# AARC 2015 and Beyond Conferences: Outcomes and Recommendations – A Wakeup Call

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# Objectives

- Compare and contrast the outcomes of the three AARC 2015 and Beyond Conferences
- DIscuss the challenges that recommendations of the third AARC 2015 Conference present to respiratory therapy educators and practitioners.

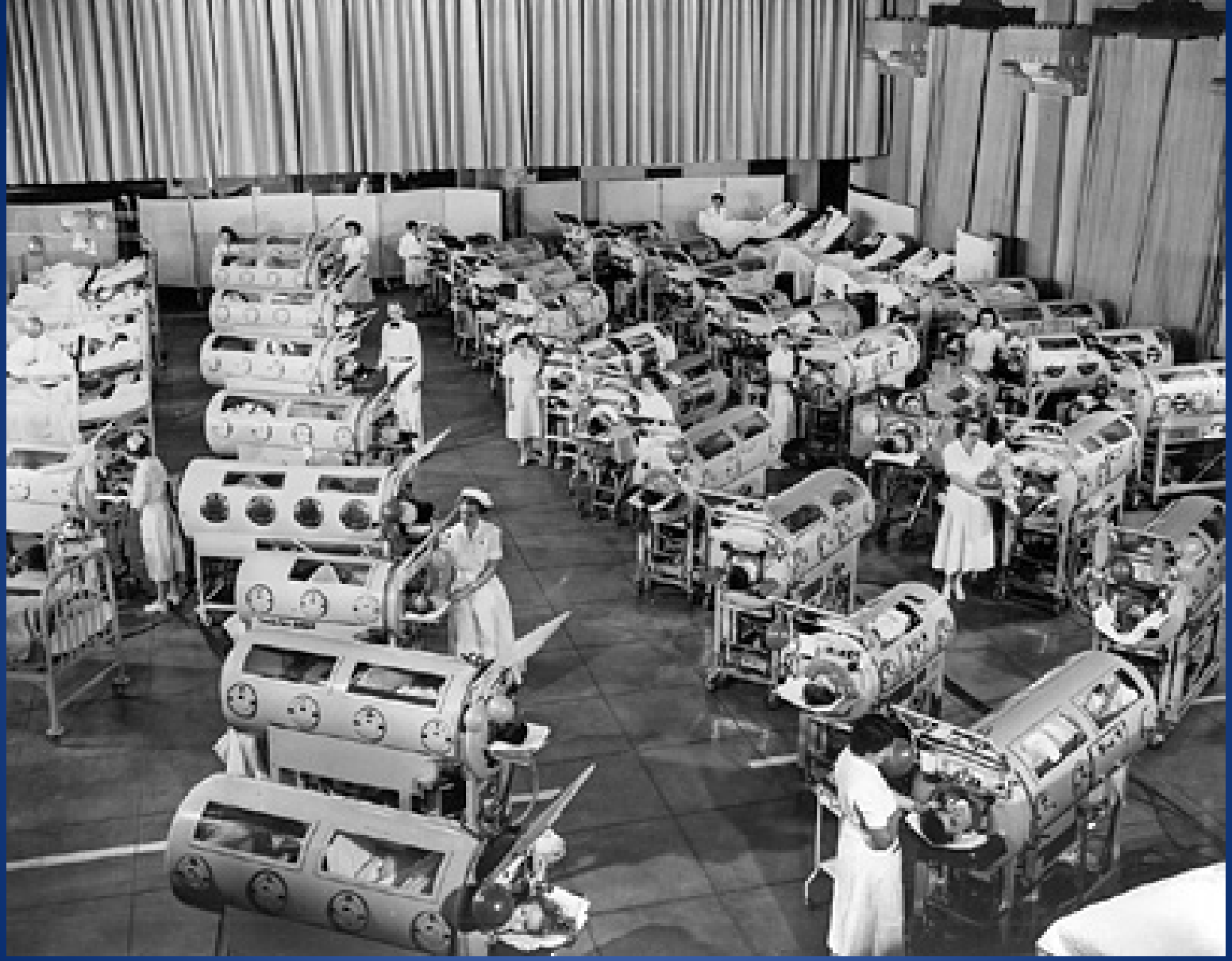
# First Conference

Kacmarek, et al.Respir Care 2009;54(3):375–389

**Predicted Changes in Health Care**

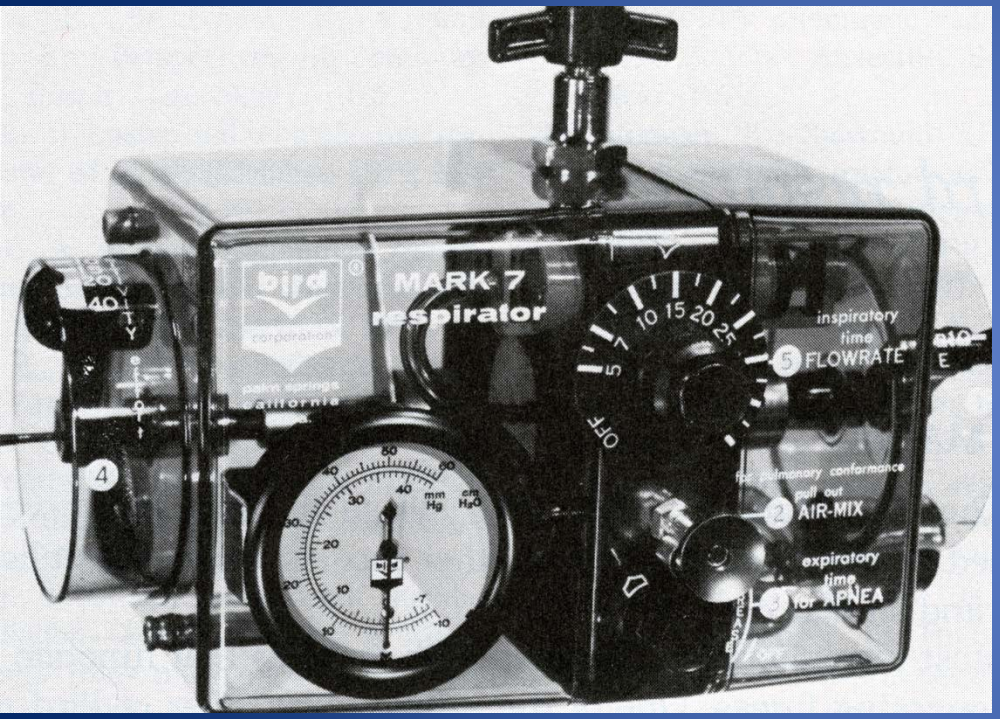
**Changes in the Health Care Workforce**

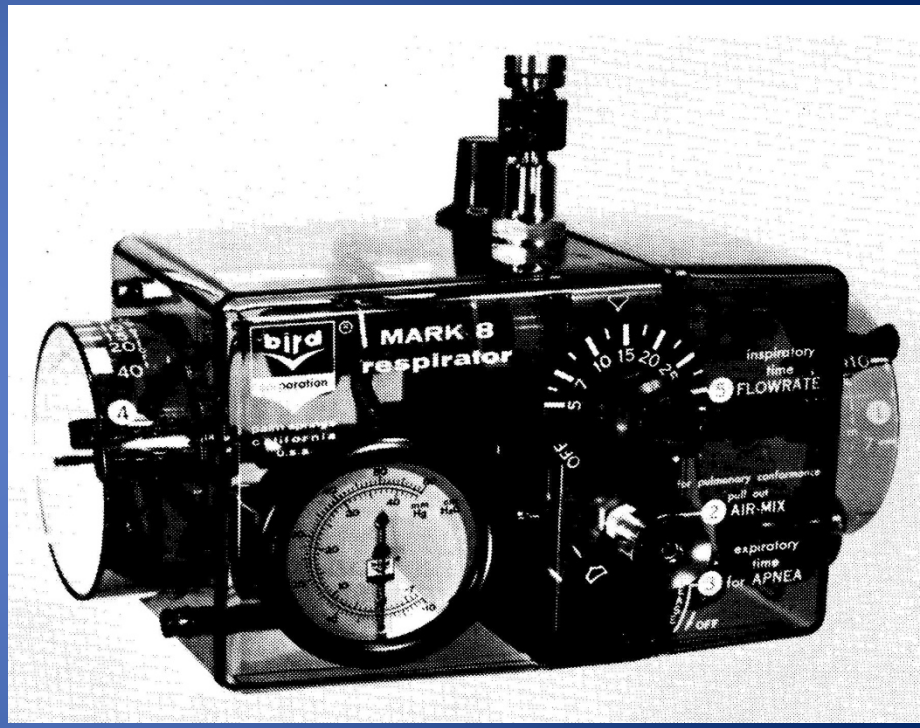
**Changes Expected in Respiratory Care**



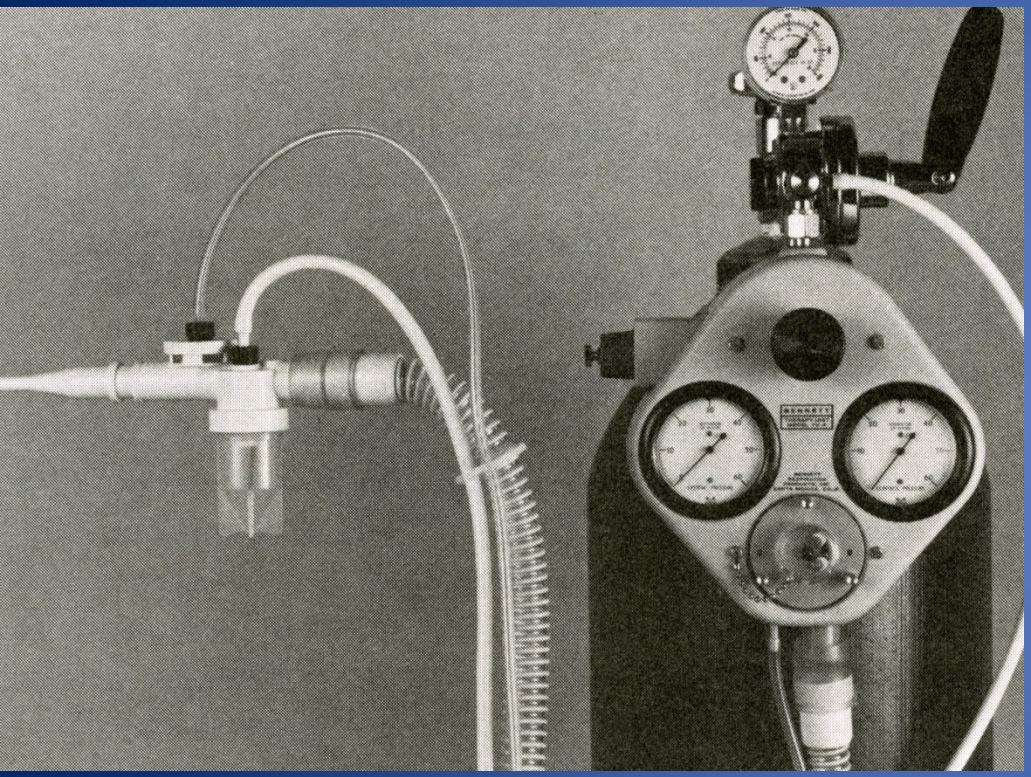
1953 Polio Epidemic Ranchos Los Amigos Hospital California

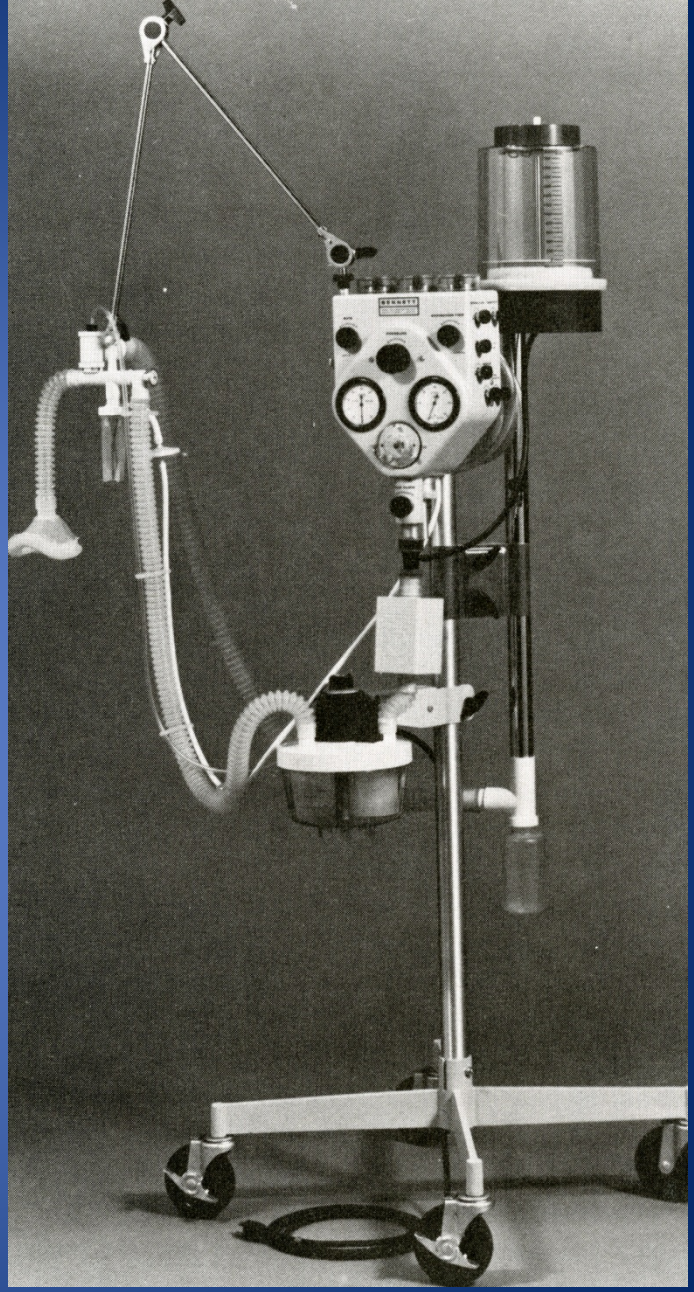
Multiperson Negative Pressure Ventilator Boston Children's Hospital, 1950’s




# Bird Mark 7 and Mark 8





# Puritan Bennett TV-2P and PR-2

# The Role of the Respiratory Therapist in 1970!

- Technician ($O_2$ Technician)
- Setup and operation of basic equipment
- Delivery of aerosol therapy
- Provision of IPPB
- Assistance with ventilatory support
- Performance of diagnostic tests
- Resuscitation Code Calls

# Role of the Respiratory Therapist Today

- Provider of basic respiratory care
- Ventilator management
- Delivery of aerosolized medication
- Transport of critically ill patients
- Extracorporeal life support
- Performance of diagnostic studies
- Patient education!
- Disease management!!
- Consultant on patient care!!!

# Respiratory Care 2015 and Beyond!

- ICU - increased Technical and Clinical Sophistication, Expanded Monitoring
- Explosion of Aerosol Therapy Applications
- Genetic Based Aerosol Therapy
- Sleep, Transport, Extracorporeal Life Support
- Subacute Care, Physician Offices and at Home
- Disease Management, Patient and Staff Education, Team leadership

# Clinical Application of Mechanical Ventilation

- Protocolized approaches to providing mechanical ventilation
- Modes of ventilation
- Integrated Monitoring Systems
- Diagnostic Algorithms

# Protocolized Ventilation

- ARDSnet Protocol
- Recruitment Procedures
- Determination of Correct PEEP
- Ventilator management protocol for Asthma, COPD, Post-Op etc!

# Closed Loop Ventilation-The Future

- Expect to see additional closed loop approaches!
- Approaches that manage both  patients receiving assisted as well as controlled ventilation and during weaning!
- Ideal feedback should include:
  - Patient effort/ventilatory pattern
  - Hemodynamic response
  - Gas exchange
- The problem finding the correct algorithm!

# Drivers of Change in Health Care

- Cost of Care
- Demographics
- Shift in Disease Burden
- Technology
- Consumers of Health Care

# Competencies Needed by Graduate Respiratory Therapists in 2015 and Beyond – Conference 2

- **How Healthcare Executive Decisions Impact the Workforce**
- **Graduate Respiratory Therapist Competencies Needed in 2015**
- **The Need for Delivery of Respiratory Therapy Via Protocol**
- **Respiratory Care Delivered to Critically Ill Patients by Respiratory Therapists**
- **Credentialing of Respiratory Therapists to Certify Competency**
- **Respiratory Therapy Accreditation to Assure Graduate Respiratory Therapist Competency**
- **The Transition From Graduate Therapist to Specialty Practice**

Barnes T, et al. Respir Care 2010;55(5):601–616.

# How Healthcare Executive Decisions Impact the Workforce

The Perfect Storm

Health Care Financing System Broken

Larger role as adjuncts to traditional nursing functions

Case & Disease Management

# Assume New Roles

- Rapid Response Teams
- Follow Patient to Discharge
- Improve Quality and Lower Costs
- Assume New Responsibilities

# Eight Major Compentency Areas

1. Diagnostics
2. Disease Management
3. Evidence-based Medicine and Respiratory Care Protocols
4. Patient Assessment
5. Leadership
6. Emergency Care
7. Critical Care
8. Therapeutics

Table 2. Competency Area I: Diagnostics*

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

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

# Chronic and Acute Disease Management

Table 3. Competency Area II: Disease Management*

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

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

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

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

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

Table 5. Competency Area IV: Patient Assessment*

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

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

Table 6. Competency Area V: Leadership*

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

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

# Competency Area VI Emergency Care

1. Perform BLS, ACLS, PALS, NRP
2. Maintain Current  AHA certificates in BLS and ACLS
3. Perform Endotracheal Intubation
4. Perform as a member of a RRT Team
5. Participate in mass-casualty staffing to provide airway management, manual and mechanical ventilatory life support, medical gas administration, aerosol delivery of bronchodilators and other agents in the resuscitation of respiratory and cardiovascular failure.
6. Provide intra-hospital Transport of critically an chronically ill Patients
7. Apply knowledge of emergency pharmacology and demonstrate ability to recommend use of pharmacotherapy.

# Competency Area VI B Critical Care

1. Apply to practice knowledge, understanding, and analysis of invasive and noninvasive mechanical ventilators.
2. Apply to practice all ventilation modes currently available on all invasive and noninvasive mechanical ventilators.
3. Interpret ventilator data and hemodynamic monitoring data, and calibrate monitoring devices.
4. Manage airway devices and sophisticated monitoring systems.
5. Make treatment recommendations based on waveform graphics, pulmonary mechanics, and related imaging studies.

# Competency Area VI B Critical Care

6. Apply knowledge, understanding, and analysis of use of therapeutic medical gases in the treatment of critically ill patients.
7. **Apply knowledge and understanding of circulatory gas exchange devices to respiratory therapy practice.**
8. Participate in collaborative care management based on evidence-based protocols.
9. Deliver therapeutic interventions based on protocol.
10. Integrate the delivery of basic and/or advanced therapies in conjunction with or without the mechanical ventilator in the care of critically ill patients.
11. Make recommendations and provide treatment to critically ill patients based on pathophysiology.
12. Recommend cardiovascular drugs based on knowledge and understanding of pharmacologic action.
13. Use electronic data systems in practice.

Table 8. Competency Area VII: Therapeutics*†

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

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

# Survey of Respiratory Therapy Education Program Directors in the United States

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

**OBJECTIVE: As background for the American Association for Respiratory Care (AARC) third 2015 and Beyond conference, we sought information and opinions on the ability of the current respiratory therapy education infrastructure to make changes that would assure competent respiratory therapists in the envisioned healthcare future. METHODS: After pilot testing and refining the questions, we invited the directors of 435 respiratory therapy programs (based in 411 colleges) that were fully accredited or in the process of being accredited by the Commission on Accreditation for Respiratory Care as of May, 2010, to participate in the survey. RESULTS: Three-hundred forty-eight program directors (80%) provided valid survey responses. Three of the 5 competencies related to evidence-based medicine and respiratory care protocols were taught less often in the associate-degree programs than in the baccalaureate-degree programs. Eighty percent of the baccalaureate-degree programs, compared to 42% of the associate-degree programs, instruct students how to critique published research ($P < .001$). Only 34% of the associate-degree programs teach students the general meaning of statistical tests, compared to 78% of the baccalaureate-degree programs ($P < .001$). Ninety-four percent of the baccalaureate-degree programs, versus 81% of the associate-degree programs, teach the students to apply evidence-based medicine to clinical practice ($P = .01$). 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 and Beyond conference) was significantly more common in the baccalaureate-degree programs (72%) than in the associate-degree programs (56%) ($P = .03$). Other competencies showed trends toward differences, and the baccalaureate-degree programs reported higher percentages of success than the associate-degree programs. CONCLUSIONS: There are important differences between the baccalaureate-degree and associate-degree programs.** *Key words: respiratory care; respiratory therapist; survey; education; credentials; accreditation.* [Respir Care 2011;56(12): 1906–1915. 

# Institutional Control

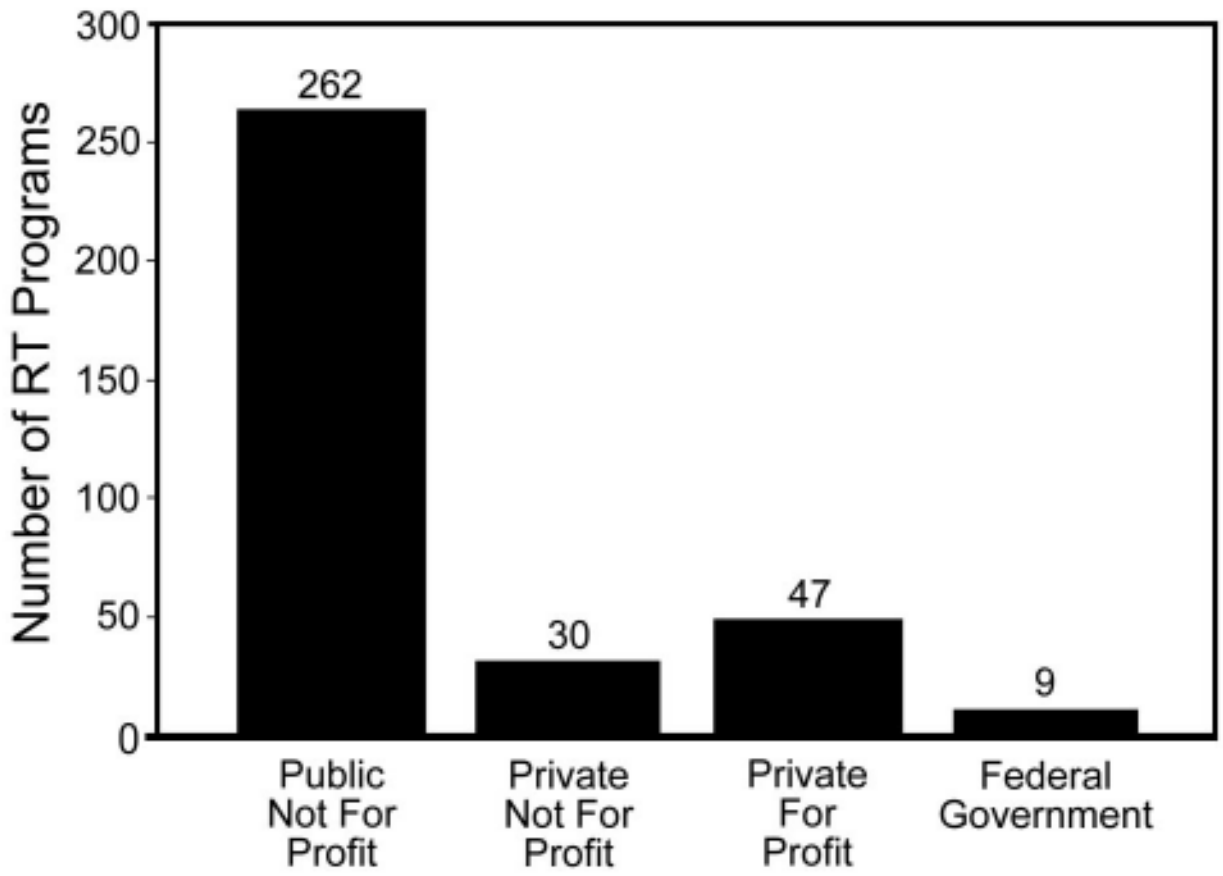



Fig. 1. Institutional control of 348 respiratory therapy education programs, according to the program directors.

# Type of Institution

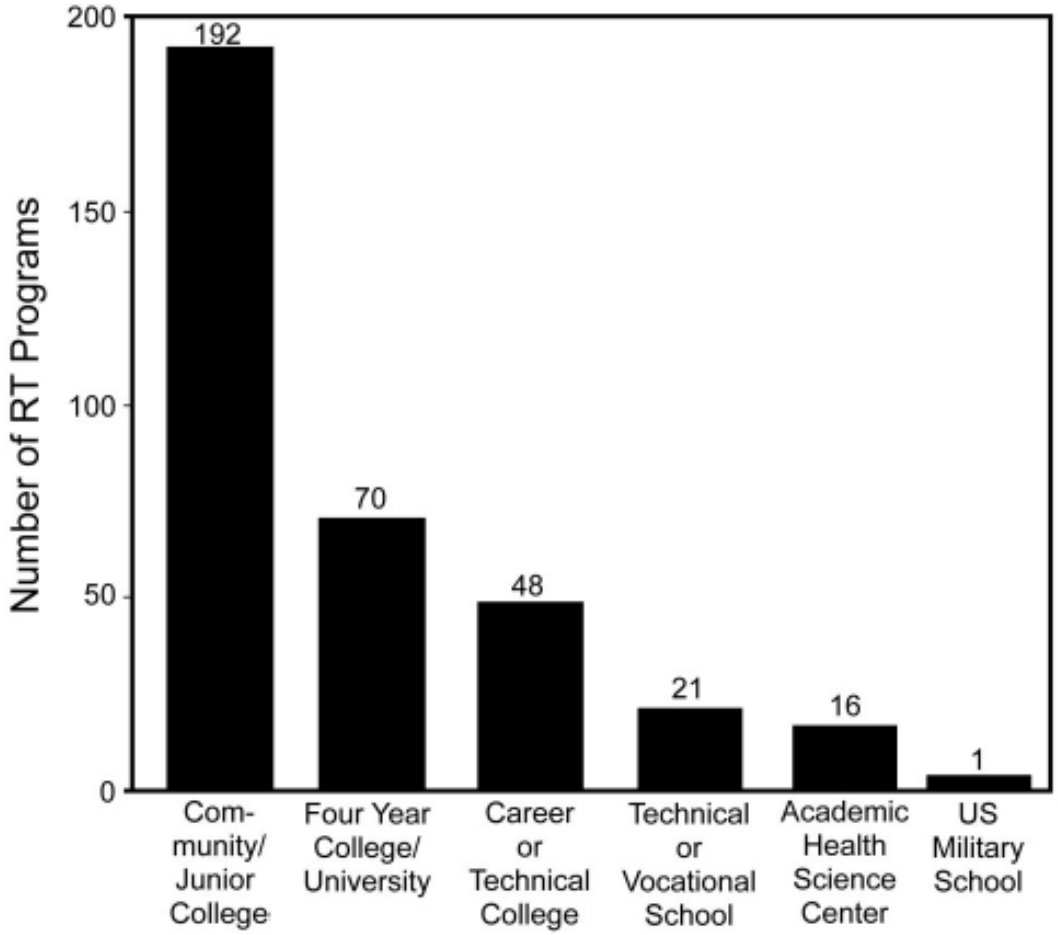



Fig. 2. Types of institutions of 348 respiratory therapy education programs, according to the program directors.

Table 1. Evidence-Based Medicine and Respiratory Care Protocol Competencies

| | Respondents (%)* | | |
|---|---|---|---|
| | Baccalaureate Program | Associate Program | *P* |
| Critique published research (no. = 165) | 80 | 42 | < .001 |
| Explain the meaning of general statistical tests (no. = 142) | 78 | 34 | < .001 |
| Apply evidence-based medicine to clinical practice (no. = 288) | 94 | 81 | .01 |
| Explain the use of evidence-based medicine in the development and application of hospital-based respiratory care protocols (no. = 276) | 83 | 79 | .43 |
| Treat patients in a variety of settings, using the appropriate respiratory care protocol (no. = 332) | 96 | 95 | .73 |

* $n$ = 348 (total programs responding): 294 associate programs; 54 baccalaureate programs.

Table 2. Leadership Competencies

| | Respondents (%)* | | |
|---|---|---|---|
| | Baccalaureate Program | Associate Program | *P* |
| Contribute to organizational teams as related to planning, collaborative decision making, and other team functions (no. = 236) | 78 | 66 | .09† |
| Describe fundamental/basic organizational implications of regulatory requirements on the healthcare system (no. = 235) | 76 | 66 | .15† |
| Demonstrate effective written and verbal communications with various members of the healthcare team, patients, families, and others (cultural competence and literacy) (no. = 327) | 94 | 94 | .87 |
| Describe healthcare financial reimbursement systems and the need to reduce the cost of delivering respiratory care (no. = 204) | 72 | 56 | .03 |
| Lead groups in care planning, bedside decision making, and collaboration with other healthcare professionals (no. = 188) | 63 | 52 | .15† |

* $n$ = 348 (total programs responding): 294 associate programs; 54 baccalaureate programs.
† Difference > 6%.

Table 3. Diagnostic Competencies

| | Respondents (%)* | | |
|---|---|---|---|
| | Baccalaureate Program | Associate Program | *P* |
| Perform basic spirometry (no. = 343) | 100 | 98 | .33 |
| Explain indications and contraindications for advanced pulmonary function tests (no. = 325) | 100 | 92 | .03 |
| Explain indications and contraindications for sleep studies (no. = 296) | 93 | 84 | .09† |
| Relate results of sleep studies to types of sleep disorders (no. = 239) | 76 | 67 | .21† |
| Explain indications and contraindications, general hazards, and complications of bronchoscopy (no. = 329) | 96 | 94 | .54 |
| Describe the bronchoscopy procedure and the respiratory therapist's role in assisting the physician (no. = 330) | 100 | 94 | .06† |
| Evaluate monitoring of a patient's clinical condition with pulse oximetry, electrocardiogram, exhaled-gas analysis, and other related devices (no. = 344) | 100 | 99 | .39 |
| Perform arterial puncture and sampling, and blood analysis (no. = 343) | 100 | 98 | .33 |

* $n$ = 348 (total programs responding): 294 associate programs; 54 baccalaureate programs.
† Difference > 6%.

Table 5. Emergency Care Competencies

| | Respondents (%)* | | |
|---|---|---|---|
| | Baccalaureate Program | Associate Program | *P* |
| Perform basic life support (no. = 336) | 100 | 96 | .13 |
| Perform advanced cardiovascular life support (no. = 298) | 89 | 85 | .46 |
| Perform pediatric advanced life support (no. = 180) | 56 | 51 | .54 |
| Perform neonatal resuscitation program (no. = 211) | 67 | 60 | .32† |
| Perform endotracheal intubation (no. = 331) | 98 | 95 | .26 |
| Maintain current American Heart Association certification in basic life support and advanced cardiovascular life support (no. = 275) | 89 | 77 | .053† |
| Perform as a member of the rapid response team (medical emergency team) (no. = 230) | 72 | 65 | .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 (no. = 169) | 54 | 48 | .41† |
| Provide intra-hospital transport of critically and chronically ill patients, provide cardiopulmonary life support and airway control during transport (no. = 282) | 87 | 80 | .22† |
| Recommend pharmacotherapy in clinical settings, including emergencies (no. = 321) | 94 | 92 | .51 |

* $n$ = 348 (total programs responding): 294 associate programs; 54 baccalaureate programs.
† Difference > 6%.

Table 6. Critical Care Competencies

| | Respondents (%)* | | |
|---|---|---|---|
| | Baccalaureate Program | Associate Program | *P* |
| Apply invasive and noninvasive mechanical ventilation (no. = 341) | 98 | 98 | .93 |
| Apply all ventilation modes currently available on all invasive and noninvasive mechanical ventilators, as well as adjunct to mechanical ventilation (no. = 335) | 100 | 96 | .12 |
| Interpret ventilator data and hemodynamic monitoring data and calibrate monitoring devices (no. = 334) | 100 | 95 | .10 |
| Manage airway devices and sophisticated monitoring systems (no. = 338) | 100 | 97 | .17 |
| Make recommendations for treatment based on wave-form graphics, pulmonary mechanics, and related imaging studies (no. = 328) | 96 | 94 | .48 |
| Use therapeutic medical gases to treat critically ill patients (no. = 333) | 94 | 96 | .62 |
| Apply circulatory gas-exchange systems in respiratory therapy practice (eg, ECMO) (no. = 154) | 44 | 44 | .98 |
| Participate in collaborative care management based on evidence-based protocols (no. = 252) | 82 | 71 | .11† |

# Discussion Questions

- Six of the 8 major competency areas identified by the second 2015 and Beyond conference have several competencies that are taught in more of the baccalaureate degree programs than in the associate-degree programs.
- One quarter of the respondents have the capability to directly award a baccalaureate degree.
- Two thirds of the respondents favor requiring the RRT credential to practice in 2015 and beyond.
- There was broad support for future respiratory therapists obtaining a baccalaureate or graduate degree after they have begun practice.
- One-hundred respondents favored requiring a baccalaureate or graduate degree to qualify for a license to deliver respiratory care.

# Education (63% Yes)

- That the AARC request the Commission on Accreditation for Respiratory Care to change, by July 1, 2012, accreditation standard 1.01 to read as follows:

1.01 The sponsoring institution must be a post-secondary academic institution accredited by a regional or national accrediting agency that is recognized by the United States Department of Education and must be authorized under applicable law or other acceptable authority to award graduates of the program a *baccalaureate or graduate* degree at the completion of the program. *Programs accredited prior to 2013 that do not currently offer a baccalaureate or graduate degree must transition to conferring a baccalaureate or graduate degree, which should be awarded by the sponsoring institution, upon all RT students who matriculate into the program after 2020.*

# Credentials (76% Yes)

That the AARC recommends to the National Board for Respiratory Care (NBRC) on July 1, 2011, that the Certified Respiratory Therapist (CRT) examination be retired after 2014.

That the AARC recommends to the NBRC on July 1, 2011, that the multiple-choice examination components (CRT and Registered Respiratory Therapist [RRT] written) for the RRT examination should be combined after 2014.

# Licensure (93% Yes)

That the AARC establish on July 1, 2011, a commission to assist state regulatory boards transition to the RRT requirement for licensure as an RT.

**Ohio - 2015**

# Transition (90% Yes)

- That the AARC Executive Office request that the AARC Board of Directors ask the appropriate existing sections to develop standards to assess competency of RTs in the workforce relative to job assignments of the RT.
- Standards should address the variety of work sites that employ RTs.
- Standards should address RT knowledge, skills, and attributes relative to the tasks being evaluated.

# Continuing Education (97% Yes)

The AARC encourages clinical department educators and state affiliates' continuing-education venues to use clinical simulation as a major tactic for increasing the competency of the current workforce.

# Consortia (100% Yes)

That the AARC, in cooperation with the Commission on Accreditation for Respiratory Care, consider development of consortia and cooperative models for associate degree programs that wish to align with baccalaureate degree granting institutions for the award of the baccalaureate degree.

# Budgetary Resources (96% Yes)

That the AARC provide budgetary resources to assist associate degree programs with the transition to baccalaureate level RT education.

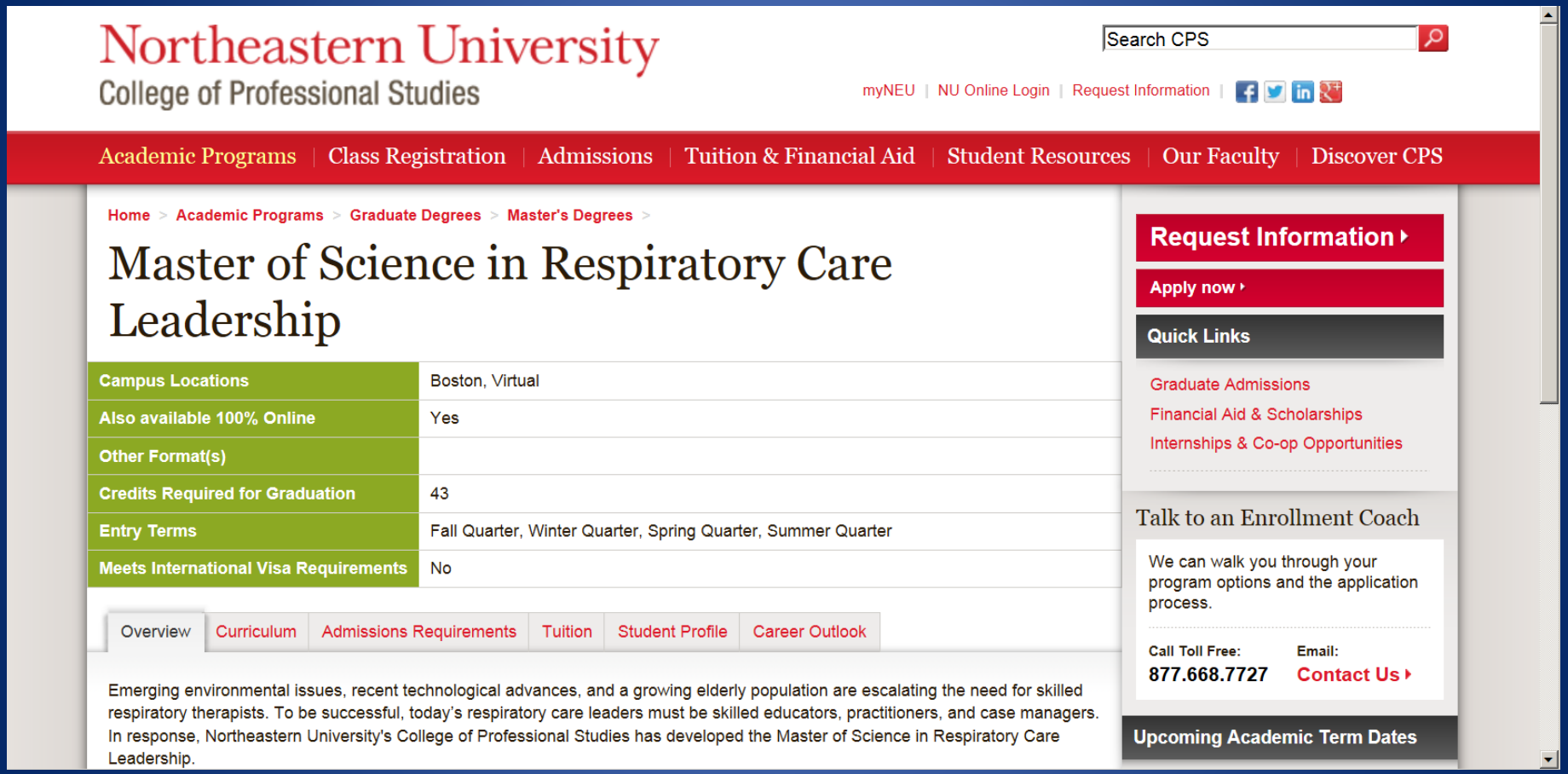
# Career Ladder (100% Yes)

That the AARC Board of Directors explores development and promotion of career ladder education options for the members of the existing workforce to obtain advanced competencies and the baccalaureate degree.

# ARCF (96% Yes)

That the AARC request the American Respiratory Care Foundation to establish a restricted fund for donations to support the transition of associate degree programs to baccalaureate level RT education.

http://www.cps.neu.edu/degree-programs/graduate/masters-degrees/masters-respiratory-care-leadership.php

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# www.cobgrte.org

## Coalition for Baccalaureate and Graduate Respiratory Therapy Education

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- Forums-Chronicle Archive

### Welcome to the CoBGRTE Web Site!

The Coalition for Baccalaureate and Graduate Respiratory Therapy Education (CoBGRTE) is organized to help students, faculty, and the general public learn about baccalaureate and graduate respiratory therapy education in the United States of America. A roster of baccalaureate and graduate respiratory therapy programs provides contact and basic information on: location, program director, medical director, curriculum design, entering class size, start dates, and provides a link to each program's web site. The CoBGRTE Roster also serves as a communication tool for faculty developing new baccalaureate and graduate respiratory therapy programs. Students and faculty are encouraged to visit program web sites and to contact each program directly for additional information.


Thanks for your attention!