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Generating region-specific paediatric sepsis data for Africa: An emergency medicine initiative in Tanzania

To the editor,

Sepsis is a serious, life-threatening condition with high paediatric morbidity and mortality [1–3]. High-quality data from low- and middle-income countries (LMICs) are lacking, especially in Africa, in part due to a paucity of research infrastructure, trained personnel, and research funding [4], as evidenced by the scant number of paediatric sepsis cohorts from sub-Saharan Africa (SSA) [5]. HIV, malaria, tuberculosis, malnutrition, and limited access to care frequently complicate sepsis management in LMICs. Without data that captures the characteristics, comorbidities and outcomes of LMIC populations, we cannot accurately risk stratify patients, nor develop appropriate triage systems or evidence-based treatment protocols. Guidelines must rest on a foundation of region-specific data, tailored to relevant populations, and include context-appropriate management strategies that take into account local resource limitations.

Septic children are frequently evaluated in emergency care settings, and the emergency centre (EC) at Muhimbili National Hospital (MNH) in Dar es Salaam, Tanzania is an ideal setting to study paediatric sepsis and build a research program. MNH is the single national referral hospital, the teaching hospital for Muhimbili University of Health and Allied Sciences (MUHAS), has the only emergency medicine residency training program in the country, and paediatric sepsis is common with approximately 200 children treated monthly in the EC. We created the Paediatric Sepsis Group – one aspect of a long-standing collaboration between MNH, (MUHAS), and the University of California, San Francisco – to characterise paediatric sepsis through the design and implementation of a comprehensive paediatric sepsis database, which captures patient characteristics, interventions received, and outcomes (mortality, length of stay, and morbidity). This required significant capacity building, infrastructure development and personnel training. The total cost to collect 12-months' worth of data, including infrastructure and training, was USD\$50,000, which was funded through a series of institutional pilot grants. Monthly, recurring expenses are USD\$3000 per month, which are primarily personnel costs. We created an in-country, functioning REDCap server and

trained 18 nurses in clinical research principles, ethical research practice, and data collection. This cadre of trained research personnel performs data collection 24 h a day, seven days a week and research shifts do not replace or interfere with clinical shifts, which ensures that clinical needs do not suffer. Secure data entry is performed using a Wi-Fi-enabled tablet and the open-source REDCap application. A dedicated research assistant tracks patients in-hospital and contacts guardians by phone at 28-days to determine post-discharge outcomes.

We are currently piloting the database to identify the most critical and relevant data points and refine it prior to implementation at district hospitals in Tanzania and sites across SSA. Data collection is ongoing, but in the first six-months, we have screened 4846 children: 1031 were eligible for inclusion and 1018 were enrolled. Next, we will use this region-specific data to develop context-relevant clinical guidelines. In the era of evidence-based medicine, we are urgently calling for resources, infrastructure and capacity building to generate high quality, regional data. African emergency care providers play an essential role in characterising the regional burden of disease and creating context-relevant, evidence-based clinical guidelines for the management of paediatric sepsis. Only then can we overcome the data gap that compromises the quality and safety of sepsis management in LMICs, and costs children's lives every day.

Conflict of interests statement

The author(s) declare no conflict of interest.

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