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Should critically ill children be managed in paediatric intensive care units only?

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Dear Editor,

We read with interest the article of Cogo et al. [1] recently published in *Intensive Care Medicine*. The authors report the outcome of 1,265 critically ill children admitted to 124 adult intensive care units (ICUs) in Italy between 2003 and 2007. By using the paediatric risk of mortality score (PRISM), they compare the standardized mortality ratios (SMRs) of the study group with that of a historical control group of 1,533 paediatric patients admitted to 26 Italian paediatric intensive care units (PICUs) between 1994 and 1995. The paper alludes to potential differences in the quality of care provided to critically ill children, once they are assisted outside of specialized units. By observing that the SMR in children admitted to adult ICUs was virtually identical to that reported 10 years earlier in paediatric ICUs, Cogo et al. [1] speculate that the performance of adult ICUs treating paediatric patients may be lower than that currently available in PICUs, suggesting a role for centralization of paediatric care in more specialized units. Indeed,

requirements for high-quality care include adequate staff training and maintenance of their practical experience, especially in complex and heterogeneous patients such as critically ill children. These requirements are unlikely to be fulfilled in adult ICUs, particularly in those with few paediatric admissions and insufficient variation of case mix, where physicians and nurses may lack adequate paediatric exposure and training, to enable them to manage the complete age range of children requiring intensive care. Interestingly, in the study by Cogo et al., the average number of paediatric admissions was about 10/year in adult ICUs, whereas it was about 60/year in the historical group of PICUs. Actually, a possible relationship between patient volume and outcomes has been studied in different settings, including neonatology and paediatric cardiac surgery, generally documenting improved outcomes from greater volume [2, 3]. Recent studies in paediatric critical care have confirmed improved outcomes at high-volume centres. Tilford et al. [4] studied over 11,000 admissions in 16 PICUs and found a severity-adjusted odds ratio of 0.95/100 patients admitted per year as well as a decreased length of stay in high-volume units. In another study, involving 32 PICUs, high-volume units showed lower severity-adjusted mortality and shorter lengths of stay compared with low-volume units [5]. Indeed, if tertiary units are proven to have better outcomes than nontertiary units, then a programme of development of “regional” units for centralizing paediatric intensive care would be appropriate.

However, although theoretically desirable, it may not be practical to refer all critically ill children to

tertiary PICUs, particularly in very large countries or in healthcare systems lacking adequate transportation facilities. In fact, several countries, including many in the European area, still provide paediatric critical care trying to find a balance between available PICUs and adult ICUs with some paediatric commitment. Cogo et al. must be congratulated for their effort to bring our attention to such an important issue. Larger contemporaneous prospective studies will have to confirm their interesting observations.

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