

Revisiting Broad Street: health-focussed research priorities for urban WaSH in the 21st century

AfriWatSan Workshop, Kisumu, July 2017

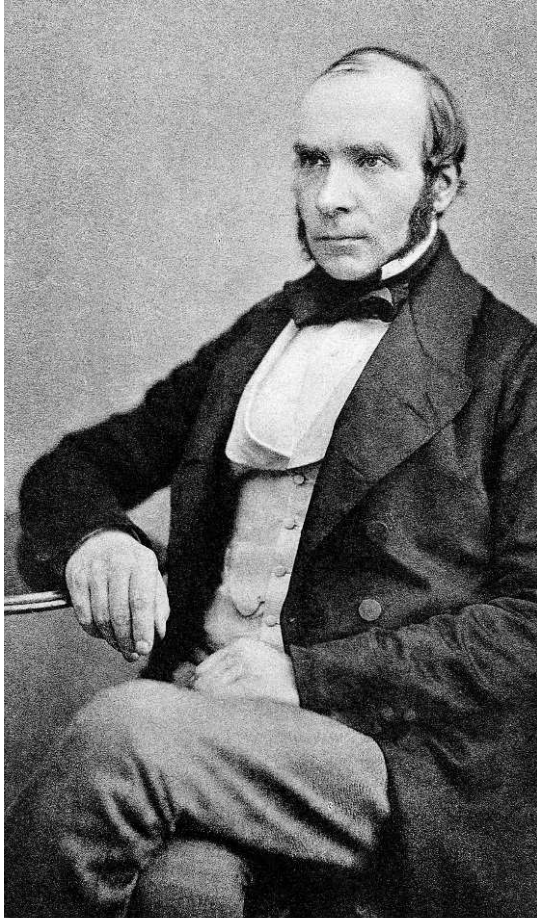
Dr Ed Fottrell

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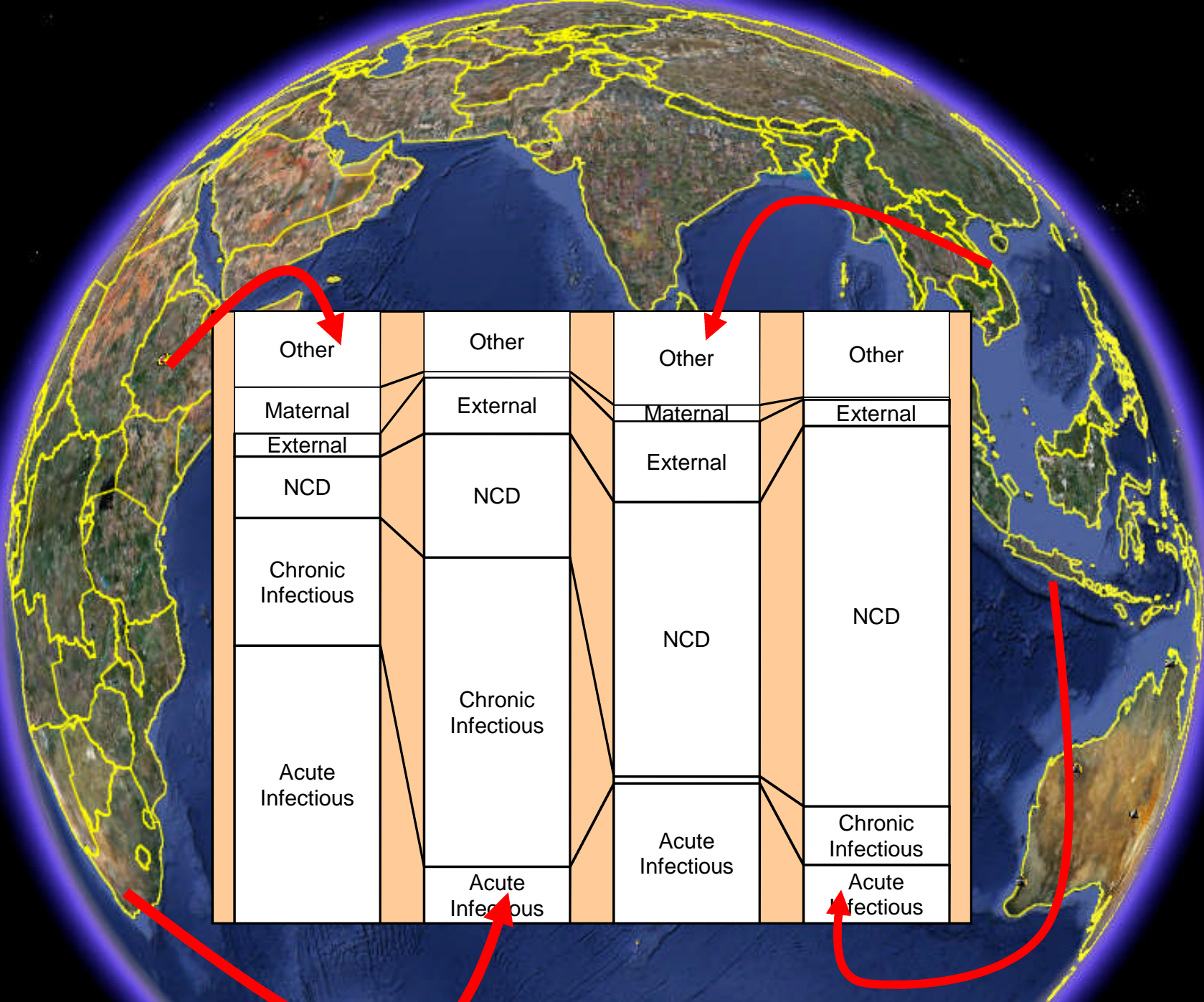
e.fottrell@ucl.ac.uk @fottrell

On the mode of communication of cholera



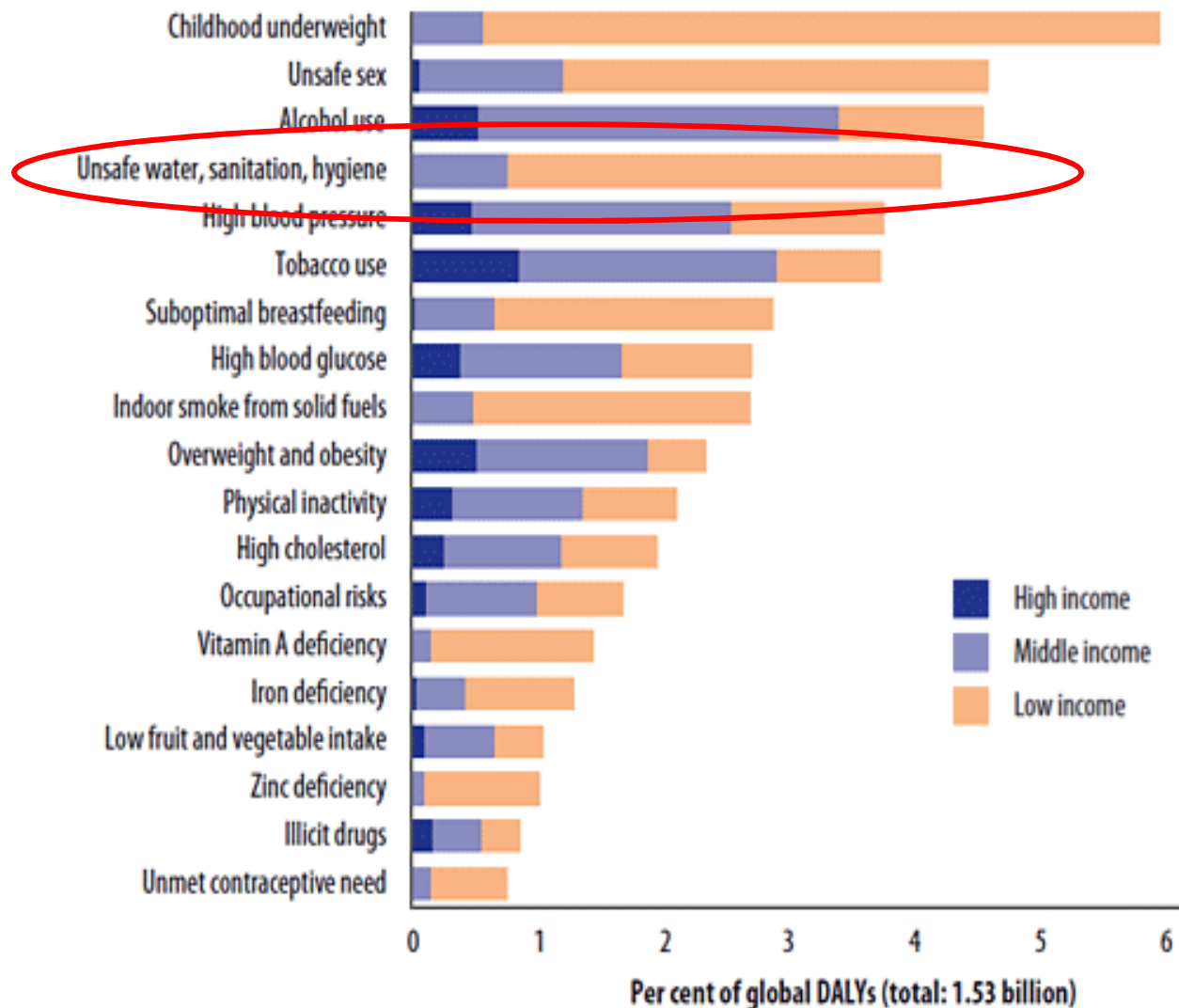
John Snow



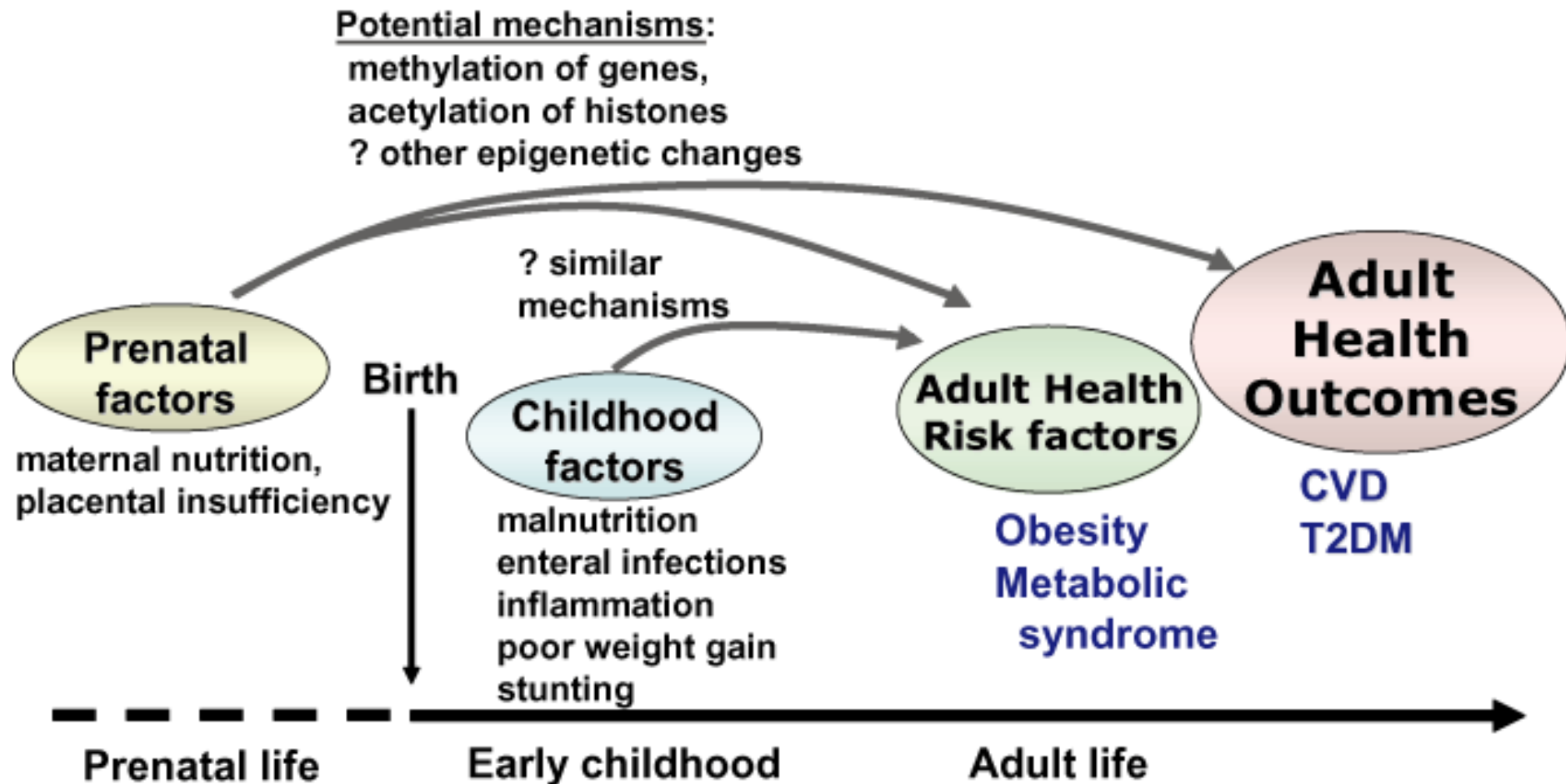


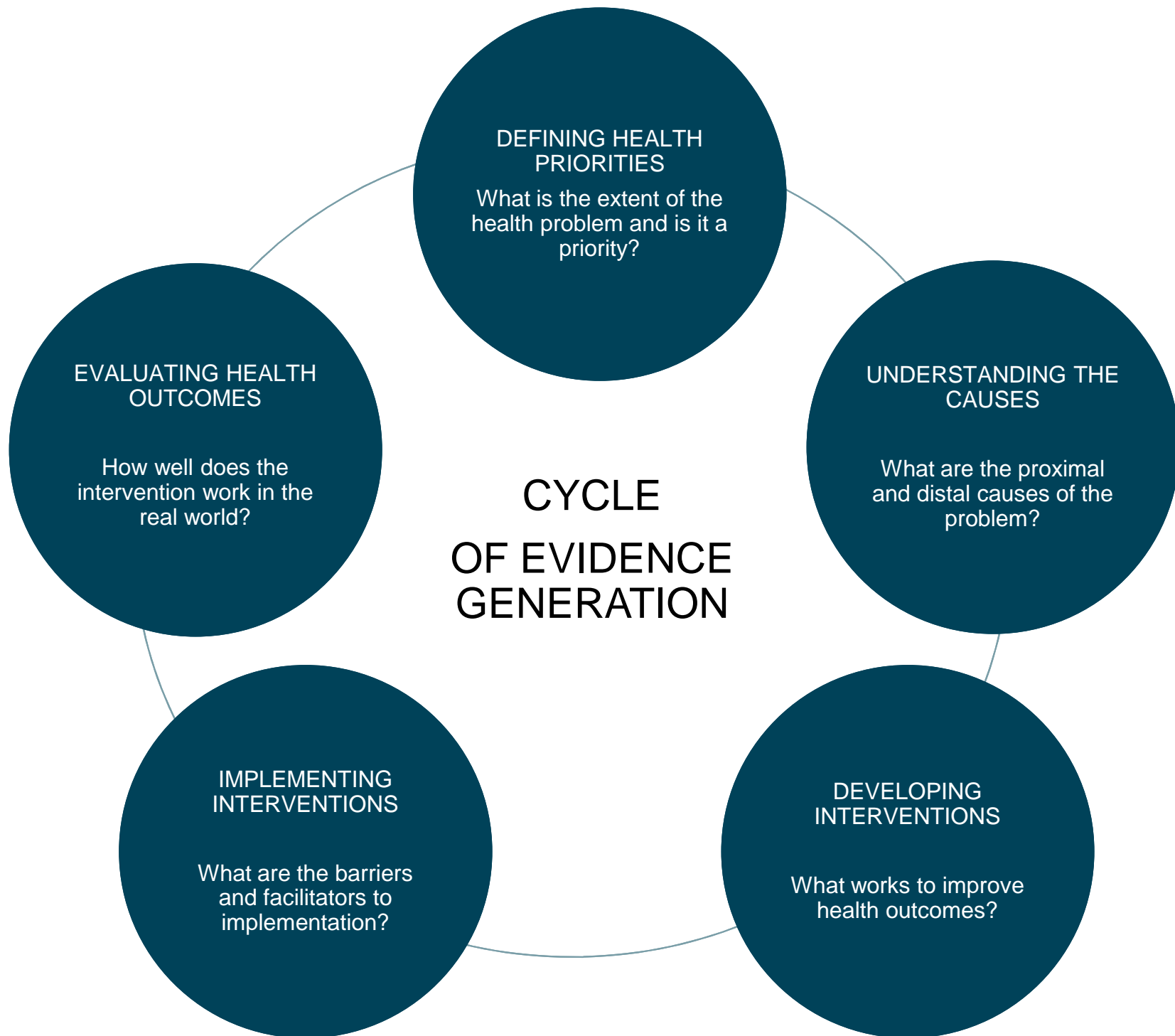
Fottrell et al. Trop Med Int Health 2010

DALYs lost because of NCD risk factors



Developmental Origins of Disease





Adapted from Andermann (2013)

BACK TO BASICS

Research question:

Does observed contamination increase incidence of malnutrition in infants observed through stunting?

Source: www.afriwatsan.org

Water contamination is our **exposure** of interest.
Child stunting is our **outcome** of interest.



BIASES TO INVESTIGATE...

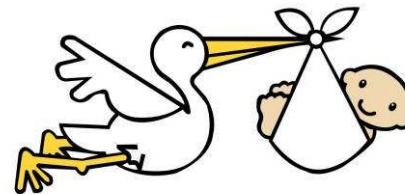
SELECTION BIAS



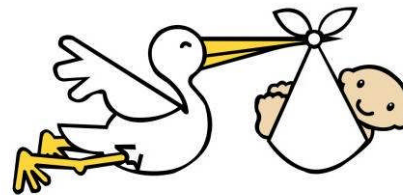
INFORMATION BIAS



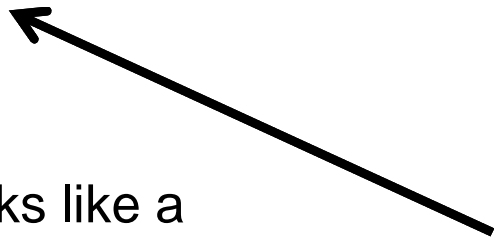
CONFOUNDING BIAS



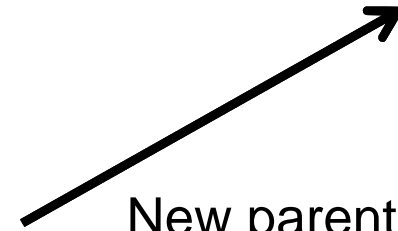
CONFOUNDING BIAS: TOTAL



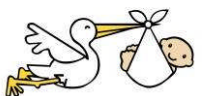
CONFOUNDING BIAS: TOTAL



Storks like a warm chimney



New parents like to keep their babies warm in winter



PS: Storks do not cause fires ... or babies !

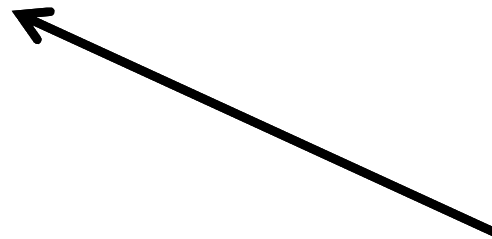
CONFOUNDING BIAS: PARTIAL



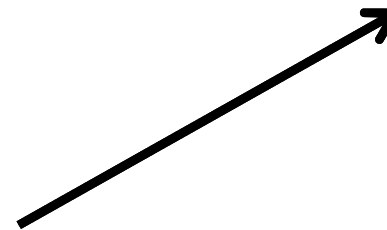
WATER CONTAMINATION



CHILD STUNTING

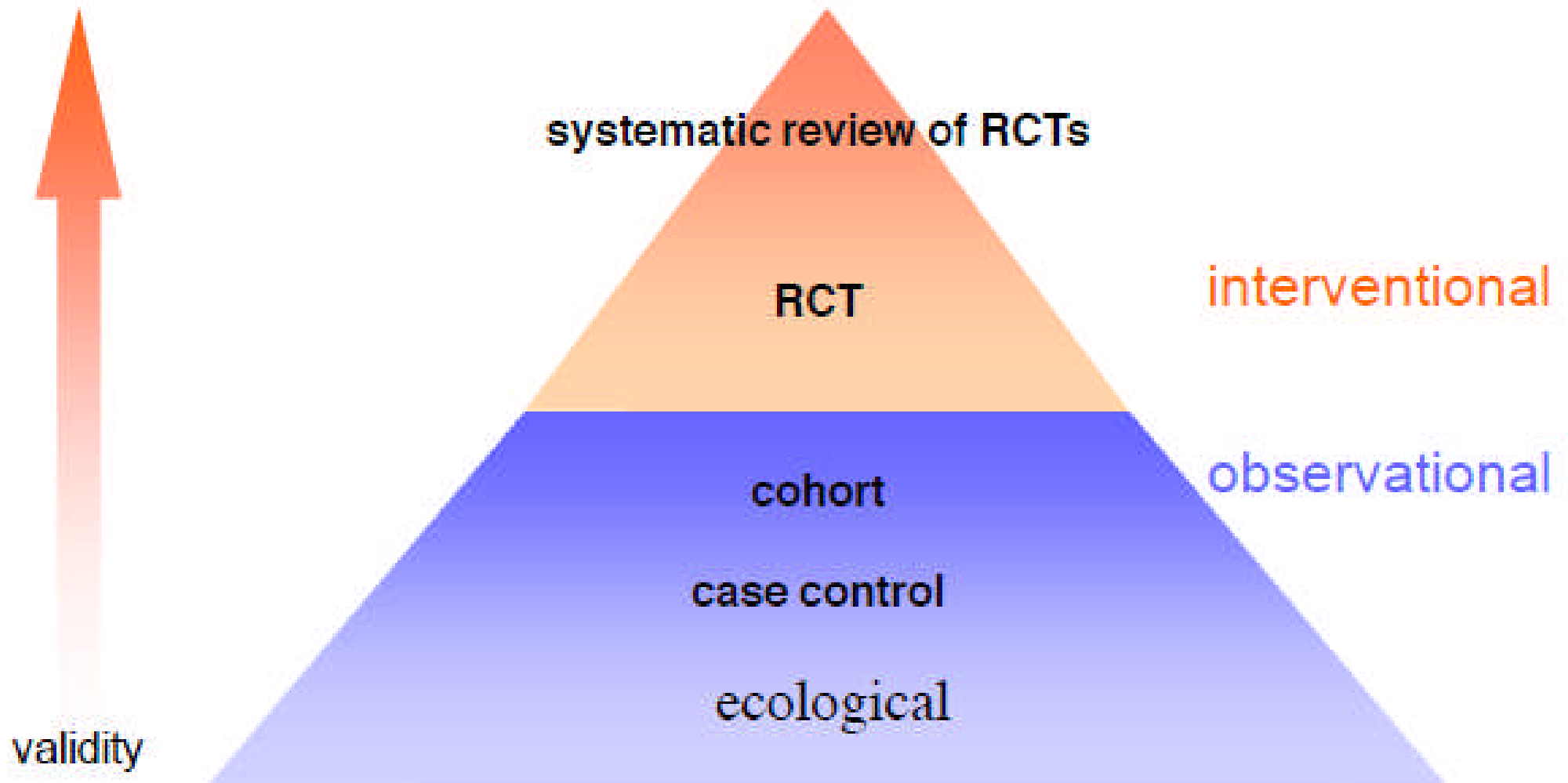


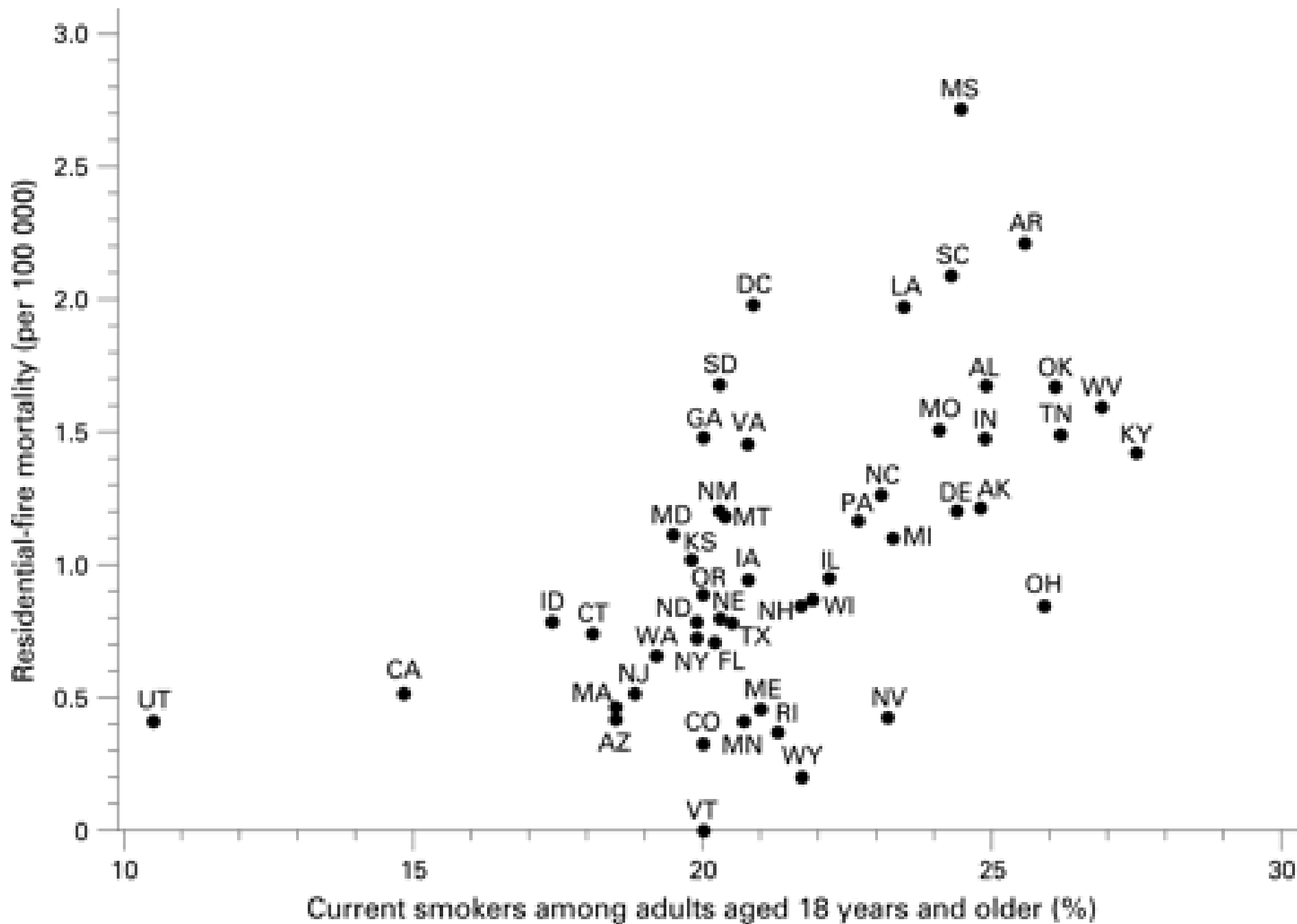
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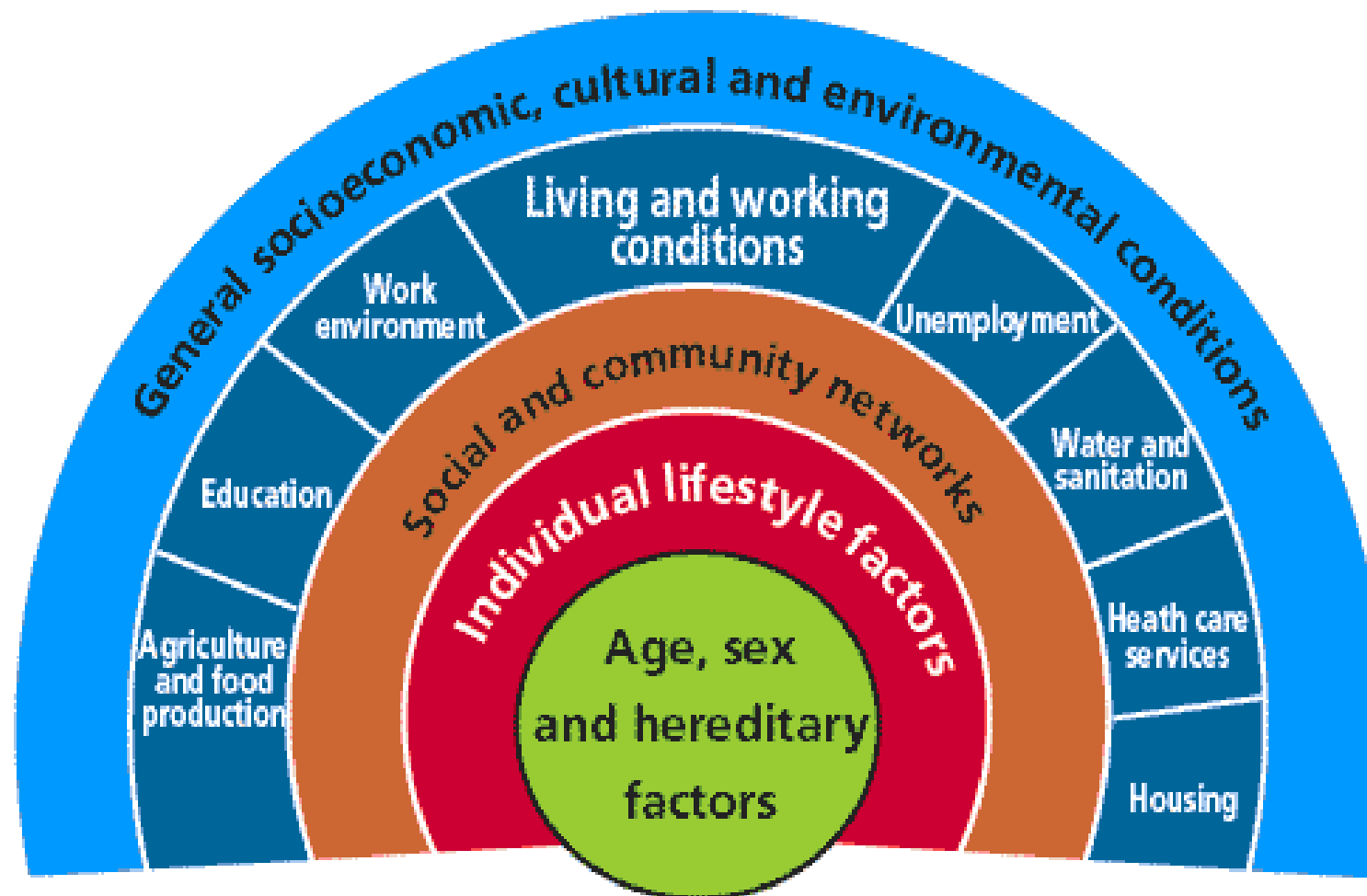
**DEPRIVATION IN MOTHER'S EARLY CHILDHOOD
WHAT IF WE DIDN'T MEASURE THIS?**

hierarchy of major study designs





Socioecological models



Poverty

Literacy

Gender



History

Economy

Cultural practices

Nutrition

Governance

Beliefs

Employment

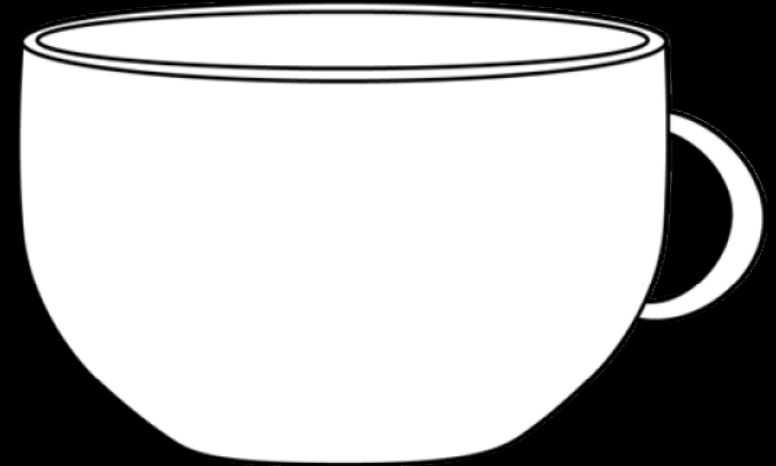
Security

ENOUGH TO JUST TO GIVE INFORMATION?

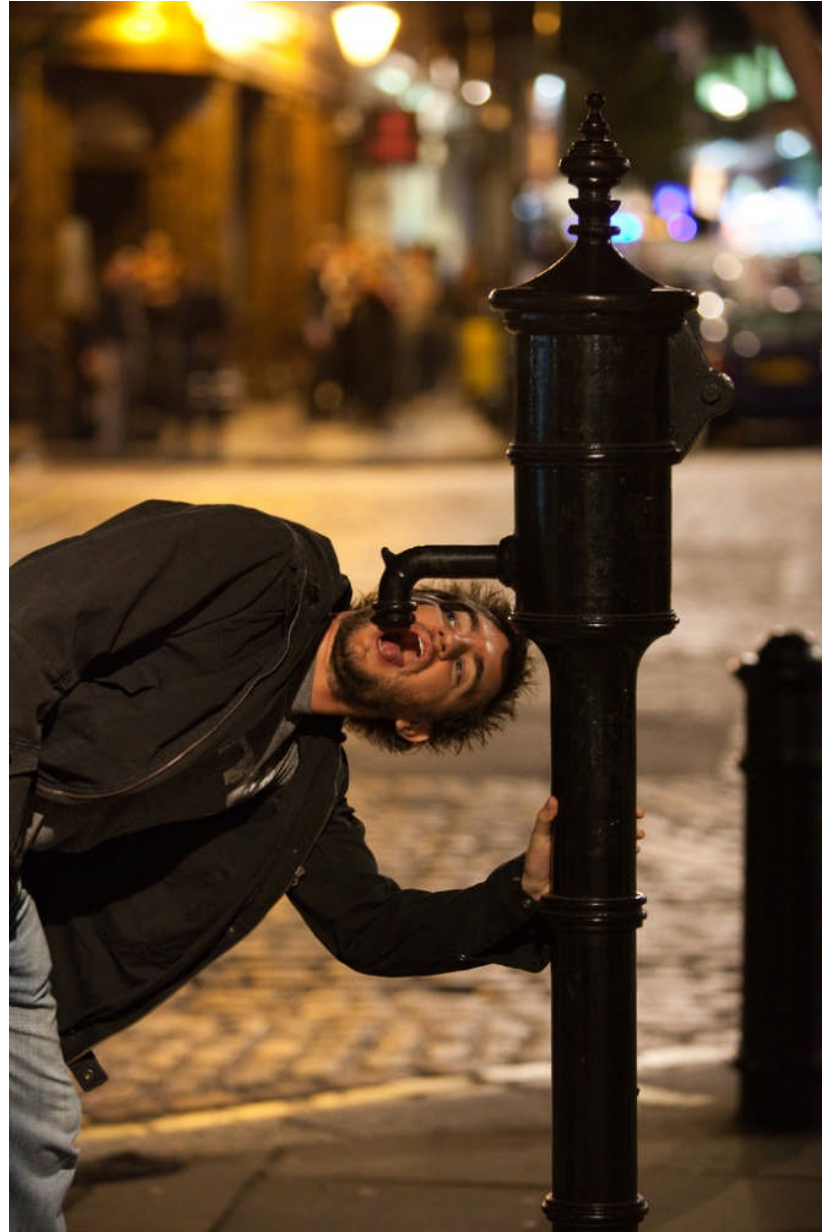
A traditional response: health education



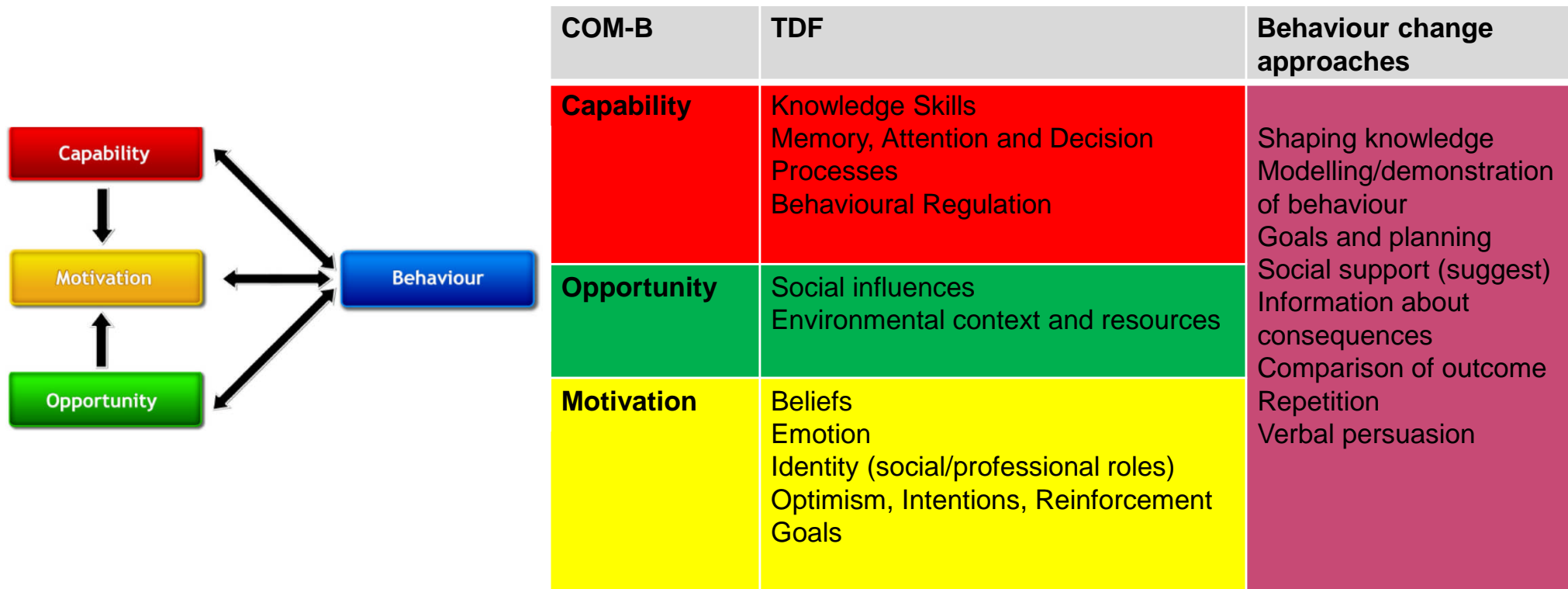
Photo credit: MIRA, Nepal



Bolam et al. BMJ 1998



COM-B, Transtheoretical Domains Framework and Behaviour Change Approaches



Behavioural Diagnosis

Community Mobilisation: Participatory Learning & Action



Manandhar et al. Lancet 2004
Tripathy et al. Lancet 2010
Azad et al, Lancet 2010
Moore et al. PLoS Med 2012

Fottrell et al. JAMA Pediatrics 2013
Colbourn et al. International Health 2013
Lewycka et al. Lancet 2013
Prost et al. Lancet 2013

Younes et al J Epi & Community Health 2014
Fottrell et al. Trials 2016

“to develop with stakeholders implementable, evidence based strategies for sustaining low-cost water supply and sanitation systems in African cities”

Source: www.afriwatsan.org



Source: UCLA



Source: UCLA



Mixed methods

Behavioural diagnosis

Participatory Intervention Design

Service mapping

Common exposure measures

Common confounder measures

Common Research Question (PICO)

Common effect-modifier measures

Common outcome measures