ICU Care in India - Status and Challenges

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An intensive care unit (ICU) is defined as a specially staffed, specially equipped, separate section of a hospital dedicated to the observation, care, and treatment of patients with life threatening illnesses, injuries, or complications from which recovery is possible. It provides special expertise and facilities for the support of vital function and utilizes the skill of medical nursing and other staff experienced in the management of these problems.

The global history of ICU care dates back to the polio epidemic in 1950s, when the specialty of critical care was born. Simple ventilators or hand ventilation enabled the survival of some patients. The technique of controlled ventilation was then extended to patients with drug overdose, tetanus, and chest trauma, with resultant improvement in survival. The development of effective ventilator and improved circulatory support in post operative patients radically extended the surgical possibilities. The ICUs then assumed the role in prevention of irreversible organ failure. The majority of hospitals (> 88%) in the United States have one or more ICUs, constituting 5% or less of the total hospital beds. ICUs in the United States consume 15% to 20% of the hospital budget, amounting to 1% of GNP.¹

India is a diverse country with different levels of health care: primary, secondary and tertiary. The first coronary care unit in India was started in 1968 at the King Edward VII Memorial Hospital, Mumbai. This unit was followed by one at Breach Candy hospital in Mumbai, and later in other large private hospitals of Mumbai and in other large cities of India.² Critical care units in the early 1970s, though centralized, were designed and equipped chiefly to offer intensive care to patients with acute myocardial infarction and other manifestations of ischaemic heart disease. There was a poor concept of overall critical care or intensive respiratory care. Ventilator support was primitive and was generally offered as a terminal therapeutic approach. Many of the ICUs were deficient in good monitoring facilities and were initially offered in a few designated room(s) within a general ward of the hospital. The number of critical care units caring for life-threatening illnesses other than coronary heart disease slowly increased. In mid-1980s there was a significant improvement in the standard of care, particularly evident in the larger teaching and private hospitals in the cities of India. As a related professional development, in 1993 the Indian Society of Critical Care Medicine (ISCCM) was formed, which currently has around two thousand members.³

The concept of respiratory care, including mechanical ventilation was still underdeveloped. Initially, a volume-cycled Beaver’s ventilator and later a Bird’s ventilator were used. Critical care beds in the large public teaching hospitals generally constitute 5-8% of the total bed strength. At advanced centres in large cities, the ICU bed strength varies between less than 5% of the total hospital beds in majority of hospitals, to near 10% in selected few hospitals. Large public hospitals (e.g., the All India Institute of Medical Sciences, Delhi, and some corporate/chain hospitals in the metropolitan cities/state-provincial capitals of the country) have separate medical, surgical, paediatric, cardiac, cardiothoracic, neurology, paediatric and neonatal ICUs. Most hospitals have all/broad purpose ICUs or, at most , medical, surgical, and coronary care units.

The number of ICU beds available is disproportionately low, both in private as well as public hospitals. Obtaining a bed in ICU is quite often difficult for critically ill patients. Owing to shortage of ICU beds, only the most critical of the deserving patients are provided ICU care, that could contribute to high mortality inside the ICU as well as outside the ICU (in the wards). There appears a strong need to increase the ICU beds to at least 10% of total beds in all hospitals; and even upto 15-20% in some leading public as well as private tertiary care centres. Shortage of ICU beds has slowed the pace of cadaver organ transplant program adversely. In India, cadaveric renal transplantation accounts for less than 1% of total renal transplantations.⁴ Shortage of ICU beds limits the protocols to be followed for brain dead patients for organ harvesting. Success of cadaver organ transplant program may become possible by creating new and exclusive ICUs for brain dead patients identified for organ harvesting, under the concerned departments, e.g. nephrology.

The care in Indian ICUs has evolved from cardiac to multi-system diseases. Initial ICUs were Cardiac Care Units, where deaths due to ventricular fibrillation could be prevented by DC shock, and temporary transvenous pacing could be done for heart blocks. In later years, the scope of ICUs includes thrombolysis in acute myocardial infarction (AMI), primary and rescue angioplasty, primary coronary artery bypass surgery, congenital heart surgeries in high risk underweight babies. Swan Ganz catheterization has ensured better measurements of pulmonary capillary wedge pressure and appropriate differentiations into causes of dyspnoea predominantly cardiac or respiratory and advanced precise interventions and mechanical ventilation.

Conventionally, the ICUs are led/manned by respective medical or surgical specialty e.g. coronary, respiratory, medical, neurological, neurosurgical, general surgical,
anaesthesia, paediatric, neonatal, burns and dialysis units. The newer generations of critical care physicians, popularly known as ‘intensivists’ undergo training to cater to multi-specialty patients. The paediatric and neonatal ICUs have come primarily from major teaching hospitals, and partly in some hospitals in the private sector. The newest ICU set up emerging in some advanced tertiary care hospitals is the emergency or acute care units, located in the casualty or emergency departments. These emergency intensive care units cater to first 24 hours of aggressive treatment, monitoring and stabilization of diverse emergencies, and seem to have significantly reduced the mortality, especially in patients with Acute Myocardial Infarction/ACS, Cerebrovascular Stroke, Adult Respiratory Distress Syndrome (ARDS) arising out of diverse aetiologies and poisonings.

The ICU patients across the country show peculiar and distinct trends. During monsoon, 70-80% of patients are of infectious diseases (tropical febrile emergencies e.g. malaria, leptospirosis, dengue). Lifestyle related metabolic diseases and consequent critical situations are on the rise, e.g. diabetes, cirrhosis, uraemia. Consistent with the general demographic trends, 30-40% of patients in ICU are elderly, with inherent features of difficult weaning, prolonged stay and refractoriness to standard line of treatment. Nosocomial infections due to multiple vascular accesses and tubings, catheterisations are clinical entities of concern, as are fungal infections in immunocompromised hosts such as those with HIV/AIDS, uncontrolled Diabetes Mellitus further accentuated by usage of potent antimicrobials.

The infrastructure and care in ICUs across the country is varied. Advanced units with proper infrastructure are available at teaching hospitals and major private hospitals. On the other hand, small time set up units with just basic ‘monitor only’ facility are apparently numerous in nursing homes and small hospitals, where ICUs exist in the most elementary and somewhat crude situations. Monitoring, certification and adherence to basic/defined norms is obviously necessary.

Overall, there are few critical care units in the country that are well equipped and have the expertise to use modern, sophisticated technology to the patient’s advantage. Many units are poorly equipped for economic reasons, and a few units are reasonably well equipped but lack the comprehensive equipment and/or the expertise to use it with efficiency and discretion. The scenario is slowly changing for the better in terms of technology and expertise.

The cost of ICU care in a tertiary care centre in India (in 1991) was reported to be Rs. 3200 per patient ($167.70). Staffing, intravenous fluids, and drugs accounted for 75% of the cost of ICU care, whereas 15% accounted for laboratory investigations and 6.9% for disposables. The cost of ICU care is rising steadily owing to costly equipments and manpower in better ratios. However, the ICU care of high quality is available in teaching hospital at highly subsidized cost to the patients; though the ratio of nursing staff in government hospitals tends to be sub-optimal.

Critical care units in India face many challenges. Laws/regulations by the government or the local and national authorities that determine the standards or efficacy of a critical care unit need to be in place. More organized formal training for physicians or nurses in critical care is necessary today, more than ever before. ICU care is poor or nonexistent at district hospitals in rural India, which cater to 80% of the population. Standard protocols and working SOPs for the staff are both essential and crucial.

While the concept of the intensive care unit has gained widespread acceptance amongst medical professionals, hospital administrators and the general public, recognition of the need and role for doctors specializing in intensive care medicine, has lagged behind. Many large studies world over suggest better outcomes in ICUs run by full time dedicated intensivists. Consultant intensivists have been demonstrated to improve outcomes in terms of morbidity, mortality, length of stay and costs. Nursing staff have a more specialized role to play in the ICU set up with a higher nurse to patient ratio.

The future directions for developing high quality ICU care in India include upgradation of ICUs, especially in the less organized sector; increasing the ICU beds to 10-15% of total hospital beds in public as well as private hospitals; defining national or state norms for ICUs; regulating and licensing of ICUs; accreditation from competent government agency; training of ICU nurses and Intensive care physicians; technology sharing with developed countries, funding programs in collaboration with WHO, ICMR, DBT, NGOs; use of information technology for patient care, training and research. Setting up acute care units in emergency departments greatly reduces the door to intervention time and has the potential to revolutionize the management of diverse emergencies both infectious and non-infectious.

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REFERENCES