Impact of '*The Intensivist*' in the PICU

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Pediatric intensive care unit (PICU) is a specialized hospital unit dedicated to the care of critically-ill children – those at extremely high risk for organ failure and death. Several studies show that organizational factors, including staffing and having trained intensivists, can affect patient outcomes in the PICU [1, 2]. High-intensity ICU physician staffing [mandatory intensivist consultation or closed ICU (all care directed by intensivist)] compared to low-intensity physician staffing (no intensivist or elective intensivist consultation) has been reported to reduce hospital and ICU mortality, and ICU and hospital length of ICU stay [1, 3, 4]. However, the finding is not consistent across studies [2–4].

Kesici et al. [5], in this issue of the journal, have retrospectively evaluated the effects of an intensivist on the process of care and patient outcomes in a pediatric intensive care unit (PICU) in a middle-income country [5]. An in-house critical care trained intensivist can improve the care of severely ill children. Greater knowledge, experience, and the skills of the attending intensivist may lead to early diagnosis, timely resuscitation, appropriate and immediate interventions. An intensivist, by direct communications, may improve patient satisfaction and reduce miscommunication with caregiver staff. However, the development of house staff independence in decision making could be potentially adversely affected by direct intensivist involvement [6, 7].

In the index study [5], the authors observed that management of PICU by an intensivist resulted in more than 2-folds increase in PICU bed occupancy and reduction in mechanical ventilation duration by 59%. Presence of intensivist, decreased the length of stay, reduced number and rate of

nosocomial infections, and reduced the mortality rates by 2.18 times. Several previous studies had shown mixed results [1–4]. Wilcox et al., in a recent systematic review and meta-analyses, including 52 studies, concluded that high-intensity staffing is associated with reduced ICU and hospital mortality. However, they did not find a low mortality benefit of 24-h in-hospital intensivist coverage within a high-intensity staff model ICU [6]. Apart from the intensivist, other organizational factors such as basic care practices, interprofessional team rounds, nurse-led quality initiatives, type of ICU, and decades of research also affect PICU outcomes [6]. Costa et al., in a recent cohort, found that high-intensity daytime physician staffing in the ICU did not significantly reduce mortality [2]. However, it was the same database used from which Wallace et al. [3] demonstrated that night-time intensivists improved mortality in ICUs with low-intensity daytime intensivist physician but not in ICUs with high-intensity daytime intensivist physician [3].

In the index study, in the second phase of the study (with intensivist) majority of admissions in PICU were from ambulance services (57.7%) and, inpatient transfer to PICU decreased significantly as compared to the first phase (28.7% vs. 53.6% respectively) of the study [5]. Inpatients are more likely to be severely ill as compared to patients brought by ambulance because of complications arising during the stay such as nosocomial infections, progression of respiratory distress, shock, non-response of primary illness to therapy or developing cardiopulmonary arrest during the stay. The mortality risk score however, was comparable between the groups. Terminally ill inpatients were not transferred to PICU during the second half of the study. These factors might have contributed to lower mortality in the second phase of the study.

The American College of Critical Care Medicine task force on models of critical care recommend - that an intensivist led high performing, multidisciplinary team dedicated to the ICU should be an integral part of effective care delivery. By using standardized protocols, including care bundles and institutional support for comprehensive quality improvement, high-quality ICU outcomes may be achieved [7].

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To summarize, an intensivist led team in the PICU may be associated with improved clinical outcomes such as reduced length of stay and mechanical ventilation, reduced number and rate of nosocomial infections and reduced mortality rates particularly in resource-limited settings.

Compliance with Ethical Standards

Conflict of Interest None.

References

1. Pronovost PJ, Angus DC, Dorman T, Robinson KA, Dremsizov TT, Young TL. Physician staffing patterns and clinical outcomes in critically ill patients: a systematic review. *JAMA*. 2002;288:2151–62.
2. Costa DK, Wallace DJ, Kahn JM. The association between daytime intensivist physician staffing and mortality in the context of other ICU organizational practices: a multicenter cohort study. *Crit Care Med*. 2015;43:2275–82.
3. Wallace DJ, Angus DC, Barnato AE, et al. Nighttime intensivist staffing and mortality among critically ill patients. *N Engl J Med*. 2012;366:2093–101.
4. Gupta P, Rettiganti M, Rice TB, Wetzel RC. Impact of 24/7 in-hospital intensivist coverage on outcomes in pediatric intensive care: a multi-center study. *Am J Respir Crit Care Med*. 2016;194:1506–13.
5. Kesici S, Bayrakci B. Impact of leadership of trained intensivist in pediatric intensive care unit in a middle income country: an uncontrolled before-after study. *Indian J Pediatr*. 2020. <https://doi.org/10.1007/s12098-019-03154-5>.
6. Wilcox ME, Chong CA, Niven DJ, et al. Do intensivist staffing patterns influence hospital mortality following ICU admission? A systematic review and meta-analyses. *Crit Care Med*. 2013;41:2253–74.
7. Weled BJ, Adzhigirey LA, Hodgman TM, et al. Critical care delivery: the importance of process of care and ICU structure to improved outcomes: an update from the American College of Critical Care Medicine Task Force on Models of Critical Care. *Crit Care Med*. 2015;43:1520–5.

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