

# Do all children in South Africa have access to dedicated paediatric intensive care?

South Africa (SA) is a country with limited resources, especially for medical care in the public sector. Availability of medical services varies greatly throughout the country. Very specialised care for children is available in most major centres in SA, although most have limited beds available.

Away from these major centres, paediatric intensive care beds are limited and mostly consist of beds in combined adult and paediatric intensive care units (ICUs), or rather adult ICUs that admit children when necessary.

This problem is not limited to SA, as many hospitals in low- and middle-income countries do not have designated paediatric intensive care units (PICUs) with nursing personnel trained in paediatrics or an adequate nurse-to-patient ratio to care for critically ill patients. There is also a lack of appropriate paediatric equipment and monitoring capacity.

In the issue of *AJTCCM*, Jingxi *et al.*<sup>[1]</sup> report their experience of children ventilated in a non-PICU setting compared with children ventilated in a PICU. This was a retrospective analysis with some limitations, but the authors do demonstrate that critically ill children ventilated in a non-PICU setting in KwaZulu-Natal Province are more likely than those in a PICU to be malnourished, to require inotropes, and to have higher mortality. Mortality was significantly different between the non-PICU and PICU setting (46.3% v. 19.5%), which may be due to delayed access to medical services in these cases and the high rate of malnutrition. On a positive note, duration of stay was significantly shorter in the non-PICU setting. Limitations of this study include dissimilar admission criteria between the different units and unobtainable severity scores to compare the outcomes of the children. The authors conclude that although increasing access to PICU bed availability is a long-term goal, the high mortality in the non-PICU setting highlights the need to optimise availability of resources in non-PICU wards, to optimise staff availability and training, and to improve primary healthcare services.

The number of ICU beds has increased during the SARS-CoV-2 pandemic. Furthermore, the pandemic has expanded the experience of medical personnel working with critically ill patients, but this has mostly affected the adult population and may not have a significant lasting effect on paediatric care.

The old saying that a child is not a small adult is very true in the critical care setting. There are many physiological differences between adults and children, and the disease spectrum is also very different. As an example, malnutrition in children admitted to an ICU, seen in a significant number of cases, increases morbidity and mortality.

The situation cannot easily be improved owing to a number of factors, which include but are not limited to the following: limited availability of PICU beds at academic units, significant patient transportation distances, lack of available air transport, delay in time from admission to initial contact with referral centres, inadequate nurse-to-patient ratios to care for critically ill patients, inadequate training of medical and nursing personnel assigned to critically ill children, lack of auxiliary services (nutritional, imaging, etc.), significantly less care during the evenings and over weekends, due to

the high trauma burden in many hospitals, and lack of appropriate equipment specific to the paediatric field.

Burkle *et al.*<sup>[2]</sup> have reported that healthcare providers at the onset of the 21st century share the awareness that, whereas significant inequities and gaps in health between the 'haves and have-nots' continue, there are overall trends towards improvement. This situation has been helped by the fact that there has been a dramatic drop in the incidence of infectious disease and trauma in the developed countries. There has also been a progressive decrease in under-5 mortality rates (U5MRs). In parts of the world, especially in developing and least-developed countries, the U5MR ranges, both in absolute numbers and in rate of reduction, and availability of resources differ greatly, as do the economic indicators. Encouragingly, and despite some areas where U5MRs are increasing, the overall trend is a substantial drop in U5MRs.<sup>[2]</sup>

The reality is that there are not enough resources in SA for dedicated PICUs in every part of the country, although the authorities in each region should strive to have at least one PICU facility in their region.

Because PICU beds are limited, children are either admitted to adult ICUs or are managed as critical care cases in paediatric wards. Two studies in Western Cape and Gauteng provinces showed good outcomes in patients managed in general wards, but this may not be applicable to the rest of SA.<sup>[3,4]</sup>

Dedicated training for both medical and nursing personnel is needed to improve outcomes in critically ill children. Outreach of the major units to peripheral areas will improve the transfer of skills to smaller, more inexperienced units. With the aid of telemedicine, Zoom or team meetings, ward rounds can be conducted remotely, and experts can easily be consulted about difficult cases. It is also important to supply peripheral units with clear management protocols, which are especially useful when junior doctors are on call. Setting time limits on the acceptable treatment duration for patients in peripheral units, before they should be referred to central units for escalated treatment, should be enforced through quality assurance. Effective and rapid transport pathways should be created to facilitate the transfer of critically ill children.

The Jingxi *et al.*<sup>[1]</sup> study highlights the need for a large prospective study to explore outcomes in critically ill children admitted to the PICU setting v. paediatric patients admitted to a general ward for critical care management, on a national level. Children managed in combined adult and paediatric ICUs for medical, surgical and trauma-related conditions should be included. Resources will remain limited, but it is important that proper dedicated care is offered to all children in SA, and PICU access should not be restricted to children living in cities with academic institutions.

**Pierre Goussard, PhD**

*Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University and Tygerberg Hospital, Cape Town, South Africa*  
pgouss@sun.ac.za

1. Jingxi XL, Tinarwo P, Masekela R, Archary M. Comparison of outcomes between children ventilated in a non-paediatric intensive care and a paediatric intensive care unit: A retrospective analysis. *Afr J Thoracic Crit Care Med* 2022;28(3):x-x. <https://doi.org/10.7196/AJTCCM.2022.v28i3.215>
2. Burkle FM Jr, Argent AC, Kissoon N, Task Force for Pediatric Emergency Mass Critical Care. The reality of pediatric emergency mass critical care in the developing world. *Pediatr Crit Care Med* 2011;12(6 Suppl):S169-S179. <https://doi.org/10.1097/PCC.0b013e318234a906>
3. Kruger I, Gie RP, Harvey J, Kruger M. Outcome of children admitted to a general highcare unit in a regional hospital in the Western Cape, South Africa. *S Afr J Child Health* 2016;10(3):156-160. <https://doi.org/10.7196/SAJCH.2016.v10i3.981>
4. Weiss SL, Peters MJ, Alhazzani W, et al. Surviving Sepsis Campaign international guidelines for the management of septic shock and sepsis-associated organ dysfunction in children. *Pediatr Crit Care Med* 2020;21(2):e52-e106. <https://doi.org/10.1097/PCC.0000000000002198>

*Afr J Thoracic Crit Care Med* 2022;28(3):102-103. <https://doi.org/10.7196/AJTCCM.2022.v28i3.272>

## Rare rib tumours: Where geography matters

Rib tumours are rare. Approximately 40% are malignant, often occurring at a young age. Often the patient presents with mild pain or just a swelling. The importance of an early diagnosis is that wide excision is often curative. Malignant tumours are more likely to present with pain as compared with benign tumours, which often present with swelling only. The important point, however, is that malignant tumours may be painless and benign tumours may cause pain.

All rib tumours should be considered malignant until proven otherwise or removed, as wide excision for both benign and malignant tumours is often curative.

Douni *et al.*,<sup>[1]</sup> in this issue, report on a rare cause of a benign rib tumour, hydatid disease, which should be considered in areas where hydatid disease is prevalent. They highlight the importance of a history, physical examination, and special investigations, followed by treatment.

### Geography matters!

A geographical history is part of good medicine. Medical geography is an important field because it aims to provide an understanding of health problems and improve the health of people worldwide, based on the various geographic factors influencing them.<sup>[2]</sup> The effect of location on health has been studied since the time of Hippocrates. Snow, in his important study of cholera in London in 1854, highlighted the effect of contaminated water.<sup>[3]</sup> COVID-19, considering its origin and the way it spreads, is a graphic example of geography and disease. In a study from the 1960s, areas of industrialisation, exploitation and dense populations have been shown to be related to high mortality rates. There are many factors to be considered such as remoteness from healthcare facilities, pollution, rainfall, environment, farming facilities and resultant nutrition.<sup>[4]</sup>

Hippocrates in 400 BCE said: ‘Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces for they are not at all alike, but differ much from themselves in regard to their changes. Then the winds, the hot and the cold, especially such as are common to all countries, and then such as are peculiar to each locality.

We must also consider the qualities of the waters, for as they differ from one another in taste and weight, so also do they differ much in their qualities. In the same manner, when one comes into a city to which he is a stranger, he ought to consider its situation, how it lies as to the winds and the rising of the sun; for its influence is not the same whether it lies to the north or the south, to the rising or to the setting sun.’ *On Airs, Waters, and Places*, (English translation by Francis Adams).<sup>[5]</sup>

To summarise, Hippocrates emphasises that geography makes a difference in healthcare.

Even in an endemic area where *Echinococcus* is common, involvement of ribs is rare. It is important, however, to consider this to enable the correct treatment to be offered. During the surgical procedure, care needs to be taken to avoid spillage of the echinococcal cyst into the surrounding areas.

**I Schewitz**, MB ChB, FCS

*Department of Cardiothoracic Surgery, University of Pretoria, Midrand, South Africa*  
[ivan@schewitz.com](mailto:ivan@schewitz.com)

1. Douni S, Sabur S, Elmine HT, et al. Hydatid disease of the ribs: An exceptional location. *Afr J Thoracic Crit Care Med* 2022;28(3):x-x. <https://doi.org/10.7196/AJTCCM.2022.v28i3.193>
2. Briney A. Medical geography: A history and overview of medical geography. <https://www.thoughtco.com/medical-geography-overview-1434508#> (accessed 15 August 2022).
3. Rosenberg M. A map stops cholera. <https://www.thoughtco.com/map-stops-cholera-1433538> (accessed 15 August 2022).
4. Subedi R, Greenberg TL, Roshanafshar S. Does geography matter in mortality? An analysis of potentially avoidable mortality by remoteness index in Canada. *Health Rep* 2019;30(5):3-15. <https://doi.org/10.25318/82-003-x201900500001-eng>
5. Burnell AC, Littre E, Cornarius J, van der Linden JA, Adams F. *Hippocrates on Airs, Water, and Places*. London: Wyman & Sons, 1881.

*Afr J Thoracic Crit Care Med* 2022;28(3):103. <https://doi.org/10.7196/AJTCCM.2022.v28i3.216>