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# Clinical Profile and Outcome in a Paediatric Intensive Care Unit in Pakistan

Anwarul Haque and Surraiya Bano

## ABSTRACT

Paediatric critical care medicine is a relatively new subspecialty in Pakistan. The clinical profile and outcomes of children admitted in the PICU (paediatric intensive care unit) were retrospectively reviewed from January to December 2007. Mean age of the studied 314 patients was 24 months; 37% were less than one-year-old and 66% was male. Mean PRISM score was 13.2. There was almost equal distribution of medical (46%) and surgical (54%) cases. Ninety percent of patients received mechanical ventilation, while more than 50% received vasoactive drugs. The rate of nosocomial infection was 4.7%. The average length of PICU stay was 3.2 (1-49) days. The overall mortality rate was 14%. The results are encouraging and efforts should be made to establish more PICUs.

**Key words:** Paediatric. Intensive care unit. PRISM score.

Pediatric Intensive Care Unit (PICU) plays a very important role in the care of critically-ill or injured children. The goal of PICU is the surveillance and support of vital organ function in critically-ill or injured children who are at risk for organ dysfunction.<sup>1</sup> Advances in knowledge and technology of medical science have dramatically improved the prognosis for the critically-ill children. Numerous conditions that were previously fatal are now treatable. The specialty of paediatric critical care medicine has grown and matured over 30 years in the developed countries.<sup>2</sup> There are several reports on the outcome of PICUs from developed countries, but only few reports are available from Pakistan.<sup>3-5</sup> This report describes the clinical profile and outcomes of patients admitted in a PICU at the Aga Khan University Hospital, over one-year period.

The medical records of all PICU admissions from January to December 2007 were reviewed. All newborn and NICU babies were excluded. The number of paediatric admissions to the ICU ranged from 72 to 132 per year and the mortality rate ranged from 25-40% from 1993 to 2005 (unpublished data). In September 2006, PICU was reorganized and made functionally independent under full-time paediatric intensivist (AH). The nurse to patient ratio was 1:1. This study was approved by Ethical Review Committee of AKUH. Data included basic demographics, primary admitting diagnosis, admission source, PRISM III score and

prevalence of nosocomial infections as defined by NISS,<sup>7,8</sup> ICU days, and in-hospital mortality were recorded from medical records. Descriptive statistics were used to express data as means with range or percentage as appropriate.

During the study period, 314 children were admitted in PICU. Sixty-six percent (220) were male. The mean age was 24 months (ranging from 1 month to 14 years) and 37% (123/314) were less than one-year old. Emergency medical admissions (46%) were almost equal to surgical admissions (54%). Majority of the patients (65%) had severe malnutrition below the 5th percentile for weight for age. Table I depicts the characteristics of patients. There were 112 cases (34%) of cardiac surgery. The major diagnostic categories of medical patients were neurological (10%), respiratory (10%) and cardiac (8%). The mean PRISM III score was 13.2 (3-39). The average length of PICU stay was 3.2 (ranging from 1 to 49) days. The bed occupancy rate was 90%. Ninety percent of patients received mechanical ventilation, while more than 50% received vasoactive drugs.

**Table I:** Patients characteristics.

Variables	Numbers
Admissions	314
Mean age (months)	24
Age < 1 year	37%
Male (%)	60
Mean PRISM III Score	13
PICU length of stay (days)	3.2
Mortality (%)	14

There were 45 deaths giving overall mortality of 14%. The patients (23/45) transferred from ward had highest mortality as compared to those who were admitted either from Emergency Room or Operation Room due to late presentation at the height of their illness with maximal physiological derangements. There was no

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mortality related to paediatric major trauma including severe traumatic brain injury in PICU. The rate of nosocomial infection was 4.7%. Bloodstream infection from central venous catheter (mostly placed in femoral vein) and ventilator associated pneumonias were the main sites of infections in patients with nosocomial infections.

Paediatric intensive care medicine is a relatively new sub-specialty in Pakistan. Recently, there has been increase in health awareness which lead to increased demand of PICU. Few studies have described the characteristics of PICUs from Pakistan. The reported mortality rate was 22-29% and the rate of nosocomial blood stream infection was reported as 15%.<sup>4-6</sup> The overall mortality rate in this setting was 14% and comparable to other reported PICU studies from India and Malaysia, which ranged from 12-18%.<sup>9,10</sup> The nosocomial infection in our PICU was only 4.7%, which is still high and most likely due to non-compliance with infection control measures.

Several reports have shown that full-time trained critical care specialists in both adult and paediatric ICUs improve the quality of care and are associated with lower mortality and morbidity rates.<sup>10</sup> We have similar findings. There was marked reduction in mortality, shorter length of stay and increase efficiency of our PICU since implementation of full-time paediatric intensivist (in press). Most of the PICUs still have no intensivist in Pakistan. The age and gender characteristics of these patients were similar to that noted in the studies done in other PICUs in this region. There was an almost equal number of medical and surgical patients as compared to western PICU, where majority of admission is from operating room.<sup>11</sup>

This study was a reflection of private sector rather than public sector which represent a more realistic picture and authors acknowledge this limitation.

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