

A Tripartite Position Statement on Baccalaureate and Graduate Respiratory Care Education

**The North Carolina Respiratory Care Board
The North Carolina Society for Respiratory Care
The North Carolina Association of Respiratory Educators**

There are about 100,000 respiratory therapists in the United States and 3,400 in North Carolina. They work with patients of all ages and in many different care settings. In North Carolina, Respiratory therapists are nationally credentialed and state licensed members of the health care team that provide respiratory care for patients with heart and lung disorders. Most respiratory therapists, also known as respiratory care practitioners (RCP's), work in hospitals where they perform intensive care procedures in the adult, pediatric and neonatal critical care units. They are typically a vital part of the hospital's lifesaving response team that handles patient emergencies. Of the more than 7,000 hospitals in this country, about 5,700 have separate respiratory care departments.

In a recent statement released by the agencies representing the profession of Respiratory Care (American Association for Respiratory Care), program accreditation (Committee on Accreditation for Respiratory Care), and professional credentialing (National Board for Respiratory Care), the continued growth and advancement of the profession requires that every respiratory therapist demonstrate an advanced level of critical thinking, assessment and problem solving skills. These facilities are essential in today's health care environment not only to improve the quality of care, but also to reduce inappropriate care and thereby reduce costs. Respiratory therapists are expected to participate in the development, modification and evaluation of care plans, protocol administration, disease management and patient education. As a result of this need the ARRC developed a white paper supporting the need for advanced training at a baccalaureate and graduate degree level. (See attached white paper)

Despite this need to develop the advanced qualities and skills needed for the respiratory care practitioner (RCP), there are no such programs offered in North Carolina beyond the associate degree level. Although the associate degree programs are the foundation for the profession and they do an outstanding job in providing the majority of the needed human resources for the field, there is an increasing need in the number of practitioners with advanced credentials and education in order to take on leadership roles within the profession. Such roles include research, education, management, as well as, advanced clinical diagnostic skills. North Carolina RCP's often enroll in distance learning programs outside of North Carolina to obtain the advanced training needed for these skills.

Therefore in cooperation with the AARC, NBRC, and CoARC, we, the North Carolina Respiratory Care Board (NCRCB), the North Carolina Society for Respiratory Care (NCSRC) and the North Carolina Association of Respiratory Educators (NCARE), support the advancement of respiratory care in North Carolina, support the development of baccalaureate level education in respiratory care, and encourage Respiratory Care Practitioners to pursue advanced levels of education. The non-traditional degree program suggested by NCARE would meet the needs of our flourishing profession without duplication of excellent resources and expenses. As a collective group, we are devoted to our professional growth and development through higher levels of education in order to improve the most important aspect of our profession - The Patient.

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Reference

AARC Website. "Development of Baccalaureate and Graduate Degrees in Respiratory Care". A white paper from the AARC Steering Committee of the Coalition for Baccalaureate and Graduate Respiratory Therapy Education.

Graduate Degrees in Respiratory Care

A White Paper from the AARC Steering Committee of the Coalition for Baccalaureate and Graduate Respiratory Therapy Education

Background

Introduction

Being a respiratory therapist in the 21st century has become a highly complex occupation. The results of twenty years of expanded clinical research have empowered respiratory therapists with additional therapeutic techniques, medications, and medical devices used to evaluate and treat patients with increasingly complex cardiopulmonary disorders. Educators have been challenged to expand their curricula to prepare students for these new responsibilities.¹⁻⁹ Progressively more respiratory therapists are expected to assess and quantify their patient's cardiopulmonary status, to provide appropriate respiratory care by applying patient care protocols, and to evaluate the medical and cost effectiveness of their care.¹⁰⁻¹² Critical thinking, decision-making, and competence to perform these responsibilities have become expected of most therapists, and many roles of the advanced therapist have become expected at entry-level.¹³⁻¹⁵

Respiratory therapists have often promoted the expansion of services in their communities, such as diagnosis and treatment of sleep disorders, health promotion and disease prevention patient education, pulmonary rehabilitation, disease specific case management, and life support outside of the intensive care unit. Changes in health care policy, regulation, and reimbursements have required therapists to adopt these expanded roles, work more independently in settings across the continuum of care, and collaborate as partners on the health care delivery team. Although experienced therapists have adapted well to the changing and increasing demands, problems have emerged:

- Producing new therapists with the knowledge and skills expected of a modern respiratory therapist has become increasingly difficult within the confinement of 2 years of post-secondary education.^{16,17}
- With less than a baccalaureate degree, respiratory therapists are often not recognized as professionals by government agencies, third party payers, the uniformed services, labor unions, and others.
- Recruitment of students has declined in recent years, creating severe shortages of therapists.¹⁸⁻²⁰
- Severe budget deficits have required some state governments to limit associate degree curricula in community colleges to 60 semester hours limiting what can be taught.

Historical Development

During the latter half of the 20th century, the respiratory care profession evolved from an on-the-job trained workforce to a college educated and licensed profession. Consistent with this evolution, education and training of therapists began as apprenticeships, and hospital-based programs became organized and awarded certificates of study. The first on-the-job hospital-based inhalation therapy schools were unable to provide adequate numbers of graduates. By the mid-1960's new programs began in vocational-technical schools and the community colleges which mushroomed across the United States. Growth of educational programs in community and technical colleges helped fill the demand for therapists during years of unprecedented growth into the 1980's. Innovative educators with new teaching strategies were able to maximize the compact 2-year time-frame. As the educational needs of new therapists increased, the need for expanded curriculum shifted the responsibility for professional preparation of therapists to colleges and universities that awarded academic credit and degrees. Throughout this period, the demand for therapists exceeded the supply, and the pressure to meet workforce needs may have contributed to an artificially short course of study with artificially low academic awards as compared to other health professions.

Recognizing the need to plan for future change, during the 1990s the American Association for Respiratory Care organized educational consensus conferences and supported research on the future scope of practice and education of therapists²¹⁻²³. These efforts contributed to the growing recognition of the need for an associate degree minimum academic preparation for entry-level therapists for 2002. As expectations accelerate for therapists to analyze and evaluate patient needs, to plan and provide care, to participate effectively on professional interdisciplinary teams, and to provide patient and caregiver education, the need to expand opportunities for baccalaureate and graduate education has become evident.²⁴ In recent years, respiratory care educational programs at the baccalaureate level have increased by 75% with 57 such programs identified in 2002.

Rationale

Profound and extensive changes have occurred regarding medicine's delivery systems, economic and governmental constraints, and societal expectations. Over time, the profession of respiratory care has adapted quickly to new technologies and practices which the founding fathers had never considered²⁵.²⁶ There has been the birth of critical care medicine, pulmonary rehabilitation, and neonatology, as well as advances in cardiovascular diagnostics, sleep-disorders, and emergency transport. The advent of therapist-driven protocols, emphasis on patient outcomes and evidence-based medicine reflect this

continuing transformation into the 21st century^{27, 28}. Consequently, respiratory care departments and educational programs have been required to constantly upgrade in order to keep pace with escalating demands on new graduates. Preparation of educated and skilled practitioners in adequate numbers has been a concern over most of the profession's first fifty years.

There has always been a core of baccalaureate degree programs, primarily at academic medical centers. In 1970 there were seven of these programs, and currently there are about sixty. The need for a greater number of baccalaureate and graduate respiratory care programs appears to be based on multiple evolutionary factors.

The clinical work has become more technically complex

Respiratory care has evolved from conducting limited, task-based technical functions, to performing an array of services requiring more complex cognitive abilities and patient management skills. Consequently the body and complexity of knowledge and skills needed for clinical practice continues to increase and shows no sign of abating. The National Board for Respiratory Care (NBRC) examinations has reflected this theme, and questions now emphasize higher levels of cognition beyond recall and application. Earlier versions of the examinations did not include technical advances such as pulse oximetry, noninvasive ventilation, and computer-interfaced medical hardware that are now considered to be routine.

There is a greater demand for respiratory care at alternate sites

There is an increasing level of non-technical professional abilities that reflect greater levels of responsibility, accountability and authority²⁹. Respiratory care continues to incorporate more specialized and diverse services beyond the traditional bedside caregiver role and has moved to alternative care sites. Therapists are becoming more involved in public health, outpatient care, private office practice, end-of-life and palliative care, smoking cessation, home care and as case managers for asthma, COPD and cystic fibrosis clinics. Therapists are, and will continue to be, more involved in providing patient education, and coordinating care in cost-effective approaches and multiple settings. To meet these future needs, educational programs will need to move beyond traditional teaching in hospital wards and ICUs.

There is increased need for non-technical skills

Professional competence goes beyond developing skills to perform technical tasks. Patient care is interactive, humanistic, and impinges on affective and moral dimensions. Practice is now participatory and involves interpretation and deductive reasoning²⁸. There is need to develop these additional skills^{29, 30}. Educational programs that incorporate the liberal arts allow students to face

future medical delivery changes, wavering economies and an unsure job market. Meeting such challenges is more certain for practitioners with the ability to write well, speak clearly and think more critically. Some Department managers now look to employees that are caregivers, but also have skills to assist in management tasks, patient and staff development education, and research. The current and future health care environment is creating demand for coordinators and planners instead of only bedside caregivers. Therapists participating in formal teaching or staff development are required to achieve baccalaureate or graduate degrees.

There is a growing educational gap between respiratory care and other health professions

In a delivery system that is based on interdisciplinary teamwork, educational differences are important. Physical therapy, pharmacy, audiology and other professions have raised educational standards to baccalaureate or higher since the mid-1960's. For example, pharmacy has moved from the BPharm to the PharmD as the entry level within the past 10 years. Physical therapy has moved from the BS to the MS within about the same time frame, and will require the doctoral degree within a few years. Physician assistant studies have mandated a master's degree entry level and occupational and physical therapy currently require a master's degree as entry level. The perception of respiratory care as a potential career choice by both young people and adults may be influenced by its minimum educational standards for entering clinical practice³¹. Failure to provide an adequate education level can negatively impact that perception, suggesting a more technical and less professional career. Governmental agencies, legislators, third-party payers, and the military services all use the baccalaureate degree as a method of professional recognition.

The AARC advocated an increase in the minimum education requirements a decade ago,^{22,23} and the 1995 PEW Commission Report, Critical Challenges: Revitalizing the Health Professions for the 21st Century, reiterated much of AARC report's findings³². The Commission spoke to innovation, restructuring and flexibility in both practice and professional medical education. It also urged multi-skilling and streamlining of service delivery instead of continued specialization.

Most notable in this discussion was the PEW Commission's recommendations for nursing, which has maintained two levels of education (AS & BS) for one entry-to-practice credential as a registered nurse (RN). This has been reflected in respiratory cares' two levels of education, (AS & BS) for the registered respiratory therapist (RRT) credential. Among the recommendations for nursing are:

- Recognize the value of the multiple entry points to professional practice available to nurses through preparation in associate, baccalaureate and

- masters programs; each is different, and each has important contributions to make in the changing health care system.
- Consolidate the professional nomenclature so that there is a single title for each level of nursing preparation and service.
 - Distinguish between the practice responsibilities of these different levels of nursing, focusing associate preparation on the entry level hospital setting and nursing home practice, baccalaureate on the hospital-based care management and community-based practice, and master's degree for specialty practice in the hospital and independent practice as a primary care provider. Strengthen existing career ladder programs in order to make movement through these levels of nursing as easy as possible.
 - Encourage the expansion of the number of master's level nurse practitioner training programs by increasing the level of federal support for students.

For 30 years various groups within the nursing profession have repeatedly recommended the baccalaureate degree as the minimum registered nurse educational entry-level. The American Nursing Association has maintained this position since 1965. In 1996 24% of nurses held a diploma, 34% held an associate degree and 31% a BSN. Presently about 40% hold a baccalaureate or higher nursing degree. However, opposition from state nursing associations, physicians and hospital administrators has been blamed for the failure to adopt the recommendation³³.

Setting education levels for practice entry has been an economically, politically and emotionally charged issue for many medical professions. Future challenges will more likely be met by leveraging greater support for baccalaureate and graduate respiratory care education.

How Do We Move Ahead?

On January 10, 2003 the AARC issued a Landmark Statement on Education and Credentialing. To support a stronger profession, the AARC, CoARC, and NBRC have all approved a statement to encourage advanced education and credentialing for respiratory therapists. While reiterating their support for associate degree programs, the groups want to ensure the profession of respiratory care is positioned for the future by encouraging pursuit of advanced training, education and credentials by the individuals in this country practicing respiratory care³⁶.”

Respiratory Care: Advancement of the Profession Tripartite Statements of Support

The continuing evolution of the Respiratory Care Profession requires that every respiratory therapist demonstrate an advanced level of critical thinking, assessment and problem solving skills. These facilities are essential in today's

health care environment not only to improve the quality of care but also to reduce inappropriate care and thereby reduce costs. Respiratory therapists are expected to participate in the development, modification and evaluation of care plans, protocol administration, disease management and patient education. Accordingly, the agencies representing the profession (American Association for Respiratory Care), program accreditation (Committee on Accreditation for Respiratory Care), and professional credentialing (National Board for Respiratory Care) together support the following as essential for the continued growth and advancement of the profession.

- The RRT credential is the standard of excellence for respiratory therapists. Evidence-based research documents the value of critical thinking, problem solving and advanced patient assessment skills. Therefore we encourage all respiratory therapists to pursue and obtain the Registered Respiratory Therapist (RRT) credential.
- We support the development of baccalaureate and graduate education in respiratory care and encourage respiratory therapists to pursue advanced levels of education.
- We have complete confidence in the professional credentialing system. The three agencies will cooperate in evaluating the results of national job analysis research to insure that the credentialing system remains current and appropriate as the profession evolves. We recognize the NBRC's obligation to administer job related, validated credentialing examinations based on the results of national job analysis research as mandated by the "Standards for Educational and Psychological Testing" (1999) published by the American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education. Job analysis research is also guided by Section 1607.14 of the Technical Standards for Validity Studies from the Federal Government's Uniform Guidelines on Employee Selection Procedures. These guidelines are found within Title 29 of the Code of Federal Regulations (29CFR1607.14). In addition, the NBRC must maintain its compliance with the standards for accreditation of certification programs developed by the National Commission for Certifying Agencies (NCCA).
- The three agencies recognize the importance of effective recruitment and retention strategies to recruit and retain respiratory therapists for the health care workforce, and qualified respiratory therapy students. We encourage the use of existing resources available from the three agencies.
- The three organizations will cooperate in evaluating examination pass rates for entry level and advanced practice programs and for associate and baccalaureate degree programs to assure that the educational requirements for admission both to the educational programs and to the examination system are appropriate.

- We encourage the development of appropriate career ladders and pay differentials based on the advanced practice credential (RRT) and education beyond the Associate Degree.
- We strongly support faculty development activities specific to educational methodology³⁷.

As evidenced by this tripartite statement it is clear that community colleges are, and will continue to be, important partners in providing respiratory care education. A plan that does not use the resources they can provide will be unnecessarily limited in scope. The AARC must facilitate the development of workable articulation and bridge agreements between community colleges and 4-year colleges. These articulations may take the form of moving students from an associate degree in respiratory therapy to a BSRT, or they may use a model where students receive two years of preparatory course work at a community college before transferring to a 4-year college to complete their bachelor's degree. Community colleges could also partner with 4-year colleges and graduate schools to provide sites for distance education. Other options for expanding baccalaureate and graduate education certainly exist and should be explored.

Currently respiratory care programs tend to have small class sizes but high fixed costs. Of the 12,183 students who graduated from advanced practitioner respiratory care programs during the years 1998 through 2000, 1773 (14.6%) were at the baccalaureate level³⁴. If we are to make it attractive for educational institutions to establish new baccalaureate and graduate programs, we must rethink this model. Models that can accommodate larger classes of baccalaureate level students without a substantial increase in program costs should be explored. Because laboratory and clinical courses are usually the limiting factor for enrollment, they should be the initial targets for remodeling. We must look to other therapy-based allied health professions that successfully accommodate large enrollments in their educational programs and examine how their approach might be adapted for respiratory therapy.

If the respiratory care profession is to move ahead we must make a concerted effort to increase the number of graduate programs. The demand for such programs will increase as we increase the number of baccalaureate program graduates. However, at present, the vast majority of respiratory therapists who seek graduate degrees must do so in another field such as education or physiology. We must develop more graduate degrees that are specific to respiratory care if we are to meet the need for clinical specialists, researchers, faculty, and professional leaders.

The need for graduate education in respiratory care

Currently, there are only a handful of graduate degree programs with majors in respiratory care in the U.S. Because of this, leadership training in clinical specialty areas, research, management, and education has been provided at the baccalaureate level or not at all. This has resulted in a dearth of qualified individuals able to fulfill the need for trained practitioners to teach, perform management and supervision, assist with research, and fulfill other professional leadership roles. Respiratory therapists with graduate education and training are needed to fill the demand for future educators, managers, researchers, and clinical specialists. A tremendous demand for respiratory care services is projected over the next fifteen years. This projected shortage is due to the aging of the population, increases in respiratory diseases (including asthma and COPD), increases in the general population, and advances in technology and treatment. Coupled with an increase in demand for services and personnel, the current generation of educators and leaders in respiratory care will be retiring. There is a major need for the respiratory profession to prepare advanced level respiratory therapists who have a foundation for leadership in the areas of education, management and supervision, and clinical practice. There are over 300 college or university-based respiratory care educational programs in the U.S. and approximately 2,700 respiratory therapists are employed as educators by colleges, universities, and health care agencies. Nationally, the vacancy rate for instructors/educators was 9.8% in year 2000, and graduates of the existing Master's degree programs in respiratory care are sought after by colleges and universities to fill faculty vacancies. In addition, about 11% of the respiratory care workforce is employed in management and supervision (11,685 FTEs in year 2000) and the anticipated demand for managers and supervisors is also expected to increase ³⁵.

Graduate education in respiratory care is needed to advance the science and practice of respiratory care by providing a link between the sciences, clinical research and practice; increase knowledge within the discipline; provide for interdisciplinary collaboration and research; and train future faculty for the profession. The goals of graduate respiratory care educational programs may include:

- To prepare advanced level respiratory therapists for clinical practice.
- Provide leadership training in the areas of management, supervision, education and research.
- Develop clinical specialists in the areas of adult critical care, pediatric critical care, neonatal critical care, pulmonary function technology and cardiopulmonary diagnostics, polysomnography, and other clinical areas, as needed.
- Prepare future faculty for college and university based respiratory care educational programs.

- Develop individuals who can formulate appropriate questions, organize and test hypotheses, and apply research results to the practice of respiratory care.
- Prepare clinical practitioners with advanced knowledge and skills in basic and clinical sciences.
- Prepare leaders, who are able to plan, develop, and deliver high quality, cost-effective health care services.

Conclusion

There is a need to increase the number of respiratory therapists with advanced levels of training and education to meet the demands of providing services requiring complex cognitive abilities and patient management skills. Therefore the AARC strongly encourages the continuing development of baccalaureate and graduate education in respiratory care, to include:

- Traditional BS degree programs
- Associate degree to baccalaureate degree articulation and bridge agreements with area community colleges
- Distance education for BS degree programs offered at the community college level
- Promotion of Master of Science in Respiratory Care degree programs for the development of leadership in the areas of management, education, research, and clinical specialization.

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References

1. Cullen D. Including nicotine intervention in the RC curriculum. *AARC Times* 1991; 15(4): 32-3.
2. Lawrence G. Teaching pulmonary rehab to RC students. *AARC Times* 1991; 15(7): 50-1
3. Bunch D. What educators should be doing now to prepare RC students for managed care. *AARC Times* 1997; 21(2): 26-7.
4. Striplin T, Rocks W. Designing and implementing a multi-competency curriculum design. *AARC Times* 1997; 21(2): 28-30.
5. Bunch D. Fitting gerontology into the RC curriculum. *AARC Times* 1997; 21(2): 38-9.
6. Minkley PL. Integrating sleep medicine and technology into respiratory care education. *AARC Times* 1997; 21(5): 74-7.
7. Hospodar GJ, Demaray W. Preparing tomorrow's pediatric RCPs. *RT: The Journal for Respiratory Care Practitioners* 1997; 10(6): 84-6.
8. Lierl DJ. Geriatric education: why RCPs need to learn more about the geriatric patient. *AARC Times* 1997; 21(11) 36-9.
9. Hoberty PD. Multiskilling education in the curricula of respiratory therapy education programs: a national survey. *Respir Care* 1997; 42(9): 49-57.
10. Kollef MH, Shapiro SD, Silver PI. A randomized, controlled trial of protocol-directed versus physician-directed weaning from mechanical ventilation. *Crit Care Med* 1997 Apr;25:567-74.
11. Scheinhorn DJ, Chao DC, Stearn-Hassenpflug M, Wallace WA. Outcomes in post-ICU mechanical ventilation: a therapist-implemented weaning protocol. *Chest* 2001; 119(1): 236-42.
12. Marelich GP, Murin S, Battistella F, Inciardi J, Vierra T, Roby M. Protocol weaning of mechanical ventilation in medical and surgical patients by respiratory care practitioners and nurses: effect on weaning time and incidence of ventilator-associated pneumonia. *Chest* 2002; 118:(2): 459-67.
13. Mishoe SC. Educating respiratory care professionals: an emphasis on critical thinking. *Respir Care* 2002; 47(5): 568-9.
14. Meredith RL, Pilbeam SP, Stoller JK. Is our educational system adequately preparing respiratory care practitioners for therapist-driven protocols? *Respir Care* 1994; 39(7): 709-11.
15. Hagus CK. Practitioner perceptions of educational needs and effects of respiratory care protocol implementation: a citywide survey *Respir Care* 1997; 42(9): 858-67.
16. Douce FH, Cullen DL. The length of educational preparation and academic awards for future respiratory care practitioners: a Delphi study. *Respir Care* 1993; 38(9): 1014-9.
17. Farrell D. Are two years enough?... respiratory care profession. *Respiratory Therapy* 1986; 16(2): 7.

18. Giordano SP. Observations. RTs in the supply-and-demand equation. AARC Times 2002; 26(7): 21-2, 106.
19. Bunch D. Meeting market demands for RTs: educators look for new students with guarded optimism. AARC Times 2000; 24(4): 32-5, 72.
20. Shelledy DC, LeGrand TS. Student recruitment: marketing respiratory care educational programs. Respiratory Care Education Annual 2002; 11: 11-21.
21. O'Daniel C, Cullen DL, Douce FH, Ellis GR, Mikles SP, Wiezalis CP, Johnson PL Jr., Lorance ND, Rinker R. The future educational needs of respiratory care practitioners: a Delphi study. Respir Care 1992; 37(1): 65-78.
22. American Association for Respiratory Care. Year 2001: Delineating the educational direction for the future respiratory care practitioner. Proceedings of a National Consensus Conference on Respiratory Care Education. Dallas, TX 1993.
23. American Association for Respiratory Care. Year 2001: an action agenda. Proceedings of a National Consensus Conference on Respiratory Care Education. Dallas, TX 1993
24. Douce FH. Changes in respiratory care education on the horizon of an associate degree entry-level mandate. Respiratory Care Education Annual. 1999; 8: 43-56.
25. Pierson DJ. Respiratory care as a science. Respir Care 1988; 33(1): 27-37.
26. Pierson DJ. The future of respiratory care. Respir Care 2001; 46(7):705.
27. Hess DR. The AARC clinical practice guidelines. Respir Care 1991; 36(12):1398-1401.
28. Evidence-Based Medicine Working Group. Evidence-based health care: a new approach to teaching the practice of health care. JAMA 1992; 268(17): 2420-5.
29. Mishoe SC, MacIntyre NR. Expanding professional roles for respiratory care practitioners. Respir Care 1997; 42(1): 71-85.
30. Gonzalez C. Undergraduate research, graduate mentoring and the university's mission. Science 2001; 293(5535): 1624.
31. Nelson MA. Education for professional nursing practice: looking backward into the future. Online Journal of Issues in Nursing. 2002; 7(3): 4.
32. Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century. The Third Report of the Pew Health Professions Commission. Center for the Health Professions, San Francisco. December 1995. [<http://www.futurehealth.ucsf.edu/summaries/challenges.html>12/03]
33. Jacobs LA, DiMatto JK, Bishop TL, Fields SD. The baccalaureate degree in nursing as an entry-level requirement for professional nursing practice. J Professional Nursing 1998; 14(4): 115.

34. American Association for Respiratory Care Coalition for Baccalaureate and Graduate Respiratory Therapy 2002 Survey. Dallas, June 2002.
35. Dubbs W, The AARC Respiratory Therapist Human Resources Study - 2000: Association releases results of landmark survey of RT workforce. AARC Times, 2000: 24(12), 34-42.
36. American Association for Respiratory Care, Landmark Statement on Education and Credentialing Issued
37. American Association for Respiratory Care, Respiratory Care: Advancement of the Profession Tripartite Statements of Support.