

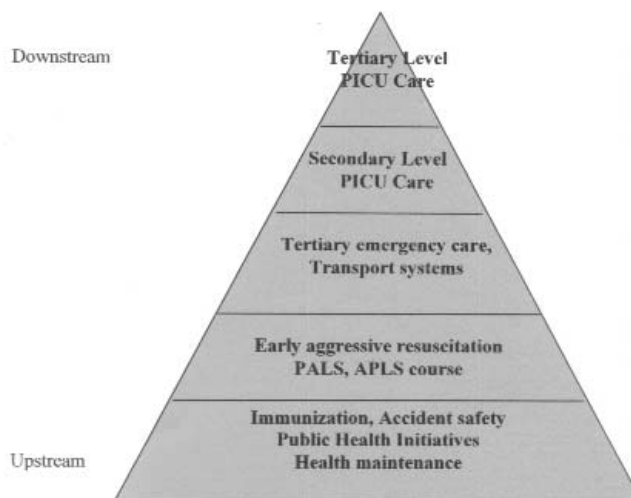
Paediatric Critical Care Stepping Beyond the Double Doors

N Kissoon

In most modern children's hospitals, the practice of paediatric critical care medicine occurs in a high technology, resource intensive environment "beyond the double doors". Few venture into this foreboding environment without good reason. However, recognition that critical illness is a dynamic process behoves us to step "outside" and attempt to decrease the need for our services "inside". Therefore, it gives me great pleasure to state that my colleagues (1) have gotten the message.

As Pierre and Augier state in a previous issue of the Journal, critical illness defines evolving pathophysiologic derangements which if uninterrupted may ultimately lead to death and disability (1). It is well recognized that regardless of the inciting insult, severe organ dysfunction will eventually lead to cardiorespiratory compromise and failure. Because frank cardiorespiratory failure is associated with dismal outcomes, to ensure the best outcomes, we need to be vigilant to detect and reverse the subtle signs of altered physiology which if left unchecked leads to a downhill spiral. The holistic approach involving health maintenance to complex tertiary care is cost effective and simply stated, prevention is better (and less expensive) than cure. The rigid hierarchies sometimes created by subspecialty disciplines is counter-intuitive to this philosophy. It therefore needs to be discouraged especially in a country in which many deaths are due to conditions that can be treated or prevented with minimal resources. It is heartening to see critical care specialists championing public health initiatives such as immunizations, accident prevention and safety measures, and health maintenance rather than having tunnel vision focused on high technological cures only.

There is no doubt that relevant public health programmes should be the foundation of healthcare in all societies. This approach to delivery of care in children is outlined in Figure 1. Public health initiatives and health maintenance should be the bedrock of the healthcare system and may stave off the need for upstream care. For those who suffer illnesses, the response should be graded depending on their physiological status. For instance, resuscitation and



Pyramid of Healthcare delivery

PICU: Paediatric Intensive Care Unit
PALS: Paediatric Advanced Life Support
APLS: Advanced Paediatric Life Support

Fig. 1: Spectrum of health services. Critical care – tip of the iceberg

stabilization early in cardiorespiratory compromise may alleviate the need for tertiary care. This is evidenced by better outcomes and less need for ICU care in children resuscitated early for septic shock (2). As we ascend the pyramid (Fig. 1) increasing resources will be utilized for the individual child who sustains a critical illness. However, the best outcome for the critically ill child is likely only if there is a seamless escalation of care complexity from bystander to tertiary in-hospital care (3) (Fig. 2). Effective bystander cardiopulmonary resuscitation (CPR) should give way to advanced cardiac life support teams for ongoing care and transfer to tertiary paediatric emergency department and/or paediatric intensive care units. The tertiary care paediatric intensive care unit (PICU) and emergency should have adequate subspecialty support and there should be facilities for post resuscitation and rehabilitation. In patients who die, there may be withdrawal of ventilatory support while organ retrieval is an option where organ transplantation is possible. A weak link in the continuum of care will undo any previous good. Therefore, I am in full agreement and echo the sentiment of my colleagues that we need to look beyond the walls of the PICU. For example, tertiary PICU care may be for naught if subspecialty support, emergency resuscitation and prehospital care are not available or substandard.

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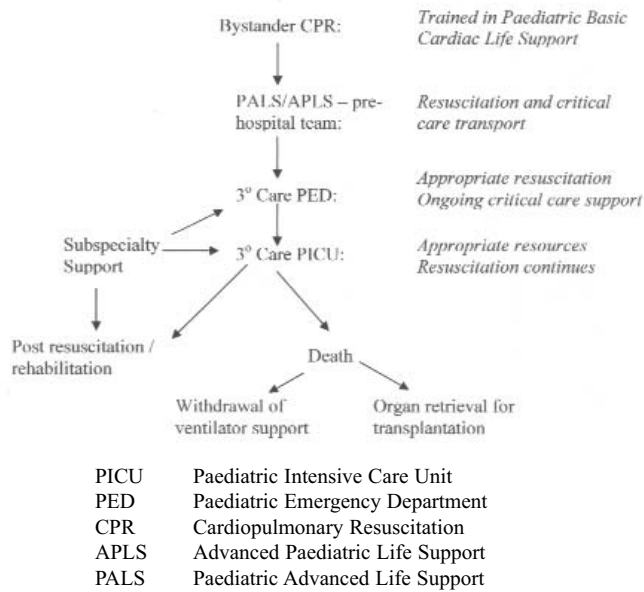


Fig. 2: Care of critically ill child
(Adapted: Kissoon N, *Ind J Pediatr* 2001)

The importance of public health initiatives is unquestioned. It is also understandable that there is unease with money spent on PICU's especially when the public purse is modest. The provision of critical care is a resource intensive undertaking and serves an unfortunate few. Pierre and Augier provide a reasonable estimate of the number of PICU beds needed in Jamaica (1). The number of beds available for intensive care of children varies depending on local resources, priorities and expectations of societies, and in Canada and the United States of America (USA) varies widely from province to province and state to state. In addition, the complexity of service provided varies depending on whether major cardiovascular surgery or transplant surgery programmes exist or whether critical care is being provided for medical problems only (4). Regardless of other models, it is chilling to see that there is a 20% refusal rate and 50% mortality among children refused ICU admission at the University Hospital of the West Indies. This statistic reveals that the critical care needs of children in Jamaica are tragically unmet. While immunization (eg meningococcus, haemophilus influenza) and safety campaigns can decrease intensive care workloads, new technologies, surgical techniques and better outcomes with PICU support can act to negate workload decreases. (5) Therefore PICU beds are and will always be needed and should be addressed.

The authors raised the question "but can we really afford to provide this kind of care, given the competing health needs and limited economy, infrastructure, and resources within the health sector?" I would rephrase this

question and ask "can we really afford not to provide this kind of care?" Intensive care dollars spent on children is money well spent because children for the most part are healthy and go on to live productive lives. It is not my intent to detract from the need of ICU resources for adults, and one would hope that resources should be available for all. However, it is our ethical imperative to discuss justice and the overwhelming societal benefits of providing critical care for all children (6). This is a debate that I am imminently unqualified to lead but strongly urge its undertaking.

The authors also raised the issue of teaching basic and advanced life support to caregivers across the spectrum. There is no doubt that training of these individuals would yield great benefits because the early recognition and treatment of respiratory failure or shock results in better outcomes if instituted early (2, 7). Another issue that should be addressed is the need for ongoing education to maintain or prevent deterioration of previously acquired skills. For those who care for critically ill patients on an occasional basis, the deterioration and loss of skills is of major concern. I agree that the training should start in the undergraduate and post-graduate years and continued updates should be a must. The emergence of simulator technology and e-learning may make this undertaking less onerous.

In summary, the discussion should be how best to provide the full spectrum of care for children as outlined in Figures 1 and 2. This endeavour calls for abandoning our discipline specific perspectives and adopting a holistic approach to children's care. We need to disregard "could we or should we" and discuss "how will we". The discussion should involve but not be limited to public health experts, paediatricians, paediatric critical care specialists and bureaucrats who control the public purse. Ultimately, society will be judged by how we treat our most vulnerable members. It is a responsibility that we should shoulder with unwavering determination and steadfast purpose.

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