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Supporting non-breastfed children as part of an Ebola response

Experiences from the Democratic Republic of the Congo

CASE STUDY

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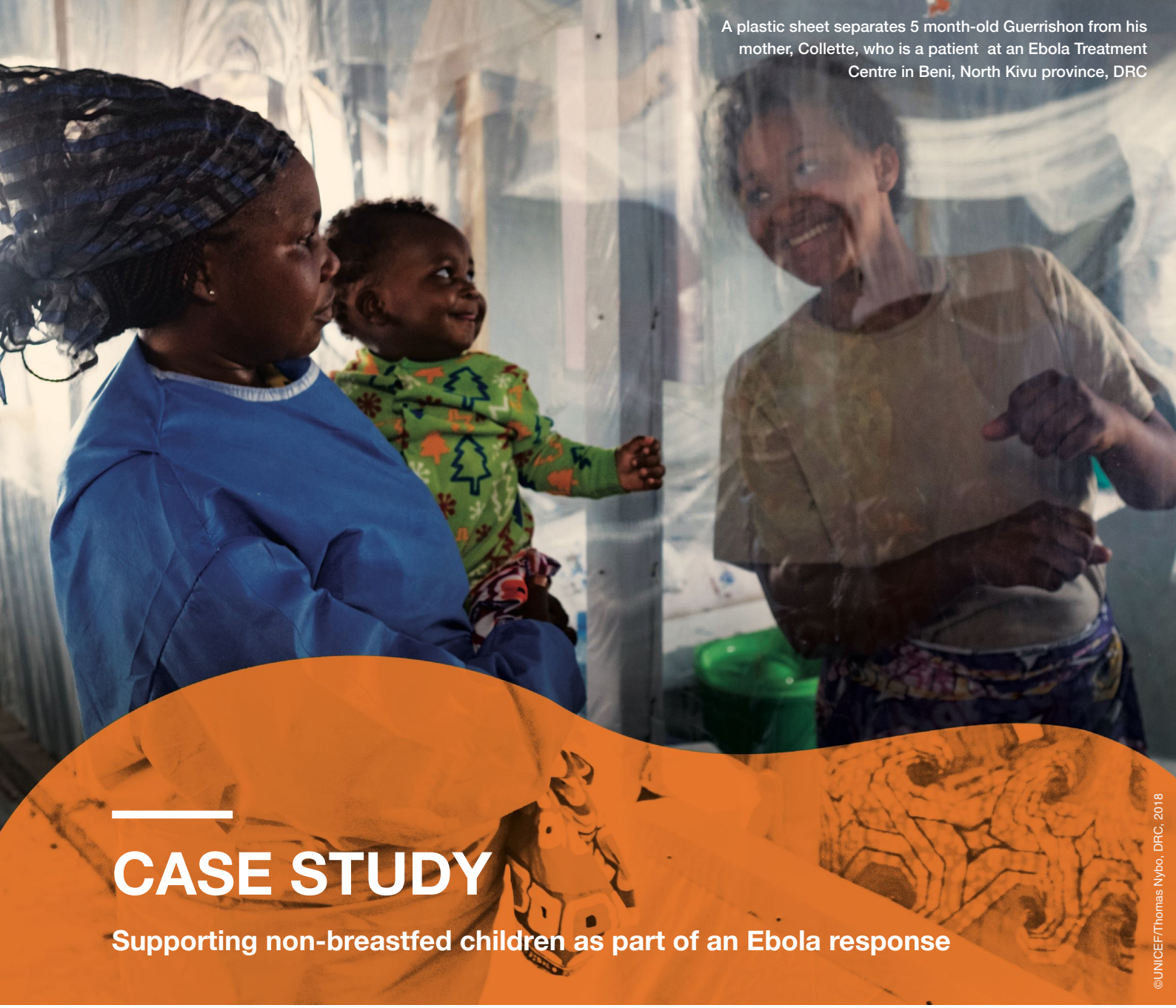

A plastic sheet separates 5 month-old Guerrishon from his mother, Collette, who is a patient at an Ebola Treatment Centre in Beni, North Kivu province, DRC

CASE STUDY

Supporting non-breastfed children as part of an Ebola response

ABOUT THIS BRIEF:

In every emergency, it is necessary to assess and act to protect and support the care and nutrition needs of both breastfed and non-breastfed infants and young children (Operational Guidance on Infant and Young Child Feeding in Emergencies, 2017 www.ennonline.net//resources/operationalguidancev32017). This case study focuses on support for non-breastfed children in the context of Ebola as this is a relatively new area of programming with limited documentation to date. In 2019, the Global Nutrition Cluster (GNC) Technical Alliance[1] (formally GTAM) examined technical challenges commonly faced by Nutrition in Emergencies (NiE) practitioners and the gaps in knowledge and guidance contributing to these challenges. The related report[2] identified "strong global guidance on the management of non-breastfed children during emergencies" as a priority technical gap, highlighting challenges that practitioners frequently experience. During the 2019 GNC Annual Meeting, an urgent call was put out for the revision of global guidance on Ebola Virus Disease (EVD) to ensure that Infant and Young Child Feeding in Emergencies (IYCF-E) is adequately integrated. This technical brief documents the DRC's experience of supporting non-breastfed children during an EVD epidemic to inform future guidance and programming in this gap area. This case study was developed through a desk review of available resources and policies as well as key informant interviews with UNICEF, WFP, ADRA and Ministry of Health personnel involved in the response.

[1] https://ta.nutritioncluster.net/
[2] https://www.ennonline.net/resource/baselinetechnicalneeds2019

BACKGROUND

On 1 August 2018, an Ebola Virus Disease (EVD) outbreak was declared in the Democratic Republic of the Congo (DRC). Almost a year later, on 17 July 2019, the World Health Organisation (WHO) declared the EVD outbreak a Public Health Emergency of international concern. By the time the outbreak was declared over on the 25 June 2020, a total of **3,470** confirmed and probable cases – including 2,280 deaths – had been reported[3], making it the worst EVD outbreak in the country's history and the second largest and deadliest globally. **57%** (1970) of the cases were female, among them were mothers who – in line with global and national guidance – were recommended to stop breastfeeding to prevent transmission of the virus to their child. To ensure these infants and young children continued to be nourished, over **3,000**[4] affected infants (0-11 months) and young children (12-23 months) received breastmilk substitutes (BMS)[5] as part of a comprehensive package of support that was integrated into the EVD response. This case study details how this was done as well as lessons learned during the process.

CONTEXT

The outbreak occurred in both urban and rural parts of North Eastern DRC, a densely populated area with a high population movement. As a result of decades of conflict, the region suffers from a chronic and complex humanitarian crisis. Prior to the outbreak, an estimated **3.58 million people**[6] were already in need of humanitarian assistance in the two worst affected provinces, North Kivu and Ituri. As with the rest of the country[7], these two affected provinces faced high rates of undernutrition (stunting prevalence of 49.6% for North Kivu and 47.1% for Ituri and wasting prevalence 4.6% in North Kivu and 11.2% in Ituri[8]). At the start of the outbreak, several territories in both the North Kivu and Ituri provinces were estimated to be facing a food security crisis (phase 3)[9]. Coverage of key nutrition interventions was low due to funding constraints.

INFANT AND YOUNG CHILD FEEDING PRACTICES

Breastfeeding is common in North Eastern DRC, with upwards of 95% of mothers in the affected provinces initiating breastfeeding after birth (DHS 2013-14). A MICS Survey (2017-2018) reported exclusive breastfeeding rates of 65.2% in Ituri and 83.7% in North Kivu (the national average is 53.5%). Complementary feeding is largely inadequate, with just 13.8% and 11.8% of children aged 6-23 months receiving the minimum acceptable diet in North Kivu and Ituri respectively (DHS 2013-14). Contributing factors include poor availability, accessibility, and (seasonal) affordability of adequate and diverse foods, inadequate services and sub-optimal caregiver knowledge of appropriate infant and child feeding practices.

[3] Democratic Republic of the Congo Ebola Virus Disease. WHO External Situation Report 98. https://www.who.int/publications/i/item/10665-332654

[4] This is an underestimation based on available UNICEF data (email correspondence). This figure includes mother-baby dyads affected by EVD, those who received BMS support linked to vaccination and suspected cases who later tested negative for EVD.

[5] A breastmilk substitute (BMS) is any food (solid or liquid) marketed, otherwise represented or used as a partial or total replacement for breastmilk. The two types of BMS used during the response were infant formula and Ultra High Temperature (UHT) milk.

[6] 2017 – 2019 Humanitarian Response Plan, 2018.

[7] DRC national prevalence of stunting is 41.8% and wasting 6.5% (UNICEF/MICS 2017-2018).

[8] MICS Survey 2018

[9] Integrated Food Security Classification (IPC) Although food insecurity was worse in other parts of the country in 2018.

POLICY AND GUIDANCE

INTERNATIONAL POLICY AND GUIDANCE:

Global guidance arising from the 2014-2016 EVD outbreak in West Africa provided a critical starting point to inform the nutrition components of the DRC EVD response. Key issues on EVD and IYCF-E from this guidance included that:[10,11,12,13]

- Although breastfeeding is the biological norm and the globally recommended way to feed infants and young children, Ebola is an exception: available evidence indicates that the risks of EVD outweigh the risks of not breastfeeding. Because the Ebola virus is present in body fluids, including sweat and breastmilk, both close physical contact during breastfeeding and breastmilk itself are presumed to carry a transmission risk. In light of this, global guidance recommends that uninfected breastfed infants of mothers with EVD should be temporarily separated and provided with replacement feeding[14].
- Wet-nursing is not recommended as the risk of transmission from a wet nurse to an infant and vice versa is considered high if either becomes infected. Replacement feeding options are therefore donor human milk and breastmilk substitutes (BMS).

NATIONAL POLICY AND GUIDANCE

Initially, existing national guidance[15] on responding to viral haemorrhagic fever outbreaks did not address nutrition and infant and young child feeding (IYCF) adequately, nor did DRC's national nutrition policy and national multi-sector strategic plan cover EVD. Existing global guidance was therefore used to guide the first three months of the EVD response, with the Operational Guidance on Infant and Young Child Feeding in Emergencies (IFE Core Group, 2017) serving as a key resource to guide BMS programming. In November 2018, contextualised national guidance[16], specific to IYCF-E in the context of EVD in DRC, was released by the Ministry of Health's Nutrition Department (PRONANUT) with support from UNICEF and inputs from multiple partners[17].

Following a cross-regional knowledge exchange workshop held in May 2019 in Goma-DRC, during which IYCF and EVD patient nutritional care protocols were reviewed, amended guidance was validated and released in May 2019[18]. The workshop aimed to facilitate an in-depth discussion around the importance of nutrition in an EVD response plan based on field experience, evidence and lessons learned from previous EVD outbreaks. The workshop further reflected on preparedness efforts in Uganda, South Sudan, Rwanda and Burundi (as outlined in Box 1 below) and highlighted the role of IYCF in EVD infection control and prevention, the importance of nutrition in quality case management and the need for specific skills and competencies[19].

Compared to global guidance on IYCF in the context of EVD, the 56-page national manual is far more detailed, covering general IYCF recommendations, key messages, practical instructions, contextualised roles and responsibilities, BMS management, community interventions (including those to promote and

[10] UNICEF, WHO, CDC and ENN (2014) Infant Feeding in the Context of Ebola (interim guidance)
[11] WHO, UNICEF and WFP (2014) Nutritional Care of Children and Adults with EVD in Treatment Centres (interim guideline)
[12] WHO (2016) Pocket guide for the frontline health worker: clinical management of patients with viral hemorrhagic fever
[13] WHO (2020) Guidelines for the management of pregnant and breastfeeding women in the context of Ebola Virus Disease.
[14] 2014 interim guidance on Infant Feeding in the Context of Ebola by UNICEF, WHO, CDC and ENN. Also echoed in the interim guideline on Nutritional care of children and adults with EVD in treatment centres (WHO, UNICEF and WFP, 2014) and the Pocket guide for the frontline health worker: clinical management of patients with viral haemorrhagic fever (WHO, 2016).
[15] E.g. Guide de Prise en Charge des FHV – Direction de lutte contre la maladie. Ministry of Health, 2012.
[16] Ministère de la Sante – Programme National de Nutrition (2018) Manuel d'orientation sur la promotion, la protection et le soutien à l'alimentation du nourrisson et du jeune enfant, dans le contexte de l'épidémie de la maladie a virus Ebola.
[17] WHO, WFP, ADRA, MDA, COOPI, IMA, UCAD.
[18] Validated guidelines can be found on the PRONANUT website: Protocole de soins nutritionnels chez les adultes et les enfants avec maladie à virus Ebola (MVE) hospitalisés aux centres de traitement (CTE) and manuel d'orientation sur la promotion, la protecion et le soutien a l'alimentation du nourrisson et du jeune enfant en communaute, dans le contexte de l'epidemie de la maladie a virus ebola
[19] DRC Ministry of Health, UNICEF and WHO (2019) Integration of nutrition in an EVD outbreak response: opportunities and challenges. Learning lessons and practices from past and current outbreaks-Report – Goma, DRC May 2019

support breastfeeding), early childhood development (ECD), institutional frameworks and monitoring and evaluation (M&E). Guidance on BMS management details decision making (Table 1), supply chain management, quantification of needs, preparation and cup feeding instructions, required equipment and human resources and hygiene measures.

In terms of key differences with global guidance, **the decision tree presented in the 2014 interim guidelines was adapted:** "mother asymptomatic, infant symptomatic", mothers of asymptomatic infants who have survived EVD and female frontline responders were added as categories. The recommendation to continue breastfeeding if both mother and child are symptomatic was reversed in line with more recent global guidance[20]. Contextualised referral instructions were included on response-specific services and structures such as community management of acute malnutrition (CMAM) services and psychosocial support. EVD vaccination status was included as a new consideration to take into account given the introduction of a vaccine (this was not available in 2014).

In December 2018, the Government of DRC requested Nutrition Cluster partners to consider BMS procurement in light of EVD. In the DRC context, key safety and operational considerations for the use of donor human milk could not be met. The safest replacement feeding for infants less than six months was therefore ready to use infant formula (RUIF). In recognition of the exceptional circumstances under which BMS provision was a life-saving intervention and with reference to global guidance and the Congolese BMS Code[21], the Nutrition Cluster, UNICEF, PRONANUT and the WHO recommended that BMS should be procured as part of the EVD response[22]. This led to a formal directive from PRONANUT that UNICEF had the sole role and responsibility for BMS procurement for the response. This recommendation sought to halt the uncoordinated procurement of BMS by partners without PRONANUT's or UNICEF's clearance and oversight and to enable tightly controlled procurement and distribution.

Children under two years of age eligible for BMS use included:

1. *Mother-child discordant pairs* to prevent trans mission to the other
2. *Mother-child concordant pairs* where both mother and child were suspected or confirmed to have EVD[23]
3. *Maternal orphans* where cause of death was suspected or confirmed EVD
4. *New mothers* who survived EVD while pregnant whose breastmilk showed presence of viral RNA[24]

Table 2 Decision making for mother-baby dyads affected by Ebola

Ebola Status	Mother	Child	Guidance
	+	+	Replacement feeding
	+	-	Separation and replacement feeding
	-	+	
	-	-	Continued breastfeeding

[20] WHO (2020) Guidelines for the management of pregnant and breastfeeding women in the context of Ebola Virus Disease.
[21] A national code has existed since 2006, regulating the marketing BMS, food and beverages, feeding bottles and teats, and the use of these products within the healthcare system. This was used to support the EVD response.
[22] December 2018. Report of ad hoc Nutrition Cluster meeting held on 5 December in Kinshasa.
[23] This global recommendation is based on very low quality evidence and the assumption that the presence of Ebola virus in breast milk increases the likelihood of severe Ebola in an already infected infant. There is a high level of uncertainty around the risks of continued breastfeeding when both mother and child are positive. If a mother wishes to continue breastfeeding after counselling on the uncertainty around the risk of continued breastfeeding, she should be supported to do so. No such cases were reported in DRC.
[24] Although not mentioned in the national guidance, in practice PCR tests were done in cured/survivor clinics.

RESPONSE COORDINATION AND DELIVERY

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The nation's tenth EVD outbreak in 40 years was the first time in DRC that IYCF-E (and nutrition in general) was integrated into the overall EVD response[25], with BMS provided for eligible children from September 2018 onward[26]. The EVD response was organised at two levels (national and operational) and delivered in parallel to the healthcare system and other response mechanisms. To ensure adequate IYCF-E coordination capacity, an IYCF-E Technical Working Group (IYCF-E TWG) was established by PRONANUT (MoH) in November 2018 under the Psychosocial Support (PSS) commission with UNICEF as partner lead. Prior to the establishment of IYCF-E TWG, UNICEF had coordinated as lead of the nutrition sector/cluster.

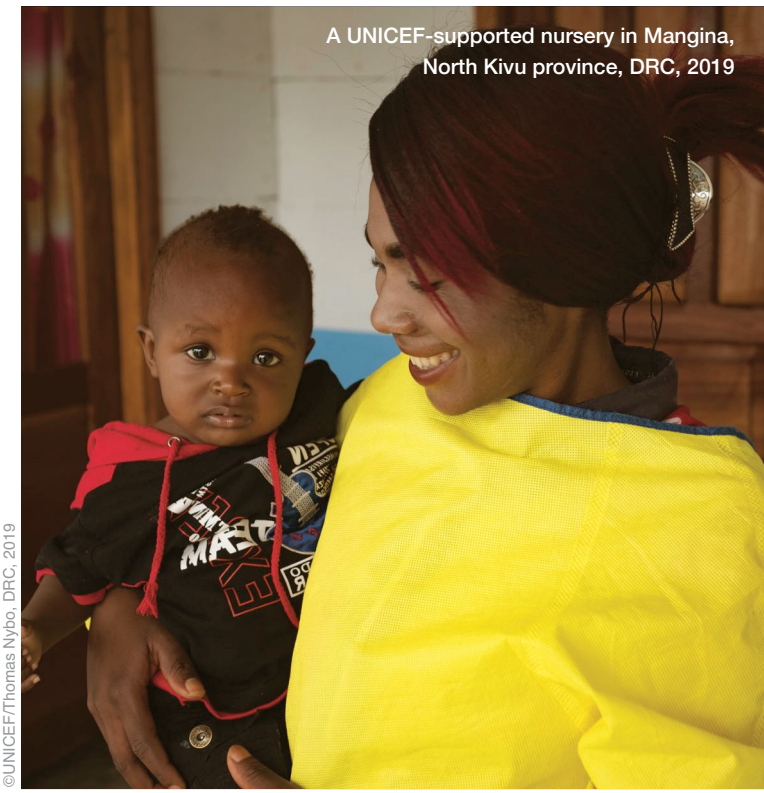
The IYCF-E TWG was initially made up of 11 institutions (including PRONANUT, UN Agencies, International and National NGOs[27]). The role of the group

[25] IYCF-E is specifically named in later response plans i.e. SRP-3 and 4, February 2019 onwards. (WHO 6/12/2018)
[26] It remains unclear how infants and young children were managed during previous EVD outbreaks.
[27] Adventist Development & Relief Agency (ADRA), Medical Aid Here and Now (MAGNA), Médecins d'Afrique (MDA), Cosoperazione Internazionale (COOPI), IMA World Health (IMA), Université Cheikh Anta Diop (UCAD), Save The Children.

was to coordinate BMS management, ensure the integration of IYCF-E approaches into emergency response interventions (including health, risk communication and community engagement (RCCE), nutrition and PSS), strengthen capacity, prevent inappropriate donations[28], develop national guidance and tools and ensure monitoring, evaluation and documentation systems were in place.

The response coordination needed to consider the following aspects:

1. **Risk communication and community engagement**: Careful, harmonised messaging was required about when and why to stop breastfeeding to prevent the negative impacts to breastfeeding rates in the general population, to protect future breastfeeding practices and to support the immediate emotional wellbeing of mothers affected by EVD by avoiding conflicting information.
2. **Capacity strengthening:** To implement the new policy guidelines, capacity needed to be rapidly scaled up, particularly as pre-existing IYCF/IYCF-E capacity was low. The existence of a team of 21 certified national IYCF-E trainers, trained by the Tech RRT[29] in May 2018, was a key facilitating factor which enabled training activities (funded by UNICEF) to be cascaded to those implicated in BMS programming, including psychosocial, vaccination and logistics personnel. Caution had to be taken during training not to overburden psychosocial workers tasked with delivering IYCF-E at community level as part of their multi-sectoral community role[30].
3. **Identification of appropriate BMS products:** PRONANUT and UNICEF oversaw the identification and procurement of appropriate BMS products, given their coordination role. For children aged less than six months, national guidance indicated that **ready-to-use infant formula (RUIF)** was preferred[31] but that **powdered infant formula (PIF)** could be used when RUIF was unavailable (a realistic acknowledgement of potential stock ruptures and international procurement delays). Older infants and young children received **Ultra High Temperature (UHT) milk.** The decision was made to provide UHT milk rather than RUIF for this age group because it was locally available and less costly than RUIF. The decision could not be based on pre-emergency practices as no appropriate products were locally known; focus group discussions held by the UNICEF-funded Social Sciences Analysis Cell (CASS) found that, prior to the emergency, mothers who were unable to breastfeed "never" used powdered or UHT milk and "almost never" used infant formula due to their prohibitive cost. Instead, they transitioned straight to porridge (bouilli), a local food otherwise introduced around one year of age. RUIF was an unknown product to all.
4. **Procurement:** The Nutrition Cluster, UNICEF, PRONANUT and the WHO recommended that BMS should be procured for the EVD response for affected areas only and be assigned to UNICEF. Due to the urgency, UNICEF DRC requested approval[32] to procure PIF on the local market and was supported by UNICEF Supply Division (SD) to identify a brand which was available locally and well known, with the least reputational risk (in terms of code violations) and acceptable from a quality point of view. In parallel, RUIF was procured internationally from a pre-approved manufacturer in South Africa. UHT milk was procured locally.



A UNICEF-supported nursery in Mangina, North Kivu province, DRC, 2019

[28] No donations were reported.
[29] http://techrrt.org/
[30] Profile and knowledge of PSS agents on nutrition and clinical care was basic
[31] This is considered to be a less risky option than Powdered Infant Formula (PIF) since it does not require reconstitution with water.
[32] UNICEF requires additional approvals for procurement of BMS to ensure it is only used in specific circumstances.

PROGRAMME ADAPTATIONS

CARE AT EBOLA TRANSIT AND TREATMENT CENTRE LEVEL

As part of Risk Communication and Community Engagement (RCCE), breastfeeding women were recommended to stop breastfeeding immediately if they, or their child, developed EVD-like symptoms. Suspected cases were handled as follows: once the mother-child dyad was transported and admitted to an Ebola transit or treatment centre (ETC) for testing, recommendations on temporary separation and stopping breastfeeding were explained to the mother by a nutritionist with support from a psychosocial worker. If she agreed to temporarily stop breastfeeding and be separated[33], the daily volume of BMS required by the child was calculated. The child was fed using an open cup, labelled with their name. If the child was older than six months, they were also offered food from their own (labelled) plate. If laboratory results (normally received within 48 hours) revealed that both mother and child were Ebola negative, they were discharged and provided with material assistance and advice to resume breastfeeding. Children or mothers whose laboratory results showed they were Ebola positive were admitted to the ETC for treatment. Children under two years admitted to the ETC received BMS, provided as part of a multidisciplinary package of clinical care which included medical, nursing, rehabilitation, psychosocial care and early childhood care services using the standard infection prevention control (IPC) measures of the ETC. If the mother was admitted to the ETC but her child was Ebola negative, the child was admitted to the nursery. Here, the child was closely monitored for EVD, cared for and fed with BMS (as well as complementary foods if aged 6-23 months) until the mother was cured. When the mother-baby dyad was ready to be discharged, a nutritionist used job aids to provide individual-level education and practical training on cup feeding and how to minimise the risks of artificial feeding. A take home ration of BMS was provided, as well as counselling on complementary feeding and relactation, if appropriate. In the event the mother had died, information was shared with the child's caregiver (own or host family or orphanage staff.)

CONTINUUM OF CARE: CARE AT COMMUNITY LEVEL

Once back in the community, an assigned psychosocial worker and nutritionist repeated the information provided during discharge from the ETC and/or nursery. Particularly in cases where the mother had died, this was found to be important to prevent inappropriate practices (such as the use of feeding bottles) as the person collecting the child (e.g., the father) was often not the child's new primary caregiver (often a grandmother or aunt). If the mother was recovering from Ebola, she was able to restart breastfeeding once two consecutive laboratory (RT-PCR) tests[34] confirmed that the virus was no longer detectable in her breastmilk. She could then start the process of relactation or increasing her breastmilk supply with support from the nutritionists, community workers and psychosocial workers. In the meantime, or if the child had no possibility of being breastfed (e.g., maternal orphan), BMS continued to be provided to the child's caregiver by a psychosocial worker (requisitioned from health facilities and discreetly transported in a provided rucksack). Each psychosocial worker was assigned a maximum of five BMS-dependent children whom they visited twice a week for the duration of BMS provision (RUIF was provided until the infant reached six months of age or breastfeeding was re-established; the duration of UHT provision for older infants was determined based on family vulnerability criteria and the child's status i.e., orphaned, separated). During visits, hygiene and cup feeding were supported and empty BMS tins collected to closely monitor BMS consumption. Nutritionists could be summoned in cases of concern and were also required to monitor the health and nutrition status of children during a monthly joint visit. At community level, these activities were complemented by activities to protect, promote and support appropriate breastfeeding and complementary feeding practices in the general population.

[33] No cases of refusal reported, attributed to the counselling process.

[34] In line with WHO (2020) Guidelines for the management of pregnant and breastfeeding women in the context of EVD. (recommendation change from WHO 2016 guidelines).

OUTCOMES OF PROGRAMME ADAPTATIONS

By the end of March 2020, more than 1,991 infants and 1,384 young children had received BMS support[35]. During interviews conducted for this case study, the introduction of BMS was widely recognised as a life-saving intervention, particularly for infants under six months. Although data is lacking, the improved case management for women and children is thought to have improved treatment acceptance and maternal wellbeing and decreased mother-child and child-child transmission and mortality rates.

One concern of programmers and policy makers was the potential negative impact of the use of BMS on breastfeeding rates. Initially, these concerns appeared to be ill-founded in this context, as outlined by those interviewed for this case study. However, data remains limited. When practices were explored in 2020 (in relation to COVID-19), concerningly it was found that 56% of women reporting through U-Reports[36] in North Kivu and only 13% in Ituri continued to exclusively breastfeed while 41% in North Kivu and 14% in Ituri had stopped breastfeeding during the COVID-19 pandemic. These figures are lower than obtained via MICS surveys prior to both the Ebola outbreak and the COVID-19 pandemic but there is little way of knowing to what extent this deterioration of breastfeeding practices can be attributed to the impact of EVD.

Among children under two, a few isolated cases of diarrhoea were linked to unhygienic practices while using BMS and a small number of cases of acute malnutrition were detected which require further investigation. These cases of malnutrition were mostly reported in infants over six months, particularly orphans cared for by host families (the child's BMS was likely shared with household members or family foods were reserved for children who did not receive BMS). Sporadic reporting through malnutrition surveillance systems has not raised any nutrition alerts.

[35] Approximately half of all BMS recipients were admitted to an ETC for EVD treatment, one quarter were admitted to nurseries while their mothers received treatment and one quarter received BMS at community level for reasons linked to vaccination (UNICEF data from August 2019 to March 2020. Email correspondence.)

[36] U-Report is a social messaging tool and data collection system developed by UNICEF. The programme sends polls and alerts to its participants, collecting real-time responses, and subsequently publishes gathered data.

BEST PRACTICES

There were a number of best practices implemented during this response, some of which included:

- The integration of nutrition into the overall response
- The integration of care for non-breastfed infants into case management
- The availability of endorsed national normative guidance and government ownership of the approach
- The availability of RUIF to mitigate the risks associated with artificial feeding
- UNICEF overseeing the procurement and distribution of BMS
- Regional knowledge exchange and preparedness platforms (see Box 1)
- Availability of a pool of national IYCF-E trainers
- Availability of technical support via the GNC and Tech RRT

Furthermore, as learned during the West and Central Africa (WCA) response, critical to all interventions was **psychosocial support** provided throughout the continuum of care. This played a key role in fostering acceptance of preventative and response measures alongside tailored material assistance.

A noteworthy best practice was the establishment of **nurseries** (crèches) which enabled children whose mothers needed to be admitted to the ETC to be cared for nearby. These nurseries mitigated some of the mothers' biggest fears (such as separation and worries about who would care for their child) which can otherwise lead to delays in seeking, or resistance to accepting, treatment. With this new approach, there were no cases of treatment refusal reported among mothers. Mother and child could

safely see each other through a window which positively impacted the wellbeing of mothers. Within the nursery, a carer was assigned to each child. Survivors of EVD were recruited for this role due to their desire to be involved in the response, ability to provide compassionate support and critical role in gaining community trust and acceptance. Their presumed immunity to the disease enabled them to feed, comfort and play with children and to bring them to see their parents. The reduced level of personal protective equipment (PPE) required by survivors enabled them to comfortably care for a child for several hours and supported connection with the child. The co-location of services within nurseries facilitated a multi-sectoral nutrition, health and psychosocial response with strong integration at this level of the response. Concerns by the Child Protection (CP) sector around risks of institutionalisation were mitigated by putting in place Standard Operating Procedures (SOPs) which clearly stipulated that these structures were only for children separated because their mother had been admitted to the ETC. Over the course of the epidemic, 881 children under two were admitted to nurseries[37].

At regional level, preparedness actions were undertaken as a result of lessons learned from the DRC. These are described in Box 1 below.

Box 1 Regional preparedness

The DRC shares its borders with nine countries with regular cross-border movement of people, goods and services in the region. Combined with weaknesses in national health systems, Ebola outbreaks in neighbouring countries were considered likely. In September 2018[38], a regional joint statement was released by the WHO, UNICEF, WFP and UNHCR calling for attention to nutrition in the context of EVD. A roadmap was developed by the UNICEF ESARO team to ensure nutrition would be integrated into EVD preparedness and response plans focusing on Priority 1 countries (Burundi, Rwanda, South Sudan and Uganda). An infant feeding decision tree for health workers was developed for the region in collaboration with Save the Children. The regional workshop in May 2019 helped to solidify ongoing communication between the DRC and neighbouring countries and to establish a community of practice for the nutrition response. Country capacities were mapped and tailored support visits conducted to address gaps, focusing on coordination, policy and planning, service delivery, monitoring and quality assurance, capacity building, supply management and information management as needed. It was noted that IYCF-E programming, including the use of BMS in pre-defined circumstances, required a clear narrative and increased capacity and engagement with other sectors (such as health and psychosocial support) compared to non-emergency IYCF programming. Although pre-approvals were obtained for RUIF, procurement itself was initially challenging due to ongoing advocacy for exclusive breastfeeding. When UNICEF Uganda approached SD with a request for pre-positioning of BMS as part of its EVD preparedness planning, the country office was encouraged to first identify other cluster partners to procure the BMS and to assess global brands in the local market. The UNICEF ESARO office was subsequently required to provide a justification for the use of RUIF for clearance by UNICEF's programme division as well as the headquarters of the WHO, WFP and UNHCR. Challenges were also experienced with quantification, storage and eventual disposal, given the product's relatively short shelf life of nine months. These challenges were reduced when guidance from UNICEF's programme division was updated to reflect UNICEF being an agency of first resort, rather than last resort, for the procurement of BMS in humanitarian settings. These preparedness actions undoubtedly ensured a level of response readiness that the DRC had lacked at the start of its response. As a result of remote and on-site technical support, key nutrition focal points were sensitised, countries developed context specific nutrition SOPs and integrated nutrition into EVD coordination mechanisms and response plans.

[37] UNICEF email correspondence.
[38] An updated joint statement reflecting emerging evidence regarding the safety of resumption of breastfeeding once cured was released in November 2018.

CHALLENGES

- **Insecurity, the geographic spread of the response and poor road conditions** presented logistical challenges, requiring significant resources for the deployment of experts and transportation of supplies. Access to households, health facilities and markets for monitoring and follow-up was limited. In some areas (such as 'red zones' that are inaccessible to responders due to fighting and the risk of kidnapping), a remote management model was applied. This remote management model, involving ad hoc monitoring and supervision via local health facilities, presented a number of challenges. Given the geographic spread of a relatively low number of cases, the ratio of required nutritionist to BMS-dependent children was high. At the start of the response, there were insufficient numbers of nutritionists to meet the needs of ETCs, nurseries and communities. Overwhelmed by cases in ETCs, the nutritionists' ability to supervise and support relatively inexperienced psychosocial workers was limited. This affected the quality of programming, documentation and monitoring at community level and restricted the ability to carry out more technically complex activities such as relactation. Once over 35 nutritionists were mobilised, significant gains were made.
- **Quantification and forecasting of BMS needs:** Due to difficulties in predicting the unprecedented number of affected children in the absence of disaggregated data as the outbreak continued to grow, forecasting and quantification of BMS needs was complex. Supply chain continuity of both RUIF and UHT posed a challenge, with ruptures in RUIF supplies requiring a temporary switch to PIF and ruptures in UHT supplies requiring a temporary switch back to either RUIF or PIF.
- **Perceptions, acceptance and cultural beliefs:** Caregivers expressed feelings of guilt and worries that their child would become "stupid" if they were not breastfed. This was addressed by explaining that, although breastmilk is superior, the use of BMS was a temporary and potentially lifesaving necessity in the context of EVD. For many women, breastfeeding is an important part of maternal identity. Documented emotions of women in other cultures who stop breastfeeding before they feel ready include feelings of failure, regret, guilt, shame, disappointment and grief[39]. BMS use may also carry stigma due to its association with HIV. Information on how artificial feeding and breastfeeding are perceived and experienced in North Kivu and Ituri was not available to inform psychosocial support and messaging. The limited inclusion of women's and mothers' associations and poor gender representation among NGO and UN staff is also thought to have contributed to the lack of a women-oriented communication strategy, despite their greater affectation. *BMS acceptance:* Some cases of UHT milk refusal were reported among children older than six months (thought to prefer the sweet taste of tea with milk and sugar they had already become accustomed to.) As RUIF also has a sweeter taste than UHT, some cases of refusal were also reported for infants transitioning from RUIF to UHT. Solutions including adding milk to porridge and encouraging responsive feeding practices. There were no reports of infants under one year old struggling to digest UHT milk.
- **Localisation of epidemics (local markets and languages):** A lack of availability of programming and monitoring tools (in French) resulted in time being lost as they had to be developed (finalised in February 2019). The team also lacked tools to support internal advocacy (e.g., to convince responders that cup feeding was possible and bottles were not necessary) and needed to translate UNICEF's Guidance on the provision and use of BMS in humanitarian settings into French in the country which took time. With regards to feeding equipment, teams were provided with graduated, transparent measuring cups to measure the volume of BMS required by a child based on their weight. A mark was placed on household cups to indicate the volume of BMS a child should receive. Caregivers reportedly found it difficult to use their household's non-transparent cups on which the mark could not be clearly seen, sometimes giving too much or too little BMS. It was reported that younger infants found it difficult to drink from the large cups commonly used by households, preferring the smaller medicine cups used within the ETCs and nurseries. Although UNICEF's guidance on BMS in humanitarian settings states cups can be procured locally, difficulties were experienced in identifying quality supplies at local level.

[39] Brown, A. (2019) Why Breastfeeding Grief and Trauma Matter. Pinter and Martin.

Medical staff decontaminate their personal protective wear at an Ebola treatment site in Chowe village, South Kivu province, eastern Democratic Republic of the Congo, 2019.

GAPS

GAPS

- **Complementary feeding:** In addition to BMS, non-breastfed infants aged 6-23 months need safe and adequate complementary foods. Key messages to strengthen caregiver knowledge on appropriate complementary feeding practices were provided alongside ECD activities[40], however access to these foods was not facilitated. Due to food safety concerns, ETCs relied on local restaurants to prepare food as directed. Older infants and young children received the same foods as other patients. Cured confirmed and discharged unconfirmed patients were provided with a standard family ration by WFP, regardless of age. Although it is not possible to confirm in the absence of outcome-level data, given what was already known about poor complementary feeding practices in the area plus anticipated market disruptions and food insecurity caused by Ebola, the provision of messaging or counselling alone (without the provision of complementary foods) is likely to have been inadequate for children recovering from Ebola, particularly vulnerable children such as orphans. However, the context for decision-making around programming for complementary feeding was difficult including restrictions on specialised foods for children, sensitivities around providing different types of commodities and assistance to cured confirmed and discharged unconfirmed[41] groups (in terms of community perception), sensitivities around cash/voucher assistance and the wide geographic spread of cases for monitoring and follow up.
- **Breastfeeding support:** *Rapid breastfeeding cessation:* How to support mothers to rapidly stop breastfeeding was not covered in the IYCF-E/EVD national guidance. Although hand expression instructions were provided for cases where the mother was asymptomatic but the infant was symptomatic, hand expression was not identified as a technique to alleviate engorgement and prevent inflammation (as suggested in global guidance). Instructions to handle and discard breastmilk of mothers with Ebola as per IPC protocols as well as guidance on associated emotional support needs are also omitted from the national guidance. Relactation: Given the urgency with which BMS management had to be introduced, future relactation needs were initially also overlooked. Relactation is a technical area of breastfeeding management that can be challenging to execute during emergencies, as reported during this response[42]. Mothers expressed worries around restarting breastfeeding after EVD infection and a lack of confidence in the process. Although, according to national guidance, breastfeeding could be resumed following two negative PCR tests, a Tech RRT evaluation[43] found that in practice these tests were rarely subsequently conducted if viral RNA was detected in breastmilk at discharge. Instead, BMS was provided and – in cases where the mother continued to produce breastmilk three months later – medication to suppress lactation was provided. This was linked to a lack of evidence on the appearance and duration of the virus in breastmilk once cured and transmissibility through breastmilk. Furthermore, although nutritionists had the required technical knowledge and counselling skills, their availability to support this intensive process was limited. Gaps in national guidance were addressed by developing job aids at a later stage. Related to this, there were reports of very low milk supply in negative cases discharged from transit centres (duration of stay 2-4 days). It remains unknown whether a real drop was caused by vaccinations and medications received or high levels of stress resulted in an inhibited milk let-down reflex and perceived low supply. It is vital to focus on relactation, increasing milk supply and building breastfeeding counselling skills from the start so that BMS support can be temporary for children whose mothers have survived EVD.
- **Water, Sanitation and Hygiene (WASH):** WASH interventions were strongly present in the overall EVD response, however intentional convergence

[40] ECD activities mostly occurred at ETC and nursery level, with some messaging on child stimulation at community level.
[41] This group was considerably larger.
[42] Out of a cohort of 56 mothers who survived Ebola, only 4 relactated successfully (7%).
[43] Tech RRT (2020) Revue du système actuel de gestion des Substituts de Laits Maternel (SLM) pour les enfants de moins de 24 mois affectés par la Maladie à Virus Ebola

with IYCF-E was low. WASH support alongside cooking and feeding equipment (BMS kits) was not included in the essential package of support for non-breastfed infants, as per Sphere Standards, beyond the provision of soap. Household level support was limited to education on hygienic practices. Risks were mitigated by using RUIF rather than PIF, when available. However, WASH support and supplies were not adapted when stock ruptures necessitated the use of PIF.

- **Code violation monitoring system:** The absence of a monitoring and reporting mechanism for code violations within the national EVD coordination mechanism was an important gap in the response. Stakeholder awareness of their roles and responsibilities with regard to monitoring and reporting was subsequently low. This led to stakeholders being unable to rapidly identify and correct code violations. At field level, no operational plan was in place to deal with possible violations, including donations. A Tech RRT adviser was deployed to the response in February 2020 to support the establishment of such a mechanism.
- **Vaccination:** Until recently, there were no specific forms of prevention for EVD. In August 2018, a vaccine (rVSV- ZEBOV), first trialled and shown to be highly effective during the WCA response, was introduced in North Eastern DRC. Pregnant and lactating women (PLW) and infants were excluded from the strategy due to a lack of evidence on the safety of the vaccine in these groups[44]. Mothers who had potentially been exposed to the virus were told to wait to see if they developed symptoms, in which case they were advised to stop breastfeeding. These mothers expressed worries that they would get sick and pass the virus on to their child with some stopping breastfeeding without support[45]. Recognising criticisms that this approach took away a breastfeeding woman's right to opt for the vaccine by making the decision for her, UNICEF switched to a shared decision-making approach and supported high-risk women who chose to be vaccinated and stop breastfeeding with BMS. In February 2019, the DRC announced its plans to include PLWs and infants over six months in its vaccination protocol, endorsed by WHO[46]. Unless symptoms of EVD developed, cessation of breastfeeding was discouraged. The national guidelines were updated, with the decision tree indicating that BMS would not be provided to mothers choosing to stop breastfeeding following vaccination. In June 2019, vaccination of PLWs began[47]. However, many mothers had already transitioned from breastfeeding to artificial feeding in order to be vaccinated at this point and could not be adequately supported to relactate in the absence of sufficient technical capacity.

Nursery workers care for babies in the Katwa Child Care Centre, in Butembo, North Kivu, DDC 2019

[44] Between 26th November 2018 and 26th May 2019, a reported 319 pregnant women and 603 lactating women were registered as contacts but not vaccinated (Schwarz et al., 2020).
[45] According to a small study conducted by the Social Sciences Analysis Cell (CASS) in November 2018
[46] https://www.cidrap.umn.edu/news-perspective/2019/02/ebola-vaccine-be-given-pregnant-lactating-women
[47] Caravotta, J. (2019) Ebola in the DRC: The vaccine battle against the serial killer.

Students put a poster detailing Ebola sensitization on the walls at La Vérité school in Butembo, North Kivu, Democratic Republic of Congo, 2019

LESSONS LEARNED AND RECOMMENDATIONS

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IYCF-E is a life-saving component of EVD responses which must be included in the first phase of a response. Responders initially focused on preventing EVD transmission without recognising IYCF as neither a problem nor a solution. Once disaggregated data showed that a predominance of women, children and infants were affected by the outbreak[48], the need to fine-tune treatment and support this vulnerable group became evident. Initially ineligible for vaccination and often breastfed, infants under one year of age were particularly affected[49]. Given the sensitivities related to BMS and concerns that BMS programming could negatively impact breastfeeding practices among uninfected women, advocacy was needed to ensure that the critical needs of EVD-affected infants and young children were met. UNICEF and its partners were able to successfully advocate to multiple response commissions by highlighting the transmission risks and likelihood of maternal death[50], emphasising that protection of children must include protecting their right to survival, nutrition and health. A joint statement[51] to this effect was released and disseminated.

Multi-sectoral sensitisation, preparedness and collaboration are essential. Responders working within sectors other than nutrition are often the first to come into contact with children under the age of two and their caregivers and may do harm if not appropriately sensitised. Feeding bottles and non-code compliant BMS were initially purchased without consulting nutrition specialists regarding what would constitute appropriate support. Households with BMS-dependent infants were also not prioritised for WASH support. This could have been prevented through mandatory IYCF-E sensitisation activities, including for logistics, in preparedness. To solidify awareness, the procurement of BMS and associated regulations should be included in procurement mechanisms and policies under the logistics commission, as well protocols and guidelines developed by sectors other than nutrition. Relevant sectors (including health, WASH, protection, education and food security) and commissions (case management, surveillance, IPC, RCC, PSS, vaccination) should be supported and guided by nutrition, a vital sector to be included at the start of any EVD response.

Breastmilk substitutes are needed from the first day of an EVD response in order to save lives[52]. According to global guidance, UNICEF will only procure BMS once the need is confirmed by a population-level assessment[53]. Unless a human milk bank is operational and can meet key safety requirements, there is a need for BMS in all Ebola epidemics. Agency needs assessment requirements should therefore be minimal in the context of EVD (e.g., declaration of an outbreak is sufficient to justify and trigger BMS procurement) and pre-approvals[54] should be granted to high-risk countries specifically for Ebola. Implementation capacity should be assessed in preparedness and systems established for the management of artificial feeding and ensuring BMS can be rapidly supplied (e.g., by establishing long term agreements with pre-approved suppliers). In this case, the presence of an approved supplier in Africa who was able to deliver stock was advantageous.

Feeding practices in orphanages may pose a transmission risk during infectious disease outbreaks. Global guidance[55] covers care for orphans but does not address practices in institutions such as orphanages. In the context of DRC, where breast-

[48] 24% of patients admitted for treatment were under the age of 15. Women represented 62% of cases. (WHO Disease Outbreak update 6/12/2108). To date it remains unclear whether the demographics of this epidemic are different, or this apparent difference is due to improved disaggregation of data or documentation. Investigation is underway.

[49] 25.4% of children under 15 admitted for treatment were less than one year old. (WHO Disease Outbreak update 6/12/2108)

[50] The overall fatality rate was 67% (WHO 2019 - External EVD Sitrep 69).

[51] DRC Nutrition Cluster, IYCF-E TWG (November 2018). Fiche information et plaidoyer aux acteurs de réponse : Alimentation des nourrissons et des jeunes enfants dans le contexte de maladie a virus Ebola en RDC

[52] As a result of the lessons learned during this response, UNICEF's Guidance on the provision and use of BMS in humanitarian settings is in the process of being updated.

[53] UNICEF (2018) UNICEF Guidance on the provision and use of BMS in humanitarian settings

[54] Based on the learnings from DRC, pre-approval for procurement of BMS was given to all Priority 1 countries as part of regional preparedness.

[55] WHO (2016) Pocket Guide for Frontline Health workers and UNICEF, WHO, CDC and ENN (2014) Infant Feeding in the Context of Ebola (interim guidance)

feeding is the norm, pockets of the population where artificial feeding is required were initially missed. Several cases were traced to the sharing of feeding utensils, such as bottles, in orphanages. There is a need to have a comprehensive overview of vulnerable groups in the context of EVD to prevent transmission through prioritising IYCF-E in such settings.

Which sector is most suitable to deliver IYCF-E interventions will depend on the context. Given the high pressure healthcare workers are under during an EVD response, IYCF-E is likely to be deprioritised if purely delivered by the health sector under the clinical care pillar. Within the DRC's EVD response model, delivery through the psychosocial commission using psychosocial workers enabled greater coverage, greater continuity of care and relieved some pressure from healthcare workers. It is, however, essential that linkages with the health system are maintained and that frontline workers have access to technical support and can refer more technically complex cases (e.g., relactation). At the start of a response, it is important to consider the availability of various key personnel and their pre-existing capacity when delineating roles and responsibilities.

Clear communication is key when new vaccines are introduced. Historically, PLWs and infants have been largely excluded from vaccine research which, in turn, leads to their exclusion from vaccine campaigns that could potentially protect them during disease outbreaks. In this instance, mothers' mental health was negatively impacted by confusing and conflicting messages and breastfeeding was unnecessarily interrupted for some infants. Until ongoing advocacy for greater inclusion of pregnant and lactating women is successful, responders must be aware of and anticipate challenges such as those outlined here when new vaccines are introduced. It is essential to include IYCF-E specialists in the development of vaccination guidelines and communication plans.

There is a need to document learnings following an outbreak. There were many programmatic actions and subsequent learnings from the WCA response that would have been valuable to inform IYCF-E in this response. However, protocols, tools and lessons were not captured in a way that could be widely accessed and utilised for this Ebola outbreak, resulting in lost time and repeated errors. Given that this is likely not the last Ebola outbreak that the DRC or the world will see, it is vital that key considerations, learnings, policy and programme guidance and recommendations are captured and stored on an easily and widely accessible platform.

Programming for BMS-dependent children has long term planning implications. When the end of the epidemic was declared, 56 children 0-6 months remained dependent on RUIF and 292 children 6-23 months were still receiving UHT milk. Three months after the EVD response ended, 19 children 0-6 months and 285 children 6-23 months continued to receive a breastmilk substitute. According to global guidance, infant formula should be provided "as long as the infant needs it, i.e., until breastfeeding is re-established or until at least six months of age" (OG-IFE, 2017). Global guidance on BMS programming focuses more on designing and scaling up programmes than the transition and scaling down of interventions. Questions relating to handing over or ending external support to families remain. While delivery by psychosocial workers under the psychosocial pillar of the EVD response was logical at the time, these were emergency-specific roles and structures delivered through a parallel system that was dissolved in the post-Ebola transition period. Responsibilities for the procurement, monitoring and follow-up of RUIF dependent children need to transition to a national health and social affairs systems, requiring the integration of a new type of programming with significant planning and supply chain implications. Nutrition programmes still have a commitment to ensure that EVD-affected children are fed appropriately and grow well despite inadequate funding hampering adequate coverage of key nutrition services. Important lessons remain to be documented on supporting BMS dependent children during response transition and recovery.

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