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Critical Care Medicine in Sri Lanka



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An Evolving Specialty

Sri Lanka is steadily progressing to establish critical care medicine as a separate specialty with fully trained intensivists and nurses playing pivotal roles, as in the developed world. Most general and teaching hospitals of the country already have fully equipped intensive care units. Establishment of an intermediate level diploma qualification for doctors in 2009, and recognition of critical care medicine as a separate specialty by the Government of Sri Lanka in 2011 are the recent milestones. With two academic societies, i.e. Sri Lanka Society of Critical Care Medicine and Emergency Medicine and Sri Lanka College of Anaesthesiologists enthusiastically prompting relevant teaching and training for doctors and nurses, conversion of current 'open' concept ICUs to 'closed' concept ones would soon follow. This article is about its path of evolution.

Historical Background: 1952–2002

Evolution of Surgical Recovery Units

The need to provide special care for patients who were critically ill was accepted by all clinicians in Sri Lanka. As with other developing countries, shortages of manpower and equipment enabled the provision of such care in sections of the general wards initially, where there was an increased ratio of nurses to patients and equipment to provide respiratory care in particular as well as limited equipment to monitor physiological parameters.

During the early 1950s a separate section in the thoracic ward at the premier hospital in Sri Lanka, the General Hospital, Colombo, was designated a surgical recovery area, where an electrocardiography (ECG) monitor was available for immediate postoperative patient monitoring. In the early 1960s, an East Radcliffe ventilator was available in this recovery area while iron lungs were in use in some other hospitals, mainly for the management of patients with severe poliomyelitis.

The following years saw the establishment of more surgical 'recovery units' adjacent to operating theatres in larger general hospitals of the Ministry of Health with facilities for short-term mechanical ventilation. Later on, the recovery unit established in the General Hospital Colombo further expanded to include 2 beds for medical patients and neonates who needed to be ventilated. This facility was officially named the Surgical Intensive Care Unit (SICU) of the Colombo General Hospital in 1968. It had six beds equipped with ECG monitors, invasive blood pressure and central venous pressure (CVP) monitoring facilities, three Bennett Pressure cycled ventilators and a Radiometer blood gas machine (Jayawardene 2007). In the 1970s some hospitals reported successful short-term ventilation of patients manually or using an East Radcliffe ventilator, for example in the thoracic unit Jaffna post surgically, and in Kandy for patients with tetanus.

The country's first multidisciplinary intensive care unit was designed, built and equipped by the Japanese Government as a gift to the Government of Sri Lanka in 1980 at the new teaching hospital at Peradeniya. Its five-bed ICU was fully equipped with products of Japanese technology for remote patient monitoring and advanced ventilation along with on-site blood gas and electrolyte measurement facilities. In 1984 a six-bed intensive care unit was also installed at the General Hospital, Jaffna.

There was an increased demand for beds in intensive care units as the available beds served all specialties in the hospital and many with life-threatening disease states were deprived of necessary care. In this context 'Friends of Critical Care', established in Kandy in 1998, was an example of public support for such a venture. As a consequence, political interests grew to support development of critical care. In 2002 medical professionals from various specialties together founded the Sri Lankan Society of Critical Care and Emergency Medicine with the motto of being

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the “pulse of the critically ill”. Installation of new services such as renal replacement therapy supported enhancement of medical services to new heights. The initiation of a national kidney transplant programme for children at Peradeniya in 2004 had a direct link to the availability of a continuous renal replacement therapy service in its critical care unit (Abeysekera et al. 2007). Advancing critical care also contributed much needed research insight to enhance care for adults with organophosphate poisoning and envenoming (Karalliedde and Senanayake 1988; Muidasa et al. 2004). Most critical care units established around the country were multidisciplinary and some had facilities for children (Mudalige et al. 2009).

Current Status: 2002–2016

Sri Lankan Society of Critical Care and Emergency Medicine (SSCCEM)

At the outset, the founder members of SSCCEM comprised specialists from the major specialties of medicine, surgery, obstetrics and gynaecology, paediatrics and anaesthesiology. Over the years the society has grown to its current membership exceeding 200.

Since 2002, the SSCCEM (ssccem.com) has conducted numerous academic activities with the collaboration of intensivists and emergency physicians from around the globe, especially from the Australian College of Emergency Medicine, and the Indian Society of critical care medicine. Many Sri Lankan expatriates with an interest in the fields of critical care and emergency medicine also voluntarily contributed. The Emergency Life Care (ELC) Sri Lanka, Basic Assessment & Support in Intensive Care (BASIC) course (<https://iii.hm/38x>) and WINFOCUS (winfocus.org) are some of the internationally recognised courses regularly conducted by the SSCCEM annually and biannually. Medical officers with postgraduate training in critical care medicine and emergency medicine actively participated in these activities of the SSCCEM.

With an unhindered commitment, members of the SSCCEM became the predominant force that persuaded policymakers of health services in Sri Lanka to accept the need for high-quality care for the critically ill patient. The national recognition of both intensive care medicine and emergency medicine as separate specialties in 2011 was a direct consequence. The SSCCEM's annual scientific sessions conducted every year since 2007 have become a much anticipated academic event in the local calendar with international participation. In 2011 the SSCCEM hosted the award-winning liver transplant team from the Mayo Clinic in the USA and conducted a comprehensive workshop on the subject.

In 2014 the SSCCEM hosted the 15th scientific meeting of the Asia Ventilation Forum in Colombo. In July 2016 SSCCEM will be hosting the 2nd South Asian Association for Regional Cooperation (SAARC) critical care congress (<https://iii.hm/38y>), the scientific meeting of the Associations of SAARC critical care societies, which includes India, Sri Lanka, Pakistan, Nepal, Bangladesh, Bhutan, Maldives and Afghanistan. SSCCEM is now a dynamic society sharing knowledge and skills from experts in critical care and emergency medicine to provide the best care for the critically ill patient.

The SSCCEM has secured membership in many international bodies of critical care and emergency medicine including the World Federation of Societies in Critical Care Medicine, International Federation of Emergency Medicine, Asia Pacific Association of Critical Care Medicine, and the SAARCC Societies of Critical Care Medicine.

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Critical care medicine has evolved on the principle that patients with serious illness are better managed when grouped to a separate area, and treated by a dedicated team of healthcare providers. Most countries in the developed world and many in the developing world installed dedicated intensive care training programs that produced intensivists. As a foundation for this process and promoting efficient and cost-effective ‘closed’ intensive care practice (Ghorra et al. 1999) in Sri Lanka, a Board of Study for Critical Care Medicine and Emergency Medicine was established in 2008. Sri Lanka did not have a professional category named intensivists. Thus the board was multidisciplinary and constituted clinicians of high academic standard with a special interest in critical care medicine (<https://iii.hm/38z>). Its main function was to expand critical care and emergency medicine teaching and training and produce required specialists for the country. To fulfil this need, as its first step, a Postgraduate Diploma in Critical Care Medicine was established in 2009 with an annual intake of 20 students (Rajapakse 2009). Its first batch of diplomates qualified in 2011. The College of Paediatricians of Sri Lanka formulated a comprehensive training programme to produce pediatric intensivists in a separate stream.

Whilst PGIM was taking the lead in the development of critical care medicine, a journal, the *Sri Lanka Journal of Critical Care*, was also launched to support this cause (sljcc.sljol.info).

Sri Lanka College of Anaesthesiologists

In 2010 a Faculty of Critical Care Medicine was established under the College of Anaesthesiologists of Sri Lanka in 2010 (criticalcare.lk) that promoted the existing ‘open’ intensive care concept. In order to recognise its contribution to critical care the College was re-named in 2014 as the College of Anaesthesiologists and Intensivists of Sri Lanka. They too were devoted to enhance critical care practice through ongoing professional education.

In 2013 the Board of Study in Anaesthesiology of the Postgraduate Institute of Medicine of the University of Colombo developed a hybrid model of training for anaesthesiologists and general physicians to master the now clearly defined specialty of critical care, following their MD qualification.

National Intensive Care Surveillance System

(nicslk.com)

National Intensive Care Surveillance was an initiative undertaken in 2012 to promote an ICU bed availability system and a critical care clinical registry for Sri Lanka. It was established with national and international collaboration led by the Ministry of Health, Sri Lanka. Its mission is to contribute to the improvement of critical care services through regular audit and standardisation of services to meet the needs and to introduce also a cost-effective bed management system.

National Audits and Standards

A national audit conducted in 2004 on intensive care services of Sri Lanka included 49 ICUs in the government sector hospitals (Yatawatte et al. 2008). 57.1% of those units were in the teaching hospitals and nearly half (51%) were ‘general’ ICU, i.e. serving patients of all specialties requiring care that was not available in the wards. A ventilator: bed ratio of 1:1 or more was seen only in 57% of units. This audit recognised that the standards and management strategies practised in these ICUs varied widely, and suggested that the inability to establish closed-type ICUs in the country was a reflection of the non-availability of sufficient numbers of medical and nursing specialists in intensive care.

In 2012, another review was undertaken with an attempt to determine where Sri Lanka stands in the chain of evolution of critical care in the world. A cross-sectional observational study of all adult intensive care units in state sector hospitals in Sri Lanka recruited a total of 51 ICUs (Fernando et al. 2012). They concluded that hardly any changes had occurred in the areas of bed numbers, staffing, staff training and availability of allied facilities when compared to the audit of 2004 (Yatawatte et al. 2008). They also found that approximately

75% of ICUs were led by consultant anaesthetists, who had a major share of their work in the operating theatres. Amongst junior doctors, only 60% were dedicated for intensive care whilst the remaining 40% shared work as anaesthetists. The training and skills, seniority and competencies of both doctors and nurses were inconsistent due to ad-hoc training patterns. The researchers concluded that this working pattern was not conducive to efficient intensive care practice (Fernando et al. 2012). They also highlighted that Sri Lanka too should adopt regulations and recommendations to maintain the standards in a cost-effective manner as observed in other countries. In order to achieve this goal, qualified intensivists are needed to take a lead role, whilst intermediate-level training and certification is needed for both medical officers and nurses involved in critical care services (Briggs et al. 2006).

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The Future: 2016 and beyond

Critical care medicine has two fundamental components in the provision of care: vital organ support and root cause identification and treatment. Although, traditionally, anaesthetists have been trained to provide vital organ support, respiratory and haemodynamic in particular, the world has moved towards a model of having dedicated trained intensive care specialists to improve outcomes. This is because prioritised multi-organ support is now an essential prerequisite for modern intensive care that requires multiple teams of expertise concurrently to manage extracorporeal systems such as extracorporeal membrane oxygenation (ECMO), continuous renal replacement therapy (CRRT) and install advanced monitoring such as intracranial pressure (ICP) and cerebral perfusion whilst also managing newer therapeutic environments such as hypothermia. Further, specialist anaesthetists with shared responsibilities elsewhere are unable to devote the time needed in the care of the critically ill and relevant continuing education.

Modern critical care is a separate specialty (Hawker 2009). While multi-monitoring, nursing and ventilator support facilities are essential on a 1:1 basis, an in-house laboratory with the capabilities of analysing blood gases, glucose, electrolytes, haemoglobin, lactate and clotting profile is deemed optimal (Hawker 2009). Around the clock support of the departments of physiotherapy, radiology, pathology, cardiology, microbiology and pharmacy cannot be undervalued.

Over the years, intensive care has moved from the 'open' ICUs concept, where physicians and anaesthetists with other commitments provided care to patients in a segregated area of the hospital, to 'closed' ICUs, with dedicated specialist doctors and nurses with focused critical care training (known as intensivists). It is mandatory that training of intensivists conforms to international standards and the arena should be a multidisciplinary, complementary participation. Conversion of intensive care to a 'closed' model reduces complication and mortality rates (Ghorra et al. 1999). Sri Lanka is yet to move towards a 'closed' ICU concept managed by board-certified intensivists. In this context, promoting postgraduate education from critical care diploma to specialist level is now essential.

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