

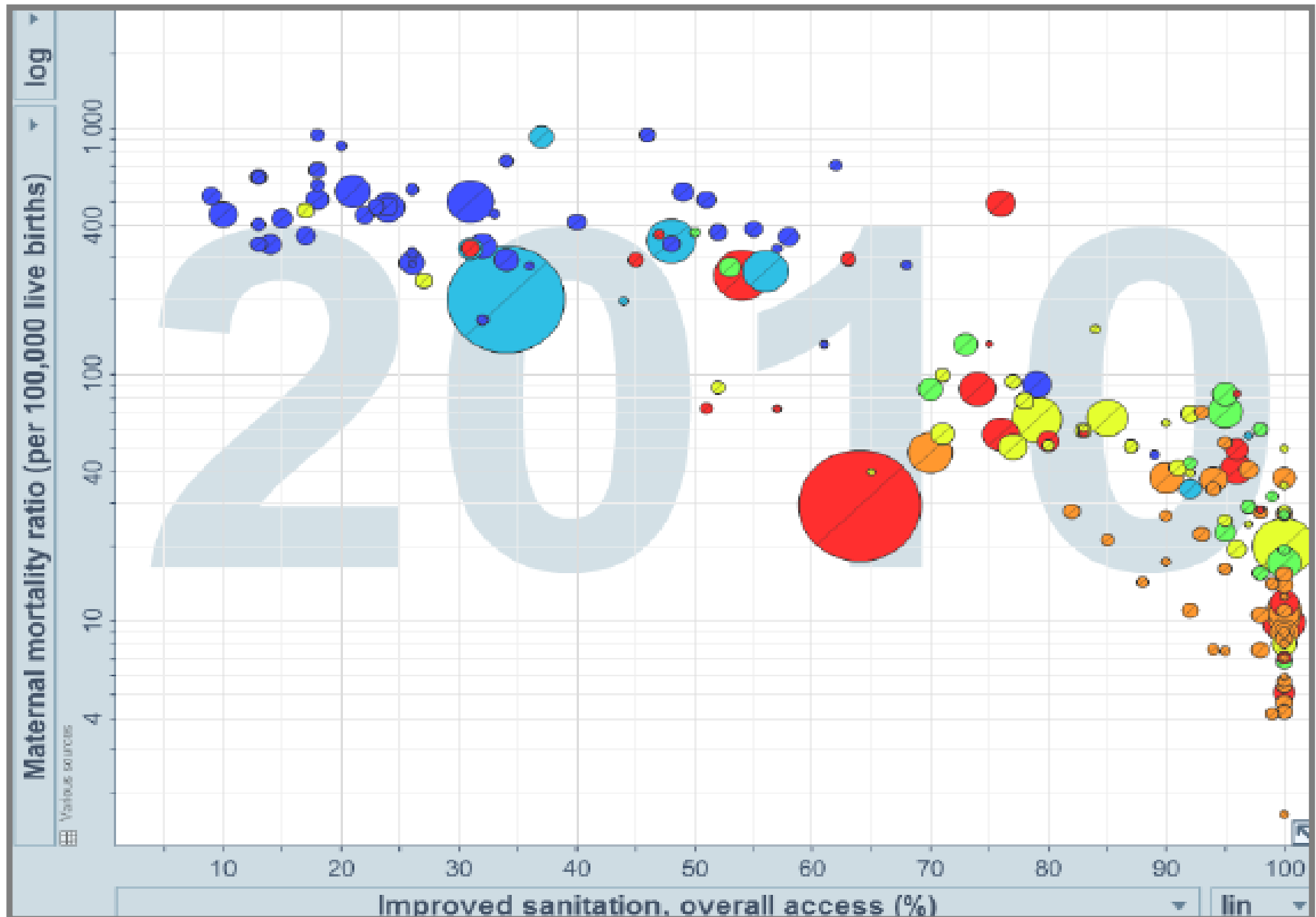


The impact of WASH on maternal & newborn health: What do we know?

Joanna Esteves Mills
CEO SHARE Consortium
London School of Hygiene & Tropical
Medicine

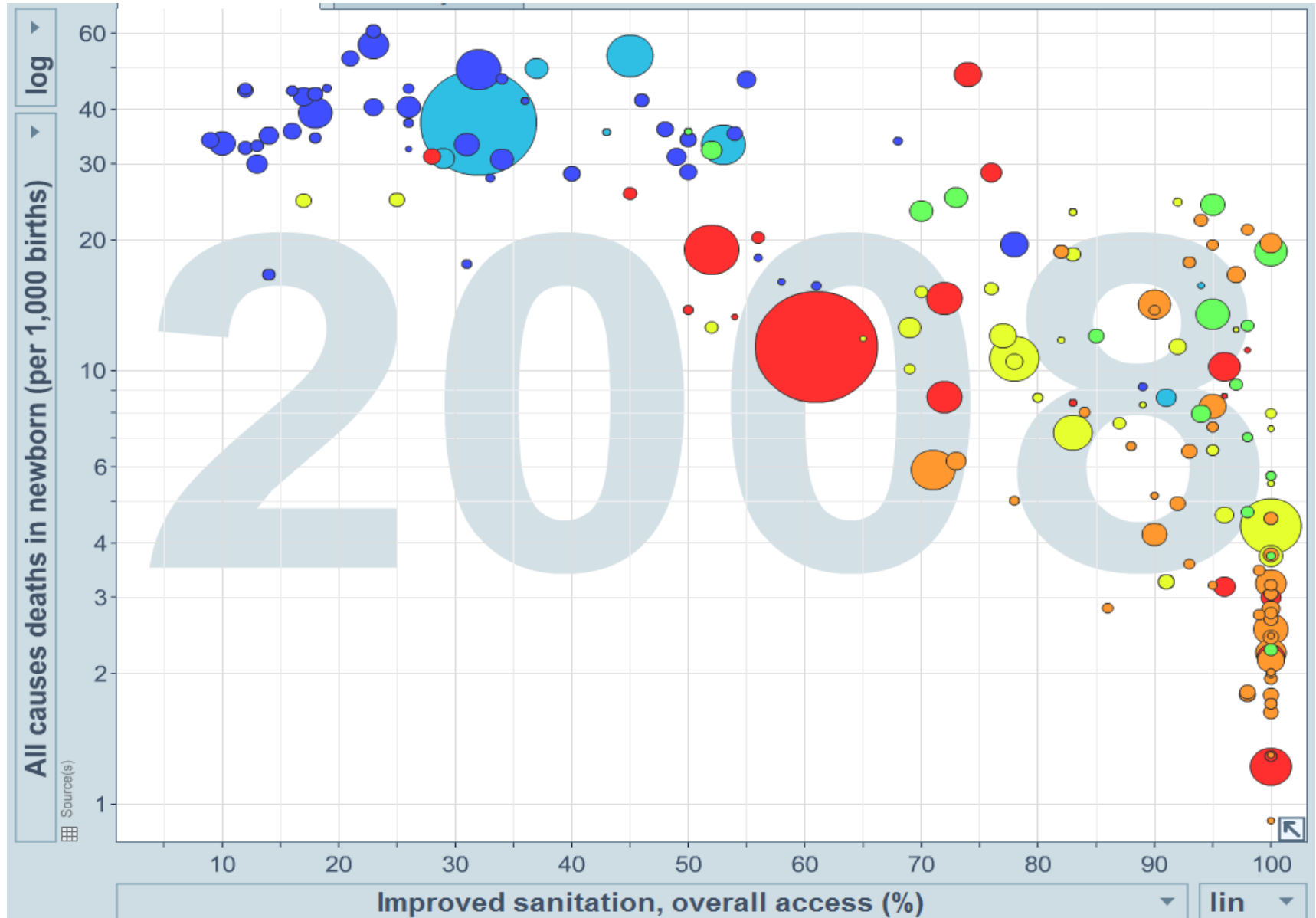
Is Sanitation correlated with Maternal Mortality?

Yes.... Water is Too



What about Sanitation and Neonatal Mortality?

Yes.... Water Too





Conceptual framework

Oona Campbell, Lenka Benova, Oliver
Cumming, Giorgia Gon, Kaosar Afsana

Conceptual framework

Three lenses:

1. WASH transmission

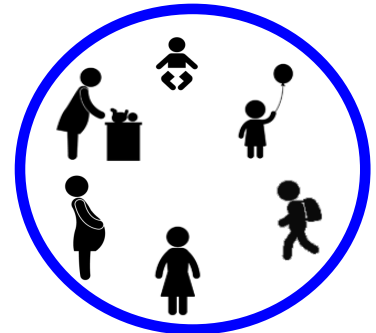


Created by Sergey Demutkin
from Noun Project

2. Gendered inequalities



3. Life-course approach



Conceptual framework



1. In the water



2. Behaviour & location

Conceptual framework

WASH transmission



Created by Sergey Demashin
from Noun Project

Water-borne

*Infections – via bacterial, parasitic and viral oral-faecal infections;
Inorganic chemical compounds – natural contaminants*

Water-based

Infections - via aquatic vector

Water-washed

*Insufficient water for personal/domestic/institutional hygiene;
Poor hygiene and faeces disposal*

Water-related

Via insects near water

Conceptual framework

WASH transmission



Created by Sergey Demashin
from Noun Project

Distance water sources or lack of water when needed

Physical burden of carrying water, time and financial costs, drudgery

Water/sanitation in risky or isolated locations

Pests and perverts

Perception of water and sanitation availability; stigma or fear
around use of sanitation facilities

Real or perceived availability of water or sanitation

1. In the water

Ingestion, inhalation or contact with 'contaminated' water

A. Water-borne chemical compounds ingested or in contact with skin

B. Water-system related infection

C. Water-based infection

D. Water-borne infection

E. Water-washed Insufficient water for personal/domestic/institutional hygiene; Poor hygiene & faeces disposal

F. Water-related insect-vector borne infection

G. Water sources distant or absent

H. Water/sanitation in risky or isolated locations

I. Perception of water and sanitation availability; stigma or fear around use of sanitation facilities

Natural contaminants
e.g. arsenic, salt, fluoride

Industrial contaminants
e.g. lead, nitrates

Deliberate additive
e.g. fluorine, chlorine or its by-products

Via aerosols from poorly managed cooling systems

Via aquatic vector
e.g. fish & tapeworm, shellfish & flukes, snails & schistosomes

Via bacterial, parasitic, & viral oral-faecal infections
e.g. cholera, listeria, hepatitis E

Via enteric infection
e.g. diarrhea & gastroenteritis, spread by fingers, food, fomites, field crops, fluids, or flies

Other infection (eye, ear, skin, lice-borne, respiratory)
e.g. Trachoma, scabies, lassa fever

Via insects near water
e.g. black flies & onchocerciasis, tsetse flies & trypanosomes

Physical burden of carrying water, time & financial costs, drudgery

Pests (insect & snake bites) and perverts (harassment & violence)

Real/perceived risk, stigma, damage to self-esteem, or disgust surrounding defecation, urination or menstruation

Real or perceived availability of water & sanitation

Arsenicosis

Blue baby

Spontaneous abortion

Legionellosis

Schistosomiasis

Hepatitis E

Hookworm

Influenza

Malaria

Uterine prolapse

Rape

ISHSN

Mental distress

Lack of use of health services

Conceptual framework

Gender inequalities perspective

Diseases or conditions that are:

- unique to women or some subgroup of women
- more prevalent
- more serious
- for which the risk factors are different
- for which the interventions are different

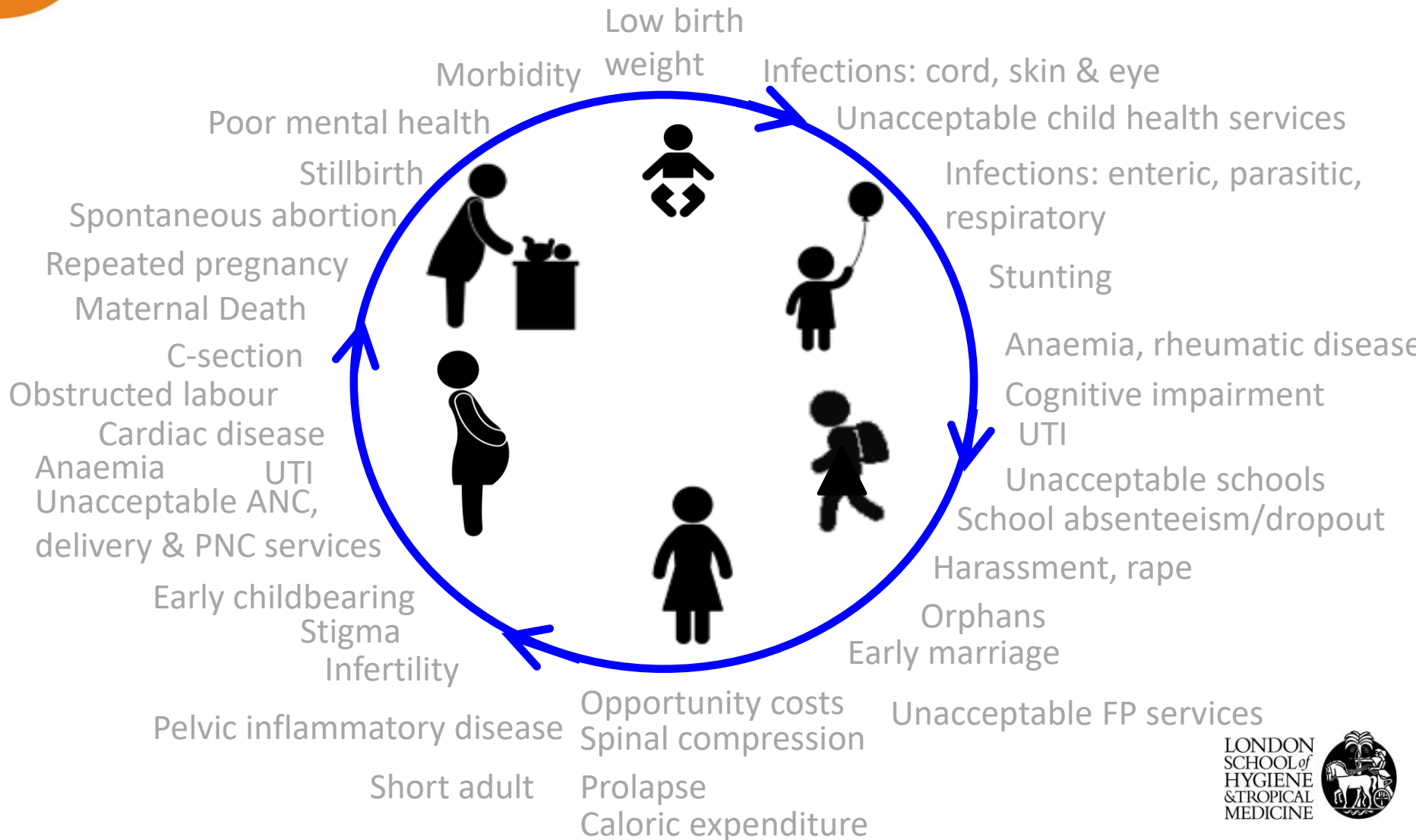
(National Institutes of Health (1991))

For example: water-borne infections
Cholera versus Hepatitis E.

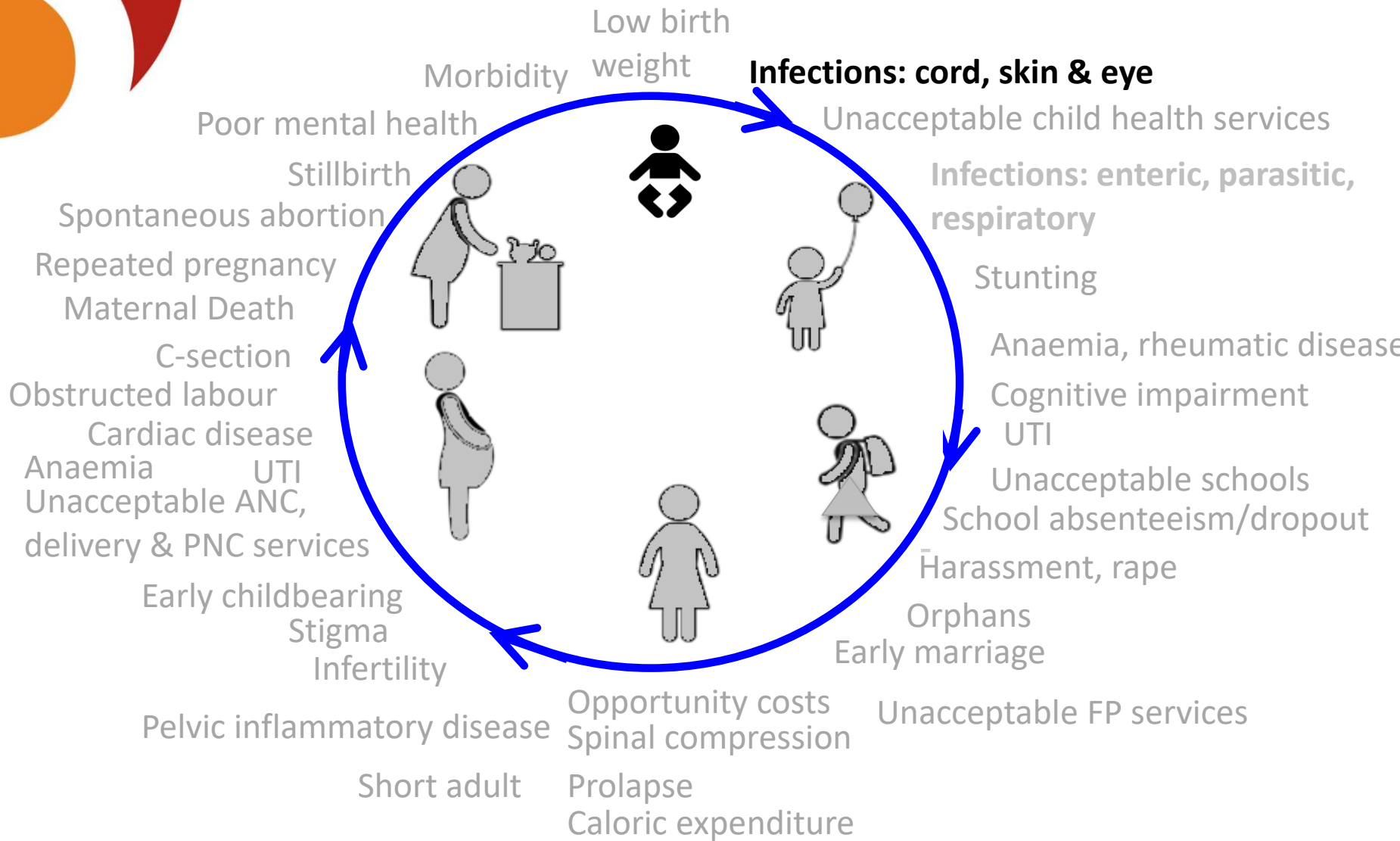


Conceptual framework

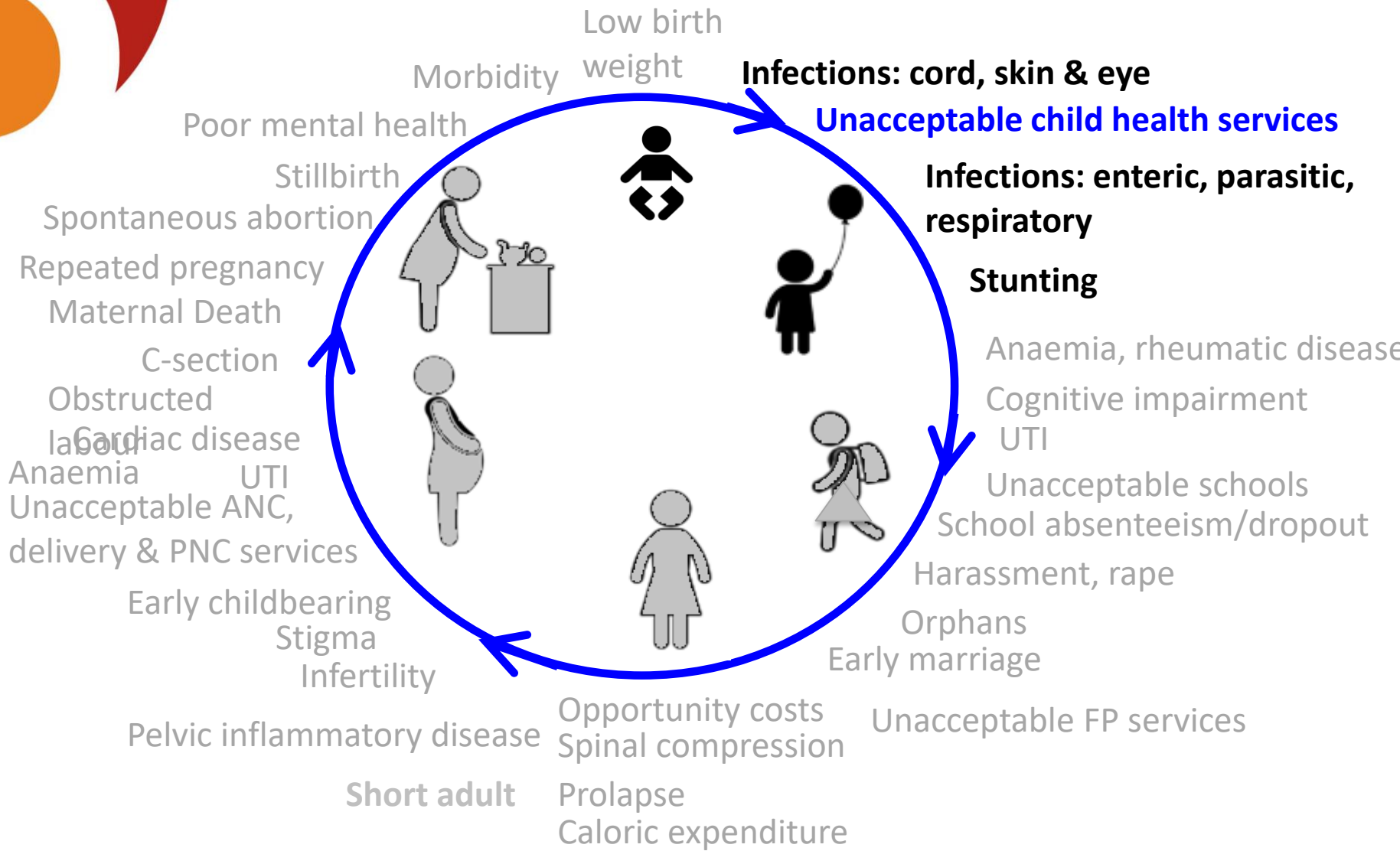
Life course perspective



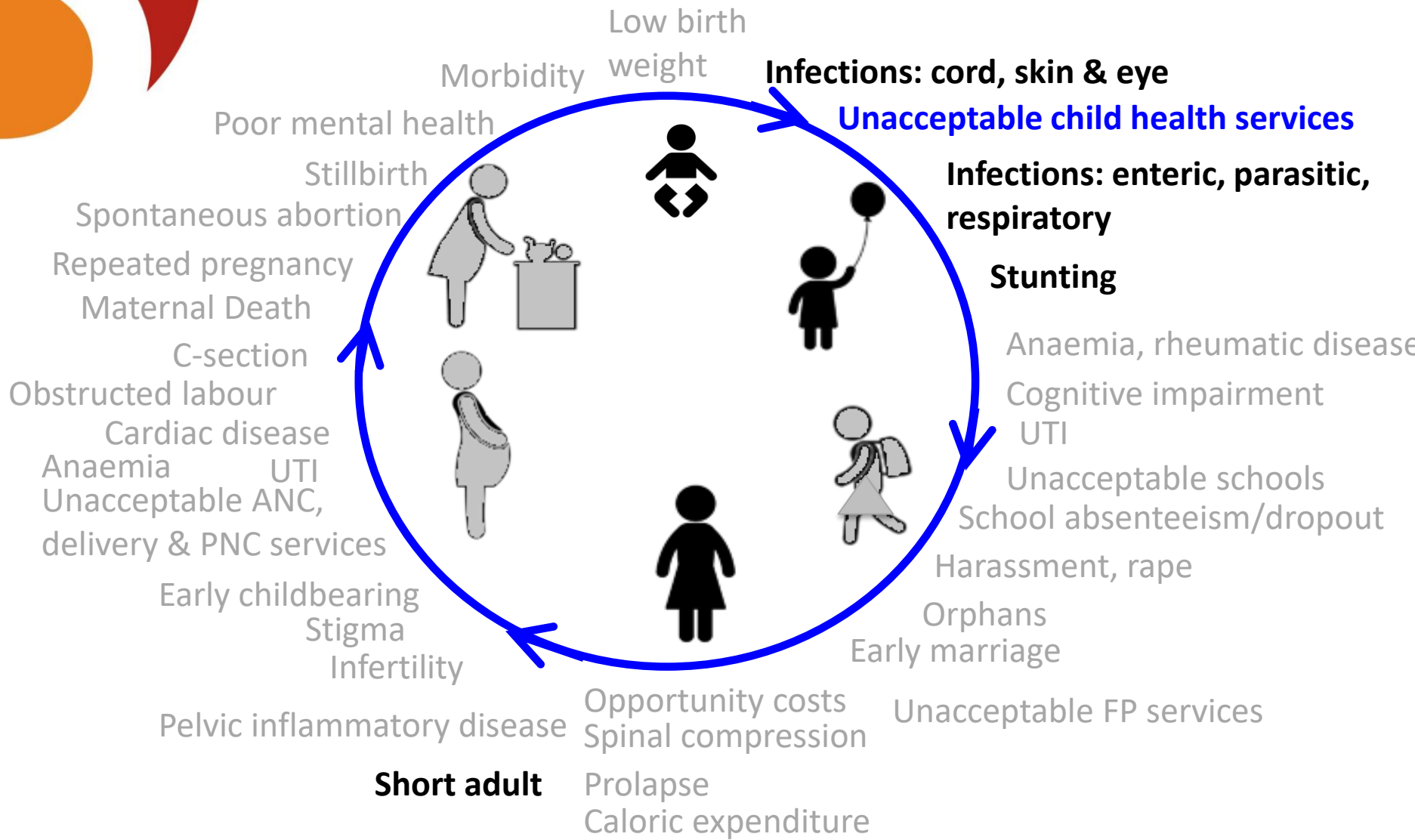
For example: infections



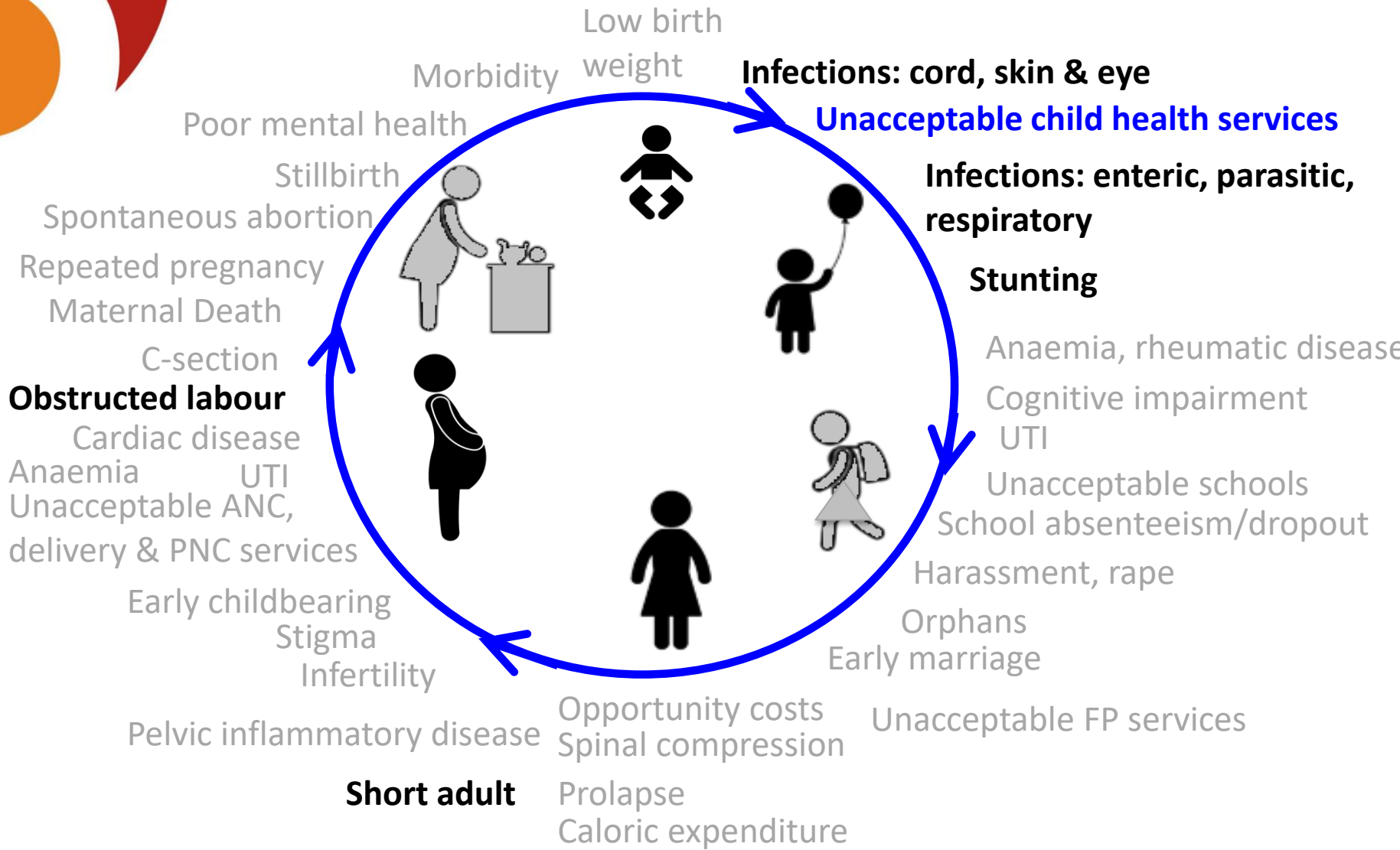
Infections → Stunting



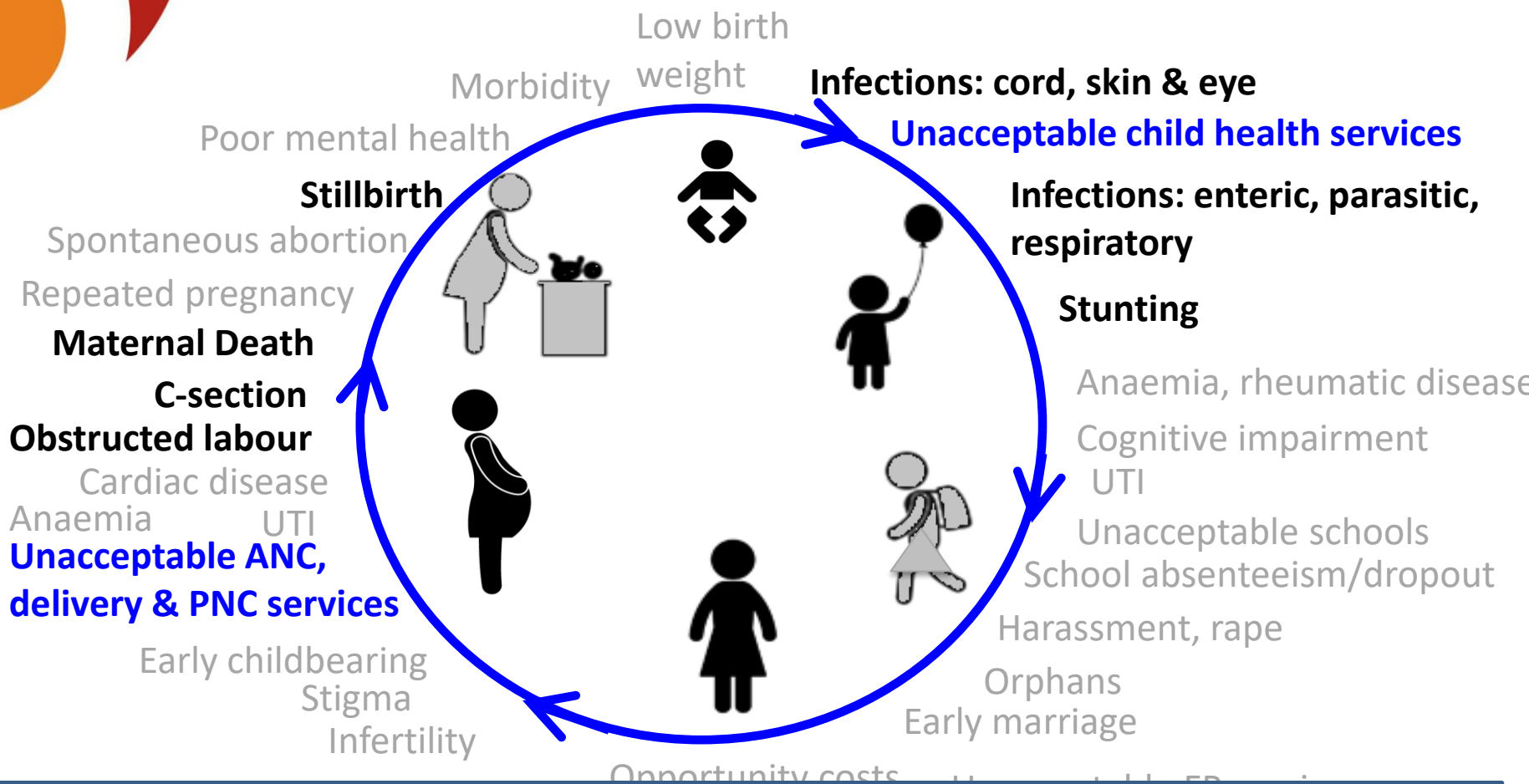
Infections → Stunting



Infections → Stunting → Obstructed Labour



Infections → Stunting → Obstructed Labour → C-section or Maternal Death or Stillbirth

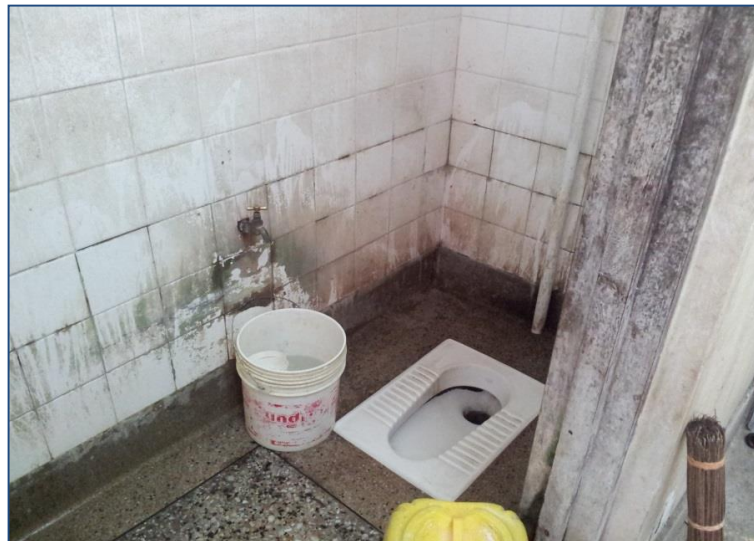


We found 67 potential biological/chemical linkages and 10 potential behavioural linkages



Insufficient evidence of impact

Insufficient evidence



Systematic reviews, secondary analyses & new data collection tools and analyses needed!

Getting the basic rights – the role of water, sanitation and hygiene in maternal and reproductive health: a conceptual framework

Oona M. R. Campbell¹, Lenka Benova¹, Giorgia Gon¹, Kaosar Afsana² and Oliver Cumming³

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Thank you

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through the SHARE Research Consortium

The SHARE Research Consortium generates new findings and synthesis of existing knowledge on sanitation and hygiene in order to improved policy and practice.

shareresearch.org





USAID
FROM THE AMERICAN PEOPLE



Clean birthing practices: a mixed-methods observational study in health care facilities in Nigeria

Helen Buxton¹; Erin Flynn¹; Dr Olutunde Yinka² Joanna Esteves Mills¹; Tess Shiras¹; Stephen Sara² Oliver Cumming¹; Robert Dreibelbis¹

1. London School of Hygiene and Tropical Medicine; 2. Maternal and Child Survival Program

Hygiene During Labor and Delivery

- Infection during labor and delivery
 - 10% of all maternal deaths
 - 15% of neonatal deaths
- Easily prevented through improved hygiene and infection prevention and control protocol
- Improvements proven difficult
 - Organizational barriers
 - Environmental barriers
 - Models based on knowledge and education

Understanding hygiene practices during labor and delivery

- Childbirth is complex,
 - Multiple, embedded procedures
 - Long duration with intermittent provider interaction
- Assessments tend to focus on binary relationships between hand hygiene practices and specific events
 - HWWS and glove use prior to vaginal examinations
- Need better methodologies that capture dynamic nature of risk

Background: Nigeria



Photo credit: Lucia Zoro Save the children

Neonatal mortality rate:

- 34/1,000¹
- SDG target: 12/1,000

Maternal mortality:

- 560/100,000²
- SDG target: 70/100,000

1. Liu (2015); 2. World Bank (2015)

MCSP Infection Prevention Activities

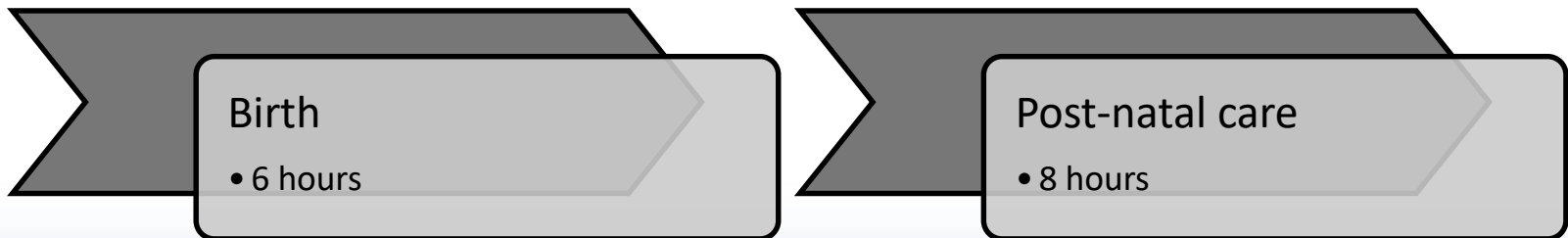
Maternal and Newborn Interventions

WASH activity	description
Materials/ Supplies	Provided IPC supplies/materials to delivery rooms and for general HCF use (hw stations, soap, personal protective supplies, disinfectant, veronica buckets)
Promotion	Promoting chlorhexidine use and compliance with the 6 clean birth practices among health care providers
	Promotion of hand hygiene and clean cord care among mothers and other caregivers (indirectly through health care providers)
Training	Training of health care workers on the 6 clean birth practices
	Training of health care workers on providing hand hygiene and cord care promotion to mothers and other caregivers during discharge
Pre-service training	Training of trainers to deliver service training on hand hygiene, the 6 clean birth practices, or IPC

Observations

Methods

- 30 structured observations of birth and post-natal care
 - 2 primary HCF
 - 2 secondary HCF
 - 2 tertiary hospitals
- Focus on hand and hygiene action
- Capture qualitative contextual information; follow-up qualitative



Hand hygiene during labour and delivery:

WHO integrated management of pregnancy and childbirth guidelines 2015

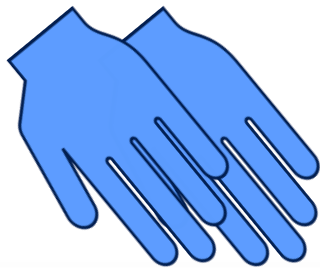


Before

- ❖ Contact with mother
- ❖ Contact with new-born
- ❖ Any treatment procedure

After

- ❖ Contact with blood, other bodily fluid
- ❖ Disposing of infectious waste
- ❖ Changing soiled bedsheets
- ❖ Changing gloves



Patient protection

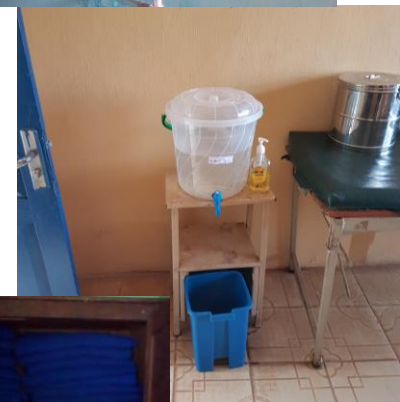
- ❖ Vaginal examination
- ❖ Delivery
- ❖ Cord cutting
- ❖ Repair of tears
- ❖ Blood drawing
- ❖ Manual removal of the placenta

HCW protection

- ❖ Handling and cleaning equipment
- ❖ Handling waste
- ❖ Cleaning blood and bodily fluids

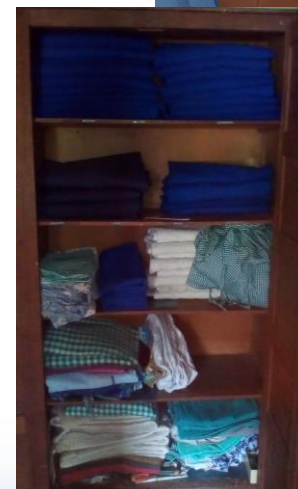
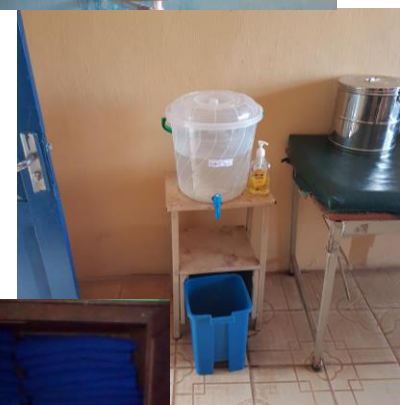
WASH and Hygiene Infrastructure / Supplies

Indicator	Number of facilities
Facility-level <ul style="list-style-type: none"> - Have piped water source - Experience water shortages 	 3 / 6 4 / 6
Delivery Unit <ul style="list-style-type: none"> - Functioning handwashing station - <i>Functioning tap</i> - <i>Veronica bucket</i> - Disposable towels 	 6 / 6 4 / 6 2 / 6 0 / 6
Post-natal care <ul style="list-style-type: none"> - Handwashing facilities - Easily cleaned, waterproof mattress covers - Visibly clean bedsheets 	 2 / 6 5 / 6 3 / 6



WASH and Hygiene Infrastructure / Supplies

Indicator	Number of facilities
Facility-level	
- Have piped water source	3 / 6
- Experience water shortages	4 / 6
Delivery Unit	
- Functioning handwashing station	6 / 6
- <i>Functioning tap</i>	4 / 6
- <i>Veronica bucket</i>	2 / 6
- Disposable towels	0 / 6
Post-natal care	
- Handwashing facilities	2 / 6
- Easily cleaned, waterproof mattress covers	5 / 6
- Visibly clean bedsheets	3 / 6



Hygiene Scoring for HCF Workers

Proper hygiene protocol: Hands washed with soap, gloves worn

Time 

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Basic hand hygiene: Hands washed with soap, no gloves

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Hands gloved, no HWWS

Time 

Hygiene Scoring for HCF Workers

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Basic hand hygiene: Hands washed with soap, no gloves

Hands gloved, no HWWS

Hygiene Risk: Hands or gloves come into contact with potential contamination

Time 

Hygiene Scoring for HCF Workers

Proper hygiene protocol: Hands washed with soap, gloves worn

Basic hand hygiene: Hands washed with soap, no gloves

Hands gloved, no HWWS

Hygiene Risk

Low Risk Events:

- Contact with mothers skin (intact)
- Contact with clean surfaces near mother
- Contact with newborn's skin (intact)

High Risk Events

- Contact with feces
- Contact with placenta
- Contact with another patient
- Contact with medical waste

al contamination

Time →

Hygiene Scoring for HCF Workers

Proper hygiene protocol: Hands washed with soap, gloves worn

Basic hand hygiene: Hands washed with soap, no gloves

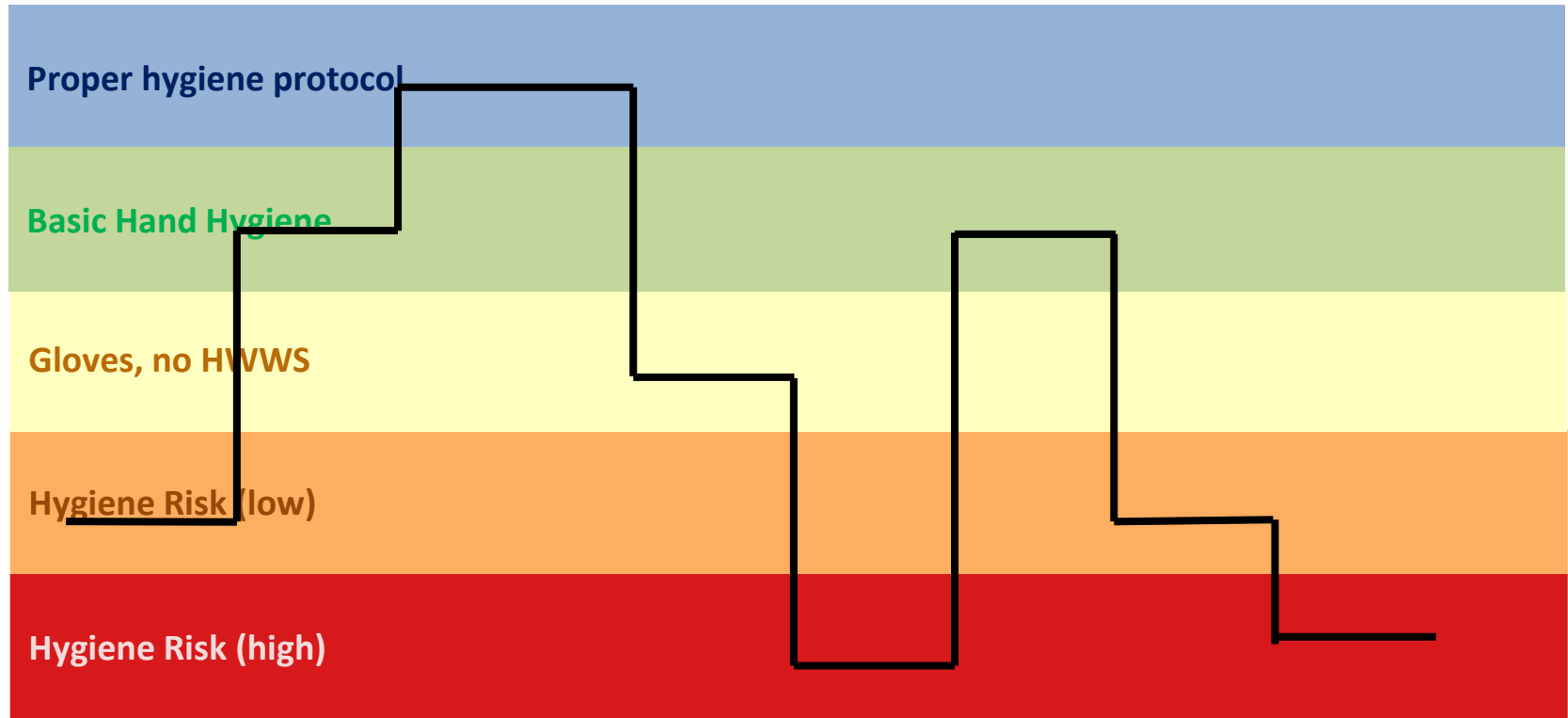
Hands gloved, no HWWS

Hygiene Risk (low): Hands or gloves come into contact with skin, clean surfaces

Hygiene Risk (high): Hands or glove contact with waste, blood, other patient

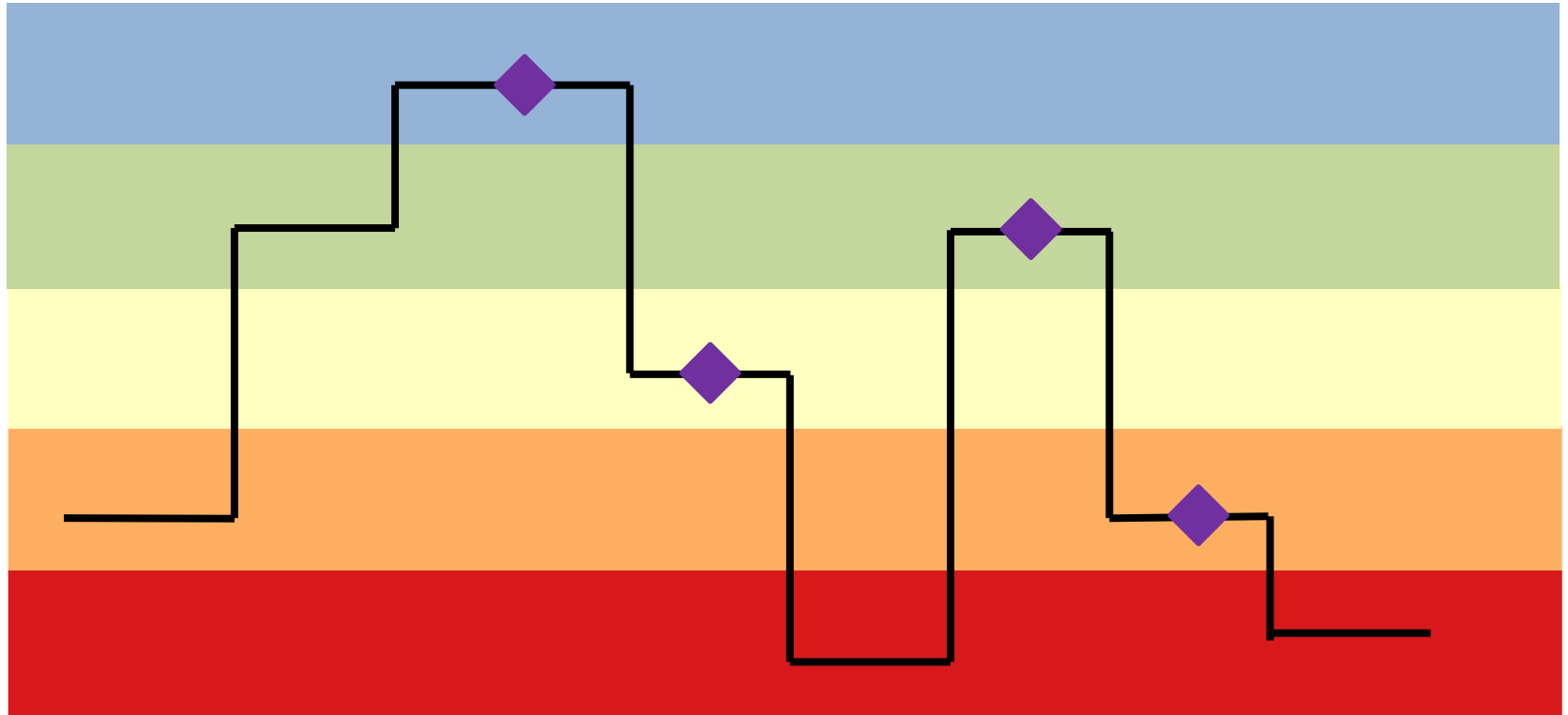
Time →

Hygiene Scoring for HCF Workers



Time →

Hygiene Scoring for HCF Workers



Time →

Hygiene during labour and delivery

	All procedures requiring aseptic technique	
	n	%
Proper hygiene protocol	7	3%
HWWS	7	3%
Hands gloved, not washed	60	27%
Hygiene risk (Low)	116	45%
Hygiene risk (High)	56	21%
Total	256	

Key Findings

Conveniently placed handwashing infrastructure with both water and soap is *necessary but not sufficient* to ensure hand hygiene compliance

Glove use being used as a substitute for HWWS

Knowledge around hygiene protocols is high, training only reinforcing knowledge

- Accountability and supervision
- Motivation and ability, particularly during shifts with fewer staff

Visitors and auxiliary staff play a large role in maternal and newborn care

- Largely absent from most IPC training and interventions
- When included, focus on a small set of specific behaviours (ie: cleaning surfaces)

Next Steps

MCSP Nigeria developing new training programs, focusing on supervisory support and critical moments for handwashing

Integrate findings into larger literature review, facility observations, and global key informants

For more information, please visit
www.mcsprogram.org

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