



CHAMPS

**Building
Knowledge.
Saving
Children's
Lives.**

Status Update and Plans for Adult Mortality Studies

NaCoVERC Conference Room, June 7, 2022

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Co-Director, CHAMPS-SL Site



What is CHAMPS? = Child Health and Mortality Prevention Surveillance



We are a network of mortality surveillance sites, funded by the BMGF, with our Program Office at Emory University, Atlanta

Child Health and Mortality Prevention Surveillance

Global Partners Board

Scientific Advisory Committee



CHAMPS Program Office



Technical Partners



South Africa

Mozambique

Kenya

Mali

Bangladesh

Ethiopia

Sierra Leone



2018

Overarching Objectives of the CHAMPS Network

Track definitive causes of child mortality in sites throughout Sub-Saharan Africa and South Asia

- *Using Minimally-Invasive Tissue Sampling (MITS)*

Produce and disseminate high-quality data to inform policy and public health action

Enable sites to leverage CHAMPS investments to prevent mortality

- *Data-to-Action*



Data to Action

CHAMPS data will help inform a range of public health decisions – including policy changes to save children’s lives



Local (DHMT)

Households, communities, health clinics, local and traditional leaders



National (TWG)

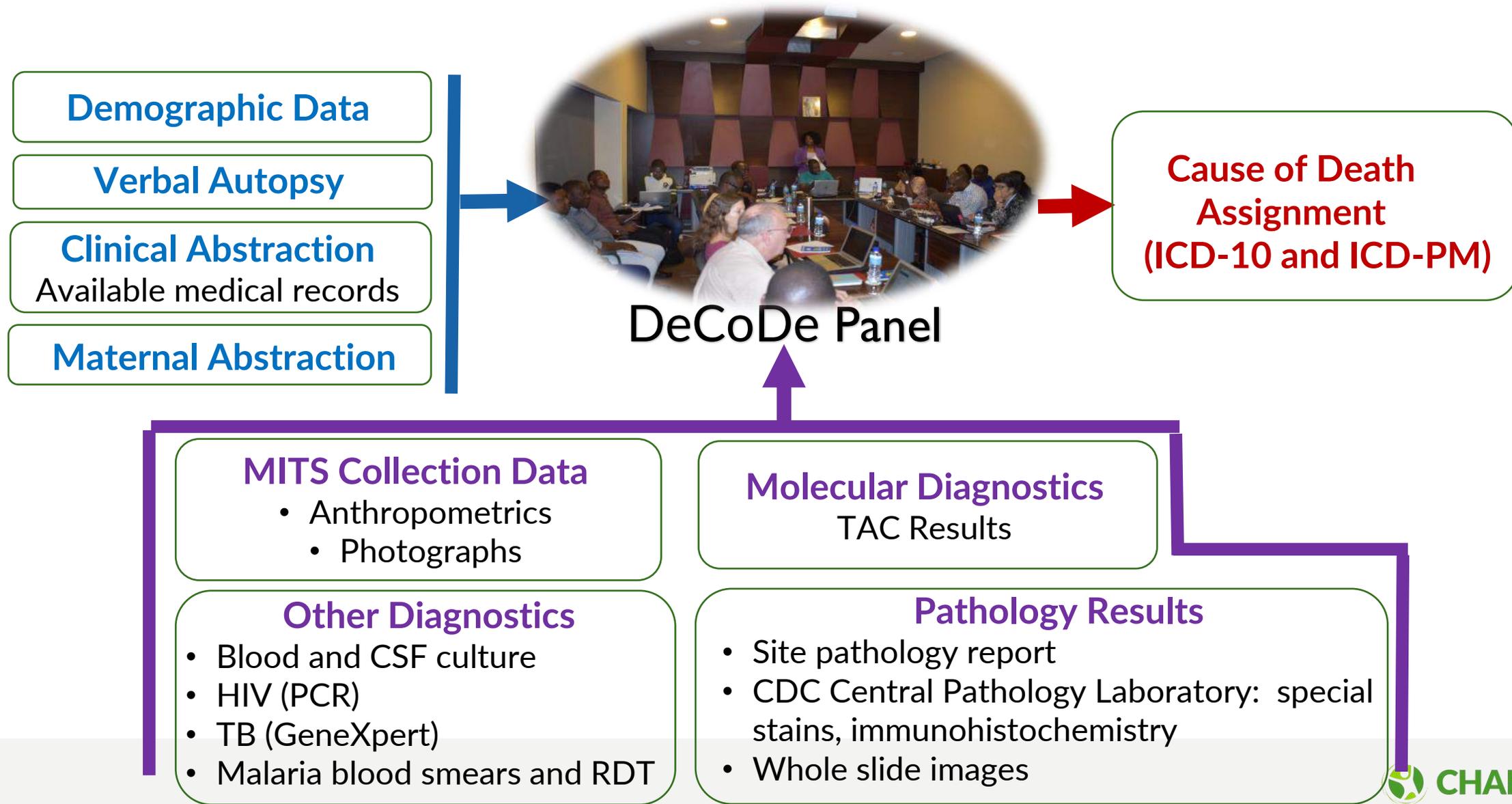
Ministries of Health, National Public Health Institutes (NPHI) – country ownership and sustainability



International

Building partnerships and networks to disseminate data, share knowledge and catalyze action

Determination of Cause of Death (DeCoDe)



The RCH-TWG's dual role as the CHAMPS TWG: From DeCoDe panel recommendations to mortality reduction

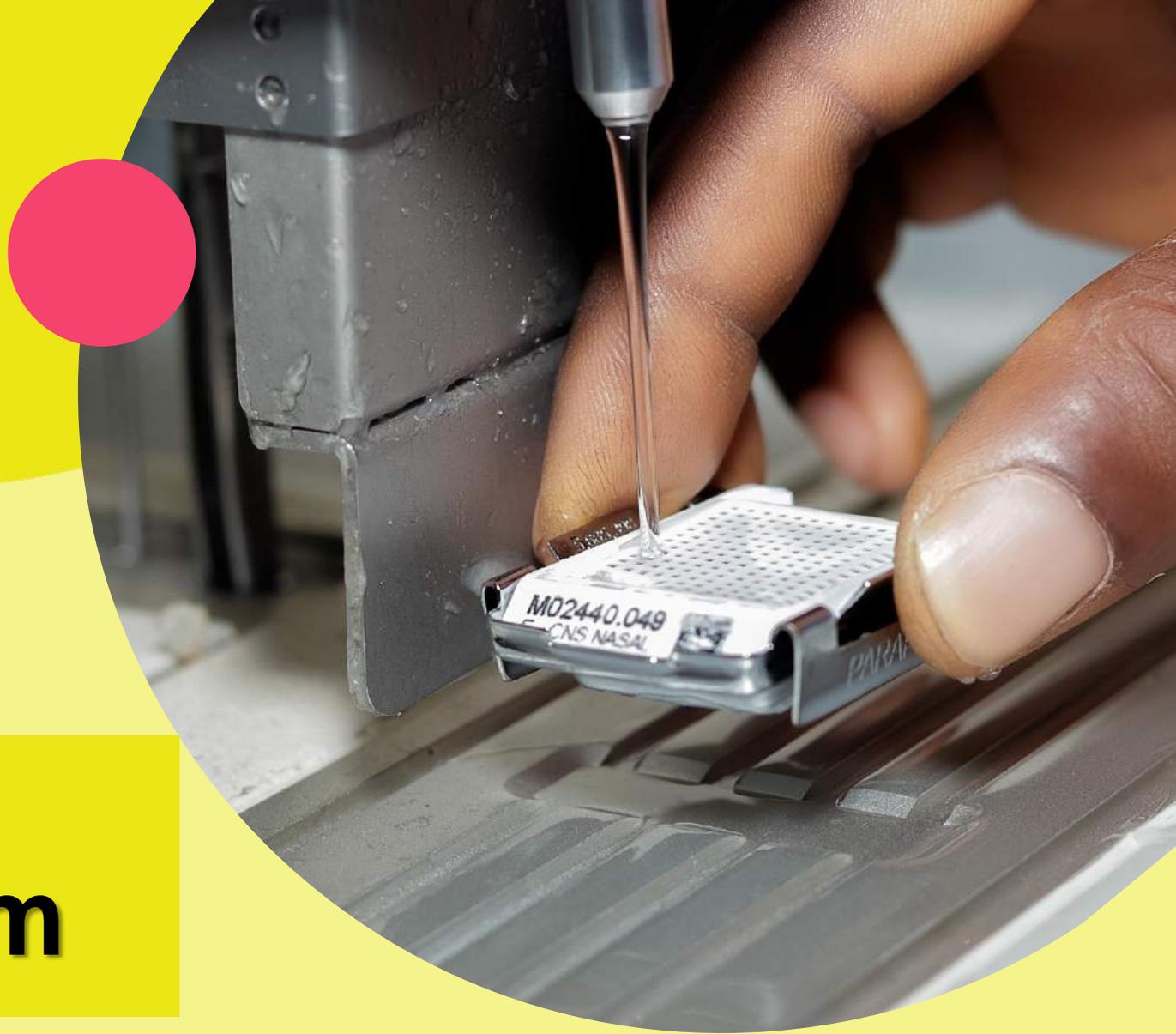
CHAMPS DeCoDe Panel - Assign Causes +
Recommendations to reduce preventable deaths

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graph TD; A[CHAMPS DeCoDe Panel - Assign Causes + Recommendations to reduce preventable deaths] --> B[CHAMPS Advisory Committee - Review and Validation of Recommendations from DeCoDe Panel]; B --> C[CHAMPS D2A WG - Implementation arm of MOH-led Public Health Actions];
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CHAMPS Advisory Committee - Review and
Validation of Recommendations from DeCoDe Panel

CHAMPS D2A WG - Implementation arm of MOH-led
Public Health Actions

CHAMPS Advisory Committee & Forum



CHAMPS Advisory Committee:

From DeCoDe panel recommendations to mortality reduction

Composition

- Comprised of CHAMPS co-directors, senior MoHS representatives, DHMT and hospital staff, CHAMPS implementing partners, representatives of national & international organizations, etc.

Central role

- To provide guidance to the MOHS in prioritizing actions outlined by the **DeCoDe panel** to prevent future childhood mortality

Specific roles

- To provide strategic advice and recommendations on queries brought forward by CHAMPS leadership
- To monitor the implementation of its recommendations through the **Data-to-Action TWG**





Embracing the Challenge:

Stakeholders Define Evidence-Informed Actions to Reduce Child Mortality in Sierra Leone



Data-to-Action Interventions (*Advisory Forum in April 2021*)

- **Goal 1: Improved quality and uptake of ANC services**
 - *Objective 1.1: Improve quality of ANC services at the facility level*
 - *Objective 1.2: Improve community awareness and demand for quality ANC services*
 - *Objective 1.3: Use learning from CHAMPS data to contribute to review and update national policy and guidelines on ANC services*
- **Goal 2: Reduced incidence of still birth and neonatal mortality**
 - *Objective 2.1: Increased proportion of delivery by skilled birth attendants*
 - *Objective 2.2: Improve community-level awareness on care of newborns and demand for services*
- **Goal 3: Reduced incidence and improved management of malnutrition and the critically ill under 5 (U5)**
 - *Objective 3.3: Use learning from CHAMPS data to contribute to review, update and harmonise existing midwifery school curricula*

Outside of the autopsy findings, systemic issues at the local level do drive child mortality!!!



CHAMPS provided accommodation for two newly-posted medical officers

- To provide better coverage for maternity and paediatric wards

Utility support for the regional hospital

- Water, electricity payments
- Generator and fuel support

Ad hoc repairs and maintenance

- Water and plumbing systems - IPC, especially during COVID
- Electrical repairs
- Mortuary fridges and ACs

Capacity building efforts

- Lab, clinical, research, etc.

Ongoing Local D2A:

01

Re-establish
monthly clinical
reviews

- Hosted by the DMO
at the MRH

02

Support to the
Quality
Improvement
team

03

Provide support
for emergency
drugs and
equipment

- At the SCBU and
Resus units

04

Disseminate CHAMPS
findings to wider health
colleagues

- Capacity building
opportunity
- UniMak, pre-service, in-
service

April 12-13, 2022: Mentoring of midwives in Makeni - CHAMPS collaboration with Seed Global Health



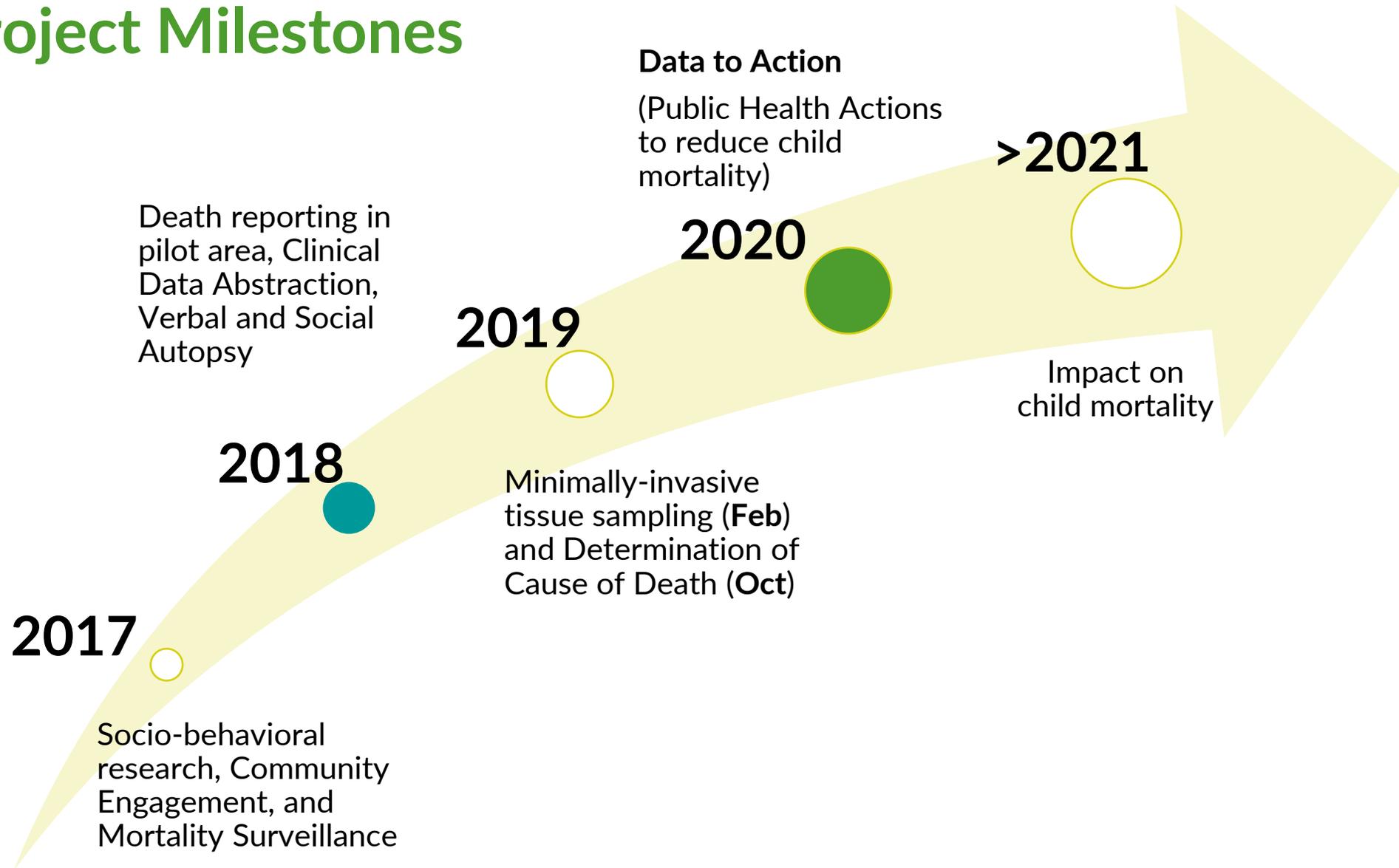
May 23-24, 2022: Mentoring of Doctors and CHO's in Makeni - CHAMPS DeCoDe expert



May 23-24, 2022: Mentoring of Doctors and CHO's in Makeni - CHAMPS DeCoDe expert



Key Project Milestones



Core CHAMPS Implementing Partners in Sierra Leone



GoSL (Ministry of Health and Sanitation)

(Co-Director + Overall Supervision)



Crown Agents in Sierra Leone

(Co-Director + Fiscal, Management & Tech Oversight; Lab, Data & Informatics)



FOCUS1000

(Social-Behavioral Science)



World Hope Intl

(Mortality Surveillance)

Echoes from 2019

Summary of Case X: *Husband's explanation: My wife started in labour but was **reluctant** to go to the hospital. ...Around midnight, labour pain increased. I took her to the hospital, and she was admitted at the maternity ward. IV fluids and injections were given.*

*The next day, delivery started with a **stuck head** after the lower extremities were delivered, only remaining the head to be delivered. I requested for C/S **but the doctor was not around** (and SACHO was also in surgery – came as quickly as possible). Finally, when the doctor came then my wife was taken to theatre and delivered a dead fetus at 4:30pm (**hydrocephalus**). Just after delivery my wife started bleeding and the doctor ordered for blood, **but before the transfusion, she passed off** at around 7pm...*

Lesson 1:

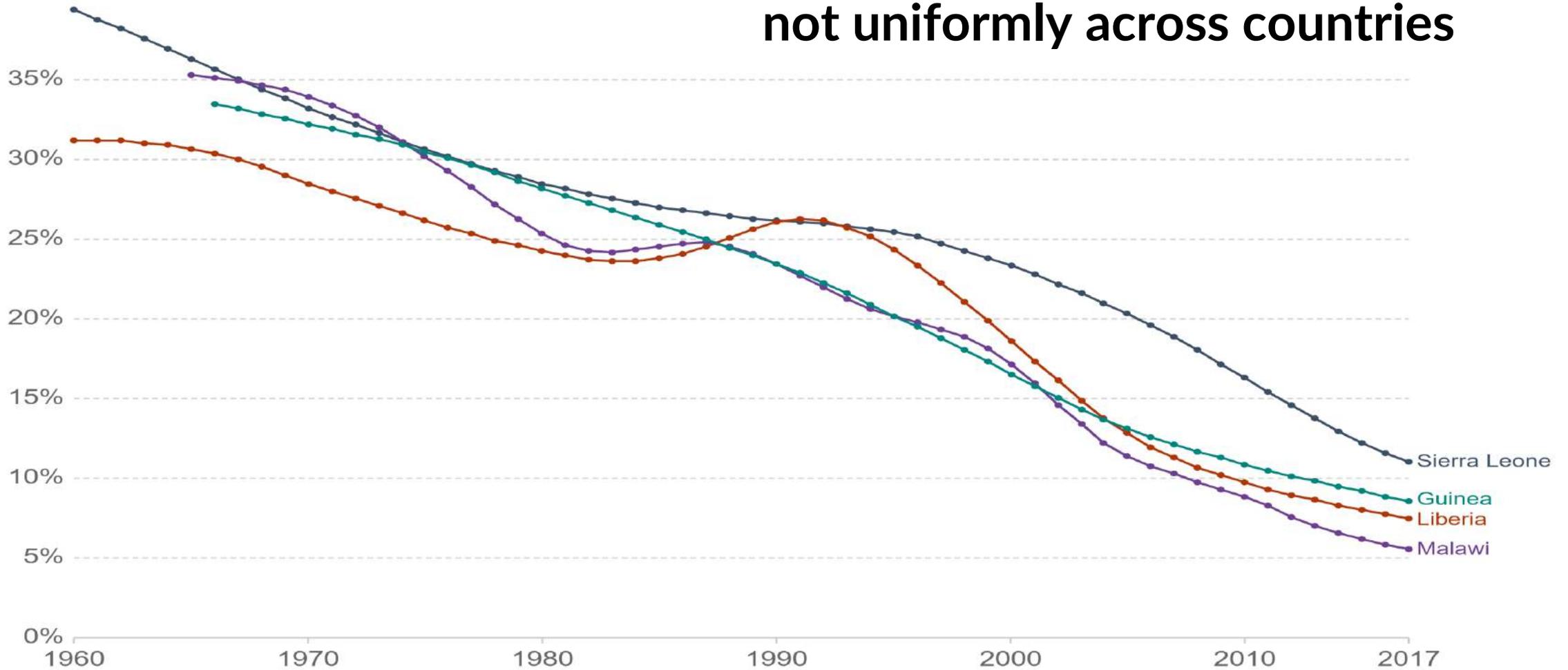
Small changes can make a big difference:

- **Leadership: Feedback loop**
- **ETAT: @MRH**

Child mortality rate

The share of newborns who die before reaching the age of five.

Progress has been made, but not uniformly across countries

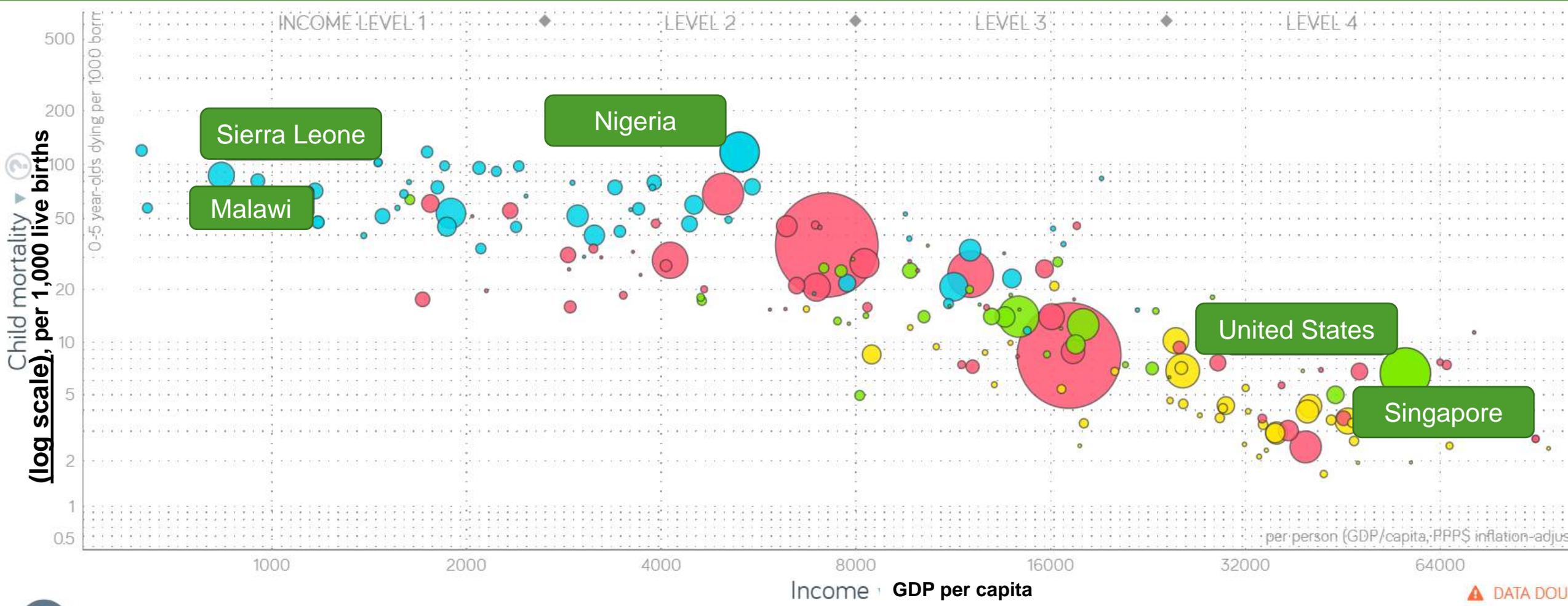


Source: UN Inter-agency Group for Child Mortality Estimation

Note: The child mortality rate expresses the probability of a child born in a specific year or period dying before reaching the age of 5 years, if subject to age-specific mortality rates of that period. This is given as the share of live births.

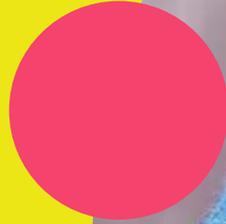
OurWorldInData.org/child-mortality • CC BY

GDP & Under-Five Mortality: Case Study of Sierra Leone

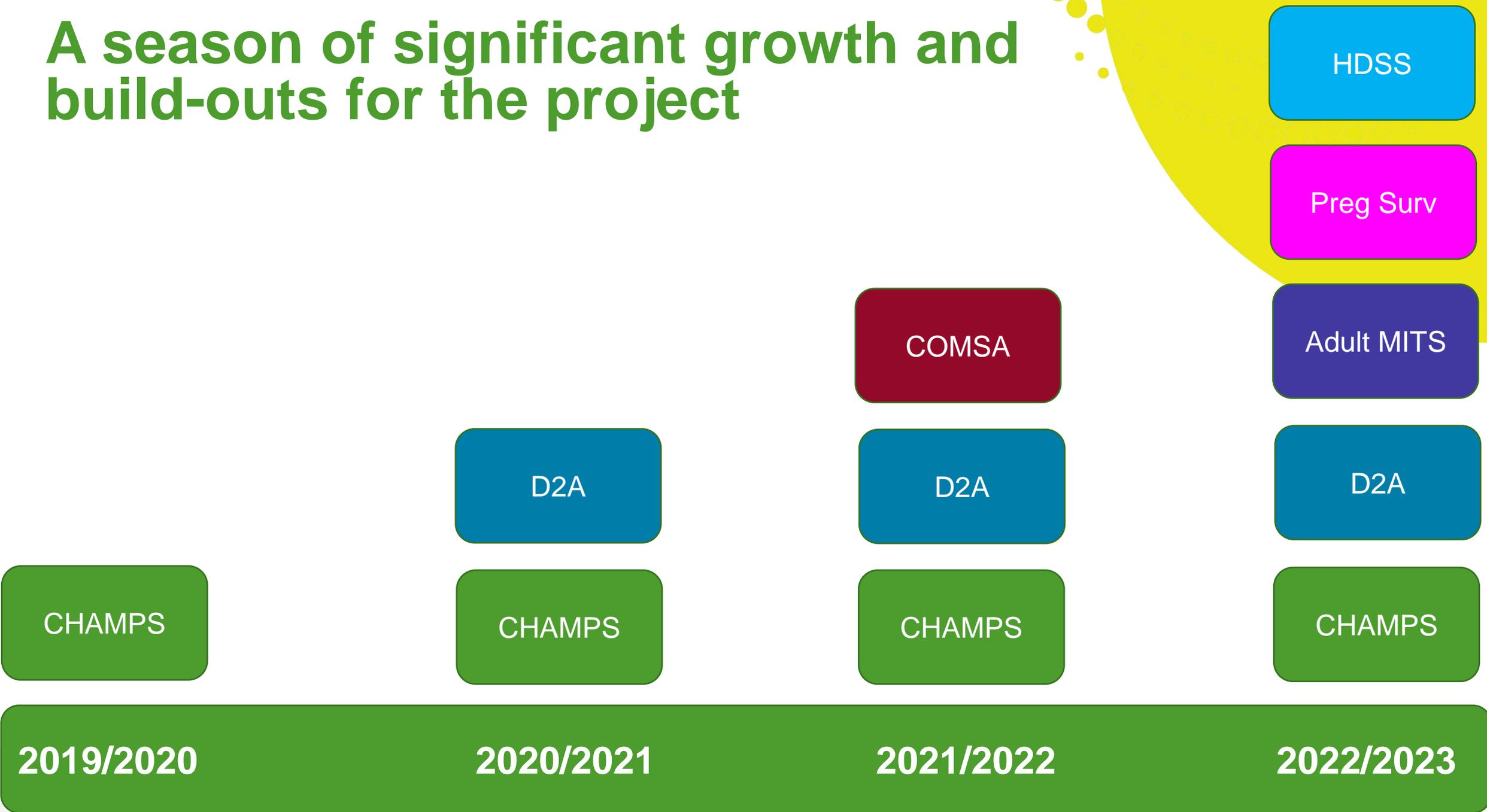


Data source: Data Visualization from GapMinder.org

**What have we been
up to since 2021?**



A season of significant growth and build-outs for the project



CHAMPS

D2A

COMSA

D2A

Adult MITS

D2A

Preg Surv

HDSS

2019/2020

2020/2021

2021/2022

2022/2023

CHAMPS

CHAMPS

CHAMPS

CHAMPS-COMSA Collaboration:

Target of 200 MITS autopsies, attained 3 months ahead of schedule!

CHAMPS

Child Health and Mortality
Prevention Surveillance

**High-precision cause of death
identification**

Fine-grained data on causes of death among children under five, supported by analyzing samples collected using the Minimally Invasive Tissue Sampling (MITS) procedure.

Precise &
scalable
mortality
surveillance

COMSA

Countrywide Mortality
Surveillance for Action

**Representative sample to provide
high quality VA information on
births and deaths**

A robust sample registration system that captures the data that allows for calculation of mortality rates, birth rates, and cause-specific mortality fractions at the national and sub-national levels.

CDAs versus MITS as Post-mortem Diagnostic Tools

Complete diagnostic autopsies (CDAs) remain the gold standard

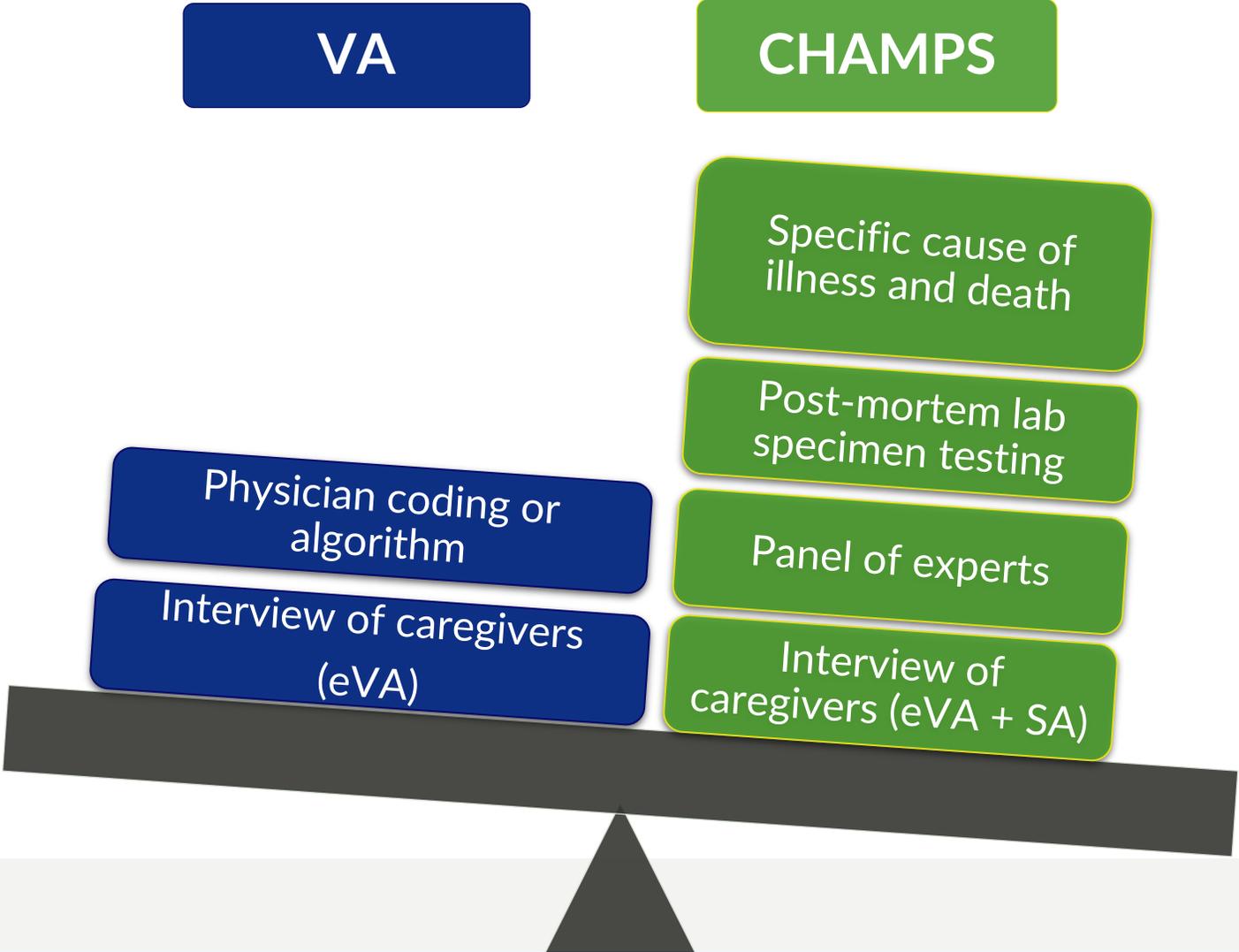
- However, they are expensive, substantially delay time to burial, and can present cultural barriers

Promise in a quicker, less expensive, non-disfiguring, needle-based sampling approach

- Minimally invasive tissue sampling (MITS, also known as minimally invasive autopsies, MIA) has been well-acceptable to parents and communities

Reasonably high correlation between MITS and CDAs, especially for infectious diseases

CHAMPS Aims to Help Bridge Some of the Known Limitations of Verbal Autopsies (VA)





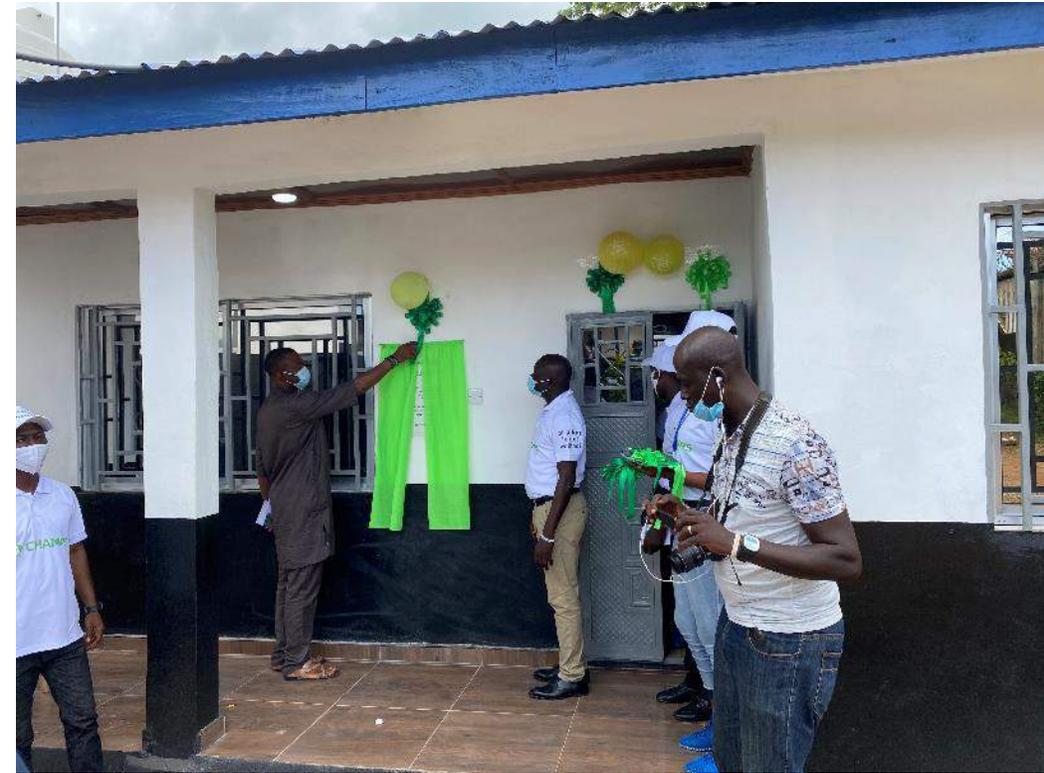
COMSA office



Patient waiting area



Mortuary Extension





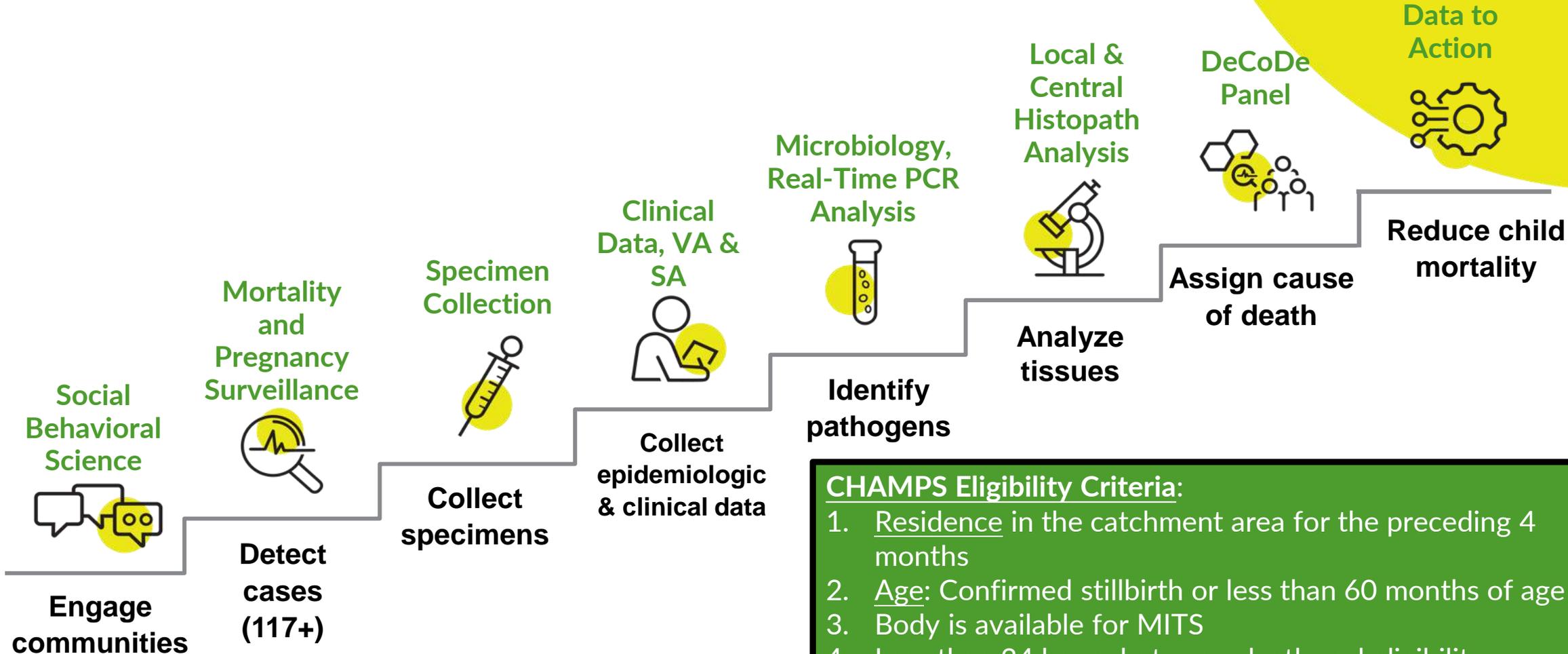
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CHAMPS Methodology

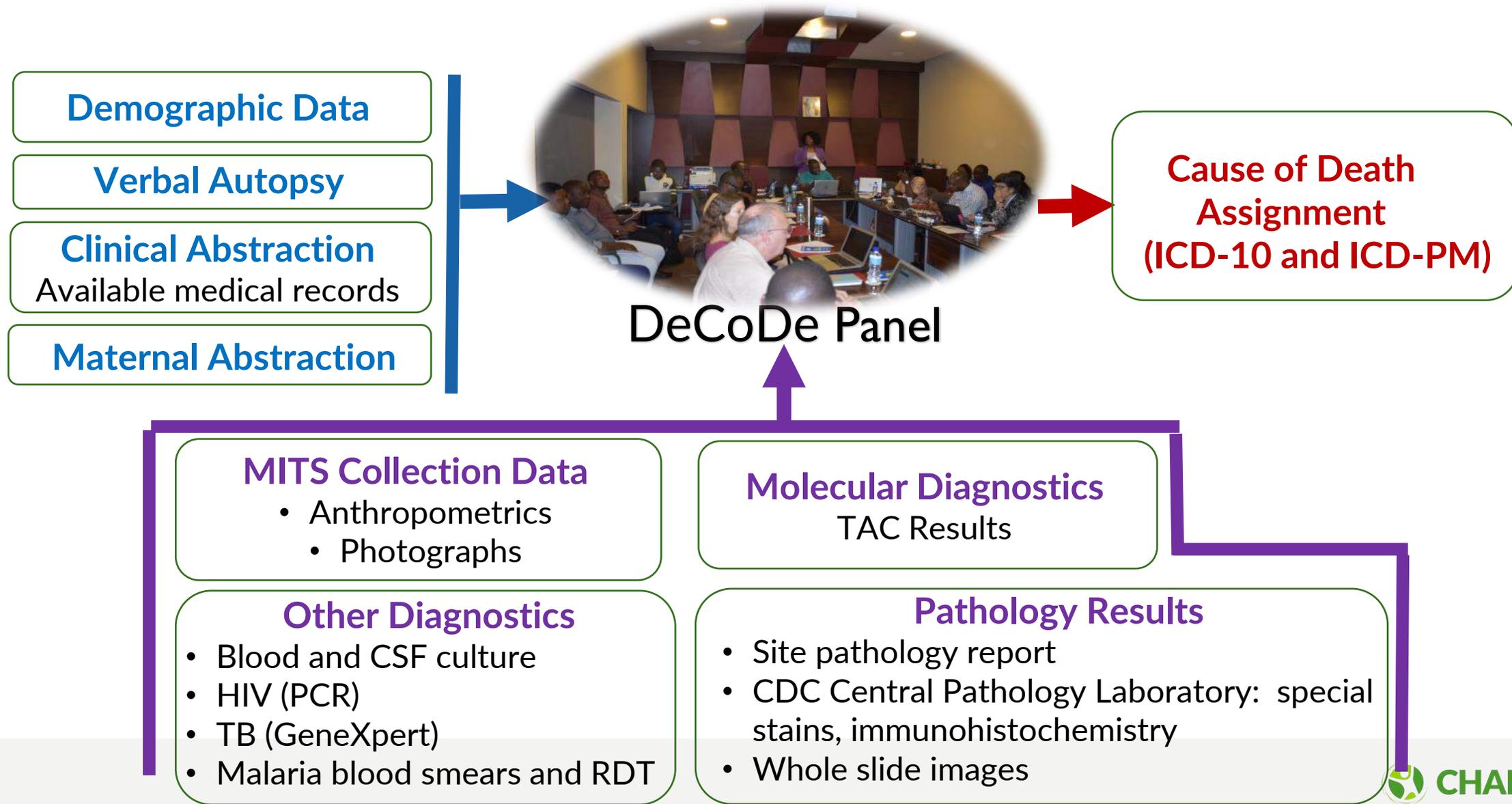


CHAMPS Methods Encompass Community Engagement, Surveillance, Laboratory, Public Health Action

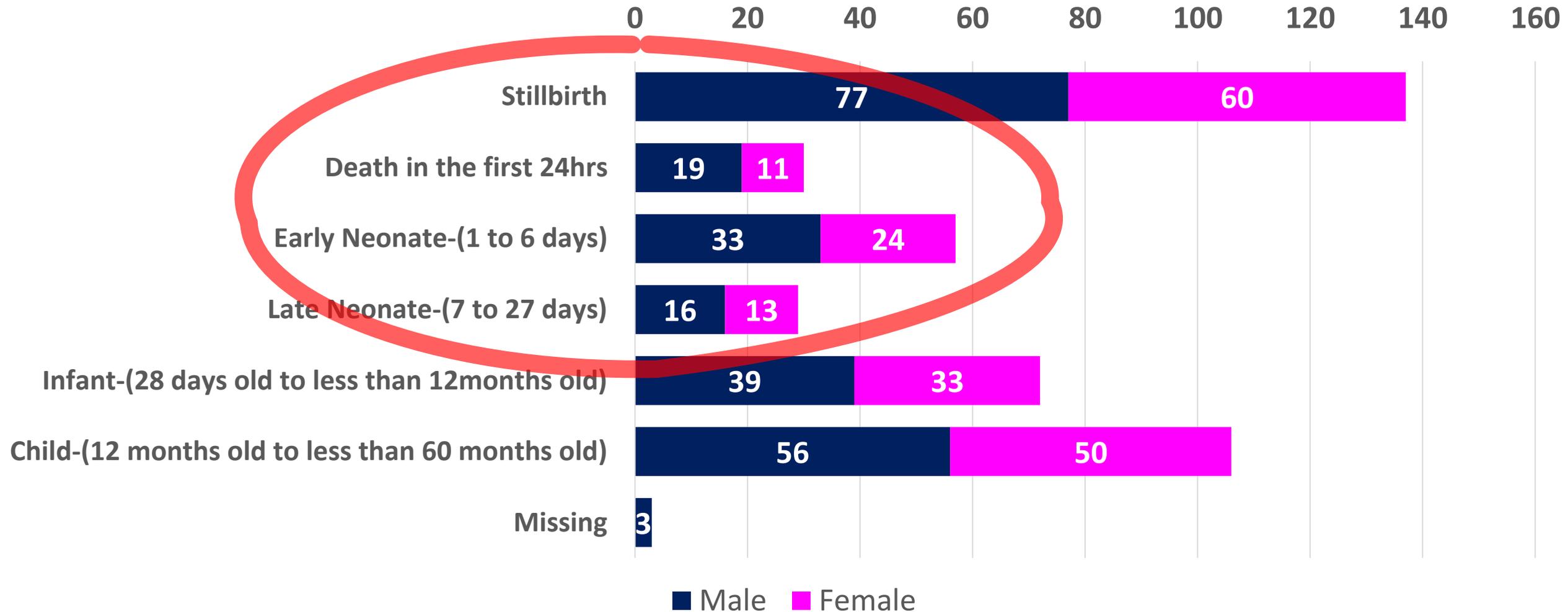


- CHAMPS Eligibility Criteria:**
1. Residence in the catchment area for the preceding 4 months
 2. Age: Confirmed stillbirth or less than 60 months of age
 3. Body is available for MITS
 4. Less than 24 hours between death and eligibility screening/ consent

Determination of Cause of Death (DeCoDe)



No. of MITS by Gender and Age (n = 434)



**Causes of Death Among
DeCoDe'd Cases
(n = 310 of 434)**



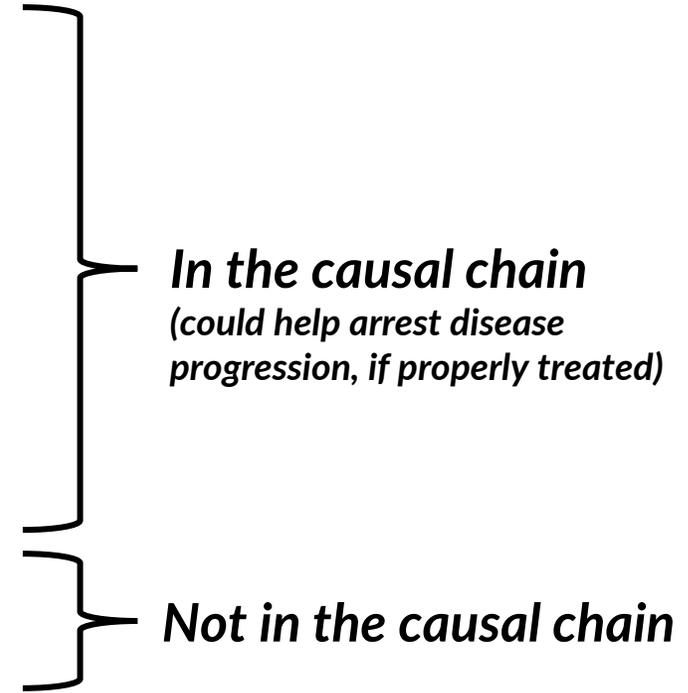
FRAME A:

► Medical data: Part 1 and 2

1. Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line		► Cause of death	► Time interval from onset to death										
		a	b	c	d								
		Due to:											
		Due to:											
		Due to:											
2. Other significant conditions contributing to death (time intervals can be included in brackets after the condition)													



Part 1	a Immediate cause of death <i>“the disease or complication which <u>directly preceded</u> or directly led to death”</i>
	b-c Morbid causes of death
	d Underlying cause of death <i>“disease or injury that <u>initiated</u> the train of events leading directly to death, or circumstances of accident or violence which produced the fatal injury”</i>
Part 2	Significant contributor <i>Other conditions that contribute to death</i>



Stillbirths: Underlying Cause of Death (n=99)



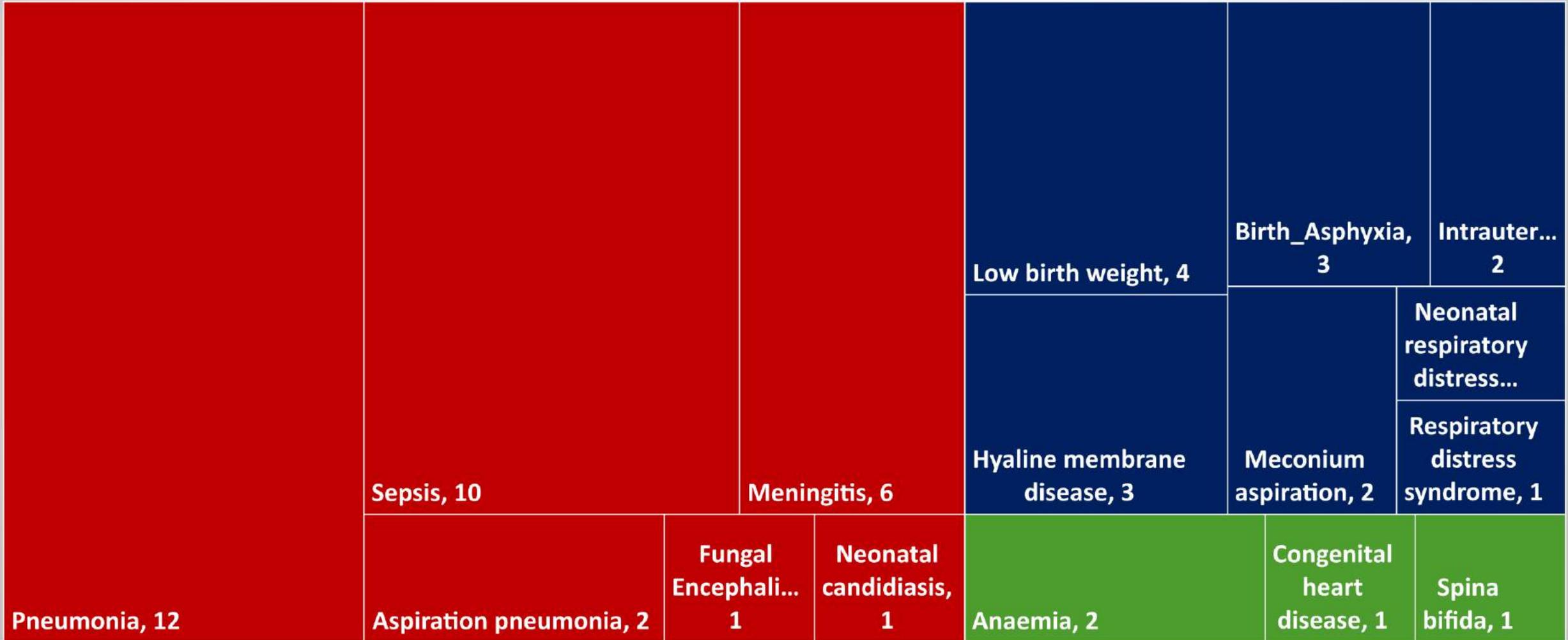
■ Communicable ■ Maternal, Neonatal, Nutritional ■ Noncommunicable ■ Undetermined

Neonates: Underlying Cause of Death (n=82)

Maternal, Neonatal, Nutritional	Intrauterine_hypoxia, 15	Prematurity, 10			Sepsis, 14	
		Congenital Malforma... 4	Meconiu... aspiration, 2	Prune belly syndrome, 2	Pneumonia, 4	
			Resp... distr... synd... 1	Low birth weig... 1	Other pret... births, 1	Asp Pneu, 1
		Birth_Asphyxia, 21				

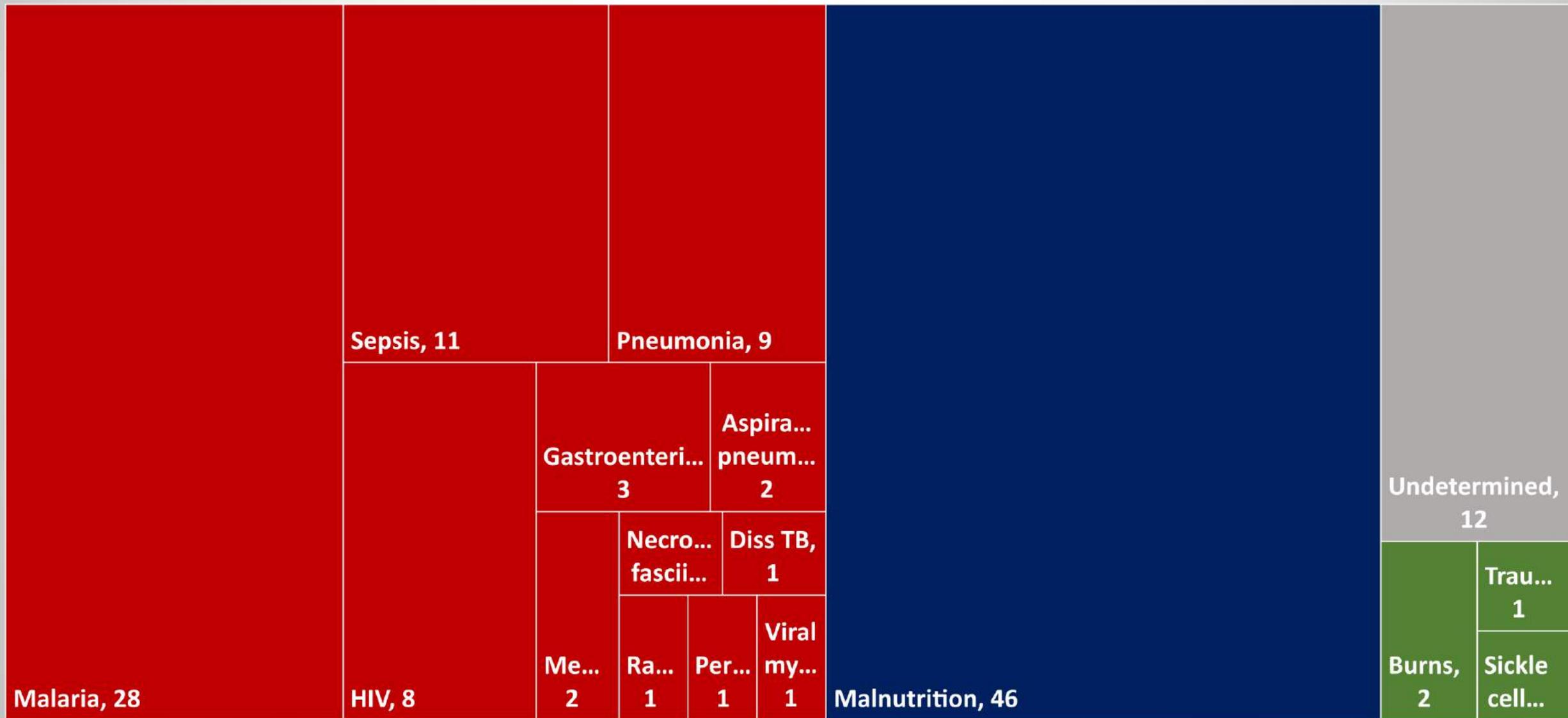
■ Communicable ■ Maternal, Neonatal, Nutritional ■ Undetermined

Neonates: Immediate Cause of Death (n=52)



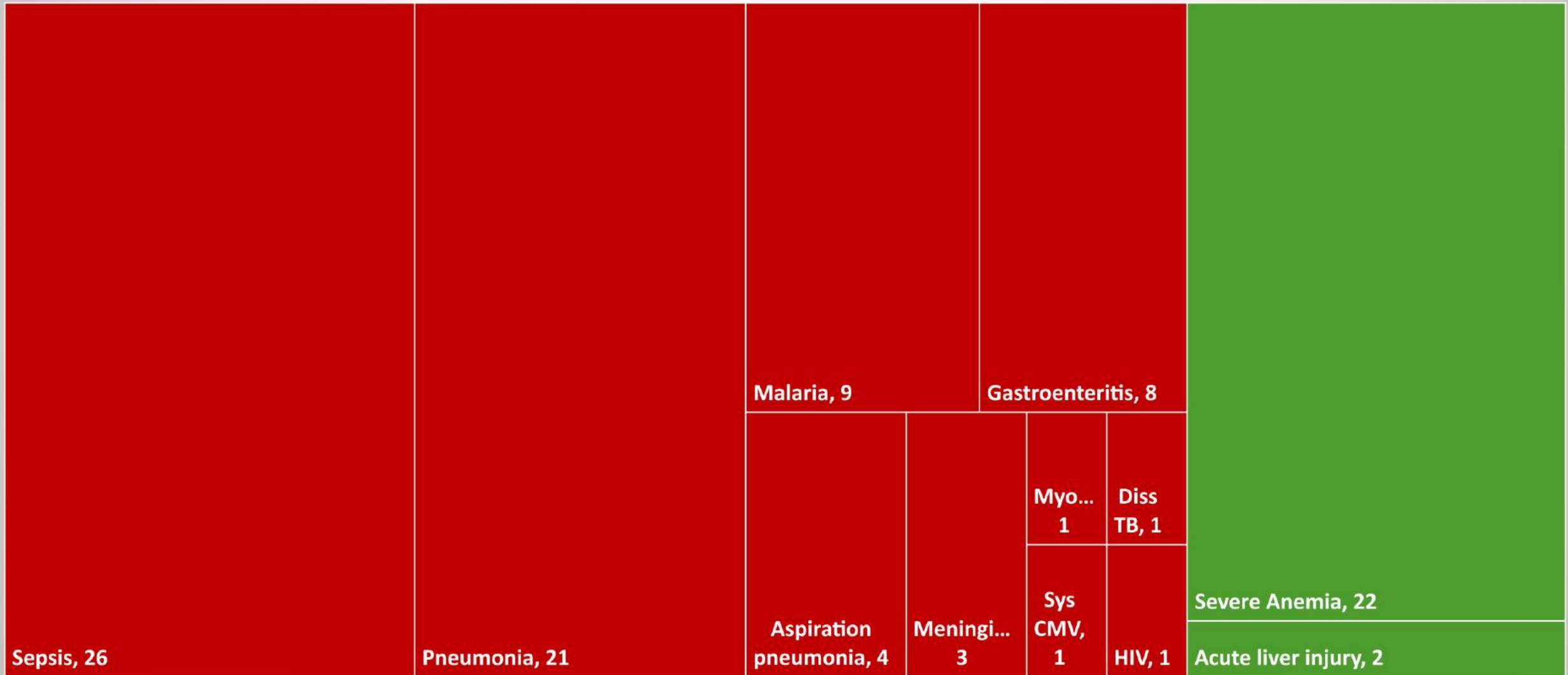
■ Communicable
 ■ Maternal, Neonatal, Nutritional
 ■ Noncommunicable

Infants & Children: Underlying Cause of Death (n=130)



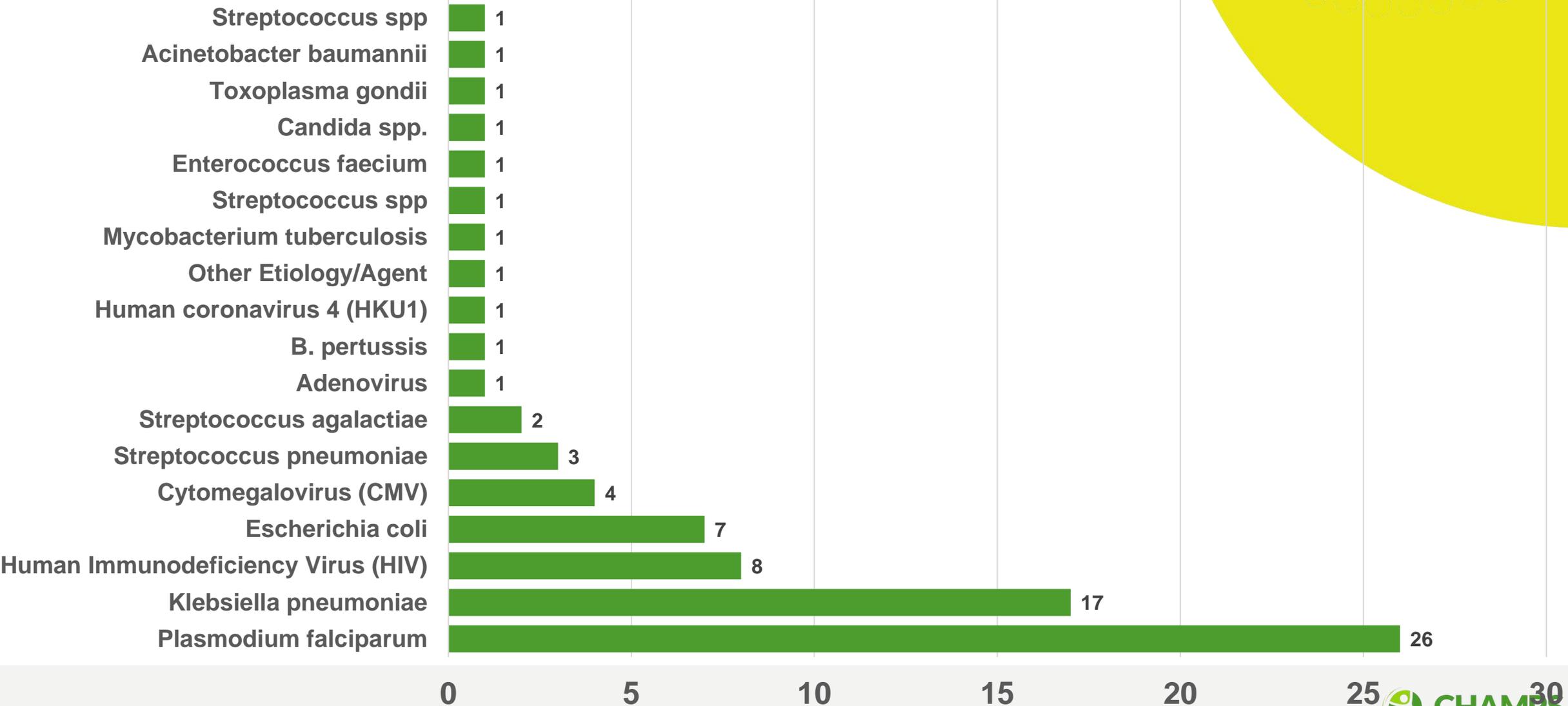
■ Communicable
 ■ Maternal, Neonatal, Nutritional
 ■ Noncommunicable
 ■ Undetermined

Infants & Children: Immediate Cause of Death (n=99)

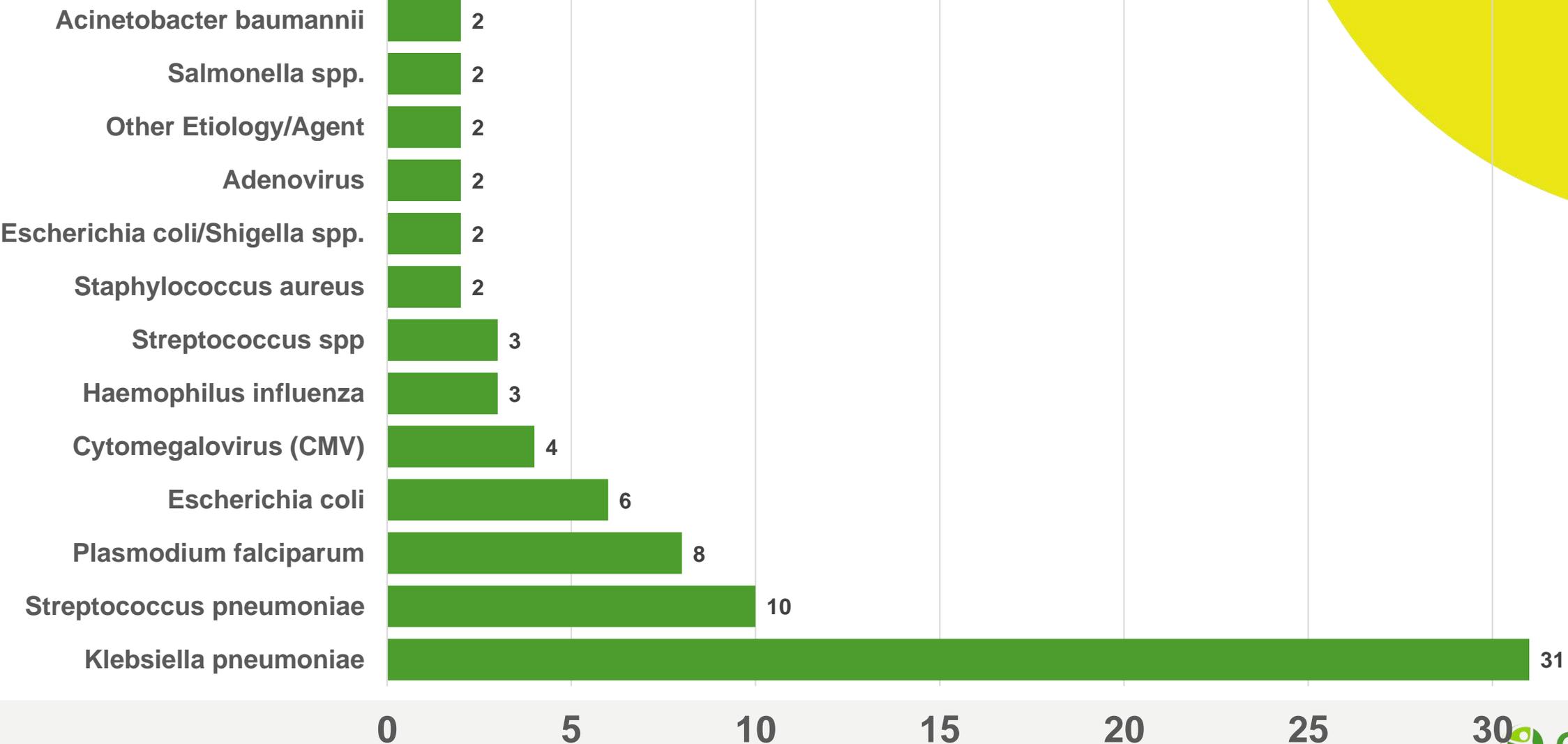


■ Noncommunicable ■ Communicable

Common pathogens associated with infectious Underlying COD (n= 71)

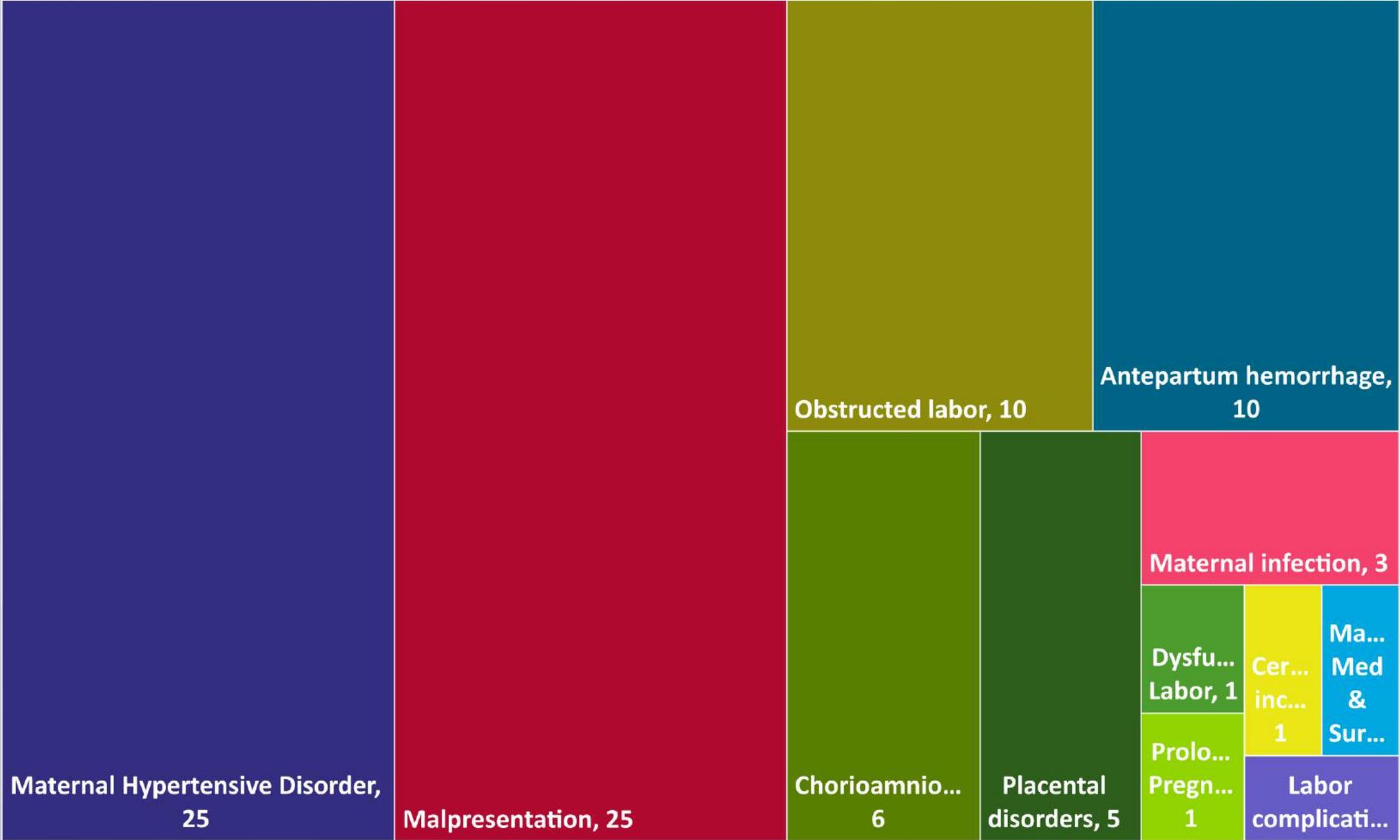


Common pathogens associated with infectious Immediate COD (n= 77)





Main Maternal Conditions (n=89)



Malnutrition in the Causal Pathway of DeCoDe'd U5 Deaths in Sierra Leone

Case Type	n	Malnutrition as Underlying Cause	Malnutrition in Causal Chain	Total in Causal Chain	% in Causal Chain
Children (12 mo. to <60 mo.)	80	25	11	36	45%
Infants (28 days to <12 mo.)	50	20	4	24	48%
Total	130	45	15	60	46%

For cases where malnutrition was the underlying cause, the leading comorbid conditions are as listed below

	n	%		n	%
Anaemia	28	27%	Bronchopneumonia	4	4%
Sepsis	22	21%	Sickle cell disease	1	1%
Malaria	18	17%	Meningitis	1	1%
Pneumonia	11	11%	Viral bronchiolitis	1	1%
Gastroenteritis	10	10%			

Echoes from 2019

Summary of Case Y (15 day old neonate): My baby had fever throughout Tues. night, and I took him to hospital on Wed. for treatment. At the facility, he was admitted, treatment and oxygen were given **but I had to buy 9 cannulas** to aid the treatment. The fever continued, followed by convulsion. The nurses asked us **to buy medicine and a cup for breastmilk**, which added up to Le 85,000.

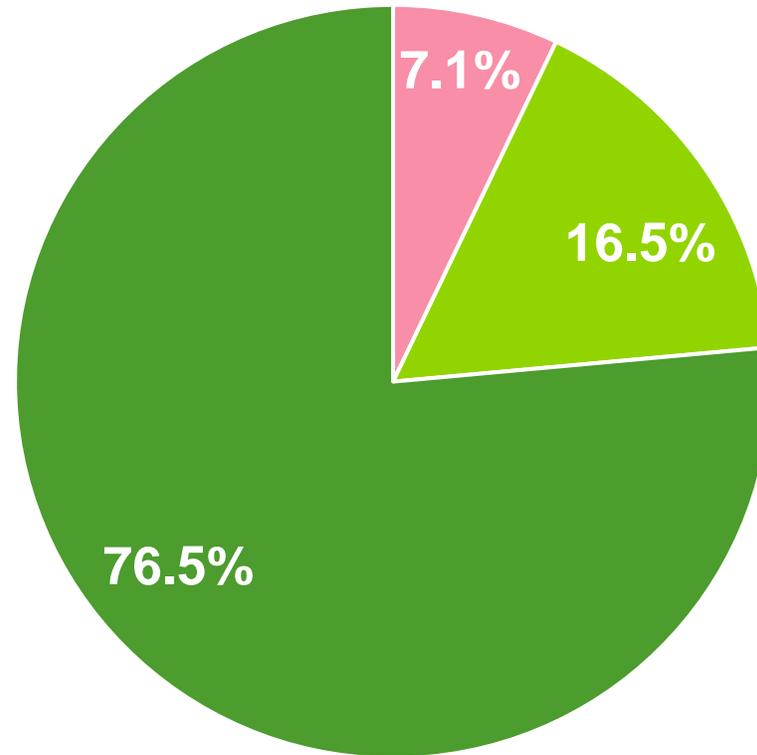
My sister and I told them that **we didn't have that amount**, but we begged them to continue treatment and we will pay later. But they were not willing to accept. Someone had to lend us some amount and we had to pay the sum that was available **before they started treatment**. After which we were asked to wait outside of the ward while they treated the baby and I squeezed breast milk into a cup for the nurses to feed the child later. My child died later that day. **I was asked by the mortuary to pay Le 150,000 to release the body.**

Lesson 2:

Access to prompt and quality healthcare services can make a big difference:

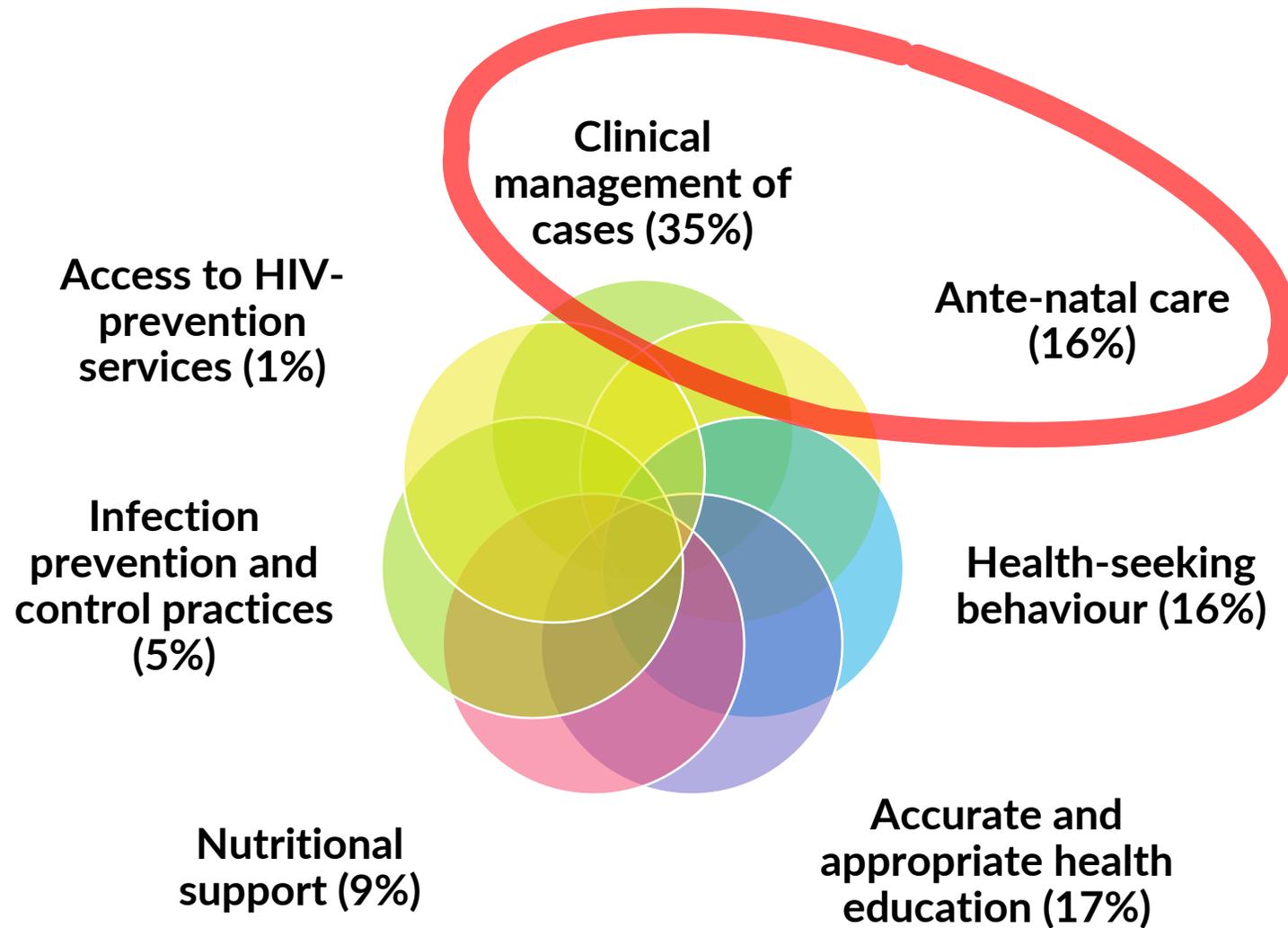
- Socio-economic barriers
- Partnership & local support

Proportion of Preventable Deaths Among DeCoDe'd Cases (n = 310)



■ No ■ Possible under certain circumstances ■ Yes

Expert DeCoDe Panel Recommendations: Public Health Improvements (n = 310)





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Looking ahead...

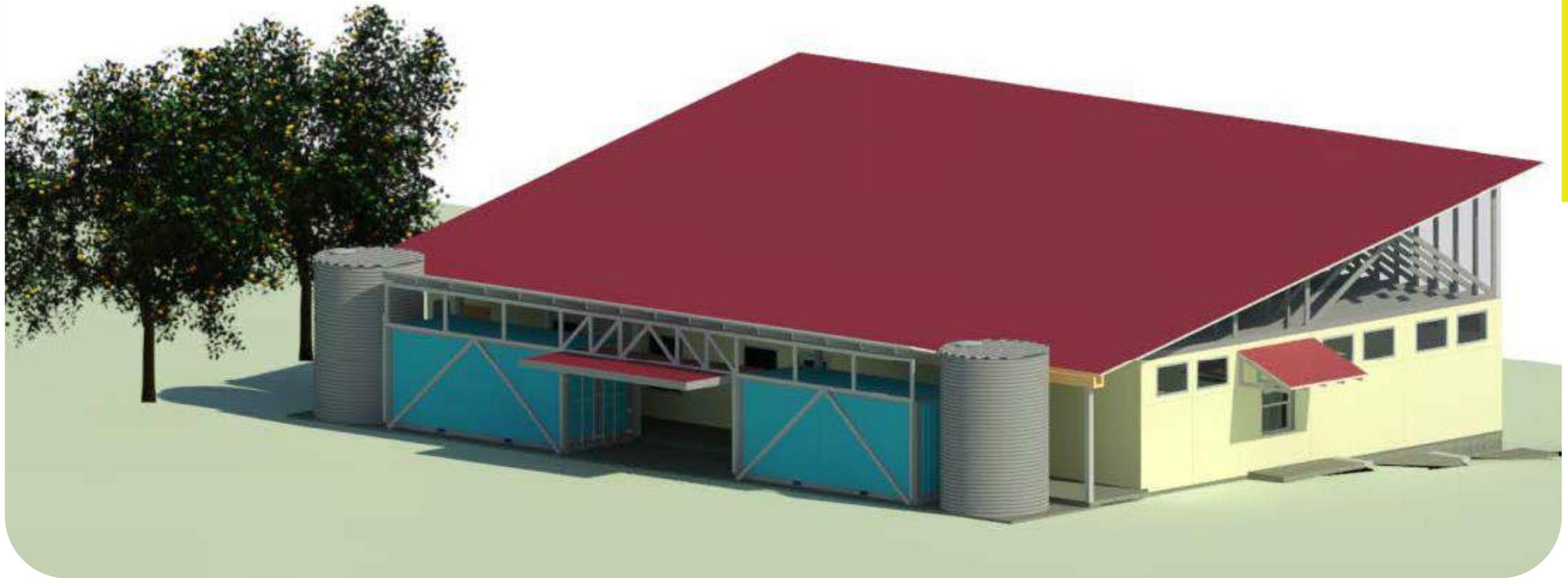


Looking ahead – 2022 and Beyond

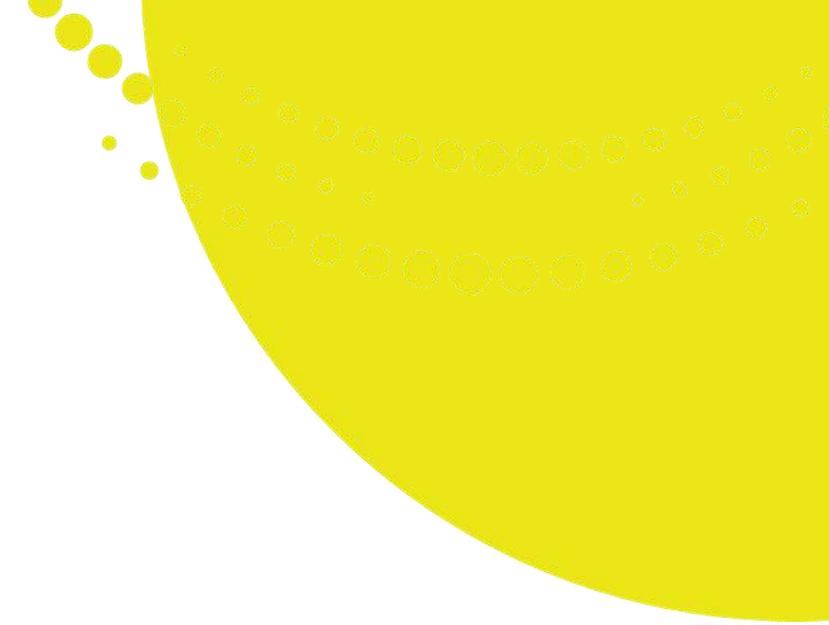
- **Additional Data-to-Action Interventions**
 - Local and National Data-to-Action working groups
 - Implement proposed interventions to reduce child mortality
 - In collaboration with the NPHA and MOHS
- **Continue Lab Support**
 - Histopathology Lab at Connaught
 - Equipment, Supplies, Training
 - Antimicrobial Testing at Makeni
 - High-end equipment
 - SCBU, Collaborate with Fleming Fund
- **Establish Additional Surveillance Systems in Bombali**
 - Pregnancy Surveillance System (PSS)
 - Health and Demographic Surveillance System (HDSS)
- **Support Research on Adult Malaria using MITS**
 - In collaboration with the COMSA team



Official Commissioning of New (CHAMPS) Lab Coming Soon!

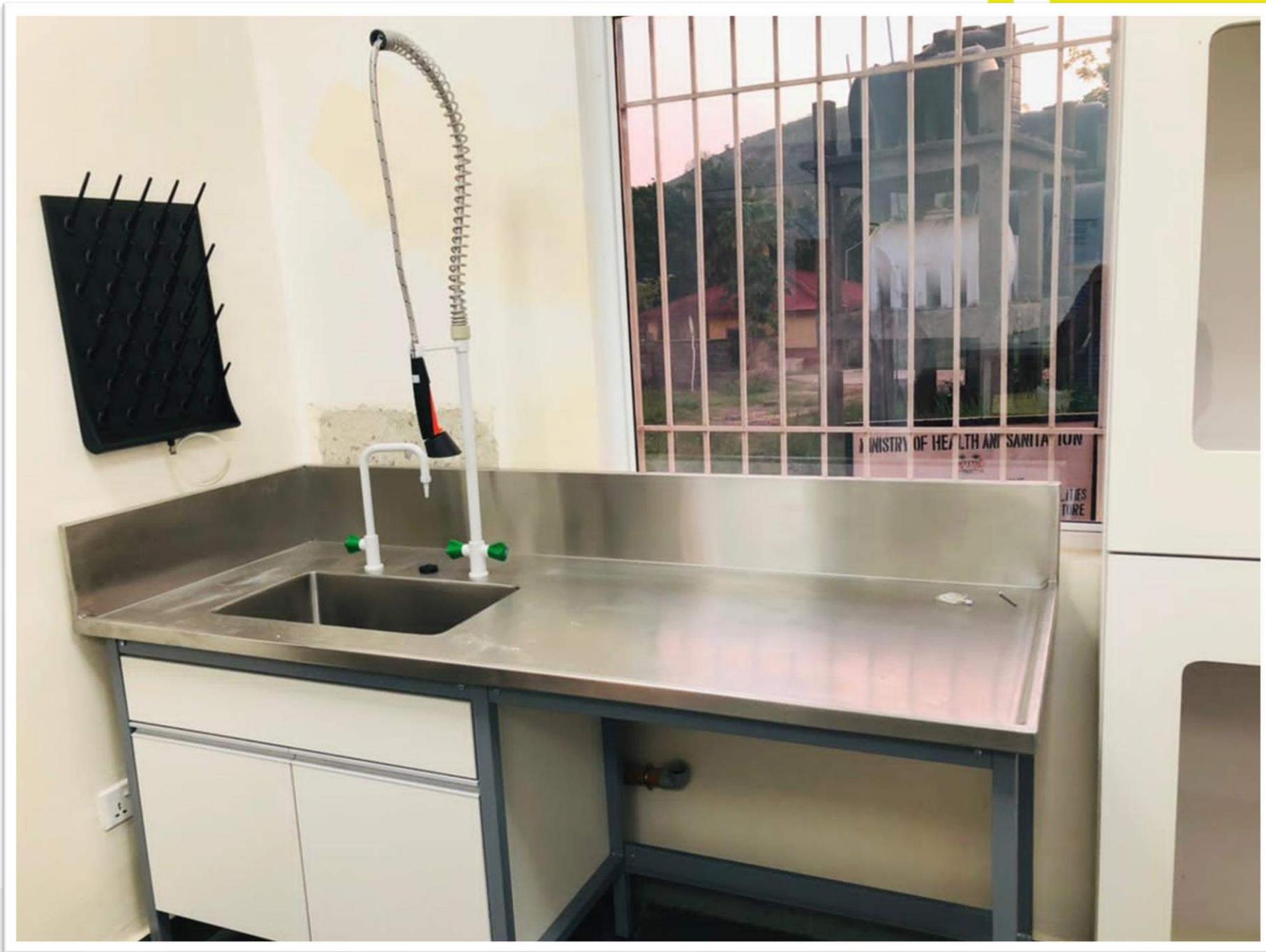














How can you collaborate with CHAMPS?

Subscribe to
the CHAMPS-
SL newsletter

Participate in
CHAMPS
working
groups

Data-to-Action
funding
opportunities

Joint research,
thesis, joint
publications

CHAMPS Sierra Leone
Newsletter



MINISTRY OF HEALTH
AND SANITATION



CROWN AGENTS



icap

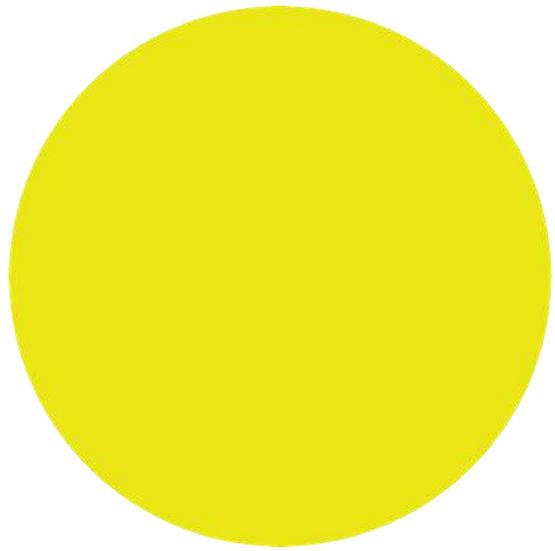


WORLD HOPE
INTERNATIONAL



FOCUS
1000





Tenki



Questions, Comments

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www.champshealth.org

