SQ-LNS POLICY BRIEF

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SQ-LNS: A high-impact, cost-effective tool to prevent child malnutrition and save lives

- While we have made progress on child malnutrition in recent decades, the current food and nutrition crisis threatens to erase these gains, and children under two years of age are the most vulnerable. Malnutrition drives nearly half of all deaths among young children.
- In addition to breastmilk, beginning at six months of age, infants and toddlers require nutrient-rich diets to support their rapid growth and development. Yet globally less than 30% of children ages 6 to 23 months consume a diet that meets the minimum diversity of food groups needed. Small quantity lipid-based nutrient supplements (SQ-LNS) are small packets of a nutrient-dense paste that can be added to the food families and caregivers already feed young children, or consumed separately as a snack.
- Trials in low- and middle-income countries showed that provision of SQ-LNS saves lives, prevents malnutrition, and supports children's healthy growth and development.
- Urgent action is needed to scale-up the provision of SQ-LNS, an exciting, new, and highly impactful nutrition intervention. This includes identifying financing opportunities, supporting national governments to integrate SQ-LNS delivery with other interventions to improve children's diets, and strengthening program delivery in diverse settings where families struggling to overcome poverty live.

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1 What are small-quantity lipid-based nutrient supplements (SQ-LNS)?

SQ-LNS are designed to prevent malnutrition among young children in settings where vulnerable populations are likely to have nutrient gaps in their diets. Delivered in the form of small packets of paste, they enrich the diets of children 6-23 months of age with more than 20 essential vitamins and minerals, and essential fatty acids to support healthy growth and development.

2 How are SQ-LNS administered?

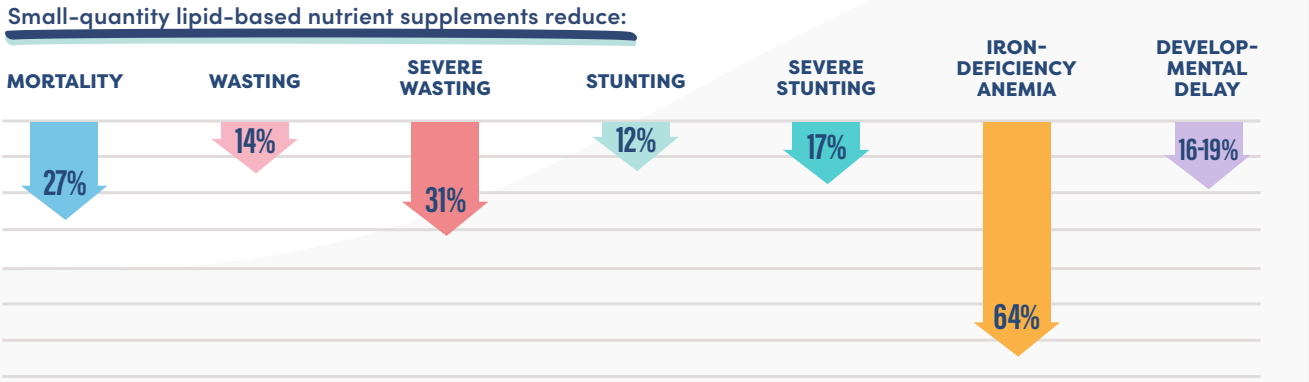
SQ-LNS are small packets of a nutrient-dense paste that can be consumed two ways, either by adding them to the food the young child is eating, or on their own as a snack. They are given to young children 6-23 months of age when nutrient requirements to support healthy growth and development are high, and the risk of micronutrient deficiencies is also high. The dose of the supplement is small (~20g/d; 100-125 kcal/d) in order to:

- Avoid displacing breastmilk and locally available nutrient-rich foods
- Ensure that all children in the target age range can consume the entire portion in one day
- Minimize cost

3 What are the benefits of using SQ-LNS?

Research has demonstrated that provision of SQ-LNS benefits survival, growth, and development outcomes, and is currently the only preventive intervention for children with demonstrated simultaneous effects on these outcomes in vulnerable populations.
The benefits are greatest when provision of SQ-LNS begins at 6 months of age and continues for 12 months (i.e., until 18 months of age). Guidance suggests that SQ-LNS should be provided for at least 6 months.

Results of numerous randomized trials, which included more than 37,000 children, indicate that provision of SQ-LNS can reduce malnutrition, increase survival rates, and improve growth and developmental outcomes among infants and children in vulnerable, low-income settings where high-quality, diverse diets are not accessible. Numerous acceptability trials of SQ-LNS have demonstrated high acceptability among children and their caregivers. The results of these studies were so promising that provision of SQ-LNS was included in the 2021 Lancet series list of recommended approaches to reduce child malnutrition.



4 How can SQ-LNS complement other approaches for preventing malnutrition among young children? Should SQ-LNS be packaged with other types of interventions or targeted to certain populations?

SQ-LNS should always be integrated into a core package of actions, including (at a minimum):

- Robust communication between health care providers and caregivers
- Counselling and support for continued breastfeeding
- Promotion of diverse nutritious diets

SQ-LNS can be positioned as an evidence-based intervention within multiple relevant frameworks (e.g. Child Survival Call to Action, Global Action Plan on Child Wasting, Human Capital Index and Nurturing Care Framework) and integrated within existing delivery platforms, such as:

- Well-child visits
- Growth monitoring and promotion programs
- Child health and immunization days
- Malaria prevention programs
- Screening for moderate and severe wasting

Targeting high-risk regions or communities with a high prevalence of stunting, wasting, anemia, and/or mortality may limit costs and maximize coverage of the most vulnerable children.

5 How do SQ-LNS products differ from ready-to-use supplemental food (RUSF) and ready-to-use therapeutic food (RUTF)?

SQ-LNS were designed for the **prevention** of malnutrition through a daily dose of ~20 g/day (100-125 kcal/day). RUSF is intended for the treatment of moderate wasting. The quantity provided may vary, but is typically ~500 kcal/day. RUTF is used for the treatment of severe wasting, with a daily dose of >= 500 kcal/day usually based on body weight and treatment goal.

6 Are there any risks associated with SQ-LNS consumption?

Studies have not demonstrated adverse health outcomes. Trials of SQ-LNS in Bangladesh, Ghana, Kenya, Madagascar, Malawi, and Zimbabwe have reported no increase in fever or suspected malaria, and little or no difference in diarrhea. Two trials in Bangladesh have actually reported beneficial effects of SQ-LNS on the prevalence of diarrhea and duration of pneumonia, diarrhea, and dysentery. Children should not be provided with both SQ-LNS and micronutrient powders, as this could result in excess intakes of certain micronutrients.

7 How does provision of SQ-LNS affect breastfeeding and complementary feeding practices? What about effects on child overweight or long-term food preferences?

Provision of SQ-LNS should always be accompanied by reinforcement of recommended feeding practices, including breastfeeding through at least two years of age, and introduction of a diverse diet

with healthy foods beginning at six months of age. The evidence indicates that there have been no harmful effects of SQ-LNS on breastfeeding, complementary feeding practices, or dietary diversity.

In some settings, provision of SQ-LNS had positive effects on feeding frequency and consumption of animal-source foods. Several trials suggest that provision of SQ-LNS may enhance participation in nutrition education activities, with potentially beneficial spillover effects on feeding practices.

Infants and young children need a relatively energy-dense diet, and in this age group there is no evidence that high-fat or energy-dense foods contribute to overweight. In the randomized trials, no short- or long-term adverse effects of SQ-LNS on overweight, body mass index, or food preferences have been observed.

8 What are the costs of SQ-LNS interventions?

Provision of SQ-LNS is a cost-effective intervention. The estimated price per sachet is approximately 0.07–0.08 USD. A 12-month supply at that price would be approximately 28 USD per child. Non-product costs can vary widely due to differences in program design and delivery platform, costs required for set-up, overage estimates used for planning, etc.

Because SQ-LNS are delivered in a pre-prepared form, the time and costs for fuel and water incurred by individual caregivers are lower in comparison to other products that require cooking.

A recent assessment of the most cost-effective maternal and child nutrition interventions from the Copenhagen Consensus **estimated a benefit to cost ratio of 13.7** for preventive SQ-LNS for children 6–23 months of age, targeted to the poorest 60% of the population in the 40 low- and lower middle-income countries with the highest rates of child stunting.

9 Can SQ-LNS be locally produced?

SQ-LNS are currently produced locally in several countries in Africa, South Asia, and the Caribbean. The micronutrient premix and some ingredients may need to be imported to meet technical specifications as set out by the World Food Programme. For these reasons, local production may not reduce costs. An example of the process for developing local products can be found in the report by Merill et al.

10 What operational guidance is currently available?

Two documents provide operational guidance about SQ-LNS:

- UNICEF's brief guidance note titled "Small Supplements for the Prevention of Malnutrition in Early Childhood (Small Quantity Lipid Nutrient Supplements)."
- USAID Advancing Nutrition's technical brief titled "Lipid-Based Nutrient Supplements: Evidence and Program Guidance."

The SQ-LNS Task Force was formed to establish a roadmap for the scale-up of SQ-LNS. It is comprised of a Steering Committee and the following five Working Groups: Advocacy; Cost and Cost-Effectiveness; Operational Guidance; Operational Research; Supply and Regulatory Issues. UC Davis is serving as the Coordinator of the SQ-LNS Task Force. For more information, and a downloadable Frequently Asked Questions document that includes references for the information provided in this brief, please visit sqlns.ucdavis.edu.