

## EDITORIAL

# Paediatric Critical Care in Bangladesh: Current Status, Challenges and Future Directions

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### Introduction

Pediatric critical care grew in the face of advances in surgical and medical subspecialties, and the development of sophisticated life support technology. Since the origin of the first dedicated paediatric intensive care units in 1950s, the field of pediatric intensive care has been expanding and sprouting new sub specialties.<sup>1,2</sup> A number of factors led to the development of the subspecialty of paediatric critical care medicine. Rapid advancement of adult respiratory intensive care, neonatology and neonatal intensive care, paediatric general surgery, paediatric cardiac surgery, and paediatric anesthesiology during 1950s led to the emergence of paediatric critical care.<sup>3</sup> Over the years hundreds of Paediatric ICU established in academic institution, children hospital and many community hospital worldwide.

In Bangladesh paediatric critical care medicine (PCCM) is an emerging field facing numerous challenges, including limited infrastructure, workforce shortages, and high patient loads. Despite these obstacles, recent initiatives and studies indicate progress in establishing and improving paediatric intensive care units (PICUs). The provision of critical care for children in Bangladesh has historically been limited, with the first dedicated PICU established in 1992 at Dhaka Shishu (Children) Hospital. Currently, only a few hospitals, primarily located in Dhaka, offer PICU services, reflecting the nascent stage of PCCM in the country. The majority of PICUs are concentrated in urban centers, particularly in Dhaka, leading to disparities in access for populations in rural and peripheral regions.<sup>4</sup> This urban-centric distribution poses significant challenges in providing timely critical care to children nationwide.

### Challenges in Paediatric Critical Care

There is wide gap between the developed and developing countries regarding paediatric critical care. The scarcity of PICUs outside major cities, coupled with inadequate equipment and facilities, hampers the delivery of effective paediatric critical care in Bangladesh. Many hospitals lack essential diagnostic tools and monitoring equipment necessary for managing critically ill children.<sup>5</sup> Due to a lack of resources critical care inadequacy cannot be solved within a short span of time.

There is a significant shortage of trained paediatric intensivists and critical care nurses. Only a few institutions offer specialized training in PCCM, leading to a reliance on general paediatricians and nurses without specific critical care expertise.<sup>6</sup>

Nosocomial infections remain a major concern in PICUs which interfere outcome. The rapid emergence and dissemination of antimicrobial resistant microorganisms in intensive care units (ICUs) worldwide constitutes a serious problem now a day. Mamun et al<sup>7</sup> in paediatric cardiac ICU of Bangladesh Shishu Hospital & Institute and Hasan et al<sup>8</sup> in cardiac ICU of National Heart Foundation & Research Institute identified multidrug resistant organisms in their intensive care with resistance to Carbapenems also, which is alarming.

Despite these challenges, efforts to establish specialized units, such as paediatric cardiac intensive care unit, paediatric respiratory intensive care unit, paediatric nephrology intensive care unit, paediatric surgical intensive care unit have shown promises. Bangladesh Shishu Hospital & Institute model for a paediatric cardiac ICU in a low-resource setting serves as a potential blueprint for similar initiatives.<sup>9</sup>

## Future Directions

To advance paediatric critical care medicine in Bangladesh, the following steps are recommended:

- Infrastructure development: Expand PICU services beyond major urban centers to improve accessibility.
- Workforce training: Establish and strengthen specialized training programs for paediatric intensivists and critical care nurses.
- Infection control measures: Implements and enforce infection prevention protocols to reduce nosocomial infections.
- Policy and funding support: Increase investment in paediatric critical care medicine infrastructure and services.
- Research and data collection: Promote research to inform evidence-based practices and policy decisions.

## Conclusion

Paediatric intensive care in Bangladesh remains in its infancy. Although significant challenges persist, recent developments signal steady progress. Delivering optimal care in the face of limited resources and a shortage of trained personnel requires effective teamwork, perseverance, and dedication. Strategic investments in infrastructure, workforce development, and infection control are essential to improving outcomes for critically ill children. Collaborative efforts among the government, healthcare institutions, and international partners will be vital to advancing paediatric critical care medicine in Bangladesh.

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