, the largest number of licenses to be issued for any year other than the first two years of the licensing requirement. With the 1.81% growth pattern, by 2015 the need for that number of new licenses total has already been exceeded, with 982 new licenses needed. Even more importantly between the years of 2010 to 2015, an average of 940

Figure 6.5: New RCP License Estimates under the Different Assmptions



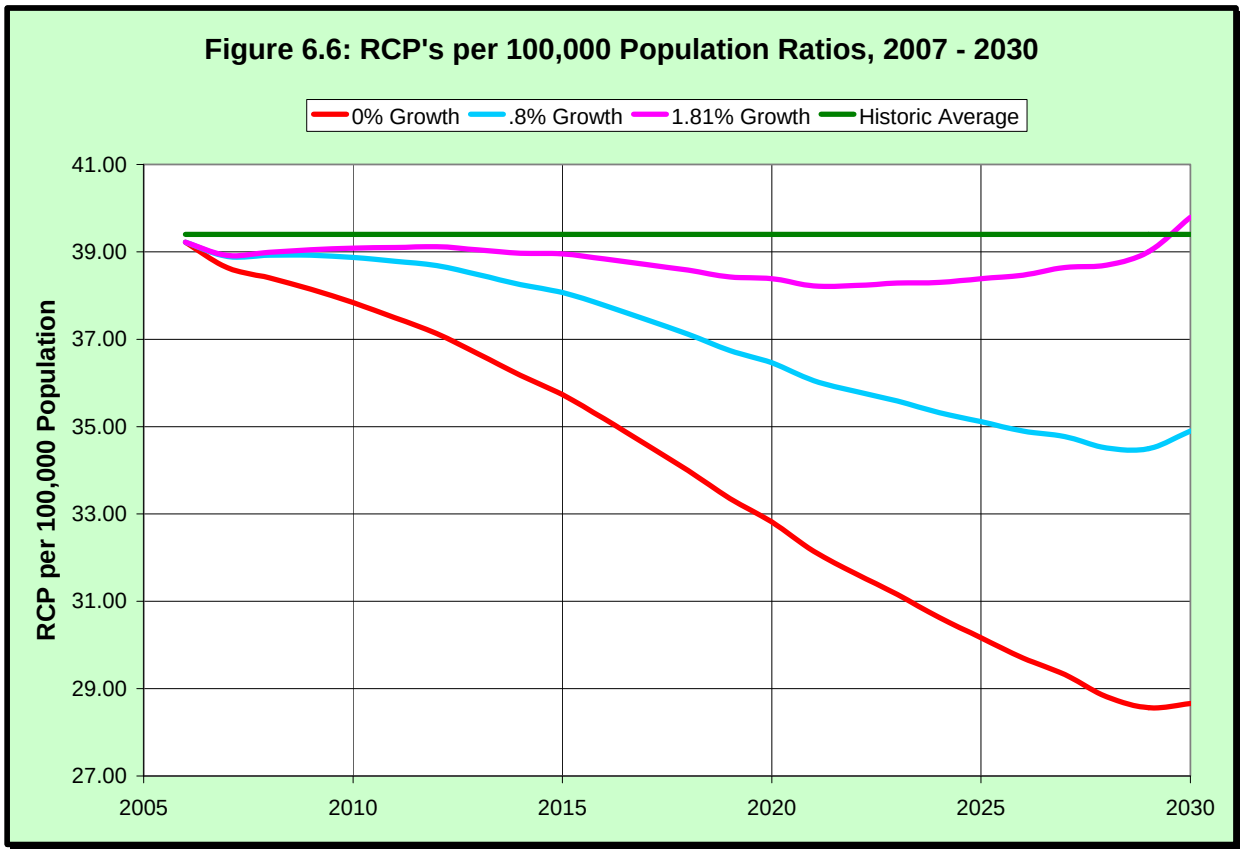
new licenses per year must be issued simply to replace exiting licenses. In the twenty years that the California Respiratory license requirement has been in effect, new license

totals have surpassed 900 only twice: once in fiscal year 1991-1992 (941) and in fiscal year 1992-1993 (981). Given this history, it can be easily assumed that achieving and sustaining such licensee growth would require tremendous effort, and to entice new people to get their California licenses to offset the aging license population will be a difficult undertaking.

The mid-range scenario with an average growth rate assumption of .8% represents the historical growth trend of the number of new RCP licenses exhibited during the fiscal years 1989-1990 to 2005-2006. The assumptions made under this scenario are much more modest, with the estimates of new licenses not passing the highest total of licenses seen to date until 2026. Under this scenario, new license levels would need to be sustained at totals greater then 836 (a number which represents the 2005-2006 new licensing starting point) throughout that 19 year period. Unfortunately, based on past observations, the longest, continuous time that 800 new licenses per year (or more) have ever been produced (after the initial two-year period) occurred in only one 5-year period (FY 1990-1991 to FY 1994-1995).

The third trend line scenario was produced as a conservative estimate showing the implication of what could happen if the historic average of new licenses was maintained into the future. Under this scenario, the historical average number is placed in the model, and no growth in the number of new licensees is considered.

Adding in Future Demand. Keeping in mind that the above scenarios offer only part of the picture regarding future workforce level, a more disturbing pattern emerges when the demand for respiratory care is added to the model. When these supply model assumptions are mapped with the demand model framework of RCP per 100,000 California residents, a more precise view emerges regarding the needs of the RCP profession and California population. Figure 6.6, displays the fact that current RCPs per 100,000 Californians levels are currently below the historic average. In Figure 6.6 the trend line produced under the 1.81% growth rate scenario stays relatively flat (reflected by the dip seen between years 2015 and 2030, which is less then one RCP per 100,000 resident difference), suggesting that it is keeping up with the projected growth in population. It only starts to rise until year 2025 and eventually passes the historic average by 2030. The other growth scenarios display more negative consequences. In 2015, under these scenarios “RCP per 100,000” levels will fall under the current standard, with the .8 percent growth pattern exhibiting a modest three percent decline falling to the 38.1 RCPs per 100,000 residents level. The average zero growth in new licenses scenario exhibits a more drastic change (a nine percent decline) falling to the level of 35.7 RCPs per 100,000 residents. By 2020 though, this downward change becomes even greater under both of the scenarios. For the .8 percent growth trend scenario, the level of RCPs per 100,000 residents falls to 36.7, marking a 7.6 percent decline in RCP levels needed to maintain the current level of care. Under the zero growth pattern, this change is even greater with the level of RCPs per 100,000 residents



falling to 32.8, which is a 19.5 percent decline in the overall number of RCPs needed to care for respiratory care patients based at current levels.

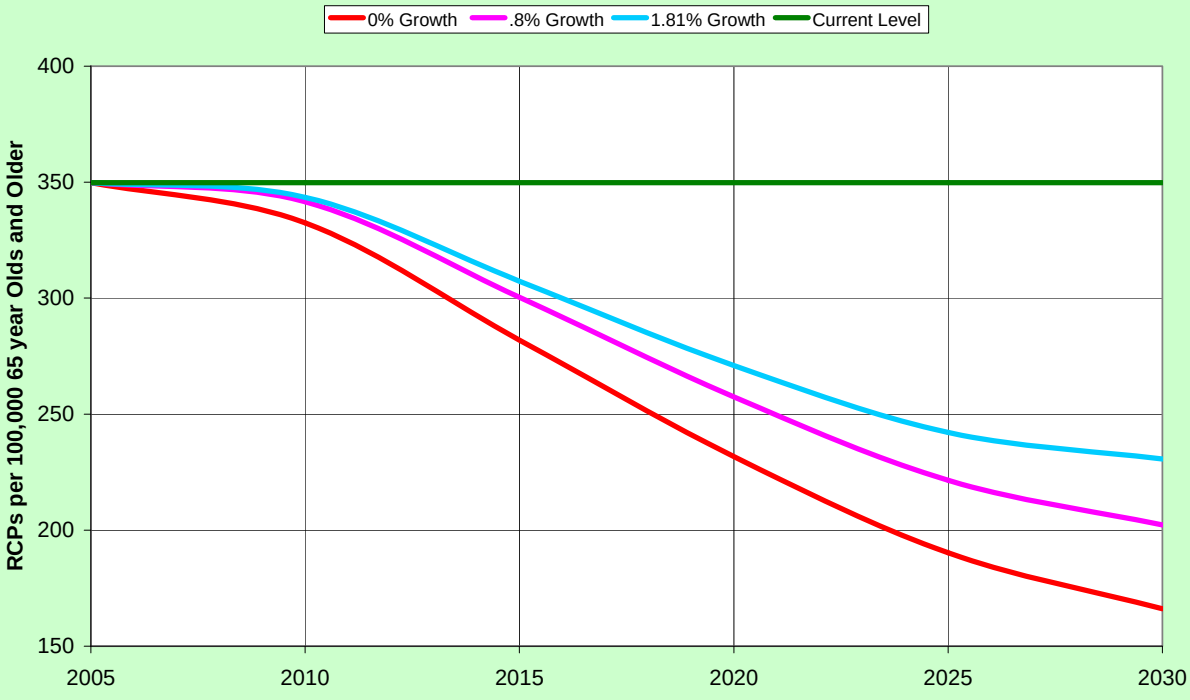
From these results, we again conclude that to solve any shortfall in future demand, actions promoting the growth of new licenses to achieve a rate of growth of new licenses equaling 1.81 percent or more a year would be necessary. Yet, upon further analysis, we conclude this might still not meet all respiratory care demand needs. Once RCP totals are compared with the ISR age categories, the future demand picture becomes sharper. As seen previously in Figure 6.3, future population estimates for California predict a drastic change in the ages of Californian residents. By 2030, the 65 and older age bracket is projected to double, which seems to be a primary driver in fueling California's population growth into the future. Results from the ISR Employer Survey of Acute Care Hospitals[21], indicate that RCPs spend their time among the population age groups at different rates: 17.16 percent of services are provided to those Under 5 years old, 10.65 percent is provided to those 5 through 17 years old, 19.53 percent to those 18 through 44 years old, 24.43 percent to those 45 through 64 years old, and 29.22 percent of services are provided to those with 65 years and older. Knowing that RCPs spend most of their time with the older age brackets, namely the 65 and older, leads to the conclusion that any reduction in the ratio between RCPs and that

[21] Numbers to be shown here are in the "weighted average" form described earlier in the chapter.

demographic will mark a reduction in the ability to meet the demand of the total population.

Under the 1.81 percent best case growth rate scenario, even though the RCPs per 100,000 residents levels stay relatively the same, the RCPs per 100,000 "65 years and older" residents levels drop drastically. As seen in Figure 6.7, under all the growth model assumptions, RCP numbers just do not keep pace with the rising numbers of 65

Figure 6.7: RCPs per 100,000, California Population 65 Years of Age and Older, 2005 - 2030

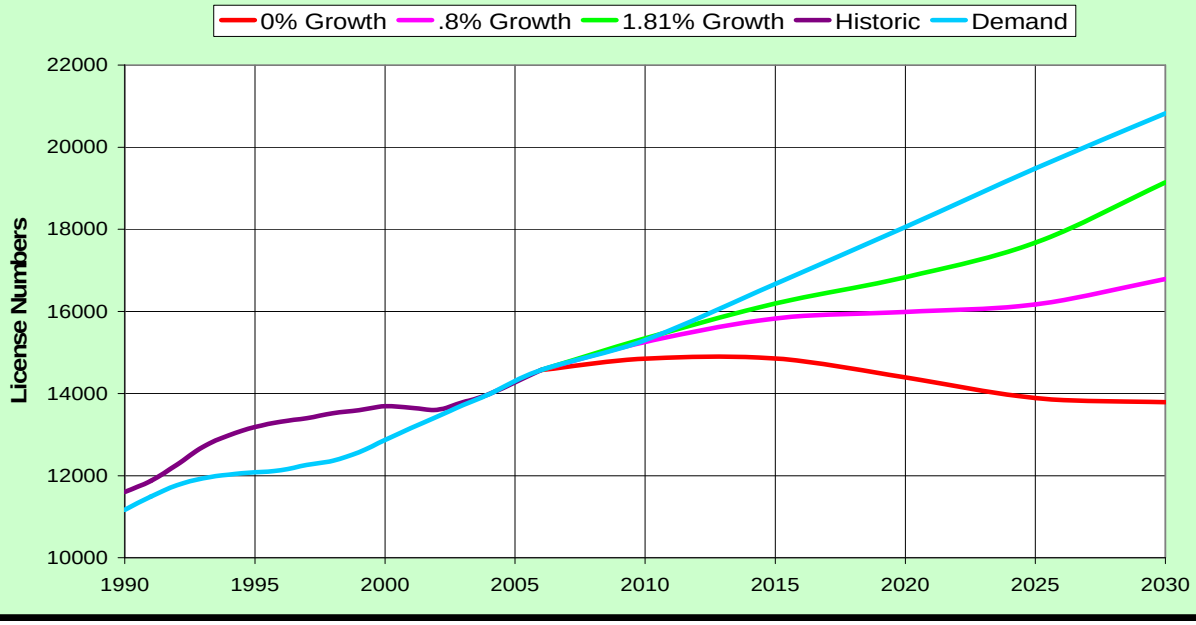


and older residents of California. Again, when looking at Figure 6.3, one can see that from years 2004 to 2030, the "65 and older" age group roughly doubles in size. Considering the finding that the majority of RCP time is spent with this age group, it appears unlikely the respiratory care needs of the future population will be met even under the most optimistic growth projections. Indeed, it is somewhat startling to realize that under the .8 mid-range percent growth rate "mid-range" scenario (again see Figure 6.6), levels of RCPs per the "65 and older" age group fall to a little more then one-half of what they are currently. While the 1.81 percent growth "best-case" scenario projection suggests a better job of slowing the fall of these ratios, its levels still fall to that of a 100 less RCPs per 100,000 than are currently found for this older age group.

Knowing the future age proportions of California residents in these various age ranges will change dramatically into the future (affecting the needs of the population as a

whole). The next step of analysis uses current license ratios per age category to estimate future total demand. These ratios (explained earlier in the demand model section of this chapter) represent the current usage of RCPs (licenses) by the different age categories within the California population. These ratios allowed the ISR to calculate a number of licenses that represent proxies for the current level of care being provided to the different future age groups. These totals are created by applying these ratios to the California Department of Finance's estimates for future population totals. For example, in the 2006-2007 fiscal year, there are 14,574 RCP licenses active in California. When the time spent by RCPs with each age group ratios are applied to the license total, results show 2,501 licenses are needed for services to the Under 5 years old group, 1,558 licenses are needed for the 5 through 17 years olds, 2,847 for services to the 18 through 44 year olds, 3,409 for services to 45 through 64 year olds, and 4,258 licenses are needed to provide services to the 65 years and older age group. The next step of the calculations involves using the future estimated population figures (from the California Department of Finance) for each age group and applying the RCPs needed per age group ratios to these estimates. Using this modeling technique projects that in 2010, the RCPs (licenses) needed by the Under 5 year old group will be 2,598, 1,545 RCPs (licenses) will be required for the 5 through 17 year olds, 2,918 RCPs will be needed for 18 through 44 year olds, 3,683 RCPs will be needed for 45 through 64 year olds, and 4,556 will be required to provide the services for the 65 years and older age group. Summed together, an estimated grand 15,300 licenses will be needed by the population as a whole in the year 2010 based on these age category sensitive estimates.

Figure 6.8: Estimated Supply and Demand of RCP Licenses, 1990 - 2030



In Figure 6.8, this demand format (details presented earlier) is plotted with all three of the supply model scenarios. Under this framework, license differences can be calculated under the different the supply model assumptions. As seen here, none of the supply model scenarios meet estimated demand needs of the population in the future. This shortfall in supply is caused by demand becoming a much stronger force in the market for RCP services because the 65 years and older age group becomes an increasing factor in the demand for respiratory care services. By 2015, which is 8 years into the future from this study, the demand for RCP services would require 16,665 licenses to meet current standards. Comparing this number with the different supply assumptions creates deficits under all the assumptions, with these 2015 deficits equaling: 472 licenses for the 1.81 percent assumption, 839 for the .8 percent assumption, and 1811 licenses for the average assumption. As one would expect these deficits grow as time moves forward, with the final calculations of deficits being shown in Table 6.6 which is listed below:

Table 6.6: Estimated Supply and Demand Differences

Year	2010	2015	2020	2025	2030
0% Growth	-449	-1,811	-3,666	-5,592	-7,035
.8% Growth	-43	-839	-2,067	-3,313	-4,033
1.81% Growth	40	-472	-1224	-1,806	-1,677

It should be noted that these license figures also assume that current employment percentages and employment status conditions currently seen are maintained into the future. Changes in the proportions of full-time and part-time workers, use of overtime, factors affecting entry or exits of individual eligible for the RCP workforce, and similar changes could all impact the projections presented here.

In summary, the ISR sees the potential for a “perfect storm” scenario driven by a constellation of factors that will create serious shortages of RCPs available to meet the needs of the California population in the coming decades. Key among the drivers of this perfect storm are the following factors: age distribution of the current RCP workforce suggesting a large group about to leave the workforce through retirement; indications that a significant portion of those in education programs about to enter the profession are comprised of older individuals returning to school which will result in shorter career spans for individuals entering the profession as new licensees; a growing California population and within California’s growing population, a disproportionately larger number of 65 and older individuals who consume an especially large portion of available respiratory care services. First, the age distribution of the current RCP workforce suggests that like the American population in general, a large percentage off individuals will be leaving the workforce in the next decade, as the “baby boomer” generation reaches retirement age. Second, according to those directing respiratory care education programs (the entry point to the profession), a significant portion of students seen in current programs are older individuals returning to school to pursue respiratory care careers. Such individuals will have shorter career spans than students who

transition directly from high school. In the intermediate and longer term, this will result in a reduction of overall supply of RCPs available to the workforce. Third, California's population is growing. Just to meet the demands of this growing population, the number of new RCPs being licenses will have to grow at rates above historical averages, especially given the number of "exits" from the workforce that are likely. Fourth, while the California population growth will increase demand, the disproportionate growth of the 65 and older age group in the population will drive demand even higher than is suggested by the general increase in population because this group consumes a larger portion of respiratory cares services than other age categories except the very young. The combination of the disproportionately large growth of those 65 and over, coupled with their higher level of consumption of respiratory care services will result in an inability to meet current staff to patient ratios without mechanisms to significantly increase the growth rate of the profession.

Key Finding

The ISR sees the potential for a "perfect storm" scenario driven by a constellation of factors that will create serious shortages of RCPs available to meet the needs of the California population in the coming decades. Key drivers of this perfect storm are:

- the age distribution of the current RCP workforce suggesting a large group about to leave the workforce through retirement;
- indications that a significant portion of those in education programs about to enter the profession is comprised of older individuals returning to school which will result in shorter career spans for individuals entering the profession as new licensees;
- a growing California population and within California's growing population, a disproportionately larger number of 65 and older individuals who consume an especially large portion of available respiratory care services.

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Transitioning the Respiratory Therapy Workforce for 2015 and Beyond

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The American Association for Respiratory Care established a task force in late 2007 to identify likely new roles and responsibilities of respiratory therapists (RTs) in the year 2015 and beyond. A series of 3 conferences was held between 2008 and 2010. The first task force conference affirmed that the healthcare system is in the process of dramatic change, driven by the need to improve health while decreasing costs and improving quality. This will be facilitated by application of evidence-based care, prevention and management of disease, and closely integrated interdisciplinary care teams. The second task force conference identified specific competencies needed to assure safe and effective execution of RT roles and responsibilities in the future. The third task force conference was charged with creating plans to change the professional education process so that RTs are able to achieve the needed skills, attitudes, and competencies identified in the previous conferences. Transition plans were developed by participants after review and discussion of the outcomes of the first two conferences and 1,011 survey responses from RT department managers and RT education program directors. This is a report of the recommendations of the third task force conference held July 12-14, 2010, on Marco Island, Florida. The participants, who represented groups concerned with RT education, licensure, and practice, proposed, discussed, and accepted that to be successful in the future a baccalaureate degree must be the minimum entry level for respiratory care practice. Also accepted was the recommendation that the Certified Respiratory

Therapist examination be retired, and instead, passing of the Registered Respiratory Therapist examination will be required for beginning clinical practice. A date of 2020 for achieving these changes was proposed, debated, and accepted. Recommendations were approved requesting resources be provided to help RT education programs, existing RT workforce, and state societies work through the issues raised by these changes. *Key words: respiratory care; respiratory therapist; manpower; education; training; competency; licensure; credentialing; accreditation; credentials; specialty; protocols.* [Respir Care 2011;56(5):681–690. © 2011 Daedalus Enterprises]

Introduction

In 2007 the American Association for Respiratory Care (AARC) established the "2015 and Beyond" task force. The charge to this task force was to determine the changes required by the profession of respiratory care to meet the evolving demands of the medical community and to position respiratory therapists (RTs) as a vital member of the medical community in 2015 and beyond.[1] The specific questions the task force was asked to address were:

- How will patients receive healthcare services in the future?
- How will respiratory therapy be provided?
- What knowledge, skills, and attributes will RTs need to provide care safely, efficiently, and cost-effectively?
- What education and credentialing systems are needed to provide this knowledge and these skills and attributes?
- How do we get from the present to the future with minimal impact on the respiratory therapy workforce?

The task force elected to address these questions through a series of 3 conferences. The first conference was held in the spring of 2008. The results of this conference[1] indicated that the RT of today barely resembles the RTs of the 1950s and 1960s, and the future role of the RT will most likely be different from today. Healthcare is going through dramatic changes, third-party payers are challenging payment for iatrogenic injury, the entire healthcare financial system is being debated, the focus of care is shifting from acute to chronic care, manpower issues are expected to affect all disciplines, the workforce is aging, and rapid introduction of innovation in the provision of medicine and information technology is expected to be the norm.[1]

Conference 2 was held in the spring of 2009. In this conference the attendees focused on identifying the competencies graduate and practicing RTs will need in 2015 and beyond.[2] The attendees identified 73 competencies in 7 majors areas: diagnostics, disease management, evidence-based medicine and respiratory care protocols, patient assessment, leadership, emergency and critical care, and therapeutics.[2]

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The third conference of this series was conducted on Marco Island, Florida, July 12–14, 2010. The goal of this conference was to determine what changes in the profession are necessary to position RTs to fulfill the roles and responsibilities identified in conference one and to ensure that future and practicing RTs acquire the competencies identified in conference two. It was postulated that changes would be needed in the RT education, accreditation, and credentialing processes to meet the needs identified from conferences one and two. This paper reports the results and recommendations formulated during the third "2015 and Beyond" conference.

Methods

The third conference started with a series of presentations (appendix 1, in the supplementary materials to this paper at http://www.rcjournal.com) designed to facilitate discussion and decision making from the 35 voting participants from 18 stakeholder organizations in attendance (appendix 2). Appendix 3 lists the stakeholder organiza-

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tions that were invited to participate in the conference by the "2015 and Beyond" task force. The task force members are listed in appendix 4. Pre-conference surveys of RT program directors, RT department directors, and deans of health science divisions were conducted in May of 2010 by the "2015 and Beyond" research group (appendix 5).

The first day of the conference began with presentations (appendix 1) that reviewed the conclusions and recommendations from the first 2 conferences.[1,2] These were followed by workforce data from the 2009 AARC Human Resources Study[3] and presentations of the results of 2 pre-conference surveys, which generated 1,011 responses from RT educators[4] and directors of respiratory care departments.[5] The survey questions included the competencies, education level, and credentials needed for entry into practice in 2015 and beyond. Three pre-conference surveys of deans who are members of the Association of Schools of Allied Health Professions, 2-year-college deans without RT programs, and deans with RT programs were not presented because of low response rate. The first conference day ended with an overview of the AARC's Medicare Part B Respiratory Therapy Initiative in the United States Congress.

The second day of the conference focused on generating, discussing, and accepting recommendations for change. We used voting key pads (eInstruction version 5.62.0090, Denton, Texas) to record and display voting on all proposals. A simple majority was used to approve all proposals made by conference attendees, with yes, no, and abstain votes recorded by a computer and the tally projected on the screen at the front of the room following the close of voting. On the third day of the conference, attributes used to evaluate recommendations and 11 recommendations to be forwarded to the AARC Board of Directors were reviewed again by the participants. Post-conference plans for a public hearing, an informational timeline, visits to stakeholder groups, and plans for publication of a conference paper were discussed by the conference participants before the conference adjourned. A public hearing on the recommendations accepted and approved by conference 3 participants was held the day after the conference adjourned.

Results

The overall goal of the conference was accepted and approved by the attendees. The attributes that transition recommendations needed to meet were approved by conference participants (Table 1). The voting results for recommendations presented and debated can be found in Table 2.

Conference Goal

The conference goal was to determine what changes in the profession are necessary to position RTs to fulfill the roles and responsibilities identified in conference one and to ensure that future and practicing RTs in 2015 and beyond acquire the competencies identified in conference two.

Table 1. Attributes That 2015 Transition Plans Must Meet

Maintain an adequate number of respiratory therapists throughout the transition.
Address unintended consequences, such as respiratory therapist shortages.
Require multiple options and flexibility in educating both students and the existing workforce. (eg, affiliation agreements, internships, special skills workshops, continuing education)
Require competency documentation options for new graduates.
Support a process of competency documentation for the existing workforce.
Assure that credentialing and licensure recommendations evolve with changes in practice.
Address implications of changes in licensing and credentialing.
Establish practical timelines for recommended actions.
Assure that emerging conference recommendations are supported by a plurality of the stakeholders in attendance.
Reflect the outcomes of the previous two 2015 and Beyond conferences.
Identify the agency most appropriate to implement identified elements.

Education

A single recommendation regarding RT education was accepted and approved by majority vote:

- That the AARC request the Commission on Accreditation for Respiratory Care to change, by July 1, 2012, accreditation standard 1.01 to read as follows:

1.01 The sponsoring institution must be a post-secondary academic institution accredited by a regional or national accrediting agency that is recognized by the United States Department of Education and must be authorized under applicable law or other acceptable authority to award graduates of the program a *baccalaureate or graduate* degree at the completion of the program. *Programs accredited prior to 2013 that do not currently offer a baccalaureate or graduate degree must transition to conferring a baccalaureate or graduate degree, which should be awarded by the sponsoring institution, upon all RT students who matriculate into the program after 2020.*

Credentials

Two specific recommendations regarding credentialing were approved:

- That the AARC recommends to the National Board for Respiratory Care (NBRC) on July 1, 2011, that the Certified Respiratory Therapist (CRT) examination be retired after 2014.

Table 2. Votes on Recommendations in the Third Conference

	Yes no. (%)	No no. (%)	Abstain* no.	Total no.
Approved				
Conference goal	28 (88)	4 (12)	2	34
Evaluation attributes	26 (84)	5 (16)	4	34
Education	20 (63)	12 (38)	3	35
Credentials	25 (76)	8 (24)	2	35
Licensure	28 (93)	2(7)	5	35
Transition of respiratory therapy workforce	28 (90)	3 (10)	0	31
Continuing education	31 (97)	1 (3)	0	32
Consortia and cooperative models	29 (100)	0 (0)	3	32
Budgetary resources	23 (96)	1 (4)	7	31
Promotion of career ladders	27 (100)	0 (0)	4	31
American Respiratory Care Foundation	25 (96)	1 (4)	4	30
Not Approved				
Two levels of practice	13 (41)	19 (59)	3	35
Licensure recommendation to chartered affiliates	2 (7)	28 (93)	5	35
Model career pathway	7 (25)	21 (75)	6	34

* American Association for Respiratory Care staff members did not vote on the recommendations.

- That the AARC recommends to the NBRC on July 1, 2011, that the multiple-choice examination components (CRT and Registered Respiratory Therapist [RRT] written) for the RRT examination should be combined after 2014.

Licensure

The following licensure recommendation was approved:

- That the AARC establish on July 1, 2011, a commission to assist state regulatory boards transition to the RRT requirement for licensure as an RT.

Transition of Respiratory Therapist Workforce

A number of recommendations regarding the existing workforce were approved:

- That the AARC Executive Office request that the AARC Board of Directors ask the appropriate existing sections to develop standards to assess competency of RTs in the workforce relative to job assignments of the RT.
- Standards should address the variety of work sites that employ RTs.
- Standards should address RT knowledge, skills, and attributes relative to the tasks being evaluated.

Continuing Education

The following recommendation regarding continuing education was approved:

- The AARC encourages clinical department educators and state affiliates' continuing-education venues to use clinical simulation as a major tactic for increasing the competency of the current workforce.

Consortia and Cooperative Models

The following recommendation regarding associate degree programs transitioning to baccalaureate degree programs was approved:

- That the AARC, in cooperation with the Commission on Accreditation for Respiratory Care, consider development of consortia and cooperative models for associate degree programs that wish to align with baccalaureate degree granting institutions for the award of the baccalaureate degree.

Budgetary Resources

The following recommendation regarding financial resources was approved:

- That the AARC provide budgetary resources to assist associate degree programs with the transition to baccalaureate level RT education.

Promotion of a Career Ladder

The following recommendation regarding a respiratory therapy career ladder was approved:

- That the AARC Board of Directors explores development and promotion of career ladder education options for the members of the existing workforce to obtain advanced competencies and the baccalaureate degree.

American Respiratory Care Foundation

The following recommendation regarding the foundation was approved:

- That the AARC request the American Respiratory Care Foundation to establish a restricted fund for donations to support the transition of associate degree programs to baccalaureate level RT education.

Recommendations Not Approved

The following recommendations considered by the Conference attendees were not approved:

- Two levels of practice, with details to follow.
- That the AARC recommend to chartered affiliates on July 1, 2011, that they recommend to their state regulatory board: (1) that the RRT credential be required to obtain a license to practice as an RT for all new applicants after 2012, and (2) that a provisional or limited license, effective for 3 years from the date of graduation from an RT program accredited by the Commission on Accreditation for Respiratory Care, be granted to all new applicants after 2012 who have passed the NBRC written registry examination but not the clinical simulation examination.
- That a model career pathway be developed by the AARC with the identified 2015 competencies incorporated into existing program levels but distinguishing between the competencies needed at each level (eg, Registry and Registry PLUS).

Discussion

Education

As defined in the results of the second "2015 and Beyond" conference,[2] the knowledge, skills, and attributes that future RTs will need exceed those of today's respiratory therapy program graduate. The education requirements of the graduate RT have not changed in 40 years, but the role of the RT has greatly expanded. The RTs of today are expected to perform therapeutic techniques, deliver medications, and operate medical devices that were not even available 20 years ago to evaluate and treat patients with increasingly complex cardiopulmonary disorders.[1,6] The RT of today is expected to assess and quantify the patient's cardiopulmonary status, to provide appropriate respiratory care by applying protocols, and to evaluate the medical and cost effectiveness of the care that RTs deliver.[2] The expectation is that in 2015 and beyond, in addition to an active role as a bedside care provider, all RTs will be consultants on how respiratory care should be provided. On patient rounds, RTs are expected to contribute to the discussion of goals and direction of therapy and to provide evidence supporting various approaches to respiratory care used in the intensive care unit. Specifically, RTs should possess the ability to discuss and recommend care for patients presenting with diseases that affect the respiratory system.[2]

RTs must achieve higher levels of education and training to respond to these increasing future demands projected by the "2015 and Beyond" task force conferences.[7,8] The attraction of respiratory therapy as a potential career choice to young people and adults has been partly due to its minimum education standard. The profession's current failure to demand an adequate entry-level education negatively affects the perception of the profession, suggesting a more technical and less professional career. Governmental agencies, legislators, third-party payers, and the military services all use the baccalaureate degree as the minimum education level that differentiates professions from technician groups.[9-11]

Educators are constantly challenged to expand their curriculums to prepare students for these new responsibilities.[12,13] These demands on RT curriculums will only increase in the future and will have a substantial impact on the education system. Associate degree RT programs are already stretched too thin to teach the knowledge, skills, and attributes that students need to enter the workforce today, let alone those needed in 2015 and beyond. In the pre-conference survey, 165 (47%) of the RT program directors indicated that because of state and institutional credit constraints for degree completion, they could not increase the credit hours in their curriculum. For example, the Texas Higher Education Coordinating Board restricts associate-degree RT programs to 72 semester hours of credit.[14] In the pre-conference survey of deans and directors of health science divisions with accredited RT programs, only 21 (30%) said that baccalaureate RT degree should be required for entry into the profession.[15] However, 46 (67%) of those respondents stated that a baccalaureate should be required after licensure for continued practice. The results of this survey lack validity because of the low response rate of 18% (75 of 411 colleges). The increased knowledge, new skills, and professional attributes simply cannot be easily taught in an already crowded 2-year curriculum. As medical science advances, it will be increasingly difficult for RT educators to add additional material to their curriculum. Too few associate-degree RT programs teach their students how to read and critique research, understand the statistical data, and search for evidence to support respiratory care practice. Evidence-

based medicine has become the standard for practice of all professions, and the graduate RTs must be proficient in the tenets of evidence-based medicine today and certainly by 2015 and beyond.[13]

The 2015 research group survey of RT program directors shows that evidence-based medicine and protocols, and leadership skills are not currently taught by the majority of associate-degree RT programs nor mastered by graduates.[4] Only 34% of associate-degree RT programs teach their students about evidence-based medicine and protocols, compared to 78% of baccalaureate RT programs.[4] The survey showed that 80% of baccalaureate RT programs teach students how to understand and critique published research, a necessary skill to practice evidence-based medicine, compared to 41% of associate-degree RT program.[4] Only one third of associate-degree RT programs teach students the meaning of general statistical tests, compared to over 78% of baccalaureate RT programs.

Changes in healthcare policy, regulation, and reimbursements have required RTs to adopt expanded roles, work more independently in settings across the continuum of care, and collaborate as partners in the healthcare delivery team. Sixty-three percent of baccalaureate RT programs teach students how to lead groups in care planning and facilitate collaboration, compared to only 52% of associate-degree RT programs.[4] Other areas where leadership is taught more often by baccalaureate RT programs than associate-degree RT programs are regulatory requirements of the healthcare system, financial reimbursement, and contributing to organizational teams for planning and collaborative decision making.[4]

Many associate-degree RT programs have had to increase from 2 years to 3 years to meet current needs and to prepare students to pass the CRT and RRT examinations.[4] Add a fourth year to a three-year associate-degree RT program and the student qualifies for a baccalaureate RT degree in many institutions. Requiring 3 years of coursework and only awarding an associate degree is grossly unfair to the student in these expanded associate degree programs.[4]

The "2015 and Beyond" conference 3 recommendations include a transition period of 10 years for associate-degree RT programs to make the arrangements necessary to be able to award baccalaureate RT degrees. Several senior colleges and universities have consortia agreements to award the baccalaureate degree in respiratory therapy to accredited baccalaureate RT programs located in academic medical centers and community colleges. Further, several accredited baccalaureate RT programs have online curriculums for associate degree RT students to complete requirements for a baccalaureate RT degree. These are proven methods for awarding a baccalaureate degree when the parent institution does not have baccalaureate degree granting authority. In addition, some community colleges are able to award baccalaureate degrees.[16-18]

Three conference recommendations were made to help associate-degree RT programs transition over 10 years to award a baccalaureate degree or higher in respiratory therapy. Development of consortia and cooperative models was recommended, because many currently accredited registry-eligible programs use this method to award baccalaureate degrees to their graduates. This recommendation is important because it is designed to show with time-tested models how associate degree RT programs, baccalaureate RT programs, and senior colleges can work together to reach a minimum baccalaureate degree entry level by 2020. Conference participants also requested that the AARC and the American Respiratory Care Foundation provide financial resources to help associate-degree RT programs transition to the point where they can award baccalaureate degrees directly or with a consortium agreement with a baccalaureate RT program or senior college. The AARC was requested by conference participants to ask the American Respiratory Care Foundation to establish a restricted fund for donations to help finance the transition of associate degree RT to baccalaureate RT programs.

The "2015 and Beyond" conference 3 heard pro and con arguments on the recommendation for transitioning to a baccalaureate RT degree entry level by 2020. Participants had no authority to vote on behalf of their respective agencies. The opposition position to change in education level is discussed below.

The RT profession has grown substantially over the past 50 years.[1] Its growth corresponds to an ever-increasing body of knowledge and technology, along with the skills required to serve patients in various settings.[1] However, the recommendation approved by the majority of attendees at conference 3 may not be feasible for many of the currently accredited RT programs. While all 3 "2015 and Beyond" conferences explored numerous issues related to increasing the RT education requirement to the baccalaureate level, they failed to discuss important aspects of the transition that could limit successful implementation:

- Transitioning from associate degree to baccalaureate degree by a secondary institution is politically charged and not likely to occur. Our nation's community colleges have played a major role in educating the respiratory care workforce. Currently there are 356 (87%) community college RT programs that award an associate degree, and their approximate enrollment is 6,230 RT students. Fifty-five programs (13%) award a baccalaureate RT degree, and most of these programs are at 4-year colleges.[3,4] While many current program directors may be interested in pursuing additional education opportunities for their students, there is no analysis that shows that 4-year institutions are willing to engage the transition and education of the respiratory care workforce from community colleges. Many 4-year colleges might be re-

luctant to invest in this workforce program if the return on investment is not profitable. In the states that allow baccalaureate degrees to be offered only in specified 4-year institutions, the current 2-year RT programs in community colleges would need to transition to this new standard. Additionally, due to force structure and degree requirements for its officers and enlisted corps, the current military programs are unlikely to be able to make the transition. Despite the fact that feasibility was accepted as an important attribute for any transition plan, this conference failed to assess the likelihood or cost involved in converting current 2-year programs or establishing new baccalaureate programs.

- The necessity of baccalaureate degree to maintain an entry level qualified workforce is disputed. The goal of the 3 conferences was to discuss the attributes for the future graduate RT, recommend competencies for future RTs, and identify the education pathway needed to reach this goal. However, there is a clear difference between recommended competencies and the required education level. Many of the competencies needed in 2015 and beyond are currently being taught in associate-degree RT programs, and additional education is not absolutely required for trained and competent RTs. There currently are numerous additional career pathways with additional skills for RTs to pursue that are recognized in the absence of a baccalaureate RT degree, including the Pulmonary Function Technologist, Neonatal/Pediatric Respiratory Care Specialist, and Certified Sleep Disorders Specialist. These specialties require additional education and on-the-job training, which is specialized training and not expected of the graduate RT. There is minimal and insufficient evidence that RTs with baccalaureate degrees are more prepared to enter the workforce than RTs with associate degrees, to undertake such a large-scale restructuring of the respiratory care education system.
- Increased competency based on increased education level is not proven. Current evidence does not suggest that additional education leads to a more qualified or competent RT. The NBRC study *Effects from Education Program Type on RRT Candidate Outcomes* demonstrated interesting characteristics of education level compared to pass rates on the CRT and RRT examinations.[19] Candidates who had earned a baccalaureate RT degree had a pass rate of 87% on the CRT, whereas associate degree holders had a pass rate of 79%. Candidates with a baccalaureate RT degree had a pass rate of 73% on the RRT, whereas those with an associate degree had a pass rate of 68%. Increasing the education level does not result in such large improvement in the examination pass rate. Before undertaking this transition, further consideration should be given to alternatives that will achieve the desired outcome: RTs who are prepared to be tomorrow's workforce. Examples of alternatives include:
  - Encouraging programs to affiliate with a 4-year college to allow students to continue with studies for a baccalaureate degree after earning an associate degree.
  - Continuing to support specialty certification that allows students to continue their education, with a focus on the needs for their specific job duties.
  - Developing an internship model through healthcare facilities, with a structured curriculum that allows the RT to take specialty examinations.

Credentials and Licensure

Graduate RTs are currently required to take 3 examinations to become an RRT.[2] First they must pass the CRT examination and be recognized as a Certified Respiratory Therapist. This examination is also used by most states as the state licensure examination. Upon successful completion of the CRT examination, the graduate RT is expected to take the RRT examination. The RRT examination is taken in 2 parts: a written multiple-choice examination, followed by a clinical simulation examination. While most graduates of RT programs take the CRT examination, a smaller percentage take the RRT examination. The current 2-tier credentialing system and state laws that require successful completion of only the CRT examination for licensure offer insufficient incentives to graduating RTs to demonstrate competency in areas tested by the RRT examinations. In 2003 the AARC, the Commission on Accreditation for Respiratory Care, and the NBRC recognized the RRT credential as the "standard of excellence" for RTs.

Both of the "2015 and Beyond" conference 3 recommendations on the appropriate credential to enter practice in 2015 stem from the widely held view that there is no difference in job duties between those holding the CRT and RRT credentials. In the pre-conference survey, RRT was selected over CRT as the credential that future graduates should earn to enter the profession by 81% of the RT department directors[5] and 68% of the directors of accredited RT programs.[4] A majority of the conference 3 participants believe that the scope of practice in 2015 will require the level of knowledge and critical thinking tested by the RRT examination. They were confident that the knowledge, skills, and attributes tested on the CRT examination, but not currently on the RRT examination, could easily be incorporated into the two RRT examinations. The vast majority felt that educators are now preparing students for the RRT examinations and that 2015 is the right time to require the RRT credential for entry into practice. The same question asked in the pre-conference survey[15] of deans and directors of health science divisions with ac-

credited RT programs found that 50 respondents (75%) favored the RRT being required to enter practice as an RT. In another pre-conference survey, of members of the Association of Schools of Allied Health Professions, 13 respondents (81%) indicated a baccalaureate or graduate degree should be required of RTs for licensure.[20] (Both of these surveys of deans had low response rates: 18% and 13%, respectively.) By 2015 the graduate RT must enter the profession demonstrating the confidence and skills required for practice at the registry level.[2] The American public should feel assured that patient care is given by the most competent and highly trained RT possible. Many RT educators and department directors surveyed prior to the conference stated that having 2 credentials (CRT and RRT) confuses the public, patients, and other healthcare colleagues who are not aware of the difference, primarily because CRTs and RRTs are assigned the same job responsibilities. The majority of conference participants believe that the respiratory therapy profession needs one level of credential (RRT), one education goal, and one expectation for competency of graduate RTs entering the workforce in 2015 and beyond. Of great concern to conference participants was the fact that the CRT credential was developed for 12-month training programs that will no longer exist in 2015. Any change in the credentialing system may require changes in some state regulations controlling who may deliver respiratory care.

Participants at the conference recognized the need to prepare for changes in state legislation and regulations regarding licensure of RTs to practice if the CRT examination is retired. Accordingly, the conference recommended that the AARC establish on July 1, 2011, a commission to assist state regulatory board transition to an RRT license. Many state licensure regulations currently state that the CRT or RRT is required for a license to practice. This type of regulatory language will accommodate grandfathered RTs with the CRT credential and also be able to license RRTs without the CRT credential.[21] Currently, the reference to the "entry level exam" means the CRT examination (but in most cases does not actually state it is the CRT examination, but simply the "entry level exam"). If the entry level were to become the RRT, most laws would not have to be amended. Most boards have fairly flexible regulatory authority and could shift over to the RRT exam if that were to become the entry level (including, presumably, some type of grandfather provision).[21] The purpose of the recommended AARC Licensure Commission is to develop models of regulatory language and to work with state licensure boards to make the transition needed by 2015.

Impact of Change on the Existing Workforce

As the expectations of the respiratory care entry level workforce change, increasing pressure will develop to assist existing practitioners to meet these new standards by documenting their success at acquiring the new competencies. Additional pressure will come from state licensing boards, and the public will demand that all healthcare professionals maintain evidence of continued basic competence throughout their professional careers. Time-limited medical specialty certification with required periodic recertification is now the standard for physicians and other professionals. While individuals already in the workforce are likely to be grandfathered, employers and the public will probably demand evidence of continued competence of all healthcare workers.[22]

Professional development, life-long learning, and validation of continued competence are the responsibility of each individual practitioner. A profession has a duty to define what its professionals should know and how they should act, and then provide continued education and documentation tools for its members to achieve those goals. This has traditionally been achieved in the form of scientific meetings, publications, and workshops, with or without an examination or certificate to demonstrate acquisition of the new knowledge. However, professional success depends on more than just knowledge: it requires acquiring new skills, new attitudes, and applying new knowledge to daily clinical practice. Employers are required to teach, test, and certify clinical competency with regard to required tasks of a particular job. The AARC should establish practice standards that include knowledge, skills, attitudes, judgment, abilities, experience, and ethics. The AARC should foster the development of tools to assess competence in all these areas throughout the duration of an RT's career. Clinical simulation techniques are useful for both teaching and assessing successful acquisition of new knowledge, skills, and attitudes in moving the current workforce members into the workforce of the future. Acceptance of the conference recommendation to elevate the entry level for RT practice to RRT will require individuals to achieve a higher level of problem-solving skills and pass a more comprehensive examination of clinical reasoning before entering into practice. Elimination of the current 3-examination system (also a recommendation of this third conference) will go a long way toward changing the expectations placed on students as they begin their education program, and will result in a different performance of successful program graduates throughout their professional careers.

Addressing Workforce Education Issues

The conference participants recommended that the AARC Executive Office and Board of Directors ask existing specialty sections to develop standards to assess and increase competency of RTs in the workforce relative to job assignments. The precedence of experienced RTs work-

Table 3. Recommendation Time Lines for Major Policy Changes and Effective Dates for Implementation

Recommendation	Change Timeline	Effective Date
Change Commission on Accreditation for Respiratory Care accreditation standard to require new programs after 2012 to offer a baccalaureate degree in respiratory therapy	July 1, 2012	January 1, 2013
Change Commission on Accreditation for Respiratory Care accreditation standard to require all accredited programs after 2020 to offer a baccalaureate degree in respiratory therapy	July 1, 2012	January 1, 2021
Retire National Board for Respiratory Care Certified Respiratory Therapist examination after 2014	July 1, 2011	January 1, 2015

ing in specialized areas such as neonatology and pediatrics, pulmonary function technology, sleep disorders, diagnostics, ground and air transport, long-term care, adult acute care, management, and education is well established.[2] Competency standards should address the variety of work sites that employ RTs and delineate the knowledge, skills, and attributes relative to the tasks needed in each specialty area.

Participants attending the conference requested that the AARC Board of Directors explore development and promotion of career ladder education options for the members of the existing workforce to obtain advanced competencies and the baccalaureate degree. This stems from the finding of the first conference that the roles and responsibilities of the RT workforce will change substantially in the near future, in response to major changes in the United States healthcare system.[1,2] The AARC must develop options for the current RT workforce to prepare for the new roles and responsibilities in 2015 and beyond. Further education and training in each of the 7 competency areas identified by the 2015 conference and in all the specialty areas need to begin immediately for the profession to ready by 2015.[1,2]

In the current and future education of RTs, the use of simulation undoubtedly will need to increase significantly. There are numerous capabilities, both in computer and human simulation, that may play a valuable role in RT education. One challenge in increasing the education requirement to the baccalaureate level may be in providing additional training opportunities. While the experience of direct patient care cannot be replaced, valuable knowledge and practice can be gained in the safety of the simulation environment. Many of the current capabilities of simulation were explored in "Respiratory System Simulations and Modeling."[23] MacIntyre categorized the simulation assets as: computerized simulation of patient signs and symptoms; computerized anatomic simulation and modeling of the respiratory system; and computerized physiologic simulation and modeling. Patient simulation systems include the full-size human patient simulator (to include ventilators) with modeling of upper-airway anatomy, breath sounds, respiratory system mechanics, and gas exchange. Airway simulation and modeling includes bronchoscopy simulation and 3-dimensional virtual bronchoscopy. Physiologic simulation and modeling can include respiratory system mechanics, distribution of ventilation, and gas exchange. Continued advances in this simulation technology can be directly applied to education of providers of mechanical ventilation.[24]

Simulation is already an effective clinical tool to train RTs and other medical providers in multiple clinical scenarios. The most frequent application has been in teaching basic resuscitation skills where use of human patient simulators is extensive and is shown to be superior to traditional teaching methods.[25] The use of mechanical ventilation simulators with medical residents for treatment of acute respiratory distress syndrome (ARDS) has demonstrated improvement in selecting proper ventilator settings.[26] Other specific respiratory therapy techniques, such as mini-bronchoalveolar lavage, are likewise effectively taught via simulation.[27] Preparation of the RT for work in the intensive care unit can be accomplished safely and effectively, and provide immediate feedback for individuals or a team, and clearly should be an integral part of any RT curriculum.[28] The value of simulation has been demonstrated in many different scenarios, such as trauma and the intensive care unit.[29] Given the current variety of simulation platforms and the expanding education needs of future RTs, simulation in didactic and clinical scenarios will be invaluable.

Summary

In response to major changes evolving in the United States healthcare system, the role and responsibilities of the RT workforce will change substantially. As predicted in the first conference, there will be increasing pressure for improved quality, reduced cost, and higher expectations of healthcare professionals. The second "2015 and Beyond" conference reached general agreement on entry-level competencies graduate RTs will need to succeed in this emerging healthcare environment. This third conference reached majority agreement on the need for a baccalaureate degree as the minimum entry education level and the RRT as the credential for beginning respiratory care practice. Discussion about how such changes would affect current program accreditation and migration, licensure, and the ex-

isting workforce led to recommendations that the AARC commit resources to support individuals and organizations in overcoming these challenges. Timelines (Table 3) to achieve these needed changes were proposed and accepted by a majority of the participants in this conference.

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2011 Fall Edition

December 7, 2011

OHIO RESPIRATORY CARE BOARD
LICENSING RESPIRATORY CARE PROFESSIONALS AND
HOME MEDICAL EQUIPMENT FACILITIES IN OHIO

The News Link

ORCB Passes Motion to Draft a Rule Requiring the RRT Credential for Initial Licensure —from the Board President, Marc K. Mays

Marc K. Mays, MS, RRT, RCP

In January 2011, I reported, through this newsletter, that the Board was undertaking a deliberate and substantive process to evaluate a proposed amendment to its current rules. As I reported then, this proposed amendment would recognize passing the written and simulation portions of the RRT examination as the minimum examination requirement to obtain a respiratory care professional license in the state of Ohio. Before going further, I need to state that this amendment, if adopted, would not have any impact on persons currently licensed in Ohio.

I supported this proposal. It is my opinion that graduate therapists should be required to take and pass both registry examinations offered by the NBRC as a condition for licensure. My position on this issue has evolved after careful thought and deliberation. It is based in part on the fact that all respiratory care educational programs are deemed to be 200 level or registered respiratory care programs by their accrediting organization - CoARC. It is the RRT credential that educational programs strive to prepare students to pass, not the CRT alone.

To study this issue, the Board chartered a Workgroup to study the proposal and render a report and recommendation back to the Board. This Workgroup, called the Ohio Examination Workgroup, was charged with evaluating the current and future needs of employers throughout Ohio, studying the impact of implementing such a change, and considering proponent and opponent positions on the proposal. The Workgroup was comprised of respiratory care professionals representing their profession, Ohio hospitals, representation from the National Board for Respiratory Care, Inc. (NBRC), representation from the Ohio Hospital Association, and Educators. Over the course of five months this group met to review, discuss, and develop assessment tools, including a statewide employer needs survey. On October 12, 2011, the Workgroup filed a report and recommendation with the Board, which supported the Board's original proposal to move away from the CRT examination as the minimum competency examination for licensure in Ohio toward the RRT written and simulation examination as the minimum requirement. This recommendation was not supported by all of the Workgroup participants, but was supported by an overwhelming majority.

On December 7, 2011, the Board passed a motion to move forward on a process to draft and eventually adopt a rule requiring a license candidate to pass the RRT written and simulation examination. At this time, an actual draft rule has not been approved by the Board. The Board's motion is not an end point, but a starting point in a very stringent process. It is now the Board's duty to continue this process: to consider the positions of stakeholders, deliberate, and, if it is determined to be in the best interest of Ohioans, promulgate a rule amendment. This process will take some time and the final language of the rule is yet to be written, but your positions and opinions are also important. All of this must take place before the Board can even file a new rule or amended rule with the State of Ohio. I urge you to get involved and submit your comments to the Board.

Licensure Statistics	
HME Licensed facility	124
HMER	766
L1	272
L2	38
RCP	7924

Inside this edition:

2012 License/Limited Permit Renewal Update

2012 License and Limited Permit renewal information will be mailed to all Active Respiratory Care Professionals and Limited Permit Holders on March 15, 2012. Similar to the renewal process in 2010, the Board is encouraging licensees to access the online renewal system to complete application submission. Online renewal is a fast and easy method to meet your renewal requirements. An optional paper form will be available for persons requesting the form.

New changes in the online continuing education reporting format should help licensee report all of the continuing education achievements. The Board has removed the single text field for reporting and replaced it with separate fields for each course. The system will handle up to twenty (20) individual courses. Reporting format is still text based and users are reminded to read the directions carefully.

How to improve your chances for successful license renewal:

(1) Update your mailing address if you have moved. The Board re-mails approximately 400 renewal applications each renewal due to moving. OAC rule 4761-10-03 requires license and permit holders to update address, employment information, or academic standing changes within 60 days.

(2) Read the instructions. The Board office addresses a very large number of inquiries during renewal that are clearly explained in the instructions.

(3) Complete all continuing education requirements prior to completing the renewal form. Also, review the continuing education requirements under OAC 4761-9-02. Additionally, continuing education must come from an approved source, noted under OAC 4761-9-05 (See below). Continuing education must comply with these rules or it will be rejected.

(4) Incomplete applications are the single greatest cause of delayed license or permit renewal. The Board will mail an incomplete application notice within a day or two of receipt. This notice will identify any problems or missing documentation. Approximately, 2-3 weeks prior to the expiration of a license or permit, the Board will mail a second incomplete notice to those persons that failed to respond to the first. If the license or permit remains incomplete, a notice of opportunity for hearing will be mailed following the June 30th lapse date. To avoid this action, the Board strongly recommends that licensee or permit holder respond to incomplete notices within a timely manner.

Continuing Education Requirements – Always worth repeating

All laws and rules governing respiratory care and home medical equipment licensure are available on the Board's website: www.respiratorycare.ohio.gov.

First, licensees and affected limited permit holders should read OAC 4761-9-05. This rule identifies the acceptable sources for continuing education. During renewal, the Board receives continuing education from hundreds of different sources, but not all are accepted. The following is a summary of this rule:

The Board will accept continuing education from any of the following combined sources:

1. Relevant college credit from an accredited institution.
2. Continuing education offered by an accredited respiratory care educational program.
3. Advanced life support programs or instructor for life support programs. Instructors must provide documentation or hours completed.
4. Recertification of advanced life support programs. Again, instructors must provide documentation of hours completed.
5. Relevant continuing education approved for contact hours by a professional organization or association. Examples include the AARC, OSRC, AMA, OSMA, ANA, ONA, OTS, ACCP, AHA, ALA, OLA, and AACCN. These organizations are listed completely in the rule.

The following is a summary of OAC 4761-9-02:

Respiratory Care Professionals:

(1) Shall complete twenty contact hours of relevant RCCE every two years. The twenty hours will include:

(a) One (1) contact hour of RCCE on Ohio respiratory care law or professional ethics as set forth in rule 4761-9-04 of the Administrative Code.

(b) At least fifteen (15) contact hours must include content relating to the provision of clinical respiratory care as defined under section 4761.01 of the Revised Code.

(c) Up to four (4) contact hours may include indirectly related content, including, but not limited to, activities relevant to specialized aspects of respiratory care, such as education, supervision, management, health care cost containment, cost management, health quality standards, disease prevention, health promotion, or abuse reporting.

Employment-based Limited Permit Holders must complete:

(2) Shall complete ten (10) contact hours of relevant RCCE every year. The ten hours will include:

(a) One (1) contact hour of RCCE on Ohio respiratory care law or professional ethics as set forth in rule 4761-9-04 of the Administrative Code.

(b) At least seven (7) of the required contact hours must include content relating to the provision of clinical respiratory care as defined under section 4761.01 of the Revised Code.

(c) Up to two (2) contact hours may include indirectly related content, including, but not limited to activities relevant to specialized aspects of respiratory care, such as education, supervision, management, health care cost containment, cost management, health quality standards, disease prevention, health promotion, or abuse reporting.

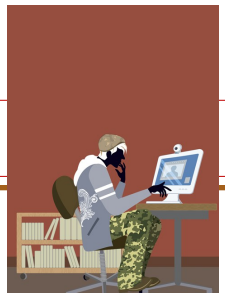
Waiver provisions:

A first time license holder in the state of Ohio who has been licensed for more than six months, but less than one year from the license expiration date must complete at least ten contact hours of continuing education, including one contact hour on Ohio respiratory care law or professional ethics. First time license holders who have held a license for less than six months from the biennial license expiration date will not be required to complete the RCCE requirements for the current term of collection, but will have to complete the RCCE requirements for the next biennial renewal period.

A request to waive the RCCE requirements may also be filed and a waiver granted for either of the following:

(a) The applicant has been absent from Ohio for more than one half of the term of collection for the authorization type held due to military service;

(b) The applicant has been prevented from completing the RCCE requirement due to documented proof of a medical disability for more than one half of the term of collection for the authorization type held.



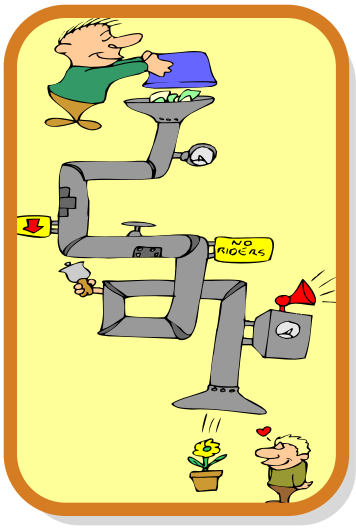
Free Law/Rules Review Continuing Education Course

The Board has two free online continuing education course meeting the one hour respiratory care law/rule review requirement for license/limited permit renewal. To take advantage of this offering, click on this link or go to the website listed: Free Ethics Continuing Education

http://respiratorycare.ohio.gov/AccessRespiratoryCareLicenseInformation/ContinuingEducationInformation/RCBLawRulesReviewOnlineContinuingEducation.aspx

2012 Home Medical Equipment Facility License and Registration Renewal

It will soon be time to renew your HME license or Certificate of Registration. All HME licenses and certificates of registration expire on June 30, 2012, unless the initial authorization is issued after January 1, 2012. Renewal information and applications will be mailed on March 15, 2012. The Board will be offering online renewal as an option for HME providers. This will permit license and registration holders to renew their authorization to provide HME services in Ohio through a secure web application. The Board encourages providers to complete their renewal by June 15, 2012, to allow for processing time prior to the expiration of the authorization to provide services. The following information will be required for renewal:



HME Certificate of Registration Holder:

1. A complete paper or online renewal application.
2. Proof of current accreditation from the accrediting organization of record. Proof is:
   a. An updated "Accreditation Verification form" Click on this link to obtain form:

      http://respiratorycare.ohio.gov/LinkClick.aspx?fileticket=Jg0N_FnfFwg%3d&tabid=79

   b. A notarized copy of a current letter of accreditation from the accreditation organization of record. Letter must include accreditation expiration date. Notarized copy should include a statement, signed by the facility's authorized representative certifying the copy is a true and accurate representation of the original record maintained by the facility.

HME License Holder:

1. Proof that the facility has developed a continuing education program for staff rendering HME services that meets the requirement of OAC 4761:1-13-01 (click here to see). Submit copy of biennial continuing education plan.
2. Proof that the facility has current product and professional liability insurance in the amount of one million dollars per occurrence, three million dollars aggregate. Submit copy of current certificate of insurance.

Continuing Education Requirements for Licensed HME Providers

Licensed HME facilities must demonstrate that a continuing education plan has been developed that provides continuing education for staff rendering HME services to the public in the state of Ohio.

A qualifying continuing education program must meet or exceed the following guidelines:

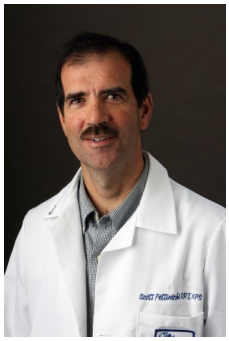
(1) Staff must complete no less than ten contact hours of continuing education per renewal cycle. Of the required hours:

(a) No more than five contact hours may be non-accredited in-service education;

(b) The remaining hours must come from educational programs specific to the type and level of HME service provided that are approved by an organization recognized by the Ohio respiratory care board that provides education relating to home medical equipment services or specific clinical affiliation; and

(c) Clinical and equipment cleaning/maintenance staff must have one contact hour of continuing education on infection control, equipment cleaning and cleaning agents, rotation of inventory and equipment separation.

Board Membership Changes



Scott M. Pettinichi, MEd, RCP, RRT, NPS was appointed to the Ohio Respiratory Care Board on July 22, 2011. Mr. Pettinichi resides in Cincinnati, Ohio and he is employed as the Director of Respiratory Care Services at Cincinnati Children's Hospital. Mr. Pettinichi has more than twenty-five years of adult/pediatric respiratory care experience, including teaching and management. Mr. Pettinichi replaces a long standing member of the Board, Susan M. Ciarlariello. Mr. Pettinichi's term will expire on March 14, 2014.

Carol A. Gilligan, ATP was appointed to the Ohio Respiratory Care Board on October 13, 2011. Ms. Gilligan previously served a six-year term on the Board that ended on April 22, 2011. Governor Kasich reappointed Ms. Gilligan after a brief term off the Board. Ms. Gilligan will serve on the Board as a representative to the home medical equipment industry. Ms. Gilligan is the founder and owner of Health Aid of Ohio, Inc., a growing custom/rehab medical equipment company located in Cleveland, Ohio. Ms. Gilligan is a long term member of the Ohio Association of Medical Equipment Services, serving in numerous leadership positions.

Fiscal Year 2012 Board Meeting

Many licensees don't know that Board meetings are public and open to anyone that wants to attend. It's a great way to learn about how the board functions and what issues are on its agenda. The following is a tentative meeting schedule for the 2012 calendar year.

February 8, 2012	August 15, 2012
April 18, 2012	October 10, 2012
June 6, 2012	December 12, 2012

Longest Standing Member of the Board Moves On

Susan M. Ciarlariello, MBA, RCP, RRT attended her last meeting as a member of the Ohio Respiratory Care Board on February 9, 2011, following four successive terms on the Board. In total, Ms. Ciarlariello served twelve years on the Board, making her the longest standing member of the Board during its twenty-two year history. Ms. Ciarlariello was originally appointed to the Board on May 7, 1999. Ms. Ciarlariello was appointed to three consecutive terms under Governor Bob Taft and to a fourth consecutive term under Governor Ted Strickland. On August 17, 2011, the Ohio Respiratory Care Board presented Ms. Ciarlariello with a resolution recognizing her long and outstanding contribution to the Board.

2011 Annual Report available on line

The Board's 2011 annual report is available at www.respiratorycare.ohio.gov. This report details the activities of the Board during fiscal year 2011, including a summary of all actions taken by the board.

THE OHIO RESPIRATORY CARE BOARD

Our Mission:
To protect and serve the public of Ohio by effectively and efficiently regulating the practice of Respiratory Care and Home Medical Equipment in the State of Ohio through the licensing of qualified practitioners and facilities, the establishment of standards for respiratory care educational programs and Home Medical Equipment facilities, and the enforcement of the laws and rules governing these practices.

Our vision:
Making a responsible difference for the citizens of Ohio --- by Efficient and Effective Licensing for Respiratory Care Professionals and Home Medical Equipment facilities, Enforcing Practice Standards and Promoting Professional Competency.

Licenses and Limited Permits Issued January 21, 2011 thru November 16, 2011

Limited Permits Issued

Number	Name	Issue Date
L1 6226	SMITH BRIGETT	20110127
L1 6227	WOLDEGIORGIES ELIZABETH	20110127
L1 6228	BARBECHO ERIKA	20110203
L1 6229	DISSER SARAH	20110203
L1 6230	GENETTE BRIDGET	20110203
L1 6231	MEADORS BRIAN	20110203
L1 6232	BRONOKOWSKI CHRISTOPHER	20110210
L1 6233	EGGLETON RYAN	20110210
L1 6234	EISHEN ABBY	20110210
L1 6235	GILLINGER AMANDA	20110210
L1 6236	MACIOCE JOH NATHAN	20110210
L1 6237	PARKER SHANTEE	20110210
L1 6238	COOPER ANNETTA	20110217
L1 6239	FAUST CYNTHIA	20110217
L1 6240	JARVIS KELLY	20110217
L1 6241	LEMING MONIQUE	20110217
L1 6242	MOLINATTO BRIANA	20110217
L1 6243	JOHNSON ASHLEY	20110217
L1 6244	DOUGHTY AMANDA	20110224
L1 6245	GHEARING BARBARA	20110224
L1 6246	PAULIN AMANDA	20110224
L1 6247	SKAGGS JAMES	20110224
L1 6248	STEELE JODY	20110224
L1 6249	WALTON AUSTIN	20110224
L1 6250	WORSHAM ANGELA	20110224
L1 6251	BILLINGS JARED	20110303
L1 6252	DAVIS ANGELA	20110303
L1 6253	DEFALCO JESSICA	20110310
L1 6254	DICKESS JERRY	20110310
L1 6255	FURNKASE LAUREN	20110310
L1 6256	IGO BETHANIE	20110310
L1 6257	OEHLER ERIN	20110310
L1 6258	CLAFLIN CHRISTOPHER	20110317
L1 6259	EVANS AMBER	20110317
L1 6260	FULLER DANIELLE	20110317
L1 6261	MORRIS DEBRA	20110317
L1 6262	WOMER JACK	20110317
L1 6263	AMOAKO AMA	20110325
L1 6264	SHEPKA ALLISON	20110325
L1 6265	FULOP ANNA	20110331
L1 6266	HOWARD WILMER	20110331
L1 6267	INBODY SIERRA	20110331
L1 6268	KAMBULE SHEENA	20110331
L1 6269	LEISENHEIMER GRACE	20110331
L1 6270	NICKEL CHERYL	20110331
L1 6271	BRIECK RACHEL	20110407
L1 6272	CAHILL JEFFREY	20110407
L1 6273	GLADE TINA	20110407
L1 6274	HILLIER ANDREA	20110407
L1 6275	HOLLIDAY JAYNE	20110407
L1 6276	PIERCE JESSICA	20110407
L1 6277	SINCLAIR COURTNEY	20110407
L1 6278	SMITH AMANDA	20110407
L1 6279	STUTLER TARA	20110407
L1 6280	ZUVER JAMEE	20110407
L1 6281	BUSCH TERESA	20110414
L1 6282	CASSINO NATALIA	20110414
L1 6283	CHINNOCK JENNA	20110414
L1 6284	DAVIS CAROL	20110414
L1 6285	DICKERSON STEPHANIE	20110414
L1 6286	EASTER LEIGH	20110414
L1 6287	EVERS JULIE	20110414
L1 6288	JOHNSTON SARAH	20110414
L1 6289	LESTER ROBIN	20110414
L1 6290	SPRINGER TROY	20110414
L1 6291	SHIRDON SOPHIA	20110414
L1 6292	ALEXANDER HEATHER	20110421
L1 6293	ALFANO NICKOLE	20110421
L1 6294	BROCK CARRIE	20110421
L1 6295	CANEI ROBERT	20110421
L1 6296	DEMENT TAMMY	20110421
L1 6297	NOBLE JAMES	20110421
L1 6298	PAYNE LAUREN	20110421
L1 6299	STAGGS LYRA	20110421
L1 6300	WELCH LINDSAY	20110421
L1 6301	UHLIR JENNIFER	20110421
L1 6302	WATSON KRISTOPHER	20110421
L1 6303	FYE ERICA	20110428
L1 6304	HALE DE'RHONDA	20110428
L1 6305	HATRIDGE ANDREA	20110428
L1 6306	KEENE MARY	20110428
L1 6307	KUCHAR KELLI	20110428
L1 6308	LOSEKAMP HAYLEY	20110428
L1 6309	WILSON ROBERT	20110428
L1 6310	YOUNG AMANDA	20110428
L1 6311	BROWN HOLLY	20110505
L1 6312	SOUTH EMILY	20110505
L1 6313	STEINES RACHEL	20110505
L1 6314	UJVARY JOYCE	20110505
L1 6315	JACOBSON ALICE	20110512
L1 6316	JOHNSON DARLA	20110512
L1 6317	LAWSON BRIAN	20110512
L1 6318	LUTHY JOSEPH	20110512
L1 6319	STANFILL CODY	20110512
L1 6320	WHITT ARNETTA	20110512
L1 6321	HICKEY RYAN	20110519
L1 6322	PAUNOVA TATYANA	20110519
L1 6323	RIVERA-WILSON ANA	20110519
L1 6324	ANTHONY BRITTANY	20110525
L1 6325	ELLER LEE	20110525
L1 6326	KENNISTON ANNE	20110525
L1 6327	NYE PATRICIA	20110525
L1 6328	WEASEL KELLIE	20110525
L1 6329	ATHEY MARY	20110602
L1 6330	CUMMINGS MEGAN	20110602
L1 6331	MILBURN, JR. GARY	20110602
L1 6332	WILBERT NICOLE	20110602
L1 6333	ALSIP ABBEY	20110609
L1 6334	CORTES AARON	20110609
L1 6335	JANNEY HOPE	20110609
L1 6336	KOEBERLE HANNAH	20110609
L1 6337	PELHAM RACHAEL	20110609
L1 6338	SCHMITT II GERALD	20110609
L1 6339	STANGLE JAMES	20110609
L1 6340	HOGAN KARLA	20110616
L1 6341	MRUSEK DIANNA	20110616
L1 6342	WHITE MARY	20110616
L1 6343	WYMAN TERRI	20110616
L1 6344	DEV PUNAM	20110624
L1 6345	GLANVILLE KAREN	20110624
L1 6346	SIMKOVICH STEFANI	20110624
L1 6347	TURNER MELISSA	20110624
L1 6348	WHITESEL JOHN	20110624
L1 6349	GAMBILL DETRA	20110630
L1 6350	MELLOTT HEATHER	20110630
L1 6351	MOORE JACQUIE	20110630
L1 6352	MOWEN CHAD	20110630
L1 6353	BARCROFT CODY	20110707
L1 6354	BROWN HEATHER	20110707
L1 6355	CUNNINGHAM MELISSA	20110707
L1 6356	DAVID THERESA	20110707
L1 6357	HOPSON JAMIE	20110707
L1 6358	KNUCKLES ASHLEY	20110707
L1 6359	SELBEE ELISE	20110707
L1 6360	WOMER JOANNE	20110707
L1 6361	ANTHONY THERESA	20110714
L1 6362	DONNELLY CALEB	20110714
L1 6363	FINLEY JASON	20110714
L1 6364	FLOCCARI LINDSEY	20110714
L1 6365	FUNK JOHN	20110714
L1 6366	GILLETTE RYAN	20110714
L1 6367	GUGGENBILLER JAMIE	20110714
L1 6368	HIGHTOWER ASHLEY	20110714
L1 6369	JONES MELISSA	20110714
L1 6370	KILGORE CHRISTA	20110714
L1 6371	MILLER LAURIE	20110714
L1 6372	PARISE MARY	20110714
L1 6373	PRICE AMY	20110714
L1 6374	ROBBINS ALEXIA	20110714
L1 6375	WIESEN ANDREW	20110714
L1 6376	RUTHVEN JONATHAN	20110715
L1 6377	ALLSTUN KELLEY	20110721
L1 6378	BRIGGS VIRGINIA	20110721
L1 6379	OTTEN LISA	20110721
L1 6380	WATZEK MIRANDA	20110721
L1 6381	BAHNY MELISSA	20110728
L1 6382	CARTER APRIL	20110728
L1 6383	GORDON JEFFREY	20110728
L1 6384	HONABARGER CHELCEE	20110728
L1 6385	SHALIN RACHELLE	20110728
L1 6386	CASTELLI ALICIA	20110804
L1 6387	CSER LAURA	20110804

Licenses and Limited Permits Issued January 21, 2011 thru November 16, 2011

L1 6388	RUBIN FELICIA	20110804
L1 6389	STARKS NORMA	20110804
L1 6390	WALSH VANESSA	20110804
L1 6391	MASCARA WILLIAM	20110805
L1 6392	FRALEY ASHLEY	20110815
L1 6393	LINDER MELISSA	20110815
L1 6394	SHIBLEY BRANDI	20110815
L1 6395	BALL TARISHA	20110818
L1 6396	BANNA FERAS	20110818
L1 6397	BURNS SANDRA	20110818
L1 6398	GUY TIMOTHY	20110818
L1 6399	JONES LAQUITA	20110818
L1 6400	LIZANICH JEFFREY	20110818
L1 6401	MCCULLY JONATHAN	20110818
L1 6402	O'BRIEN TIMOTHY	20110818
L1 6403	PORCH AMANDA	20110818
L1 6404	SCHANTZ DEBORA	20110818
L1 6405	SMITH NICOLE	20110818
L1 6406	SPANG KATHLEEN	20110818
L1 6407	VENTURA MATTHEW	20110818
L1 6408	MERRILL VANNESSA	20110819
L1 6409	PENDLETON AMANDA	20110819
L1 6410	POWERS ASHLEY	20110819
L1 6411	BARDO CAITLIN	20110829
L1 6412	BONITATI KATIE	20110829
L1 6413	CRUZ KRISTINE	20110829
L1 6414	FELLOWS SATIS	20110829
L1 6415	FERRER RACHEL	20110829
L1 6416	PATEL ROSHANKUMAR	20110829
L1 6417	WILSON SARA	20110829
L1 6418	ZALAR JAMIE	20110829
L1 6419	LANUM RICHARD	20110901
L1 6420	MALONEY PAUL	20110901
L1 6421	MARTINEZ JENNIFER	20110901
L1 6422	NEAL BRITTANI	20110901
L1 6423	TOWETT ERIKA	20110901
L1 6424	YATES NAOMI	20110901
L1 6425	ZORN AMY	20110901
L1 6426	LANE TONI	20110901
L1 6427	SUTTLE SANDRA	20110907
L1 6428	WADE SHANNA	20110907
L1 6429	SHAW JAMIE	20110912
L1 6430	ALLEN PATRICK	20110915
L1 6431	BRAZIE ANDREW	20110915
L1 6432	GRAY RACHEL	20110915
L1 6433	HILL ANTHONY	20110915
L1 6434	ICE TIMOTHY	20110915
L1 6435	KEMP DAVID	20110915
L1 6436	KOCSIS RYAN	20110915
L1 6437	OTT AMBER	20110915
L1 6438	RUSSELL JAMICA	20110915
L1 6439	STEWART CHERI	20110915
L1 6440	TASCO LANCE	20110915
L1 6441	EPPLEY BRIAN	20110922
L1 6442	NEESE BRANDON	20110922
L1 6443	SHELTON AMANDA	20110922
L1 6444	BYRUM JASON	20110929
L1 6445	CYRANEK BEATA	20110929
L1 6446	KEALEY KHRYSTAL	20110929
L1 6447	NEMET THOMAS	20110929
L1 6448	RAMOS CHRISTINE ANNE	20110929
L1 6449	SIMPSON MICHAEL	20110929
L1 6450	AHOLA NIKKI	20111006
L1 6451	MATTESON VALERIE	20111006
L1 6452	MUSCATELLO MALISSA	20111006
L1 6453	NEWCOMER ERIC	20111006
L1 6454	RUPERT BROOKE	20111006
L1 6455	CAISSE JESSICA	20111013
L1 6456	DIENER JENNIFER	20111013
L1 6457	LUIS JAYLORD	20111013
L1 6458	BARRON BRITTANY	20111020
L1 6459	HOLLOWAY DUSTIN	20111020
L1 6460	STAHL FREDERICK	20111020
L1 6461	ULERY ANDREA	20111020
L1 6462	HOFFMAN ANNETTE	20111027
L1 6463	MCDONALD MEGAN	20111027
L1 6464	ROMEO TIFFANI	20111027
L1 6465	BACKSCHEIDER BETH	20111103
L1 6466	BALL KATIE	20111103
L1 6467	ENGLE PATRICK	20111103
L1 6468	HAYES RAYMOND	20111103
L1 6469	MUSSE MOHAMED	20111103
L1 6470	RAMOS KIRSTEN	20111103
L1 6471	SCHMIDT SAMANTHA	20111103
L1 6472	SCOTT TERESA	20111103
L1 6473	MCALLISTER RICK	20111109
L1 6474	MCINTOSH MICHELLE	20111109
L1 6475	MYERS GINETTE	20111109
L1 6476	REDICK CHRISTOPHER	20111109

Respiratory Care Professional Licenses Issued

Number	Name	Issue Date
RCP 12286	PRITCHETT CAYLAH	20110121
RCP 12287	BURCKHART LISA	20110127
RCP 12288	CAPICCIONI STEPHEN	20110127
RCP 12289	CLARK JONI	20110127
RCP 12290	RAYBURN KIM	20110127
RCP 12291	SMITH JENNIFER	20110127
RCP 12292	STARK KATHLEEN	20110127
RCP 12293	WRIGHT EMILY	20110127
RCP 12294	CAPUTO JESSICA	20110203
RCP 12295	DOWLER DEANNA	20110203
RCP 12296	FRANKS STEPHANIE	20110203
RCP 12297	SHARPE KAYLA	20110203
RCP 12298	COX JEFFEREY	20110210
RCP 12299	KNIGHT LILY	20110210
RCP 12300	MALOY WILLIAM	20110210
RCP 12301	NISWONGER KEVIN	20110210
RCP 12302	BORGER LINDSEY	20110217
RCP 12303	CONLEY MATTHEW	20110217
RCP 12304	FERRELL BRIDGET	20110217
RCP 12305	GUERRERO IVET	20110217
RCP 12306	PAPOTNIK KELLY	20110217
RCP 12307	RAISON AMANDA	20110217
RCP 12308	REIMONDO STEVEN	20110217
RCP 12309	ROBERTS JAMES	20110217
RCP 12310	SALSBERRY MELISSA	20110217
RCP 12311	SMITH SHAWN	20110217
RCP 12312	VAUGHN LYNDSEY	20110217
RCP 12313	FRITZ EMILY	20110224
RCP 12314	MEIXNER AMANDA	20110224
RCP 12315	MILES MELINA	20110224
RCP 12316	WHITE BRANDON	20110224
RCP 12317	ADAMS MICHAEL	20110303
RCP 12318	BROWN BRITTANY	20110303
RCP 12319	HERTZMAN ROGER	20110303
RCP 12320	KING AMBER	20110303
RCP 12321	TUCKER MARLENA	20110303
RCP 12322	BROWN NICOLE	20110310
RCP 12323	CHAFFEE SUSAN	20110310
RCP 12324	EMMEL MARVIN	20110310
RCP 12325	HOLDEN MARY	20110310
RCP 12326	KLEIN AMBER	20110310
RCP 12327	LEEK MICHAEL	20110310
RCP 12328	MANN PHILIP	20110310
RCP 12329	MENDEZ ERICA	20110310
RCP 12330	REAGLE AMY	20110310
RCP 12331	WEAVER MATTHEW	20110310
RCP 12332	WILFING STACEY	20110310
RCP 12333	DAHLHEIMER MELISSA	20110317
RCP 12334	EMAHISER TIFFANY	20110317
RCP 12335	GIBSON MARY	20110317
RCP 12336	JACKSON BONNILEE	20110317
RCP 12337	KEELING SANDRA	20110317
RCP 12338	YOUNG SARAH	20110317
RCP 12339	ZAPOR MARY	20110317
RCP 12340	ZEITER BRITTANY	20110317
RCP 12341	ADAMS CAROL	20110325
RCP 12342	BLACK SARA	20110325
RCP 12343	DARMETKO REBECCA	20110325
RCP 12344	HIRED ABDULKADIR	20110325
RCP 12345	HOWARD SERENA	20110325
RCP 12346	LALLEY LYNN	20110325
RCP 12347	STEVENS LOUIS	20110325
RCP 12348	WEBER DAVID	20110325
RCP 12349	BUSCH SUZANNE	20110331
RCP 12350	HELINSKI SHERI	20110331
RCP 12351	LANGSTON LAUREN	20110331
RCP 12352	MILLS BRITTNEY	20110331
RCP 12353	POHORENCE AMANDA	20110331
RCP 12354	SIMMONS JESSICA	20110331
RCP 12355	BENDER JEFFREY	20110407
RCP 12356	CHARLTON JUDI	20110407

Licenses and Limited Permits Issued January 21, 2011 thru November 16, 2011

RCP	12357	EVANS JODI	20110407
RCP	12358	MABRY JUSTIN	20110407
RCP	12359	MARSHALL ARIEL	20110407
RCP	12360	PARSONS WENDY	20110407
RCP	12361	PHILLIPS DANA	20110407
RCP	12362	PINO CHERYL	20110407
RCP	12363	AL-DOBAISHI NEAMAH	20110414
RCP	12364	BREWSTER CHRISTOPHER	20110414
RCP	12365	KENNARD ROBERT	20110414
RCP	12366	KNABLE JOSEPH	20110414
RCP	12367	KOVERMAN ASHLEY	20110414
RCP	12368	LIDDIL JESSICA	20110414
RCP	12369	ADKINS JODY	20110421
RCP	12370	BROWN KATIE	20110421
RCP	12371	JOBES ZACHARY	20110421
RCP	12372	WAGNER TRACEY	20110421
RCP	12373	BECKER KATHLEEN	20110428
RCP	12374	LATIMER ERIC	20110428
RCP	12375	LUND MARCELLA	20110428
RCP	12376	MUJANOVIC SAMIN	20110428
RCP	12377	ROBINSON JESSICA	20110428
RCP	12378	SCHMIDT JASON	20110428
RCP	12379	SKILLICORN BRITTANY	20110428
RCP	12380	TEETS JOHN	20110428
RCP	12381	HELMICK AARON	20110505
RCP	12382	HOWARD SUSAN	20110505
RCP	12383	MACKEY DOMINIQUE	20110505
RCP	12384	MALEY ERIN	20110505
RCP	12385	SNYDER PATRICIA	20110505
RCP	12386	BONAWITT RICHARD	20110512
RCP	12387	GRADERT AMANDA	20110512
RCP	12388	NIEDERST SEAN	20110512
RCP	12389	THORNSBERRY AMANDA	20110512
RCP	12390	ZAKRAJSEK JAIME	20110512
RCP	12391	ALLISON JENNIE	20110519
RCP	12392	GARRISON SHELIA	20110519
RCP	12393	HART MEGAN	20110519
RCP	12394	METZ REBECCA	20110519
RCP	12395	SIAS BROOKE	20110519
RCP	12396	VECCHIO CHRISTINE	20110519
RCP	12397	BAMFORTH MISHAWNA	20110525
RCP	12398	CANNADY JESSICA	20110525
RCP	12399	ESPER KATIE	20110525
RCP	12400	HALYE JESSICA	20110525
RCP	12401	LOHMEYER BETHANY	20110525
RCP	12402	NARCISSE TAMMY	20110525
RCP	12403	VEIN AIMEE	20110525
RCP	12404	WEST STACEY	20110525
RCP	12405	BROOKS CAREY	20110602
RCP	12406	CURRY ROBERT	20110602
RCP	12407	DUMBAUSKAS FRANK	20110602
RCP	12408	EISHEN ABBY	20110602
RCP	12409	SCHAEFER GARY	20110602
RCP	12410	SEIBERT COURTNEY	20110602
RCP	12411	ANDREWS RENEE	20110609
RCP	12412	BLANKENSHIP MELISSA	20110609
RCP	12413	BOTTS AMBER	20110609
RCP	12414	BROOKS DIANE	20110609
RCP	12415	CONGER ALECIA	20110609
RCP	12416	DELISIO JAMIE	20110609
RCP	12417	GROVE LESLIE	20110609
RCP	12418	HEHR LYNN	20110609
RCP	12419	HOFFMAN JUSTIN	20110609
RCP	12420	JONES MARQUITA	20110609
RCP	12421	PATEL MIHAL	20110609
RCP	12422	ABYAD MOHAMAD	20110616
RCP	12423	BRADY CHAD	20110616
RCP	12424	BYCH II RONALD	20110616
RCP	12425	HAGA, JR. JACK	20110616
RCP	12426	HINELINE SAVANNAH	20110616
RCP	12427	HINKLE PATRICK	20110616
RCP	12428	GREENLEE LEIGH	20110616
RCP	12429	PREER CIERA	20110616
RCP	12430	STEINMETZ ELIZABETH	20110616
RCP	12431	EPPERSON JAMIE	20110616
RCP	12432	WEAVER MELINDA	20110616
RCP	12433	BICKEL JAMIE	20110624
RCP	12434	BROOKS CHRISTINA	20110624
RCP	12435	BROSNAHAN JEFFREY	20110624
RCP	12436	BROWN NATHANIAL	20110624
RCP	12437	CULBRETH JENNIFER	20110624
RCP	12438	FREKER LINDSAY	20110624
RCP	12439	HARLOW PAUL	20110624
RCP	12440	JACKSON TAMMI	20110624
RCP	12441	JORDAN LISA	20110624
RCP	12442	KNOTH STACY	20110624
RCP	12443	LORIGAN RONALD	20110624
RCP	12444	MAXWELL JENNIFER	20110624
RCP	12445	MEADOWS CHARLES	20110624
RCP	12446	MYERS ROMATT	20110624
RCP	12447	NYE PATRICIA	20110624
RCP	12448	OLIVERIO ADA	20110624
RCP	12449	ROCKS GRETCHEN	20110624
RCP	12450	SIBERT MATTHEW	20110624
RCP	12451	SMITH AMANDA	20110624
RCP	12452	STOLLAR ANGELA	20110624
RCP	12453	STRITTHOLT VANCE	20110624
RCP	12454	SZYPERSKI AMEE	20110624
RCP	12455	WEISER HALI	20110624
RCP	12456	SHUMNEY LEAH	20110624
RCP	12457	BROWN TERESA	20110630
RCP	12458	BURTON JASON	20110630
RCP	12459	DODRILL DANEAN	20110630
RCP	12460	EDEH NDIDI	20110630
RCP	12461	GENETTE BRIDGET	20110630
RCP	12462	HEATER THOMAS	20110630
RCP	12463	HOOD JOSEPH	20110630
RCP	12464	JESSOP KRISTEN	20110630
RCP	12465	MCMILLAN SARAH	20110630
RCP	12466	PASCHALL RANDI	20110630
RCP	12467	PIERCE JESSICA	20110630
RCP	12468	SIMS ANGELA	20110630
RCP	12469	STEELE KIMBERLY	20110630
RCP	12470	STEWART CARLTON	20110630
RCP	12471	SWEAT GEORGE	20110630
RCP	12472	TACKETT BRITTANY	20110630
RCP	12473	TEMPLEMAN AMY	20110630
RCP	12474	WILLIAMS DEVON	20110630
RCP	12475	COX JEREMY	20110701
RCP	12476	BATES DAVID	20110707
RCP	12477	BERK JONEL	20110707
RCP	12478	BILLMYER MELISSA	20110707
RCP	12479	DIEHL CHRISTINA	20110707
RCP	12480	LEONARD VICTORIA	20110707
RCP	12481	FOGLE CHAD	20110707
RCP	12482	GIBLIN MEGAN	20110707
RCP	12483	KASTNER MARK	20110707
RCP	12484	KNEESHAW SUSAN	20110707
RCP	12485	NICKEL CHERYL	20110707
RCP	12486	PICKLES BRITTNEY	20110707
RCP	12487	SHEALY DEBORAH	20110707
RCP	12488	SOROKA JANELLE	20110707
RCP	12489	TABLER JESSICA	20110707
RCP	12490	VORIES RICHARD	20110707
RCP	12491	WILLIAMS CRYSTAL	20110707
RCP	12492	ALFANO NICKOLE	20110714
RCP	12493	BARBECHO ERIKA	20110714
RCP	12494	BASS SARAH	20110714
RCP	12495	BOIE CATHERINE	20110714
RCP	12496	BRADLEY ELIZABETH	20110714
RCP	12497	BRANDT ALEASHA	20110714
RCP	12498	HERITAGE RACHEL	20110714
RCP	12499	JOHNSTON SARAH	20110714
RCP	12500	JONES SUZANNE	20110714
RCP	12501	KEENE MARY	20110714
RCP	12502	KOPP ROBERT	20110714
RCP	12503	LASHUK BRYAN	20110714
RCP	12504	LEWIS WHITNEY	20110714
RCP	12505	LOCKE AMY	20110714
RCP	12506	PIET ERICA	20110714
RCP	12507	SMITH NICOLE	20110714
RCP	12508	VARGO BRIAN	20110714
RCP	12509	WOLFE TIMOTHY	20110714
RCP	12510	ARRIGO BENJAMIN	20110721
RCP	12511	BOESTER GREGORY	20110721
RCP	12512	HAYDU STEPHANIE	20110721
RCP	12513	HESLOP-JOSEPH CHERYL	20110721
RCP	12514	IRELAND VICKY	20110721
RCP	12515	KIRSCHSTEIN ERICA	20110721
RCP	12516	NEBE DENISE	20110721
RCP	12517	NOBLE JAMES	20110721
RCP	12518	SARKES KRISTINA	20110721
RCP	12519	SCHROEDER AMBER	20110721

Licenses and Limited Permits Issued January 21, 2011 thru November 16, 2011

RCP	12520	SINCLAIR COURTNEY	20110721
RCP	12521	SNYDER JAMES	20110721
RCP	12522	ENDRESS KATHERYN	20110721
RCP	12523	TURNER JACQUELINE	20110721
RCP	12524	BASS JULIAN	20110728
RCP	12525	BUTLER REBECCA	20110728
RCP	12526	CANEI ROBERT	20110728
RCP	12527	HEAVILIN ROBERT	20110728
RCP	12528	HOWARD WILMER	20110728
RCP	12529	JARVIS KELLY	20110728
RCP	12530	LEVELLE HEATHER	20110728
RCP	12531	SHULER CHRISTINA	20110728
RCP	12532	SHUMAKER ROBERT	20110728
RCP	12533	SOWERS, JR. RICHARD	20110728
RCP	12534	THEN TARA	20110728
RCP	12535	BENKO JENNIFER	20110804
RCP	12536	GARRETT ANTRANETTE	20110804
RCP	12537	GUK SEBASTIAN	20110804
RCP	12538	HIBBARD KELLEE	20110804
RCP	12539	HOLLIDAY JAYNE	20110804
RCP	12540	JOSEPH AMBER	20110804
RCP	12541	SPARKS MARTIN	20110804
RCP	12542	STRAKER TRACY	20110804
RCP	12543	TRAME DEVIN	20110804
RCP	12544	VALKOSKY MEGAN	20110804
RCP	12545	WELSH CHRISTINE JOY	20110804
RCP	12546	BLANCHET JASON	20110805
RCP	12547	FITCH ANDREW	20110805
RCP	12548	HANNA CHRISTINE	20110805
RCP	12549	MEADORS BRIAN	20110805
RCP	12550	SHELLABARGER TONYA	20110805
RCP	12551	STAGGS LYRA	20110805
RCP	12552	TROGDLON CODI	20110805
RCP	12553	KUSAR JULIE	20110805
RCP	12554	BRADLEY JEFFREY	20110815
RCP	12555	DAGRES CHAD	20110815
RCP	12556	ELLER LEE	20110815
RCP	12557	GRAHAM BRETT	20110815
RCP	12558	JACKS NIKKI	20110815
RCP	12559	NEWPORT KELLY	20110815
RCP	12560	WILLEY AMBER	20110815
RCP	12561	WRIGHTSMAN HEATHER	20110815
RCP	12562	BOBST WHITLEY	20110818
RCP	12563	COLLINS MARTY	20110818
RCP	12564	FUMIA MARK	20110818
RCP	12565	HILDRETH KAYLA	20110818
RCP	12566	MARCUS BRANDON	20110818
RCP	12567	VEMSANI VENKATA	20110818
RCP	12568	WOMER JACK	20110818
RCP	12569	ZABOROWSKI RICHARD	20110818
RCP	12570	ARNETT STACEY	20110829
RCP	12571	BROERMAN JENNIFER	20110829
RCP	12572	BROWN HEATHER	20110829
RCP	12573	GLENN KATHRYN	20110829
RCP	12574	HALE DE'RHONDA	20110829
RCP	12575	JOHNSON CRYSTAL	20110829
RCP	12576	KUHNSMAN SHERRI	20110829
RCP	12577	WORSHAM ANGELA	20110829
RCP	12578	ANDERSON ERIK	20110901
RCP	12579	BASS STEPHANIE	20110901
RCP	12580	BUCKHOLZ KAILEY	20110901
RCP	12581	DIAZ RODRIGUEZ JOSE	20110901
RCP	12582	FLOWERS ANTHONY	20110901
RCP	12583	HILLIER ANDREA	20110901
RCP	12584	KELLING MOLLY	20110901
RCP	12585	NATION JARED	20110901
RCP	12586	OTTE KAREN	20110901
RCP	12587	PALMER HELENA	20110901
RCP	12588	RANSOM TRICIA	20110901
RCP	12589	REBHOLZ TIFFANY	20110901
RCP	12590	SMOLAK MCKENNA	20110901
RCP	12591	STEWART KASSEY	20110901
RCP	12592	VAN WERT JULIE	20110901
RCP	12593	ZERANTE SHANNAN	20110901
RCP	12594	JOHNSON ASHLEY	20110901
RCP	12595	LEMING MONIQUE	20110901
RCP	12596	BRANTNER ANDREW	20110907
RCP	12597	COOK ASHLEY	20110907
RCP	12598	DEMARK THOMAS	20110907
RCP	12599	DUFFY MARK	20110907
RCP	12600	JIVOIN MONIQUE	20110907
RCP	12601	MORGAN KRISTINA	20110907
RCP	12602	WOLFE RICHARD	20110907
RCP	12603	BILLINGS JARED	20110915
RCP	12604	GARRISON WILLIAM	20110915
RCP	12605	KNIPP LOREY	20110915
RCP	12606	LOCKHART KEMEISHA	20110915
RCP	12607	MAHL DANIELLE	20110915
RCP	12608	MANGAS CHRISTINE	20110915
RCP	12609	MATA WILLIAM	20110915
RCP	12610	MCCAIN MEAGAN	20110915
RCP	12611	PENA HAJAAR	20110915
RCP	12612	PLOTT ALEXANDRA	20110915
RCP	12613	PROIA DEBORAH	20110915
RCP	12614	BLOOM SHANTEL	20110922
RCP	12615	BUCKLEY TIMOTHY	20110922
RCP	12616	LINT MARISSA	20110922
RCP	12617	NEAL ERICA	20110922
RCP	12618	PARSONS SHERRI	20110922
RCP	12619	REPASKY DOMINIC	20110922
RCP	12620	SHEPLER BROOKE	20110922
RCP	12621	SMITH ALISON	20110922
RCP	12622	WALTON AUSTIN	20110922
RCP	12623	ZOZ STEPHEN	20110922
RCP	12624	BARRETT DESIREE	20110929
RCP	12625	BLEDSOE MISTY	20110929
RCP	12626	EGGLETON RYAN	20110929
RCP	12627	FOX ASHLEY	20110929
RCP	12628	JOHNSON ANGELA	20110929
RCP	12629	NEELY ROBERT	20110929
RCP	12630	ROBISON APRIL	20110929
RCP	12631	WHARTON RHONDA	20110929
RCP	12632	BREWER STEPHANIE	20110929
RCP	12633	DAVIS CAROLYN	20111006
RCP	12634	DAYE JAMES	20111006
RCP	12635	DEWALT KARI	20111006
RCP	12636	HOLBROOK BETHANY	20111006
RCP	12637	MEYER JUSTIN	20111006
RCP	12638	PARKER SHANTEE	20111006
RCP	12639	SCHAROLD DAVID	20111006
RCP	12640	BENNETT REBECCA	20111013
RCP	12641	COOPER ANNETTA	20111013
RCP	12642	DIXON DESIREE'	20111013
RCP	12643	JACOBSON ALICE	20111013
RCP	12644	RENFROE ROBYN	20111013
RCP	12645	ROEDIGER TEMENI	20111013
RCP	12646	SKAGGS JAMES	20111013
RCP	12647	SMITH BRIGETT	20111013
RCP	12648	PENDLETON AMANDA	20111014
RCP	12649	BOLING MEGAN	20111020
RCP	12650	CUMMINGS MEGAN	20111020
RCP	12651	DAHLINGHAUS JANESSA	20111020
RCP	12652	DOUGHTY AMANDA	20111020
RCP	12653	KLAUSING COURTNEY	20111020
RCP	12654	FOLLAS ABBY	20111020
RCP	12655	GARRIS JOSEPH	20111020
RCP	12656	LESNIAK BRENDA	20111020
RCP	12657	MCCLEESE IAN	20111020
RCP	12658	ARNOLD CALEB	20111027
RCP	12659	CARPENTER HOLLY	20111027
RCP	12660	CLAFLIN CHRISTOPHER	20111027
RCP	12661	LAMB ELIZABETH	20111027
RCP	12662	LAWSON BRIAN	20111027
RCP	12663	PATTON JUDITH	20111027
RCP	12664	WHITT ARNETTA	20111027
RCP	12665	WILFERT CHRISTINA	20111027
RCP	12667	BRIECK RACHEL	20111103
RCP	12668	GLADE TINA	20111103
RCP	12669	LAFFERTY ANGELA	20111103
RCP	12670	SHIRDON SOPHIA	20111103
RCP	12671	STROLLO DANA	20111103
RCP	12672	WULKER MARIANNE	20111103
RCP	12673	DAWSON FATIMA	20111109
RCP	12674	HICKEY RYAN	20111109
RCP	12675	REDMOND CHRISTINE	20111109
RCP	12676	SHIBLEY BRANDI	20111109
RCP	12677	SWINEY CONNIE	20111109
RCP	12678	VAN DER GRIEND BRIANNE	20111109
RCP	12679	VANCE CRYSTAL	20111109

HME Licenses and Registrations Issued January 21, 2011 thru November 16, 2011

Licensed Home Medical Equipment Facilities

License No.	Name	Issue Date
HMEL 11440	THE SLEEP & BREATHING RESEARCH INSTITUTE	20110203
HMEL 11441	LIFE CARE HOME MEDICAL EQUIPMENT LLC	20110217
HMEL 11442	ERIE COAST CHEST PHYSICIAN'S INC.	20110303
HMEL 11443	WECARE MEDICAL LLC	20110307
HMEL 11444	SPECIALTY MEDICAL GROUP LLC	20110315
HMEL 11445	HEALTH AID OF OHIO, INC.	20110324
HMEL 11446	HEALTH AID OF OHIO, INC.	20110324
HMEL 11447	RX NUTRITIONAL SOLUTIONS	20110330
HMEL 11448	ELYRIA PMC	20110401
HMEL 11449	SCS MEDICAL EQUIPMENT & SUPPLY.	20110405
HMEL 11450	MID-OHIO MEDICAL, LLC	20110413
HMEL 11451	OHIO SLEEP AWARENESS LLC	20110425
HMEL 11452	FIRST CHOICE MEDICAL SUPPLY, INC.	20110512
HMEL 11453	PURE OXYGEN SERVICES	20110526
HMEL 11454	ADAPTIVE SPECIALTIES LLC	20110527
HMEL 11455	COLUMBUS CLINICAL SERVICES LLC	20110602
HMEL 11456	VISITING NURSE SERVICE EQUIPMENT & SUPPLIES	20110624
HMEL 11457	REMCARE CPAP AND SUPPLY	20110628
HMEL 11458	HOMETOWN MEDICAL SUPPLIES INC	20110701
HMEL 11459	COVENANT MEDICAL COMPANY, LLC	20110719
HMEL 11460	BLUE COCOON	20110829
HMEL 11461	NOVAVISION INC.	20110907
HMEL 11462	RECOVERCARE LLC	20110912
HMEL 11463	RECOVERCARE LLC	20110912
HMEL 11464	FISHER & PAYKEL HEALTHCARE, INC.	20110830
HMEL 11465	SPORTOPEDICS MEDICAL SHOPPE INC.	20110929
HMEL 11466	RESPIRATORY SUPPORT SERVICES, LLC	20111110

Home Medical Equipment Facilities Holding Certificates of Registration

Registration No.	Name	Issue Date
HMER 22848	WRENCARE	20110126
HMER 22861	US MED INC.	20110126
HMER 22862	PROFESSIONAL MEDICAL SURGICAL SUPPLY INC.	20110128
HMER 22863	HOMESIDE HEALTHCARE, INC.	20110128
HMER 22864	PATIENT'S CHOICE, LLC	20110203
HMER 22865	EASTERN MEDICAL EQUIPMENT	20110203
HMER 22866	MEDICAL SERVICE COMPANY	20110203
HMER 22867	PACIFIC PULMONARY SERVICES	20110203
HMER 22868	ABSOLUTE BILLING SERVICES, INC	20110208
HMER 22869	WYANDOT MEMORIAL HOSPITAL DURABLE MEDICAL EQUIPMEN	20110208
HMER 22870	TRIAD MEDICAL SUPPLY LLC	20110210
HMER 22871	CUSTOM MEDICAL SOLUTIONS	20110210
HMER 22872	AUSTIN RESPIRATORY	20110210
HMER 22873	DIAMEDIX HEALTHCARE, LLC	20110222
HMER 22874	VISITING NURSE SERVICE EQUIPMENT & SUPPLIES	20110217
HMER 22875	A+ MEDICAL EQUIPMENT	20110223
HMER 22876	OPTIMISTIC MEDICAL EQUIPMENT SUPPLY LLC	20110223
HMER 22877	HILL-ROM COMPANY, INC.	20110223
HMER 22878	HILL-ROM COMPANY, INC.	20110223
HMER 22879	HILL-ROM COMPANY, INC.	20110223
HMER 22880	AMERICAN MEDICAL SUPPLY OF LOVELAND INC.	20110225
HMER 22881	PREFERRED DIABETICS	20110224
HMER 22882	RESPIRATORY MEDICAL SOLUTIONS, INC.	20110302
HMER 22883	ORBIT MEDICAL PRODUCTS OF MADISON HEIGHTS INC	20110303
HMER 22884	STATELINE MEDICAL EQUIPMENT	20110307
HMER 22885	SEELEY MEDICAL	20110307
HMER 22886	ZIKS FAMILY PHARMACY	20110307
HMER 22887	ADVACARE HOME SERVICES, INC.	20110315
HMER 22888	ADVACARE HOME SERVICES, INC.	20110315
HMER 22889	HEALTH CARE SOLUTIONS AT HOME INC.	20110315
HMER 22890	OKULEY'S PHARMACY INC.	20110317
HMER 22891	OKULEY'S PHARMACY & HOME MEDICAL OF WAUSEON INC.	20110317
HMER 22892	KING'S DAUGHTERS HOME MEDICAL EQUIPMENT	20110317
HMER 22893	LINCARE, INC.	20110317
HMER 22894	BUCKHEAD PHARMACEUTICAL ASSOCIATION INC	20110325
HMER 22895	HEALTH CARE SOLUTIONS	20110325
HMER 22896	AMERICAN HOMEPATIENT	20110330
HMER 22897	MARINA HOME HEALTH LLC	20110331
HMER 22898	DURAMED EQUIPMENT, LLC	20110331
HMER 22899	ZIKS FAMILY PHARMACY INC. #102	20110401
HMER 22900	ANCILLARY SERVICES MANAGEMENT, LLC	20110408
HMER 22901	ADVANTAGE HEALTHCARE INC.	20110408
HMER 22902	HOME CHOICE HEALTHCARE, INC.	20110408
HMER 22903	OHIO MEDICAL EQUIPMENT SERVICES, INC.	20110414
HMER 22904	HEALTH AID OF OHIO, INC.	20110420
HMER 22905	HEALTH AID OF OHIO, INC.	20110420
HMER 22906	THE SLEEP CENTER AT SOUTHWEST GENERAL HEALTH CTR.	20110425
HMER 22907	SMART REMEDIES	20110428
HMER 22908	ABBOTT INFUSION CARE	20110428
HMER 22909	DASCO UNION HOSPITAL HOME MEDICAL, LLC	20110428
HMER 22910	KINETIC HEALTH CARE	20110503
HMER 22911	KINETIC HEALTH CARE	20110503
HMER 22912	PARMA MEDICAL SUPPLY	20110506
HMER 22913	SHIELD DENVER HEALTH CARE CENTER, INC.	20110526
HMER 22914	LEGACY INFUSION SERVICES LLC	20110607
HMER 22915	HILL-ROM CO., INC.	20110624
HMER 22916	MEDSOURCE, LLC	20110706
HMER 22917	MEDICINE AND MORE HOME MEDICAL EQUIPMENT	20110706
HMER 22918	EASTERN MEDICAL EQUIPMENT, INC.	20110712
HMER 22919	ANDOVER PMC	20110713
HMER 22920	ELYRIA PMC	20110713
HMER 22921	PIERCE MEDICAL PRODUCTS, INC.	20110719
HMER 22922	MEDI HOME CARE	20110719
HMER 22923	AULTMAN HOME MEDICAL SUPPLY	20110728
HMER 22924	NATIONWIDE HOME MEDICAL RETAIL, INC	20110802
HMER 22925	ACCURATE MEDICAL SUPPLY INC	20110805
HMER 22926	AMERICAN PAIN CONSULTANTS INC.	20110815
HMER 22927	THE WHEELCHAIR STORE	20110829
HMER 22928	ABLECARE MEDICAL, INC.	20110829
HMER 22929	RUXTON SUPPLY SERVICES LLC	20110928
HMER 22930	AMERICAN HOMEPATIENT	20110902
HMER 22931	UNIVERSITY HOSPITALS HOME CARE SERVICES	20110902
HMER 22932	CSI - INFUSION SERVICES	20110907
HMER 22933	LINCARE INC	20110915
HMER 22934	CHESAPEAKE REHAB EQUIPMENT INC.	20110920
HMER 22935	NORTHCOAST ORTHOPEDIC SALES, LLC	20110921

HME Licenses and Registrations Issued January 21, 2011 thru November 16, 2011

HMER	22936	HILL-ROM CO., INC.	20110921
HMER	22937	NORTHWEST OHIO MEDICAL EQUIPMENT	20110929
HMER	22938	HILL-ROM COMPANY, INC	20110929
HMER	22939	HILL-ROM COMPANY, INC	20110929
HMER	22940	UNITED SEATING & MOBILITY	20111005
HMER	22941	AMERICAN HOME PATIENT	20111005
HMER	22942	HEALTH CARE SOLUTIONS	20110930
HMER	22943	HME REPAIR TEAM	20111007
HMER	22944	ORTHOPEDIC RESOURCES, INC.	20111013
HMER	22945	SAVING GRACE, LLC	20111018
HMER	22946	MONITOR MEDICAL INC	20111027
HMER	22947	A+ MEDICAL EQUIPMENT	20111027
HMER	22948	A+ MEDICAL EQUIPMENT	20111031
HMER	22949	PEDIATRIC SPECIALISTS	20111027
HMER	22950	NATIONAL COLON HEALTH CENTER	20111031
HMER	22951	FIRST CHOICE MEDICAL SUPPLY, INC.	20111031
HMER	22952	WOUND CARE SERVICES	20111102
HMER	22953	XCEL MED LLC	20111102
HMER	22954	IDEAL MEDICAL SUPPLY, INC.	20111108

Did you move or change your name?

Ohio law mandates that you advise the Board within sixty days of a change in address, name, or employment. Each biennial renewal, hundreds of renewal applications are returned, re-mailed, or lost due to old address information. If you have not kept the Board up-to-date, please do so. We want to know where you are to serve you better and it's the LAW.

CHECK YOUR LICENSE EXPIRATION DATE

Persons practicing beyond the expiration date of their license are subject to disciplinary sanctions by the Ohio Respiratory Care Board. Take some time to check your expiration date. You may access a current status report by visiting our license verification look-up feature on the boards website: www.respiratorycare.ohio.gov.

NORTH CAROLINA RESPIRATORY CARE BOARD
1100 Navaho Drive, Suite 242
Raleigh, NC 27609

AN OPEN LETTER TO THE NORTH CAROLINA RESPIRATORY CARE COMMUNITY CONCERNING BACCALAUREATE AND GRADUATE RESPIRATORY CARE EDUCATION --

The North Carolina Respiratory Care Board has been charged by the General Assembly with responsibility to ensure the competency of respiratory care in this state and to protect the citizens of North Carolina from the unqualified practice of respiratory care. In keeping with this responsibility, the Board is issuing this letter to address the need for more intensive educational programs for Respiratory Care Practitioners (RCP's). The increasing demands on the practice of Respiratory Care require careful attention to the clinical skills that will be necessary for future practice.

There are over four thousand practitioners in North Carolina who have been nationally credentialed and have become licensed by the Board. Like the 100,000 RCP's across the United States, North Carolina RCP's work with patients of all ages and in many different care settings. RCP's work in hospitals where they perform intensive care procedures in the adult, pediatric and neonatal critical care units, and are typically a vital part of the hospital's lifesaving response team that handles patient emergencies. They also are a vital part of the health care team that provides respiratory care for patients with heart and lung disorders in many non-institutional settings.

Wherever they practice, RCPs are expected to participate in the development, modification and evaluation of care plans, protocol administration, disease management and patient education. The continued growth and advancement of the profession, and the expectations placed on RCP's will require that every RCP demonstrate an advanced level of critical thinking, assessment and problem solving skills. These skills are essential in today's health care environment not only to improve the quality of care, but also to reduce inappropriate care and control costs.

The associate degree programs have been the foundation for the respiratory care profession and do an outstanding job in providing the initial training of many practitioners in the field, but there is an increasing need for RCP's with advanced credentials and education who can take on leadership roles, including research, education, management, as well as advanced clinical diagnostic skills. Therefore, the Board supports the development of baccalaureate and masters level education in respiratory care.

There is currently one baccalaureate level education program in respiratory care at the University of North Carolina at Charlotte. In order to meet the current and future need for RCP's with advanced credentials and education, the Board supports the establishment of at least two more similar programs in the state to accommodate selected graduates of the 14 associate degree programs in the state. The Board also supports the establishment of a Clinical Masters Respiratory Care program in the state

to provide a midlevel Clinical Respiratory Care Practitioner who can function as a clinical assistant to physicians such as Pulmonologists, Anesthesiologists, Hospitalists and Intensivists.

The Board also plans to explore several amendments to the Respiratory Care Practice Act which would:

- allow for the associate level respiratory care graduate who has passed the Certified Respiratory Therapist (CRT) exam to practice with a basic / provisional license under the direct supervision of an active / advanced licensed RCP. The provisional licensee would be limited in the procedures that he/she may perform.
- require the associate level graduate to successfully pass the Registered Respiratory Therapist (RRT) exam and complete a baccalaureate degree in respiratory care or other health services related degree within a set period of time, such as 5 years.
- allow RCP's who have passed the RRT exam and completed a baccalaureate degree in respiratory care or other degree program approved by the Board to practice advanced procedures such as ECMO, moderate sedation, protocol development, respiratory care consult, ventilation management, and advanced medication administration such as moderate sedation, nitric oxide administration, and prostaglandin administration.
- grandfather those individuals that are currently licensed as RCP's on the effective date of the statute.

In conclusion, the Board believes that the establishment of baccalaureate level education programs in respiratory care and the requirement of a baccalaureate degree in respiratory care as the minimum entry level for advanced practice is needed to advance the respiratory care profession and improve patient outcomes. The Board also supports the development of masters level respiratory care education programs for clinical practice, education and management.

The Board is issuing this letter to start a dialogue within the respiratory care community about these critical issues for the future of our profession.

On behalf of
The North Carolina Respiratory Care Board:

_____
Floyd E. Boyer, RCP
Executive Director

Applying the Principles of Organisational Learning

Monday, April 1st, 2002

Dean R
Phelan, Partner, and Gregory R Birchall, Partner,

Abstract

People in organisations live in interesting and sometimes difficult times. Organisational learning, and the creation of "Learning Organisations", has been offered as one way to deal with the apparently endless waves of organisational change and for the organisation to move forward.

In this paper a range of meanings and definitions of organisational learning are canvassed and four principles for establishing organisational learning in health care organisations are discussed. More concrete steps for creating a learning organisation are outlined, and organised according to the "Personal-Collective" and "Structural-Cultural" dimensions. The need to "hardwire" learning into organisations once it has been created or identified is also noted. Other initiatives found to be beneficial in the creation of organisational learning in the health sector include the use of "action learning" teams to work through and around blockages to organisational learning and the creation of a "Teachable Point of View" to cascade a new vision and objectives down through the many management levels within organisations. Performance management systems incorporating 360-degree feedback need to be aligned with the organisational vision along with the culture of the organisation.

The World We Find Ourselves In

We are all witnesses to continual change in our workplaces, our communities and our lives. Our traditional institutions (including hospitals) are stretched, some to breaking point, by the demand for ever-greater performance, profits and/or cost savings. The recent collapse of well-known organisations such as Ansett, HIH, and Enron in the US, hits home hard.

The explosion of knowledge, technology and telecommunications capability has led to seemingly ever higher demands to shorten turnaround times in all fields of endeavour. In health care, surgery and care methodologies continue to advance while inpatient hospital stays continue to be driven down by insurers and Government. There are changes in consumer and employee expectations and loyalties. The way people work and the relationships and values associated with working are all changing. More and more energy has to be incorporated into new strategies, new services and improving the way we do things. Even public health care institutions and not-for-profit organisations must now compete fiercely for their own survival. Competition, anxiety and internal "politics" seem to be everywhere. Many of us find ourselves immersed in a life pattern of feeling there is too much to do, being constantly under time pressure, watching our flanks and are, thus, constantly tired.

Many management efforts at initiating and sustaining change within organisations have proved to be ineffective over time, and there is a growing realisation that implementing significant change in today's world is a daunting task - one that is increasingly requiring significant knowledge and skill about people, organisations and culture.

In response to this world we find ourselves in, management theorists around the globe have increasingly focused on *learning* as a way forward. This derives from the view that we who live and work in modern organisations are where we are because the mental and cultural "maps" we are using are no longer valid. As a global community we are not learning fast enough or effectively enough to manage appropriately in our rapidly changing world, ie, to develop new, meaningful, evolving maps for our personal lives and for managing our organisations and communities. "Organisational Learning" and "the creation of Learning Organisations" have therefore become catch-cries for management theorists and consultants over the past decade or more.

So, What is Organisational Learning?

- *The process of improving actions through better knowledge and understanding*. Fiol & Lyles (1985)
- *The continuous testing of experience, and transformation of that experience into knowledge accessible to the whole organisation, and relevant to its core purpose*. Ross & Hannay (1986)
- *It occurs through shared insights, knowledge and mental models . . . (and) builds on past knowledge and experience - that is on memory.* Stata (1989)
- *The creation of knowledge that is accessible and used throughout the entire organisation to accomplish its mission.* Meyer (1990)

What, Then, is a Learning Organisation?

- *(One) where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.* Senge (1990)
- *(One) that facilitates the learning of all of its members and continuously transforms itself.* Pedler et al (1991)
- *(One) skilled at creating, acquiring and transferring knowledge and at modifying its behaviour to reflect new knowledge and insights.* Garvin (1993)

Enderby (1997) conducted an extensive literature review and a three-year, on-site case study of Australia's largest private hospital. The hospital was seeking to introduce substantial changes, among which the creation of a learning organisation was a high priority. From the perspective of this work Enderby (p120) defined a learning organisation as "*one which continuously monitors or captures data about its performance and health, reflects on that data and modifies its behaviour in the light of the knowledge gained, so as to ensure its long term survival and growth. A learning organization is one that is continuously improving*".

Philosophical Foundations

The philosophical foundations of learning organisations can be located in the works of such thinkers as Bohm, Kofman, Senge, and Handy.

The main dysfunctions in our institutions - fragmentation, competition and reactiveness - are actually by-products of our success over hundreds of years in conquering the physical world and developing our scientific, industrial culture. They are very deep-rooted. Success has come from dissecting or breaking down problems, tasks and strategies into their micro parts, and having "expert specialists" tackle them. Fragmentation, competition and reactiveness are not problems to be solved - they are frozen patterns of thinking to be dissolved.

The solvent is a new way of thinking, feeling and being - a culture of systems:

- Fragmentary thinking becomes "systems thinking" when we recover "the memory of the whole", the awareness that wholes actually precede parts.
- Competition becomes co-operation when we discover the "community nature of self" and realise our role as challengers to help each other excel, rather than competitors to beat - win/win rather than win/lose.
- Reactiveness becomes creation when we see the "generative power of language or dialogue (from the Greek dia-logos which means shared meaning); how language brings forth distinctions, ideas, insights and possibilities from the undivided flow of life.

A learning organisation is built upon an assumption of competence that is supported by four other qualities: curiosity, forgiveness, trust and togetherness. The assumption of competence means assuming each individual can be expected to perform to the limit of his or her competence, with the minimum of supervision.

A learning organisation is also built upon a readiness to experiment with several strategies simultaneously. As there are no roadmaps for going forward in the changing world, we must entertain a number of possibilities and put in place reflective, evaluative practices and mechanisms that enable us to discern quickly what is working and what is not.

To enable this to happen, a learning organisation must be grounded in four principles:

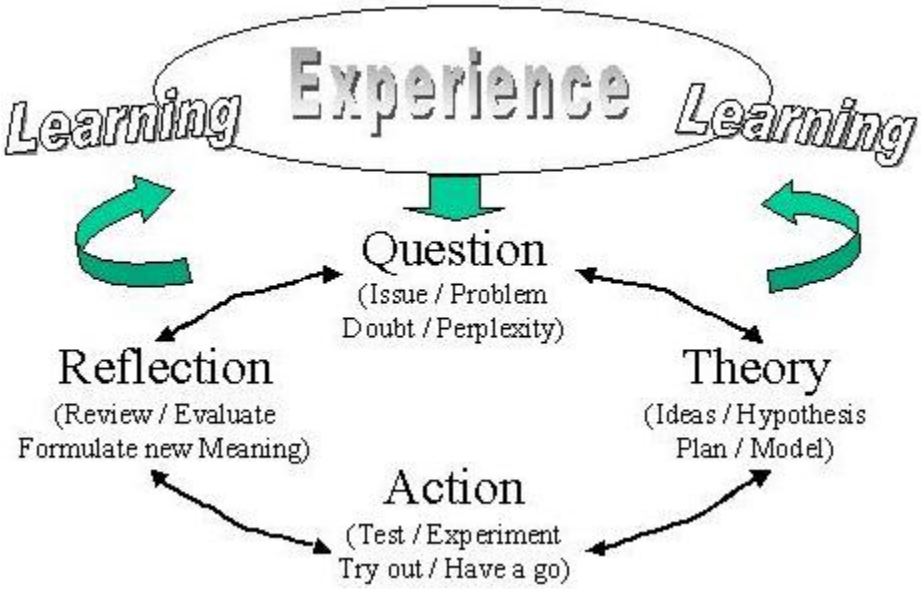
1. A culture that is fundamentally based on transcendent human values of love, wonder and humility - which allows creativity, new ideas, experimentation, regeneration, reinvention.
2. A set of practices for generative conversation and reflection (dialogue) - that leads to shared vision, strategy, empowerment, real problem-solving and co-ordinated action.
3. A capacity to see and work with the flow of life as a system - which leads to a deeper understanding of the relationship between investments and return, of cause and effect when making change, and of what it means to be a "healthy" organisation.
4. A determination to survive, grow and flourish no matter what life throws up - which leads to disciplined practices throughout the organisation.

Building a Learning Organisation

In his study of the creation and maintenance of organisational learning in a private hospital setting, Enderby (p169) found one of the most powerful interventions was the systematic use of "action learning" teams to remove blockages to change. Action learning provided a safe and co-operative environment in which participants could clarify their tasks and roles and which encouraged and enabled their reflection on action and provided an opportunity to share the desired vision for the hospital (refer "Action Learning Groups and Cultural Change in Hospitals").

The following "Action Learning Wheel" outlines the cycle that underpins the implementation of organisational learning. The wheel explains how true learning occurs. Too often in organisations (and in our personal lives) we do *not* learn from our experience. A problem arises and we act according to our, often unconscious, theories about effective action. Our actions are based on past success, the way we were trained or brought up, or on cultural norms that dictate behaviour. We generally do not stop to think about alternative possibilities or to evaluate the real consequences of our actions. We are generally in a lifestyle pattern where we are busy moving on to the next issue before the lessons of prior actions have been adequately processed.

Figure 1 The Action Learning Process



Action Learning Wheel Â©Phelan & Enderby 1995

Therefore, building a learning organisation fundamentally requires leaders, individuals and teams to:

1. understand the principles and applications of action learning
2. understand and commit to the implementation of the four foundations outlined above
3. be given space and encouragement to practise the above
4. capture their learnings in a way that can be disseminated and accessed by others throughout the organisation.

Our last 15 years' experiences confirm that the following framework outlines how these elements can be progressively implemented. There is no one right way, but we can say, essentially, that an organisation's capacity for learning is significantly increased when two core strategies are pursued in conjunction with each other - basically strategies for developing the people and strategies for building the systems.

Implementation Steps

1. Personal - Collective

(Essentially, directing peoples' thinking and ability)

1.1 Begin with a "Teachable Point of View" Process

The Teachable Point of View (TPoV) process begins with a vision - a picture of a desired future that induces a passion to achieve that vision within the people of the organisation. The CEO or leader first defines in their own mind the possibilities and the future potential of the organisation. The "vision" is a defining position for the organisation that the leader feels personally inspired by and cannot help but describe passionately to those around them. It always contains clear, compelling goals and often paints a picture of the desired culture (how we will be doing things and what we will be like). Often, a "future search" or "strategic planning" process is used to help develop, gather and coalesce these views about the possible future.

The TPoV process is an intensive, cascading, education programme for teaching people, level by level, in an organisation who the organisation is, why it exists, where it is going and how it operates.

These ideas are supported by a value system that the leaders exemplify, articulate and enforce. The leader spells out his or her fundamental beliefs about how the vision can be achieved - what is required for their organisation to successfully implement the vision.

The CEO and those reporting directly to him or her then take time out to reflect upon, discuss and reach a true consensus on what the TPoV should be for their organisation, ie, perfecting their vision and defining the underlying beliefs and assumptions about the requirements for its successful implementation. Core ideas and values are brought out and discussed, including an examination of the four foundations outlined above and what they might mean to and look like in this particular organisation. Agreement is then reached on what will generate and sustain the emotional energy needed to achieve the vision, and the "edges" of the vision, ie, the leader's need to face reality and to reach tough decisions about identity and products, investments and people - deciding what business and activities are outside the vision and values and therefore will not be pursued.

At this point, reflection on the "whole" takes place - time should be spent taking a systems view of the organisation, the business and social environment, and the fundamental requirements for moving the organisation from its current position to where leaders aspire it to be.

Then each senior manager repeats the process with those reporting directly to them to create agreement on their TPoV, and so forth to "cascade" the TpoV down through the organisation. This is generally done via workshops over one or two days.

This is a process that can ultimately change an organisation's "DNA" and has been used very successfully by, for example, the Ford Motor Company, GE Medical Systems and Reynolds Healthcare Systems in the USA. (Tichy 1999). The TPoV process flows into the other suggested steps below:

1.2 Identify Core Competencies and Behaviours

Through the TPoV process and interviews with organisational leaders and line managers the core competencies and behaviours required of all leaders to achieve the desired vision and values are identified and described.

1.3 Shared Agreement and Ownership of a Leadership Checklist

Collective agreement is obtained from leaders on these descriptions and a Leadership Checklist for the organisation is produced.

1.4. 360^{o} Performance Feedback

Each leader is invited to rate themselves on the "Checklist" competencies and to ask six other relevant staff members (generally their boss, some colleagues and some subordinates) to anonymously rate them against the criteria. A "Feedback Profile" incorporating the combined feedback is produced. The "Feedback Report" profiles the subject against the agreed critical competencies, behaviours and values as seen by those they work with.

1.5 Performance Coaching and Individual learning Contracts

A one-on-one meeting is then held with each manager to review his or her "Feedback Profile" and to identify their opportunities for learning and improved effectiveness. Commitments and actions are recorded in an individual learning contract or Development Plan. Managers are encouraged to take a performance coaching orientation towards their staff by focussing on performance strengths and gaps, and engaging in dialogue on how to maximise the strengths and to address the gaps. Senge (1990) calls

this Personal Mastery in his Five Disciplines.

1.6 Core Training Modules

A collective data profile is then built from all the "Feedback Profiles". Common needs across the organisation are identified from the collective profile data, and core-training modules are designed. The modules are constructed using the principles of the action learning framework outlined above. Specific training modules, such as those that teach people to think more systemically, the skill of dialogue and collective problem solving or coaching can be extremely valuable to managers and other staff.

One group of private hospitals operating nationwide in Australia wonderfully exemplifies the power of a clearly articulated "Point of View" coupled with an aligned performance management system. A clear and unambiguous message is articulated from the very top of the organisation, from the Board of Directors, the CEO and each Executive Member. Hospital General Managers are also encouraged to communicate with staff daily about these core performance drivers for the organisation. The performance drivers are then reinforced by the use of 360^{o} feedback, one-on-one coaching and imposition of clear consequences for good and less-than-good performance. While not all staff may entirely agree with the message that is cascaded from the very peak of the organisation there is little doubt about the "core curriculum" or the prevailing "Point of View" of this organisation. One indicator of the success of this strategy has been revealed in the strong performance of the organisation's share price over the four-year period in which the current management has been in place. Another is the detailed attention paid by staff to the needs of patients, and their doctors, in each facility operated by the group.

2. Structural - Cultural

(Essentially getting the systems and business processes right - "the way we do things around here" - culture)

2.1 Action Learning Teams

During the TPoV workshops, opinions are obtained on the key systems or business issues in relation to the achievement of the vision. Employee surveys and focus groups can also be used to gather data on where the blockages are and also the opportunities to do things more effectively.

Consultants reach agreement with top management about the core issues and action learning teams of six to eight volunteers are formed to tackle each core issue or problem. Each member must be personally affected by the issue they are going to work on, and they should have some emotional investment in solving the problem. Ideally they should be of roughly equal status - "Communities of Practice".

Meetings must be spaced to allow action/reflection/problem solving/learning. As a guide, the teams might meet for approximately two or three hours per session over six to eight fortnights, or for a whole day once each month for four months. The timing is very much dictated by the issue to be solved and the individual/organisational requirements and logistics involved. At the end of the designated period, team members present their recommendations in relation to the business issue, and also what they have learned both individually and collectively on behalf of the organisation. The Team Charter must include the brief to "tell us what to do and tell us what you've learned".

Action learning teams are also an opportunity to bring to the surface some of the underlying assumptions and subconscious "learning" that pervades the organisation and reflects the underlying culture. The size and age of many large public teaching hospitals, for example, often mean that they have largely unexamined and indistinct norms and customary practices that together constitute the way things are done within the organisation. Often the culture is revealed in the language, the

folklore, the values and the employment, promotion and recognition practices of the organisation - how the hospital makes decisions, deals with disputes and conflict, responds or doesn't respond to various situations.

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Making overt the underlying assumptions and values that are driving an organisation's culture, in order that alternative, more effective workplace solutions to problems can be considered, is a very powerful organisational learning practice.

2.2 Performance Management System

The Performance Management System of the organisation should incorporate the Personal-Collective elements outlined above, with the development of a "Balanced Score Card" set of measures and feedback processes that reflect the vision, values, goals and priorities of the organisation - "What gets measured gets attended to". The 360^{o} Performance Feedback process is incorporated into the overall performance management system.

2.3 Organisational Culture

All of the above steps and processes impact upon and help to shape the culture of an organisation. Building a Learning Organisation is fundamentally a matter of building a certain type of culture - one that enables the organisation to be resilient and healthy. Changing a culture takes years of intentional communication, modelling and reinforcement of the organisation's particular ideas, values, priorities and ways of doing things. It requires an understanding of strategic human-resources management and a focused effort throughout all areas of the organisation and in the marketplace. In marketing terms, it is a matter of having a consistent "brand" internally and externally.

In addition to the specific steps spelled out above, some other ways in which organisational culture can be shaped and reinforced are (Collins & Porras 1996):

- An orientation and induction program for new staff that has ideological as well as practical content, teaching such things as values, norms, history and tradition.
- On the job socialisation by peers and immediate supervisors.
- Home-grown management - promotion from within, bringing to senior levels only those who have demonstrated commitment to the ideology of the organisation.
- Unique language and terminology that reinforce sense of belonging to a special group.
- Exposure to pervasive mythology of "heroic deeds" and corporate exemplars - photos on wall, framed heroic customer letters, Awards, etc - the founding story.
- Corporate songs, affirmations, pledges, that reinforce psychological commitment.
- Tight hiring processes that very intentionally screen and weed out people particularly during probation period.
- Incentive and advancement criteria that explicitly link and reinforce fit to corporate ideology and ways of doing things.
- Awards or other public recognition that reward those who demonstrate great effort consistent with the ideology.
- Tangible and visible penalties for those who break ideological boundaries.

- Celebrations that reinforce success, belonging and specialness.
- Building and advertising a "Brand" that reflects the vision and values.

Hardwiring the Learning

As outcomes result from the two implementation steps (Personal-Collective and Structural-Cultural), they must be captured and hardwired into the organisation, ie, re-engineered into new business processes, policies, procedures, forms, electronic libraries/data banks tool kits, etc. This is where information technology can be very helpful in enabling people to record, contribute to and access the Knowledge Bank (the reservoir of know-how) relevant to their job, work or interest group. The new way of doing things must be locked in so that people cannot revert back to the old ways.

This "hard-wiring" is essential to ensure that the ideas, insights and learning gained during the process are actually captured for others and to create new ways of more effective working. Creating a more open, learning-friendly climate is one step. Coming up with new ideas and identifying how things can be done more effectively is another. Actually implementing the re-engineered processes, forms and procedures that encompass the learning is critical.

Concluding Thoughts

Today's world demands" new ways of thinking and acting. Towards the end of his life, Einstein observed that many of today's problems have been caused by yesterday's thinking. He went on to say that we could only solve some of our deepest problems by new ways of thinking and of doing things - in other words, action learning.

In his 1997 hospital study, Enderby found that detailed examination of the in-depth interview transcripts revealed a large " meaning space" among the perceptions of organisational learning held by executives and senior staff that formed the basis of his three-year case study. These included perceptions of organisational learning as:

- A mechanistic-instrumental view of organisational learning as a process that occurs when the right levers are pulled by management.
- A process of capturing, remembering and learning from what has happened in the past.
- A process of keeping focused on the new vision even when faced with apparent chaos and resistance. This is a kind of "no pain, no gain view of organisational learning".
- A process of creating a certain desired culture that emphasises learning and continuous improvement.
- A process of critically questioning prevailing assumptions, mission, values or norms. This is a critically reflective view of organisational learning.
- A process of creating, capturing and hardwiring new knowledge and skills into the processes and systems of the organisation. This perception is closest to the model for creation of organisational learning outlined above.

Interestingly, none of the meanings outlined above, and none of the interview transcripts analysed by Enderby and his associates, reflected in any close way the view of organisational learning implied in Peter Senge's book "Fifth Discipline". Little or no understanding or commitment to systems thinking, as described by Senge, was apparent in the transcripts of interview conducted with hospital administrators who aspired to create a learning organisation.

On the other hand, perhaps it is unrealistic to expect that all hospital managers would quickly be able to see and to work with the multiple levels operating simultaneously within an organisational setting and the pattern of interrelationships among key components of the system. The Systems Thinkers' goal is not impossible, but it is difficult.

What is needed however, is a firm commitment to change and a workable model to guide the action.

Applying the principles of organisational learning can be done in many ways. The heart of the quest is to build an organisation where "learning" is continually valued, encouraged, enabled, captured, accessed and built upon. The model and steps outlined above is one framework for moving forward toward this goal.

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