Quality of care for paediatric admissions: is a score-based approach viable?

Childhood mortality declined by 53% globally between 1990 and 2015.[1] This reduction has been attributed to multisectoral improvements and the introduction and expansion of routine immunisation programmes and implementation of standardised diagnosis and treatment guidelines.[2] If the Sustainable Development Goal (SDG) to end preventable newborn and under-5 deaths by 2030 is to be met, more sophisticated approaches to decision-making around the prioritisation of resources to children at higher risk of mortality, but still curable with proper treatment, alongside improvements in the general quality of care are needed.

The use of scores to direct or monitor individual patient care prospectively are not novel within health care, with examples from resource-rich settings such as the Paediatric Early Warning System (PEWS) score being widely implemented.[3] But this data-driven approach has not yet been broadly rolled-out for quality of care metrics in low-income settings, and could therefore pose an opportunity for improving paediatric outcomes. There are several challenges to getting score-based approaches from theory to implementation, a key barrier being the ability to apply them beyond the often small and non-representative populations in which they are developed. This raises questions on how well the scores will perform across a range of real-world settings. External validation, where the score is tested on a different sample of the target population, is strongly recommended but often beyond the scope of research groups.[4] Without this crucial step, it can be hard to convince policy makers of the utility and appropriateness of these tools, as it is often unclear how using these scores could affect resource allocation or clinical outcomes.

In *The Lancet Global Health*, Charles Opondo and colleagues[5] report on a large external validation of a previously developed score—the PAQC score[6]—which aims to retrospectively quantify the quality of care given to children admitted to hospital with pneumonia, malaria, and diarrhoea/dehydration in Kenya. Their validation included over 19 000 admissions from 25 geographically distributed hospitals, across a period of over 7 years. This varied dataset should therefore be

heterogeneous, providing a robust test for the score's performance. Opondo and colleagues found that a high score, corresponding to better diagnosis and adherence to treatment guidelines, was associated with lower odds of paediatric inpatient deaths and that a low score was associated with higher odds of inpatient paediatric deaths. These types of statistic, although somewhat un-nuanced, are crucial in supporting more sophisticated decision-making by policy makers and health-care managers.

Opondo and colleagues found that overall the hospitals in their study had mean PAQC scores ranging from 2·93 to 3·60 out of the possible 6 points, meaning that on average for paediatric pneumonia, malaria, and diarrhoea admissions only half of the recommended guidelines for diagnosis and treatment had been correctly completed and documented. This shows considerable room for improvement and the potential for a score like this to be used by health-care facility or programme managers to rank and then target facilities for more intensive evaluation, remedial action, and eventual reassessment. Crucial to this approach is the need for policies, processes, and resources that support quality improvement activities, when the gaps are identified.

For a score such as PAQC to have any meaningful impact, complete, reliable, and valid data need to be collected during routinely provided care. In many low-resource settings, routine medical records can be of poor quality and many settings lack standardised national systems. Opondo and colleagues note that Kenya has widely distributed national guidelines and that more than 95% of the data were generated from studies that enhanced clinical data collection practices, yet they report that 32% of admissions did not have complete enough data to calculate the PAQC score. In the absence of high-quality routine data, comparisons between facilities within a country would be challenging and across borders would be near impossible, unless a unified agreement on what constituted correct diagnosis and treatment for these common paediatric illnesses and definitions was reached. Although the WHO Integrated Management of Childhood Illnesses

(IMCI) guidelines have gone some way to achieving such agreement, with 75 countries having adopted them, most countries adapt these guidelines locally, making direct comparisons more difficult.[7]

This novel study, validating a score-based approach for quality of care evaluations, has shown promise as a standardised tool in paediatric admissions in a low-resource setting. However, if the power of a score such as PAQC is to be fully unleashed, comprehensive data system improvements are paramount. Although the SDGs include the goal of universal access to *quality* essential health-care services, the indicator measures coverage only and not quality.[8] Mandated and standardised capture of key diagnostic and treatment data, alongside vital registration systems that reliably record mortality outcomes, will be key in promoting quality of care. Therefore, policy and investment in data systems that can support routine reporting of quality of care metrics like PAQC, alongside evaluation and remediation of identified gaps, should be considered a key policy for sustaining reductions in paediatric mortality in low-resource settings.

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