BRIEF GUIDANCE NOTE

Age prioritization of nutrition interventions for child survival, growth and development in resource-constrained contexts

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Acknowledgements

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KEY MESSAGES

- ***Despite significant global declines in child mortality and malnutrition, many children still die from preventable causes, including undernutrition; these deaths are concentrated in the first two years of life.***
- ***Maternal and child nutrition programmes contribute to reducing child mortality significantly, but sometimes lack the resources and data needed to optimize population level impact.***
- ***Age prioritization is the deliberate dedication of resources to optimize coverage of nutrition interventions and actions among the youngest children who bear the highest risk and burden of malnutrition, morbidity and mortality.***
- ***Age prioritization enables preventive nutrition programmes to increase population level impact on child survival, growth and development for available resources.***
- ***Prioritizing the youngest children in contexts of resource scarcity is justifiable; however, programmes may consider other relevant risk factors when prioritizing delivery.***
- ***Age prioritization should be accompanied by coverage monitoring to ascertain whether programmes have increased their reach in prioritized population groups.***

Key issue: prioritizing delivery by age when resources are scarce

To prevent malnutrition in early childhood, nutrition programmes reach children with key evidence-based nutrition interventions that give every child the best chance to survive and thrive. In the last two decades, the scale-up of these programmes has contributed to reduce child mortality by half and child malnutrition by one-third. Despite these substantial declines, globally, just under 5 million children still die every year, mostly due to preventable causes. Undernutrition is the attributable cause of an estimated 45 per cent of all deaths in children under 5 years of age,[1] and the burden of child mortality is highly inequitable. Almost 2 million child deaths occur annually in the 47 countries that the United Nations describes as 'least developed'.[2] Far too many children are still missing out on the benefits of preventive and life-saving nutrition interventions.

Preventive and therapeutic child nutrition programmes address all forms of malnutrition and avert deaths in children. However, their coverage in low- and middle-income countries is often suboptimal and inequitable. This is sometimes due to lack of sufficient resources needed to achieve optimal coverage everywhere. In some countries, particularly those depending on external donor support, funding is unreliable, unsustainable, and declining. In many contexts, there are no or few reliable data to show where exactly to find the children at highest risk. When resources are limited and relevant data are scarce, nutrition preventive programmes must seek to optimize child survival, growth and development by prioritizing children or population groups most in need of nutrition interventions.

What is age prioritization?

Preventive programmes and policies aim to maximizing health and nutrition outcomes across the population rather than for the individual child. Since the epidemiology of mortality and malnutrition suggests that risks are more significant early in life, preventive programmes have traditionally focused on the youngest children. Five years has usually been the cut-off age after which interventions are deemed insufficiently beneficial to justify the costs. That does not mean that the risk of poor health and nutrition outcomes is zero after age 5 years, but rather that preventive interventions are more cost effective in children under 5 years of age.

When financial and human resources do not allow all children under 5 years to be reached, programmes can narrow the age range further and prioritize children under, for example 2 years of age.[3,4,5] This is because risks are higher in children under 2 years then in older children.

Age prioritization is the deliberate dedication of resources to optimize coverage of nutrition interventions and actions in the youngest children (i.e., those under 2 years of age), in contexts where resources are scarce. It enables programmes to focus attention and resources on the children that benefit the most, and thereby optimize desired survival, nutrition and development outcomes without increasing costs.

The brief focuses on three key areas in nutrition programming (micronutrient supplementation, home-based food fortification, and the early detection and treatment of children with severe wasting) and three interventions (vitamin A supplementation, small quantity lipid-nutrient supplements and multiple micronutrient powders, and community outreach for the early prevention, detection and treatment of child wasting).

What does the evidence say?

Research shows that deaths in children younger than 5 years of age are concentrated in the first two years of life. Studies have found an excess of mortality in the first month of life (neonatal mortality) and that most of the remaining under-five mortality happens during the period from 6 months to 23 months of age.[6] [7] Neonatal deaths make up 43 per cent of all under-five deaths, while as many as 39 per cent of under-five deaths (i.e., more than two-thirds of post-neonatal deaths) occur in the period from 1 month to 23 months of age. Only 18.5 per cent of deaths were at 2 years of age or older. No country had more deaths in children over age 2 than in children under the age of 2 years.

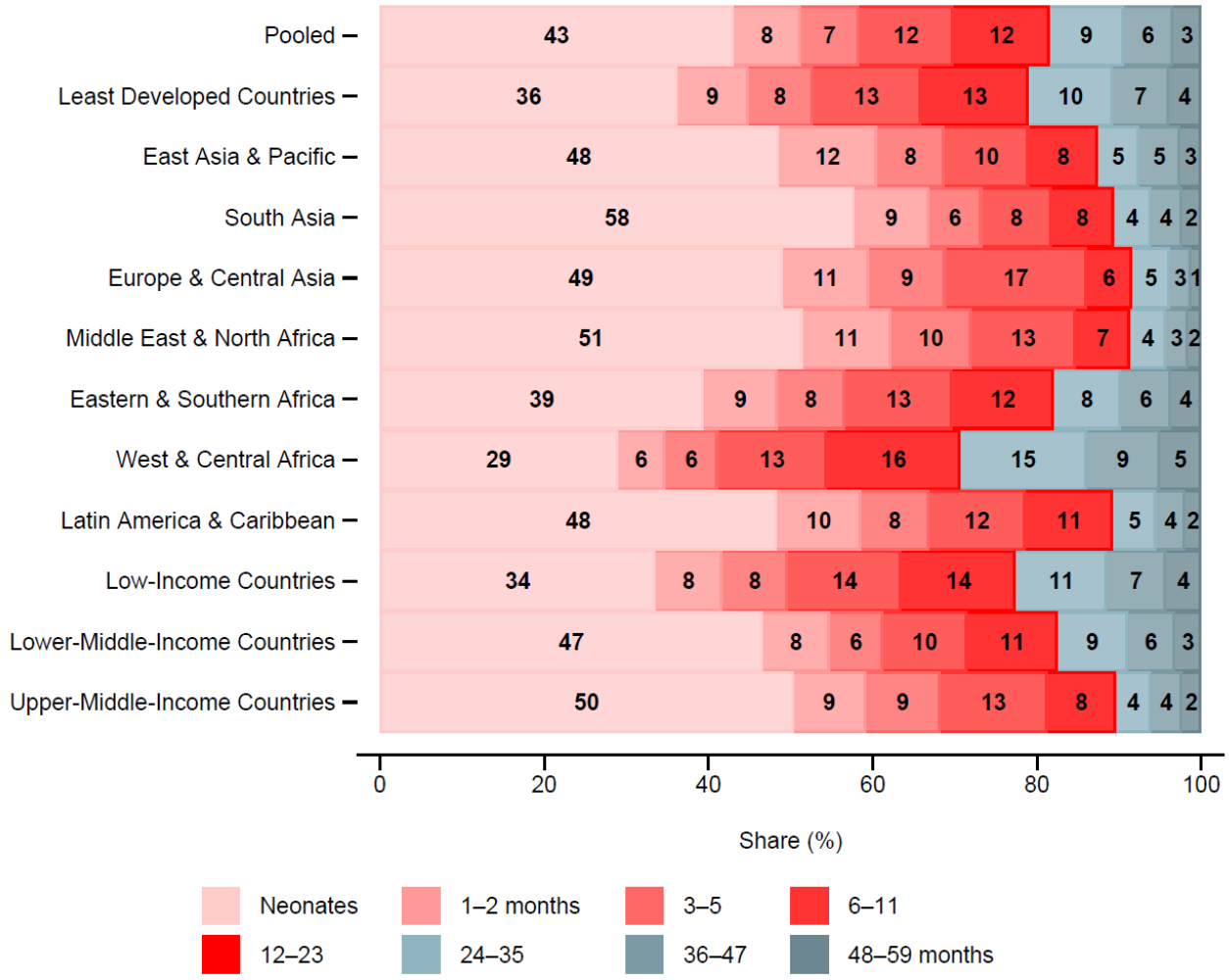
Other nutritional risks are also concentrated in the first two years of life, including impaired growth. Child stunting (low height-for-age) is an indicator of impeded physical growth due to undernutrition and infections, which also increases the risk of mortality, morbidity, and cognitive delays. A recent study of the relationship between stunting prevalence and age in children aged 0–59 months in 94 low- and middle-income countries found higher stunting prevalence among younger children. Stunting prevalence increases from birth until around age 28 months, after which it decreases.[8] Child wasting (low weight-for-height) is also more common among children under 2 years of age, affecting 14 per cent of children under 2 versus 9 per cent of children 2–4 years of age.[9] While the first 2 years of life are the period of greatest risk for child mortality and impaired growth, they are also a period of rapid growth and neurodevelopment, and where interventions to prevent malnutrition and ensure optimal child development have the greatest opportunity for impact. This suggests that in settings where resources are limited, prioritizing nutrition programmes in the first two years of life will save more children's lives and support a wide range of positive child nutrition and development outcomes.

The research also shows that while age is an important risk factor for undernutrition and mortality, it is not the only one. Children from poor and rural households continue to face inequalities in access to diets, services and practices that make them more vulnerable to malnutrition. Indeed, in the analysis the highest mortality and prevalence of both stunting and wasting at any age was found among children from poorer households. This means that, in addition to age prioritization, programmes should also consider complementary factors that put children at risk according to context – such as poverty.

Is age prioritization ethically justified?

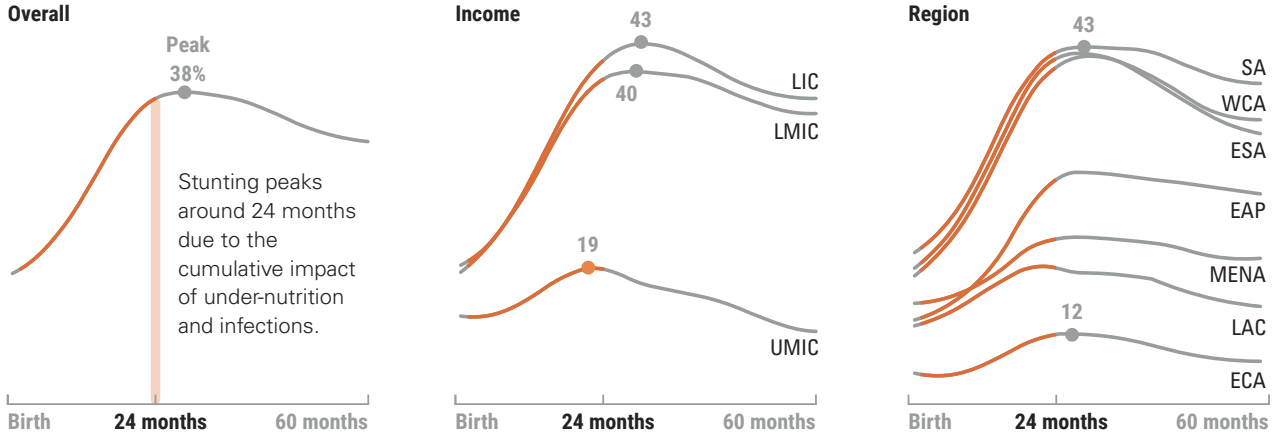
Ethical considerations surrounding age prioritization are complex and require unpacking. Every child has a right to adequate nutrition – and to the survival and development that result from the fulfilment of that right. But when resources are insufficient to reach all children under 5 years of age to the same extent, it is equitable to allocate resources so that children who are most at risk – i.e., those who have the greatest need for preventive and therapeutic services – are given priority. This means that age prioritization can be justified when used to optimize survival, nutrition and development outcomes for the greatest number of children from the resources available. Evidence suggests that many nutrition programmes that do not age prioritize (i.e., attempt to cover all children under 5 years of age) are not effective in reaching high-risk children. For example, coverage of vitamin A supplementation is significantly higher in children already consuming diets rich in vitamin A than in those

Figure 1: distribution of mortality in children under 5 years of age, by age



Karlsson, O., Kim, R., Hasman, A., & Subramanian, S. V. (2022). Age Distribution of All-Cause Mortality Among Children Younger Than 5 Years in Low- and Middle-Income Countries. *JAMA Network Open, 5*(5), e2212692-e2212692

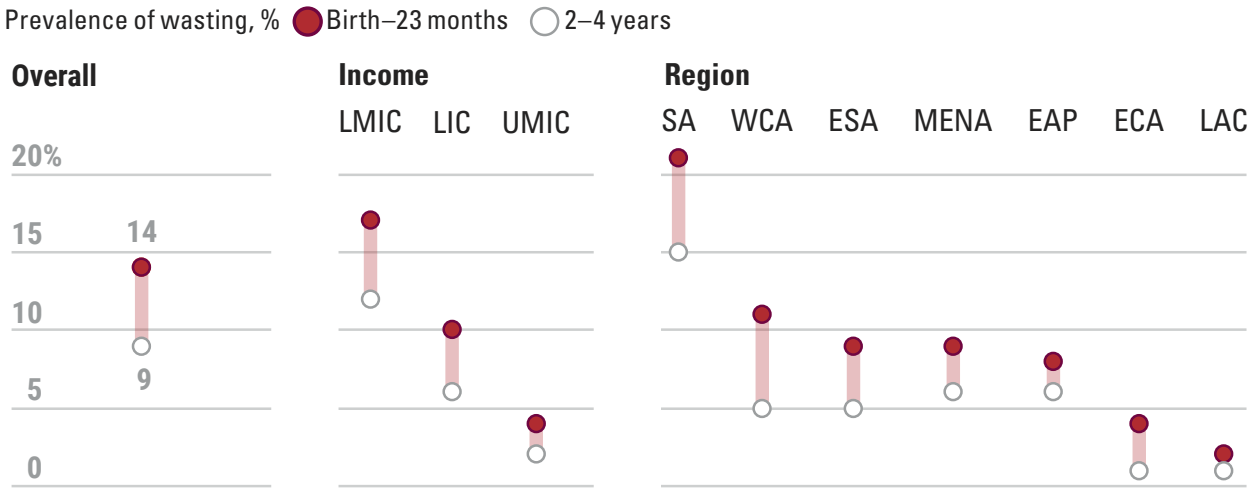
Figure 2. Relationship between stunting and age



EAP: East Asia and Pacific; ECA: Europe and Central Asia; ESA: Eastern and Southern Africa; LAC: Latin America and Caribbean; LIC: low-income country; LMIC: lower-middle-income country; MENA: Middle East and North Africa; SA: South Asia; UMIC: upper-middle-income country; WCA: West and Central Africa.

Modified from: Karlsson, O., Kim, R., Moloney, G. M., Hasman, A., & Subramanian, S. V. (2023). Patterns in child stunting by age: A cross-sectional study of 94 low- and middle-income countries. *Maternal & Child Nutrition,* e13537.

Figure 3. Wasting prevalence across UNICEF regions



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not getting sufficient vitamin A.[10] In most places we typically do not have the required data at the individual or community level needed to identify high-risk children. Until we have data to assess risk at the community or individual level, age prioritization can be the most logical public health nutrition option.

What are the implications for programme design?

Prioritizing the youngest children is an effective and justifiable strategy for optimizing reductions in malnutrition and mortality in contexts where resources are scarce. Ideally, early childhood nutrition programmes should aim to reach all children under 5 years of age. However, when resources are scarce one way to optimize outcomes is to scale up coverage of proven nutrition interventions in children under 2 years of age. This rationale should be clearly communicated to programme managers and frontline workers to ensure effective implementation.

Some resource constrained programmes may choose to completely stop delivery of services to children over 2 years of age and re-direct resources to children under two years of age. However, for other programs it may be beneficial to take a phased approach, whereby some areas (e.g., districts) focus on children under 2 years of age, while other areas continue delivery to children under 5 years. Comparison of districts will show if prioritizing the youngest children has increased coverage, equity and population level impact in child survival, growth and development.

Because age is not the only important risk factor for undernutrition and mortality, programmes can also consider other indicators of deprivation – such as poverty levels, disparities between young children living in rural and urban areas, exposure to conflict and other humanitarian crises, and other measures of disadvantage and vulnerability – when delivering interventions. This may mean going beyond the 2-year cutoff in some disadvantaged communities.

A decision to prioritize interventions based on age will depend on the context, the type of intervention and the delivery platform. The following sections interpret the evidence and programme implications of age prioritization for three child nutrition programmes: vitamin A supplementation (VAS); home fortification with small quantity lipid-based nutrient supplements (SQ-LNS) and multiple micronutrient powders (MNPs); and the early detection and treatment of child wasting.

Can vitamin A supplementation be age-prioritized?

Since the 2000s, countries have delivered supplements to millions of children either through routine health services, including facility-based and community outreach, or via mass campaigns. Following initial steady progress, global coverage of VAS has declined and stalled since 2016, hovering around 60 per cent.[11]

VAS has been shown to reduce all-cause mortality by 12 per cent in children affected by vitamin A deficiency,[12] and the World Health Organization recommends VAS for children aged 6–59 months every 4–6 months where vitamin A deficiency is a prevalent problem.[13] Most VAS programmes collect coverage data for the 6–11-month and 12–59-month age groups only. While the cost of a vitamin A supplement is only about 2 US cents, programme costs, including the cost of supply chains, and health workers' time for delivery and demand generation, can be significant. Delivery relies on facility and community health and nutrition workers who have limited capacity and usually several other programmes to deliver. Human and financial resources for delivery are therefore often limited. Biochemical data on vitamin A deficiency are rarely available, making it impossible to target high-risk populations and geographical areas. With resource and data limitations in many countries, there will in some cases be a strong case for age prioritization of VAS to ensure universal coverage of the youngest children, and thereby optimized impact of vitamin A supplementation on survival.

Can home-based food fortification using SQ-LNS or MNPs be age-prioritized?

Globally, almost half of all children aged 6–23 months (48 per cent) are not fed the minimum recommended number of meals each day, and more than two-thirds (71 per cent) are not fed the minimally diverse diets they need to grow and develop to their full potential. Poor infant and young child feeding practices lead to micronutrient deficiencies, which have detrimental effects on survival, growth and development.

SQ-LNS and MNPs are nutritional supplements that have the potential to fill these gaps, in contexts where diets are likely to be low in multiple micronutrients. SQ-LNS are effective in reducing the risk of all-cause child mortality by up to 27 per cent.[14] [15] There is emerging evidence that the benefits of SQ-LNS are greatest between the ages of 6 and 11 months;[16] as such, UNICEF advises prioritizing this younger age group in contexts where access to nutritious diets is severely constrained. Although the effects of MNPs on mortality have not been established,[17] there is some evidence to suggest that MNPs contribute to improved growth[18] and there is strong evidence that MNPs prevent anaemia and iron deficiency in children aged 6–23 months.[19]

In many contexts, coverage of SQL-NS and MNPs is low due to inadequate supply, limited capacity to distribute among health facilities and community health workers, etc. In such contexts, prioritizing children under 2 years of age, and potentially children under 1 year of age, for SQ-LNS and MNPs has the potential to optimize survival and development in contexts where resources are limited.

Can early detection and treatment of child wasting be age-prioritized?

Globally, an estimated 13.7 million children suffer from severe wasting.[20] Wasting is strongly associated with increased mortality[21] and impaired growth and development. The prevalence of child wasting is highest among children under 2 years of age, and most wasting-related child mortality is also concentrated among children under 2 years of age. However, once a child is wasted, the individual risk of death is comparable in children under 2 years of age and between 2 and 5 years of age.[22] This means that once diagnosed, all children with severe wasting, regardless of age, must receive timely and quality therapeutic treatment and care.

In resource-constrained contexts, it may be advisable to prioritize children under 2 years of age for the early detection of child wasting, as most cases of severe wasting and mortality risk associated with severe wasting are concentrated in this age group. Screening is done in community outreach sessions by measuring either the child's mid-upper arm circumference or height-and-weight. Prioritizing children under 2 years of age for this intervention will optimize programme cost-effectiveness because more children under 2 years with severe wasting – who have highest risk of mortality and malnutrition – will be identified as wasted and referred to treatment services. However, programmes should assess whether this approach is effective in identifying more children with severe wasting and ultimately results in more children in need receiving life-saving treatment and care.

Recommendations and guiding principles for age prioritization

1. Where resources are limited and coverage is suboptimal, nutrition programmes should do a comprehensive review of coverage and equity. Where there is scope to reach more children under 2 years of age, explicit prioritization of this age-group should be considered, regardless of coverage in children between 2 and 5 years.
2. A decision to limit delivery to children under 2 years of age should be accompanied by an appraisal of opportunities to optimize reach in this age group, e.g., training of community-based health and nutrition workers on the benefits of prioritizing children under 2 years of age; and targeted communication and support to caregivers with children under 2 years of age.
3. A communication strategy should be developed to convey the rationale and implications of age prioritization to programme managers and community workers.
4. If not already available, age-disaggregated coverage data collection should be introduced into administrative data systems to generate coverage estimates for children under 2 years, to enable programmers to track progress.
5. Alongside age, programmes should consider data on other risk factors, for example poverty, and expand delivery beyond 2 years of age in the most disadvantaged communities. Programmes should document and evaluate the policies and programmes aimed at prioritizing children under 2 years of age, in order to enable adjustments and optimize nutrition impact on child survival, growth and development.

Endnotes

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