

WORLD
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WEEK

Presentation from the
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www.worldwaterweek.org



WASH & Undernutrition

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Key points

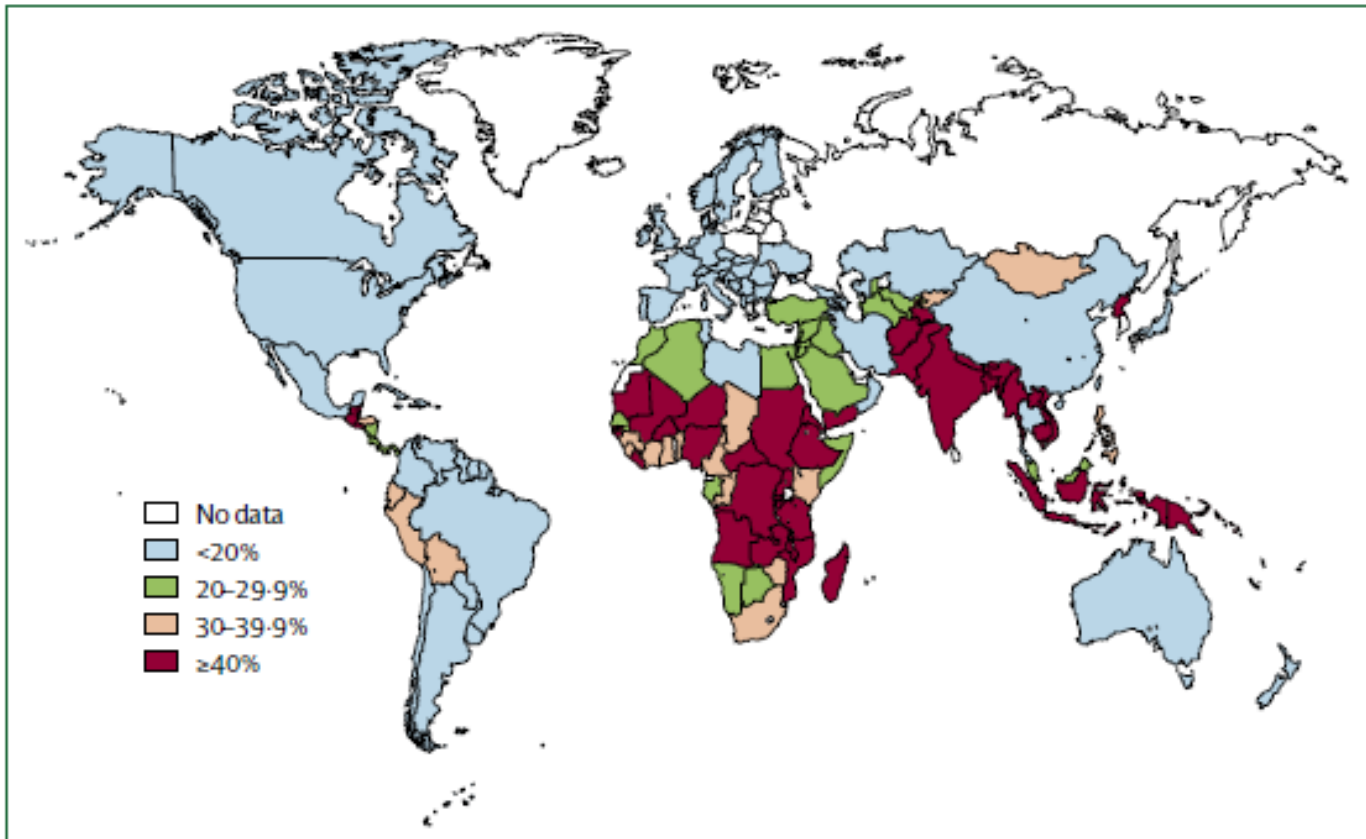
1. Background
2. Evidence
3. Disparities/equity
4. Implications for policy



Undernutrition

Prevalence of stunting (> 2 SD HAZ)

Source: Black et al. 2008





Undernutrition

It is estimated that undernutrition causes 2.2 million deaths and 21% of global disease burden for children younger than 5 years (Black et al 2008)¹

30% of children in low-income countries <5 years are chronically undernourished (UNICEF 2008)²

As diarrhoea causes undernutrition, it also reduces a child's resistance to subsequent infections creating a vicious circle (Brown et al. 2003)

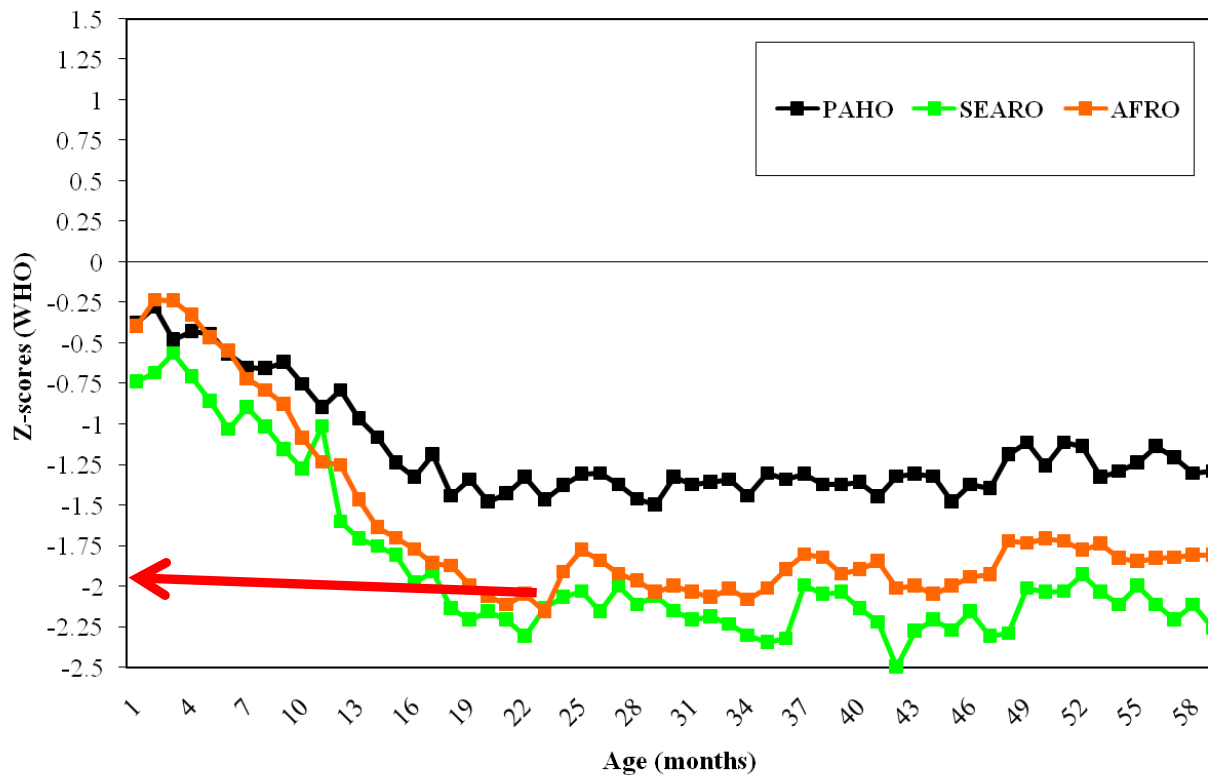
Further evidence suggests that sustained exposure to excreta-related pathogens – including helminths referred to above – in early life limits cognitive development and lowers immunity (Prüss-Üstün & Corvalán 2006)



Growth faltering

Mean height for age z-scores by age by region

Source: Victora et al 2010





WASH

- Review of 42 studies for food programmes in Africa found the best result was 0.7 z-score
- Average growth deficit for Africa (& Asia) 2.0
- So, the best programmes only achieved 33% normalisation
- Environmental influences may explain some of this



Systematic Review

1. To evaluate the strength of evidence on the effectiveness of water, sanitation and hygiene interventions in improving child nutritional status
2. To identify current research gaps



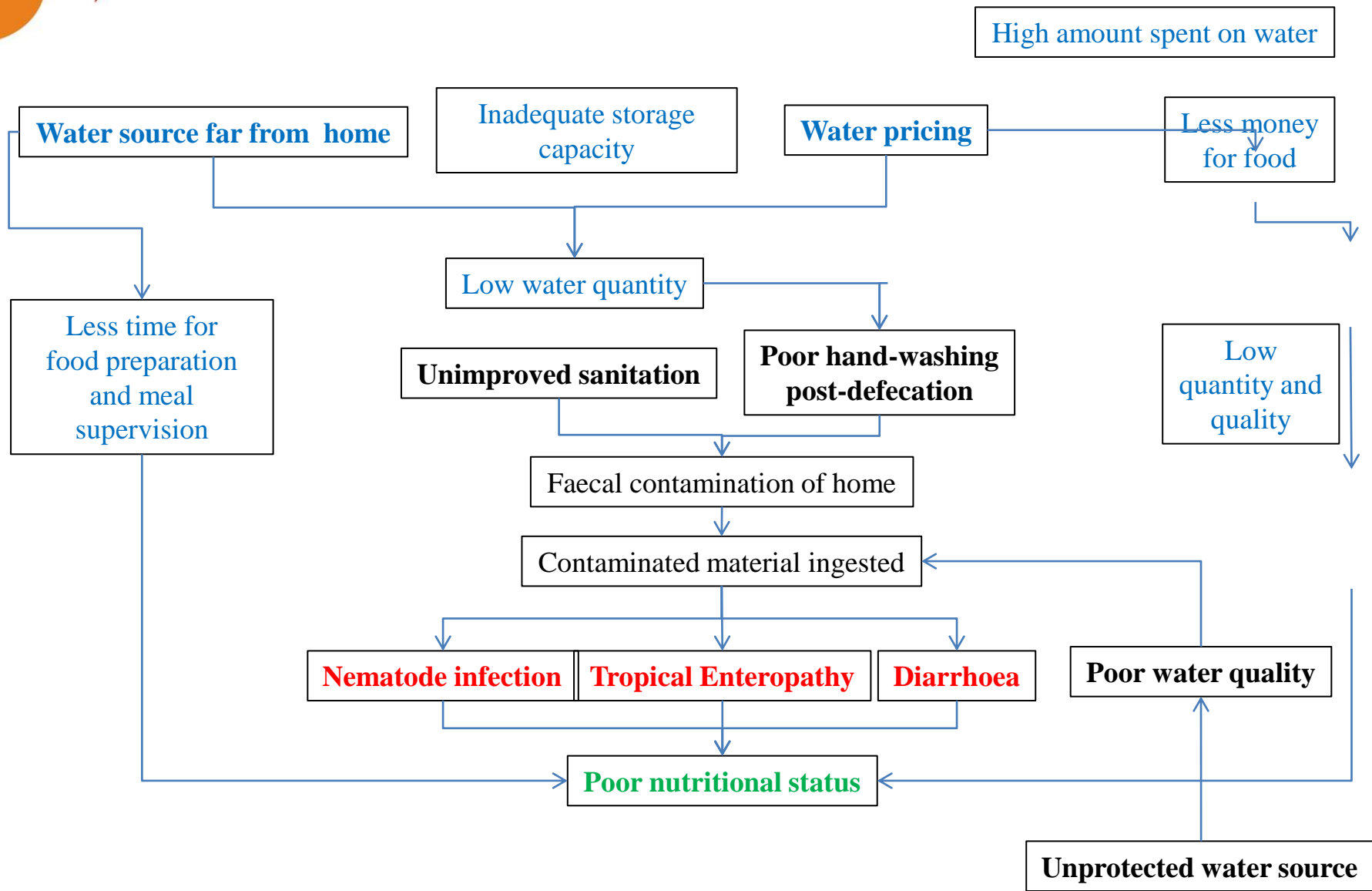
Source: Dangour et al 2011
(Cochrane online)

Hypothesis

- Evidence that WASH interventions positively impact prevalence of childhood disease^{3 4 5}
- Diseases such as diarrhoea, tropical enteropathy and nematode infections have negative effects on nutritional status in children^{6 7 8 9}
- WASH interventions could be associated with improved measures of nutritional status in children.
- Indirect pathways could also contribute:
 - time taken to collect water
 - the purchase of water
 - chemical contamination of water



Conceptual framework





Three key pathways

1. Repeated bouts of diarrhoea

2. Intestinal worm infection
(hookworm, ascaris)

3. Environmental enteropathy***



Methods

- **Primary outcomes:**
 - weight-for-height (wasting)
 - weight-for-age (underweight)
 - height-for-age (stunting)
- **Secondary outcomes:**
 - all other child anthropometric measures
 - biochemical measures of micronutrient status (including EE)
- 6 databases searched using a keyword search and MeSH terms





Method

- Study design: intervention with control arm
- Participants: children < 18 years old from both low and high income countries.
- Intervention types included are those aimed at:
 1. improving access to facilities which ensure the hygienic separation of human excreta from human contact
 2. promotion of hand-washing with soap
 3. introducing a new/improved water supply and/or improved distribution
 4. improving the microbiological quality of drinking water





Preliminary Results

Few high quality interventions studies <10

Most studies included ranked as poor quality by Cochrane

One randomised controlled trial:

Du Preez (2011)

Water treatment median 0.8 cm gain for u5 stunting (0.7 - 1.6 cm; P-0.031)

A number of important protocols identified:

- Clasen et al – Orissa, India (Z-scores)
- Luby et al – Bangladesh (Z-scores, MUAC, EE markers)
- Humphrey et al – Zimbabwe ((Z-scores, MUAC, EE) *from birth/factorial*

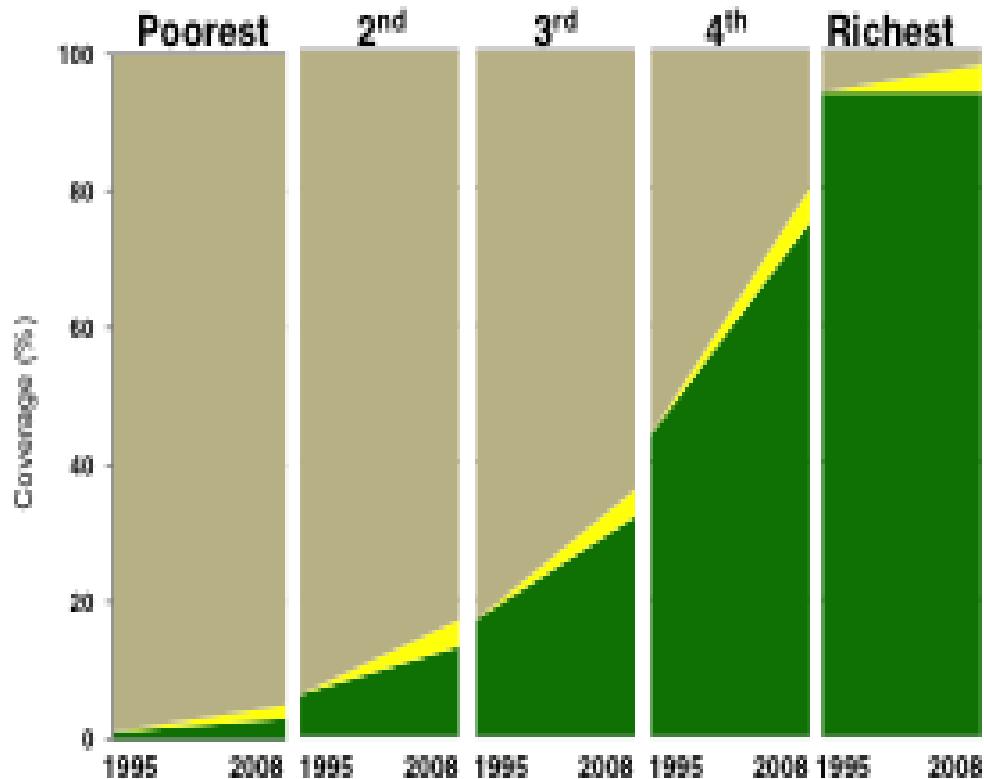




Disparities

Sanitation progress 1995-2008 by wealth quintile

Source: UNICEF 2011





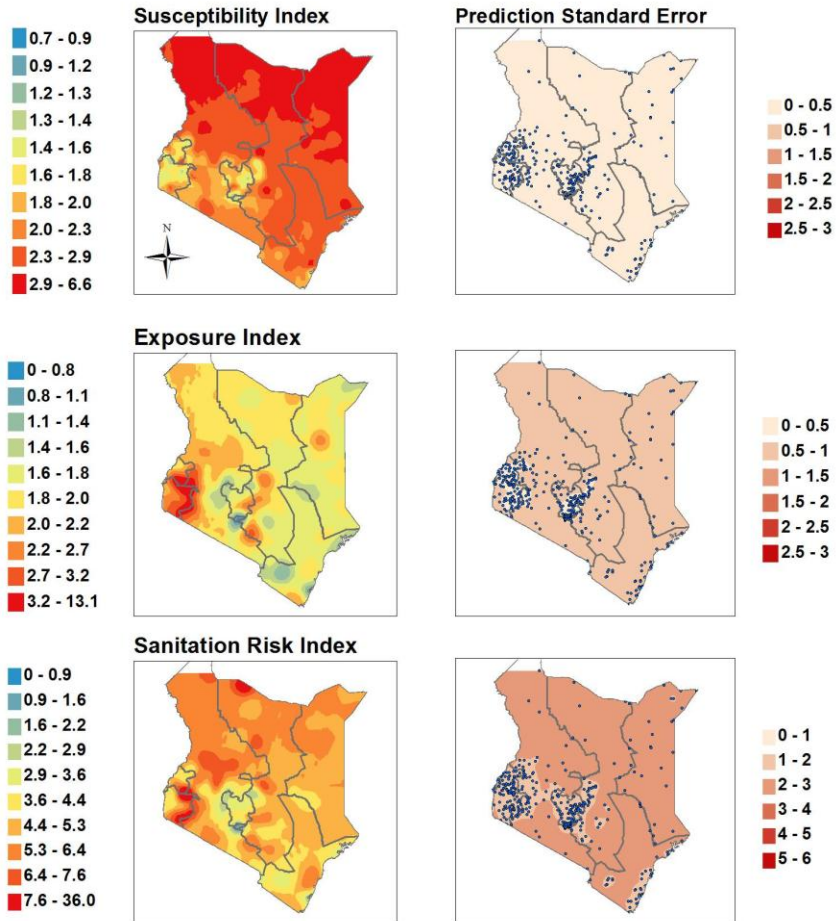
All toilets are equal?


- 2.5 billion people without toilet
- Every toilet built (used!) is progress
- But, need to get toilets to the most at risk
- Sanitation risks is not distributed evenly in populations
- RR of fatal diarrhoea higher for u5 with under-nutrition
- Nutrition is a high determinant of sanitation health risk





So what?





**“If preventable, why
not prevented?”
(1891)**





Key messages

1. New research but WASH a cause of undernutrition
2. Undernutrition increases risk of infection & death
3. Need food, healthcare access, and WASH
4. Different exposures may mean different interventions
5. Investment case: revalue 'costs and consequences'
6. Policy coherence – WASH, nutrition, NTD...
7. Another reason to consider disparities/equity/non-discrimination!





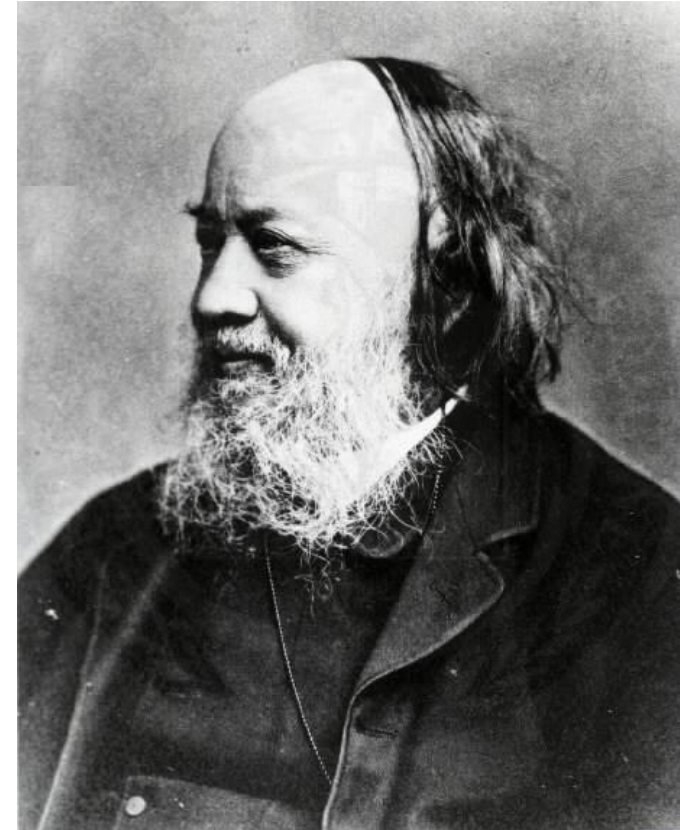
Concluding footnote

Edwin Chadwick (1847)

Sanitary reform to improve nutrition
of urban poor

Mills-Reinicke (McNutt 1901)

“The surprising fact that the
reduction in child mortality
accompanying improvements in
water supply was greater than
what could be accounted for by
the fall in mortality caused by
enteric, waterborne diseases.”





Thank you

www.SHAREresearch.org

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