

Chapter 01 - History of Respiratory Care

Kacmarek et al.: Egan's Fundamentals of Respiratory Care, 11th Edition

MULTIPLE CHOICE

Which of the following is an expected role of a respiratory therapist?

- Promoting lung health and wellness
 - Providing patient education
 - Assessing the patient's cardiopulmonary health status
 - Selling oxygen (O₂) therapy devices to patients
- 1 only
1 and 4 only
1, 2, and 3 only
d. 1, 2, 3, and 4

ANS: C

Respiratory care includes the assessment, treatment, management, control, diagnostic evaluation, education, and care of patients with deficiencies and abnormalities of the cardiopulmonary system. Respiratory care is increasingly involved in the prevention of respiratory disease, the management of patients with chronic disease, and promotion of health and wellness.

DIF: Recall REF: p. 3 OBJ: 1

Where are the majority of respiratory therapists employed?

- Skilled nursing facilities
- Diagnostic laboratories
- Hospitals or acute care settings
- Outpatient physician offices

ANS: C

Approximately 75% of all respiratory therapists work in hospitals or other acute care settings.

DIF: Recall REF: p. 3 OBJ: 1

Who is considered to be the "father of medicine"?

- Hippocrates
- Galen
- Erasistratus
- Aristotle

ANS: A

The foundation of modern Western medicine was laid in ancient Greece with the development of the Hippocratic Corpus. This collection of ancient medical writings is attributed to the "father of medicine," Hippocrates, a Greek physician who lived during the fifth and fourth centuries BC.

DIF: Recall REF: pp. 3-4 OBJ: 2

In 1662, a chemist published a book that described the relationship between gas, volume, and pressure. What was the chemist's name?

- Sir Isaac Newton
- Robert Boyle
- Anthony van Leeuwenhoek
- Nicolaus Copernicus

ANS: B

The chemist, Robert Boyle, published what is now known as "Boyle's law," governing the relationship between gas, volume, and pressure.

DIF: Recall REF: p. 6 OBJ: 2

Who discovered O₂ in 1774 and described it as "dephlogisticated air"?

- Robert Boyle
- Jacque Charles
- Thomas Beddoes
- Joseph Priestley

ANS: D

In 1774, Joseph Priestley described his discovery of O₂, which he called "dephlogisticated air."

DIF: Recall REF: pp. 6-7 OBJ: 2

Who is credited with first describing the law of partial pressures for a gas mixture?

- John Dalton
- Joseph Prestley
- Jacque Charles
- Thomas Young

ANS: A

John Dalton described his law of partial pressures for a gas mixture in 1801 and his atomic theory in 1808.

DIF: Recall REF: p. 7 OBJ: 2

Who was the first scientist in 1865 to suggest that microorganisms caused many diseases?

- Thomas Young
- Louis Pasteur
- Henry Graham
- Robert Koch

ANS: B

In 1865, Louis Pasteur advanced his "germ theory" of disease, which held that many diseases are caused by microorganisms.

DIF: Recall REF: p. 7 OBJ: 2

Who discovered the x-ray and opened the door for the modern field of radiology?

- John Dalton
- William Smith

William Roentgen
Thomas Young

ANS: C

In 1895, William Roentgen discovered the x-ray and the modern field of radiologic imaging sciences was born.

DIF: Recall REF: p. 7 OBJ: 2

What was the primary duty of the first inhalation therapists?

- Provide airway care.
- Support O₂ therapy.
- Aerosol therapy to patients.
- Maintain patients on mechanical ventilation.

ANS: B

The first inhalation therapists were really just O₂ technicians.

DIF: Recall REF: p. 7 OBJ: 3

When did the designation “respiratory therapist” become standard?

- a. 1954
- b. 1964
- c. 1974
- d. 1984

ANS: C

In 1974, the designation “respiratory therapist” became standard.

DIF: Recall REF: p. 7 OBJ: 3

Who was the first to develop the large-scale production of O₂ in 1907?

- Robert Dalton
- David Boyle
- Thomas Anderson
- Karl von Linde

ANS: D

Large-scale production of O₂ was developed by Karl von Linde in 1907.

DIF: Recall REF: p. 7 OBJ: 4

When was the first Venti-mask introduced that allows the precise delivery of 24%, 28%, 35%, and 40% O₂?

- a. 1945
- b. 1954
- c. 1960
- d. 1972

ANS: C

The Campbell Venti-mask, which allowed the administration of 24%, 28%, 35%, or 40% O₂, was introduced in 1960.

DIF: Recall REF: p. 8 OBJ: 4

When were aerosolized glucocorticoids for the maintenance of patients with moderate to severe asthma first introduced?

- In the 1950s
- In the 1960s
- In the 1970s
- In the 1980s

ANS: C

The use of aerosolized glucocorticoids for the maintenance of patients with moderate to severe asthma began in the 1970s.

DIF: Recall REF: p. 8 OBJ: 4

Which of the following medications has never been delivered as an aerosol by a respiratory therapist?

- Inotropes
- Anticholinergic
- Mucolytic
- Antibiotic

ANS: A

There has been a proliferation of medications designed for aerosol administration, including bronchodilators, mucolytic, antibiotic, anticholinergic, and antiinflammatory agents.

DIF: Recall REF: p. 8 OBJ: 4

Which two names are linked to the development of the iron lung, which was extensively used to treat the polio epidemic in the 1950s?

- Allison and Smyth
- Drinker and Emerson
- Dräger and Bennett
- Byrd and Tyler

ANS: B

The iron lung was developed by Drinker, an engineer at Harvard University. Jack H. Emerson developed a commercial version of the iron lung that was used extensively during the polio epidemics of the 1930s and 1950s.

DIF: Recall REF: p. 8 OBJ: 5

Which of the following was one of the first positive-pressure ventilators developed?

- MA-1
- Bird Mark 7
- Dräger Pulmotor
- Engstrom

ANS: C

Early positive-pressure ventilators included the Dräger Pulmotor (1911), the Spiropulsator (1934), the Bennett TV-2P (1948), the Morch Piston Ventilator (1952), and the Bird Mark 7 (1958).

DIF: Recall REF: p. 8 OBJ: 4

When was positive end expiratory pressure (PEEP) first introduced to treat patients with acute respiratory distress syndrome?

- a. 1935
- b. 1946
- c. 1958
- d. 1967

ANS: D

Positive end expiratory pressure (PEEP) was introduced for use in patients with ARDS in 1967.

DIF: Recall REF: p. 9 OBJ: 4

When was synchronized intermittent mandatory ventilation (SIMV) first introduced?

- a. 1975
- b. 1985
- c. 1995
- d. 2005

ANS: A

SIMV was introduced in 1975.

DIF: Recall REF: p. 9 OBJ: 4

Who introduced the first laryngoscope, in 1913?

- Thomas Allen
- Chevalier Jackson
- Jack Emerson
- Forrest Bird

ANS: B

In 1913, the laryngoscope was introduced by Chevalier Jackson.

DIF: Recall REF: p. 10 OBJ: 5

Who introduced the use of soft rubber endotracheal tubes around 1930?

- Davidson
- McGill
- Haight
- Murphy

ANS: B

Ivan McGill introduced the use of soft rubber endotracheal tubes.

DIF: Recall REF: p. 10 OBJ: 5

In 1846, who developed a water seal spirometer, which allowed accurate measurement of the patient's vital capacity?

- Hutchinson

Strohl
Tiffeneau
Davis

ANS: A

In 1846, John Hutchinson developed a water seal spirometer, with which he measured the vital capacity.

DIF: Recall REF: p. 10 OBJ: 5

What was the name of the first professional organization for the field of respiratory care?

American Association for Inhalation Therapy
National Organization for Inhalation Therapy
Inhalation Therapy Association
Better Breathers Organization

ANS: C

Founded in 1947 in Chicago, the Inhalational Therapy Association (ITA) was the first professional association for the field of respiratory care.

DIF: Recall REF: p. 10 OBJ: 7

In which year did the respiratory care professional organization American Association for Respiratory Therapy (ARRT) change its name to American Association for Respiratory Care (AARC)?

- a. 1954
- b. 1966
- c. 1975
- d. 1982

ANS: D

The ITA became the American Association for Inhalation Therapists (AAIT) in 1954, the American Association for Respiratory Therapy (ARRT) in 1973, and the AARC in 1982.

DIF: Recall REF: p. 10 OBJ: 7

What organization has developed an examination to enable respiratory therapists to become licensed?

American Respiratory Care Board
National Board for Respiratory Care
American Association for Respiratory Care
National Organization for Respiratory Therapist

ANS: B

During the 1980s, the AARC began a major push to introduce state licensure for respiratory care practitioners based on the National Board for Respiratory Care (NBRC) credentials.

DIF: Recall REF: p. 10 OBJ: 6

Today, respiratory care educational programs in the United States are accredited by what organization?

National Board for Respiratory Care (NBRC)

American Association for Respiratory Care (AARC)
Committee on Accreditation for Respiratory Care (CoARC)
Joint Review Committee for Respiratory Therapy Education (JRCRTE)

ANS: C

Today, respiratory care educational programs in the United States are accredited by the CoARC.

DIF: Recall REF: p. 13 OBJ: 6

The majority of respiratory care education programs in the United States offer what degree?

- Associate's degree
- Bachelor's degree
- Master's degree
- Certificate degree

ANS: A

There are approximately 300 associate, 50 baccalaureate, and 3 graduate-level degree programs in the United States.

DIF: Recall REF: p. 13 OBJ: 8

Which of the following are predicted to be a growing trend in respiratory care for the future?

- Greater use of respiratory therapy protocols
 - Increased need for patient assessment skills
 - Increased involvement in smoking cessation programs
 - Clinical decisions will increasingly be data-driven
- 1 and 2 only
2 and 3 only
2, 3, and 4 only
d. 1, 2, 3, and 4

ANS: D

Dr. David Pierson, a prominent pulmonary physician, described the future of respiratory care in 2001. Among other things, he predicted greater use of patient assessment and protocols in disease state management in all clinical settings; a more active role for respiratory therapists in palliative care; increasing emphasis on smoking cessation and prevention; early detection and intervention in COPD; and an increase in the use of respiratory therapists as coordinators and caregivers for homecare. The science of respiratory care will continue to evolve and increase in complexity, and clinical decisions will increasingly be data-driven.

DIF: Recall REF: p. 14 OBJ: 9

How is competency to practice Respiratory Care determined?

- Achievement of good grades in school and graduating from an approved program.
- Applying for a state license.
- Only by graduating from a CoARC approved program.
- Obtaining a passing grade on a credentialing examination administered by the NBRC after graduation from a CoARC approved program.

ANS: D

State licensing laws set the minimum educational requirements and the method of determining competence to practice.

DIF: Recall REF: p. 10 OBJ: 6

Due to the aging of the majority of the population, which of the following will be the focus of the Respiratory Therapist of the future?

- Verifying insurance information
- Disease management and rehabilitation
- Patient and family education
- Tobacco education and smoking cessation

- 1 and 3 only
- 1, 2, and 3 only
- 2, 3, and 4 only
- d. 1, 2, 3, and 4

ANS: C

In the future, there will be an increase in demand for respiratory care due to advances in treatment and technology, increases in the aging of the population, and increases in the number of people with asthma, COPD, and other cardiopulmonary diseases. Due to this the RT of the future will be focused on patient assessment, care plan development, protocol administration, disease management and rehabilitation, and patient and family education, to include tobacco education and smoking cessation.

DIF: Application REF: pp. 14-15 OBJ: 9

According to the AARC's "2015 and Beyond" project, all of the following are included in the seven major competencies required by Respiratory Therapists by the Year 2015 except:

- chronic disease state management.
- bronchoscopy.
- evidence-based medicine and respiratory care protocols.
- leadership.

ANS: B

According to the AARC's "2015 and Beyond" project, the seven major competencies required by Respiratory Therapists by the Year 2015 will be, diagnostic, chronic disease state management, evidence-based medicine and respiratory care protocols, patient assessment, leadership, emergency and critical care, and therapeutics.

DIF: Recall REF: pp. 14-15 OBJ: 9

Chapter 02 - Delivering Evidence-Based Respiratory Care
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MULTIPLE CHOICE

Quality in the practice of respiratory care encompasses which of the following?

- Personnel performing care
 - Equipment used
 - Method or manner in which care is provided
 - Level of experience of respiratory care providers
- 1 and 2 only
3 only
1, 3, and 4 only
d. 1, 2, 3, and 4

ANS: D

Quality, as applied to the practice of respiratory care, is multidimensional. It encompasses the personnel who perform respiratory care, the equipment used, and the method or manner in which care is provided.

DIF: Recall REF: p. 18 OBJ: 1

Who is professionally responsible for the clinical function of the respiratory care department?

- Shift supervisor
- Department head
- Medical director
- Clinical supervisor

ANS: C

The medical director of respiratory care is professionally responsible for the clinical function of the department and provides oversight of the clinical care that is delivered (Box 2-1).

DIF: Recall REF: p. 19 OBJ: 1

What is the most essential aspect of providing quality respiratory care?

- Care being provided is indicated.
 - Care is delivered competently and appropriately.
 - Physician appropriately evaluates patient before care is initiated.
- 1 and 2 only
3 only
2 and 3 only
1, 2, and 3

ANS: A

The medical director of respiratory care is professionally responsible for the clinical function of the department and provides oversight of the clinical care that is delivered (Box 2-1).

DIF: Recall REF: p. 19 OBJ: 2

The medical director of respiratory care is responsible for which of the following?

Supervision of ongoing quality assurance activities
Supervision of respiratory therapists performing pulmonary function testing
Participation in the selection and promotion of technical staff
Medical direction of the in-service and educational programs

- 1 only
- 1 and 4 only
- 1, 2, and 3 only
- d. 1, 2, 3, and 4

ANS: D

Perhaps the most essential aspect of providing quality respiratory care is to ensure that the care being provided is indicated and that it is delivered competently and appropriately.

DIF: Recall REF: p. 19 OBJ: 1

What is the chief reason that respiratory care protocols were developed and are currently being used in hospitals throughout North America?

- Enhance proper allocation of respiratory care services.
- Decrease patient care costs to hospitals and insurance companies.
- Expand patient care skills among respiratory care providers.
- Enhance efficiency of respiratory care personnel in providing patient care.

ANS: A

Misallocation has led to the use of respiratory care protocols that are implemented by respiratory therapists (as described under “Methods for Enhancing the Quality of Respiratory Care”).

DIF: Application REF: p. 19 OBJ: 1

Which of the following factors is important in determining the quality of care delivered by a respiratory therapist?

- Education
- Experience
- Training
- All of the above

ANS: D

The quality of respiratory therapists depends primarily on their training, education, experience, and professionalism.

DIF: Recall REF: p. 19 OBJ: 1

Respiratory care education programs are reviewed by which committee to ensure quality?

- Committee on Accreditation for Respiratory Care
- American Association for Respiratory Care Education
- Joint Review Committee Respiratory Care Education
- Respiratory Care Education Committee

ANS: A

Respiratory care education programs are reviewed by the Committee on Accreditation for Respiratory Care (CoARC).

DIF: Recall REF: p. 19 OBJ: 1

The word “credentialing” in general refers to what?

- Recognition of an individual in the profession
- Licensure by a state or national organization
- Successful completion of entry-level board examination
- Voluntary certification by state agency

ANS: A

“Credentialing” is a general term that refers to the recognition of individuals in particular occupations or professions.

DIF: Recall REF: p. 20 OBJ: 1

What term is used to describe the process in which a government agency gives an individual permission to practice an occupation?

- Certification
- Licensure
- Registry
- Credentialing

ANS: B

Licensure is the process in which a government agency gives an individual permission to practice an occupation.

DIF: Recall REF: p. 20 OBJ: 1

What agency is responsible for ensuring quality in respiratory care through voluntary certification and registration?

- JRCRTE
- CoARC
- NBRC
- AARC

ANS: C

The primary method of ensuring quality in respiratory care is voluntary certification or registration conducted by the National Board for Respiratory Care (NBRC).

DIF: Recall REF: p. 21 OBJ: 1

What organization is responsible for credentialing respiratory therapists?

- AARC
- ATS
- NBRC
- ACCP

ANS: C

The primary method of ensuring quality in respiratory care is voluntary certification or registration conducted by the National Board for Respiratory Care (NBRC).

DIF: Recall REF: p. 21 OBJ: 1

Which of the following are characteristics of a respiratory care professional?

- Participates in continuing education activities.
- Obtains professional credentials.
- Adheres to a code of ethics.
- Completes an accredited education program.

- 1, 2 and 3 only
- 2, 3, and 4 only
- 1, 2, and 4 only
- d. 1, 2, 3, and 4

ANS: D

A professional is characterized as an individual conforming to the technical and ethical standards of a profession. Respiratory therapists demonstrate their professionalism by maintaining the highest practice standards, by engaging in ongoing learning, by conducting research to advance the quality of respiratory care, and by participating in organized activities through professional societies such as the American Association for Respiratory Care and associated state societies. Box 2-3 lists the professional attributes of a respiratory therapist.

DIF: Recall REF: p. 21 OBJ: 1

HIPAA was established in 1996 to set standards related to sharing confidential health history information about patients. What does the letter “P” stand for?

- Privacy
- Portability
- Patient
- Protection

ANS: B

HIPAA is the Health Insurance Portability and Accountability Act.

DIF: Recall REF: p. 22 OBJ: 1

Which of the following is an essential element of a comprehensive protocol program?

- Carefully structured assessment tool and care plan form
- Active quality monitoring
- Comprehensive delineation of boundaries between respiratory care, nursing, and physician personnel
- Both b and c

ANS: A

Carefully structured assessment tool and care plan form (Figures 2-3 and 2-4) are essential elements for a comprehensive protocol program.

DIF: Recall REF: p. 22 OBJ: 2

What voluntary accrediting agency monitors quality in respiratory care departments?

- JRCRTE
- AARC
- FDA
- The Joint Commission

ANS: D

The Joint Commission requires a hospital service to have a quality assurance plan to provide a system for controlling quality.

DIF: Recall REF: p. 21 OBJ: 1

Current Joint Commission standards for accreditation emphasize which of the following?

- Continual quality improvement
- Therapist-driven protocols
- License and registration of health care providers
- Health, welfare, and safety of patients using respiratory care equipment

ANS: A

Current Joint Commission standards for accreditation emphasize organization-wide efforts for continuous quality improvement (CQI).

DIF: Recall REF: p. 21 OBJ: 1

To monitor correctness of respiratory care plans, which of the following should be used?

- Nursing care plans
- Physician progress notes
- Care plan auditors and case study exercises
- Daily patient rounds with medical director

ANS: C

Specific methods to monitor the quality of respiratory care protocol programs include conducting care plan audits in real time and ensuring practitioner training by using case study exercises.

DIF: Application REF: pp. 27-28 OBJ: 2

What is one advantage that has been shown of respiratory care protocols?

- Increase in the number of procedures performed by respiratory care providers
- Decrease in the overordering of respiratory care services
- Decrease in the cost savings to respiratory care departments
- Decrease in the cost of performing each respiratory care procedure

ANS: B

Most studies show a significant decrease in overordering respiratory care services.

DIF: Application REF: pp. 22-23 OBJ: 2

Treatment based on careful review of available literature is known as:

- evidence-based medicine.
- protocol-based medicine.
- review-based medicine.
- team-based health care.

ANS: A

Evidence-based medicine refers to an approach to determining optimal clinical management based on several practices.

DIF: Recall REF: p. 30 OBJ: 5

What term is used to describe the work done by a researcher who reviews numerous studies on a single topic and gives more weight to the more rigorous ones before making recommendations?

- White paper
- Meta-analysis
- Alpha review
- Apical review

ANS: B

Meta-analyses assess the quality of available evidence and give weight to better-designed, more rigorous studies.

DIF: Recall REF: p. 32 OBJ: 5

How are competencies being used to monitor the quality of respiratory care?

- They focus on cost saving strategies.
- They are used to check the skill and knowledge of respiratory through the use of clinical simulations.
- They are used to educate therapist on new treatments and procedures.
- They are used to review protocols.

ANS: B

The purpose of competencies is to check for having suitable and sufficient skills, knowledge, and experience for specific tasks.

DIF: Recall REF: p. 26 OBJ: 3

What is/are the essential component(s) comprise(s) disease management programs?

- An integrated health care system that can provide a full range of a patient's needs
 - A knowledge regarding prevention, diagnosis, and treatment of diseases
 - A commitment to CQI
 - A sophisticated clinical and administrative information system that helps assess patterns in the clinical practice
- 1 and 3 only
2 only
3 and 4 only
d. 1, 2, 3, and 4

ANS: D

All of the above are the essential components for a disease management team to be successful at meeting the clinical needs of the patients and hospital.

DIF: Recall REF: pp. 31-32 OBJ: 4

What is a cohort study?

- Comparing the clinical outcomes from two different groups
- Single patient study
- A literature-based review
- Collection of patients with similar clinical situations

ANS: A