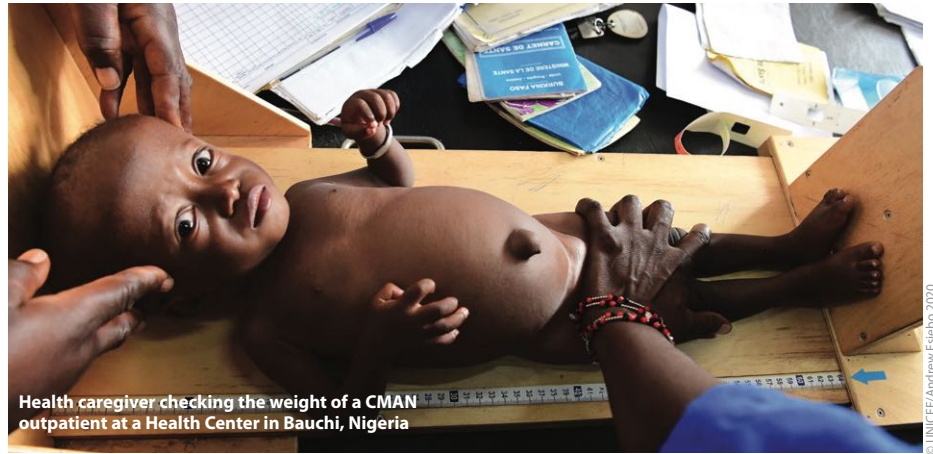


## Can children catch up from the consequences of undernourishment?

### Research snapshot<sup>1</sup>

**T**his review of the literature examines the possibility of recovery from undernutrition in early life in terms of linear growth, developmental epigenetics and child development. In this study, four criteria must be met to claim catch-up growth: a growth inhibiting condition is required (criterion 1) which causes a reduction in linear growth velocity (criterion 2). This period of growth inhibition is followed by alleviation of or compensation for the inhibiting condition (criterion 3) which subsequently leads to higher-than-normal velocity (criterion 4).

Identifying catch-up growth therefore requires looking at absolute height velocity, i.e., the change in height in cm with age, compared against the growth standard for a given age and sex. The common use of height-for-age z-scores (HAZs), sometimes referred to as “relative catch-up growth”, is incorrect. Studies examining catch-up growth using observational data or methods that do not cover the four criteria stipulated in this study are deemed by the authors as inaccurate and likely counterproductive. Be-



Health caregiver checking the weight of a CMAN outpatient at a Health Center in Bauchi, Nigeria

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cause recovery from linear growth retardation does not automatically lead to improved neurocognitive outcomes, the literature remains unclear as to whether children can actually recover from the broader consequences of undernutrition even when they recover from linear growth retardation.

The review of 11 adoption studies suggests that catch-up growth is biologically possible, even after 24 months of age, when children’s home environments are dramatically improved. Most interventions in low- and middle-income countries, however, do not achieve these dramatic improvements in conditions and therefore do not offer the conditions for full catch-up growth. The effects of undernourishment early in life

were found to be profound and irreversible across the three domains reviewed: linear growth, developmental epigenetics and child development.

The reviewed evidence confirmed the importance of ensuring adequate nutrition, health and responsive care from before conception and throughout childhood rather than attempting to correct consequences of undernutrition or to prove that its consequences can be corrected.

<sup>1</sup> Jef L Leroy, Edward A Frongillo, Pragya Dewan, Maureen M Black, Robert A Waterland, (2020) Can Children Catch up from the Consequences of Undernourishment? Evidence from Child Linear Growth, Developmental Epigenetics, and Brain and Neurocognitive Development, *Advances in Nutrition*, Volume 11, Issue 4, July 2020, Pages 1032–1041, <https://doi.org/10.1093/advances/nmaa020>

## Making the health system work for the delivery of nutrition interventions

### Research snapshot<sup>1</sup>



Child recovers from severe acute malnutrition after undergoing CMAM treatment programme at the Primary Health Care center in Binkola, Adamawa

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**T**he 2013 Lancet series on nutrition highlighted 10 nutrition-specific interventions that, if scaled up through national health systems, could significantly reduce child mortality associated with undernutrition. While there is substantial evidence of the efficacy and potential impact of nutrition-specific interventions, less is understood about how to deliver them at scale and the role of health systems in facilitating or hindering their success.

This paper describes the health system components required for the delivery of nutrition-specific interventions and explores how the framework could be used to identify opportunities for increasing coverage of nutrition interventions. For each of the 10 nutrition-specific interventions, implementation guidance was reviewed and information on the nature of the intervention (provision of drugs/supplements or counselling), delivery level (facility or community), workforce cadre responsible for the intervention (doctor, nurse or occasional trained provider/peer) and required supplies (drugs/supplements or counselling materials) was extracted. Flow diagrams were then developed to illustrate the delivery process for each intervention.

Nutrition-specific interventions were found to be delivered in one of four ways: (i) when nutrition interventions are intentionally sought out, (ii) when care is sought for other, unrelated interventions, (iii) at a health facility after active community case finding and referral and (iv) in the community after active community case finding. The nutrition community should consider the four health system components required for the success of its interventions: a skilled and motivated health workforce, an effective supply chain, demand for services and access to services. A strong health system can both provide health services and promote and facilitate care seeking for those services.

In addition to strengthening health systems, adjusting delivery processes to make better use of existing health systems as they are now should be considered by nutrition programmers. This may include increasing the number and frequency of interactions (for any reason) that people have with the health system, improving demand for, and access to, health services in general and enhanced pre-service and in-service training of health workers to ensure they use every patient interaction to assess, treat and counsel on nutrition-related issues.

<sup>1</sup> King, SE, Sawadogo–Lewis, T, Black, RE, Robertson, T. (2020). Making the health system work for the delivery of nutrition interventions. *Matern Child Nutr.* 2020:e13056. <https://doi.org/10.1111/mcn.13056>