More than 5 million children younger than 5 years die each year, mostly due to preventable causes.\(^1\) The Sustainable Development Goal aims to achieve an under-five mortality rate of less than 25 deaths per 1000 live births by year 2030, but the under-five mortality rate among low- and middle-income countries (LMICs) remains high at 66.1 deaths per 1000 live births.\(^2\) It is in this context that the study by Bassat et al\(^3\) on detailed understanding of the causes of 632 postneonatal deaths assumes significance. The study is important for 2 reasons. Bassat et al\(^3\) offer a novel postmortem approach with minimally invasive tissue sampling (MITS) to ascertain the cause of death. The MITS-based approach is a departure from the commonly used measures, such as verbal autopsy, clinical records investigation, or complete diagnostic autopsy. The value added by MITS could have been more compellingly demonstrated if the study had adopted a design where the efficacy and feasibility of MITS could be directly compared with other approaches.

The substantive contribution of the study by Bassat et al\(^3\) lies in the detailed assessment of causes of postneonatal deaths from 7 surveillance sites based in South Africa, Mozambique, Kenya, Ethiopia, Sierra Leone, Mali, and Bangladesh that are part of the Child Health and Mortality Prevention Surveillance (CHAMPS) Network. According to a recent population-based study, the rates of under-five mortality in the selected countries ranged between 124.3 (Sierra Leone) to 40.5 (Bangladesh) per 1000 live births, with most of the mortality burden occurring in the first 2 years.\(^2\) Instead of adopting the restrictive single cause framework, Bassat et al\(^3\) present an understanding of the causes at multiple levels from underlying to intermediate to immediate in an interconnected manner. Notwithstanding the geographic focus on sub-Saharan Africa (except for Bangladesh), a key finding that has relevance across a broader range of contexts is the identification of malnutrition as the most dominant underlying cause of death. In 46% of all studied deaths, children were severely underweight (a marker of severe nutritional deprivation\(^4\)). Alongside the overwhelming presence of nutritional deprivation that preceded the studied deaths, an infection was present in the causal chain in 87% of the studied deaths.\(^3\)

This commentary situates the study by Bassett et al\(^3\) in the larger context of the need to strengthen data systems in LMICs by moving from estimating deaths to counting deaths and argues for the need to move beyond the task of assessing the causes of child mortality in an academic vacuum and instead understand ways of identifying children who are at risk for the underlying and immediate causes.

### Death Counts When Counted

The COVID-19 crisis showed the power of real-time data to inform policy makers and compel them to take action, in addition to raising awareness of public health priorities in the population. It was not simply high-income countries (HICs) but many LMICs also managed to collect and release data on COVID-19 statistics on cases and deaths with consistent frequency. Yet, an up-to-date count of child deaths (or births) remains elusive in LMICs.\(^5\) In most LMICs there is no true count of child births and deaths available because of poor civil registration systems.\(^6\) Most policy deliberations on interventions to improve child survival are thus based on statistical estimates coming from sample-based surveys, with little ground validation. Sample-based estimates are useful but cannot be substitutes for actual counts. Robust civil registration systems are crucial for bringing accountability.
and equity to public health and polity in LMICs. Creating a publicly available real-time data infrastructure to track child births and deaths on a daily, weekly, or even monthly basis is well worth the effort, as it can accelerate the global elimination of preventable child deaths.

Linking Causes to Identifying At-Risk Children

The incomplete count of child deaths consequently impedes establishing the causal factors leading to a child’s death. Indeed, the small but detailed study by Bassett et al3 fills an important knowledge gap in this domain. However, and notwithstanding the value of MITS to ascertaining the multiple and overlapping causes of death, it is unclear how these assessments can be scaled up at the population level and be used in a timely manner to save a child’s life. Even though by definition the cause of death is ascertained after death, the challenge is to establish the underlying and immediate conditions leading to the cause and identify the at-risk population in a way that timely interventions can be made to save the child. Put simply, the academic exercise of establishing causes of death among children needs to be connected to the operational research of using this information for real-time practical intervention to prevent the majority (more than 80%) of the cases identified by Bassat et al3 as avoidable.

The agenda for establishing the causes of death should be intrinsically linked to counting every child along with the circumstances under which they are born, live, and die. For a large part, avoidable deaths among children are low in the context of HICs because nearly every child is counted and there are truly population-based (not sample-based) surveillance systems that provide measurements on children from their birth along with routine monitoring by pediatricians for the first few years after birth. In a useful insight, and underscoring the above reasoning, Basset et al3 quantified that nearly half of the studied deaths (46.8%) could have been avoided by optimal clinical management. Another quarter of the studied deaths could have been avoided if timely access to health care was present.

A Social Determinant of Health Approach for Improving Child Survival

A key finding of the study by Bassat et al3 that has relevance across a broader range of contexts is the identification of malnutrition as the single most prevalent underlying cause of death. Furthermore, an infection was present in the causal chain of events in 87% of the studied deaths. Notably, enhanced nutrition support was also identified as a critical prevention measure in one-fifth of the cases that could have avoided the fatal event. However, it seems somewhat narrow to describe nutritional deprivation and infection as underlying causes, and instead this conceptualization of the causal chain would benefit from a consideration of the social determinants of health perspective.

Presence of nutritional deprivation or infection does not occur in vacuum. While to some extent a clinical approach may help manage acute cases of malnutrition (eg, providing therapeutic food in a clinical or community setting for a limited period), the factors that lead to acute events of nutritional deprivation are related to the overall socioeconomic conditions of the household as well as the communities. For instance, in a study of correlates associated with anthropometric failure among children from 35 LMICS, low socioeconomic status remained the strongest and most consistent correlate of child undernutrition.7

In summary, improving the socioeconomic circumstances of the households where children live needs to be at the core of any child survival agenda. Policies related to poverty alleviation; livelihood generation programs; welfare programs, such as those related to food subsidies; and programs aimed at providing access to clean water and sanitation all become critical to ensure that lives are saved. It is these kinds of structural interventions ranging from improvements in sanitation, civil registration, milk purification, and institutional structures to monitor and reduce infant mortality that have played a crucial role in the decline in infant mortality seen in the United States in the early
1900s. One hundred years later, it is precisely the lack of concerted efforts in these basic infrastructures that impedes the child survival agenda in LMICs.

ARTICLE INFORMATION
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