



Advanced Certification in Respiratory Technology Curriculum

The ACRT curriculum includes 3 modules, each of four months, as follows.

Module	1
Title	Introduction to Respiratory Technology
Duration	Four months

Basic Life Support Certification

- The candidates are expected to obtain BLS certification from American Heart Association, within a month of commencement of certification program.
- Those candidates, who already have the BLS certification, are expected to have its validity till the completion of certification program.

Applied Cardiopulmonary Anatomy and Physiology

This Course aims to provide the trainee with basic knowledge of the applied anatomy and physiology of the cardiopulmonary system. Study units will include topics on cardiopulmonary anatomy and physiology and its applied areas in ICU. The topics include Thoracic Cavity, Upper and Lower Respiratory Airways, Ventilation, Oxygen and Carbon Dioxide Transport, Control of Ventilation etc.

Basics of Microbiology

This course gives the candidates and extensive overview about classification of microorganisms, pathogens involving respiratory tract, Mycobacterium and common gram negative bacteria, Methods of sterilization and disinfection, Disinfection of respiratory equipment's, Infection control – Meaning, methods of transmission of diseases.

Respiratory Technology I

This course deals about indications, calibration, setting up, cleaning and disinfection of the following; Medical gas and Medical Gas Pipelines, Oxygen Flow meters, Humidifiers, Heat & Moisture Exchanger, Heated Humidifier, Defibrillators, Capnography, Pulse Oximeter, Cuff Pressure manometer, Peak Expiratory flow meter

Module	2
Title	Infection Control Practices
Duration	Four months

Sterilization and Disinfection of Respiratory Equipment: This course will detail the various types of Sterilization and Disinfection techniques in ICU. The candidates are expected to; understand to sterilize instrumentation and equipment through a series of critical steps; understand microbiology and infection control as it pertains to sterile processing and decontamination procedures; implement infection control practices to ensure that patients avoid infections; provide instrumentation and equipment access to doctors, nurses and allied health professionals as required

Infection Control and Infectious diseases: The candidates are expected to understand various diseases caused by bacterial, fungal and viral organisms and the modes of disease transmission that includes; the infectious agent, reservoir, portal of exit, mode of transmission, portal of entry, and susceptible host. They are also expected to understand defence mechanisms like passive and active, including immunoglobulins, complement, macrophages and pyrexia.

Respiratory Technology II: This course deals about indications, calibration, setting up, cleaning and disinfection of the following; AMBU, BAINS circuit, Spirometer, Artificial airways – Basic & Advanced, Various routes of O2 administration, Aerosol therapy, Nebulizer – Jet, Ultrasonic and ICD.

Module	3
Title	Advanced Respiratory Technology
Duration	Four months

Advanced Respiratory Technology, including Oxygen Therapy and Humidification.

This course deals about indications, calibration, setting up, cleaning and disinfection of the following; ABG Analyser, NIV, Ventilator, O2 Analyser, ETCO2, Laryngoscope, Bronchoscope etc. This module will also include application of medical gas delivery devices such as Oxygen masks, High flow oxygen devices etc. Also briefly describe the specifications of gas sources like cylinders and hospital gas storage and delivery system. The candidates are expected to be exposed in the indications, contraindication and complications of these medical gases. The candidates are also expected to learn various types of humidification devices and its care and trouble shooting in respiratory critical care.

Property Control, Inventory Management and Procurement Process in Respiratory Department

This course includes an overview of inventory management and updates. This course also covers the importance of keeping an accurate inventory, purchase of equipment's and consumables, tagging & capturing equipment transactions, managing ICU inventory, annual physical inventory and property disposal procedures and requirements. By the end of this course the technician will have a strong understanding of inventory management skills and will be much more able to handle procurement tasks professionally.

Disaster Management, Ethics, Quality and Safety

This module details the ethical concepts and conflicts, commonly seen in critical care areas, including patient autonomy, informed consent, end of the life care, withdrawal of life support, and organ donation. This module will also cover the importance of multidisciplinary team performance and important components of healthcare quality and patient safety and the importance of effective disaster management plan in ICU.

Competency Checklist

Name of the Candidate: _____

Procedure	Date	Date
OBTAINING AND RECORDING		
Universal Precautions		
Hand washing		
Isolation Techniques		
Infectious/Hazardous Waste Disposal		
Supply/Equipment Disposal		
Proper use of specific barrier, methods: Gloves, Gown, Mask/Goggles		
Assisting Code Team		
Assessing Vital signs		
Mouth Care		
Positioning the Patient		
Managing Equipment dispatch and Supply		
Applying Oximeter/ Pulse Oximeters (SpO2)		
Use, and troubleshooting alarms; Bed, Patient, Unit		
Disinfection of respiratory care equipment		
Calibration and preparation of ventilators		
Trouble shooting ventilator alarms		
Blood gas machine / calibration & maintenance		
Carbon Dioxide Module (CO2), EtCO2 calibration and maintenance		
Defibrillator		
Fiberoptic Light Sources		
Maintain annual test equipment calibration and records		
Arterial Sampling and Analyzing		
Defibrillators		
Bag Valve and Mask		
Oxygen Therapy Devices; Masks, Nasal Cannulas, Ventury Masks		
Safe handling, cracking and operation of oxygen cylinders		
Humidification Therapy devices and maintenance		
Aerosol Therapy equipment & disinfection		
BHT Equipment maintenance		
Suctioning the airway; Oropharyngeal and nasopharyngeal		
Cuff manometer		

Preparing the Intubation kit/trolley		
Preparing the equipment for extubation		
Preparing the tracheostomy/and decannulation		
Preparing the equipment for thoracostomy		
Preparing for arterial line insertion/removal		
Preparing for chest tube insertion/removal		
Preparing the equipment for transporting the ventilated		
Preparing the equipment for transporting respiratory patient		
Schedule Planned Maintenance		
Inventory – Addition, Deletion, Modification		

- All the Respiratory Technology candidates are strictly expected to complete the competency checklist on a weekly basis, and get it countersigned by Assigned Respiratory Therapist of the Department or by the Assigned Faculty

Name and Signature of the Assigned Faculty _____

Date of Completion: _____

Remarks: _____

Reference Resources:

Books
1. Egan's Fundamentals of Respiratory Care- RM Kacmarek
2. Mechanical Ventilation: Clinical Application- V Deshpande
3. ICU Protocols- R Chawla (ISCCM)
4. Clinical Application of Mechanical Ventilation- D Chang
5. Mosby's Respiratory Care Equipment- JM Cairo
Journals
1. Indian Journal of Critical Care Medicine (ISCCM)
2. Indian Journal of Respiratory Care (IARC)
3. Respiratory Care Journal (AARC)
4. Clinical Practice Guidelines (CPGs) - AARC
5. Intensive Care Medicine Journal (ESICM)
6. Canadian Journal of Respiratory Therapy (CSRT)