



# Scope of Practice - Critical Care Technologist

## Broad Overview

Critical care is a high technology area and utilises applied science. What defines a Critical Care Technologist (CCTs) as a unique professional is the combination of equipment management, patient/technology interface and training of other professionals. CCTs require a significant depth and breadth of knowledge. CCTs are healthcare scientists whose primary role is to provide the scientific and technological services and solutions to support organ function and maintain life. This life preservation requires CCTs to be based in critical care and have a broad knowledge base from healthcare science to ensure rapid and effective interventions during life threatening events, thus improving the delivery and quality of patient care.

With the patient's life being dependant upon the application of science, CCTs utilise monitoring and diagnostic procedures, including Point of Care Testing, plus organ support technologies and therapies, to diagnose and treat a wide variety of conditions, including trauma and multi organ failure. This is further underpinned by the bed side training and supervision of staff in the use and interaction of technologies and the equipment management of the technologies that are required for a patient during a life threatening event.

CCTs are responsible for the supply, efficacy, quality assurance and application of critical care technologies, including the introduction of new technologies, leading to improved quality of care to critically ill patients at all levels of dependency. The scientific and technological delivery of a patient's care and therapy may be provided by CCTs in any location where a patient requiring critical care is to be found, and should follow the patient's care pathway, whilst, their physiological systems remain compromised. This includes locations external to the hospital and areas of physiological extremes or stress.

**A newly qualified Critical Care Technologist must be familiar with all critical care areas and have the following skill mix and be able to perform :**

## Physiological Support , Measurement and Clinical Intervention

- Be able to decontaminate, calibrate and set up technological systems used in critical care.
- Be able to assess patients physiology taking into account the complexity of the patients condition, the technology and resources available.
- Be able to plan within unit protocol , deliver and evaluate treatments to take into account interactions between different support systems and the effect on, and of patients pathophysiology, as part of a multi-disciplinary team to improve the quality of care.
- Be able to set up and attach to patients non invasive diagnostic and physiological monitoring equipment, generating and interpreting the data and its clinical significance to the patient and technologies in use plus take appropriate action.
- For example: 12 , 5 , 3 lead electrocardiograms', Respiratory movement, pulse oximeters.
- Non-invasive blood pressure including Brachial, Radial, Posteria Tibial, Dorsalispedis and Popateal.
- Transcutaneous Oxygen and Carbon Dioxide sensors Temperature sensors.
- Be able to set up and attach arterial and venous pressure monitoring.
- Assist in provision of diagnostic, monitoring and support therapies of critical care patients physiological systems, including:

**Respiratory-** be able to set up and take measurements of:

Non invasive ventilation including CPAP, BIPAP, nebulisation, and humidification. Respiratory mechanics, ventilatory support strategies and including therapeutic drug administration e.g. Modes and types of invasive ventilation including volume and pressure control, Spontaneous, Oscillation and Nitric oxide End Tidal Carbon dioxide.

**Cardio-vascular-** be able to set up and take measurements of: Pulmonary artery catheters, Diagnostic hemodynamic pressure monitoring, Cardiac output, Temporary pacing including bipolar flotation catheters and external pacing and Intra Aortic balloon pump. Volume replacement including cell saving, blood warmers and rapid infusors.

**Renal and Hepatic-** be able to set up and take measurements of Heamofiltration technology support systems.

**Neurological-** be able to set up and take measurements of: Nerve stimulator/depth of Anesthesia monitoring, Cerebral function monitor, Intercranial pressure monitoring and Jugular bulb oxygen saturation monitoring.

**Gastro- Instinal-** be able to set up and take measurements of Carbon Dioxide and Oxygen.

- Be able to set up and assist with clinical procedures for example resuscitation, intubation and cannulation.
- Participate in the safe transfer of critically ill patients. Ensuring safe functionality of technology and availability of resources, during the transfer ensuring appropriate use.

#### **Point of Care Testing (Near Patient Testing):**

- Be able to take and analyse samples with the ability to interpret the results and their clinical relevance to the patients condition and the support therapies being used. For example: Blood gases and electrolytes, Co oximetry and Hemoglobin, Blood clotting, Metabolites, lactate, glucose, urea and creatinine.
- Perform internal Quality Control Assessment plus preventative and remedial maintenance of POC devices in line with local Chemical/Bio Pathology and National Recommendations and be able to interpret the data and take appropriate action.
- Assist with microbiological surveillance of POC systems.
- Maintain Good Laboratory Practice (GLP) procedures, in accordance with agreed protocols.

#### **Management of Critical Care Technology:**

- Be able to perform pre-use checks on equipment.
- Be able to undertake preventative and day to day maintenance of technological systems to ensure accuracy and reliability in the clinical environment.
- Be able to follow a systematic approach in the assessment of errors of technology in use in critical care.
- Assist with Quality Control and Quality Assurance to ensure adherence with National and International legislation and local policies and procedures.
- Be aware of health service economics and budgets to ensure cost effective use of current technology.
- Be responsible for the safe condition and use of technology.

#### **Training and Development:**

- Undertake Critical Incident reporting procedure.
- Be involved in a continuous personal development of the knowledge and skill required to practice as a CCT.
- Assist in the maintenance of effective records of, teaching/training, for end-users of technology to maintain compliance with institutional and national procedures with respect to the Clinical Negligence Scheme for Trusts (CNST) outlines.
- Be part of a multi-disciplinary team.

#### **Research and Development**

- Be able to use information technology databases and logs.
- Be able to perform and understand the importance of clinical audit.
- Be able to demonstrate an understanding of clinical governance to ensure adherence to clinical governance protocols and policies.

#### **Health and Safety, Risk Assessment and Clinical Governance:**

- Comply with Health and Safety legislation and guidelines.
- Participate in risk assessment procedures.

#### **Miscellaneous:**

- Be able to assist with effective appraisal and revalidation of all issues concerning critical care technology to, ensure the highest standard of treatment for all patients and to protect the health and well-being of people who use the services of the health professionals.