

## Healthcare Providers in Africa Face HIV and AIDS Challenges in Providing Services to a Key Population: Infant and Young Child Feeding

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### **Abstract**

*There is agreement on the benefits of exclusive breastfeeding for 6 months and the introduction of appropriate complementary foods at 6 months, followed by continued breastfeeding, for all infants. However, infant, and young child feeding (IYCF) guidelines for HIV-positive mothers have changed on a regular basis since 2000. Considering new HIV treatment guidelines, implementation challenges, and knowledge gaps, this article investigates issues and Evidence related to IYCF for the prevention and care of paediatric HIV in resource-limited settings. The effectiveness of antiretroviral medications (ARVs) in decreasing the incidence of HIV transmission from mother to child prompted WHO to urge countries to support either avoidance or treatment. Significant progress has been made in terms of preserving the lives of moms but also decreasing the spread of HIV among children, but long-term political, financial, and scientific commitment is essential for ensuring effective postnatal HIV prevention programs and providing for the nutritional requirements of HIV-exposed and HIV-infected infants.*

**Keywords:** *Anti-retroviral drugs, Breastfeeding, HIV, Infant feeding options, Mother-to-child transmission prevention, Resource-limited settings.*

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### **Introduction**

Since 2010, evidence-based guidelines have recommended that HIV-infected mothers When it comes to infant, and young child feeding (IYCF), HIV-positive mothers in low-resource/high-HIV burden settings get the same recommendations as HIV-negative mothers: Breastfeeding should be initiated as soon as possible after birth (within one hour of birth), and it should be exclusive [1, 2]. (EBF) for the first six months, and introduction of appropriate complementary foods at six months, followed by continued breastfeeding. Despite the fact that rules for all babies are consistent, issues include constantly changing worldwide recommendations and the sluggish distribution of revised national standards resulting in late training for healthcare workers. Unsafe breastfeeding traditions and taboos, Inadequate support for breastfeeding mothers, as well as

significant evidence gaps in programmatic experience, have resulted in ongoing confusion and poor adherence to these strategies. Changes in guidelines, as well as E suppliers are to blame for poor supplementary feeding habits among the general public. have made safe weaning and adequate complementary feeding practices particularly difficult to implement [3].

As remaining questions are answered and recommendations evolve, HIV-positive mothers require up-to-date, clear messages about, and support for, optimal IYCF practices. In light of the WHO 2010 HIV and infant feeding guidelines and the 2013 Consolidated guidelines, implementation challenges and knowledge gaps that limit optimal care for HIV-exposed and infected infants and young children are investigated in this article, which is not a systematic review, and calls on program implementers to pay attention to critical nutrition

issues that are emerging for these children in resource-limited settings [4, 5].

### **Evidence and Suggestions on the Relationship between HIV and Baby Feeding**

Children born to HIV-infected mothers are at Evidence that suggests they are at greater risk of death and morbidity than their non-exposed counterparts. There is substantial evidence Babies born to HIV-positive mothers are more likely to be preterm or have low birth weight, while babies exposed to the virus are also more likely to be born tiny for gestational age [6].

Although in-utero HIV infection has not been shown to affect foetal growth, HIV has been shown to affect postnatal growth beginning usually occurs in the first few months of life, frequently before any other symptoms of illness are visible, and it's closely linked to both wasting and slow linear development. HIV-infected children often have linear growth failure in addition to severe wasting. This kind of growth failure may be a better indicator of HIV disease progression than severe wasting [7]. HIV can cause poor growth, as can opportunistic infections or medication side effects that alter food intake, absorption, and metabolism; diarrhoea and other childhood illnesses; poverty and food insecurity.

Undiagnosed malnutrition that does not improve with routine therapy might be a symptom of advanced HIV infection, and HIV testing should be included in the usual care of malnourished children. They lose more muscle and are more likely to die than their uninfected peers who are malnourished [8]. They also go through metabolic changes similar to those that occur in adults and may raise their risk of death.

### **The First Six Months of a Child's Existence**

Infant immunity can be improved by breastfeeds and thus reduce infant mortality, improve paediatric development, and provide mothers with health benefits like natural spacing

between children and improved maternal-child bonding. Breastfeeding has also been shown to be beneficial to the economy and environment [9].

There is a higher risk of morbidity and death for infants who are not exclusively breastfed during the first six months owing to unclean water, inappropriate formula preparation or storage conditions, and filthy environments, especially in low-resource areas. To escape the societal pressure that comes with not breastfeeding, moms with HIV routinely breastfeed in public while secretly giving babies younger than 6 months formula or other meals and liquids [10]. Mixed feeding raises the possibility of vertical transmission in addition to the previously outlined dangers. For these reasons, women have been urged for years to breastfeed their babies exclusively for the first six months after birth.

Since the World Health Organization's first consensus statement on new-born feeding technical consultation in 2000, IYCF guidance for HIV-exposed children has evolved. Breastfeeding has a 15–20 percent risk of HIV transmission up to 18–24 months, but studies in low-resource settings have found that not breastfeeding or stopping breastfeeding early increases mortality and reduces HIV-free survival [11]. Additional research has found that safer practices such as exclusive breastfeeding for the first 6 months, proper breast health management, and anti-retroviral therapy (ART) for the mother and infant during the breastfeeding period reduce the risk of HIV transmission significantly.

WHO recommended In 2006, HIV-positive women were given the option of 1) exclusive nursing for six months or 2) exclusive replacement feeding for six months if acceptable, practicable, economical, sustainable, and safe (AFASS). Those choosing EBF were urged to continue breastfeeding until they could offer a healthy replacement food for their infants, WHO updated its recommendations again in 2010, this time urging countries to

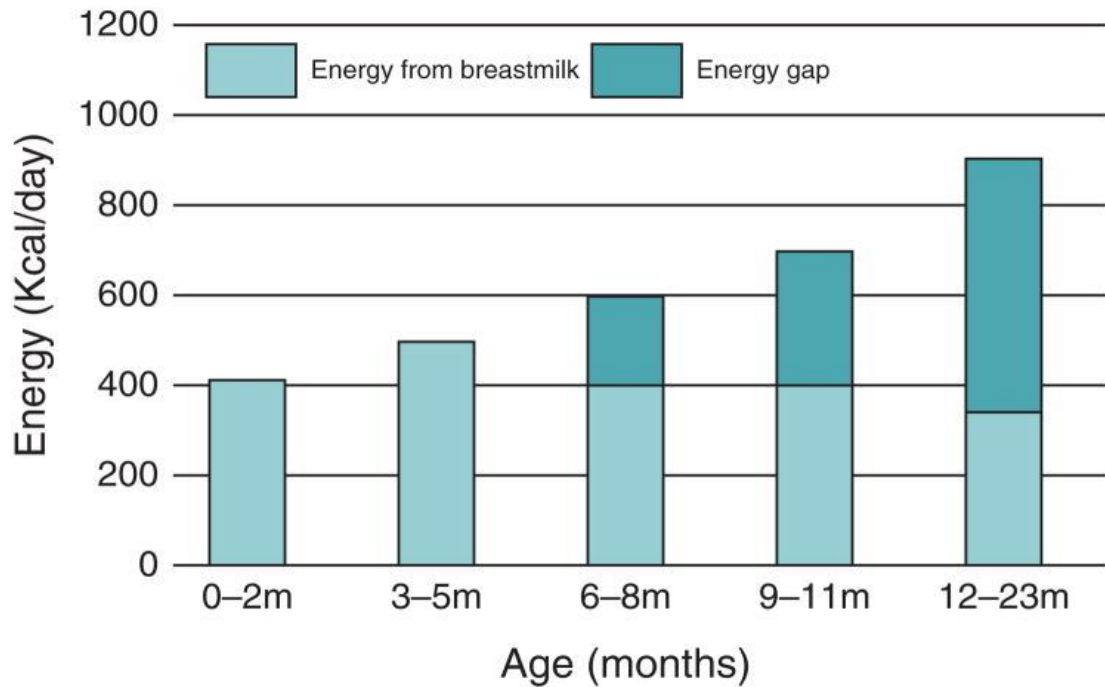
endorse a single nationwide infant feeding recommendation for women who were newly diagnosed with HIV. By 2010, data on the impact of anti-retroviral drugs (ARVs) on reducing HIV transmission from mother to child and increasing all-cause mortality in infants who were not exclusively breastfed prompted WHO to update its recommendations once more [12, 13]. Women living with HIV are urged to breastfeed for as long as they feel comfortable for at least one year and until a nutritionally adequate and safe diet without breast milk can be provided in countries where breastfeeding is the policy. Even in the absence of ARVs, WHO recommends breastfeeding for HIV-exposed infants [14].

The rapid shift in global recommendations for infant feeding in the context of HIV explains only a portion of the confusion about what to advise HIV-positive mothers [15]. Countries are frequently slow to adopt new global guidelines, and they face difficulties in retraining healthcare providers and addressing maternal norms. The most recent WHO guidelines, on the other hand, offer an opportunity for the During the first year of life, all children, even those who are HIV-exposed, should get the same nutrition messaging from the HIV and child survival communities.

### **The Second Six Months of One's Existence**

The high levels of nutrients in breast milk protect against mortality from diarrhoea, pneumonia, and malnutrition during the first 12

months of life. However, around the age of 6 months, breast milk alone cannot meet all the infant's nutritional needs, and complementary feeding – the transition from exclusive breastfeeding to family foods – is required. Although complementary foods provide energy and nutrients to help meet the growing child's nutritional needs, breastfeeding continues to meet at least half of a child's nutritional needs between the ages of 6 and 12 months [16]. Changes in advice on how long women with HIV should breastfeed after 6 months, as well as changes in ARV prophylaxis and treatment regimens, have caused significant confusion among healthcare providers. As recently as ten years ago, HIV-positive mothers were advised to discontinue breastfeeding at the age of four to six months thus, Evidence of stunted development, increased diarrhoeal morbidity, and all-cause mortality in these babies showed that discontinuing nursing was not advised for women with HIV at that time. Breastfeeding is still important since there are no safe alternatives, infectious infections are still a problem, and children's development might slow down if they aren't breastfed. Several growth hormones found in breast milk, including epidermal growth factor, and transforming growth factor, may aid in gut epithelial barrier maturation by enhancing the barrier's integrity and inhibiting viral passage. The risk of HIV transmission diminishes with age. Therefore, mixed feeding is not as dangerous after 6 months. It matters a lot to the gut of a youngster [17].



**Figure. 1.** Trends in exclusive breastfeeding rates (1996–2006)

Source: UNICEF. Progress for children: a world fit for children Statistical Review, Number [18]. New York, UNICEF, 2007

ARVs that reduce the risk of HIV transmission through breastfeeding have tipped the risk/benefit balance in favor of breastfeeding. Several significant trials using various ARV approaches have shown that mothers with HIV can safely breastfeed for longer periods of time, which can be lifesaving for their infants. Although long-term ARV exposure may have undiscovered consequences, the best available evidence suggests that the risks of infants dying from other diseases if breastfeeding is discontinued before the age of one are greater than the potential side effects of long-term drug exposure [19].

In most low-resource settings, adherence to complementary feeding guidelines is generally poor. Complementary foods are frequently introduced too early or too late, with little variety and insufficient portions, and food safety is frequently inadequate. As a result, growth stalling is common during the complementary feeding period, as is the risk of stunting. It is even more difficult to provide complementary foods to HIV-exposed and HIV-infected

children because they may lack appetite or suffer from other factors that reduce food intake or increase nutrient losses [20].

### The Second Year of One's Life

The ideal length of nursing beyond 12 months is uncertain, even though doctors believe that HIV-positive moms should nurse for at least a year after delivery. The necessity for restrictions is questioned by some. With its high nutritional content and immune effects, breast milk helps prevent babies from diseases like diarrhoea, pneumonia, and malnutrition throughout the first year of life. While breast milk continues to give considerable health advantages beyond the first year, older children are better able to recover from childhood diseases. Thus, the benefit of lower mortality is less appealing. The nutritional requirements of a kid may be better satisfied after the age of 12 months by family meals that include a sufficient quantity of cow's milk for the age group [21].

At this point, breast milk still has a considerable health advantage after a year;

however, the benefit in terms of decreased mortality is less convincing since older children are better able to recover from childhood diseases. Furthermore, family meals with a suitable proportion of cow's milk may better meet a child's nutritional demands beyond the age of 12 months.

Breast milk is mostly constituted of water, carbs, lipids, and proteins, with a little amount of fat and protein. Each of these nutrients has a

specific job to play in the growth and development of a child's body. Human milk comprises 0.8 percent to 0.9 percent protein, 4.5 percent fat, 7.1 percent carbs, and 0.2 percent ash, according to the National Dairy Council (minerals). It has been discovered that numerous lactose-based oligosaccharides are present as small constituents of the carbohydrate composition.

**Table 1.** Breastmilk Components

Component Fats: 3.5 g per 100 ml [docosahexaenoic acid (DHA) and arachidonic acid (ARA)]	Benefit Neurological development
Carbohydrates: 7 g per 100 ml (lactose and oligosaccharides)	Energy and protection against infection
Protein: 0.9 g per 100 ml (casein, $\alpha$ -lactalbumin)	Growth and development
Vitamins: All except K	Optimal growth and development
Minerals: Sodium, potassium, calcium, magnesium, phosphorus, chlorine	Optimal growth and development
Anti-infective factors: IgA, white blood cells	Immunity and protection against inflammation, bacteria, and other pathogens
Other bioactive factors: bile-salt stimulated lipase, epidermal growth factor	Digestion, maturity of the infant's intestinal lining

Table 1 demonstrates that Breast milk is primarily water, with some carbohydrates, lipids, and proteins. Each nutrient has a special role in a child's growth and development. The National Dairy Council says human milk has 0.8-0.9% protein, 4.5-7% fat, 7.1-7% carbohydrates, and 0.2-3% ash (minerals). Numerous lactose-based oligosaccharides are found as minor carbohydrate components [22].

Mothers with HIV should only be encouraged to stop nursing if they can offer a "nutritionally sufficient and safe diet" without breast milk after 12 months. If this is the case, they should continue breastfeeding for another year while taking ARVs (and according to the instructions that come with them). While the ideal strategy and duration of the cessation process are uncertain, they should wean their infants gradually over the course of one month when they decide to stop nursing. When weaning a

baby from breast milk too quickly, there is a risk of mastitis and a higher viral load in the milk. Children with HIV who are breastfed have an increased likelihood of survival, which helps them live longer [23].

## Methodology

### Breastfeeding with Antiretroviral Treatment

To reduce viral load and prevent postnatal vertical transmission of HIV, mothers should take ARVs as prophylaxis or as therapy for their own health throughout the duration of breastfeeding, and their infants should receive ARVs for 4–6 weeks after birth. The WHO Guidelines on HIV and Infant Feeding published in 2010 reflect Evidence of the benefits of breastfeeding as well as the ability of ARVs for either mothers or infants during breastfeeding to significantly reduce the risk of postnatal HIV

transmission. With these recommendations, ARV prophylaxis during breastfeeding became part of the public health approach to preventing HIV transmission from mother to child (PMTCT). More pregnant and lactating women with HIV are now eligible for ART, thanks to changes in CD4 eligibility and the introduction of life-long ART for pregnant women regardless of CD4 cell count (Option B+). These advancements can not only prevent postnatal HIV transmission through breastfeeding but also lower the risk of transmission in future pregnancies while maintaining mothers' health [24].

WHO Consolidated Guidelines on the Use of Antiretroviral Drugs to Treat and Prevent HIV Infection, 2013, state that the primary goal of HIV and infant feeding recommendations is improving HIV-free survival by reducing the risk of transmission through breastmilk while avoiding malnutrition and the increased risk of serious infections in infants and children as a result of unsafe feeding methods. For anti-retrovirals (ARVs) to be successful, HIV-positive mothers must take them frequently during breastfeeding. The risk of virologic failure and medicine resistance increases if treatment is interrupted in any way. Mortality and morbidity are intertwined concepts. It is vital to encourage HIV-positive mothers to continue receiving anti-retroviral medication (ART), considering the many obstacles they face on an individual and systemic level. The 2013 recommendations contain a chapter on retention throughout the continuum of care, which argues for improved health systems to give treatment to women and children. To lower the danger of vertical transmission for women without access to ARVs, adequate new-born feeding is still required [25].

### **Child Nutrition and Antiretroviral Treatment**

Many recent studies have found that anti-retroviral therapy (ART) can significantly enhance the weight and height of HIV-infected

children. It appears to have the greatest effect on growth in younger children before chronic undernutrition (stunting) becomes permanent, as well as in children with less severe growth deficiencies at the time of therapy commencement. On the other hand, ART does not appear to assist children in achieving complete growth recovery or maintaining their growth over time. Furthermore, a recent study discovered that children who were underweight when they started ART had lower immunological responses, emphasizing the importance of maintaining good hygiene to avoid development stalls and improve treatment effects. Underlining the need of aggressive case-finding for undiagnosed HIV in malnourished children, as well as non-medical interventions such as IYCF counselling and improved water, sanitation, and hygiene to avoid growth stalls and improve treatment results [26].

### **HIV-infected Children's Nutritional Supplementation and Fortification**

HIV-positive children require more energy than HIV-negative children. If asymptomatic, HIV-positive children should consume 10% more energy than HIV-negative children, 20–30% more energy if they have opportunistic infections, and 50–100% more energy during and after bouts of severe acute malnutrition to regain lost weight. HIV-positive youngsters can gain weight by eating more energy-dense foods. Poor linear growth, on the other hand, has a far stronger link to HIV viral load. The link between viral load and growth is unclear, but it could entail a number of disease-related endocrine and metabolic alterations. Children who are HIV-positive are also more susceptible to diarrhoea and gastrointestinal illnesses, which are frequent causes of malnutrition in the general population. Malnutrition in these children may be caused by diarrhoea-related nutritional losses, malabsorption, and insufficient feeding habits for catch-up growth [27].

Vitamin A supplementation is well accepted and useful for HIV-infected children, according

to a 2010 Cochrane study, while zinc supplementation is well tolerated and possibly as effective for HIV-infected children as it is for uninfected children. More studies on additional supplements (such as vitamin D, zinc, and selenium) are required to improve the database and examine the long-term benefits, adverse effects, and optimum formulations of diverse micronutrient supplements [28].

### It's Important to Think about the Operational and Programmatic Problems

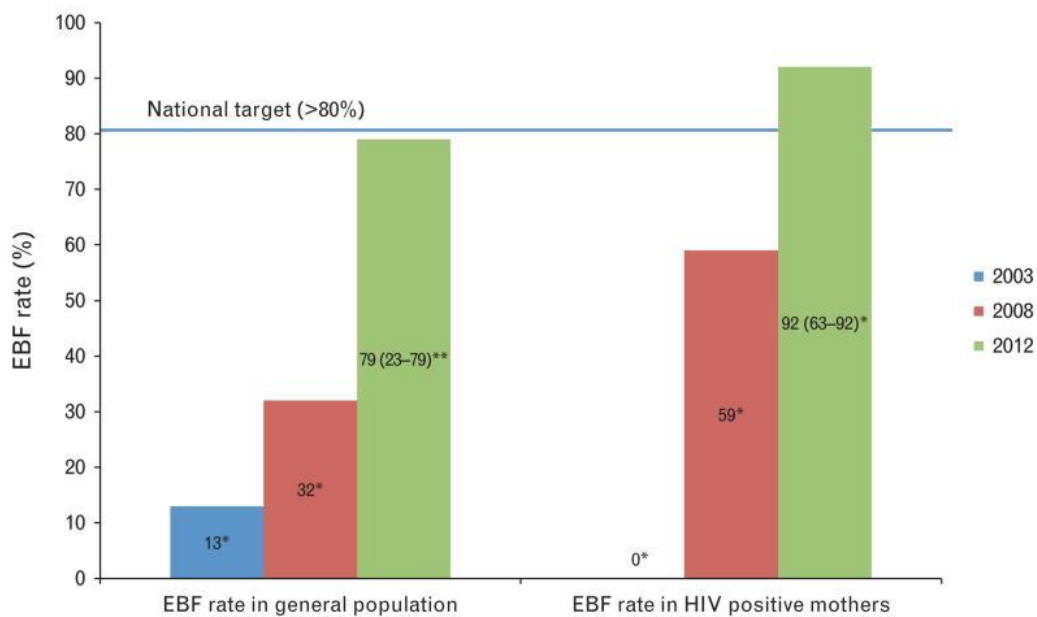
Program managers must consider operational and programmatic challenges at each stage of service delivery to ensure effective and continuous patient-centered care, given the historical ambiguity surrounding HIV and infant feeding messages as well as high malnutrition rates and poor IYCF practices in many settings.

#### At Community Level

HIV and nutrition services must extend beyond clinics into communities to increase the adoption of IYCF counselling recommendations by HIV-positive mothers and to provide nutrition care and follow-up of HIV-positive children. Women's ability to put lessons from

healthcare practitioners into practice is deeply influenced by social norms, stigma, gender-based disparities, and socioeconomic conditions. Poor infant feeding practices in the general population, as well as high rates of nonadherence to prescription regimens, are consistent indicators of a poor enabling environment and the difficulty of changing behaviour. Communities must be engaged to encourage exclusive breastfeeding and adequate supplemental feeding for all infants in low-resource/high-HIV-burden countries that suggest breastfeeding for HIV-exposed infants. Women require assistance in order to receive answers to their queries regarding IYCF, to stick to ART, to maintain their own health, and to give the best possible care for their children [29].

There is programmatic Evidence that improving EBF rates in HIV-positive moms is possible. With deliberate acceleration and multi-pronged system strengthening initiatives that focused on health facility and community level point of care support, exclusive breastfeeding rates increased (Figure 2). Such progress could have a positive impact on new-born feeding habits in the wider community.



\* 2003, 2008 data from KDHS showing national EBF rate

\*\* 2012 data from MoH district surveys and showing a range EBF rates among districts

Figure. 2. Improving EBF rates in HIV-positive mothers

Figure 2 evidence shows that improving EBF rates in HIV positive mothers is achievable. As a result of targeted system strengthening activities at the health facility and community level, exclusive breastfeeding rates rose.

EBF rates in the general population and for HIV-positive women in Kenya, 2003–2012 Source: Kenya Demographic and Health Survey (KDHS) 2003 and 2008; Kenya Ministry of Health (MOH) district surveys, 2012; Kenya National PMTCT evaluation, 2010; and Nyanza Program data.

To improve service uptake and retention, improve adherence to ART and IYCF guidelines, and monitor baby nutritional and HIV status, effective techniques for tracking mother/infant couples after they leave the clinic are required. During times of transition, community counselling and follow-up are especially important to avoid confusion about the introduction of complementary foods or weaning. Individual support and linkage to food security measures are required to determine whether enough diet can be supplied without breast milk, especially when household foods are unable to meet the nutritional demands of growing children with extra energy needs caused by HIV.

## **Recommendation**

### **At Health Facility Level**

To offer consistent, accurate, and culturally appropriate IYCF counselling and services to pregnant women and new mothers with HIV, healthcare providers need training, job aids, and advice. Training and supervision that is inconsistent and of poor quality can result in confusing or inaccurate feeding messages. Healthcare providers also require direction in order to counsel and support clients who may require specialized care. To eliminate gaps in assistance and follow-up, training and implementation plans should consider referral linkages between facility services and community care [30].

HIV-infected infants growth falters at a young age, but few nations have been effective in expanding early baby testing or retaining infants inadequate care and treatment for the duration of their exposure. It's difficult to keep track of at-risk infants because of weak health systems, undertrained workers, and insufficient follow-up methods. Early HIV testing and treatment with anti-retroviral drugs (ARVs) can help new-borns and young children regain lost weight and height, increasing their chances of survival. Countries should step up efforts to detect active cases of children whose moms may have been missed during the antenatal time or were infected during the postnatal period as soon as possible. Improve HIV testing and follow-up for all HIV-exposed infants during the weaning period and ensure that HIV-infected children continue to receive treatment. Nutrition assessment should be a part of all paediatric care and treatment, with country settings and local epidemiology of both malnutrition and HIV taking precedence. In high-prevalence communities, healthcare providers and volunteers should be educated to refer children with failure to thrive and severe development faltering to HIV testing as soon as possible.

### **At National Level**

To put the IYCF guidelines for HIV-positive women into practice, countries need costed and properly comprehensive implementation strategies. To establish political will and enable optimal resource allocation, plans should be driven by technical expertise, stakeholder consensus at all levels of service delivery, and collaboration among ministries of health, education, and finance. In 2012, UNICEF analysed how well the 2010 WHO HIV and baby feeding guidelines were being implemented in 25 African countries. Only 12 of the 25 countries had a relevant implementation plan, and only six of those 12 plans were costed, according to the study. Planning must consider how to reach mothers in different situations, how to make



services appealing and accessible, and how much it will cost to offer them [31].

An integrated, real-time monitoring and evaluation (M & E) system for collecting, assessing, and utilising data on breastfeeding, replacement feeding, and mixed feeding must be included in a national IYCF implementation plan. Many nations with high HIV prevalence lack such a system. Infant feeding patterns are not typically reported in annual reports by countries.

A lot of the current estimates come from demographic and health surveys that are done every three to five years and don't provide enough data to identify service shortages or improve programming, which are based on general population surveys like the MICS and DHS. Qualitative data, such as the provision of breastfeeding counselling, is also not sufficiently documented by national M&E systems. Qualitative or mixed-method studies should be used more frequently in IYCF programs to provide credible data for policy and guidance program changes.

According to preliminary findings from a WHO-funded pilot project, collecting routine data on new-born feeding behaviours using 24-hour recall is both possible and reliable. At three months of age, the percentage of HIV-exposed breastfed children who received exclusive nursing, exclusive replacement feeding, or mixed feeding, as well as ARV uptake among HIV-exposed breastfed infants, were among the indicators. Infant feeding practices for HIV-exposed new-borns during the first six months can be published as a national indicator, according to the findings.

### **At Global Level**

During the supplemental feeding period, data collection and reporting become increasingly difficult, and effective recording techniques are limited. The proposed IYCF indicators should be integrated into stronger mother and child health monitoring and evaluation systems, with the goal of combining them into a single,

harmonized system rather than operating in parallel.

At the first new-born follow-up visit for infants delivered to HIV-positive moms and women receiving infant feeding counselling. The registry includes UNICEF parameters such as the distribution of feeding practices and at the age of four, the nutritional condition of orphans and vulnerable children (OVC) and non-OVC.) WHO, UNAIDS, UNI-CEF, the Global Fund to Prevent AIDS, Tuberculosis, and Malaria; the World Bank, WFP, PEPFAR, and as well as HIV-free survival at 12 months, maternal and newborn nutritional status, and baby feeding status from 3 months to 9 months, other organizations have suggested internationally harmonized indicators in these areas as well. Developing countries should be aided and encouraged to submit yearly reports on these metrics.

With efforts to roll out lifelong ART to all pregnant women with HIV, regardless of CD4 cell level, IYCF service delivery issues will become more acute. As countries revise and alter their national PMTCT guidelines, now is the moment to address implementation issues by ensuring that IYCF planning, monitoring and evaluation, and training are all produced in tandem [32].

### **Result**

Existing evidence-based nutrition interventions can help HIV-infected children's nutrition and well-being, but there has been limited study on the impact of nutrition interventions on HIV-infected children using ARVs HIV-infected children (6 months–14 years) were the focus of WHO's 2009 publication, Guidelines for an Integrated Approach to Nutrition Care. to aid in the assessment and classification of nutritional status and the development of nutrition care programs for HIV-infected children, this was a significant step toward integrating nutrition into HIV treatment. In view of the improved availability of ARVs, WHO needs to update

recommendations on nutritional assistance for persons living with HIV and document more data on which established strategies can be used to target HIV-infected children in low-resource settings? During the postnatal period, many women drop out of PMTCT programs. Because of this, babies are not being tested for HIV at an early enough stage to prevent serious development failure or immune suppression, which diminishes the effectiveness of therapies and decreases the likelihood of survival. More Evidence is needed to guide not only implementation but also HIV prevention, which should begin during pregnancy, and the treatment of malnutrition in HIV-exposed and HIV-infected children. There is limited information on whether or how HIV-infected children's nutrition-related care should differ from HIV-negative children's nutrition-related care [33].

To understand the reason of HIV-related growth stalling and design cost-effective therapies to promote enough height and weight, more scientific information is needed. To uncover feasible alternatives for improving linear growth and body composition in HIV-positive children, program-based studies on supplementary feeding and nutritional rehabilitation are needed. Longer-term ARV exposure is also unknown in terms of its safety and impact on new-born growth and development. Pharmacovigilance must be maintained in order to inform the ongoing risk-benefit analysis [34]. More challenges with implementation will occur when protocols evolve, and trends in lifelong treatment uptake emerge. During and after breastfeeding, women's adherence to anti-retroviral therapy (ART) should be evaluated. It's also important to investigate the impact of early baby testing on the nursing success [35, 36].

## **Conclusion**

From birth to two years of age, it is vital to support optimal growth, health, and development for all new-borns. Inadequate

IYCF and caring behaviours, as well as high infection rates, have a negative impact on health and growth during these crucial years. All women, including those living with HIV, must follow optimum new-born feeding habits to maximize protection against early childhood diseases and minimize the risk of HIV infection for the greatest possible infant health and development results. To enhance the health and survival outcomes of HIV-infected children, nutrition assessment, counselling, and support should be a fundamental aspect of their care and treatment [37, 38].

In underdeveloped nations, despite the availability of evidence-based advice and standards, there are still misconceptions and misunderstandings concerning safer IYCF procedures. The inability of programs to make necessary modifications is hampered by a lack of national data combined with implementation issues. Governments and implementers should concentrate on practical and effective approaches to training and supervising healthcare providers, strengthening health systems, which should include procedures to track mother-infant pairs and national monitoring and reporting of internationally approved infant feeding indicators, such as improving the use of PMTCT and nutrition services. ARVs' efficacy in lowering HIV transmission and enhancing maternal treatment is limited by gaps in information regarding appropriate maternal regimens, baby prophylaxis duration, and the short- and long-term consequences on children of extended ARV exposure in breast milk on children. To inform global recommendations, new ART regimens and possibly vaccines that allow HIV-positive women to breastfeed without regard to duration should be identified, and Postnatal ARV adherence and breastfeeding should be improved with health care treatments [39, 40].

Despite significant progress in keeping mothers alive and reducing paediatric HIV, challenges remain in putting evidence-based recommendations into action. To eliminate

mother-to-child HIV transmission while protecting the health and well-being of all mothers and children, long-term political, financial, and scientific commitments are required [41, 42].

## Discussion in the Manuscript

The following are some of the most often discussed and unresolved issues with optimal new-born nutrition for HIV-positive mothers and babies: Is it safe for an HIV-positive mom to breastfeed her child?

1. Why is it safe to provide breast milk and other meals to infants after 6 months but not before?
2. How long should HIV-positive women breastfeed?
3. Do ARVs interfere with breastfeeding?
4. Does nursing cause health issues for women on ART, such as excessive weight loss? What does ‘gradual weaning’ mean?
5. Should medicine be mixed with breast milk or water if syrup medicines are not accessible for infants less than 6 months?

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6. What exactly does the term “gradual weaning” mean?
7. If syrup medications are not accessible for babies less than 6 months of age, should the medication be combined with breast milk or water?

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## Conflicts of Interest

There are no conflicts of interest to be concerned about. Please note that the findings and conclusions presented in this article are those of the authors and do not necessarily reflect the official position of the World Health Organization or the United States government, including the Centres for Disease Control and Prevention, the Agency for Toxic Substances and Disease Registry, or the United States Agency for International Development.

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