



How to better link WASH and nutrition programmes

CONCERN
worldwide

Introduction

The overall goal of Concern's Global Health Strategy 2011-2015 is to contribute to the achievements of health and nutrition security for the poor within the context of the health-related Millennium Development Goals. The strategy recognises the need for improving integration both between the various health sub-sectors and the other sectors in which Concern works. It is hoped that, with better integration, programmes will be more cost-effective and sustainable, and will show increased impact (Concern, 2011). This paper aims to provide some practical guidance on how water sanitation and hygiene (WASH) programmes can be more nutrition-sensitive¹ and how nutrition programmes can incorporate more WASH aspects. It should be useful for all project staff working in nutrition and WASH programmes when WASH and/or a nutrition programme are in operation.

Review of the evidence-based knowledge linking WASH and nutrition

The most obvious link between nutrition and WASH can be seen by looking at the main causes of child death. As shown in figure 1 below, diarrhoea is the second leading cause of death in children under the age of five (excluding pre-term birth complications), accounting for 11% (Liu, 2012). Diarrhoea is mainly caused by ingesting contaminated foods or drinks and by direct person-to-person contact (mainly hand to hand then hand to mouth). Hand washing with soap is one of a range of hygiene promotion interventions that can interrupt the transmission of diarrhoea-causing pathogens. The leading cause of child mortality is pneumonia at 18%. Evidence indicates that hand washing with soap can significantly reduce the incidence of pneumonia in addition to diarrhoea (Luby, 2005). Undernutrition as a cause of child death is often masked by the reported disease. It is estimated that 45% of all under-five deaths (3.1 million per year) are attributable to undernutrition (Horton, 2013). Children who are ill with pneumonia or diarrhoea or other diseases are more likely to become malnourished as they lose their appetite or are too sick to eat. At the same time, their energy requirements are increased due to illness. Conversely, children who are malnourished are more susceptible to illness. Thus, a cycle of illness and malnutrition can develop (figure 2) (Keene, 2012, Martorell 1980)

¹ Nutrition-sensitive interventions address some of the underlying and basic causes of malnutrition by incorporating nutrition goals and activities from a wide range of sectors. They can also serve as delivery platforms for nutrition-specific interventions which address the immediate causes of undernutrition like inadequate dietary intake as well as some of the underlying causes like feeding practices and access to food.

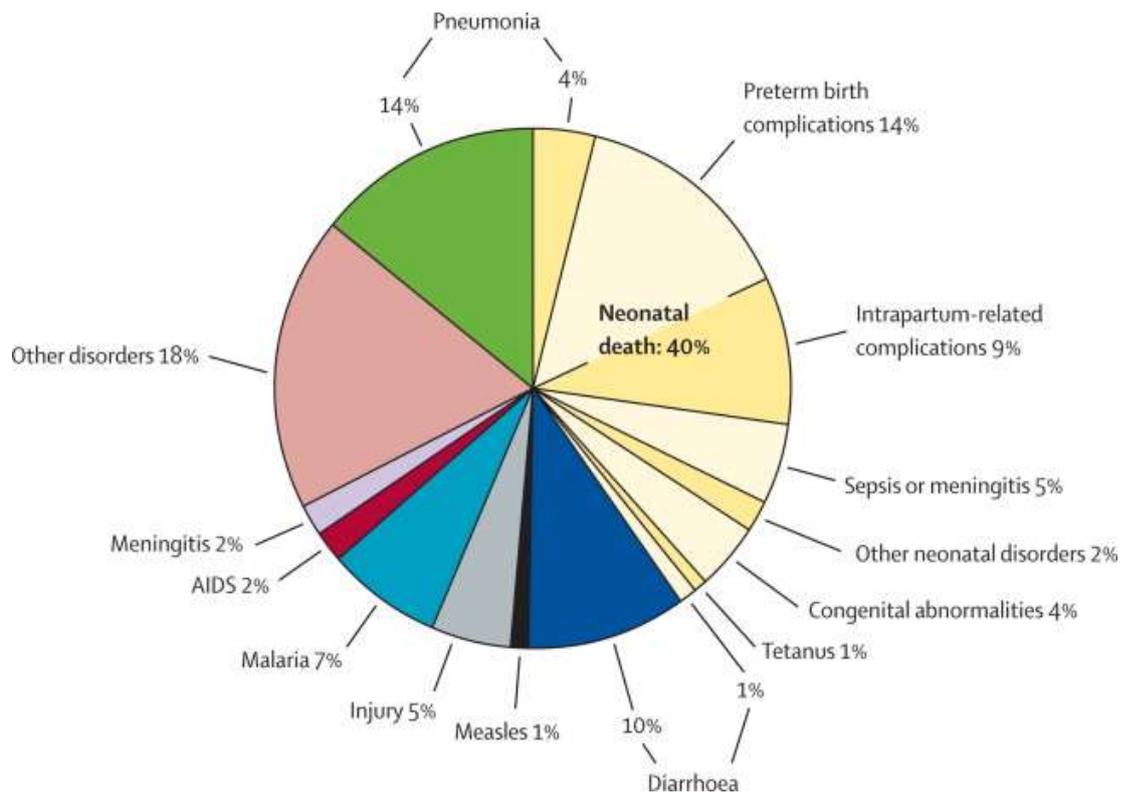


Figure 1: Distribution of causes of death among children aged <5 years (Liu, 2012).

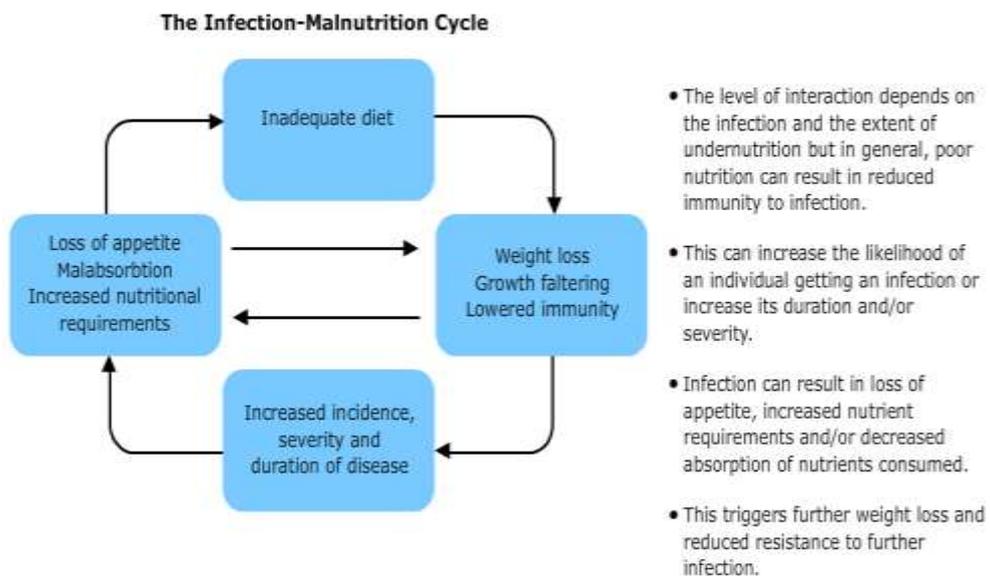


Figure 2: the infection and malnutrition cycle (Martorell, 1980)

The World Health Organization (WHO) estimates that 88% of all cases of diarrhoea are due to poor WASH environments. A number of studies indicate that diarrhoea negatively impacts a child's linear growth (Fewtrell, 2005). However, a reduction in diarrhoea prevalence does not automatically lead to a similar reduction in growth failure (Black, 2008). Research shows that environmental enteropathy (EE) can also compromise the nutritional status of a child (Ngure, 2014). EE is a condition brought on when children live and play in unhygienic environments. By placing in their mouths natural playthings like stones and twigs that have been exposed to manure, children can 'consume' harmful bacteria, resulting in changes in their intestinal guts. The normally fuzzy intestinal lining that slows the passage of food and absorbs nutrients is flattened because of the bacteria so fewer nutrients are absorbed. As well, the permeability of the gut increases so that more bacteria can pass unhindered. Current research indicates that EE could be one of the major causes of stunting² in children. With both diarrhoea and EE, children have an increased need for energy and nutrients for the immune response. At the same time they suffer from a reduced intestinal absorption of nutrients (Humphrey, 2013). Unfortunately, undernourished children and children who were not exclusively breastfed for the first 6 months of their lives are more susceptible to diarrhoea (and probably environmental enteropathy) and thus have an increased risk of morbidity and mortality.

Thanks to the Scaling Up Nutrition (SUN) movement, understanding of the interdependence between nutrition and WASH has increased in recent years. Working with governments committed to SUN, UN agencies and NGOs commit to accelerate progress in reducing maternal and child undernutrition by combining their efforts across sectors and by promoting interventions from household level through to national level. The goal is to optimise nutrition during the first 1000 days of a child's life, from pregnancy to the child's second birthday, and therefore reduce the prevalence of stunting. During the first 1000 days, the brain develops rapidly, laying the foundation for future cognitive and social ability, school success and productivity. It is also the time when young children are the most susceptible to infections that lead to diarrhoea, particularly as they begin the weaning process, begin to crawl and become exposed to environmental enteropathies.

Concern's prevention of undernutrition framework (figure 3), which originated from UNICEF's causal framework of undernutrition, highlights that a multi-sectoral approach is required to sustainably reduce morbidity and mortality in children. This includes addressing food security, child caring and feeding practices, and health and water & sanitation services as well as economic aspects of the household and equality. Breaking up the silos of the various sectors is essential. Incorporating aspects of one sector into a project of the other, e.g. by making a WASH intervention nutrition-sensitive, is considered the way forward.

² Stunting, or low height-for-age (below minus two standard deviations from median height-for-age of reference population), is caused by long-term insufficient nutrient intake and frequent infections. Stunting generally occurs before age two, and its effects are largely irreversible. These include delayed motor development, impaired cognitive function and poor school performance. Nearly one third of children under five in the developing world are stunted.

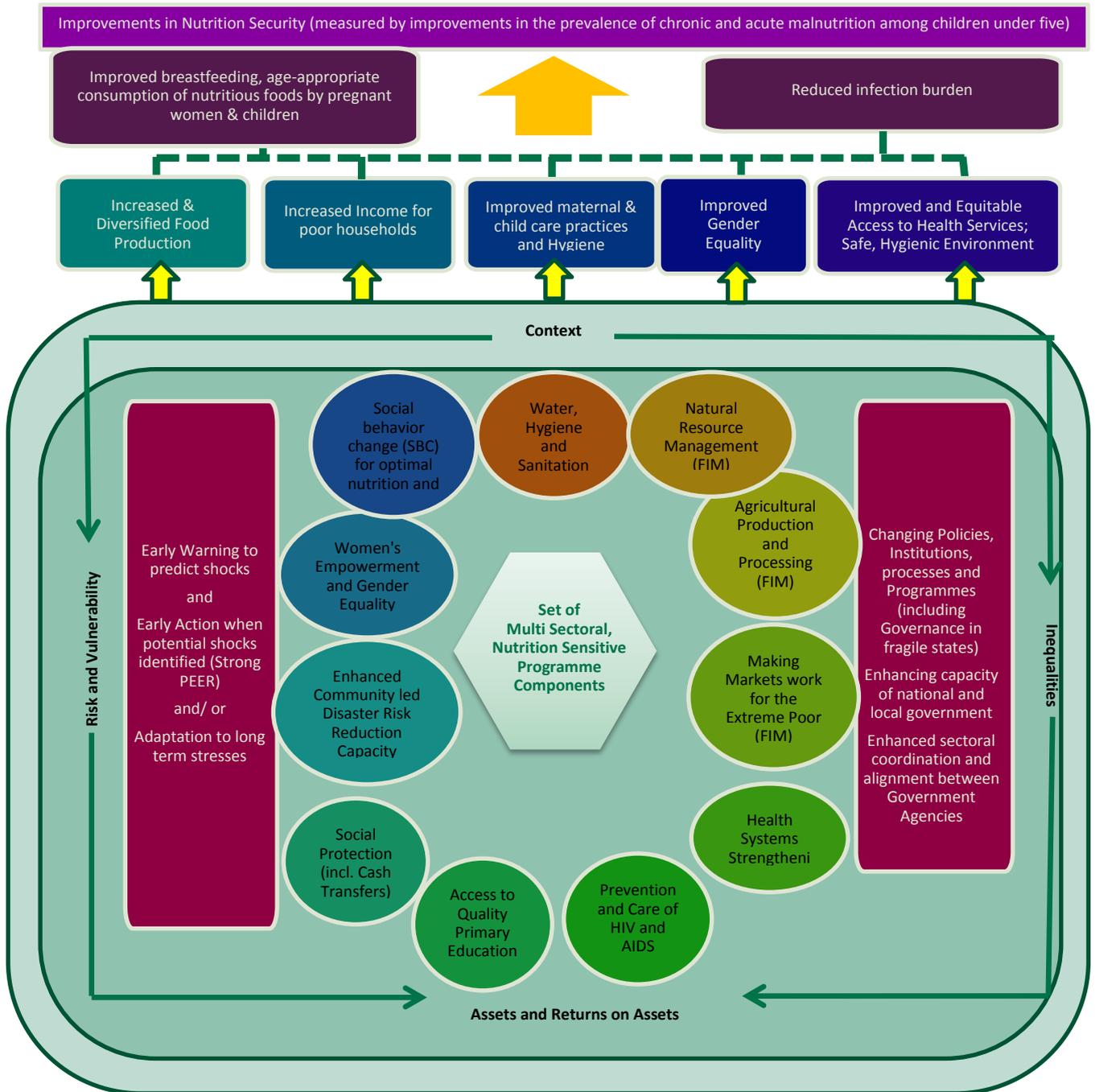


Figure 3: Concern's Prevention of Undernutrition Framework

There are a number of well-known measures available to make the environment, particularly for children, more hygienic. Figure 4 below shows the effectiveness of different WASH interventions on reducing morbidity from diarrhoea.

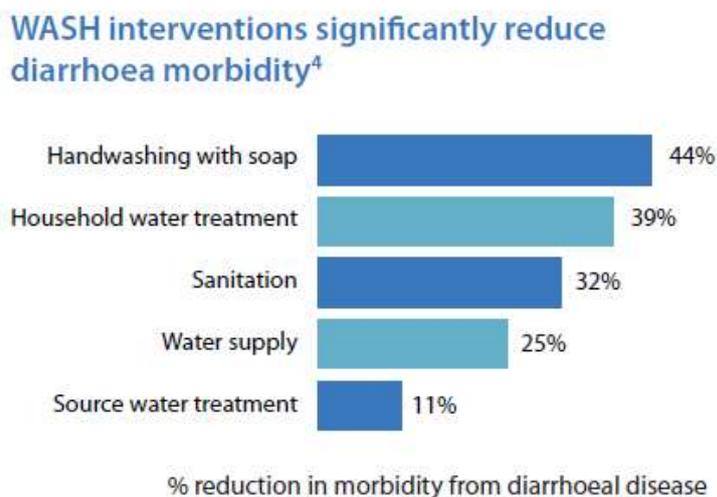


Figure 4: Effectiveness (%) of WASH interventions to reduce diarrhoea morbidity (UNICEF, 2009)

Review of options for better linking WASH and nutrition programmes

In the following section, you will find some guidance and practical suggestions on making your WASH programme more nutrition-sensitive and on how your nutrition programmes can better incorporate WASH aspects. We have kept these suggestions very practical. They are often small activities which require very little additional resources or changes to your programme. A number of ideas were taken from a paper produced by WASHplus (Washplus. 2013)

The suggestions are divided into six categories: linking WASH and nutrition

1. During the assessment phase
2. During counselling and health promotion activities
3. When strengthening overall community services
4. At institutional level (government, NGO)
5. Under emergency response programmes
6. Through joint research projects

1. Linking wash and nutrition during the assessment phase

Here you could look at the various steps of an assessment and make sure there interests and resources of both sub-sectors are factored in. However, do not get carried away by the vast number of interesting WASH and nutrition indicators you could assess. When identifying the most essential indicators for your survey, refer to the log frame of your project proposal and ensure that only crucial information needed for monitoring progress or impact is collected. Incorporating indicators of the other sector into your survey should only increase your questionnaire minimally, if at all. You should first check for already available information on the other sectors and then discuss jointly with your colleagues from the other sector what additional data are needed. In the table below, there are some ideas on how nutritionists can incorporate WASH aspects into their nutrition assessments and how to make WASH assessments more nutrition-sensitive.

Suggestions for incorporating WASH activities into nutrition programmes: During assessment phase

Common WASH activities	Can/ should this activity be integrated into a nutrition programme?	How?	Reference material
Collect and analyse WASH-related data and develop and follow up recommendations addressing the WASH findings.	Yes, but only those relevant to your nutrition programme e.g. access to drinking water (source, distance, quantity, and quality), availability and quality of sanitation facilities, and hygiene-related behaviours e.g. hand washing.	Make sure WASH-relevant information is collected and analysed using a WASH lens and that findings are shared with your WASH colleagues/ other relevant parties for their action. Involve your WASH colleagues for technical support on WASH aspects.	Standard indicators found here ³ DHS questionnaire found here ⁴
Check for functionality of WASH facilities during household interviews.	Yes, if relevant to your programme e.g. for hand washing station, latrine and water storage systems.	Use a standardised checklist; ensure your enumerators are trained on these standards.	Found here ⁵
Assess barriers to WASH-related behaviours e.g. hand washing	Yes, if hand washing or another WASH-related behaviour was identified as key to undernutrition a barrier analysis could be useful. Always coordinate with your WASH colleagues where present to avoid overlap and to ensure quality.	Conduct a barrier analysis e.g. on hand washing and incorporate some of the developed activities into your nutrition programme to address the significant barriers.	Found here ⁶

3

<http://intranet/People/SAL/PALU/approaches/pme/Indicators/Forms/AllItems.aspx?RootFolder=%2fPeople%2fSAL%2fPALU%2fapproaches%2fPME%2fIndicators%2fConcern%20Indicator%20Menu%20and%20Definitions&FolderCTID=&View=%7b7B9F8F31%2dA66A%2d41E2%2d928F%2d160F8591A988%7d>

⁴ http://www.measuredhs.com/pubs/pdf/DHSQ6/DHS6_Questionnaires_5Nov2012_DHSQ6.pdf

This document is also available in French http://www.measuredhs.com/pubs/pdf/DHSQ6/DHS6_Questionnaires_French_5Nov2012_DHSQ6.pdf

⁵ http://www.unicef.org/wash/files/WASH_in_Schools_Monitoring_Package_English.pdf

⁶

<http://intranet/People/SAL/HSU/health/Key%20Documents/Forms/AllItems.aspx?RootFolder=%2fPeople%2fSAL%2fHSU%2fhealth%2fKey%20Documents%2fSBC%2c%20DBC%2c%20BAs%20%28Concern%20work%29%2fBA%20reports%20%28results%29&FolderCTID=0x01200051BD199463302143BBA1370B7E7CD1A1&View=%7bCB6295F6%2dA29E%2d49F9%2dA663%2dCACCB6COEDB1%7d>

Suggestions for incorporating nutrition activities into WASH programmes: During assessment phase

Common nutrition activities	Can/ should this activity be integrated into a WASH programme?	How?	Reference material
Use data from the health management information system (HMIS) and the demographic health surveys (DHS) as references when planning interventions.	Yes, HMIS and DHS reports are available for most countries and contain valuable health information including hand washing, access to safe drinking water, water treatment, and diarrhoea prevalence. They also have nutrition indicators like prevalence of global acute malnutrition and stunting etc.	DHS country reports are prepared every 4 to 5 years and are on the internet; HMIS data can be obtained from the Ministry of Health in country.	DHS reports by country found here ⁷
Collection and analyses of nutrition-related data. Develop and follow up recommendations addressing the nutrition findings.	Yes, but only those relevant to your WASH programme e.g. diarrhoea prevalence, stunting prevalence, deworming coverage, GAM and SAM.	Make sure nutrition-relevant information is analysed using a nutrition lens and that findings are shared with your nutrition colleagues where present for their action. Involve your nutrition colleagues/or other relevant partner for technical support on nutrition aspects.	Link to indicator menu found here ⁸ DHS questionnaire found here ⁹ Ask your nutrition colleagues or head office based nutrition advisor for support.

⁷ <http://www.measuredhs.com/data/available-datasets.cfm>

⁸ <http://intranet/People/SAL/PALU/approaches/pme/Indicators/Forms/AllItems.aspx?RootFolder=%2fPeople%2fSAL%2fPALU%2fapproaches%2fPME%2fIndicators%2fConcern%20Indicator%20Menu%20and%20Definitions&FolderCTID=&View=%7b7B9F8F31%2dA66A%2d41E2%2d928F%2d160F8591A988%7d>

⁹ http://www.measuredhs.com/pubs/pdf/DHSQ6/DHS6_Questionnaires_5Nov2012_DHSQ6.pdf

2. Linking WASH and nutrition during counselling and health and hygiene promotion activities

Hand washing is a crucial behaviour that is usually addressed by WASH, but also by nutrition programmes. However, WASH and nutrition colleagues sometimes coordinate their activities poorly despite aiming for the same result, i.e. increasing knowledge and practice of hand washing with soap at the five critical times¹⁰. When communicating with the community, both sectors heavily rely on community volunteers but often different types of volunteers are mobilised to deliver related services and messages. Nutrition projects traditionally focus on the child and the care giver, often the mother. In the more recent evolved discussion around environmental enteropathy, the term 'Baby WASH' has been developed. It summarises WASH interventions with particular importance to babies and young children and their carer givers. WASH interventions, particularly those involving technical solutions, traditionally attract more men. By communicating nutrition information through WASH channels, more men can be reached. Women can easily be targeted with WASH information through nutrition communication channels. Below are a few more suggestions on how WASH and nutrition programmes can better interlink their efforts, not only for hand washing but also for other behaviours and methods used when reaching out to communities, households and individuals.

Suggestions for incorporating WASH activities into nutrition programmes: counselling and health promotion activities			
Common WASH activities	Can/ should this activity be integrated into a nutrition programme?	How?	Reference material
Promote hygiene behaviours to individuals or groups	Yes, but only a few selected behaviours mostly relevant to your nutrition programme e.g. hand washing, water treatment, use of a latrine, safe disposal of babies' stool, etc.	Use already established contact points e.g. care givers at SFPs, OTPs, and mother/ father or care group meetings and home visits by CHWs. Also consider contact points established by WASH e.g. water user committees. Ask your WASH colleagues to join nutrition sessions to talk about WASH aspects. Always use harmonised messages across sectors.	UNICEF nutrition counselling materials in English and French found here ¹¹
Work towards a more hygienic environment by promoting 'open	Yes and no: an unhygienic environment is caused by a) poor	Identify the key WASH practices causing undernutrition, understand the barriers	Manual to community-led total sanitation (CLTS) the tool to create

¹⁰ The five critical times of handwashing are: 1) after defecation, 2) after attending to a child who has defecated, 3) before preparing food, 4) before feeding a child, 5) before eating

¹¹ http://www.unicef.org/nutrition/index_58362.html

defecation free villages' or organising clean-up campaigns	WASH infrastructure and b) by inadequate practices. For infrastructure related solutions, contact your WASH colleagues. Nutrition programmes are a suitable vehicle for influencing behaviours.	and integrate appropriate activities in your nutrition programme.	open defecation free villages here ¹²
Suggestions for incorporating nutrition activities into WASH programmes: counselling and health promotion activities			
Common nutrition activities	Can/ should this activity be integrated into a WASH programme?	How?	Reference material
Promote optimal nutrition behaviours to individuals or groups	Yes, but only a few selected nutrition behaviours mostly relevant to your WASH programme e.g. use of oral rehydration solution (ORS), deworming, use of insecticide treated nets (ITNs), information about feeding and care seeking practices for a child suffering from diarrhoea.	Provide relevant nutrition/ health messages at WASH meetings and to hygiene promoters. Ask your nutrition colleagues to join WASH sessions to talk about nutrition aspects. Always use harmonised messages across sectors.	UNICEF nutrition counselling materials in English and French found here ¹³
Cooking demonstrations	No, but make sure that your nutrition colleagues follow good hygiene practices when conducting cooking demonstrations and that all key WASH messages are communicated to the audience at these events.	Jointly make a list of what WASH aspects should be considered when doing a cooking demonstration; use harmonised messages. Possible WASH aspects: food safety, personal hygiene, hygienic home environment.	For a list of WASH aspects to consider when doing cooking demonstrations (page 7-12) found here ¹⁴

Table 1: Suggestions for incorporating WASH and nutrition aspects during counselling and promotion activities

¹² <http://www.communityledtotalsanitation.org/page/clts-approach>

¹³ http://www.unicef.org/nutrition/index_58362.html

¹⁴ <http://www.eatwellbewell.org/uploads/media/documents/aznn-food-demonstration-guide.pdf>

3. Linking WASH and nutrition when strengthening overall community services

A community accesses a number of services provided by institutions and their staff. Depending on the context, communities have access to government and private sector services for health, education, finance and agriculture. These services are delivered by a fleet of employees and volunteers such as nurses, community health workers, pharmacists, birth attendants, teachers, early child development workers, agriculture extension workers, model farmers and religious leaders. They all play important roles in improving the WASH and nutrition conditions of the community. Even though the majority of these actors don't have a WASH or nutrition specific focus, they are important multipliers of WASH and nutrition information. The table below proposes a selection of activities for making your community service programmes more WASH or nutrition sensitive.

Suggestions for incorporating WASH activities into nutrition programmes: strengthening over all community services			
Common WASH activities	Can/ should this activity be integrated into a nutrition programme?	How?	Reference material
Construct water & sanitation facilities	No, if you have evidence that water & sanitation facilities are insufficient (at households, health facilities, feeding centres, schools) contact your WASH colleagues or an organisation/ the government implementing WASH interventions in the area. When you promote vegetable gardens or livestock husbandry to diversify the diet, keep in mind that these activities require a lot of water.	However, you can provide information to communities on how to construct low-cost WASH facilities using own resources e.g. hand washing stands like tippy taps, latrines, dish racks, etc. Discuss with your WASH and livelihood colleagues low-cost rain water harvesting systems (where applicable) or the use of grey water for growing vegetables.	 How-to-build-a-tippy-tap-manual.pdf  LatrinePhotosStepByStep.pdf
Set up a WASH committee to ensure water source is well managed	No, but make sure the WASH committee (where available) also covers the maintenance of WASH facilities in health and feeding centres.	E.g. ensure a health worker is appointed as a member of a WASH committee. Where there is no WASH committee, provide guidance to the community health committee (CHC) to address WASH aspects of the health/ feeding centre. When introducing pricing for water, consider subsidising drinking water for the most vulnerable households.	

Treatment of water at source e.g. chlorination of wells	No, but if there is a clear indication that diarrhoea largely contributes to the high prevalence of undernutrition e.g. diarrhoea spikes during rainy season and contamination of the water source could be the cause then link up with the WASH sector.	Share survey findings with WASH colleagues. Consider using mapping software to visualise pockets of children with diarrhoea and link it with the GPS coordinates of the water source used.	
Suggestions for incorporating nutrition activities into WASH programmes: strengthening overall community services			
Common nutrition activities	Can/ should this activity be integrated into a WASH programme?	How?	Reference material
Provide drugs and equipment to support the government health system to provide health & nutrition services (usually in an emergency context only)	No, but there are services (routine and campaigns) which are highly relevant to the WASH sector you should be aware of e.g. distribution of ORS, bed nets, soap, water purification and deworming tablets.	For your programme area assess availability and coverage of these items/ services and advocate to health/ nutrition sector for improvements where needed. Help communicate availability and purpose of these services to the community. Participate in any campaigns if possible.	Recipe for home-made ORS found http://rehydrate.org/solutions/homemade.htm#recipe
Strengthen the skills of government health workers at the various levels	No, but work together with your health and nutrition colleagues to ensure WASH aspects are incorporated (behaviours health workers should communicate to patients but also what the staff need to practice themselves at work).	Assist health and nutrition colleagues to identify the key WASH behaviours health workers should know and practice. Provide already available standardised WASH messages and guidance on monitoring uptake and adherence.	
Technically support community health committees (CHC) or health facility management committees	No, but together with your nutrition/ health colleagues ensure WASH aspects are discussed in these health/ nutrition committees and nutrition aspects are introduced during WASH committee meetings.	You could support CHCs to initiate actions to respond timely to seasonal or unexpected spikes in water-borne diseases e.g. chlorination of wells, hand washing, deworming, cleaning up campaigns	

4. Linking WASH and nutrition at institutional level (government, NGO)

Government and NGO offices are often divided into sectors. It can be very difficult to break up these silos and to get people working together. Often, lack of knowledge about the other sector stops us from working together; we do not feel confident because we do not speak the same technical language. Yet, exchanging information is so important. For example, nutritionists often have detailed information about diarrhoea prevalence and when and where caseloads spike as they have to respond to the consequences of diarrhoea outbreaks i.e. malnutrition. For WASH colleagues, this information can help to spot any seasonal gaps in water supply and to put preventative measures in place such as timely treatment of water sources or campaigning for the use of latrines or hand washing. The WASH sector does not only work on water quality, but also tries to shorten distances women have to walk when fetching water. Every minute saved for collecting water provides women more time for their other chores such as caring for and feeding children. The table below provides some suggestions on how to improve the collaboration between the WASH and nutrition sectors at the institutional level and how to maximise cross-sectional impact. Because the suggestions for both sectors are the same, there is only one table for WASH and nutrition together.

Suggestions for linking WASH and nutrition activities at institutional level: At institutional level			
Common WASH and nutrition activities	Can/ should this activity be linked?	How?	Reference material
WASH or nutrition coordination meetings at district, regional or national level	Yes, ensure WASH and nutrition projects in the area are complementing each other.	From time to time, try to join a coordination meeting from the other sector. Listen to up-dates and contribute to overlapping issues. Bring in your WASH/ nutrition perspective.	
WASH or nutrition workshops, trainings, review meetings at district, regional or national level	Yes, ensure nutritionists have basic WASH knowledge and are up to date with the WASH project plans and progress. Ensure WASH staff have basic nutrition knowledge and are up to date with the nutrition project plans and progress.	Try to participate in relevant events from the other sector. Ask a colleague from the other sector to facilitate a session at your meeting/ training. Always invite colleagues from the other sector to your meeting/ training. Don't be shy asking when you are not familiar with the other sectors work.	
Conduct supervision, field and exchange visits	Yes, ensure nutritionists have a practical understanding of WASH projects and WASH staff know about nutrition projects.	Plan for a joint trip. You can learn from each other. Questions and comments from your colleagues will help you improving your project. Ideally, have both sectors working in the same geographic area.	

5. Linking WASH and nutrition under emergency response programmes

During emergency responses, making the most efficient use of resources to achieve the maximum impact is crucial; linking WASH and nutrition can contribute to this. Below are ideas which apply particularly to emergency interventions, but many of the earlier suggestions are also relevant for the emergency context.

Suggestions for incorporating WASH activities into nutrition programmes: emergency response			
Common WASH activities	Can/ should this activity be integrated into a nutrition programme?	How?	Reference material
Distribution of jerry cans, soap, water treatment tablets, ITNs, ORS sachets, etc.	Yes, ensure households, particularly the most vulnerable ones, are sufficiently stocked with these items. Coordinate with your WASH and health colleagues to avoid duplication and ensure items with the required technical specifications are procured.	Involve WASH colleagues who are familiar with the product specifications. Refer nutrition beneficiaries to the WASH programme. Organise with WASH colleagues to distribute these items at food distributions.	
Construction of communal water points, latrines and bathing units	No, but their accessibility, functionality and cleanliness directly impacts on health and therefore nutritional status.	Check condition of WASH facilities e.g. in an IDP camp when supervising nutrition activities and report findings to your WASH colleagues for their action.	
Suggestions for incorporating nutrition activities into WASH programmes: Emergency response			
Common nutrition activities	Can/ should this activity be integrated into a WASH programme?	How?	Reference material
Setting up of temporary feeding centres, mobile clinics and community kitchens	No, but WASH staff should support the nutrition team in ensuring that all beneficiaries/ care takers and staff working at feeding sites have access to safe drinking water, hand washing and latrine facilities.	WASH or nutrition to allocate funds for WASH facilities for temporary feeding centres or community kitchens; do joint planning of the outline of feeding sites, joint site visits; WASH team to organise maintenance teams.	

5. Linking WASH and nutrition through joint research projects

In the recent past, WASH and nutrition linkages have managed to gain more attention. Some evidence exists showing that by making nutrition programmes more WASH-sensitive (or WASH programmes more nutrition-sensitive), undernutrition prevalence can be reduced. However, there is still a lot to discover. Below is a short list of suggested research topics. Please contact your SAL WASH or nutrition advisor if you are interested in exploring any of these research topics further:

- Impact of adequate village water on children's length of stay in feeding programmes
- Impact of integrated WASH/ nutrition/ health interventions on stunting
- Testing of a specifically designed 'baby WASH' package targeting the first 1000 days of a child's life
- Impact on the nutritional status of children when a community is declared 'open defecation free'
- Increase of hand washing practice using a linked WASH-nutrition approach versus a WASH only approach
- How can new technology help to identify WASH related causes to undernutrition? The use of DDG and mapping software to present nutrition and WASH data.

Conclusions

- A child without symptoms of diarrhoea might suffer from Environmental enteropathy, a condition that changes a child's intestinal gut by the consumption of harmful bacteria often by placing natural playthings in their mouth. Both diseases are harmful for a child's health and long-term development and contribute to malnutrition.
- Hygiene-related activities contribute just as much to reducing stunting as nutrition-specific activities.
- Therefore, all WASH programmes and all nutrition programmes should at least promote handwashing.
- For people to adopt handwashing habits, sharing knowledge is not enough. You must use appropriate and specific behaviour change methodologies.

References

1. Concern, Global Health Strategy January 2011; Concern Worldwide [here](#)¹⁵
2. Liu, L, Johnston, H, Cousens, S, et al. Global, regional, and national causes of child mortality; The Lancet, Volume 379, Issue 9832, Pages 2151 - 2161, 9 June 2012.¹⁶
3. Martorell, R. Interrelationships between Diet, Infectious Disease, and Nutritional Status. In Social and Biological Predictors of Nutritional Status, Physical Growth, and Neurological Development. Greene LS, Johnston FE eds. New York: Academic Press 1980
4. Luby SP, Agboatwalla M, Feikin, et al. Effect of hand washing on child health: a randomised controlled trial; The Lancet, 366 (9481):225-33. July 2005.
5. Horton, R, Lo, S. Nutrition: a quintessential sustainable development goal; The Lancet 2013.¹⁷
6. Keene, B. WASH, Food Security and the Environment: Making the Links. Care e-publication, 2012.¹⁸
7. Fewtrell L et al. Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: a systematic review and meta-analysis The Lancet Infectious Diseases, 2005, 5(1):42–52Black, R. Undernutrition Study Group. What works? Interventions for maternal and child undernutrition and survival. Lancet 2008; 371: 417–40.
8. Ngure, F, Brianna M, Humphrey, J. et al. Volume 1308, Every Child's Potential: Integrating Nutrition and Early Childhood Development Interventions. The New York Academy of Sciences. pages 118–128, January 2014.
9. Humphrey JH. Child undernutrition, tropical enteropathy, toilets, and handwashing. The Lancet 2009, 374: 1032–35
10. WASHplus, Integrating water, sanitation and hygiene into nutrition programming. 2013¹⁹
11. UNICEF, Soap, toilets and taps – A foundation for healthy children, 2009

¹⁵ <http://intranet/People/SAL/HSU/health/Key%20Documents/Health%20Strategy/Health%20Strategy%202011-2015.docx>

¹⁶ [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60560-1/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60560-1/fulltext)

¹⁷ <http://press.thelancet.com/nutritioncommentintro.pdf>

¹⁸ http://www.washplus.org/sites/default/files/wash_foodsecurity-keene.pdf

¹⁹ http://washplus.org/sites/default/files/wash_nutrition2013.pdf.