Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Survey of Respiratory Therapy Educational Program Directors in the United States

Thomas A Barnes EdD RRT FAARC, Robert M Kacmarek PhD RRT FAARC, Charles G Durbin Jr MD FAARC FCCM

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Abstract

OBJECTIVE: As background for the American Association for Respiratory Care (AARC) Third Respiratory Care in 2015 and Beyond conference, information and opinions were sought on the ability of the current educational infrastructure to make changes that would assure competent providers in the envisioned health care future. METHODS: Survey responses from Respiratory Therapy Program Directors (RTPDs) are the basis of this report. After pilot testing and refining the questions, a self-administered internet based AARC survey was used to gather information from RTPDs of 435 RT programs, based in 411 colleges that were fully accredited or in the process of being accredited by the Commission on Accreditation for Respiratory Care (CoARC) as of May, 2010. RESULTS: Three hundred and forty-eight program directors (80%) provided valid survey responses. Three of the five competencies related to "evidence-based medicine" and "respiratory care protocols" were taught less often in ASRT programs than in BSRT programs. Eighty percent of BSRT compared to 42% of ASRT programs instruct students how to critique published research ($p < .001$). Only 34% of ASRT programs teach students the general meaning of statistical tests compared to 78% of BSRT programs ($p < .001$). RTPDs reported that students are taught to apply evidence-based medicine to clinical practice in 94% of BSRT but only in 81% of ASRT programs ($p = .013$). Teaching students how to describe healthcare and financial reimbursement systems and the need to reduce the cost of delivering respiratory care, a leadership competency identified by the second 2015 conference, was significantly different for BSRT (72%) and ASRT (56%) programs ($p = .027$). Other competencies showed trends toward differences with BSRT reporting higher percentages of success than ASRT programs. CONCLUSION: Important differences do exist between BSRT and ASRT programs. *Key words: respiratory care, respiratory therapist, survey, education, credentials, accreditation.*

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Introduction

The first Respiratory Care 2015 and Beyond Conference defined the expected role of the practicing and graduating respiratory therapist in 2015 and beyond.[1] While the second Respiratory Care 2015 and Beyond Conference identified competencies required of both practicing and graduating respiratory therapists in 2015 and beyond.[2] The goal of the third Respiratory Care 2015 and Beyond conference was to determine the educational, credentialing and accreditation needs that would support the profession in the development and attainment of the competencies identified in the second conference.[3] In order to insure that the participants of the third conference would have as much information as possible to base their recommendations, the planning committee for the 2015 and Beyond Conferences elected to develop a survey to distribute to all directors of respiratory therapy educational programs.

The intent of this survey was to identify the program directors' opinions on their current and future ability to insure that their graduating students were meeting the 67 competencies in the seven categories that were identified by the second conference as necessary for graduates in 2015 and beyond. In addition, program directors were asked to provide their opinions on the required length of respiratory care programs in 2015 and beyond, the educational needs of practicing therapists beyond entry and the credential needed by graduating therapists in 2015 and beyond.

The committee hypothesized that educational programs would not be able to ensure the attainment of all of the competencies identified in the second conference by their graduates, that there would be differences in the opinion between AS and BS programs on the educational

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

requirements of graduates and that a large majority of educational programs would consider the Registry Credential as the necessary credential for entry into the profession in 2015 and beyond.

Methods

Questionnaire Development and Pilot Testing

This study was conducted by the 2015 Research Group (Appendix 1) of the American Association for Respiratory Care (AARC). Survey questions related to respiratory therapy practice in 2015 and beyond were developed based on outcomes from 2015 conferences one and two, and information needed for the third conference. These questions were organized, reviewed and discussed by group members, who have considerable academic and clinical experience in respiratory therapy (RT) practice, education, accreditation, certification, and licensure. The survey asked general demographic questions about the responding institutions characteristics, e.g., degrees offered, institutional control, programs offered, expected graduates in 2010 and expected graduates in the future. The program directors were also asked to select which of the 67 competencies, identified by the second 2015 conference, were taught in their curriculums. A section of the questionnaire asked if additional credit hours could be added to the RT curriculum in order to teach the competencies needed in 2015 and beyond, and not exceed maximum degree requirements. The survey finished with questions related to the degree and credentials that should be required to enter and to continue practice as a respiratory therapist in 2105 and beyond (Appendix 2, in the supplementary materials to the paper at http://www.rcjournal.com/).

The survey questionnaire was pilot-tested on six program directors of accredited associate and baccalaureate RT programs. These individual were asked to comment on the following aspects of the survey:

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

1. Time. How many minutes were required for you to complete the survey?

2. Clarity. Are any questions ambiguous?

3. Invitation. Was the survey invitation letter easily understood and appropriate?

4. Connection. Did the link provided connect you to the online survey easily? Were you able to submit the survey easily?

5. Progression. Were you able to easily move forward and backwards between survey questions?

6. Overall. What general comments do you have regarding the survey?

The survey questionnaire was revised according to the pilot-test feedback received and approved by the 2015 Research Group. The study protocol was approved by the institutional review board of Northeastern University.

Data collection

The survey population was the directors of 435 RT programs, based in 411 colleges accredited or in the process of being accredited by the Commission on Accreditation for Respiratory Care (CoARC) as of May 2010. The AARC President sent an invitation, via e-mail, to the 435 program directors asking that they complete the survey questionnaire. The e-mail addresses for these directors were obtained from CoARC and the internet-based survey was self-administered. To improve response rate, three e-mail follow-up reminders were sent to all the non-respondents.

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Data Analysis

Data were aggregated according to response categories for type of respiratory therapy program (associate or baccalaureate degree). Percentages, frequency distribution, and differences between program types were determined with cross tabulation and Pearson chi-square analysis using SPSS version 18.0 software, SPSS, Inc,. Chicago, Illinois. A two-tailed $p < .05$ was considered statistically significant.

Results

Response Rate and Demographics

There were 348 valid responses received from directors of the 435 RT programs in the CoARC database as of May 2010 (80.0%). Six colleges had more than one program director because of students located on satellite campuses and collectively submitted thirty responses to the survey. At least one program director response was received from 324 colleges of the 411 with RT programs (78.8%). Institutional control was reported as public not-for-profit 271 (77.9%) and 77 (22.1%) indicated they were based in private institutions (Fig.1). Community and junior colleges were the most common institutional type (Fig.2). The associate degree is offered by 298 RT programs (ASRT) responding to the survey. A baccalaureate degree in RT (BSRT) or graduate degree is offered by 55 program respondents.

Major Competency Areas

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Areas where statistically significant differences ($p < .05$) between the competencies taught by BSRT and ASRT degree programs were evidence-based medicine and protocols (Table 1), leadership (Table 2) and diagnostics (Table 3). Greater than 6% differences in competencies taught by BSRT and ASRT programs were reported in three other major areas: chronic and acute disease management (Table 4), emergency and critical care (Tables 5 and 6). There was <5% difference between competencies taught in patient assessment (Table 7) and the therapeutics area (Tables 8 and 9).

Evidence-Based Medicine and Respiratory Care Protocols

Three of the five competencies related to evidence-based medicine and respiratory care protocols were taught significantly more often by BSRT than ASRT programs (Table 1). Eighty percent of BSRT compared to 41.5% of ASRT programs instruct students how to critique published research ($p < .001$). Seventy-eight percent of BSRT programs teach students the general meaning of statistical tests compared to 34% of ASRT programs ($p < .001$). Directors reported that students are taught to apply evidence-based medicine to clinical practice in 94.4% of BSRT and 80.6% of ASRT programs ($p = .013$). Both types of programs teach students how to treat patients in a variety of settings, using the appropriate respiratory care protocols, (BSRT 96.5%, ASRT 95.2%) and explain to students the use of evidence-based medicine in the development of hospital-based respiratory care protocols (BSRT 83.3%, ASRT 78.6%).

Leadership

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Teaching students to describe healthcare financial reimbursement and the need to reduce the cost of delivering respiratory care, a leadership competency identified by the second 2015 conference, was significantly different between BSRT (72.2%) and ASRT (56.1%) programs ($p < .027$). The survey indicated both BSRT (63.0%) and ASRT (52.4%) programs are preparing students to lead groups in care planning, bedside decisions making, and collaboration with other healthcare professionals ($p < .15$). Teaching students to contribute to organizational teams as related to planning, collaborative decision making, and other team functions, were also reported by both BSRT (77.8%) and ASRT (66.0%) programs ($p <.09$). Basic organizational implications of regulatory requirements on the healthcare system were reported to be taught by both BSRT (75.9%) and ASRT (66.0%) programs ($p < .15$). Both types of RT programs had a high proportion that taught effective written and verbal communications with various members of the healthcare team, patients, families, and others (Table 2).

The Other Competency Areas with Differences

A high proportion of both BSRT (>92.5%) and ASRT (> 83.6%) programs teach most competencies in diagnostics except the competency for relating the results of sleep studies to sleep disorders where the percentage drops to 75.9% for BSRT and 67.3% for ASRT programs (Table 3). Overall, BSRT programs report teaching competencies in diagnostics more often than ASRT programs.

Greater than 88.9 % of BSRT programs teach all the competencies in the chronic and acute disease management area except for: develop, administer, and re-evaluate the care plan for chronic disease management where only 83.3% teach this skill (Table 4). A larger proportion of BSRT than ASRT programs teach the disease management competencies with the largest

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

difference (6.8%) for the competency: manage respiratory care plans in the acute-care setting, using evidence-based medicine, protocols, and clinical practice guidelines.

A high proportion (>90.7%) of BSRT and ASRT programs teach their students patient assessment competencies. Fewer BSRT (90.7%) than ASRT (95.2%) programs teach students how to obtain social behavioral and occupational histories and other historical information incident to the purpose of the current complaint. All BSRT and most ASRT (98.3%) programs teach students how to interpret pulmonary function studies (spirometry) studies. More BSRT than ASRT programs teach students to interpret lung volumes and diffusion studies (Table 7).

The emergency care competencies are taught by a higher proportion of BSRT than ASRT programs (Table 5). Fewer programs of both types teach students how to provide emergency care to children and neonates. A relatively low proportion of BSRT and ASRT programs are training students how to perform as a member of a rapid response teams, 72.2% and 65.0% respectively. Less than 100% of BSRT (89.9%) and ASRT (77.2%) programs require students to maintain current American Heart Association advanced cardiovascular life support (ACLS) and basic life support certification. A relatively low proportion of both types of programs teach students how to participate in mass casualty staffing (Table 5).

The largest differences between BSRT and ASRT program instruction in the critical care competency area, is the number of programs that teach students how to participate in collaborative care management based on evidence-based protocols, 81.5% and 70.7% respectively (Table 6). Less than one-half of both program types teach students to apply circulatory gas exchange systems in RT practice, e.g., ECMO (Table 6).

Projected Number of Graduates and Factors that Impact Enrollment

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

The survey shows that RTPDs expect the average number of graduates per program to increase 24.1% over the next decade, from 19.9 in 2010 to 24.7 in 2020 (Table 10). Using the median data, the number of graduates would increase by one-third, from 15 to 20 per program. The total number of programs answering the survey questions on the number of graduates in 2010 was 341. The largest barriers to accepting more students into RT programs are inadequate number of clinical affiliates, limited availability of additional faculty, and lack of funding to expand (Table 11). Half of the program directors reported difficulty recruiting faculty and 67% of this group indicated that lack of teaching experience, inadequate salary, and lack of academic credentials contributed to the recruitment problem. The survey identified that 25.6% of the RT programs have the ability to allow program graduates to directly earn a baccalaureate degree. More BSRT (85.4%) than ASRT (14.6%) programs directly award the baccalaureate degree to graduates. The BSRT programs that indirectly award a baccalaureate degree in RT do so through consortia agreements with colleges and universities, e.g. academic health science centers with accredited RT programs.

Education Level and Credentials to Enter Practice

There were 102 respondents that indicated that a baccalaureate or masters degree in respiratory therapy should be required to qualify for a license to deliver respiratory care in 2015 and beyond. However, 241 thought the associate degree was all that should be needed to begin practice as a respiratory therapist. A high proportion (87.0%) of directors of BSRT program selected baccalaureate or masters' degree for entry. However, a high proportion (81.3%) of directors of ASRT programs selected an associate degree entry level. More agreement on the

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

education level after licensure was observed with both BSRT (100%) and ASRT (65.8%) program directors in favor of a baccalaureate or masters degree to progress in practice.

The survey indicates that 68.5% of program directors are in favor of the RRT credential being required to practice in 2015 and beyond. The proportion was higher for directors of BSRT (83.3%) than ASRT (65.7%) programs. A high proportion of program directors 300 (86.2%) indicated on the survey that future RT graduates should be required to maintain an active CRT or RRT credential to renew their state license to practice respiratory care. Only 48 (13.8%) program directors were opposed to this requirement.

Accelerated and ASRT to BSRT Bridge Programs

Forty-four (80.0%) BSRT program directors reported that they offer an ASRT to BSRT option. The survey shows that 15 (27.3%) BSRT programs offer an accelerated baccalaureate program for individuals that have already completed a bachelor's or graduate degree in a non-respiratory discipline. Twelve (21.8%) BSRT programs plan to start new accelerated programs by 2015. One hundred and thirty-two (37.9%) program directors report that their college has an articulation agreement with another institution to award a baccalaureate degree. The survey indicates that 21 programs plan to offer a baccalaureate or master's degree in respiratory therapy in the future, 19 of them by 2015. Two hundred eleven programs reported that the largest barrier to offering a BSRT degree was that their college does not award baccalaureate degrees.

The survey shows that a majority (60%) of program directors can increase the number of credit hours in their curriculums in order to teach new competencies and 92.4% said they could accomplish this by 2015. Program directors who are unable to add credit hours to their

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

curriculums indicate that they plan to teach the competencies needed in 2015 by revising their program of study.[2]

Discussion

The major findings of this national survey are: (1) six of seven major competency areas identified by the second 2015 conference have several competencies that are taught more often in BSRT than ASRT programs, (2) Only one-quarter of accredited RT programs responding to this survey have the capability to directly award a baccalaureate degree to their graduates, (3) Two-thirds of program directors are in favor of the RRT credential being required to practice in 2015 and beyond, and (4) Broad support was seen for a baccalaureate or graduate degree for future graduates after they have begun practice. In addition, 100 directors were in favor of a BSRT or graduate degree to qualify to for license to deliver respiratory care.

Strong evidence supports the need by 2015 and beyond for graduate respiratory therapists to master 69 competencies in seven major areas.[2] The respiratory therapist in 2015 will have to be able to understand the scientific evidence because healthcare is increasingly driven by evidence-based medicine.[1, 4] Disease management was identified as a major competency area needed in 2015 and beyond.[1] Respiratory Therapists will have to increase their scope of knowledge and skills in order to assimilate into the new disease management model. They will need to expand and refine their critical thinking and communication skills, receive training in finance, and increase their ability to analyze the literature.[5] Leadership was one of seven major competency areas identified by the second 2015 conference.[2] This survey showed that significantly fewer ASRT than BSRT programs teach students how to describe healthcare

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

financial reimbursement systems. Program directors reported that leadership skills for serving as a member or leader of interdisciplinary clinical teams are taught more often by BSRT programs. This presents a serious challenge for the next decade based on survey results that show only one quarter of responding accredited RT programs have the capability to offer a baccalaureate or graduate degree in respiratory therapy or related areas such as health sciences. The AARC 2009 Human Resources Study reported that 75% of RT faculty for accredited programs plan to retire by 2020.[6] Seven years ago the AARC identified in a white paper the need for RT graduate programs to prepare respiratory therapists for faculty positions in accredited programs.[7] However, despite regional accrediting group requirements for baccalaureate allied health faculty to have a graduate degree in their specialty area, today there are only four masters degree and no doctorate programs with majors or concentrations in respiratory therapy.[8] However, a recent 2009 survey of 52 BSRT program directors with a 100% response and located throughout the United States (Figure 1), indicated that 22 will start a masters degree program for RTs by 2014.[8] The AARC 2009 Human Resource Study surveyed 359 accredited RT programs and received responses from 242 (67.4%) directors.[6] These respondents indicated that 45 awarded only the baccalaureate degree in respiratory therapy and only three offered a graduate degree. However, 71 programs (29.3%) indicated that students could earn a baccalaureate directly from their institution.

Student enrollment in 2009 for both ASRT and BSRT was quite limited with an average graduating class of 17.5 (SD 12.9).[6] BSRT programs have a smaller average number of graduates than ASRT programs. The average number of BSRT graduates in 2009 was 15.1 (SD 9.0).[9] This survey indicates that the average number of graduates will increase in 2010 to 19.9 (SD 17.9) and increase further by 2020 to 24.7 (SD 15.8) (Table10). If the total number of programs

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

remains unchanged (435), 10,745 students will graduate from RT programs in 2020 compared to 8,656 that were reported graduating in 2010. More RT faculty with graduate degrees, teaching experience and scholarly publication records are needed for both types of programs so they can expand and graduate more students who can successfully complete the RRT examinations and practice at the competency levels expected in 2015 and beyond.[2, 3] Funding and number of clinical affiliates closely followed by faculty shortage are reported to be the barriers to accepting more students (Table 11). Twenty-one programs plan to offer a baccalaureate or master's degree in respiratory therapy in the future, nineteen by 2015.

A high proportion of program directors surveyed were in favor of the RRT credential being required for licensure to practice as an RT in 2015 and beyond. Further, they can no longer see the rationale for the National Board for Respiratory Care (NBRC) to require graduates to take three examinations to be awarded the RRT credential. Many directors stated in the comment sections of the survey that they believe that the CRT examination should no longer be offered. A majority of the voting participants attending the third AARC 2015 and Beyond conference recommended that the AARC request that the NBRC no longer offer the CRT examination after 2014.[3] The primary reasons given for this change in credential were:

1. There are no differences in job duties between an RRT and CRT credentialed therapist.
2. RT programs prepare students for the RRT credential and it is time to require it for practice of the profession.
3. Advancement in technology and assessment techniques requires a higher level of competency for entry into the profession.
4. Having two credentials (CRT and RRT) confuses the public and healthcare workers as to what is necessary to practice as a respiratory therapist.

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

5. Most institutions and communities don't differentiate between the CRT and the RRT credential.
6. Having a two-tiered credentialing process is time consuming and expensive and does not improve patient care.
7. The category of questions on the CRT examination that are not covered on the RRT examination could well be incorporated within the RRT examination questions.

Limitations

This study was limited by the RTPDs located in 58 (14.1%) colleges that did not complete the survey. One of the more confounding and distressing aspects of the response to this survey was the large number of items that were intentionally left unanswered by the respondents (Tables 1 to 9). For example when asked about teaching students how to critique the published literature, only 45 of 56 BSRT programs responded at all to this question (80% response rate) and an even lower number (120 of 304) of the ASRT programs responding actually answered this question (40% response rate). An even lower response rate was noted for teaching the meaning of general statistical tests (Table 1). A similar lack of response by a large number of programs is seen in many of the competency areas surveyed with a consistently lower response rate for ASRT programs than BSRT programs. A serious concern is how to interpret this selective lack of response. Did the program director simply overlook these items or was the absence of a response an indication that the competency was not taught? Were the program directors simply embarrassed to state that the omitted competency was not part of their curriculum. Since the current requirements for accreditation of RT programs[10] do not require the

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

inclusion of specific content areas or specific numbers of hours of clinical instruction it is highly possible that these lack of responses are actually a statement that the competency is not taught by the program. If this is so, then the actual percentage of programs teaching the majority of the 69 competencies identified during the second conference is much lower than these survey results indicate.

Conclusion

Our study provides important information from program directors regarding changes to the current educational infrastructure that would assure competent providers in the envisioned health care future and on their current and future ability to insure that their graduating students could meet the necessary competencies identified during the three 2015 conferences. Other major findings of this national survey are: (1) Only one-quarter of accredited RT programs responding to this survey have the capability to directly award a baccalaureate degree in respiratory therapy or a health science related area to their graduates, (2) two-thirds of program directors are in favor of the RRT credential being required to practice in 2015 and beyond, and (3) broad support was seen for a baccalaureate or graduate degree for future graduates after they have begun practice, (4) over one forth of responding program directors were in favor of a BSRT or graduate degree to qualify for a license to deliver respiratory care, and (5) many respondents have concerns about finding necessary administrative and clinical resources to increase the number of graduates meeting needed competencies by 2015 and beyond and adjusting or expanding curriculum to meet the competencies identified for 2015 and beyond.

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

REFERENCES

1. Kacmarek RM, Durbin CG, Barnes TA, Kageler WV, Walton JR, O'Neil EH. Creating a vision for respiratory care in 2015 and beyond. Respir Care 2009;54(3):375-389.
2. Barnes TA, Gale DD, Kacmarek RM, Kageler WV. Competencies needed by graduate respiratory therapists in 2015 and beyond. Respir Care 2010;55(5):601-616.
3. Barnes TA, Kacmarek RM, Durbin CG. Transitioning the Respiratory Therapy Workforce for 2015 and Beyond. Respir Care 2011;55(In Press).
4. Hess DR. What is evidence-based medicine and why should I care? Respir Care 2004;49(7):730-741.
5. Stoller JK, Niewoehner DE, Fan VS. Disease management as an evolving role for respiratory therapists. Respir Care 2006;51(12):1400-1402.
6. American Association for Respiratory Care. AARC 2009 Respiratory Therapist Human Resource Study. Irving, Texas, June 2009.
7. American Association for Respiratory Care. A White Paper From the AARC Steering Committee of the Coalition For Baccalaureate and Graduate Respiratory Therapy Education: Development of Baccalaureate and Graduate Degrees in Respiratory Care, Irving, Texas 2003. http://www.aarc.org/resources/bacc_edu/index.asp accessed October 25, 2010.
8. Barnes TA, Ward JJ. Survey and analysis of baccalaureate and graduate respiratory therapy education programs. Education Annual, American Association for Respiratory Care, Irving, Texas, 2010;19:1-11. .
9. Coalition for Baccalaureate and Graduate Respiratory Therapy Education, 2010 Roster of Respiratory Therapy Programs Awarding a Baccalaureate or Masters Degree, 2010 Boston, Massachusetts. http://www.aarc.org/education/accredited_programs/bsrt_msrt_roster.pdf accessed November 20, 2010.
10. Commission on Accreditation for Respiratory Care. Accreditation Standards for the Profession of Respiratory Care. June 1, 2010, Bedford, Texas. http://www.coarc.com/29.html accessed November 28, 2010.

Figure Legend

Fig 1. Colleges and universities awarding a Bachelor of Science degree in respiratory therapy.[9]

Fig. 2. Institutional control for 348 RT program directors responding to the survey.

Fig. 3. Type of institution for 348 program directors responding to the survey.

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 1. Survey responses: Which of the following evidence-based medicine and respiratory care protocol competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Critique published research (n = 165)*	**79.6%**	**41.5%**	**< .001**
Explain the meaning of general statistical tests (n = 142)*	**77.8%**	**34.0%**	**< .001**
Apply evidence-based medicine to clinical practice (n = 288)*	**94.4%**	**80.6%**	**.013**
Explain the use of evidence-based medicine in the development and application of hospital-based respiratory care protocols (n = 276)	83.3%	78.6%	.43
Treat patients in a variety of settings, using the appropriate respiratory care protocol (n = 332)	96.3%	95.2%	.73

*Statistically significant difference P < .05
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table2. Which of the following leadership competencies are taught in your curriculum? Select all that apply.

Deleted:

Competency	Education Level		*P*-value
	BSRT	ASRT	
Contribute to organizational teams as related to planning, collaborative decision making and other team functions (n = 236)**	77.8%	66.0%	.09
Describe fundamental/basic organizational implications of regulatory requirements on the healthcare system (n = 235)**	75.9%	66.0%	.15
Demonstrates effective written and verbal communications with various members of the healthcare team, patients, families, and others (cultural competence and literacy). (n = 327)	94.4%	93.9%	.87
Describe healthcare financial reimbursement systems and the need to reduce the cost of delivering respiratory care (n = 204)*	**72.2%**	**56.1%**	**.027**
Lead groups in care planning, bedside decision making, and collaboration with other healthcare professionals (n = 188)**	63.0%	52.4%	.15

*Statistically significant difference P < .05
**Difference > 6%
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 3. Which of the following diagnostic competencies are taught in your curriculum? Select all that apply

Competency	Education Level		*P*-value
	BSRT	ASRT	
Perform basic spirometry (n = 343)	100.0%	98.3%	.33
Explain indications and contraindications for advanced pulmonary function tests (n = 325)*	**100.0%**	**92.2%**	**.033**
Explain indications and contraindications for sleep studies. (n = 296)**	92.6%	83.7%	.09
Relate results of sleep studies to types of sleep disorders (n = 239)**	75.9%	67.3%	.21
Explain indications and contraindications, general hazards, and complications of bronchoscopy (n = 329)	96.3%	94.2%	.54
Describe the bronchoscopy procedure and the respiratory therapist's role in assisting the physician (n = 330)**	100.0%	93.9%	.06
Evaluate monitoring of a patient's clinical condition with pulse oximetry, electrocardiogram, exhaled gas analysis, and other related devices (n = 344)	100.0%	98.6%	.39
Perform arterial puncture and sampling, and blood analysis. (n = 343)	100.0%	98.3%	.33

*Statistically significant difference P < .05
**Difference > 6%
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 4. Which of the following chronic and acute disease management competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Explain the etiology, anatomy, pathophysiology, diagnosis, and treatment of cardiopulmonary diseases (e.g., asthma, chronic obstructive pulmonary disease) and comorbidities (n = 345)	100.0%	99.0%	.46
Engage patients through communication and education and empowerment (n = 304)	88.9%	87.1%	.72
Develop, administer, and re-evaluate the care plan for chronic disease management (n = 275)	83.3%	78.2%	.40
Manage respiratory care plans in the acute-care setting, using evidence-based medicine, protocols, and clinical practice guidelines (n = 315)**	96.3%	89.5%	.12

**Difference > 6%
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 5. Which of the following emergency care competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Perform basic life support (BLS) (n = 336)	100.0%	95.9%	.13
Perform advanced cardiovascular life support (ACLS) (n = 298)	88.9%	85.0%	.46
Perform pediatric advanced life support (PALS) (n = 180)	55.6%	51.0%	.54
Perform neonatal resuscitation program (NRP) (n = 211)**	66.7%	59.5%	.32
Perform endotracheal intubation (n = 331)	98.1%	94.6%	.26
Maintain current AHA certification in BLS and ACLS (n = 275)**	88.9%	77.2%	.053
Perform as a member of the Rapid Response Team (Medical Emergency Team) (n = 230)**	72.2%	65.0%	.30
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 (n = 169)**	53.7%	47.6%	.41
Provide intra-hospital transport of critically and chronically ill patients, provide cardiopulmonary life support and airway control during transport (n = 282)**	87.0%	79.9%	.22
Recommend pharmacotherapy in clinical settings including emergencies (n = 321)	94.4%	91.8%	.51

**Difference > 6%
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 6. Which of the following critical care competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Apply invasive and noninvasive mechanical ventilation (n = 341)	98.1%	98.0%	.93
Apply all ventilation modes currently available on all invasive and noninvasive mechanical ventilators as well as adjunct to mechanical ventilation (n = 335)	100.0%	95.6%	.12
Interpret ventilator data and hemodynamic monitoring data, and calibrate monitoring devices (n = 334)	100.0%	95.2%	.10
Manage airway devices and sophisticated monitoring systems (n = 338)	100.0%	96.6%	.17
Make recommendations for treatment based on wave form graphics, pulmonary mechanics and related imaging studies (n = 328)	96.3%	93.9%	.48
Use of therapeutic medical gases in the treatment of critically ill patients (n = 333)	94.4%	95.9%	.62
Apply circulatory gas exchange systems in RT practice, e.g., ECMO (n = 154)	44.4%	44.2%	.98
Participate in collaborative care management based on evidence-based protocols (n = 252)**	81.5%	70.7%	.11
Deliver therapeutic interventions based on protocol (n = 326)	98.1%	92.9%	.14
Integrate the delivery of basic and/or advanced therapeutics in conjunction with or without the mechanical ventilator in the care of critically ill patients (n = 331)	100.0%	94.2%	.070
Make recommendations, and provide treatment to critically ill patients based on pathophysiology (n = 331)	94.4%	95.2%	.80
Recommend cardiovascular drugs based on knowledge, understanding of pharmacologic action (n = 302)	88.9%	86.4%	.62
Use electronic data systems in their practice (n = 307)**	94.4%	87.1%	.12

**Difference > 6%
Total programs responding = 348, BSRT = 55, ASRT = 293

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 7. Which of the following patient assessment competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Complete a patient assessment through physical examination, chart review and other means as appropriate and interact with healthcare team members about assessment results (n = 345)	98.1%	99.0%	.60
Obtain past medical, surgical and family history (n = 337)	96.3%	96.9%	.80
Obtain social behavioral and occupational history and other historical information incident to the purpose of the current complaint. (n = 329)	90.7%	95.2%	.18
Interpret pulmonary function studies (spirometry) (n = 343)	100.0%	98.3%	.33
Interpret lung volumes and diffusion studies (n = 330)	98.1%	94.2%	.23
Interpret arterial blood gases, electrolytes, complete blood cell count and related laboratory tests. (n = 346)	100.0%	99.3%	.54
Inspect the chest and extremities to detect deformation, cyanosis edema, clubbing and other anomalies. (n = 344)	100.0%	98.6%	.39
Measure vital signs (blood pressure, heart rate, and respiratory rate) (n = 346)	100.0%	99.3%	.54
Evaluate patient breathing effort, ventilatory pattern, and use of accessory muscles (n = 345)	100.0%	99.0%	.44
Document oxygen saturation oximetry measurements under all appropriate conditions (with or without oxygen at rest, during sleep, ambulation, and exercise). (n = 339)	98.1%	97.3%	.71
Total programs responding = 348, BSRT = 55, ASRT = 293			

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 8. Which of the following therapeutics competencies are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Assess therapy (n = 340)	100.0%	97.3%	.22
Assess a patient prior to therapy (n = 341)	98.1%	97.6%	.81
Administer therapy (n = 342)	100.0%	98.0%	.29
Evaluate therapy (n = 338)	98.1%	96.9%	.62
Total programs responding = 348, BSRT = 55, ASRT = 293			

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 9. Which of the following therapeutic applications are taught in your curriculum? Select all that apply.

Competency	Education Level		*P*-value
	BSRT	ASRT	
Medical gas therapy (n = 340)	100.0%	97.3%	.22
Humidity therapy (n = 341)	100.0%	97.6%	.25
Aerosol therapy (n = 341)	100.0%	97.6%	.25
Hyperinflation therapy (n = 340)	100.0%	97.3%	.22
Bronchial hygiene therapy (n = 341)	100.0%	97.6%	.25
Airway management (n = 339)	100.0%	96.9%	.19
Mechanical ventilation (n = 337)	94.4%	97.3%	.27
Total programs responding = 348, BSRT = 55, ASRT = 293			

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 10. Graduate projections

Number of Graduates per Program				
Year	Mean (SD)	Median	Min	Max
2010 (n = 341)	19.9 (17.9)	15.0	0	120
2012 (n = 338)	23.1 (16.6)	18.0	0	120
2015 (n = 324)	24.6 (16.9)	20.0	5	130
2020 (n = 321)	24.7 (15.8)	20.0	5	100

Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Table 11. Barriers to accepting more students.

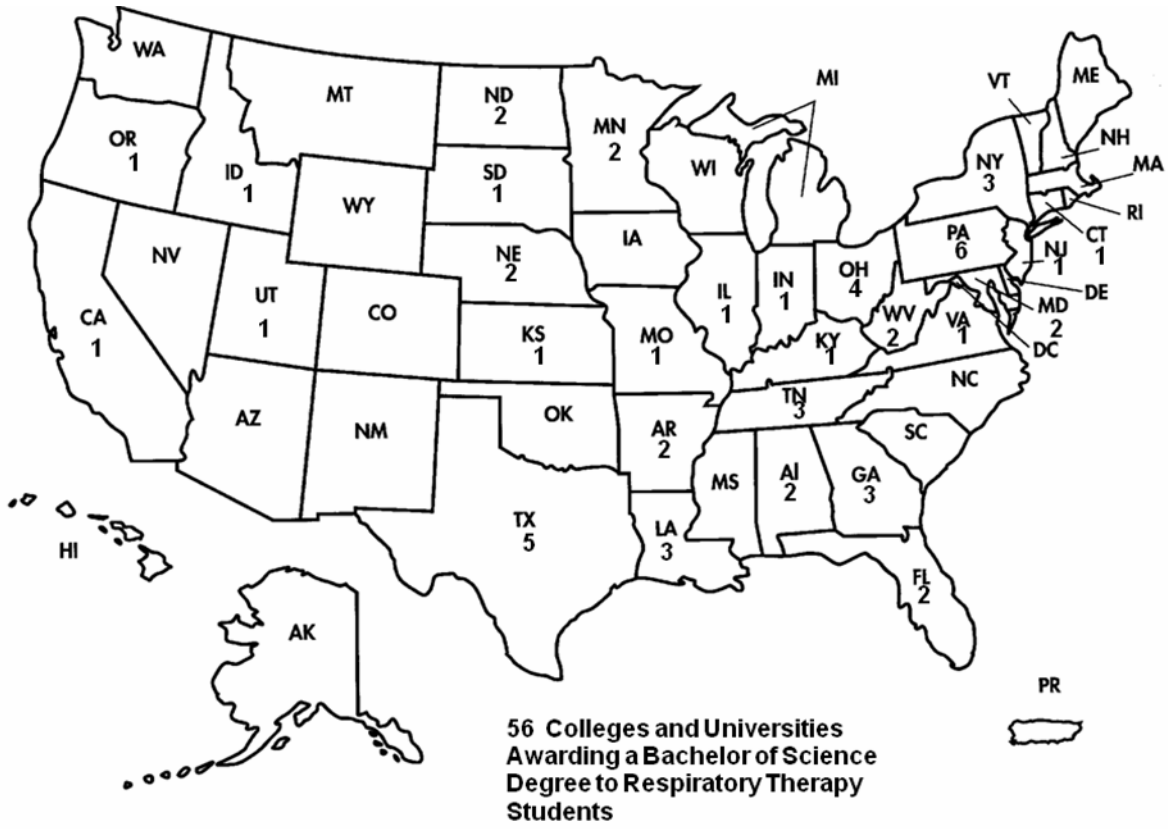
	1	2	3	4	5	
	n (%)	n (%)	n (%)	n (%)	n (%)	Total
Inadequate number of clinical affiliates	58 (16.8)	27 (7.8)	38 (11.0)	63 (18.2)	**160 (46.2)**	346
Additional faculty unavailable	70 (20.1)	51 (14.7)	62 (17.8)	**83 (23.9)**	82 (23.6)	348
Competition from other RT programs	**88 (25.3)**	60 (17.2)	80 (23.0)	71 (20.4)	49 (14.1)	348
Competition from other healthcare programs	**93 (26.9)**	59 (17.1)	83 (24.0)	66 (19.1)	45 (13.0)	346
Funding to expand program unavailable	60 (17.2)	48 (14.0)	74 (21.2)	**83 (23.8)**	**83 (23.8)**	348
Insufficient classroom/lab space	**83 (24.1)**	56 (16.2)	67 (19.4)	74 (21.4)	65 (18.8)	345

1 = Low relevance, 5 = high relevance

Copyright (C) 2011 Daedalus Enterprises

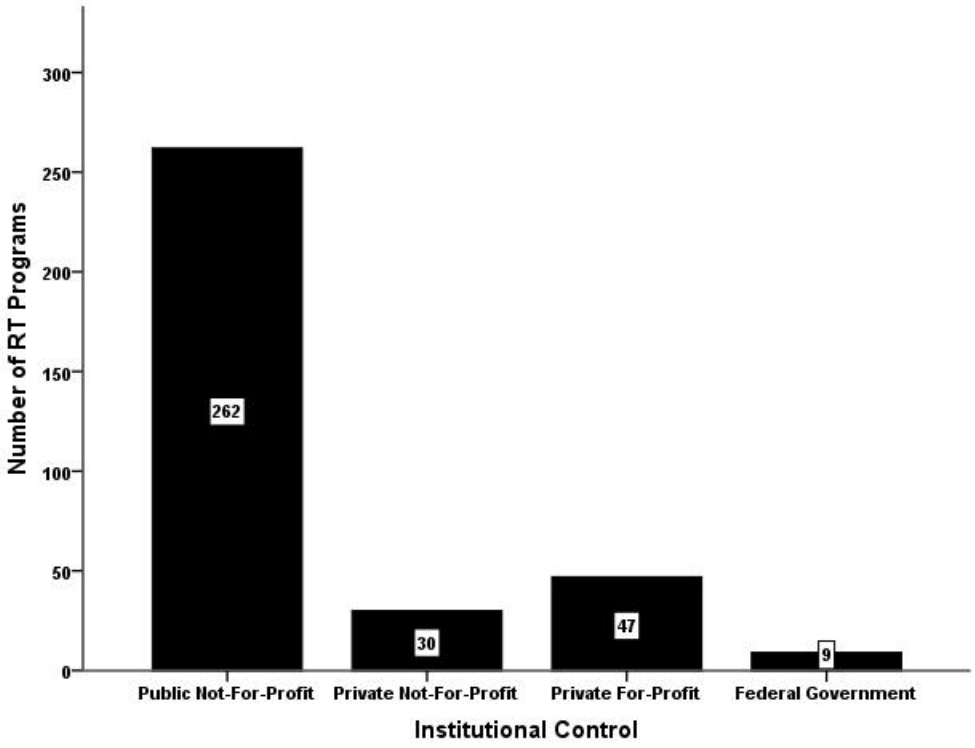
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259



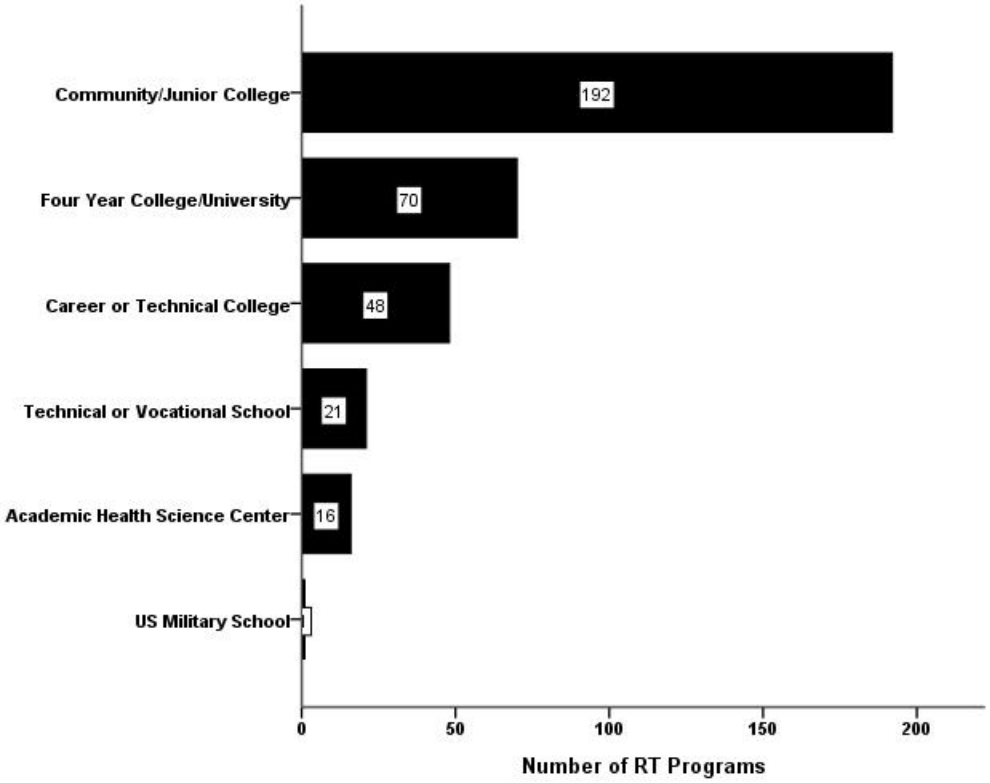
Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259



Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited
and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259



Copyright (C) 2011 Daedalus Enterprises
Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited
and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Appendix 1

2015 Task Force Research Group

Thomas A Barnes EdD RRT FAARC, Chair

William H Dubbs RRT MHA MEd FAARC

Charles G Durbin MD FAARC FCCM

David D Gale PhD

Sam P Giordano MBA RRT FAARC

Robert M Kacmarek PhD RRT FAARC

Woody V Kageler MD MBA FACP FCCP

Michael J Morris MD FACP FCCP

Robert C. Shaw Jr PhD RRT FAARC

Thomas R Smalling PhD RRT RPFT RPSGT FAARC

Karen J Stewart MS RRT FAARC

David L Vines MHS RRT FAARC

Jeffrey J Ward MEd RRT FAARC

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

PROGRAM INFORMATION

*** 1. What is the name of the institutional sponsor and CoARC accreditation number for this program?**

Institutional Sponsor

CoARC Accreditation Number:

State:

*** 2. What best describes the institutional control for your Respiratory Therapy?**

*** 3. What best describes your institutional type?**

*** 4. What type of degree is awarded upon completion of your respiratory therapy program (s)?**

Select all that apply.

- ☐ Associate of Applied Science (AAS)
- ☐ Associate of Occupational Science (AOS)
- ☐ Associate of Science (AS)
- ☐ Bachelor of Science (BS)
- ☐ Bachelor of Health Science (BHS)
- ☐ Master of Science (MS)
- ☐ Master of Health Science (MHS)
- ☐ Other (please specify)

*** 5. Can graduates from your respiratory therapy program directly earn a Baccalaureate degree from your institution without interacting with another institution?**

- ◯ Yes
- ◯ No

Optional Comments

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

BACCALAUREATE PROGRAM OPTIONS

6. Does your BSRT program offer an ASRT to BSRT option?

- ◯ Yes
- ◯ No

If yes, please explain the rationale for the program.

7. Does your institution offer an accelerated baccalaureate RT program (i.e., bridge program) for individuals who have already completed a bachelor's or graduate degree in a non-respiratory care discipline (e.g., second-degree/second career students)?

- ◯ Yes
- ◯ No

If yes, please explain the rationale for the program

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

ARTICULATION AGREEMENT AND FUTURE PLANS

8. Does your program have an articulation agreement with another institution to award a Baccalaureate degree?

- ◯ Yes
- ◯ No

*** 9. Does your program plan to offer a Baccalaureate or Masters degree in respiratory therapy in the future?**

- ◯ Yes
- ◯ No
- ◯ Undecided

Please explain your rationale

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

FUTURE PLANS ACCELERATED PROGRAM

10. Do you have plans to offer an accelerated baccalaureate RT program in the future?

- ◯ Yes
- ◯ No

If yes, please explain the rationale for the program

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

START DATE FOR ACCELERATED PROGRAM

11. What year do you plan to start the accelerated respiratory therapy program?

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

START DATE NEW BACCALAUREAT OR MASTERS

*** 12. What year will the new Baccalaureate or Master's degree program become available?**

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

BARRIERS TO STARTING A BACCALAUREATE PROGRAM

13. If not able to award a baccalaureate degree in respiratory therapy, what are the barriers to offering such a program? Please select all that apply.

- [ ] Baccalaureate degrees are not awarded by this college.
- [ ] Funding is unavailable
- [ ] Unable to recruit respiratory therapy faculty with graduate degrees
- [ ] Not a documented need for the program
- [ ] Other

Please specify "Other"

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

GRADUATION RATE and CLASS SIZE

14. How many students do you expect to graduate from your program this year and in the future? Answer only with whole numbers.

2010 _____

2012 _____

2015 _____

2020 _____

15. Please rate the following barriers to accepting more students into this program in order of significance:

	1-Low significance	2	3	4	5-High significance
Inadequate number of clinical affiliates	◯	◯	◯	◯	◯
Additionale faculty are unavailable	◯	◯	◯	◯	◯
Competition from other respiratory therapy programs	◯	◯	◯	◯	◯
Competition from other healthcare programs	◯	◯	◯	◯	◯
Funding to expand program capacity is unavailable	◯	◯	◯	◯	◯
Insufficient classroom/lab space	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯

Please specify "Other"

_____

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

FACULTY RECRUITMENT

16. Have you had difficulty recruiting faculty for your program?

- ◯ Yes
- ◯ No

17. If yes, what reasons contributed to the difficulty you experienced in recruiting Faculty? Select all that apply.

- ☐ The applicants did not meet academic requirements.
- ☐ The salary we could offer was not sufficient.
- ☐ The applicants lacked teaching experience.
- ☐ Other (please specify)

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

DIAGNOSTICS

The purpose of questions x-x is to evaluate how many competencies identified by the AARC Task Force on the Future of Respiratory Care are taught to students currently enrolled in your program(s). See the special article published in Respiratory Care May 2010;55(5):601-616 for specific information on these competencies.

*** 18. Which of the following diagnostic competencies are taught in your curriculum? Select all that apply.**

- ☐ Perform basic spirometry.
- ☐ Explain indications and contraindications for advanced pulmonary function tests.
- ☐ Explain indications and contraindications for sleep studies.
- ☐ Relate results of sleep studies to types of respiratory sleep disorders.
- ☐ Explain indications and contraindications, general hazards, and complications of bronchoscopy.
- ☐ Describe the bronchoscopy procedure and the respiratory therapist's role in assisting the physician.
- ☐ Evaluate monitoring of a patient's clinical condition with pulse oximetry, electrocardiogram, exhaled gas analysis, and other related devices.
- ☐ Perform arterial puncture and sampling, and blood analysis.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

CHRONIC AND ACUTE DISEASE MANAGEMENT

*** 19. Which of the following chronic and acute disease management competencies are taught in your curriculum? Select all that apply.**

- ☐ Explain the etiology, anatomy, pathophysiology, diagnosis, and treatment of cardiopulmonary diseases (e.g., asthma, chronic obstructive pulmonary disease) and comorbidities.
- ☐ Engage patients through communication and education and empowerment.
- ☐ Develop, administer, and re-evaluate the care plan for chronic disease management.
- ☐ Manage respiratory care plans in the acute-care setting, using evidence-based medicine, protocols, and clinical practice guidelines.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

EVIDENCE-BASED MEDICINE AND RESPIRATORY CARE PROTOCOLS

*** 20. Which of the following evidence-based medicine and respiratory care protocol competencies are taught in your curriculum? Select all that apply.**

- ☐ Critique published research.
- ☐ Explain the meaning of general statistical tests.
- ☐ Apply evidence-based medicine to clinical practice.
- ☐ Explain the use of evidence-based medicine in the development and application of hospital-based respiratory care protocols.
- ☐ Treat patients in a variety of settings, using the appropriate respiratory care protocols.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

PATIENT ASSESSMENT

*** 21. Which of the following patient assessment competencies are taught in your curriculum? Select all that apply.**

- ☐ Complete a patient assessment through physical examination, chart review and other means as appropriate and interact with healthcare team members about assessment results.
- ☐ Obtain past medical, surgical and family history.
- ☐ Obtain social behavioral and occupational history and other historical information incident to the purpose of the current complaint.
- ☐ Interpret pulmonary function studies (spirometry).
- ☐ Interpret lung volumes and diffusion studies.
- ☐ Interpret arterial blood gases, electrolytes, complete blood cell count and related laboratory tests.
- ☐ Inspect the chest and extremities to detect deformation, cyanosis edema, clubbing and other anomalies.
- ☐ Measure vital signs (blood pressure, heart rate, and respiratory rate).
- ☐ Evaluate patient breathing effort, ventilatory pattern, and use of accessory muscles.
- ☐ Document oxygen saturation oximetry measurements under all appropriate conditions (with or without oxygen at rest, during sleep, ambulation, and exercise).

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

LEADERSHIP

*** 22. Which of the following leadership competencies are taught in your curriculum? Select all that apply.**

- [ ] Contribute to organizational teams as related to planning, collaborative decision making and other team functions.
- [ ] Describe fundamental/basic organizational implications of regulatory requirements on the healthcare system.
- [ ] Demonstrates effective written and verbal communications with various members of the healthcare team, patients, families, and others (cultural competence and literacy).
- [ ] Describe healthcare and financial reimbursement systems and the need to reduce the cost of delivering respiratory care.
- [ ] Lead groups in care planning, bedside decision making, and collaboration with other healthcare professionals.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

EMERGENCY CARE

*** 23. Which of the following emergency care competencies are taught in your curriculum? Select all that apply.**

- [ ] Perform basic life support (BLS).
- [ ] Perform advanced cardiovascular life support (ACLS).
- [ ] Perform pediatric advanced life support (PALS).
- [ ] Perform neonatal resuscitation program (NRP).
- [ ] Perform endotracheal intubation.
- [ ] Maintain current AHA certification in BLS and ACLS.
- [ ] Perform as a member of the Rapid Response Team (Medical Emergency Team).
- [ ] 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.
- [ ] Provide intra-hospital transport of critically and chronically ill patients, provide cardiopulmonary life support and airway control during transport.
- [ ] Recommend pharmacotherapy in clinical settings including emergencies.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

CRITICAL CARE

*** 24. Which of the following critical care competencies are taught in your curriculum? Select all that apply.**

- [ ] Apply invasive and noninvasive mechanical ventilation.
- [ ] Apply all ventilation modes currently available on all invasive and noninvasive mechanical ventilators as well as adjunct to mechanical ventilation.
- [ ] Interpret ventilator data and hemodynamic monitoring data, and calibrate monitoring devices
- [ ] Manage airway devices and sophisticated monitoring systems.
- [ ] Make recommendations for treatment based on wave form graphics, pulmonary mechanics and related imaging studies.
- [ ] Use of therapeutic medical gases in the treatment of critically ill patients.
- [ ] Apply circulatory gas exchange systems in RT practice.
- [ ] Participate in collaborative care management based on evidence-based protocols.
- [ ] Deliver therapeutic interventions based on protocol.
- [ ] Integrate the delivery of basic and/or advanced therapeutics in conjunction with or without the mechanical ventilator in the care of critically ill patients.
- [ ] Make recommendations, and provide treatment to critically ill patients based on pathophysiology.
- [ ] Recommend cardiovascular drugs based on knowledge, understanding of pharmacologic action.
- [ ] Use electronic data systems in their practice.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

THERAPEUTICS

*** 25. Which of the following therapeutics competencies are taught in your curriculum? Select all that apply.**

- [ ] Assess therapy
- [ ] Assess a patient prior to therapy
- [ ] Administer therapy
- [ ] Evaluate therapy

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

THERAPEUTIC APPLICATIONS

*** 26. Which of the following therapeutic applications are taught in your curriculum? Select all that apply.**

- [ ] Medical gas therapy
- [ ] Humidity therapy
- [ ] Aerosol therapy
- [ ] Hyperinflation therapy
- [ ] Bronchial hygiene therapy
- [ ] Airway management
- [ ] Mechanical ventilation

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

CURRICULUM PLANS FOR 2015 AND BEYOND

*** 27. If more contact hours were required with students, can a program in your institution request an increase in the number of credit hours required to achieve a degree?**

- ◯ Yes
- ◯ No

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

ADDING COMPETENCIES WITH CREDIT HOUR INCREASE

*** 28. If your program can increase the number of credit hours required to achieve a degree, can the program add competencies needed in 2015 as detailed in the special article published in the May 2010 issue of Respiratory Care – "Competencies Needed By Graduate Respiratory Therapists in 2015 and Beyond?"**

- ◯ Yes
- ◯ No

Please explain your rationale.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

ADDING COMPETENCIES WITHOUT CREDIT HOUR INCREASE

*** 29. Because you cannot expand the credit hours required to complete the program, can the program still add competencies needed in 2015 as detailed in the special article published in the May 2010 issue of Respiratory Care – "Competencies Needed By Graduate Respiratory Therapists in 2015 and Beyond?"**

- ◯ Yes
- ◯ No

Please explain how your program plans to provide graduates with competencies needed in 2015 and beyond.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

BARRIERS EXPANDING CURRICULUM

*** 30. If you are unable to expand your curriculum, what are the barriers to including additional competencies?**

Select all that apply.

- ☐ Unable to request increase in credit hours through sponsoring institution.
- ☐ Inadequate faculty numbers available to teach additional courses.
- ☐ Faculty without appropriate academic degrees.
- ☐ Have already reached the limit of allowable credit hours.
- ☐ Unable to fill vacant and new faculty positions.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

RESPIRATORY THERAPY PRACTICE

Assuming several of the new competencies described above are incorporated into your curriculum, please respond to the following questions.

*** 31. What credential should future graduates earn to enter the profession and satisfy legislative requirements to practice in your state?**

- ◯ RRT
- ◯ CRT

Please explain rationale

*** 32. What degree should future graduates be "required" to earn to be eligible for the examination they take to meet state legislative requirements to practice as a respiratory therapist?**

- ◯ Doctorate
- ◯ Masters
- ◯ Baccalaureate
- ◯ Associate

Please explain rationale

*** 33. What degree should be "recommended" for future respiratory graduates to earn for continued practice beyond licensure and entry into practice as a respiratory therapist?**

- ◯ Doctorate
- ◯ Masters
- ◯ Baccalaureate
- ◯ Associate

Please explain rationale

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

34. Should future graduates be required to maintain an active CRT or RRT credential to renew their license to practice in your state?

- ◯ Yes
- ◯ No

Please explain rationale

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.

Respir Care Articles in Press. Published on April 28, 2011 as DOI: 10.4187/respcare.01259

Summary Comments and Survey Submittal

Thank you for taking time to complete this important survey. Use the text box below for additional comments on any of the survey questions.

IMPORTANT: Remember to click on the “DONE” button on the bottom of the last page to submit your survey.

35. Please submit additional comments on any of the survey questions.

Copyright (C) 2011 Daedalus Enterprises

Epub ahead of print papers have been peer-reviewed and accepted for publication but are posted before being copy edited and proofread, and as a result, may differ substantially when published in final version in the online and print editions of RESPIRATORY CARE.