WASH - Nutrition Strategy West and Central Africa

To maximise the impact of projects addressing malnutrition through interventions of the Water, Sanitation, Hygiene sector

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This WASH - Nutrition strategic guidance note for West and Central Africa builds on the precedent WASH-in-NUT strategy elaborated in 2012 and is the regional outcome of a multiyear collaborative work conducted at country level between 2018 and 2022, in Mali, Niger, Nigeria Chad, Burkina Faso. This work is based on a strong multi-partner collaboration, involving national technical directorates of the water and sanitation sector as well as technical directorates of Health and Nutrition, civil society organizations, national and international NGOs as well as United Nations agencies.

This document can serve as a technical and strategic guide for any partner wishing to strengthen the intersectorality of WASH-Nutrition programmes. It presents the regional WASH & Nutrition context, a brief review of the latest scientific evidence, and proposes an integrated WASH-Nutrition programming framework adapted to the regional context of West and Central Africa. Beyond the implementation of programmes, this document also calls for the explicit and concrete inclusion of WASH-Nutrition integration into national policy documents.

Dakar, October 2022.

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SUMMARY

LIST OF ACRONYMS AND ABBREVIATIONS

HZ	:	Health Zone
KAP	:	Knowledge, attitudes, practices
NC	:	Nutritional center
PHC	:	Primary Health Care Center
PLW	:	Pregnant and Lactating women
ODF	:	Open Defecation Free
IEC	:	Information - education - communication
GAM	:	Global Acute Malnutrition
MAM	:	Moderate Acute Malnutrition
SAM	:	Severe Acute Malnutrition
SDGs	:	Sustainable Development Goals
NGO	:	Non-Governmental Organization
INGO	:	International Non-Governmental organization
GR	:	Growth Retardation
PCIMA	:	Integrated management of acute malnutrition
CREN	:	Recovery and Education Center nutritional
CRENAS	:	Outpatient Nutrition Education and Recovery Center
CRENI	:	Intensive Nutrition Education and Recovery Center
WASH	:	Water, Sanitation and Hygiene

REMINDERS / DEFINITIONS

Figure 1: Differences between chronic malnutrition (also called growth retardation, or stunting) and acute malnutrition (also called emaciation, or wasting).

CHRONIC UNDERNUTRITION (STUNTING)	ACUTE MALNUTRITION (WASTING)
Measured by low height-for-age.	Measured by low weight-for-height, and/or small Mid-Upper Arm Circumference (MUAC) and/or presence of bilateral pitting oedema.
Process occurring over the longer term in the period between conception and 24 months of age. It is a consequence of prolonged or repeated episodes of nutritional deficiencies, and can also reflect exposure to repeated infection or other illnesses throughout the early years of life.	Reflects recent weight loss as highlighted by a small weight for a given height. Acute malnutrition occurs as a result of a recent shock to a child's nutritional status, which can result from food shortage, a recent bout of illness, inappropriate care practices or a combination of these factors.
Stunted children are more vulnerable to infection and may experience impaired cognitive development and low work capacity during adulthood. Chronic undernutrition usually develops in children aged less than 2 years old and after a child reaches two or three years of age, chronic undernutrition may be irreversible and damage to the child's development is likely to be permanent.	Severely acutely malnourished children are very susceptible to infections and death. Severe Acute Malnutrition (SAM) is treatable. Treatment lasts 6 to 8 weeks.
• Chronic undernutrition and acute malnutrition often co-exist within the same child. • Chronic undernutrition is a risk factor for acute malnutrition and vice versa. • Chronic undernutrition and acute malnutrition share common risk factors.	

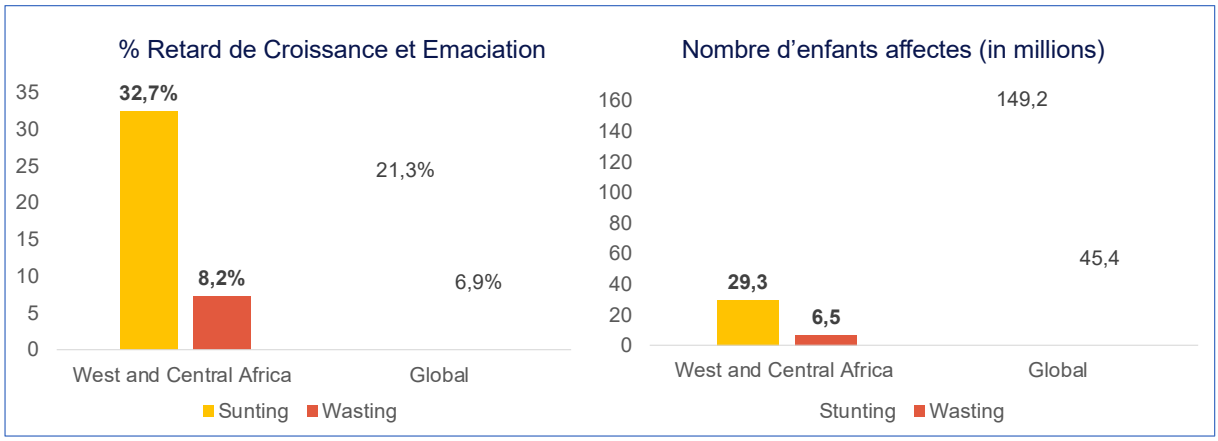
Source: WASH Nutrition Operational Note – ACF 2021

CONTEXT AND RATIONALE

General context

In West and Central Africa, the nutritional situation is a real chronic public health problem, regularly exacerbated by droughts and food crises.

Figure 2: Situation of chronic malnutrition (Stunting) and acute malnutrition (Wasting) in the world (global) and in West and Central Africa in terms of prevalence (%) and number of affected children (in millions)



Source: *UNICEF-WHO-The World Bank: Joint child malnutrition estimates - levels and trends - 2021 edition*

Chronic malnutrition affects 32.7% of children under 5 (29 million children)[1]. This prevalence is considered "very high" by the WHO.

Acute malnutrition represents a smaller but more visible portion, with just over 6.5 million acutely malnourished children (8.2% of children under 5)1.

It is estimated that 45% of annual deaths are attributable to malnutrition[2].

Apart from avoidable deaths, the consequences for the economy and the development of the countries of the region are significant: the losses linked to malnutrition are estimated, depending on the country, at between 7% and 15% of the gross domestic product (GDP), of the cumulative effects of child undernutrition in terms of health expenditure, school expenditure and loss of productivity in the labor market[2].

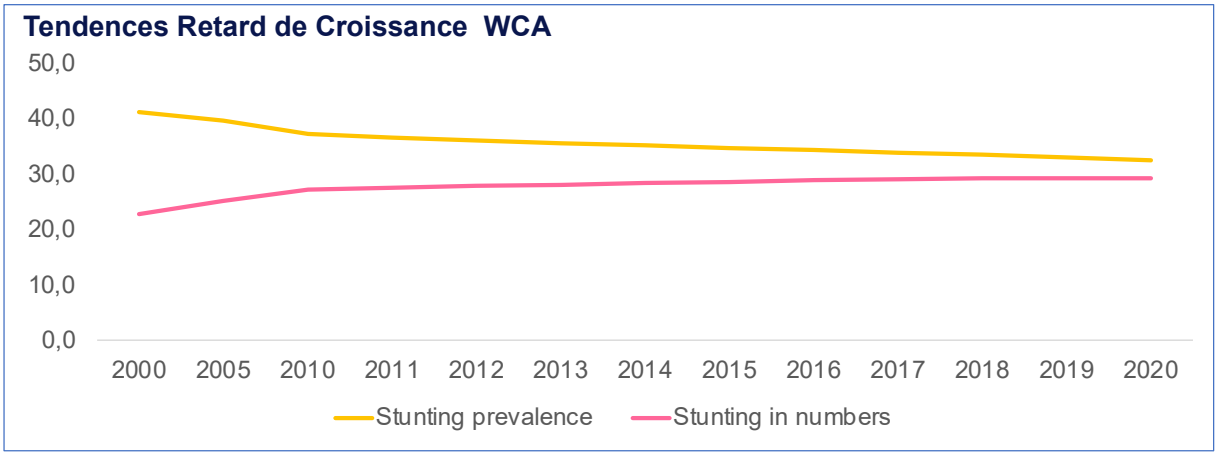
[1]UNICEF-WHO-The World Bank: Joint child malnutrition estimates – levels and trends – 2021 edition - UNICEF DATA

[2]The Cost of Hunger in Africa (COHA). The social and economic impact of child malnutrition in Africa. African Union Commission (AUC), New Partnership for Africa's Development (NEPAD, World Food Program (WFP) and United Nations Economic Commission for Latin America and the Caribbean (ECLAC). 2013.

These results demonstrate the urgency of a strong mobilization in order to significantly reduce child malnutrition and contribute to the achievement of the 2030 Sustainable Development Goals (SDGs).

Nutritional situation in West and Central Africa

Figure 3: Evolution of the situation of chronic malnutrition (Stunting) in West and Central Africa in terms of prevalence (%) and number of children affected (in millions) between 2000 and 2020.



Source:*UNICEF-WHO-The World Bank: Joint child malnutrition estimates - levels and trends - 2021 edition*

Despite an apparent decrease in the prevalence of chronic malnutrition since the 2000s (prevalence decrease from 41.1% in 2000 to 32.7% in 2020), the total number of malnourished children in the region has actually increased due to population growth (from 22.8 million in 2000 to more than 29.3 million children affected in 2020). This prevalence exceeds 30% in 6 countries of the sub-region (Benin, CAR, Chad, DRC, Niger and Nigeria).

The prevalence of acute malnutrition (8.2%) also remains above acceptable thresholds. At the national level it most often exceeds 5% and sometimes even 10%. This represents almost one in 10 children under the age of 5.

It is estimated that one in three children who suffer from acute malnutrition also suffer from stunting.[3]

In view of this observation, to maintain the populations and especially the vulnerable strata in an acceptable nutritional situation, the emphasis must be placed on actions to prevent malnutrition in all its forms, in parallel with actions to take charge of malnutrition. acute malnutrition.

[3]The state of child wasting in West and Central Africa, UNICEF 2020.

The role of the Water, Hygiene and Sanitation sector in the multisectoral fight against malnutrition

Malnutrition cannot be overcome by a nutritional approach alone. The causes of malnutrition are multifactorial and approaches to combating malnutrition must be multisectoral to take into account all the immediate and underlying causes.

Conditions of access to water, sanitation and hygiene affect the availability, access, stability and use of food resources. Similarly, to ensure and maintain a good state of health and appropriate care practices, it is necessary to have a healthy environment.

The WASH sector, by promoting access to a healthy environment and encouraging good hygiene practices, plays a key role in guaranteeing nutritional security.

In a multi-country study of the sectors that have contributed to the reduction of chronic malnutrition, the contribution of the WASH sector could explain up to 17% (case of Ethiopia) of reduction efforts, depending on the case.

Figure 4: Relative contribution of the WASH sector to the reduction of stunting. Decomposition analysis over 15 years or more.

Source: Examples in Global Health. Stunting Cross Country Synthesis

CALL FOR TRANSFORMATIVE WASH INTERVENTIONS

According to the UNICEF and WHO position paper: Implications of recent WASH and nutrition studies for WASH policy and practice. WHO/UNICEF. 2019

Research on the links between WASH and malnutrition and on the effect of WASH interventions on improving the nutritional status of children is a growing field. Following a set of recent publications and interpretations that are not always obvious, researchers[4][5][6][7][8]attempted to better explain the results of these studies, and called for "transformative" WASH interventions.

This concept of "transformative WASH interventions" represents a set of interventions capable of interrupting all routes of environmental contamination and systematically preventing exposure to faecal pathogens.

The hypothesis that it is necessary to interrupt all contamination pathways is reinforced by a recent analysis that mapped the results of randomized controlled trials of WASH interventions against a faecal contamination index[9]. The results suggest that unless the intervention achieves a certain level of environmental 'cleanliness', a significant reduction in cases of diarrhea and by extension stunting is unlikely.

What might "transformative" WASH interventions look like?

There is not yet an established consensus on all the criteria for a WASH intervention to be considered "transformative", other than that the intervention allows effective and sufficient sanitation of the environment.

The key elements that stand out as consensus so far are:

> An intervention aiming at an ambitious level of service

The results of the 2014 disease burden estimates[10] showed that access to an "improved" level of WASH services for water and sanitation (as defined by the WHO/UNICEF JMP) could only generate modest health gains and only health gains. Substantial health gains can only come with higher levels of service. These new higher "safely managed" levels of service are now well established in the JMP and SDG 6.1 and 6.2 scales and are also reflected in the new sanitation and health guidelines.

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[4]Cumming O, Curtis V. Implications of WASH Benefits trials for water and sanitation. Lancet Glob Health. 2018; 6(6): e613-e614.

[5]Arnold BF, Null C, Luby SP, Colford JM Jr. Implications of WASH Benefits trials for water and sanitation - Authors' reply. Lancet Glob Health. 2018; 6(6):e616 - e617

[6] Water Aid. WaterAid's reflections on the results of the WASH benefits Trials – Kenya and Bangladesh. 2018.

[7]Maleta KM, Manary MJ. WASH alone cannot prevent childhood linear growth faltering. Lancet Glob Health. 2019; 7(1): e16-17.

[8]WASH and Nutrition – an intimate and complex relationship: A Discussion Paper. UNICEF; 2019.

[9]Wolf J, Johnston R, Hunter PR, Gordon B, Medlicott K, Prüss-Ustün A. A Faecal Contamination Index for interpreting heterogeneous diarrhoea impacts of water, sanitation and hygiene interventions and overall, regional and country estimates of community sanitation coverage with a focus on low- and middle-income countries. Int J Hyg Environ Health. 2019; 222(2):270-282.

[10]Preventing diarrhea through better water, sanitation and hygiene: exposures and impacts in low- and middle-income countries. WHO, 2016.

> An intervention that covers the entire community.
Interventions should be carried out at the level of administrative areas, with programs covering entire municipalities, districts and provinces, and not just a number of households or villages in an administrative level.
East Asian countries have recently demonstrated that this type of transformative governance can deliver large-scale, lasting improvements in WASH and health[11].

> An intervention that aims to address all the causal pathways (known in the context of the project).
The results of these studies highlight the blind spots of "classic" WASH programs, particularly the role of animal faeces in enteric infections and the role of geophagy as a key pathway leading to undernutrition during the 1,000 days opportunity window. The intervention must be based on the health risks identified locally, requiring closer contact with health and nutrition services and actors.

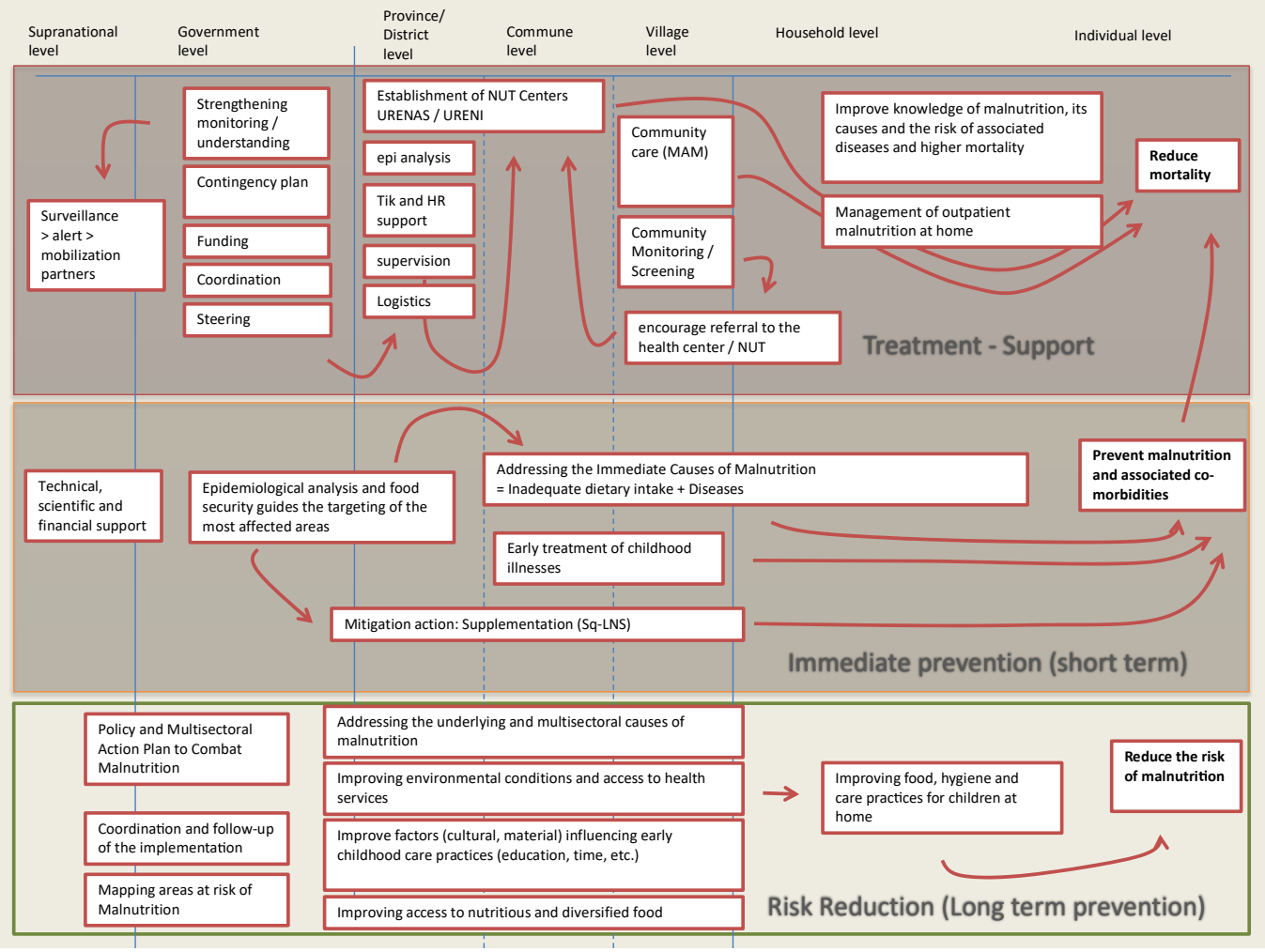
This approach challenges actors to go beyond pre-defined WASH interventions (e.g., toilets, household chlorination and generic approaches to promoting good behaviors) to design ambitious interventions that take into account all the specific risks adapted to the context.
Identification of context-specific needs and risk factors can be fully integrated (e.g., Joint Needs Assessment, Link-NCA (Nutrition Causal Analysis) or aligned (WASH questions included in household nutrition surveys/interviews/groups discussion, and nutrition issues included in WASH assessments).

[11]Water Aid. Achieving total sanitation and hygiene coverage within a generation – lessons from East Asia. 2016.

Objectives and areas of intervention

A simplified framework representing the main activities and their contribution to the objectives of the fight against malnutrition at different levels (individual or household, community, province / district, and national) could be summarized as follows:

Figure 5: Graphic representation of the WASH Nutrition Strategic Framework



The objective of the WASH-Nutrition strategy is to maximize the impact of projects to combat malnutrition through interventions in the Water, Hygiene and Sanitation sector.

The general objective is therefore and above all a nutritional objective:

GO: Contribute to the reduction of morbidity and mortality linked to malnutrition through water, hygiene and sanitation interventions

To contribute to the general objective, two specific objectives can be distinguished:

Specific objective (SO) 1:
(Treatment) Reduce malnutrition-related mortality and co-morbidities through water, hygiene and sanitation interventions

Specific objective (SO) 2:
(Prevention) Reducing the risk of malnutrition through water, hygiene and sanitation interventions

It is important to be able to distinguish between interventions with a more immediate objective of saving lives, such as the treatment of acute malnutrition, and interventions with a longer-term objective of preventing malnutrition in all its forms. These two specific objectives are complementary but have different intervention times, different targets (on the one hand malnourished children, on the other children likely to become malnourished) and will also require different approaches.

Specific objective (SO) 1: To contribute to the reduction of malnutrition-related mortality and co-morbidities through water, hygiene and sanitation interventions

Here, the declared aim of the interventions is to limit the co-morbidities associated with diseases linked to water, hygiene and sanitation in malnourished children and the associated excess mortality.

Indeed, the vicious malnutrition-diarrhoea cycle puts a malnourished child at greater risk of contracting enteric infections and it is estimated that the risk of dying for a child suffering from diarrheal disease and malnutrition is multiplied by 10.

We will therefore seek to provide malnourished children with the healthiest possible environment, in order to limit exposure to infections and allow them optimal nutritional recovery.

The target of the interventions is therefore the malnourished child, being treated, and the gateway to malnutrition care programs / malnutrition care centres.

For the implementation, we distinguish:

- Severe acute malnourished children with complications (hospitalized in CRENI).
- Severe (or moderate) acute malnourished children without complications – managed on an outpatient basis and in the community (CRENAS, CRENAM).

We therefore have two main results:

Result 1.1: Minimum WASH conditions in hospitals and health centers (CRENI, CRENAS) are ensured
Result 1.2: Malnourished children cared for in the programs have an adequate sanitary environment at home for the duration of the treatment

For malnourished children in CRENI, it is necessary to ensure that the minimum WASH conditions in the centers are respected:
- Minimum water access for water and hygiene needs

- A healthy environment, with hygiene/cleaning of surfaces and floors, access to latrines, hand washing points and showers, management and treatment of medical waste
- Treatment and conservation of drinking water
- Food hygiene / food preparation

For outpatient malnourished children (CRENAS), the implementation is more complex, because the maintenance of a healthy environment must be obtained not only in the care centers (CRENAS) but especially at home, where the children malnourished will spend most of their time. We will therefore seek to promote good environmental conditions at home as a priority:

- Encourage home hygiene (healthy environment, with hygiene/cleaning of surfaces and floors, separation of pets from living areas, access to latrines and safe management of children's faeces, hand washing at 5 key times, safe and clean play areas for children, etc.)
- Promote the treatment and conservation of drinking water
- Promote food hygiene and safe food preparation

Specific objective (SO) 2: To contribute to the reduction of the risk of acute and chronic malnutrition through water, hygiene and sanitation interventions (prevention)

Here, the stated goal of interventions is to limit exposure to faecal pathogens and contribute to a health environment conducive to child care and development practices in communities and households.

Indeed, improved (and close) access to water, a healthy environment and appropriate hygiene practices are associated with better nutritional status – sometimes even independent of episodes of diarrheal disease.

We will therefore seek to provide children with satisfactory access to water, a sanitized environment at the community level, and an adequate sanitary environment at home in order to limit exposure to infections and allow optimal use of nutrients and growth.

The target of interventions here is therefore all children to prevent them from falling into malnutrition (as well as mothers and pregnant and lactating women), and the entry point for interventions is the community and households - in priority targeting the communities most affected by malnutrition.

For this purpose, we will have three main results:

Result 2.1: Communities have adequate access to drinking water[12]
Result 2.2: Communities eliminate the practice of open defecation (ODF) and have a sanitized environment
Result 2.3: Households maintain an adequate sanitary environment at home

[12]In satisfactory quantity and quality and with sustainable and sustainable access, i.e., one or more improved water points delivering quality water all year round and where 100% of households have access to water. water within 30 minutes.

Areas of intervention

The areas of intervention presented here are based on recent reviews of scientific evidence and are in accordance with the Compendium of Actions in Nutrition (CAN) prepared by SUN[13].

Improved access to water

This activity includes the construction of improved water supply systems such as piped water networks with house connections, standpipes, protected boreholes and wells, protected springs and rainwater harvesting systems.

Improved access to water is associated with reduced diarrheal disease and better nutritional status. However, there is great variation in the reduction of health risk depending on the level of service. Quality water delivered by a safely managed water network[14] would reduce the risk of diarrhea by 73%, while simple improved water points (wells/boreholes type) would only allow a reduction of 11%[15]. In addition, the return travel time to fetch water seems to be closely correlated with the nutritional status of children.

In order to maximize the impact on the health and nutritional status of children, it is best to prioritize as soon as possible safely managed water supply systems that allow access to water directly in the home rather than the access to a remote community water point, even at a distance of less than 30 minutes.

NB: Access to an improved water source makes it possible to guarantee a minimum quality of the water at the source, but not necessarily its potability or its protection during transport and storage at home.

Treatment and conservation of drinking water

This activity includes promotion and behavior change aimed at water treatment, and water quality conservation, during transport and household storage. Water treatment technologies should be context-specific and take into account ease of use, local culture preferences and motivations, and product cost and availability.

Improved water quality is associated with reduced diarrheal disease and better nutritional status. However, it has been shown that recontamination of water, even when it is potable at the point of use, can occur throughout transport, and during storage and use at home.

To maximize the impact on the health and nutritional status of children, it is best to prioritize behavior change approaches that aim to maintain water quality throughout the entire water supply chain, from drawing, transport, secure storage and home use

Improving access to sanitation

[13]SUN/REACH, 2016. Compendium of Nutrition Actions.

[14]WHO-UNICEF, 2017. Safely managed drinking water services - thematic report on drinking water.

[15]WHO, 2014. Preventing diarrhea through better water, sanitation and hygiene: exposure and impacts in low and middle-income countries.

This activity includes the promotion of improved sanitation at the community level and behavior change aimed at the construction and use of latrines, with the objective of ending open defecation, and more generally a healthy environment free of faecal contamination in the community. This includes Community-Led Total Sanitation – CLTS approaches but also market-based approaches and social marketing, as long as the goal is the eradication of open defecation at scale. the community (and not just a few households). Managing faeces from domestic animals and herds should also be part of community sanitation.

Improved sanitation is associated with reduced diarrheal disease and better nutritional status. Again, the higher the level of service (safely managed), the greater the reduction in health risk. However, the proportion of the population practicing open defecation appears to be strongly associated with malnutrition and significant gains in health and nutrition already appear to be associated with ending open defecation.

In order to maximize the impact on the health and nutritional status of children, it is preferable to prioritize behavior change approaches (CLTS+ type) that aim for the complete eradication of the practice of open defecation and the management of animal faeces at the community level.

Food hygiene

This activity includes promotion and behavior change aimed at the safe preparation of meals and complementary foods. Indeed, as with drinking water, food contamination can result from contamination of the raw materials used, or during its preparation, and/or its storage until consumption.

Faecal contamination of food (including complementary foods) plays an important role in the ingestion of bacteria and other pathogens.
Several factors can cause this contamination: poor water quality, or insufficient water for cleaning food, dirty hands, contaminated food preparation surfaces, or kitchen utensils contaminated during food preparation, cross-contamination of raw and cooked foods, undercooking or improper storage conditions, and insect contamination.

In order to maximize the impact on the health and nutritional status of children, it is preferable to integrate into WASH interventions behavior change approaches that target essential food hygiene practices inspired by the "five keys to safe food". safer" from the WHO[16]:

(1) Maintaining a clean environment for handling food (including washing hands, cleaning preparation surfaces and utensils, keeping insects and animals away from areas where food is prepared)
(2) Separate raw foods from cooked foods
(3) Cook food well
(4) Store food at the right temperature, and cover it to protect it
(5) Use water and safe products

Hand washing

This activity includes promotion and behavior change aimed at handwashing at key times.

[16]WHO/OMS, 2007. Five keys to safer food.

The practice of handwashing with soap is associated with reduced diarrheal disease and improved nutritional status. But to be effective in limiting contamination by dirty hands, the practice of handwashing must be correct and consistent. Setting up basic "handwashing stations" with soap and water in critical places (in the immediate vicinity of the kitchen and toilets, or in public buildings) can serve as a useful reminder to encourage practice of hand washing at key times.

In order to maximize the impact on the health and nutritional status of children, it is best to integrate behavior change approaches that promote handwashing according to WHO recommendations:

(1) Before preparing and cooking food
(2) Before eating or feeding a child
(3) After cleaning a child who has defecated
(4) After defecating

Home hygiene

This activity includes a set of measures aimed at guaranteeing hygiene of the home and immediate environment of the child, healthy and free from faecal contamination.

The soil in and around the home is a significant source of contamination for young children, who explore their environment by crawling, walking, putting objects or their hands in their mouths, or directly by ingesting soil, dust or faeces from domestic livestock on the floor.

While hygiene promotion programs have traditionally focused primarily on mothers' handwashing, to maximize the impact on children's health and nutritional status, it is best to encourage behavior change approaches that take into account more broadly the routes of faecal-oral contamination of young children at home, by promoting the adoption of the following practices:

(1) Keep pets and small livestock away from food preparation area, eating area and children's play areas (pen)
(2) Clean key surfaces (latrines, kitchen, floors, etc.) with soap and water and then if possible with a disinfectant (diluted bleach, for example)
(3) Safely manage children's faeces
(4) Control vectors such as flies, mosquitoes, cockroaches and rats by covering food, draining standing water, and disposing of garbage in a covered container (garbage can) or in a protected (closed) garbage pit.
(5) Provide a safe area that can be cleaned where children can play (mat/tarp or play area)

In particular, the proper and safe management of children's faeces seems to be a particularly important action, because of the high rates of diarrheal disease in young children (and therefore the high contamination of their faeces) and the fact that they tend to defecate in places where other children may be exposed. Different measures, adapted to the age of the child and the culture of the household can be promoted, such as the use of washable or disposable nappies, chamber pots, cleaning of faeces immediately after defecation and the deposit of faeces in latrines, and the adaptation of latrines to make them accessible to children when they are a little older.

Implementation of WASH – Nutrition interventions

Institutional Approach

The new regional WASH-Nutrition strategy relies for implementation on the national level, in order to guarantee better ownership by governments and possible contextualization.

The strategy provides for the integration into the national policies and implementation plans of the different sectors, in order to ensure that the different interventions are harmonized and aligned with the national policy defined by the government.

At the level of each country, the process includes several major steps, from creating a common understanding and mobilizing the WASH and Nutrition sector, to integrating the approach into sector policy documents and action plans implementation, support for the development of programs and projects, advocacy and evaluation of the effect and impact of interventions.

General principles for the implementation of the strategy

To guide the implementation of WASH-Nutrition interventions, the approach is based on the following principles:

- Encourage **geographical targeting** of WASH projects in areas with high prevalence of malnutrition and / or with a high burden of malnourished children.

- **Consideration of nutritional objectives and indicators in WASH interventions**, which will make it possible to measure the effects in terms of nutritional benefit, and therefore to promote WASH actions and approaches with nutritional impact.

- **Strengthen synergy and joint programming with other existing interventions**. WASH interventions alone cannot address all the needs of children and must be combined with the efforts of other sectors (food security, access to health, child care practices, etc.) to maximize the impact on reducing malnutrition.

- **Aim for access to an ambitious level of WASH service as soon as possible.** Studies have shown that only the provision of "safely managed" services (as recently established in the JMP scales) can provide significant health gains.

- **Consider interventions that cover the whole community and an administrative level.** This type of geographical targeting allows the involvement of local authorities and multisectoral coordination platforms in the management and coordination of interventions and strengthens the appropriation and sustainability of interventions.

- **In the targeted communities, have a specific focus on children under 5 (and more specifically children under 2) and their mothers**, and pregnant and lactating women in line with the 1000-days window of opportunity (the period between the start of pregnancy and the child's second birthday is the most critical period for malnutrition and diarrheal diseases), and therefore adapt interventions for this audience.

- Promote interventions aimed at guaranteeing the safety of the child's immediate environment as a whole, and not just water and clean hands (addressing all the causal chains). Innovative approaches known as "BabyWASH" or "child-centered WASH" approaches include food hygiene, clean play areas, management of child and pet faeces, and hand washing children - all these interventions being adapted according to the age of the children

- Focus on behavior change at the household level, using tailored approaches. Indeed, if adequate hygiene behaviors are not adopted, the mere provision of WASH infrastructure (water supply and sanitation) will have a limited impact on health.

- **Capitalize and document** results of interventions to help show the impact of WASH-Nutrition approaches through monitoring and evaluation of implementation.

Piloting WASH-Nutrition interventions

The objective of this strategy is to promote the commitment of the Water, Hygiene and Sanitation sector in the fight against malnutrition and the integration of interventions.

The management of the WASH-Nutrition strategy at the national level is carried out by the governments, more particularly by the body or the commission in charge of the multisectoral fight against malnutrition.

A coordination platform bringing together all the non-governmental actors interested in the issue and united under the name of "WASH-Nutrition Working Group" will be able to support this commission and share its technical expertise and experience in the field.

At the decentralized level, efforts will be coordinated by local authorities (with the support of local coordination platforms for multisectoral nutrition interventions), and should be integrated into local development plans (municipal and regional);

Targeting / Entry Points

In order to help stakeholders in the Water, Hygiene, Sanitation sector to determine priority intervention areas, a certain amount of information is already available to guide the targeting of interventions:

- **Major national health surveys** DHS (Demographic Health Survey) and MICS (every 3-5 years) with representativeness at national level and by administrative region.
- SMART anthropometric nutritional surveys. They may be available in certain regions or districts or be carried out on an ad hoc basis.
- Data from National Health or Nutrition Information Platforms
- Epidemiological data on the management of cases of acute malnutrition (admissions to health areas, management performance criteria); These data are available at the health center level and can be used retrospectively to guide targeting at a more local level. Data regarding the prevalence of diarrheal diseases/malaria can also be collected.
- Health data by health area are also available through the national health information system, which can be obtained from health information officers at the district level.
- The water and sanitation databases and the Regional Water Resources Departments for drinking water and sanitation coverage.

Methods of analysis and cartographic representation with the superposition of WASH and Nutrition indicators can also make it possible to determine the areas where the interventions will have the greatest impact.

The objective of targeting is to identify areas affected by malnutrition but also within these areas of malnutrition, areas where comorbidities related to diarrheal diseases are reported.

The useful parameters for targeting interventions may vary depending on the objectives targeted by the intervention (support for the management of acute malnutrition or prevention of malnutrition).

For treatment interventions, which rather aim to reduce mortality related to malnutrition and associated diarrheal comorbidities, the entry point will be the health district. We will mainly focus on the following parameters:

- Prevalence of Global Acute Malnutrition (GAM) and Prevalence of Severe Acute Malnutrition (SAM)
- Number of children with GAM or SAM (or expected number of cases)
- Incidence or prevalence of diarrheal diseases, parasitosis, anemia
- Specific indicators of nutritional programs: The proportion of malnourished children with comorbidities (diarrhea, respiratory infection, anemia), length of stay (average number of days in treatment), average daily weight gain, cure rate, non-response and mortality.

For prevention interventions, which instead aim to reduce the risk/prevalence of malnutrition, the entry point will be the community. We will rather focus on the following parameters:

- Prevalence of chronic malnutrition (CR)
- Number of chronically malnourished children (or estimates)
- Incidence or prevalence of diarrheal diseases, parasitosis, anemia
- The parameters concerning the Water, Hygiene and Sanitation conditions (Rate of access to water and sanitation, Proportion of the population practicing open defecation, Average time to fetch water, Proportion of households that have a handwashing facility with soap and water at home, Proportion of households that report handling children's faeces properly, etc.)

Implementation Monitoring and Impact Indicators

The establishment of mechanisms for monitoring the implementation of WASH-Nutrition interventions is important, as it will allow to measure the progress achieved over the long term and encourage new commitments from the WASH sector for nutrition.

Monitoring can be organized at several levels:

- At the national level, through the monitoring of WASH and Nutrition indicators recorded by major national surveys (EDS, MICS, SMART, etc.).

- At program and project level, provided that nutritional objectives and indicators are integrated into WASH program monitoring and evaluation plans.

Impact indicators reflect long-term changes and are usually measured at the start and end of program implementation. They are often used to demonstrate the usefulness of new interventions, rather than for routine monitoring of interventions for which evidence of effectiveness already exists.

The prevalence (or incidence) of reported diarrhea is the most commonly used indicator to assess the impact of WASH interventions. However, reliably measuring the incidence of diarrhea is difficult. Reported incidence of diarrhea is subject to reporting bias, is related to seasonality, and often requires large sample sizes for a program's impact to be detected.

Nutrition impact indicators include the prevalence of stunting (chronic malnutrition) and wasting (acute malnutrition) among children under 5 years old. These anthropometric indicators, combined with an analysis of the implementation of WASH and nutrition interventions, should help determine the impact of joint efforts on nutritional status.

Like diarrhoea, it is important that nutritional status is measured in the same season. However, it will not be possible to see an impact on stunting over a short period of time. Programs of at least 2-3 years are necessary to be able to observe an impact on stunting.

The impact indicators vary according to the specific objective chosen:

Impact indicators for specific objective (SO) 1: Reduce malnutrition-related mortality and co-morbidities through water, hygiene and sanitation interventions

- Number (or %) of malnourished children undergoing treatment with diarrheal comorbidity
- Number of days with diarrhea during treatment period
- Length of stay (number of days in treatment)
- Daily weight gain
- Healing rate
- Non-response rate
- Mortality rate

Specific objective (SO) 2 impact indicators: Reducing the risk of malnutrition through water, hygiene and sanitation interventions

- Number (or %) of children aged 0-59 months with stunting
- Number (or %) of children aged 0-59 months who are wasted

- Number (or %) of children aged 0-59 months with underweight underweight
- Number (or %) of children aged 6-59 months with anemia (Hb<8 g/dL)
- Number (or %) of underweight women (body mass index < 18.5)
- Number (or %) of women of childbearing age with anemia (% of women aged 15-49 years tested for hemoglobin with a result < 12 g/dL or for pregnant women < 11 g/dL)
- Proportion of children with low birth weight (< 2500 g)

Results indicators

Result 1.1: Minimum WASH conditions in health centers are ensured

- % centers that have access to an improved water point
- % of centers with at least one improved, hygienic and functional latrine (with hand washing point with soap nearby) and cleaned regularly, without any signs of open defecation.
- % of centers that have a water treatment device and appropriate storage of treated water for drinking for patients and staff.
- % of centers that have hygienic conditions for the preparation of meals (CRENI) or the appetite test (CRENAS)
- % of centers that have handwashing stations with soap for staff (indoors) and for patients (outdoors).
- % of centers with an adequate waste management system, absence of visible waste within the center and in the immediate surroundings.
- % of centers that deliver WASH prevention messages on an ongoing basis (visuals + regular sessions)
- % of centers where areas are visibly cleaned/disinfected.
- % of centers with a WASH hygienist/technician trained in WASH aspects and infection prevention and control

And or
% of health centers that have minimum WASH conditions (that meet all of the above criteria)

Result 1.2: Malnourished children cared for in programs have a minimum sanitary environment at home for the duration of treatment

% of households that practice household water treatment
% of households with chlorine residual >0.1 mg/L in drinking water stored at home.
% of households that have safe storage practices for drinking water
% of households that declare respecting the 5 keys to food hygiene
% of households that have soap available at home
% of households that have a handwashing device (even basic) (water and soap) available in the toilets and/or kitchen
% of households with adequate child excreta management practices
% of households reporting daily cleaning of floors and key surfaces
% of households with a dedicated and clean play area for children
% of households with no visible pets in kitchen, dining, and children's living areas

And or

%households that maintain a minimum sanitary environment at home (that meet all of the above criteria)

Result 2.1: Communities have satisfactory access to water

% of households with year-round access to an improved water supply system (including with a return travel time of more than 30 minutes)
*- Corresponding to the JMP improved water access service level "limited"**
% of households with year-round access to an improved water supply system and whose round-trip time taken to fetch water <30 minutes
*- Corresponding to the level of improved water access service of the JMP "basic/elementary"**
% of households with year-round access to an improved water supply at home/close to home, available at all times, and free from contamination
*- Corresponding to the JMP improved water access service level "safely managed"**

And or
% of communities that have satisfactory access to water - that have one (or more) improved water point delivering water all year round and where 100% of households have access to safe drinking water less than 30 mins.

Result 2.2: Communities eradicate the practice of open defecation (ODF)

% of households that have, use and maintain their latrines;
% of latrines built that meet "improved latrine" standards according to the JMP
Absence of human or animal excreta around the village;

And
% of communities that have achieved and maintain Open Defecation End (ODF) status.

Result 2.3: Households maintain an adequate sanitary environment at home

% of households that practice household water treatment
% of households with chlorine residual >0.1 mg/L in drinking water stored at home.
% of households that have safe storage practices for drinking water
% of households with improved and well-maintained sanitation facilities
% of individuals in households who report using sanitation facilities
% of households that declare respecting the 5 keys to food hygiene
% of households that have soap available at home
% of households that have a handwashing device (even basic) (water and soap) available in the toilets and/or kitchen
% of households that have a handwashing facility with soap and water at home
% of households with adequate practices for the management of children's excreta
% of households reporting daily cleaning of floors and key surfaces
% of households with a dedicated and clean play area for children
% of households with no visible pets in kitchen, dining, and children's living areas

And
%households that maintain an adequate sanitary environment at home (that meet all of the above criteria)

The activity indicators vary according to the context and the technical choices of implementation. Examples are given in the action sheets detailed in the appendix.

Appendices

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Annex 4: Detailed WASH-Nutrition action sheets

Annex 1: Essential bibliographical references

- Improving nutrition through multisectoral approaches. World Bank, 2013
- WASH'Nutrition: Practical guide for a better nutritional impact thanks to integrated WASH and nutrition programs. ACF, 2017.
- Multisectoral Approaches to Improve Nutrition: Water, Hygiene and Sanitation. The World Bank – WSP (Water & Sanitation Programme), 2016
- Compendium of Actions for Nutrition (CAN). SUN REACH, 2016.
- Improving nutrition outcomes with better water, sanitation and hygiene:Practical solutions for policy and programs. WHO, UNICEF, USAID, 2015.
- Nutrition Security Policy. Framework document. ACF international, 2014
- The Cost of Hunger in Africa. AUC-NEPAD-MAP-ECLAC, 2017.
- Preventing diarrhea through better water, sanitation and hygiene. WHO, 2014
- Towards a hygienic environment for infants and young children. USAID, 2018
- BABYWASH and the 1000 days. Practical interventions for reducing chronic undernutrition. ACF, 2017.
- The Recipe for Success: Tools for Policy Makers to Integrate Access to Water, Sanitation and Hygiene into Action to End Malnutrition. ACF and WATERAID, 2017.
- Nutrition-Sensitive Water Supply, Sanitation, and Hygiene. World Bank, 2019.
- Water and Nutrition: A framework for action. World Bank, 2019.
- Position paper: Implications of recent WASH and nutrition studies for WASH policy and practice. WHO & UNICEF, 2019.
- R4ACT Brief, Impact of Water, Sanitation and Hygiene on Acute Malnutrition. ACF, 2020
- WASH'Nutrition Operational Note. ACF, 2021

Annex 2: Logical framework of the WASH – Nutrition strategy

Overall objective: **Contribute to the reduction of morbidity and mortality linked to malnutrition through water, hygiene and sanitation interventions**	
Specific objective (SO) 1: (Treatment) Reduce malnutrition-related mortality and co-morbidities through water, hygiene and sanitation interventions	**Indicators (examples)** ▪ Number (or %) of malnourished children undergoing treatment with diarrheal co-morbidity ▪ Number of days with diarrhea during treatment period ▪ Length of stay (number of days in treatment) ▪ Daily weight gain ▪ Healing rate ▪ Non-response rate ▪ Mortality rate
Result 1.1: Minimum WASH conditions in health centers are ensured Activities (examples): ▪ Construction, rehabilitation, development of water points, hand washing, or sanitation equipment in health centers ▪ Organization and maintenance of a healthy environment (hygiene, cleaning of surfaces and floors, access to latrines, hand washing points, point for the hygienic preparation of meals, showers, waste management) in health centers	**Indicators (examples)** **% of health centers that have minimum WASH conditions(see criteria below)** ▪ who have access to an improved water point ▪ who have at least one improved, hygienic and functional latrine (with hand washing point with soap nearby) and cleaned regularly, without any sign of open defecation. ▪ that have a water treatment device and appropriate storage of treated water for drinking for patients and staff. ▪ who have the hygienic conditions for the preparation of meals (CRENI) or the appetite test (CRENAS) ▪ which have handwashing stations with soap for staff (indoors) and for patients (outdoors). ▪ which have an adequate waste management system, absence of visible waste within the center and in the immediate surroundings. ▪ which continuously deliver wash prevention messages (visuals + regular sessions)

	▪ where care and passage areas are visibly cleaned/disinfected. ▪ that have a WASH hygienist/technician trained in WASH and prevention and control aspects
Result 1.2: Malnourished children cared for in programs have an adequate sanitary environment at home for the duration of treatment Activities (examples): ▪ Promotion of home hygiene (cleaning of surfaces and floors, separation of domestic animals from living areas, access to latrines and safe management of children's faeces, vector control, hand washing at 5 key times, play areas safe and clean for children, etc.) ▪ Promotion of the treatment and conservation of drinking water ▪ Promotion of food hygiene and safe food preparation	**Indicators (examples)** **%households that maintain a minimum sanitary environment at home (that meet all the criteria below)** ▪ % of households that practice household water treatment ▪ % of households with chlorine residual >0.1 mg/L in drinking water stored at home. ▪ % of households that have safe storage practices for drinking water ▪ % of households that declare respecting the 5 keys to food hygiene ▪ % of households that have soap available at home ▪ % of households that have a handwashing device (even basic) (water and soap) available in the toilets and/or kitchen ▪ % of households with adequate child excreta management practices ▪ % of households reporting daily cleaning of floors and key surfaces ▪ % of households with a dedicated and clean play area for children ▪ % of households with no visible pets in kitchen, dining, and children's living areas

Specific objective (SO) 2: (Prevention) Reducing the risk of malnutrition through water, hygiene and sanitation interventions	**Indicators (examples)** ▪ Number (or %) of children aged 0-59 months with stunting (CR) ▪ Number (or %) of children aged 0-59 months who are wasted (GAM) ▪ Number (or %) of children aged 0-59 months who are underweight ▪ Number (or%) of children aged 6-59 months with anemia (Hb<8 g/dL) ▪ Number (or %) of underweight women (body mass index < 18.5) ▪ Number (or %) of women of childbearing age with anemia (% of women aged 15-49 years tested for hemoglobin with a result < 12 g/dL or for pregnant women < 11 g/dL) ▪ Proportion of children with low birth weight (< 2500 g)
Result 2.1: Communities have satisfactory access to water Activities (examples): ▪ Construction of water points ▪ Construction of water distribution network with home connections ▪ Construction of water treatment systems	Indicators (examples) **% of communities that have satisfactory access to water - that have one (or more) improved water point delivering water all year round and where 100% of households have access to water less than 30 mins.** ▪ % of households with year-round access to an improved water supply system (including with a return travel time of more than 30 minutes) ▪ % of households with year-round access to an improved water supply system and whose round-trip time taken to fetch water <30 minutes ▪ % of households with year-round access to an improved water supply at home/close to home, available at all times, and free from contamination
Result 2.2: Communities eradicate the practice of open defecation (ODF)	**Indicators (examples)**

Activities (examples): Promoting behavior change to encourage an end to open defecation and an environment free of human or animal faeces (CLTS, CLTS+)	**% of communities that have achieved and maintain Open Defecation End (ODF) status.** ▪ % of households that have, use and maintain their latrine ▪ % of latrines built that meet "improved latrine" standards according to the JMP ▪ Absence of human or animal excreta around the village;
Result 2.3: Households maintain an adequate sanitary environment at home Activities (examples): ▪ Promotion of home hygiene (cleaning of surfaces and floors, separation of domestic animals from living areas, access to latrines and safe management of children's faeces, vector control, hand washing at 5 key times, play areas safe and clean for children, etc.) ▪ Promotion of the treatment and conservation of drinking water ▪ Promotion of food hygiene and safe food preparation	**Indicators (examples)** **%households that maintain an adequate sanitary environment at home (that meet all the criteria below)** % of households that practice household water treatment % of households with chlorine residual >0.1 mg/L in drinking water stored at home. % of households that have safe storage practices for drinking water % of households with improved and well-maintained sanitation facilities % of individuals in households who report using sanitation facilities % of households that declare respecting the 5 keys to food hygiene % of households that have soap available at home % of households that have a handwashing device (even basic) (water and soap) available in the toilets and/or kitchen % of mothers who report practicing handwashing appropriately with soap and at critical times % of households with adequate child excreta management practices % of households reporting daily cleaning of floors and key surfaces % of households with a dedicated and clean play area for children % of households with no visible pets in kitchen, dining, and children's living areas

Annex 3: Detailed WASH-Nutrition action sheets

ACTION SHEET
Objective: OS 1 – Treatment / Support.
Improved WASH conditions in malnutrition treatment centers

Kind / Description
Improvement of WASH conditions in nutritional centers: Access to water, treatment and storage of drinking water, access to latrines and hand washing points, food hygiene, waste management and cleanliness / general hygiene.

Objective
This activity aims to protect the malnourished child undergoing treatment (and therefore more susceptible to infections) from falling ill – the association of diarrhoea/malnutrition significantly increases the risk of mortality. Specifically, this activity aims to reduce co-morbidities and the risk of mortality, and hopes to contribute to better nutritional recovery/healing of malnourished children.

Expected result/ indicators
Decrease in co-morbidities (diarrhea) associated with malnutrition, decrease in mortality, increase in recovery rate, decrease in non-response rate, decrease in length of stay, improvement in daily weight gain

Justification
Known links between diarrhoea/malnutrition; Vicious circle infection/malnutrition. Excess mortality (risk of death x10 from malnutrition+diarrhea).

Target / Entry Point
The target of the activity are severely acute malnourished children (SAM children) supported by an acute malnutrition treatment program during their stay in a nutritional center (essentially in CRENI, and to a lesser extent CRENAS). The entry point is therefore the malnutrition treatment program / the health district (more precisely at the level of the health center which carries out the treatment).

Level of evidence / Effectiveness of the intervention
Lack of WASH services compromises the ability to deliver safe, quality care, puts both health workers and patients at considerable risk of contracting infections[17].

Lessons learned / difficulties / advantages
Important : The involvement of ASACOs (Community Health Associations) from the outset is essential to ensure ownership and maintenance of the works

Declination according to the context
Emergency. We will mainly focus on the functionality of the service and less on the construction of sustainable infrastructures. Water supply can be arranged even if a water point is not available on site. Water storage and hand washing points can be set up in the form of plastic containers with taps. Temporary latrines can be provided – the important thing is that the minimum WASH service is provided.

[17]WHO-UNICEF 2017. WASH FIT - A practical guide to improving the quality of care through improved water, sanitation and hygiene services in health care facilities

Stable context / chronic nutritional problem. In a context of stability, we will try as much as possible to improve WASH conditions in health centers in a sustainable way, following the WASHFIT approach and respecting WASH standards in health centers established by the government.

In which situation is this activity particularly recommended?
This activity should be carried out in a systematic way – minimum WASH services in malnutrition care centers should be guaranteed by the partner in charge of the nutrition programme: - as a priority in CRENIs (due to the state of health of malnourished children with complications and their type of stay – hospitalization for several days)

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity only addresses hygiene conditions during the care of children in hospitalization (CRENI) and in outpatient health centers (CRENAS). However, the malnourished child continues the treatment against malnutrition at home. This activity should ideally be offered in combination with a set of measures to improve hygiene conditions in the home, such as the treatment and safe storage of drinking water, the promotion of handwashing with soap at key times (in particularly for care practices for the malnourished young child), food hygiene and food preservation, and the cleanliness of the young child's immediate environment (play area, floor, etc.) - including disposing of the faeces of children in the toilets and avoid the presence of stray animals.

ACTION SHEET
Objective: OS 1 – Treatment / Support.
Disinfection of drinking water for acutely malnourished SAM children at home

Kind / Description
Promotion of water treatment and its conservation in the home of malnourished children undergoing treatment to prevent the ingestion of bacteria (potentially pathogenic) by contaminated drinking water.

Objective
This activity aims to protect the malnourished child undergoing treatment (and therefore more susceptible to infections) from falling ill – the association of diarrhoea/malnutrition significantly increases the risk of mortality. Specifically, this activity aims to reduce co-morbidities and the risk of mortality, and hopes to contribute to better nutritional recovery/healing of malnourished children.

Expected result/ indicators
Decrease in co-morbidities (diarrhea) associated with malnutrition, decrease in mortality, increase in recovery rate, decrease in non-response rate, decrease in length of stay, improvement in daily weight gain

Justification
Known links between diarrhoea/malnutrition; Vicious circle infection/malnutrition. Excess mortality (risk of death x10 from malnutrition+diarrhea).

Target / Entry Point
The target of the activity are severely acute malnourished children (SAM children) supported by a treatment program for acute malnutrition. The entry point is therefore the malnutrition management program / the health district (more precisely at the level of the health area covered by the health center that carries out the management).

Level of evidence / Effectiveness of the intervention
- MSF Tahoua study (Niger)[18]: In this study carried out by MSF, the length of stay of malnourished children in the nutritional program was significantly correlated with the level of access to water in the villages of origin (in quantity and quality). - ACF studies in the DRC[19]**, in Pakistan[20]and in Chad[21]**: In these randomized intervention studies carried out by ACF, the addition of a "distribution of water treatment products" component in nutritional care programs for malnourished children at home improves

[18]Dorion et al., 2013. Does Village Water Supply Affect Children's Length of Stay in a Therapeutic Feeding Program in Niger? Lessons from a Doctors Without Borders Program.
[19]ACF, 2013. A comparative study on the effects of Ready to Use Therapeutic Food + PUR® in the management of severe acute undernutrition in children under 5 years
[20]Doocy et al, 2018. Point-of-use water treatment improves recovery rates among children with severe acute malnutrition in Pakistan: results from a site-randomized trial
[21]Altman et al, 2018. Effectiveness of a Household Water, Sanitation and Hygiene Package on an Outpatient Program for Severe Acute Malnutrition: A Pragmatic Cluster-Randomized Controlled Trial in Chad

performance nutritional programs (reduction of the residence time, reduction of the non-response rate, improvement of the daily weight gain and the recovery rate).

Lessons learned / difficulties / advantages
The positive result on the nutritional status does not depend on the water treatment method used (Aquatabs, PUR, chlorine, ceramic filter). It is therefore worth promoting the preferred and context-appropriate home water treatment products or approaches. **Attention**, requires user training and home monitoring to ensure proper use of treatment products (aquatabs often misused). **Advantage :**Good practice at home can be checked simply (a simple residual chlorine test using a pool tester in the case of chlorine treatment). **Inconvenience**: Logistics to be planned for purchases, storage of products and distribution within the framework of nutritional support.

Declination according to the context
Emergency. Distribution of a suitable product (aquatabs, flocculant/disinfectant, filter) and possibly containers for transport and secure storage (jerry can, bucket with tap) by the operational partner who makes the purchases, and all the distribution logistics. Still requires support for proper home use. **Stable context / chronic nutritional problem**. Education/Promotion of drinking water treatment and safe storage during visits to nutritional centers, in conjunction with social marketing approaches for water treatment products in targeted communities. If an approach including the subsidy is chosen, a voucher/voucher approach is possible to relieve the nutritional centers of purchases and logistics.

In which situation is this activity particularly recommended?
This activity does not necessarily have to be carried out systematically and must be based on an analysis of the situation in the intervention villages. Favorable contexts are: - emergency - when the nutritional care programs have significant co-morbidity issues related to diarrhoea, length of stay, non-response rates or significant mortality rates - when water supply conditions in villages are inadequate

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity only addresses the faecal-oral route of transmission through drinking water. This activity should ideally be offered in combination with other measures, such as the promotion of handwashing with soap at key times (especially for care practices for young malnourished children), food hygiene and food preservation, and the cleanliness of the young child's immediate environment (play area, floor, etc.) – including disposing of children's faeces in toilets and avoiding the presence of stray animals.

ACTION SHEET
Objective: OS 1 – Treatment / Support.
Promotion of adequate hygiene conditions for the child at home

Kind / Description
Promotion of adequate hygiene practices for malnourished children undergoing treatment: Use of treated drinking water, hand washing at key times, food hygiene, hygiene of the home and immediate environment, use of latrines and management of children's faeces, separation of pets from living space, clean and protected play areas for children;

Objective
This activity aims to protect the malnourished child undergoing treatment (and therefore more susceptible to infections) from falling ill – the association of diarrhoea/malnutrition significantly increases the risk of mortality. Specifically, this activity aims to reduce co-morbidities and the risk of mortality, and hopes to contribute to better nutritional recovery/healing of malnourished children.

Expected result/ indicators
Reduction in co-morbidities (diarrhea, enteropathy, parasitosis) associated with malnutrition, reduction in mortality, increase in recovery rate, reduction in non-response rate, reduction in length of stay, improvement in daily weight gain

Justification
Links between hygiene/enteropathy/diarrhea/parasitosis and malnutrition; Vicious circle infection/malnutrition. Excess mortality (risk of death x10 from malnutrition+diarrhea).

Target / Entry Point
The target of the activity are severely acute malnourished children (SAM children) supported by an acute malnutrition treatment program). The entry point is therefore the malnutrition management program / the health district (more precisely at the level of the health area covered by the health center that carries out the management).

Level of evidence / Effectiveness of the intervention
Observational study in Ethiopia[22]: Faecal contamination of the living environment of young children is a significant factor in stunting. Observation of the children showed that they put hands, food, water, soil, and chicken droppings into their mouths. **Links between livestock and malnutrition**[23]: In this study in Chad, a correlation between the concentration of livestock in villages and malnutrition rates was observed. **Risk factors in Chad**[24]**:**mother's handwashing practices and latrine use are significant risk factors for acute malnutrition.

[22]Ngure et al. 2013. Water, sanitation, and hygiene (WASH), environmental enteropathy, nutrition, and early child development: making the links.
[23]Marshak et al, 2017. Water, livestock and malnutrition: findings from an impact assessment of community resilience to acute malnutrition programming in Dar Sila, Eastern Chad.

[24]Dodos et al, 2018. Individual and household risk factors of severe acute malnutrition among under-five children in Mao, Chad: a matched case-control study

Intervention study in Ethiopia[25]: This study with a control group but not randomized was able to demonstrate a significant effect of a WASH package (protected source, promotion of sanitation, promotion of handwashing with soap, household hygiene, separate shelter for animals and storage of safe water) on the growth of children.
Zimbabwe Intervention Study (RCT)[26]: This randomized study aimed to demonstrate the effect of a WASH intervention including the promotion of latrine construction, hand washing and soap distribution, safe play areas for children, the distribution of water, and the promotion of food hygiene. No effect on diarrhea or malnutrition could be demonstrated.

Lessons learned / difficulties / advantages
Important : Recent studies have shown the multiple origins of faecal contamination of children at home – and therefore the need to promote household hygiene as a whole and not just the treatment of drinking water.

Declination according to the context
Emergency. We will mainly focus on the dissemination of messages on the different elements of hygiene at home when the children pass through the care centres. The use of picture boxes can be useful to illustrate bad and good practices. **Stable context / chronic nutritional problem**. In a context of stability, we will try as far as possible to accompany the messages with home visits to malnourished children to reinforce the messages and their application at home.

In which situation is this activity particularly recommended?
This activity should be systematically integrated into the messages delivered in nutrition programs – home hygiene being an essential element of the health and nutrition of young children.

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity should ideally be offered in combination with a set of measures to improve the sanitary environment of the child such as the treatment and safe storage of drinking water.

[25]Fenn et al, 2012. An evaluation of an operations research project to reduce childhood stunting in a food-insecure area in Ethiopia.
[26] Prendergastet al, 2018. Independent and combined effects of improved water, sanitation, and hygiene, and improved complementary feeding, on stunting and anemia among HIV-exposed children in rural Zimbabwe (SHINE).

ACTION SHEET
Objective: SO 2 – Prevention of malnutrition.
Improving access to water in communities affected by malnutrition

Kind / Description
Improving access to water through the construction and improvement of improved water supply infrastructure – such as piped water networks with house connections, standpipes, protected boreholes and wells, protected springs and rainwater harvesting systems.

Objective
This activity aims to improve access to and use of water in communities affected by malnutrition. More specifically, this activity aims to reduce the incidence of enteric infections, and thus hopes to contribute to the prevention of malnutrition.

Expected result/ indicators
Reduction in the incidence of enteric infections (diarrhoea, enteropathy, parasitosis), reduction in the incidence of diarrhoea, reduction in the prevalence of malnutrition, improvement in anthropometric parameters (Weight/Height; Size/Age).

Justification
Links between improved access to water, reduction of enteropathy/diarrhoea/parasitosis and reduction of malnutrition;

Target / Entry Point
The target of the activity/entry point is the communities affected by malnutrition.

Level of evidence / Effectiveness of the intervention
Study in Peru[27]: The nutritional status is directly correlated to the conditions of access to water in households. **Multi-country study** [28]: The volume of water consumed depends on the type of access to water (at home / outside) more than on the distance. **Study in Sub-Saharan Africa (multi-country)[29]:**Travel time to fetch water is directly correlated to the nutritional status and mortality of children.

Lessons learned / difficulties / advantages
Important : In order to maximize the nutritional and health impact, it is preferable to prioritize water supply systems that allow access to water at home or with a very short travel time/distance rather than access to a distant community water point, even at a distance of less than 30 minutes.

Declination according to the context

[27]Checkley et al. 2004 Effect of water and sanitation on childhood health in a poor Peruvian peri-urban community.
[28]Evans et al. 2013. Public health and social benefits of at-house water supplies.
[29]Pickering & Davis, 2012. Freshwater Availability and Water Fetching Distance Affect Child Health in Sub-Saharan Africa"

Emergency. We will focus on the availability and functionality of the service rather than on the construction of infrastructures (for example, water trucking).
Stable context / chronic nutritional problem. In a context of stability, we will seek to increase the level of water access service in the communities most affected by malnutrition so that water availability, access time and service management are improved. ("safely managed" service level of the UNICEF-WHO JMP scale).

In which situation is this activity particularly recommended?
This activity is particularly recommended in areas with a high prevalence of acute and chronic malnutrition and where access rates to an improved water point are low.

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity should ideally be offered in association with the improvement of sanitation in the same communities affected by malnutrition as well as with the promotion of a set of measures to improve the immediate sanitary environment of the child such as the treatment and safe storage of drinking water, promotion of handwashing with soap at key times (particularly for care practices for malnourished young children), food hygiene and food storage, and cleanliness of the immediate environment of the young child (play area, ground, etc.) – including disposing of children's faeces in the toilets and avoiding the presence of stray animals.

ACTION SHEET
Objective: SO 2 – Prevention of malnutrition.
Disinfection of drinking water at home in communities affected by malnutrition

Kind / Description
Promoting water treatment and home storage in communities affected by malnutrition - to prevent the ingestion of (potentially pathogenic) bacteria through contaminated drinking water.

Objective
This activity aims to protect all households in communities affected by malnutrition (and in particular children) from the ingestion of pathogenic bacteria in order to prevent the vicious circle between enteropathy - diarrhea - malnutrition. More specifically, this activity aims to reduce the incidence of enteric infections, and thus hopes to contribute to the prevention of malnutrition.

Expected result/ indicators
Improvement in the quality of the drinking water consumed, reduction in the incidence of diarrheal diseases, reduction in the prevalence of malnutrition, improvement in anthropometric parameters (Weight/Height; Height/Age).

Justification
Links between diarrhoea/malnutrition; Vicious circle infection/malnutrition.

Target / Entry Point
The target of the activity are healthy children and pregnant and lactating women - at risk (in communities affected by malnutrition). The entry point is therefore households in communities affected by malnutrition.

Level of evidence / Effectiveness of the intervention
Meta-analysis[30]: In this meta-analysis on the effect of WASH interventions on malnutrition, household water treatment in particular was found to be effective in improving nutritional status (height-for-age ratio in particular). **Study in Peru[31]**: In this study, the conditions of access to water and storage of drinking water were statistically correlated with the size of the children and with the number of episodes of diarrhoea. **Study in Ethiopia[32]**: The practice of household water treatment is inversely associated with stunting **Study in Chad[33]**: Use of the same container for drinking/non-potable water and insufficient cleaning of the storage container is associated with acute malnutrition.

[30]Dangour et al, 2013. Interventions to improve water quality and supply, sanitation and hygiene practices, and their effect on the nutritional status of children.
[31]Checkley et al, 2014. Effect of water and sanitation on childhood health in a poor Peruvian peri-urban community.
[32]Alemu et al, 2017. Individual and community level factors with a significant role in determining child height for age Z score in Amhara Regional state, Ethiopia.
[33]Marshak et al, 2017. Water, livestock and malnutrition: findings from an impact assessment of community resilience to acute malnutrition programming in Dar Sila, Eastern Chad.

Lessons learned / difficulties / advantages
The positive result on the nutritional status does not depend on the water treatment method used (Aquatabs, PUR, chlorine, ceramic filter). It is therefore worth promoting the preferred and context-appropriate home water treatment products or approaches. **Attention**, requires user training and home monitoring to ensure proper use of treatment products (aquatabs often misused). **Advantage :**Good practice at home can be checked simply (a simple residual chlorine test using a pool tester in the case of chlorine treatment). **Inconvenience**: Logistics to be planned for purchases and storage of products and distribution

Declination according to the context
Emergency. Distribution of a suitable product (aquatabs, flocculant/disinfectant, filter) and possibly containers for transport and secure storage (jerrycan, bucket with tap) in the communities particularly affected by the operational partner who makes the purchases, and all the distribution logistics. Still requires support for proper home use. **Stable context / chronic nutritional problem**. Approaches aimed at behavior change for the adoption of adequate water treatment practices and safe storage at home, in connection with social marketing approaches for water treatment products in the targeted communities.

In which situation is this activity particularly recommended?
This activity does not necessarily have to be carried out systematically and must be based on an analysis of the situation in the intervention villages. Favorable contexts are: - in development contexts, - when water supply conditions in villages are inadequate and malnutrition rates are high

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity only addresses the faecal-oral route of transmission through drinking water. This activity should ideally be offered in combination with other measures, such as the promotion of handwashing with soap at key times (especially for care practices for young malnourished children), food hygiene and food preservation, and the cleanliness of the young child's immediate environment (play area, floor, etc.) – including disposing of children's faeces in toilets and avoiding the presence of stray animals.

ACTION SHEET
Objective: SO 2 – Prevention of malnutrition.
Improved sanitation in communities affected by malnutrition

Kind / Description
Improved sanitation at the household level by promoting the construction and use of latrines and at the community level by ending open defecation and waste management.

Objective
This activity aims to improve environmental cleanliness and reduce faecal contamination in communities affected by malnutrition. More specifically, this activity aims to reduce the incidence of enteric infections, and thus hopes to contribute to the prevention of malnutrition.

Expected result/ indicators
Increase in the rate of use of latrines, decrease in open defecation, decrease in the incidence of enteric infections (diarrhea, enteropathy, parasitosis), decrease in the incidence of diarrhoea, decrease in the prevalence of malnutrition, improvement of anthropometric parameters (weight/height; height/age).

Justification
Links between improved sanitation, reduction of enteropathy/diarrhoea/parasitosis and reduction of malnutrition;

Target / Entry Point
The target of the activity/entry point is the communities affected by malnutrition.

Level of evidence / Effectiveness of the intervention
Study in Peru[34]: The nutritional status is directly correlated to the conditions of access to sanitation in households. **Multi-country study** [35]: Access to improved sanitation is associated with reduced prevalence of diarrhea, stunting and mortality. **Multi-country study**[36]: Sanitation (and in particular open defecation) explains 54% of the difference in height of children between countries. **Study in Mali**[37]: A randomized study (RCT) has shown that the CLTS approach aimed at behavior change and an end to open defecation in communities reduces the relative risk of malnutrition (underweight and stunting) by 15%. growth) (RRR=15%) in the intervention communities.

[34]Checkley et al. 2004 Effect of water and sanitation on childhood health in a poor Peruvian peri-urban community.
[35]Fink et al, 2011. The effect of water and sanitation on child health: evidence from the Demographic and Health Surveys 1986–2007
[36]Spears, 2013. The nutritional value of toilets: How much international variation in child height can sanitation explain?
[37]Effect of a community-led sanitation intervention on child diarrhea and child growth in rural Mali: a cluster-randomized controlled trial

Lessons learned / difficulties / advantages
Important : To maximize nutritional and health impact, it is best to aim for improved sanitation at the level of entire communities (End of open defecation).

Declination according to the context
Emergency. Focus will be on disseminating messages about the importance of sanitation and no open faeces rather than building infrastructure (eg the cat method). **Stable context / chronic nutritional problem**. In a context of stability, we will seek to promote behavior change through proven community approaches such as the CLTS approach and to carry out monitoring / emulation at the level of municipalities / circles for certification and maintenance of ODF status.

In which situation is this activity particularly recommended?
This activity is particularly recommended in areas with a high prevalence of acute and chronic malnutrition and where sanitation access rates are low.

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity should ideally be offered in association with the improvement of access to water in the same communities affected by malnutrition as well as with the promotion of a set of measures to improve the immediate sanitary environment of the child such as the treatment and safe storage of drinking water, the promotion of handwashing with soap at key times (especially for care practices for young malnourished children), food hygiene and food preservation, and the cleanliness of the young child's immediate environment (play area, floor, etc.) – including disposing of children's faeces in toilets and avoiding the presence of stray animals.

ACTION SHEET
Objective: SO 2 – Prevention of malnutrition.
Promotion of adequate hygiene conditions at home in communities affected by malnutrition

Kind / Description
Promotion of adequate hygiene practices at home in communities affected by malnutrition - to prevent the ingestion of potentially pathogenic bacteria: Use of treated drinking water, washing of hands at key times, food hygiene, hygiene of the habitat and the immediate environment, use of latrines and management of children's faeces, separation of domestic animals from the place of life, clean and protected play areas for children;

Objective
This activity aims to protect all children in communities affected by malnutrition from ingesting pathogenic bacteria in order to prevent the vicious circle between enteropathy - diarrhea - malnutrition. More specifically, this activity aims to reduce the incidence of enteric infections, and thus hopes to contribute to the prevention of malnutrition.

Expected result/ indicators
Reduction in the incidence of enteric infections (diarrhoea, enteropathy, parasitosis), reduction in the incidence of diarrhoea, reduction in the prevalence of malnutrition, improvement in anthropometric parameters (Weight/Height; Size/Age).

Justification
Links between hygiene/enteropathy/diarrhea/parasitosis and malnutrition; Vicious circle infection/malnutrition.

Target / Entry Point
The target of the activity are healthy children and pregnant and lactating women - at risk (in communities affected by malnutrition). The entry point is therefore households in communities affected by malnutrition.

Level of evidence / Effectiveness of the intervention
Observational study in Ethiopia[38]: Faecal contamination of the living environment of young children is a significant factor in stunting. Observation of the children showed that they put hands, food, water, soil, and chicken droppings into their mouths. **Links between livestock and malnutrition**[39]: In this study in Chad, a correlation between the concentration of livestock in villages and malnutrition rates was observed. **Risk factors in Chad**[40]**:**mother's handwashing practices and latrine use are significant risk factors for acute malnutrition.

[38]Ngure et al. 2013. Water, sanitation, and hygiene (WASH), environmental enteropathy, nutrition, and early child development: making the links.
[39]Marshak et al, 2017. Water, livestock and malnutrition: findings from an impact assessment of community resilience to acute malnutrition programming in Dar Sila, Eastern Chad.

[40]Dodos et al, 2018. Individual and household risk factors of severe acute malnutrition among under-five children in Mao, Chad: a matched case-control study

Intervention study in Ethiopia[41]: This study with a control group but not randomized was able to demonstrate a significant effect of a WASH package (protected source, promotion of sanitation, promotion of handwashing with soap, household hygiene, separate shelter for animals and storage of safe water) on the growth of children.
Zimbabwe Intervention Study (RCT)[42]: This randomized study aimed to demonstrate the effect of a WASH intervention including the promotion of latrine construction, hand washing and soap distribution, safe play areas for children, the distribution of water, and the promotion of food hygiene. No effect on diarrhea or malnutrition could be demonstrated.

Lessons learned / difficulties / advantages
Important : Recent studies have shown the multiple origins of faecal contamination of children at home – and therefore the need to promote household hygiene as a whole and not just the treatment of drinking water.

Declination according to the context
Emergency. The main focus will be on disseminating messages on the different elements of home hygiene in communities affected by malnutrition. The use of picture boxes can be useful to illustrate bad and good practices. **Stable context / chronic nutritional problem**. In a context of stability, the promotion of good hygiene practices at home will be done through behavior change approaches integrating an analysis of barriers and motivating factors.

In which situation is this activity particularly recommended?
This activity should be systematically integrated into the messages delivered in malnutrition prevention programs – home hygiene being an essential element of the health and nutrition of young children.

Recommendations (in particular if should be accompanied by other complementary measures?)
This activity should ideally be offered in combination with a set of measures to improve the sanitary environment of the child such as the treatment and safe storage of drinking water.

[41]Fenn et al, 2012. An evaluation of an operations research project to reduce childhood stunting in a food-insecure area in Ethiopia.
[42] Prendergastet al, 2018. Independent and combined effects of improved water, sanitation, and hygiene, and improved complementary feeding, on stunting and anemia among HIV-exposed children in rural Zimbabwe (SHINE).