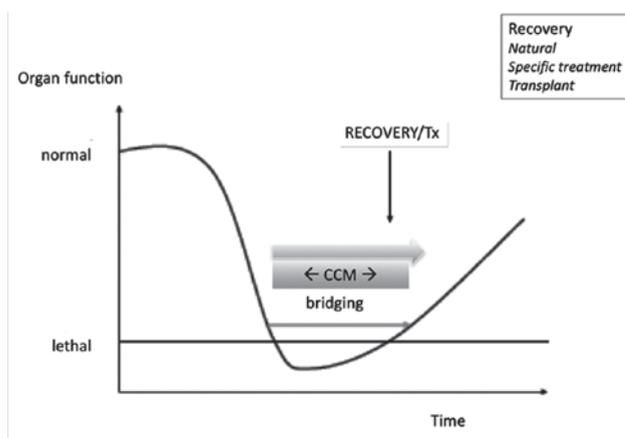


From the Desk of the Editor

Nurturing the Critical Care Concept

Chulananda Goonasekera and Ross Freebairn

Critical illness arises when an organ injury from whatever the cause leads to organ failure. If we do not support the failing organ function, the situation turns lethal. Improving survival and outcome of these patients has been the impetus for critical care specialty development. So much so, today it has become a health care delivery process that demands highly skilled providers on-site 24/7 (critical care specialist doctors and nurses, physiotherapists, pharmacists, and so on). Further, it is an organizational framework that balances conflicting treatments whilst promoting safe and efficient application of appropriate and timely individualised care whilst minimizing errors. Critical care medicine is therefore the 'bridge' that sustains life in grim circumstances of illness while either the original insults self resolves, definitive treatment have time to work, or both, and the bodies organ functions have resolved sufficiently to allow recovery independent of extraordinary support. It embodies more than a collection of treatments. The respective referring specialists also work hand in hand to resolve the original insult and its implications during this 'borrowed' time in life although, in most cases, natural recovery takes place. The service not only looks at the clinical effectiveness but also other aspects of care such a safety, patient experience and environment. The "optimisation of recovery" is the therapeutic objective of critical care medicine rather than mere "survival".



Sadly, we in developing countries have wasted time debating the nuances of whether this is a 'supra' or a 'sub' specialty, instead of promoting training of doctors and nurses for critical care using multi-disciplinary resources available to us. This is fundamental for the eventual establishment of a critical care specialist-training pathway. The need for competent doctors and nurses on-site cannot be replaced via tele or remote ICU systems, providing surveillance alone¹ as the rectification of the abnormalities detected is often urgent. Enthusiastically promoting relevant teaching and training for doctors and nurses is paramount at intermediate and specialist level.

The key for its acceptance as a speciality in a country also lies with the practising critical care clinicians themselves. Their knowledge, skills and attitude form the base. More importantly, their ability to lead a team with mutual respect to the opinions of all colleagues involved and a commitment for equality in serving the patients in need matters most for its sustainability especially in our resource limited settings with shortage of ICU beds.

Today, the role of the critical care specialist is not limited to the confines of the walls of the intensive care unit. The main goal of therapy is to improve survival of patients, minimise their need for admission or re-admission to intensive care and reduce the duration of stay in ICU through safe, effective and efficient supportive care.

Today, in the developed world, critical care specialists undergo an independent comprehensive training program with residential skill acquisition on the job. This not only assists much needed skills training under pressure but also benefits patients as their competencies at intermediate level adds to the quality of care delivered and improve patient outcomes. It is also a speciality that is so fundamental to assist other specialties institute their high-end therapies too. Therefore, it is an essential catalyst to promote healthcare advancement as a whole in a country. For example, there is no point embarking on a transplant programme to save lives of patients with severe heart or liver disease unless the critical care set-up is not up to the standard to deal with the perioperative supportive care they need.

Critical care specialists should be committed fulltime to the critical care services and not overlook this as a sub-speciality whilst catering full-time to a major specialty elsewhere such as anaesthesia or internal medicine. Dual speciality commitment that embraces 'open ICU' concept do not help critical care development. There is a lot to do, especially in a country where it is just beginning. We must move away from the out-dated model of dual commitment, a practice prevalent in developing countries. Hybrid models such as these that place variable emphasis on accountability and responsibility have dampened critical care advancement. The resulting inexperience, incompetence and inaction all add to the increased demand for the same service making available resources stretch further reducing its efficacy and popularity.

Critical care is not a modern concept. Egyptians had documented procedures resembling tracheostomies as early as 1500 BC. Hippocrates had commenced a form of organ support by cannulating the airway². During the Crimean War in the 1850s, Florence Nightingale separated wounded soldiers depending on the severity of their injuries to enhance resource utility and care making a revolutionary step towards modern critical care³. In 1952, Dr Ibsen, an anaesthetist saved lives during a polio epidemic in Copenhagen by installing

manual ventilator support and respiratory care via a tracheostomy³. This led to the opening of the world's first intensive care unit (ICU) in 1953⁴. Since then critical care has grown into a speciality in its own right^{5,6}.

Therefore, 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 installed dedicated critical care training programs that produced critical care competent doctors and nurses as a foundation promoting the efficient and cost-effective 'closed' intensive care practice^{7,8}.

The role of intensive care has rapidly expanded over the last 20 years with critical care staff being involved not only within the ICU, but also on general wards before and after discharge⁹. "Critical care without walls" is the theory applied to this idea, whereby critical care doctors and nurses offered their help and expertise to those who are acutely unwell on the ward^{10,11} promoting 'team care' as the optimal model¹². The purpose was to identify patients who are deteriorating and institute treatments early or support the continued recovery of previously critically ill patients and share critical care expertise and experience. Today, they play a significant preventative role in managing critical illness. Early recognition (and management) of the deteriorating patients not only reduces individual patient morbidity and mortality, but also minimises unnecessary burden on health systems^{13,14} and is the most effective form of critical care therapy to ensure best outcomes.

Multidisciplinary teams, consisting of experienced staff trained in intensive care, provides this critical care outreach service¹⁵ including installation of early warning systems (EWS)¹⁶. The National Institute for Clinical Excellence (NICE) recommended that all hospitals should have a physiological "track and trigger" system, with multiple or aggregated weighted Scoring systems that allowed a graded response¹⁷. The evidence to support the best EWS model is still evolving¹⁶. Perhaps our focus should move to identify those patients who are likely to benefit from critical care rather than those who are likely to die⁵.

Intensive care units, rapid response teams and patient at risk services do not develop by simply by appointing a director, placing a placard on the door, and expecting staff to have the necessary skills and training to provide quality acute care. Development of effective quality service requires a concerted effort to develop health professional's knowledge, skills and attitudes to recognize and manage critically ill patients. There are a wide variety of approaches to this ranging from the formal six year post graduate programs¹⁸ through interventions targeted at low resource settings¹⁹ to more generalizable short courses focused on a range of aspects of intensive care²⁰.

Education reduces patient harm. There is evidence in the Asian environment that the presence of an intensive care fellowship program is associated with lower hospital mortality in sepsis²¹. Education programs for intensive care

need to be appropriate for the resources available, be cost efficient, preferably with minimal capital outlay, be locally deliverable and sustainable. However opting to not provide specific education, and continuing to provide intensive care results in ineffective and expensive care without improvement in meaningful patient outcomes^{20,21}.

Regular audits are essential to find the optimal model of care that would provide best outcome for the patients as local culture, practices, resource availability and the stage of manpower development vary between countries. Simple national audits²² and re-audits²³ published in a local journal may convince governments in making political provisions necessary for the development of critical care services as was seen in Sri Lanka. Such studies identify deficits and defects in standards²⁴ and promote remedies²³.

The mission in critical care is to improve survival of patients, minimise their need for admission to intensive care and minimise the duration of stay in intensive care through safe, effective and efficient supportive care without aggravating organ damage. Therefore, the focus is patient centred and geared to fulfil the needs of the patient at the earliest opportunity and ensure their return to normal life with no residual damage.

Both nurses and doctors need additional competence based comprehensive training before managing critically ill patients. If we don't have this degree of competence available at the bedside, it's none other but patients who would suffer. Losing a breadwinner of a family this way from a preventable cause is a tragedy, needless to say the unbearable loss to the family and the country as a whole. Education is the key. That is why we need to ensure that critical care education is improved to the highest possible standard in our countries.



Chulananda Goonasekera
MBBS, FCA Ire, MD (Anaesthesiology), FRCP (UK), DCH (Lon), PhD (Lon), M Phil (Peradeniya), MRCPC (UK)
Consultant Anaesthetist and Honorary Clinical Senior Lecturer, Kings College Hospital NHS Trust, London and formerly Professor of Anaesthesiology, University of Peradeniya, Sri Lanka.
Email: cgoonase@gmail.com



Ross Freebairn
MBChB, Dip Obst, FANZCA, FRCPE, FCICM,
Consultant, Intensive Care Services,
Hawke's Bay Hospital, Hastings NZ,
President, Asian Pacific Association of Critical Care Medicine, Associate Dean, (Hawke's Bay), University of Otago Medical School (Wellington) Medical Director, NZ Air Ambulance Service, Adjunct Associate Professor, Chinese University of Hong Kong.
E mail : ross.freebairn@gmail.com

References:

1. Goran SF. A second set of eyes: An introduction to Tele-ICU. *Critical Care Nurse*.2010. 30(4): p. 46-55; quiz 56.
2. Szmuk P, Ezri T, Evron S, Roth Y, Katz J. A brief history of tracheostomy and tracheal intubation, from the Bronze Age to the Space Age. *Intensive Care Medicine*.2008;34(2): 222-8.
3. Munro CL. The "lady with the lamp" illuminates critical care today. *American Journal of Critical Care*, 2010. 19(4):315-7.
4. Berthelsen PG, Cronqvist M. The first intensive care unit in the world: Copenhagen 1953. *Acta Anaesthesiologica Scandinavica*. 2003; 47(10):1190-5.
5. Fletcher SJ, Cuthbertson BH. Outreach, epistemology and the evolution of critical care. *Anaesthesia*, 2010. 65(2):115-8.
6. Myburgh J. The evolution of intensive care medicine: a personal journey. *Critical care and resuscitation : journal of the Australasian Academy of Critical Care Medicine*.2017; 19: 287 – 289.
7. Multz AS, Chalfin DB, Samson IM, Dantzker DR, Fein AM, Steinberg HS. A "closed" medical intensive care unit (MICU) improves resource utilization when compared with an "open" MICU. *American Journal of Respiratory & Critical Care Medicine*, 1998. 157(5):1468-73.
8. Brilli RJ, Spevetz A, Branson RD, Campbell GM, Cohen H, Dasta JF. Critical care delivery in the intensive care unit: defining clinical roles and the best practice model. *Critical Care Medicine*, 2001. 29(10): 2007-19.
9. Bamgbade OA, The peri-operative care team: a model for outreach critical care. *Anaesthesia*, 2002. 57(10): 1028-9.
10. Mercer M and Robinson H, Outreach and the evolution of critical care. *Anaesthesia*, 2010. 65(7): 754.
11. Hillman K, Critical care without walls. *Current Opinion in Critical Care*, 2002. 8(6): 594-9.
12. Pronovost PJ, Holzmueller CG, Clattenburg L, Berenholtz S, Martinez EA, Paz JR ET AL. Team care: beyond open and closed intensive care units. *Current Opinion in Critical Care*. 2006; 12(6): 604-8.
13. Molina JA, Seow E, Heng BH, Chong WF, HoB. Outcomes of direct and indirect medical intensive care unit admissions from the emergency department of an acute care hospital: a retrospective cohort study. *BMJ Open*, 2014. 4(11): e005553.
14. Santamaria JA, Tobin A, Holmes J. Changing cardiac arrest and hospital mortality rates through a medical emergency team takes time and constant review. *Critical Care Medicine*, 2010. 38(2): 445-50.
15. Rowe K, Fletcher SJ. Critical care outreach: a review of current practice and evidence. *Acute Medicine*.2010; 9(1): 8-12.
16. McGaughey J, Alderdice F, Fowler R, Kapila A, Mayhew A, Moutray M. Outreach and Early Warning Systems (EWS) for the prevention of intensive care admission and death of critically ill adult patients on general hospital wards. *Cochrane Database of Systematic Reviews*, 2007;18(3): p. CD005529.
17. Armitage M, Eddleston J, Stokes T; Guideline Development Group at the NICE. Recognising and responding to acute illness in adults in hospital: summary of NICE guidance. *BMJ*.2007;335(7613): 258-9.
18. Bevan R, Freebairn R, Lee R. College of Intensive Care Medicine: changes to intensive care medicine training. *Critical Care & Resuscitation*, 2014. 16(4): 291-3.
19. Haniffa R, Lubell Y, Cooper BS, Mohanty S, Alam S, Karki A et al. Impact of a structured ICU training programme in resource-limited settings in Asia. *PLoS ONE*. 2017; 12(3): e0173483.
20. Douglas AE, Holley A, Udy A, Lipman J, Gomersall CD, Joynt GM et al. Can learning to sustain life be BASIC? Teaching for the initial management of the critically ill in Australia and New Zealand. *Anaesthesia & Intensive Care*, 2010. 38(6): 1043-51.
21. Phua J, Koh Y, Du B, Tang YQ, Divatia JV, Tan CC et al. Management of severe sepsis in patients admitted to Asian intensive care units: prospective cohort study. *BMJ*.2011; 342: d3245.
22. Yatawatte A, Wanniarachchi C, Goonasekara C. An audit of state sector intensive care services in Sri Lanka. *Ceylon Medical Journal*, 2004. 49(2):51-4.
23. Fernando JLIN, Wickramaratne CP, Dissanayake RSB, Kolambage SH, Aminda MAU, Cooray NH. Studying current status of intensive care services in Sri Lanka. *International Journal of Critical Illness and Injury Science*, 2012. 2(1): 11-6.
24. Briggs LA, Brown H, Kesten K, Heath J. Certification: a benchmark for critical care nursing excellence. *Critical Care Nurse*, 2006. 26(6): 47-53.