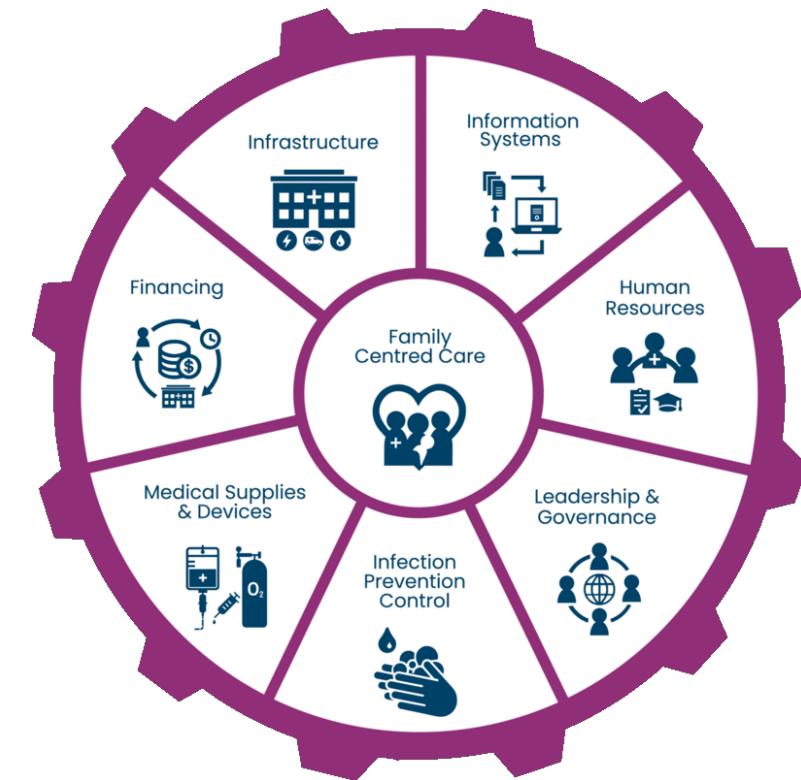


IMPLEMENTATION TOOLKIT

Small and sick newborn care

Implementation Learning Seminar Series

<https://newborntoolkit.org>



FIRST Seminar!

Implementation Learning Seminar Series

Welcome to the **NEST360/UNICEF Newborn Toolkit** joint learning community!

The aim of the series is to encourage collaborative learning for the advancement of small and sick newborn care.

This seminar series, structured around the **Health System Building Blocks (HSBBs)**, is linked to the NEST360/UNICEF Newborn Toolkit:

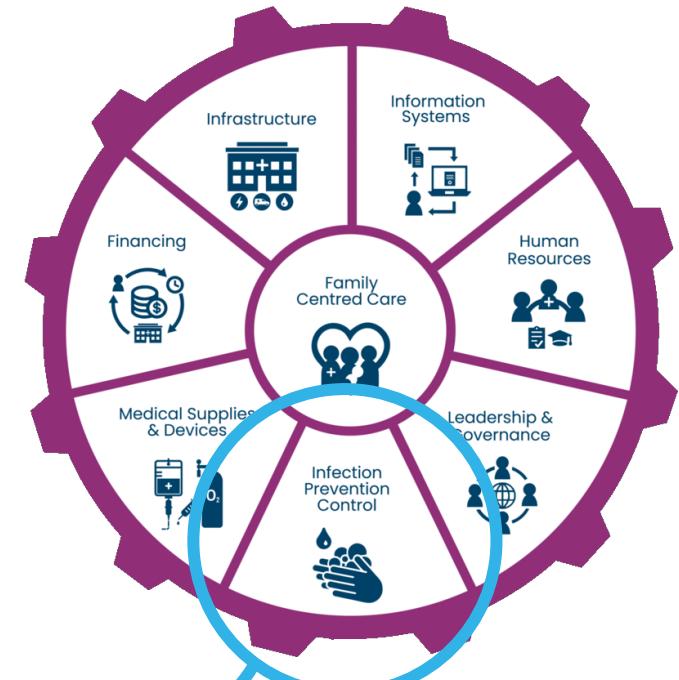
Please sign up to our toolkit newsletter:

<https://newborntoolkit.org>

<http://eepurl.com/hLb8lr>

The first HSBB is **Infection Prevention and Control (IPC)**

Join the **IPC HSBB group** and wider group to share ideas, tools and inputs.



NOW: First Toolkit Seminar!

INFECTION PREVENTION & CONTROL

Closing the neonatal infection detection gap: from data and evidence to action



Interactive Seminar
Hosted by IPC Health System Building Block team
26 April 2022

Overview

1 Introduction

Dr Kondwani Kawaza, Kamuzu University of Health Sciences

2 Neonatal infection culture gap: how big, where, and why?

Dr James Cross, London School of Hygiene & Tropical Medicine

Dr Sarah Collins, London School of Hygiene & Tropical Medicine

3 Creating a “culture of doing cultures” in Tanzania

Dr Nahya Salim, Muhimbili University of Health and Allied Sciences

Dr Aisa Shayo, Kilimanjaro Christian Medical Centre

4 Group discussions and feedback

How can we close the infection detection gap in the ward, laboratory and at the interface?

Discussion hosted by:

Prof Joy Lawn, London School of Hygiene & Tropical Medicine

Dr Nahya Salim, Muhimbili University of Health and Allied Sciences



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Newborn Survival: A Global Priority

The Burden

2.4m

Number of global annual newborn deaths¹



~80%

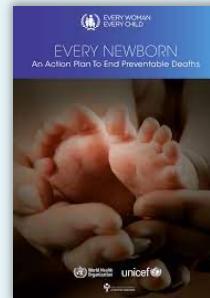
Percentage of neonatal deaths that are preventable or treatable

The Response



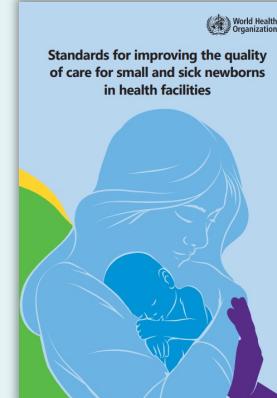
SDG Target 3.2 NMR
 $\leq 12/1000$ live births by 2030

ENAP Target
80% districts to have a facility providing level two newborn care by 2025



What Needs to be Done?

WHO standards of care for small and sick newborns (2020)



Why is Infection Important?

30 million

Estimated number of small and sick newborns requiring admission each year²



BUT **HCAIs and AMR** are a major threat to gains being made in newborn survival

Abbreviations: SDG; Sustainable Development Goal, NMR; neonatal mortality rate, ENAP; Every Newborn Action Plan, WHO; World Health Organisation, HCAI; healthcare-associated infection, AMR; antimicrobial resistance

References: 1. Levels and trends in child mortality: Report 2021. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME) 2. WHO: Survive and Thrive: Transforming Care for every Small and Sick Newborn.

HCAI & AMR: Major Threat to Neonate Survival

HCAI incidence in inpatient newborn care units in LMICs is estimated to be

9 times

higher than in high-income settings¹

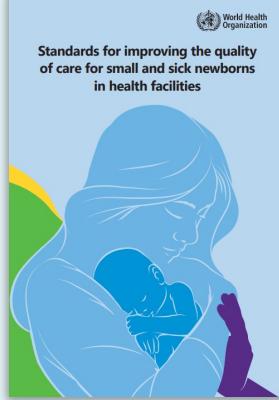


Estimates from south Asia indicate that:

56,524 neonates in India and 25,692 in Pakistan



die each year from **resistance-attributable** neonatal sepsis deaths caused by bacteria resistant to first line antibiotics²



Quality statement
1.12 speaks specifically to standards for neonatal infection management in facilities

Management Cornerstones

1. Preventative strategies
2. Early detection
3. Appropriate antibiotic prescribing & supportive care

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Managing Newborns with Infections

1 Preventing & Controlling Neonatal Infections

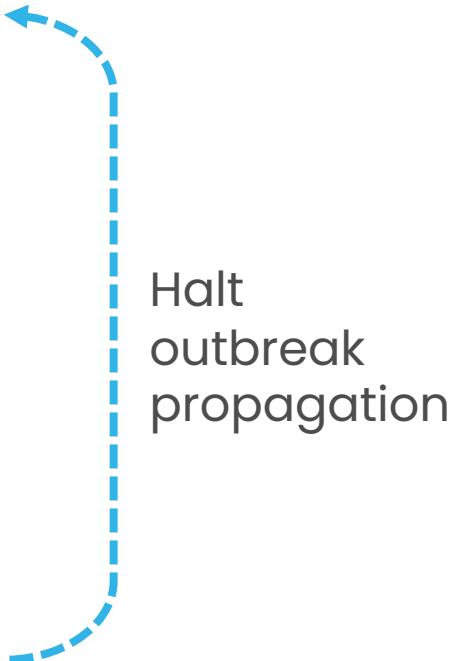
Preventing patients and health workers from being harmed by avoidable infections

2 Infection Detection

Ascertainment of true cases to guide treatment and care

3 Care for Neonatal Infections

Care of neonates with infection using internationally accepted care standards - advocated by WHO



Managing Newborns with Infections

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3 Care for Neonatal Infections

Care of neonates with infection using internationally accepted care standards – advocated by WHO

Infection prevention and care bundles addressing health care-associated infections in neonatal care in low-middle income countries: a scoping review

Alexandra Molina Garcia, MPH,^a James H. Cross, PhD,^{a,*} Elizabeth J.A. Fitchett, MPH,^b Kondwani Kawaza, FCP,^c Uduak Okomo, PhD,^d Naomi E. Spotswood, MIPH,^e Msandeni Chiume, FCP,^c Veronica Chinyere Ezeaka, FWACP (Paed),^f Grace Irimu, PhD,^g Nahya Salim, PhD,^h Elizabeth M. Molyneux, FRCPCH,^c and Joy E. Lawn, PhD^{a,*}, with the NEST360 Infection Prevention, Detection and Care Collaborative Group

This is the **first scoping review to synthesize all published literature on neonatal infection prevention, detection and care bundles** addressing HCAI in LMICs:

- Five electronic databases
- 3,619 records screened
- 44 eligible studies identified

Key Finding: Detection elements were a major gap (Fig 1).



Acknowledgement:
Alexandra Molina Garcia

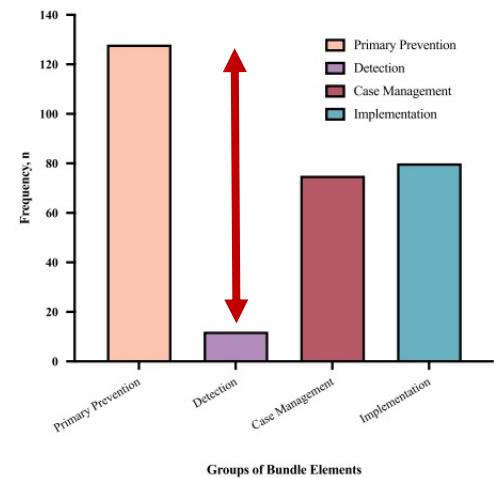


Fig 1: Frequency of the groups of bundle elements.

Published in Lancet EClinical medicine doi: <https://doi.org/10.1016/j.eclinm.2021.101259>

Detection of Neonatal Infection

Microbiological Culture (i.e., Blood/CSF)

'Gold standard' definitive diagnostic for neonatal sepsis.

Considered **standard practice** for neonatal sepsis in resource-rich settings (NICE guideline, 2021).

Challenges to culture use:

- **Ward:** Contamination, consumables, norms, trained personnel
- **Laboratory:** Consumables, procedures
- **Interface:** Time-lag, communication

Key messages:

- Culture is doable
- Communication between ward & lab is essential for QI
- Effective culture use = key component of newborn infection care



Point-of-Care Test (POCT)

Area for innovation – not yet standard care practice.

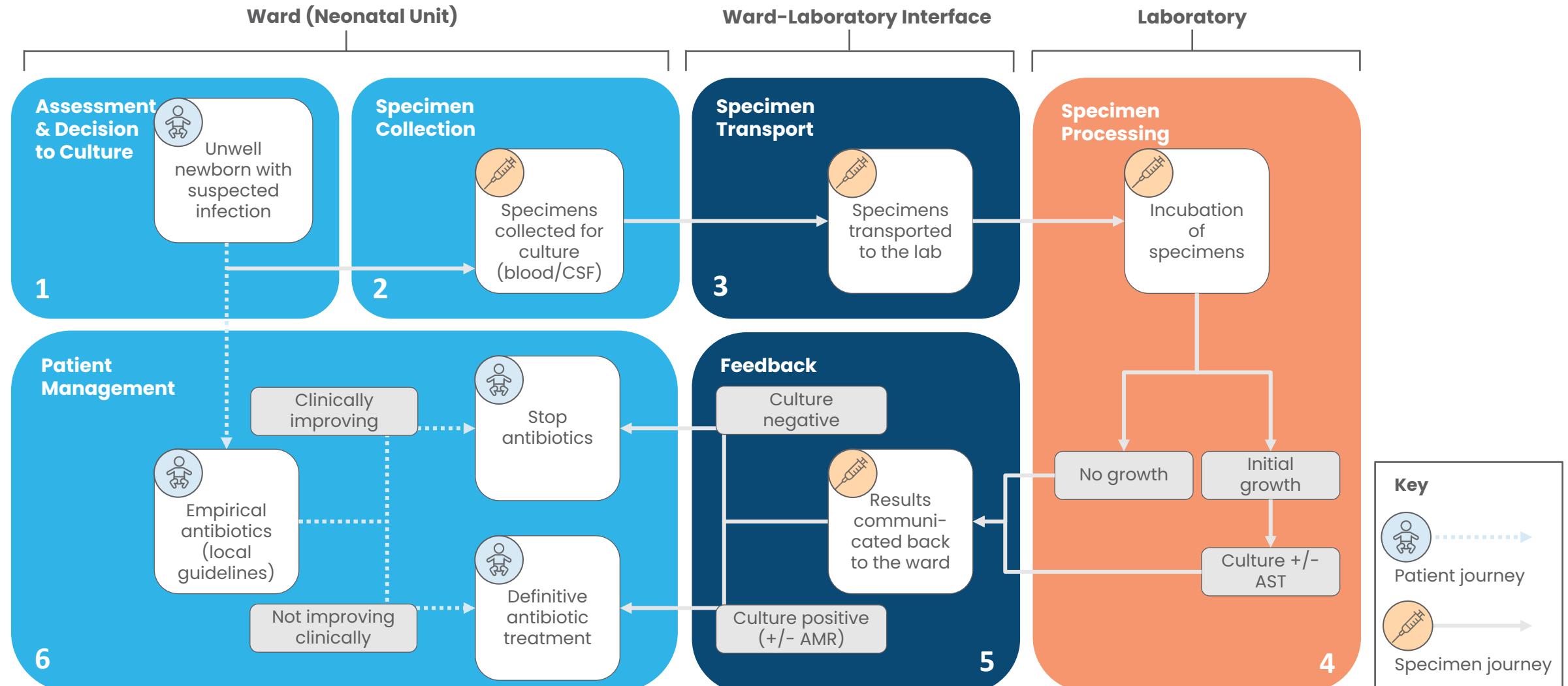
Challenges to POCT development:

Needs to be cheap, specific, & sensitive

Not testing for a single organism

Lack of data points to estimate the utility of a POCT

Neonatal Blood Culture: A Collaborative Process



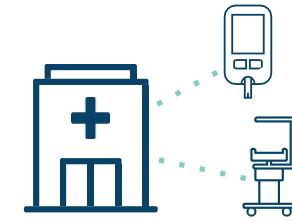
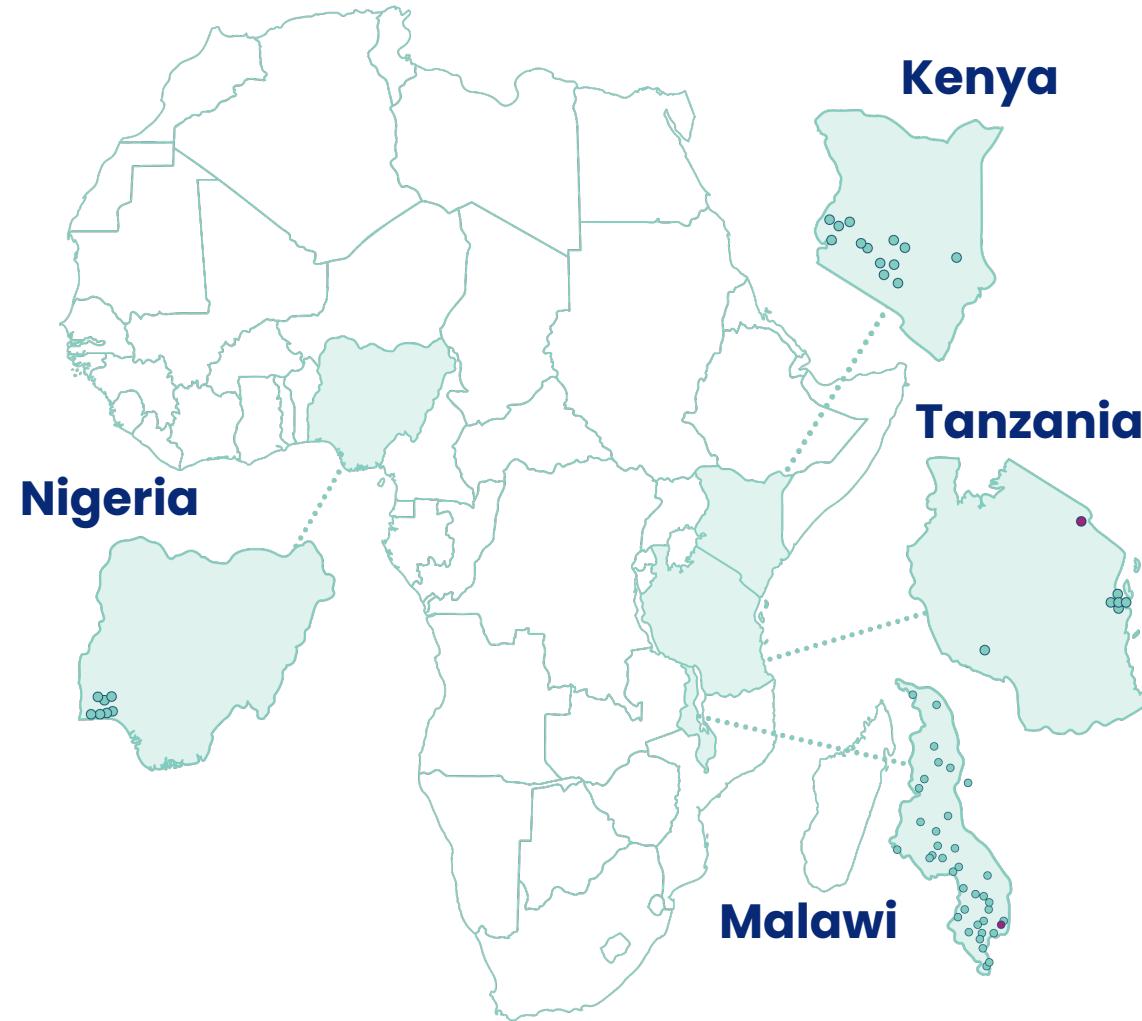
NEST360: Newborn Essential Solutions & Technologies

4 countries

65 facilities

>90 000

annual newborn admissions at health facilities where NEST360 is implemented



NEST-Equipped Hospitals

Upcoming NEST Implementation

of hospitals where NEST is installed

13 Kenya

37 Malawi

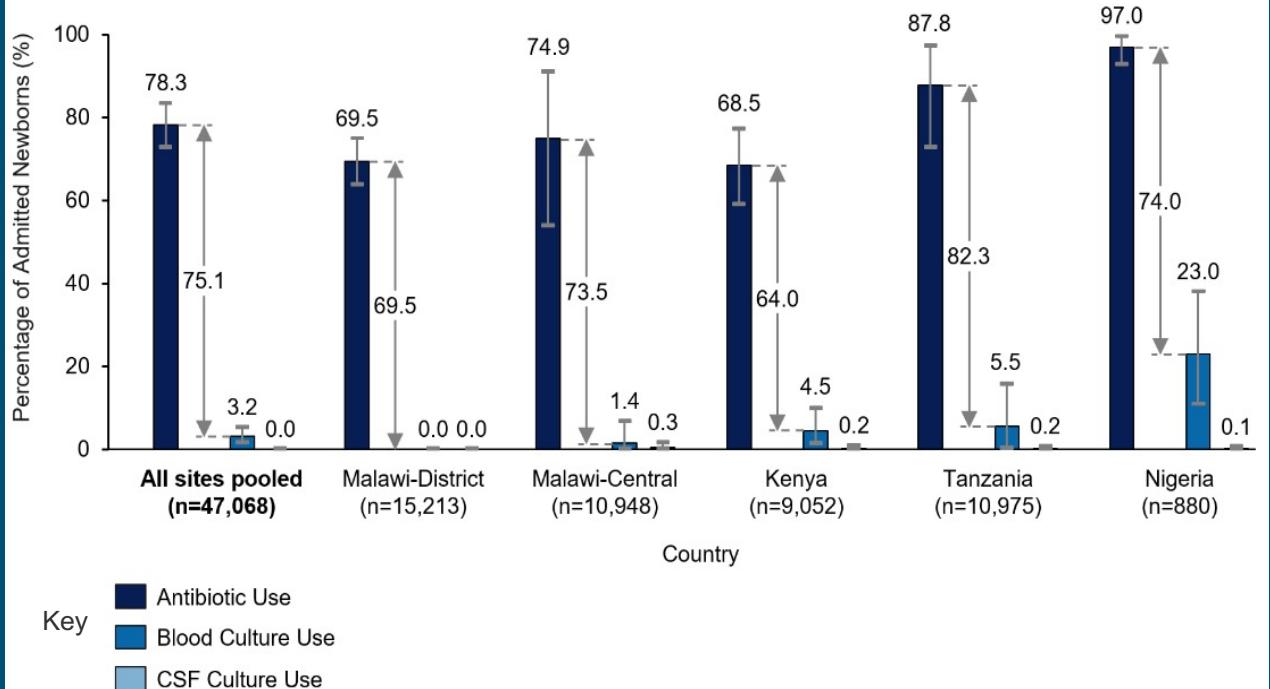
7 Nigeria

6 Tanzania

Detection Gap: NEST360 Data

Country Level Detection Gap

Fig 1 shows the major gap between antibiotic and microbiological culture (blood and CSF) use for inpatient newborn care at the country level.



Key:
■ Antibiotic Use
■ Blood Culture Use
■ CSF Culture Use

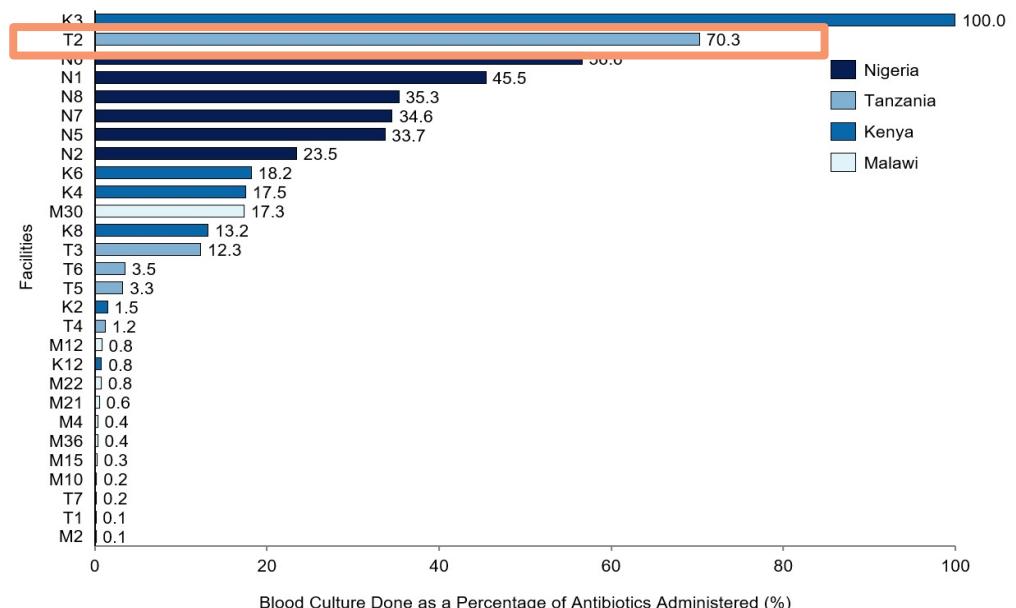
Note: All 65 NEST360 facilities have laboratory access (HFA)

Acknowledgement: Sarah Collins

Facility Level Assessment of Detection

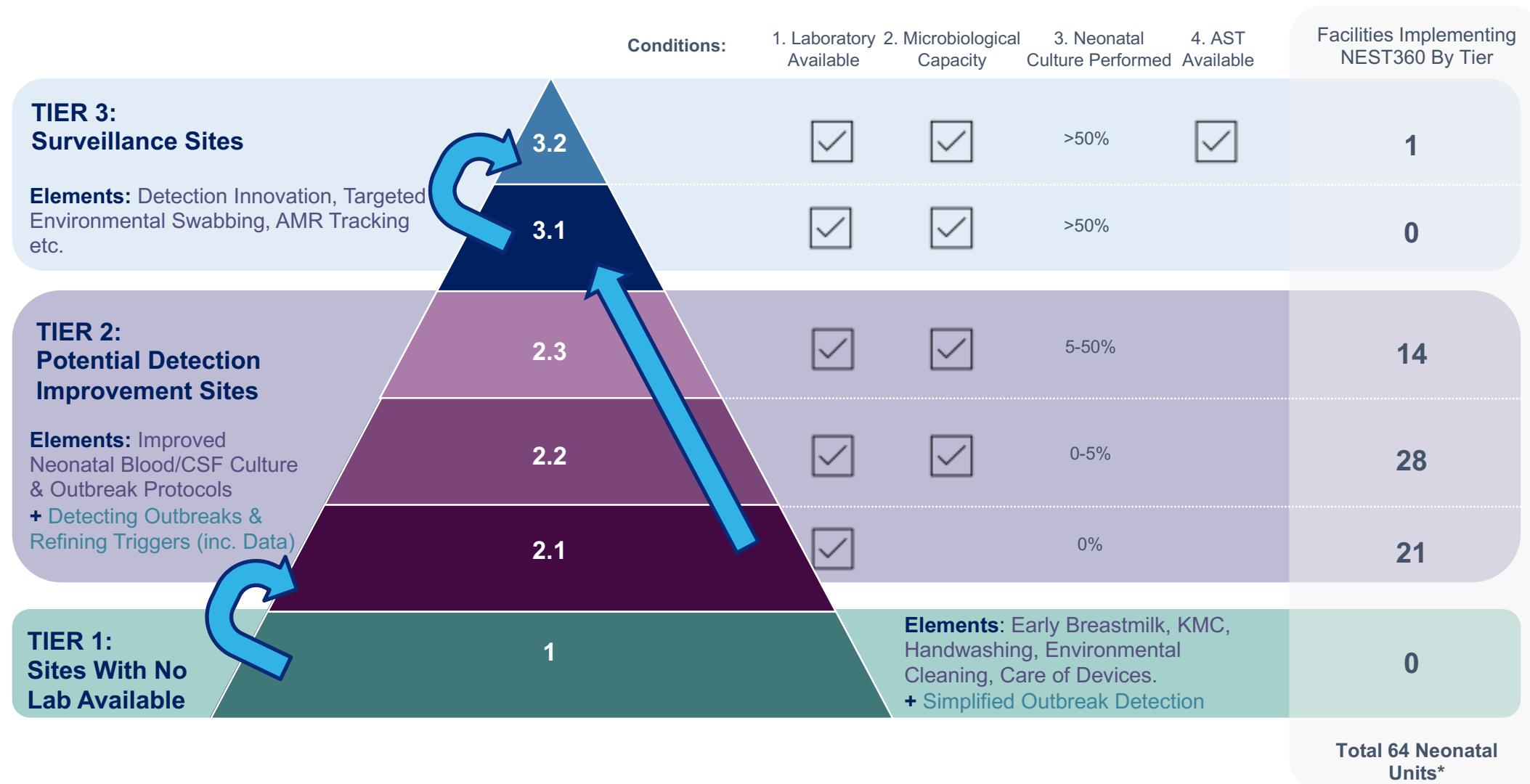
Despite the major detection gaps noted at the country level, there was significant variation in blood culture use at the facility level, with some facilities outperforming.

Fig 2 depicts the facility-level blood culture coverage for 49 NEST360-implementing facilities.



Note: For brevity, the 21 facilities with 0.0% blood culture use were excluded from the figure.

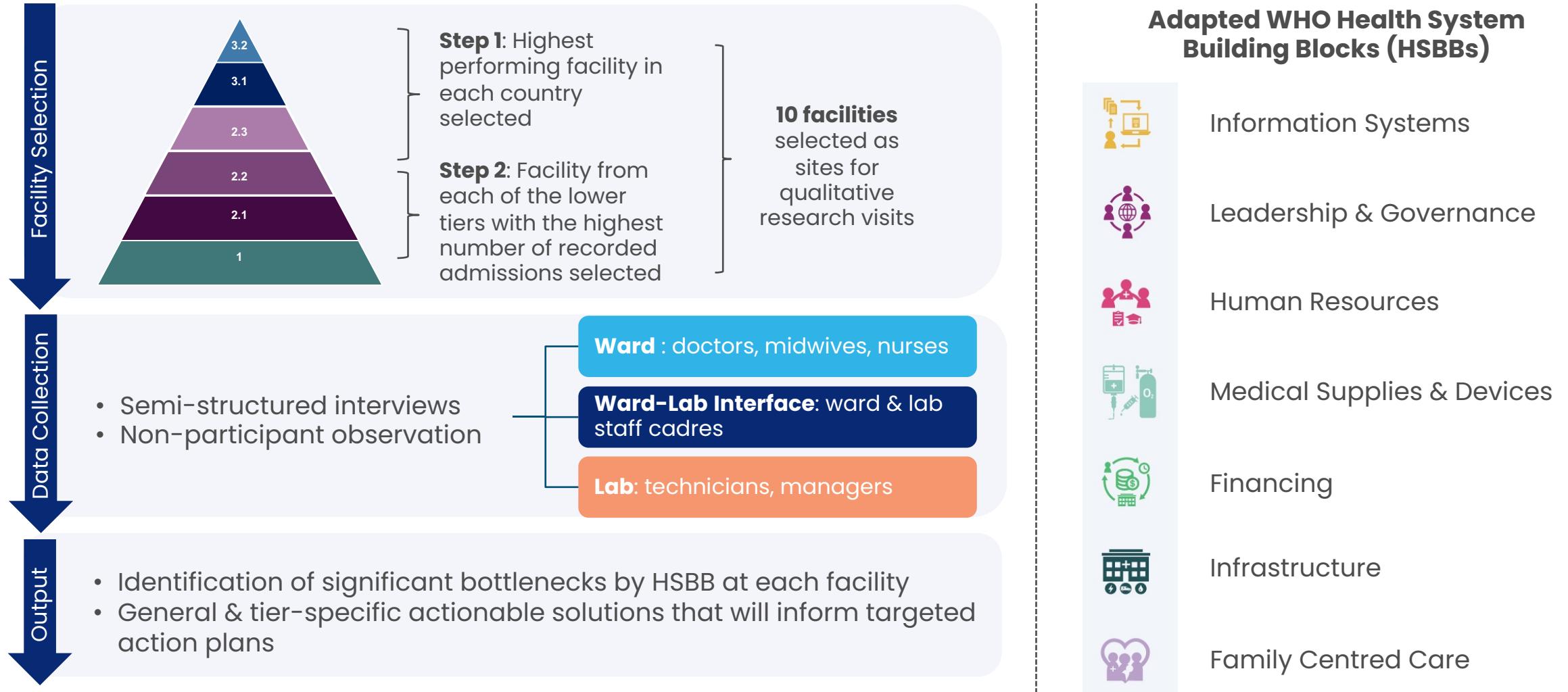
Facility Capacity Neonatal Culture – Tiered Approach



Abbreviations: AMR; antimicrobial resistance, AST; antibiotic sensitivity testing, CSF; cerebrospinal fluid, KMC; kangaroo mother care, NEST360; Newborn Essential Solutions and Technologies alliance

Legend: *Data not available for 5 implementing neonatal units at time of analysis

Towards Targeted Action Plans – Understanding Barriers and Enablers to Culture

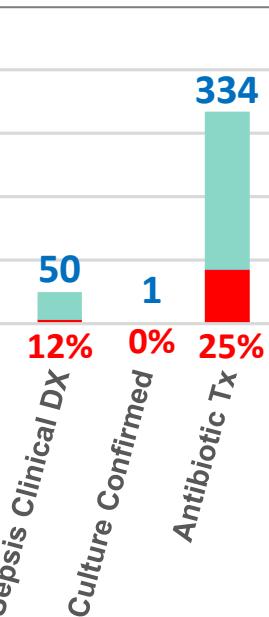


Using Data for Action to Address Neonatal Infections

1 NEST360 QI Facility Dashboard



2 Infection Detection Gap



3 Problem Prioritisation Matrix & Clinical Action Plan

Problem (List up to four problems)	Problem Impact	Cost to Solve the Problem (in time, people and money)	How often does the problem affect the facility/patients?	Total Points (out of 9)
	Scoring Guide 1 – Small impact 2 – Medium impact 3 – Big impact	Scoring Guide 1 – High cost 2 – Some cost 3 – Almost no cost	Scoring Guide 1 – Rarely 2 – Often 3 – Very Often	
Lab investigations are done but not followed up.	3	3	3	9/9

Clinical Action Plan						
Possible Root Causes	Actions to Be Taken	Responsible Person	Indicators to Track	Deadline	Need Support from Other Tracks?	Need Management Support?
Task allocation	To allocate a person for results collection and follow up			31/01/22	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, which?	Yes No
No mentorship	To do on job trainings			31/01/22	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, which?	Yes No
Sample collection	To make sure that all cases diagnosed with sepsis have had sepsis screening			31/01/22	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, which?	Yes No

Component of Quality Improvement Visit



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Creating a “culture of doing cultures” in Tanzania



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Senior Lecturer and Head of Department
Paediatrics and Child Health



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Discussion – How can we close the infection detection gap in the ward, laboratory and at the interface?

Please post your comments, learnings, questions, reflections in the **Q&A section** of the webinar, using the following themes (and suggested sub-points) as a guide:

Ward

- In your experience, how do you think the **quality of blood culture specimens** might be improved?
- Instances where **leaders/champions** have encouraged blood culture use.
- Success stories where laboratory culture results have **influenced patient management**.



Interface

- Examples for **effective specimen transport systems** that you have seen implemented.
- What methods to **communicate results** from lab to ward work best?
- Experience of **interdepartmental quality improvement** between the ward and lab.



Laboratory

- How could we **decrease culture turn-around times** in the laboratory?
- What role should a **microbiologist play in the ward/clinical care**?
- Innovative or alternative methods for the **management of consumable stock-outs**.



Critical to hear from you regarding **what is working in your settings**, so that we can learn and improve together.



Implementation Learning Seminar Series

Thank-you so much for joining us today!

Visit and contribute to
the Toolkit:

<https://newborntoolkit.org>

Sign up for the
newsletter:

<http://eepurl.com/hLb8lr>

Let's continue to learn together for the benefit of
every newborn!

Dates for the subsequent HSBB seminars in the series to follow.





NEST360