

## THE ROLE OF WATER, SANITATION & HYGIENE IN THE FIGHT AGAINST CHILD UNDERNUTRITION

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In 2014, 50 million children below the age of five were wasted & 159 million were stunted.<sup>iii</sup>

Infectious diseases & undernutrition operate in a vicious circle: a lack of nutrients weakens a child's defences against infection, while infection reduces appetite & prevents the body's normal absorption of food.

The World Health Organisation estimates that half of all cases of undernutrition are associated with repeated diarrhoeal or intestinal worm infections - a direct result of unsafe water & poor hygiene & sanitation.<sup>iv</sup>

Around one quarter of all cases of stunting can be attributed to five or more episodes of diarrhoea before the age of two.<sup>v</sup>

Diarrhoea can also be a major cause of the rapid weight loss associated with acute malnutrition.

1.8 billion people use a source of drinking water that is contaminated by faeces & 2.4 billion people lack adequate sanitation. Among this latter group, nearly a billion defecate in the open.<sup>vi</sup>



THIS FACTSHEET IS THE FIRST IN A SERIES BY GENERATION NUTRITION LOOKING AT THE DIFFERENT WAYS OF PREVENTING CHILD UNDERNUTRITION, AND FOCUSES ON WATER, SANITATION AND HYGIENE (WASH). IT EXPLAINS HOW WASH AND NUTRITIONAL OUTCOMES FOR CHILDREN ARE INTIMATELY LINKED AND HOW IMPROVED WASH REDUCES UNDERNUTRITION, THEREBY HELPING TO BREAK THE CYCLE OF POVERTY AND TRANSFORM PEOPLE'S LIVES.

POOR WASH IS A MAJOR FACTOR CAUSING UNDERNUTRITION IN CHILDREN, BY PERMITTING THE SPREAD OF INFECTIOUS DISEASES SUCH AS DIARRHOEA, AMONGST OTHER INDIRECT EFFECTS.

**Nearly half of all deaths among children under five - 2.6 million deaths a year - are related to undernutrition.<sup>i</sup> Each of these deaths is entirely preventable.**

Undernutrition results from inadequate food intake (measured in terms of quantity or quality) and infectious disease. Two important types of undernutrition affecting children are acute malnutrition (also known as wasting) and chronic malnutrition (or stunting). **Wasting, or acute malnutrition**, is a condition where a child's weight drops to such a level that they are at risk of dying. It develops over a short period of time. **Stunting**, on the other hand, occurs over a longer period of time. It happens when a child is constantly malnourished and as a result their growth becomes stunted.<sup>ii</sup> A third type of undernutrition is **micronutrient deficiencies**.

The immediate determinants of undernutrition (inadequate food intake and disease) are fuelled by a range of underlying factors which can only be tackled through an integrated, multi-sectoral approach. Preventing undernutrition requires addressing critical issues such as a lack of access to diverse food and micronutrients, limited access to healthcare and inadequate water, sanitation and hygiene (WASH).



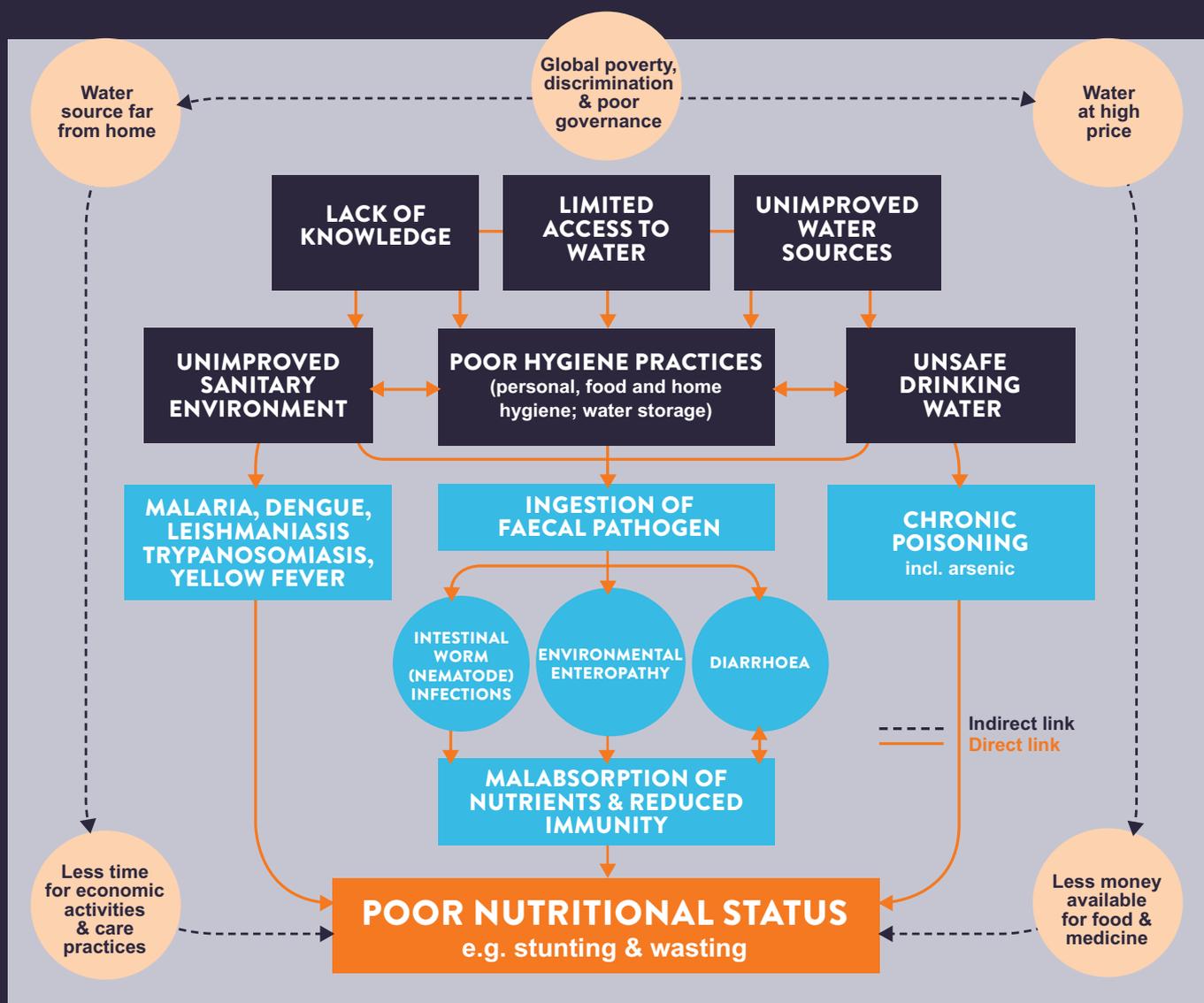
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# HOW DOES WASH AFFECT A CHILD'S NUTRITIONAL STATUS?

Poor sanitation and hygiene practices and unsafe drinking water create the perfect conditions for the development of different infectious diseases that are linked to undernutrition (see Figure 1). For example, pathogens found in human and animal faeces are accidentally ingested when a person touches his/her mouth or swallows contaminated food or water. Flies, which are attracted to faeces, also play a role in this transmission.<sup>vii</sup>

This ingestion of pathogens through the “faecal-oral” route leads to diarrhoea, intestinal worms and environmental enteropathy. All these infections result in the poor absorption of nutrients by the body and hence a worsening of undernutrition (see right for details). Furthermore, stagnant water containing solid waste attracts mosquitoes, which carry diseases such as malaria. Malaria is a cause of stunting.<sup>viii</sup>

**FIGURE 1: THE RELATIONSHIP BETWEEN POOR WASH & CHILD UNDERNUTRITION**



## FROM POOR WASH TO UNDERNUTRITION: THREE MAJOR PATHWAYS

### 01 DIARRHOEA

Diarrhoea is both a cause and consequence of undernutrition: it prevents children from achieving normal growth and weight gain, while undernutrition increases the frequency and duration of diarrhoeal events.<sup>ix</sup>

### 02 ENVIRONMENTAL ENTEROPATHY

This disease provokes a number of changes to the intestines, which prevent the normal absorption of food, vitamins and minerals.<sup>x</sup> Environmental enteropathy is thought to be a major risk factor for stunting.<sup>xi</sup>

### 03 INTESTINAL WORMS

Parasitic, intestinal worms, such as schistosomes (contracted through bathing in, or drinking contaminated water) and helminths (transmitted through soil contaminated with faeces) cause blood loss and reduced appetite, both of which negatively affect a child's nutritional status.<sup>xii</sup>

With safe and accessible water and sanitation facilities, and good personal, food and home hygiene, human contact with these pathogens is minimised and the opportunity for mosquitoes and flies to spread disease declines. This has a huge knock-on benefit for child nutrition.

There are also many indirect benefits of improved WASH for nutrition. For example, the time-savings for women and children which come about when they no longer have to travel long distances to collect water, or the possible lower cost of water resulting from a piped water supply, which can free up money for other critical household purchases.

## EXAMINING THE EVIDENCE

There is a strong and growing body of evidence regarding the positive impacts of WASH for nutrition. In 2013, the Cochrane Collaboration published the first ever systematic review of the evidence of the effects of WASH on childhood undernutrition. A key finding was that the **disinfection of water, provision of soap and improvement of water quality has a positive impact on the growth of children under five**.<sup>xiii</sup> Improved hygiene, specifically handwashing, is included in The Lancet's list of 12 proven, direct interventions on nutrition (also referred to as 'nutrition-specific' actions).<sup>xiv</sup> And at the country level, hygiene promotion and better water and sanitation coverage have been shown to contribute to recent declines in stunting - for example, the 12% reduction in stunting in Bangladesh between 1997 and 2011, and the 30% fall in Brazil between 1975 and 2007.<sup>xv</sup>

# THE WAY FORWARD

Poor WASH is a major factor causing undernutrition in children by permitting the spread of infectious diseases such as diarrhoea, amongst other indirect effects. We need to break this link once and for all and there are two ways that countries can do it:

01 BY INVESTING PROPERLY IN BETTER WATER, SANITATION & HYGIENE

02 BY WORKING TOWARDS A FULLER INTEGRATION OF WASH, HEALTH & NUTRITION PROGRAMMES

The box below gives some examples of actions that could be taken by governments, donors and other development actors in order to expand access to WASH.

As regards better integration, it is true to say that too often WASH and nutrition programmes operate in isolation from each other. This means that the opportunity to deal holistically with the root causes of poor nutrition and health are missed. Actions on WASH should be included as a core part of a country's nutrition strategy (this is not always the case at present). Likewise, there is a critical need to better integrate nutrition into WASH sector plans, policies and programmes at the country level.

This two-way integration would help achieve faster improvements in the nutritional status of key target groups for nutrition programmes, including pregnant women, mothers, children under five, and children being treated for acute malnutrition.

## KEY ACTIONS REQUIRED TO SCALE UP WASH

- ◆ **HUMAN RIGHTS TO WATER AND SANITATION:** Despite these rights existing in international law, including in the UN Convention on the Rights of the Child, many countries have yet to recognise them within national legislation - one step towards extending these rights to all.<sup>xvi</sup>
- ◆ **POLITICAL SUPPORT:** Goal 6 of the new Sustainable Development Goals calls for water and sanitation for all by 2030. Achieving Goal 6 should be a key priority for governments in the years to come: this would also have knock-on benefits for other goals and targets, including those on hunger, malnutrition and child health.
- ◆ **FINANCE:** The WASH sector is chronically under-funded, particularly in low-income countries and in the areas of sanitation and hygiene. The scarce funds that are available are not used to maximum effect and often fail to reach those most in need; the poorest and most marginalised groups.
- ◆ **SUSTAINABILITY OF SERVICES:** Improvements to water supply and sanitation services should deliver permanent benefits to their users. The systems and institutions required to manage, finance and support WASH services are in many countries too weak and urgently need strengthening.
- ◆ **ACTION ON HYGIENE:** Handwashing with soap is arguably one of the most simple and cost-effective interventions to improve health and well-being. Its benefits for nutrition are well documented<sup>xvii</sup> and it dramatically reduces incidences of diarrhoea. However, handwashing, and hygiene promotion in general, remain one of the least prioritised areas of development.



# RECOMMENDATIONS

GENERATION NUTRITION CALLS ON GOVERNMENTS, SERVICE PROVIDERS, DONORS, INTERNATIONAL INSTITUTIONS AND OTHER ACTORS WORKING IN THE AREAS OF WASH, AND CHILD HEALTH AND NUTRITION TO:

- ◆ **Integrate WASH into national nutrition policies, strategies and plans, with relevant targets and indicators to measure progress. Similarly, objectives on nutrition should be included in national plans and programmes for the WASH sector.**
- ◆ **Develop and strengthen multi-sectoral action on the prevention of child undernutrition, for instance by bringing together more routinely nutrition staff, healthcare providers and WASH practitioners. This would help increase skills and capacities in relation to the WASH-health-nutrition link.**
- ◆ **Promote flexible funding mechanisms which allow investments across sectors.**
- ◆ **Honour existing funding commitments made on WASH and nutrition, including the aid pledges given at the 2013 Nutrition for Growth Summit and the commitments on WASH made under the Sanitation and Water for All Partnership, amongst others.**
- ◆ **Increase domestic and international funding for WASH, in order to address the existing shortfalls in funding, especially in low-income countries and for sanitation and hygiene.**
- ◆ **Adopt a rights-based approach, including by fully recognising in national legislation people's fundamental rights to clean water and sanitation.**

## END NOTES

i Source for share of under-five deaths linked to undernutrition (45%): Liu L. et al, 'Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: An updated systematic analysis', *The Lancet*, Volume 385, No. 99661, January 2015. Source for child mortality: UNICEF, *Committing to Child Survival: A Promise Renewed. Progress Report*, 2015.

ii There are important links between these two conditions. For instance, repeated episodes of acute malnutrition increase the risk of stunting. A child can be acutely malnourished, stunted or both at the same time.

iii UNICEF, WHO & World Bank Group, 'Levels and trends in child malnutrition', *Joint Child Malnutrition Estimates – 2015 edition*, <http://www.who.int/nutgrowthdb/estimates/en/>, accessed on 29/10/15.

iv World Health Organisation, *Safer water, better health: Costs, benefits and sustainability of interventions to protect and promote health*, 2008.

v Walker C.L.F. et al, 'Global burden of childhood pneumonia and diarrhoea', *The Lancet: Childhood Pneumonia and Diarrhoea Series*, Volume 381, No. 9875, 2013.

vi UNICEF & WHO, *Progress on sanitation and drinking water: 2015 update and MDG assessment*, Joint Monitoring Programme for Water Supply and Sanitation, [http://www.wssinfo.org/fileadmin/user\\_upload/resources/JMP-Update-report-2015\\_English.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/JMP-Update-report-2015_English.pdf), accessed on 29/10/15.

vii See for instance 'The causal effect of malaria on stunting: a Mendelian randomization and matching approach', Kang H. et al, *International Journal of Epidemiology*, Vol. 42, Issue 5, 2013.

viii Flies facilitate the transmission of disease by picking up the pathogens contained in faeces and then depositing them on food or directly on a person's mouth.

ix Action Against Hunger France, *Interactions of Malnutrition, Water, Sanitation and Hygiene, and Infections*, 2007 revised edition.

x Korpe P.S. & Petri W.A., 'Environmental enteropathy: Critical implications of a poorly understood condition', *Trends in Molecular Medicine*, Volume 18, Issue 6, 25 May 2012. Environmental enteropathy involves various changes to the intestines, including "smaller villi, larger crypts...increased permeability, and inflammatory cell build-up within the intestines." These changes reduce the absorption of food, vitamins and minerals. [https://en.wikipedia.org/wiki/Environmental\\_enteropathy](https://en.wikipedia.org/wiki/Environmental_enteropathy), accessed on 29/10/15.

xi Humphrey, J. 'Child undernutrition, tropical enteropathy, toilets and handwashing', *The Lancet* 374, 1032-1035, 2009.

xii Recent reviews have shown that improvements in sanitation reduce by approximately half the risk of soil-transmitted helminths being ingested. See Ziegelbauer K. et al, 'Effect of sanitation on soil-transmitted helminths: A systematic review and meta-analysis', *PLOS Medicine*, Volume 9, No. 1, 2012.

xiii Dangour A.D. et al, 'Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children', *Cochrane Database of Systematic Reviews*, Issue 8, Art. No. CD009382, 2013.

xiv Horton S. et al, *Scaling up nutrition: What will it cost?* World Bank, 2010.

xv International Food Policy Research Institute, *Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition*, 2014.

xvi For details of which countries have already included this right in national law, see: <http://www.righttowater.info/progress-so-far/national-legislation-on-the-right-to-water/>, accessed on 29/10/15.

This factsheet was produced by the Generation Nutrition global campaign team, WaterAid and End Water Poverty on behalf of Generation Nutrition.

Generation Nutrition is a global civil society campaign, launched in 2014. We campaign for governments to bring about an end to child deaths from undernutrition. Around 50 partner organisations support the campaign, working in: Burkina Faso, Canada, Czech Republic, EU, France, India, Kenya, Philippines, Spain, UK, US; and at the global level. [www.generation-nutrition.org](http://www.generation-nutrition.org)

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