Hygiene Behaviour Change

Implications for Future WASH Programming

Mark Ellery | 3rd August, 2017

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Hygiene Behaviour Change

The purpose of this presentation is to question whether we have not been not quite telling the truth about the consequences of poor hygiene!

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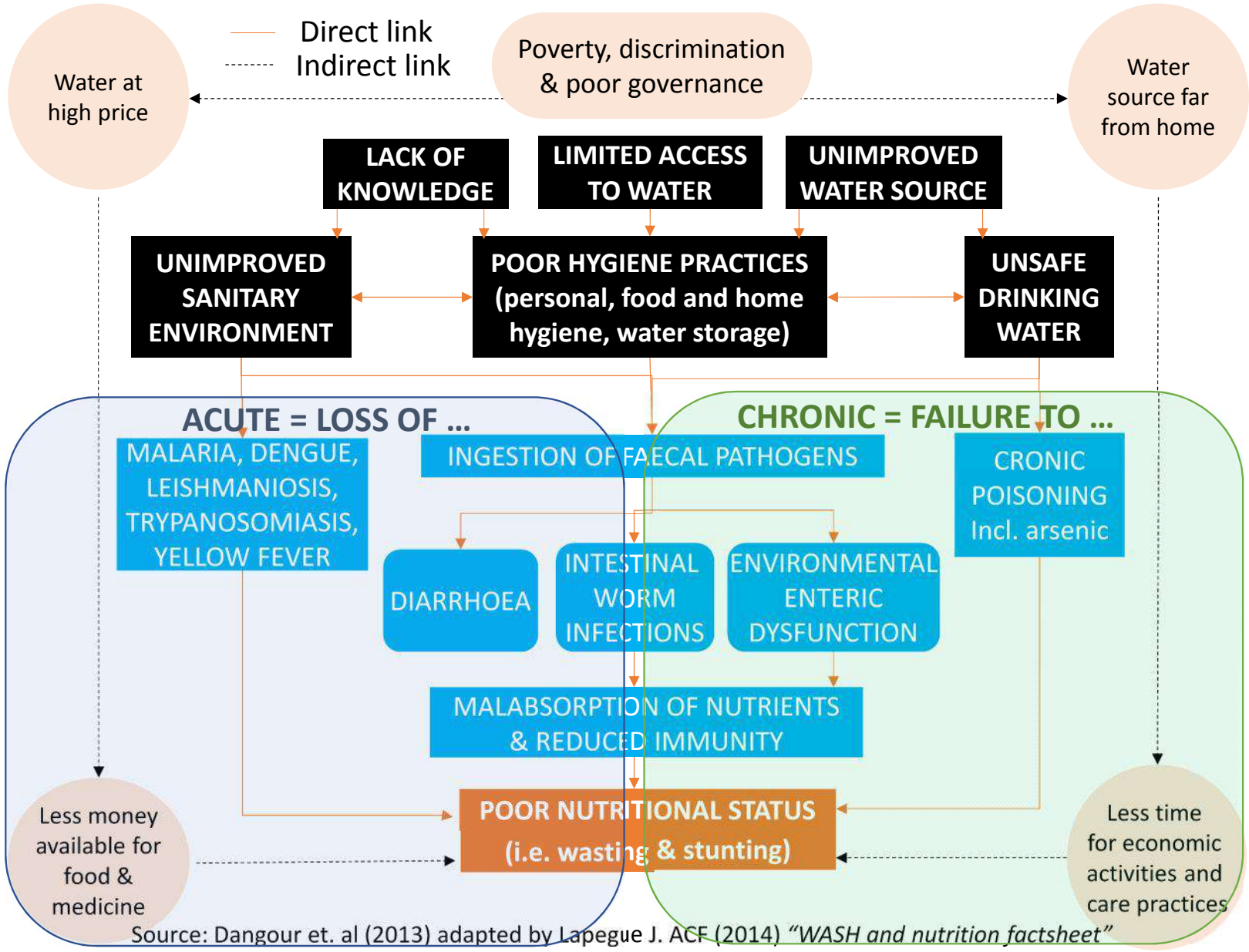


Hygiene Behaviour Change

Why is it so difficult?

WE KNOW THAT good hygiene behaviour practices are:

- *Effective (i.e. positive impact on health)*
- *Efficient (i.e. low cost)*

BUT hygiene behaviour change programmes are often:

- *Ineffective (i.e. minimal change in behaviours & health outcomes)*
- *Inefficient (i.e. costly against sustained hygiene behaviours)*

WHY

Because it is complicated … and maybe we have more to learn!

Hygiene Behaviour Change

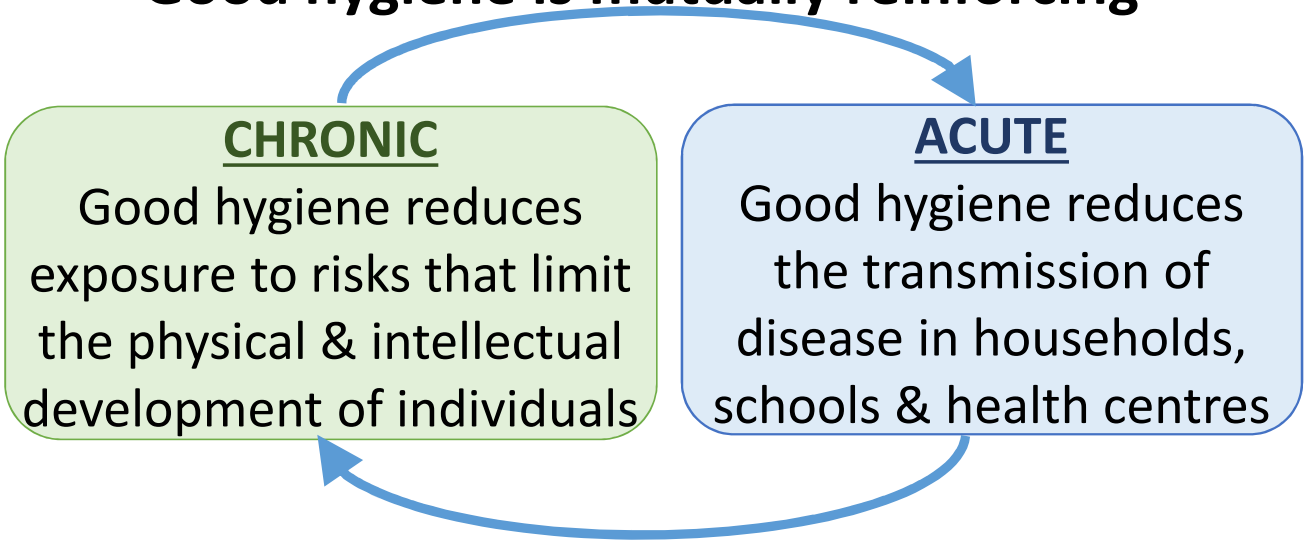
Why is it so difficult?

WE KNOW THAT bad hygiene has negative acute (i.e. loss of) and chronic (i.e. failure to) impacts on the health and well-being of individuals and nations

BUT

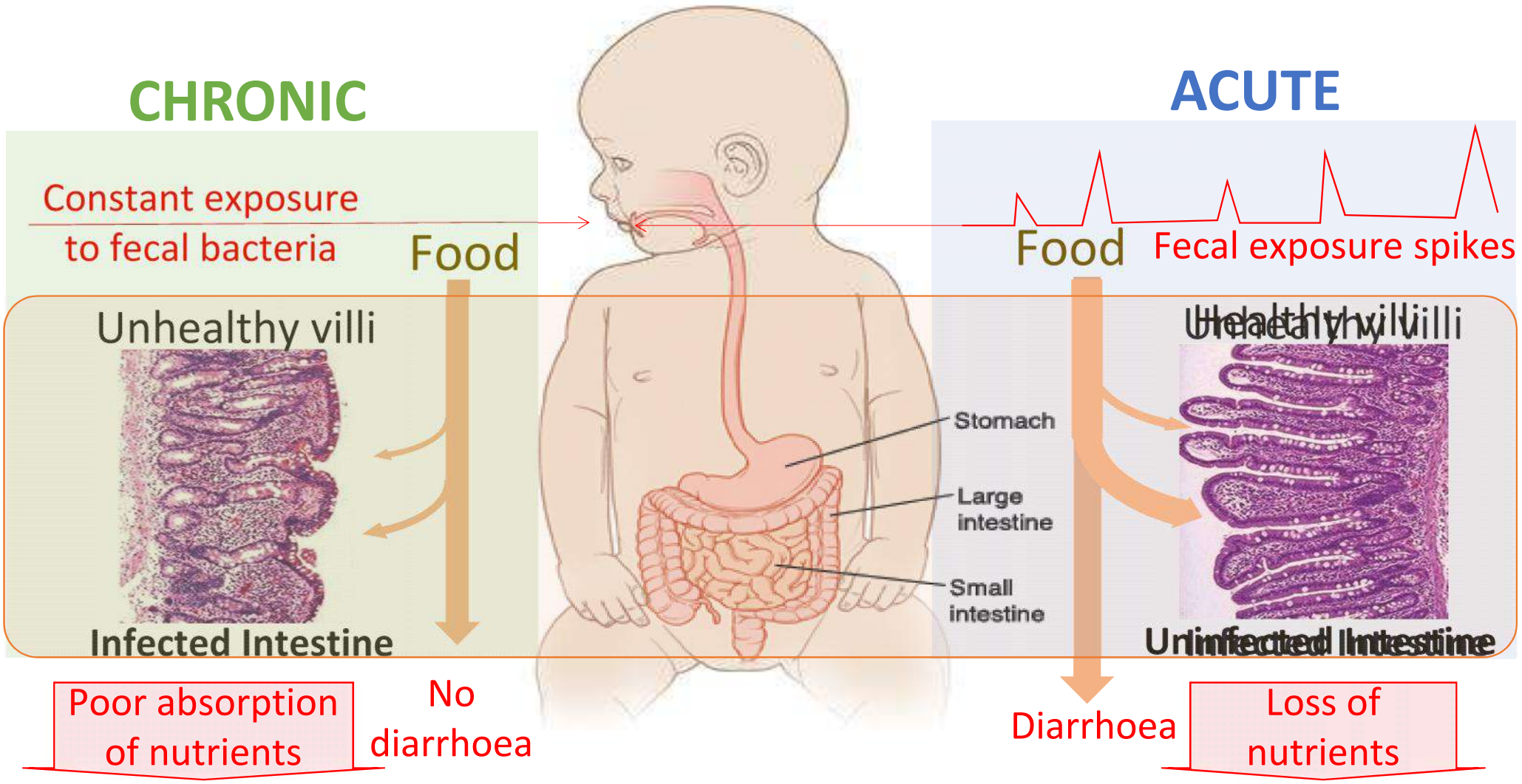
- *Bad hygiene practices don't necessarily result in diarrhoea*
- *Reduced diarrhoea doesn't mean less faecal exposure*
  - *Reduced acute symptoms (i.e. diarrhoea & wasting) may mean increased chronic symptoms (i.e. gut infections & stunting)*
- *Chronic symptoms are generally not obvious!!!*

Good hygiene is mutually reinforcing

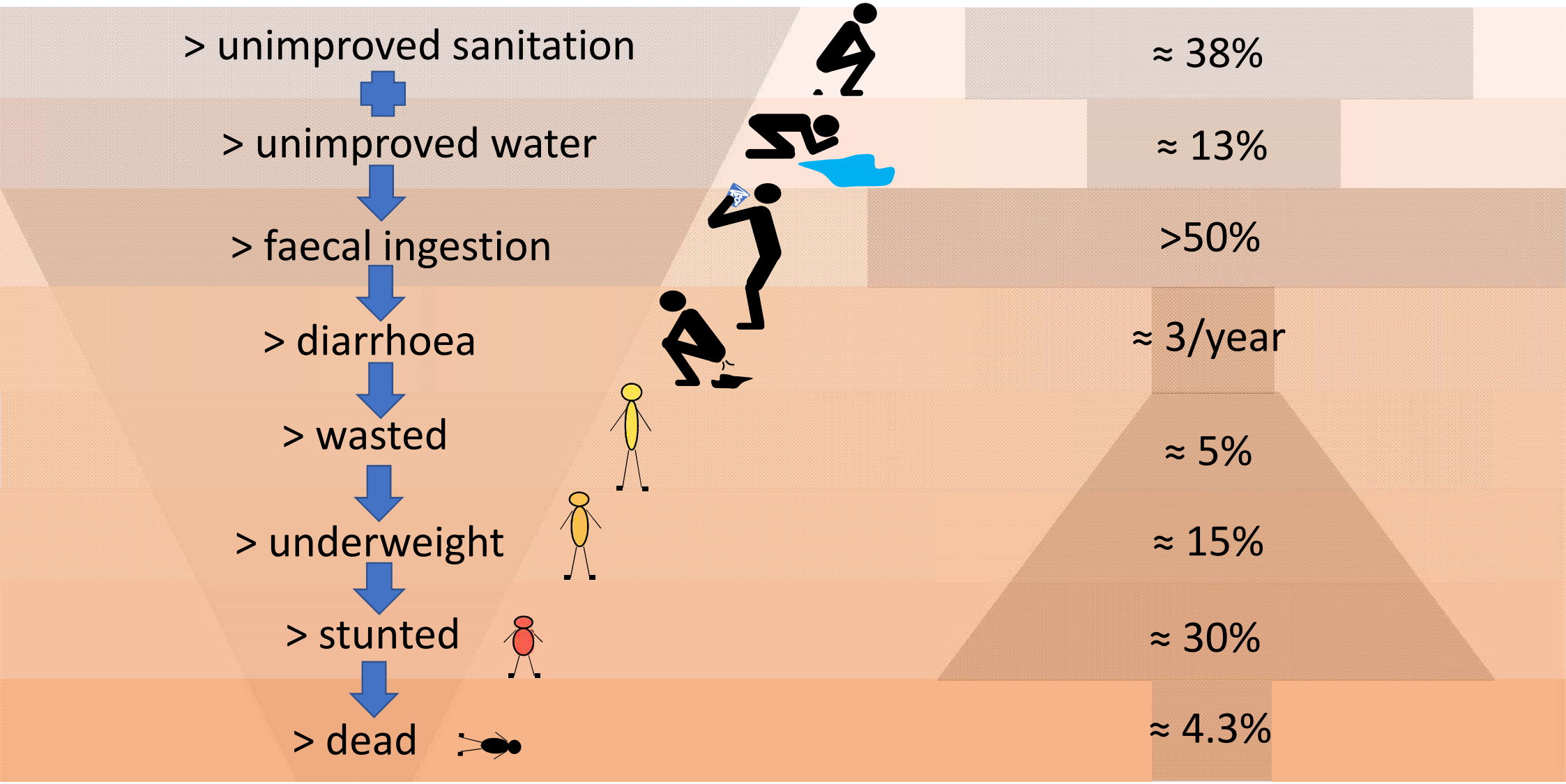


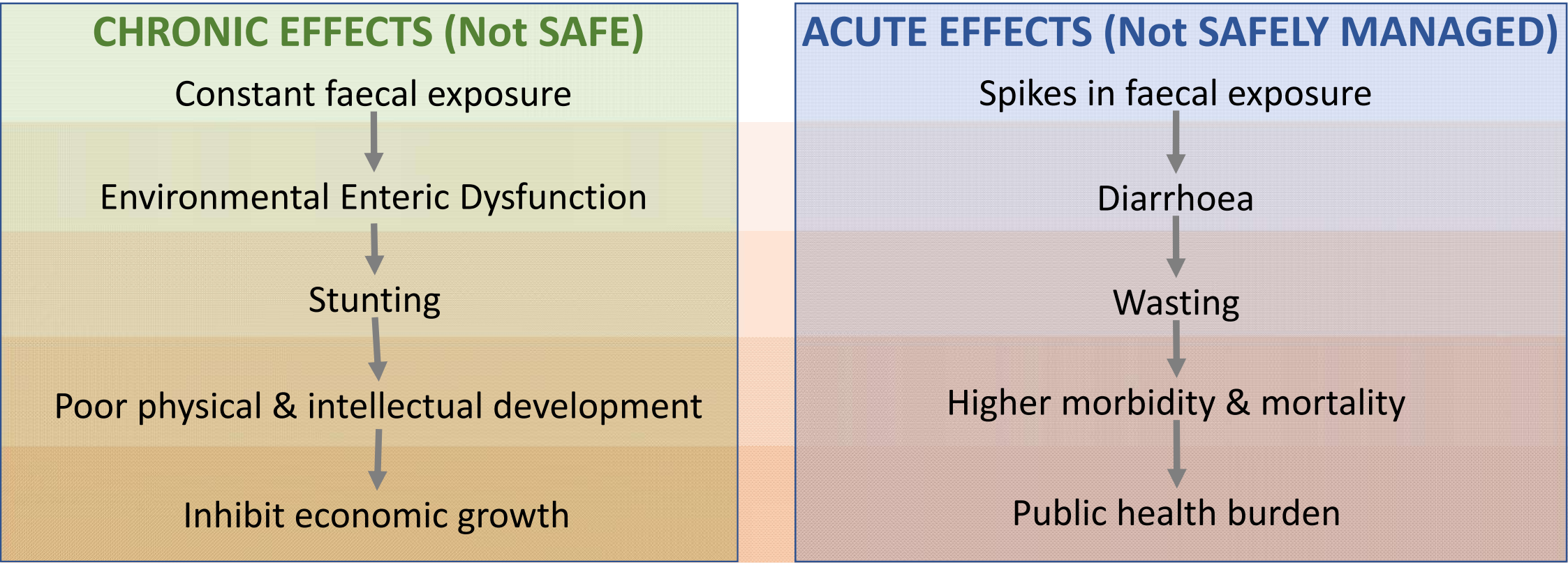
Increased acute symptoms (i.e. diarrhoea & wasting) may even be a result of a reduction in chronic symptoms (i.e. gut infections & stunting)

Implications of Environmental Enteric Dysfunction



Assumptions on the implications of WASH




CHRONIC EFFECTS (Not SAFE)
Constant faecal exposure
Environmental Enteric Dysfunction
Stunting
Poor physical & intellectual development
Inhibit economic growth
ACUTE EFFECTS (Not SAFELY MANAGED)
Spikes in faecal exposure
Diarrhoea
Wasting
Higher morbidity & mortality
Public health burden

CHRONIC

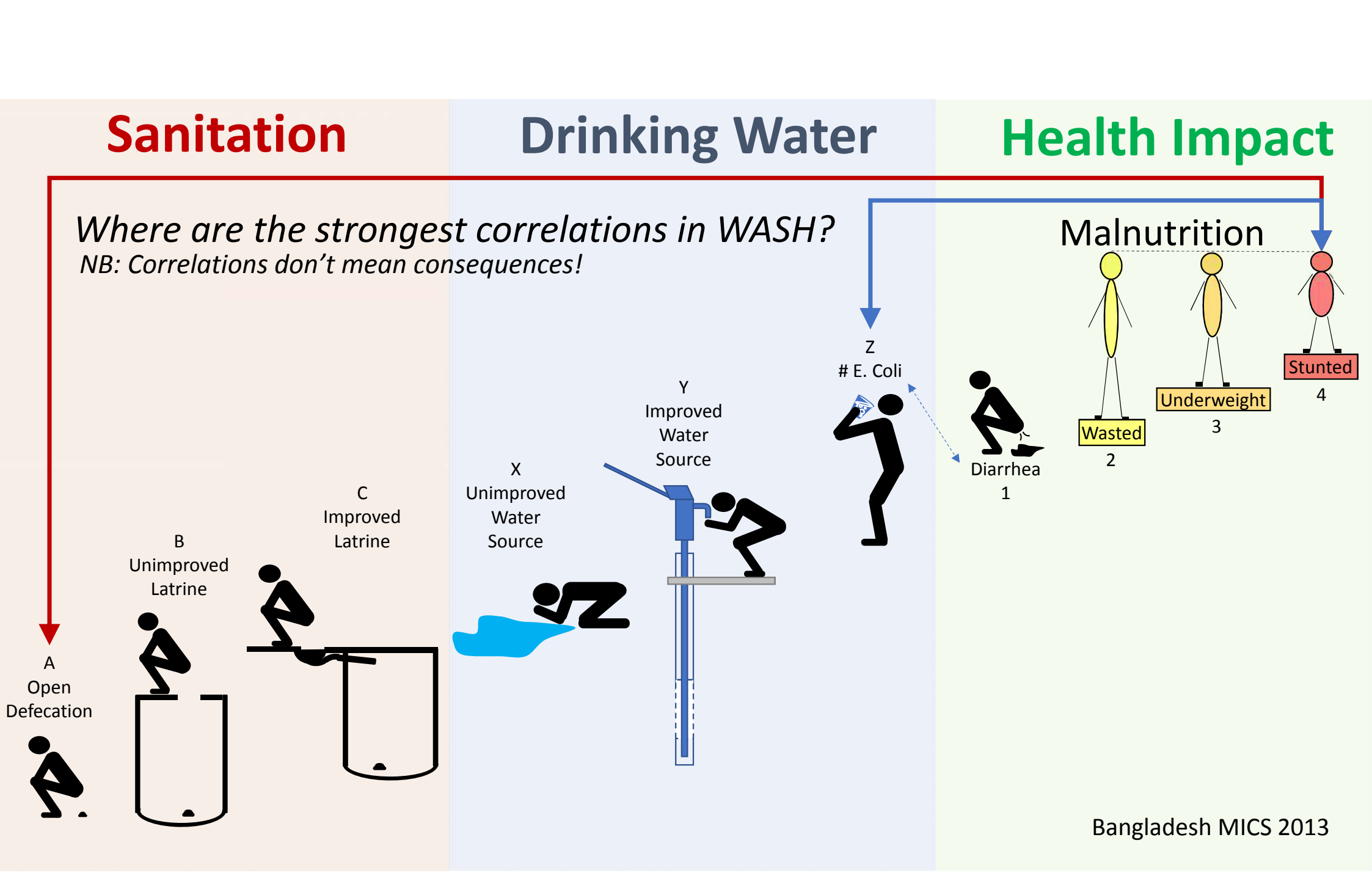
Sanitation

Drinking Water

Health Impact

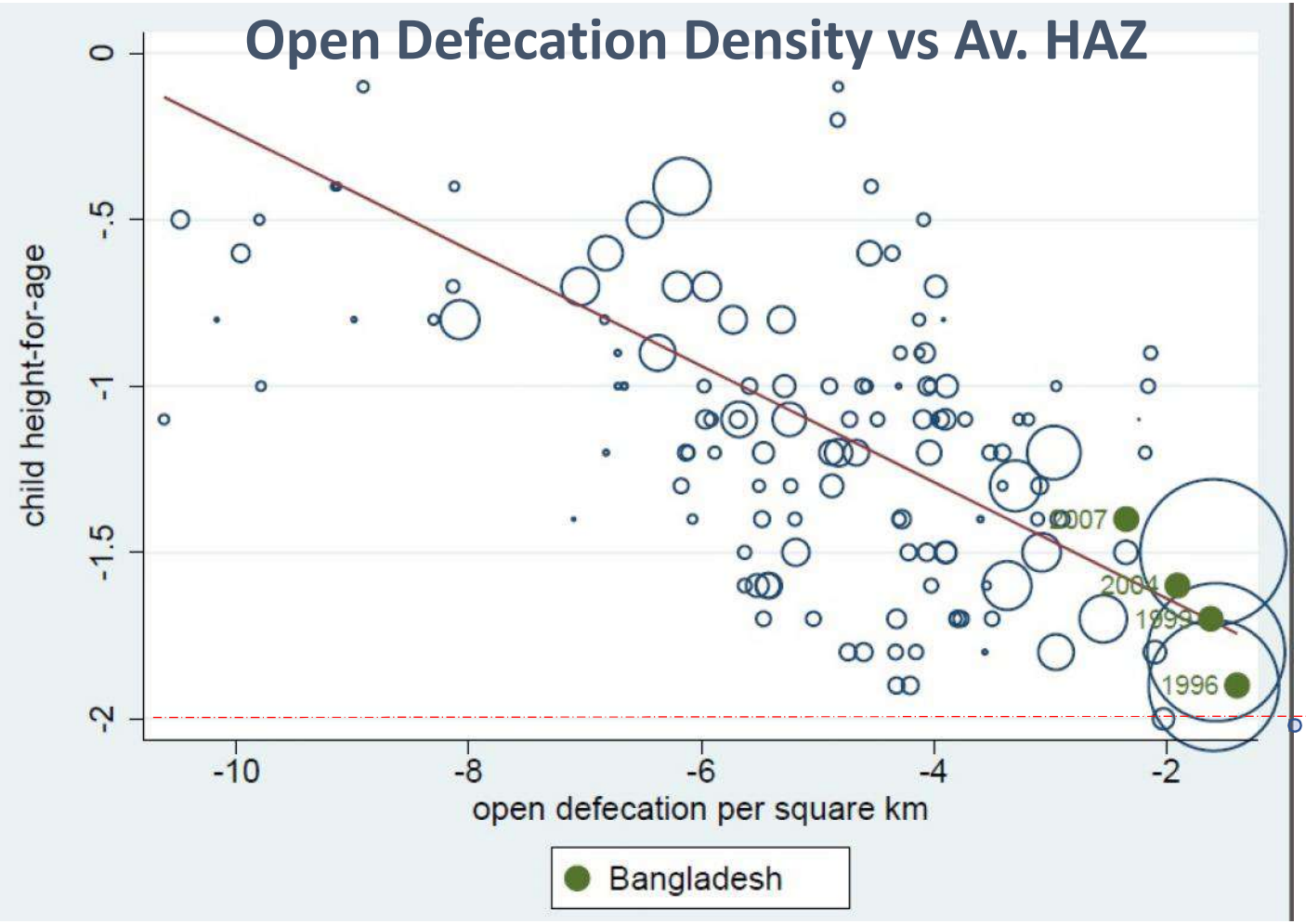
Where are the strongest correlations in WASH?

NB: Correlations don't mean consequences!



Bangladesh MICS 2013

Surprising Correlation (OD Density ↓ = Height ↑)



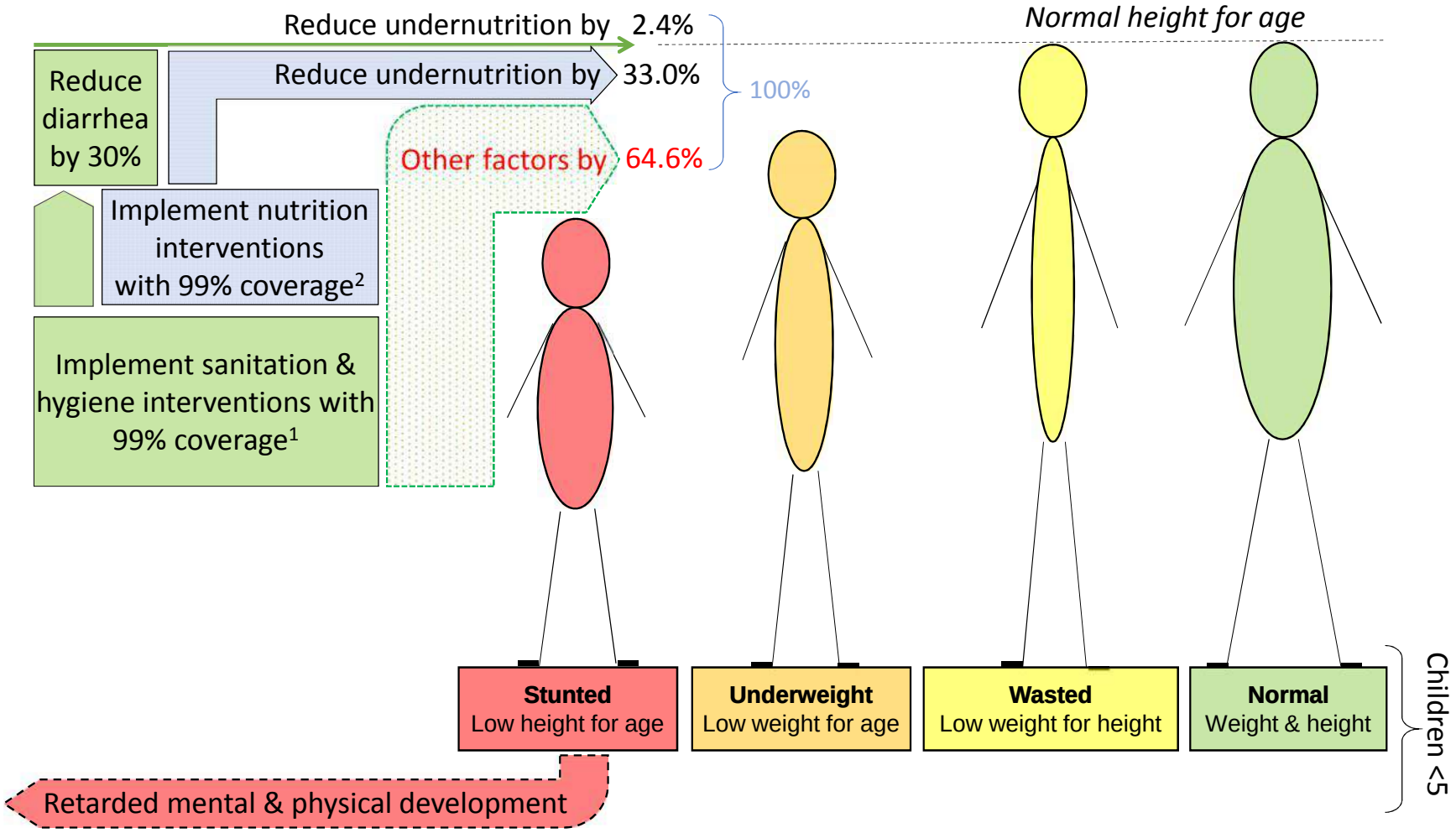
Stunting: (or chronic child malnutrition) can result in:

- increased mortality risks
- impaired cognitive function
- low physical capacity
- low human productivity, efficiency, economic activity

Stunting = children >2 standard deviations below normal height-for-age

World Bank Policy Research Working Paper No. 6351

Still a lot of unanswered questions …

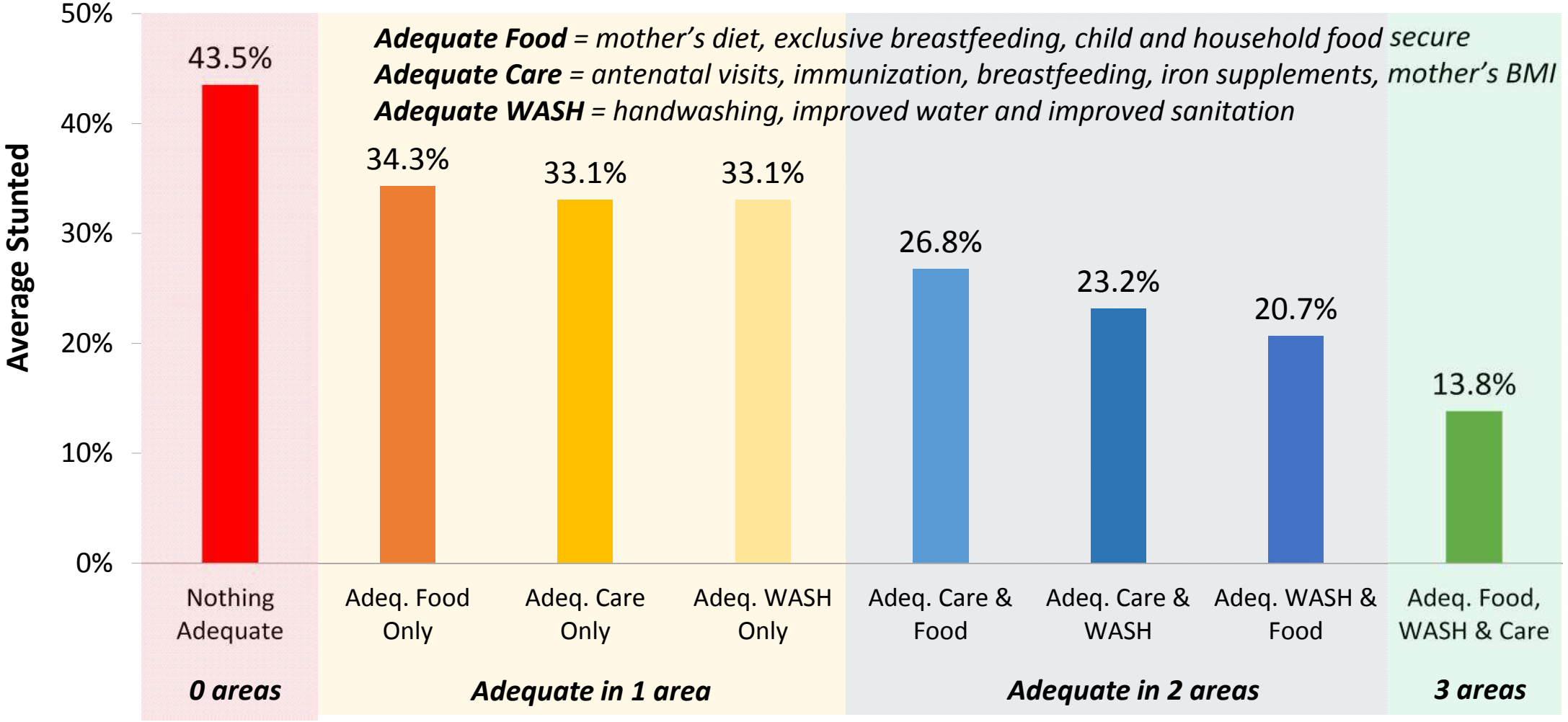


SOURCE:

[1] Humphrey J H, *Child under-nutrition, tropical enteropathy, toilets, and handwashing*; Lancet (2009)

[2] Bhutta ZA, Ahmed T, Black RE; *Interventions for maternal and child undernutrition and survival.* Lancet (2008)

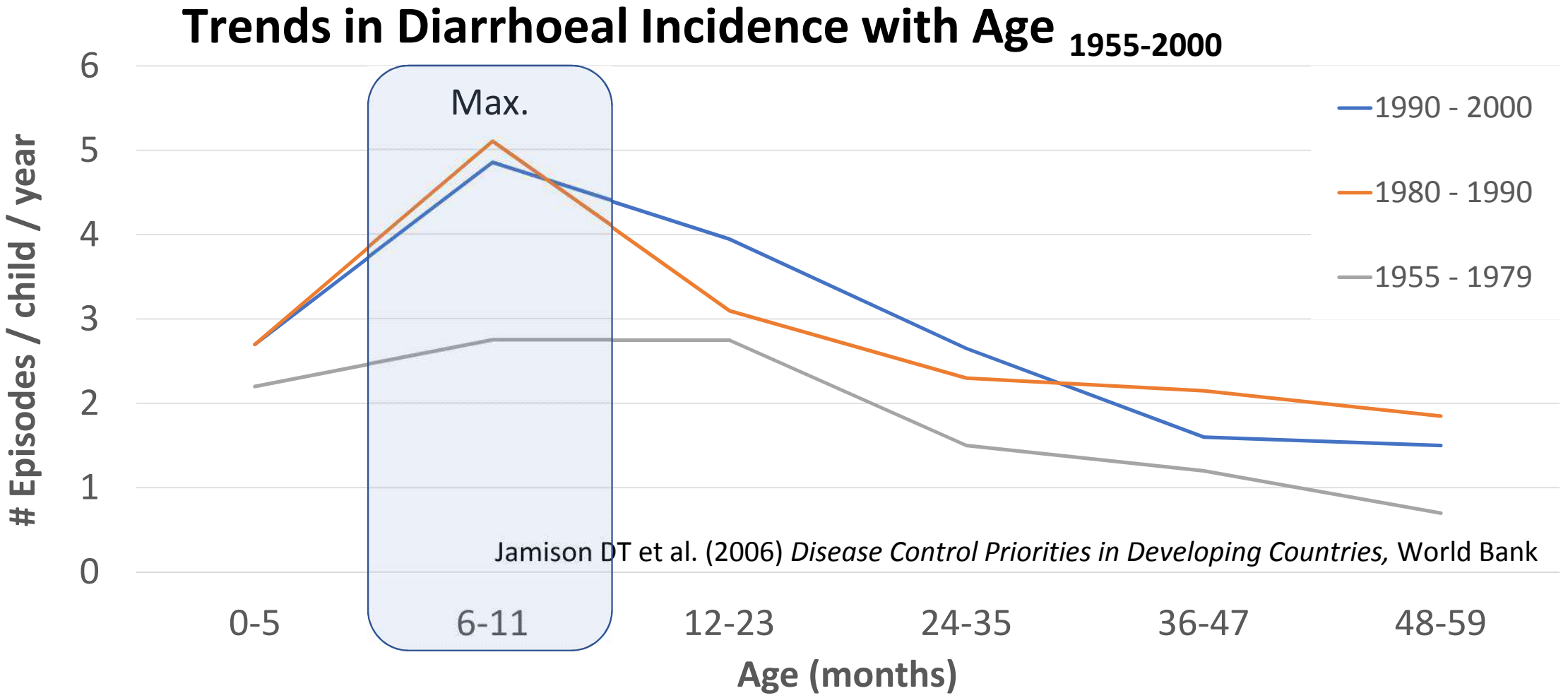
Impact of Food, Care & WASH on Stunting in Bangladesh



SOURCE: Newman, J (2013) *How Stunting is related to Adequate Food, Environmental Health and Care: Evidence from India, Bangladesh, and Peru*, World Bank

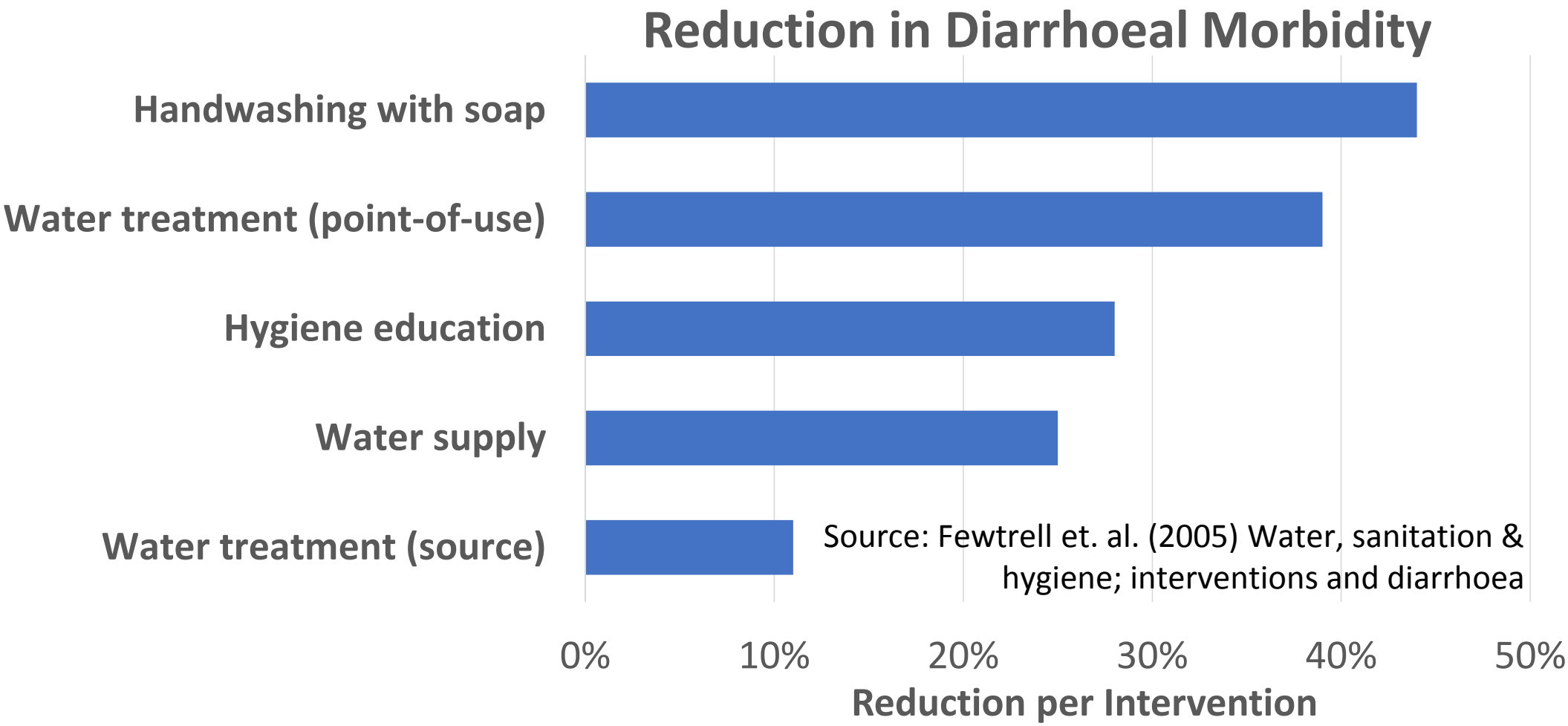
ACUTE

At what age do Children have more Diarrhea?



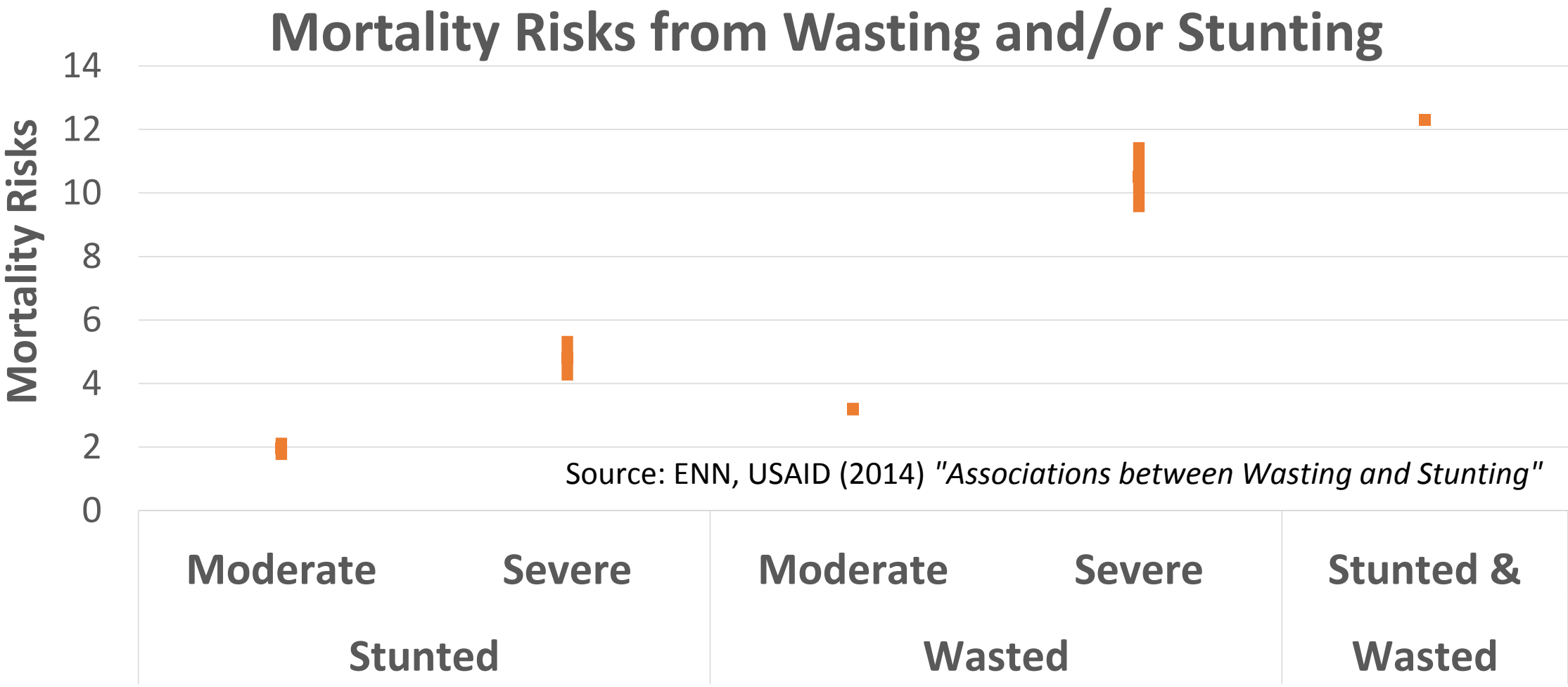
Acute Morbidity Effects of WASH Failures

Hygiene behaviour has a greater impact on diarrhoea …



Acute Mortality Effects of WASH Failures

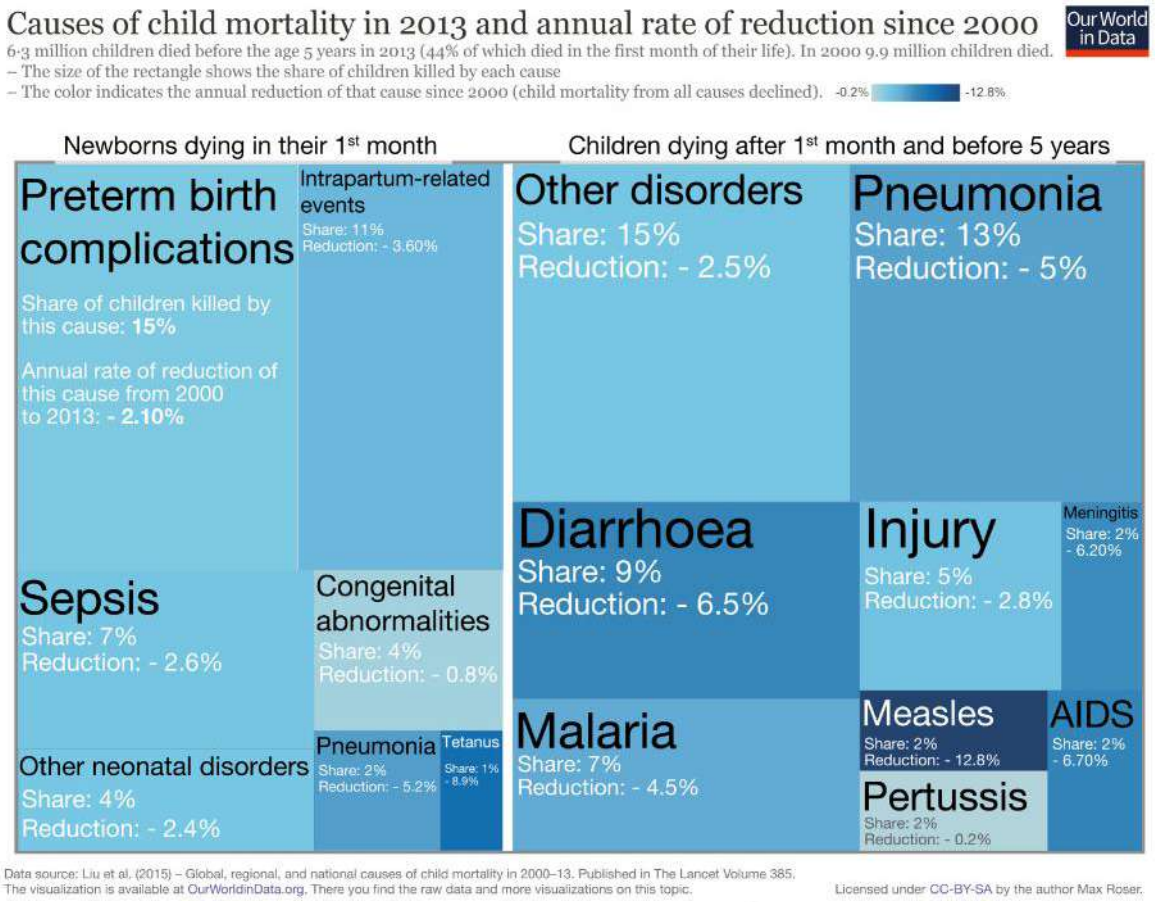
Wasted children have a higher risk of death than stunted children



Acute Effects of WASH Failures

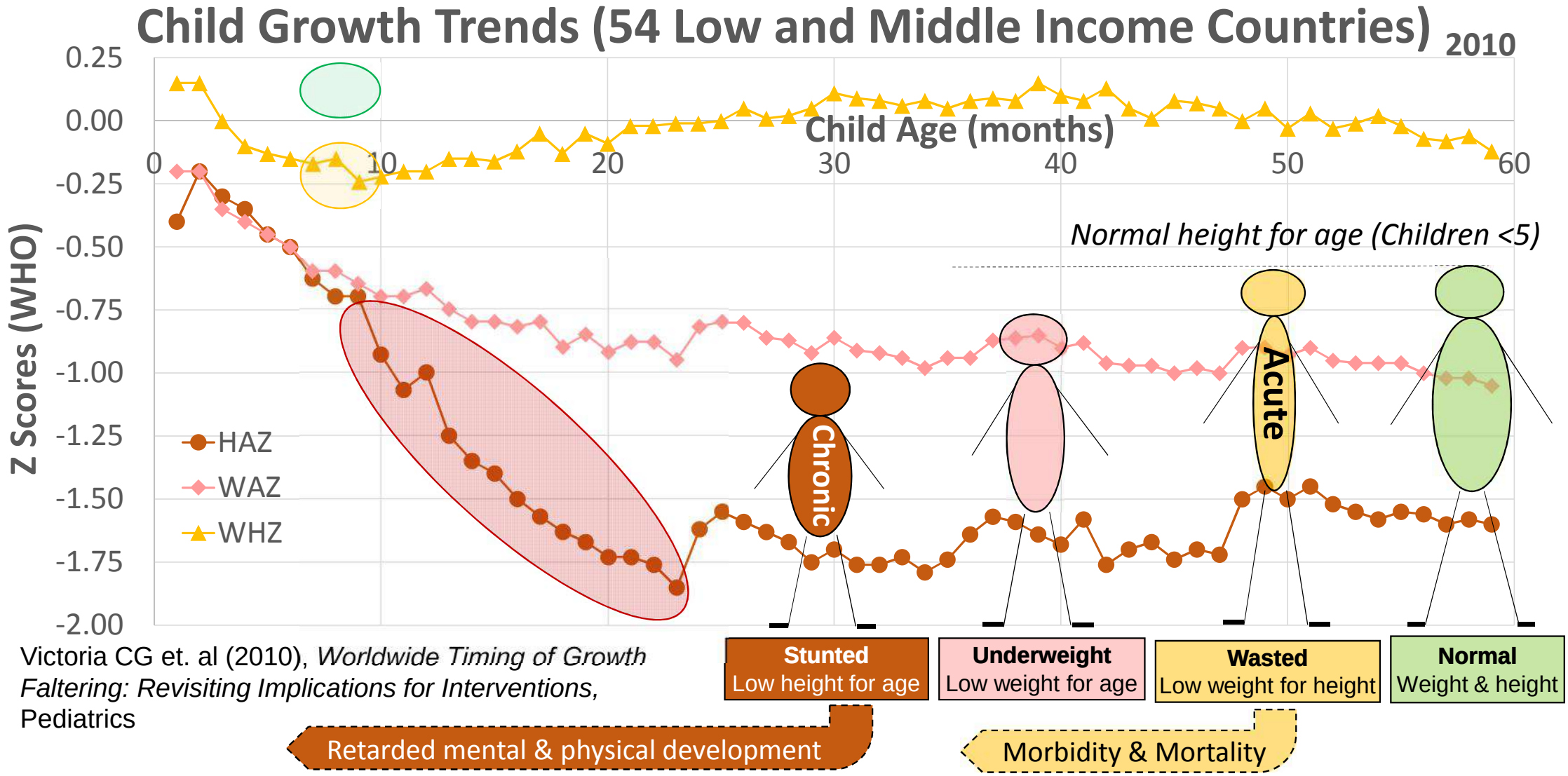
Less than 0.35% of children globally will die before 5 years of age from diarrhoea related causes

U5MR in CS WASH Countries & Deaths from Diarrhoea

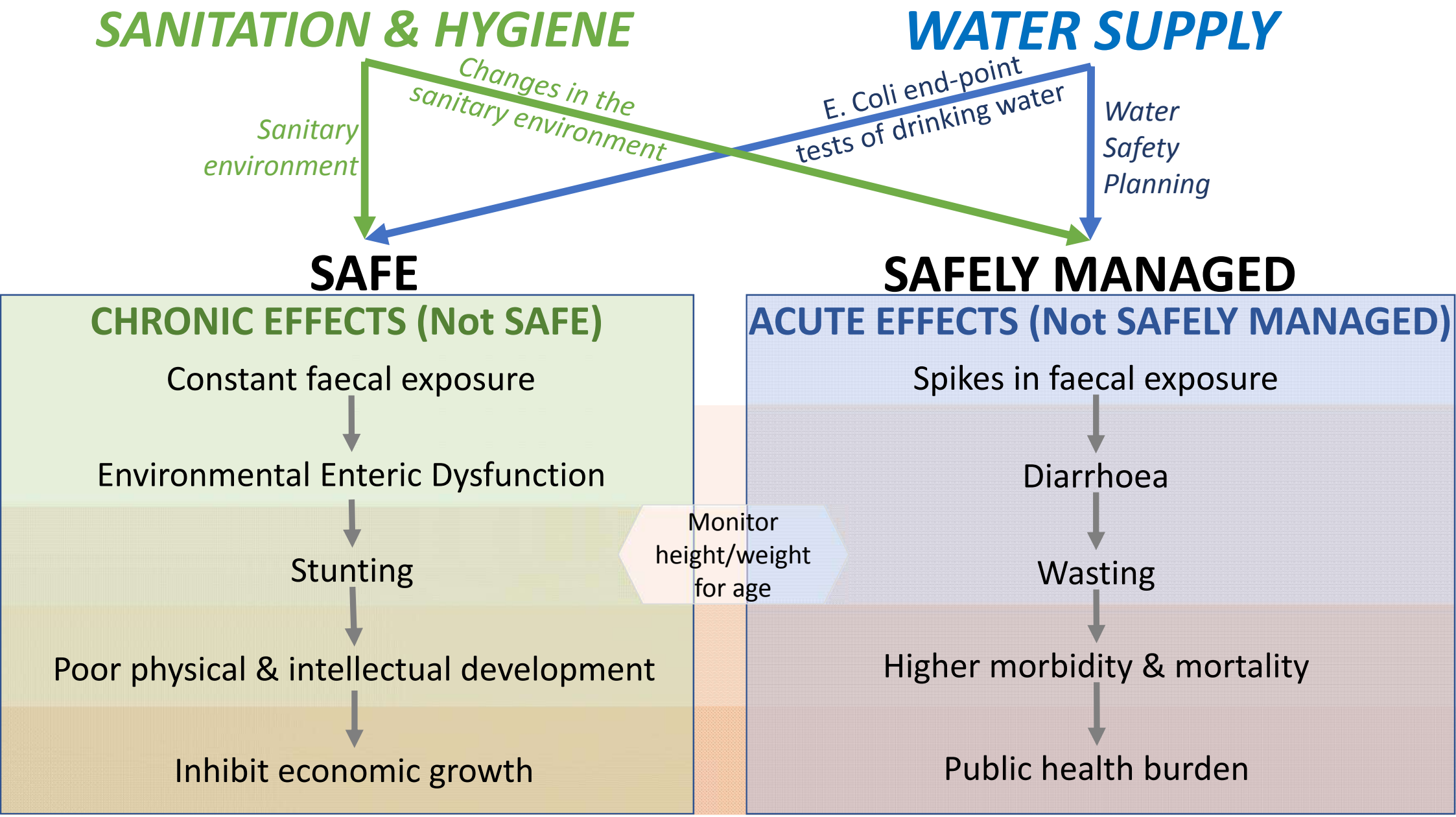


ACUTE
&
CHRONIC

Possible Faecal Exposure & Av. Child Growth

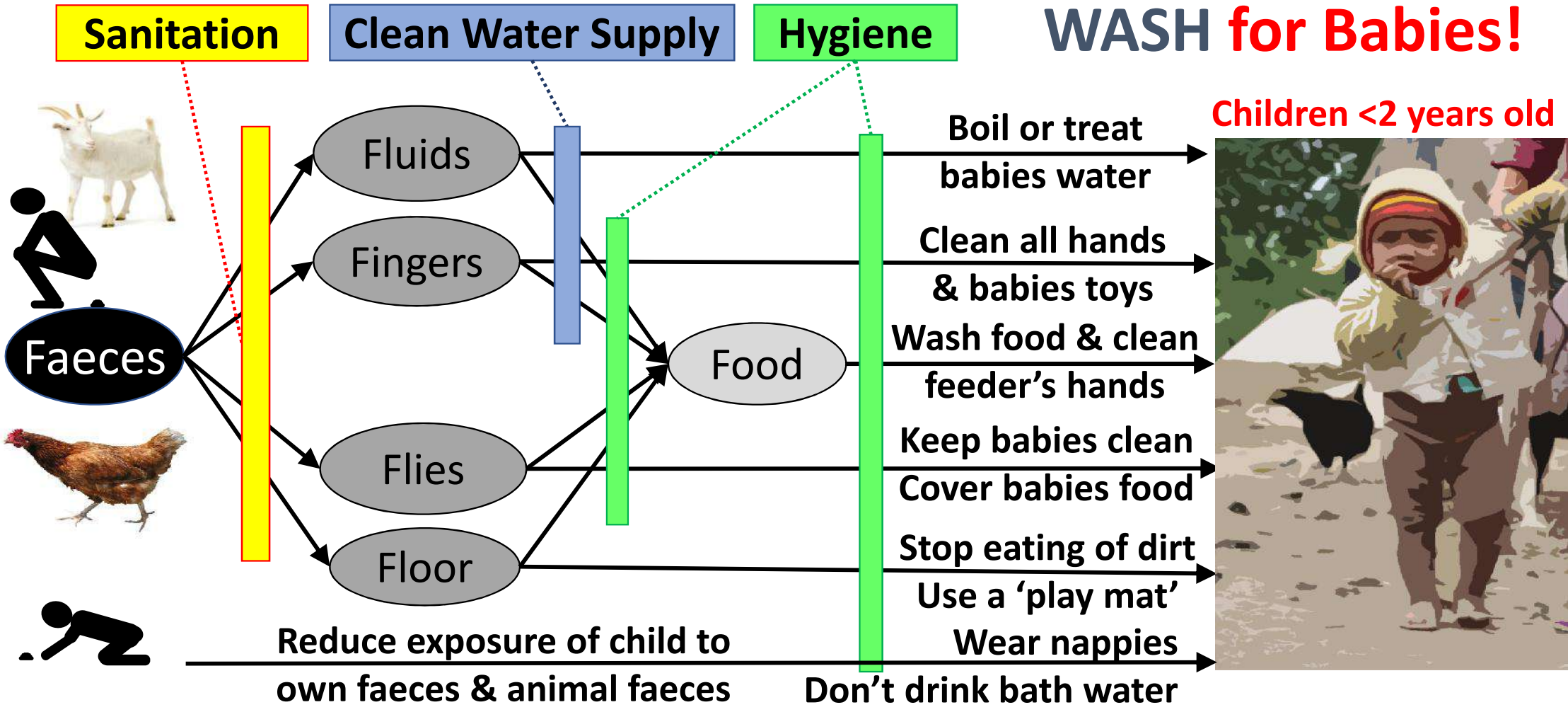


Victoria CG et. al (2010), *Worldwide Timing of Growth Faltering: Revisiting Implications for Interventions*, Pediatrics


SANITATION & HYGIENE
WATER SUPPLY
Changes in the sanitary environment
Sanitary environment
E. Coli end-point tests of drinking water
Water Safety Planning
SAFE
SAFELY MANAGED
CHRONIC EFFECTS (Not SAFE)
Constant faecal exposure
Environmental Enteric Dysfunction
Stunting
Poor physical & intellectual development
Inhibit economic growth
Monitor height/weight for age
ACUTE EFFECTS (Not SAFELY MANAGED)
Spikes in faecal exposure
Diarrhoea
Wasting
Higher morbidity & mortality
Public health burden

Thank you

Focus Hygiene at the Point of Faecal Ingestion



Hygiene Behaviour Change M&E

- Morbidity associated with WASH is a difficult indicator
  - Diarrhorea appears to be indicative of a step change in faecal exposure
    - It does not indicative of faecal exposure
    - It is highly subjective (recall in last x weeks) and binary (yes / no)
    - It is hard to distinguish between serious and non-serious
- Mortality associated with WASH is a difficult indicator
  - The failure to measure (or record) U5MR makes the data look better
  - No-one actually dies of diarrhoea
  - Assigning the first cause of deterioration is complicated
- Acute

Hygiene Behaviour Change

Why is it so difficult?

There are a lot of myths …

Diarrhoea is NOT necessarily the result of faecal exposure …

- *but rather the result of a step increase in faecal exposure!*

No-one ever dies of diarrhoea …

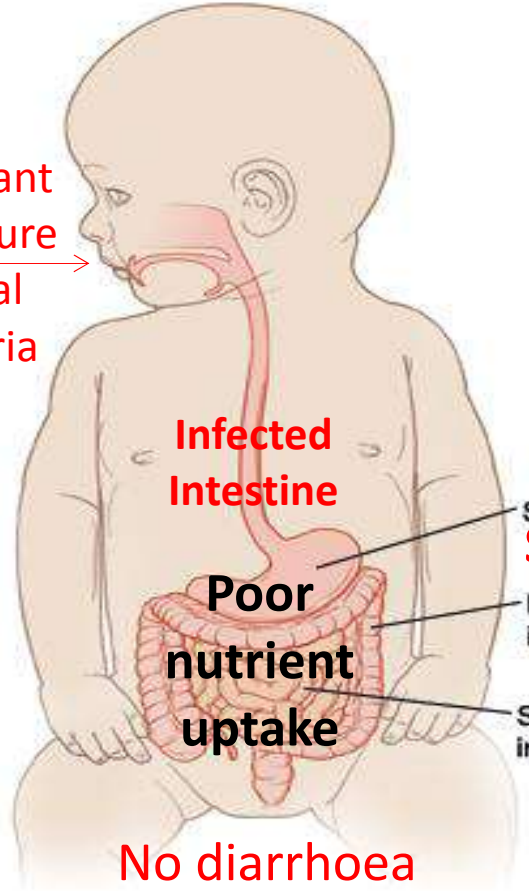
- *but rather as a consequence of dehydration (or wasting, or fever, or respiratory failures) that started with diarrhoea!*

Acute undernutrition (or wasting) is not necessarily a precursor or predictor of chronic undernutrition (or stunting)

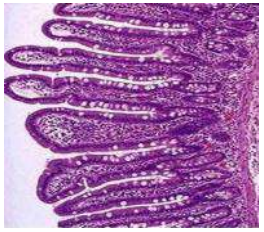
- *Children don't necessarily get skinnier before they get shorter*

Environmental Enteric Dysfunction

Constant exposure to fecal bacteria

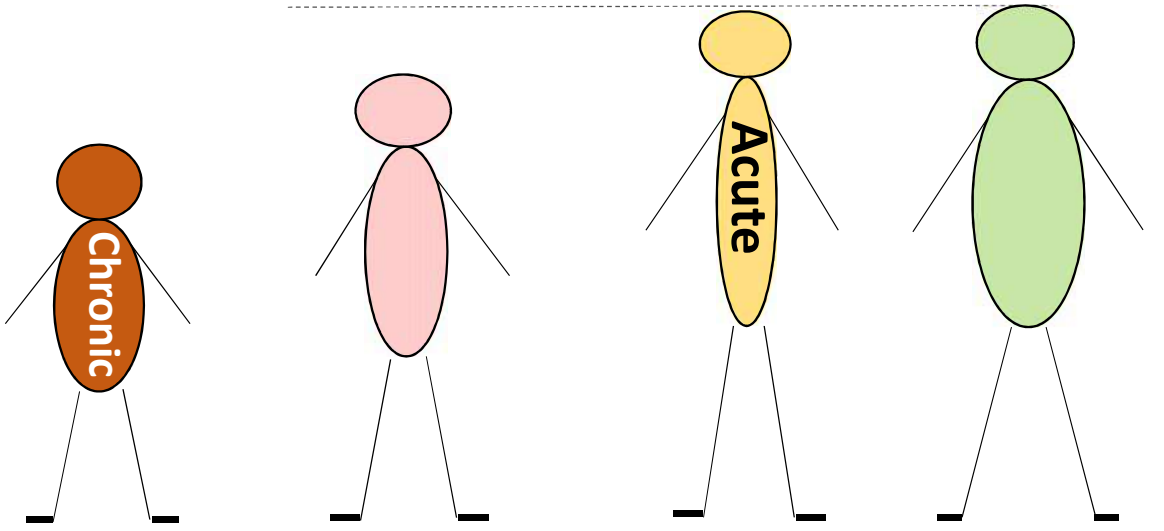


Healthy Villi



Stunted Villi

Normal height for age (Children <5)



Retarded mental & physical development

Morbidity & Mortality

Some WASH & Nutrition Hypotheses

- Acute undernutrition does not necessarily precede chronic undernutrition
  - Causes of acute undernutrition are related to (1) food, (2) care & (3) environment
  - Causes of chronic undernutrition are related to (1) environment, (2) care & (3) food
- Diarrhorea is a good indicator of faecal exposure if the gut is healthy
  - Diarrhorea is indicative of a step increase in faecal exposure
  - End point E. Coli testing will often miss step changes in E. Coli
  - Continued diarrhorea will lead to wasting in children
- Constant faecal exposure will not necessarily result in diarrhorea
  - Constant faecal exposure can infect & blunt intestinal villi inhibiting the absorption of nutrients (as well as the normal symptoms of diarrhorea)
  - Child height-for-age is a better proxy for the impact of constant faecal exposure
  - E. Coli swabs & water tests give some indication of environmental faecal exposure

???

- Diarrhorea may be a poor indicator of chronic WASH failures in Developing Countries
  - It is binary
  - It is subjective
  - It is not necessarily related
- Deaths may be a poor indicator of WASH failures in Developing Countries
  - The cause is subjective
  - No-one dies of diarrhoea
  - Failures to measure (or record) look better
- Child growth may tell us more about WASH failures in Developing Countries
  - It is graduated
  - It can distinguish acute (weight-for-height) from chronic (height-for-age) exposure
  - E-Coli (end-point testing) can complement

Outline – WHY?

- Why safely managed (& inclusive & equitable) WASH services?
  a) Reduce acute social, environmental & economic costs
  b) Reduce chronic social, environmental & economic costs
- In the past we have been led to believe that chronic failures are a consequence of repeated acute failures … but I would suggest that while they are connected they are separate processes

A. Constant faecal exposure = EED = Chronic symptoms (i.e. stunting) = a failure of individuals & nations to reach their intellectual & economic potential

B. Changes in faecal exposure = Diarrhorea = Acute symptoms (i.e. wasting) = greater risk of death = greater costs on the health systems

THEREFORE

- We need to manage both chronic & acute WASH failures
- They need to be managed differently