

IMProving qUaLity and uSe of nEwborn indicators (IMPULSE)

Concept Note

INTRODUCTION

Every year, an estimated 2.5 million newborns die during the first 28 days of life (1). Approximately 80% of these are low-birth-weight (LBW), and two thirds are born prematurely (1). In addition, a further estimated 1 million small and sick newborns survive with a long-term disability (2). Globally, up to 30 million newborns require some level of inpatient care each year (3). Substantial human potential for lifelong health and well-being is lost through newborn mortality, disability and long-term disease (2). Furthermore, family members of small and sick newborns are at high risk of long-term psychological and financial problems, which in turn, can have additional detrimental effects on a newborn's developmental, social and cognitive growth (2,4).

Just a decade remains to meet the SDG 3.2 target for every country to reach a newborn mortality rate (NMR) of 12 deaths or fewer per 1000 births (3). While many low and middle-income countries (LMICs) have made impressive progress towards the target, African countries need to more than double their current progress to be on track for 2030 (2).

There is wide agreement that accelerating change requires improvements in the routine collection of data focusing on service coverage, quality and outcomes, in addition to ensuring better use of existing data, thereby promoting accountability and action (3-6). To accelerate progress towards targets for the Survive, Thrive and Transform agenda, ambitious change is needed (3). Gaps in high-priority data must be closed to end preventable deaths (survive); ensure health and well-being (thrive); and change how small and sick newborns are cared for (transform) (3).

The Every Newborn Action Plan (ENAP) Metrics working group, co-chaired by the World Health Organisation (WHO) and London School of Hygiene & Tropical Medicine (LSHTM), has a mandate to work with all partners involved with ENAP to ensure the milestones in the Action Plan related to metrics are met on time, and tools and learning are shared and available in open access for widespread use in countries (3,7). Currently, work is ongoing to define specific indicators, test validity, develop tools and promote data use (8). Although in the last five years major initiatives have been conducted and other are in progress (7-14), still there are major gaps to fill.

This project, developed in dialogues with an international Advisory Board including several members of WHO, aims at addressing some of these gaps with a specific focus on African countries.

AIM

The final aim of IMPULSE is to **improve newborn routine data quality and use** in low- and middle-income countries and specifically Africa for Every Newborn to survive and thrive.

METHODS

The project will have two main phases: Phase 1 aims at documenting newborn data quality and use and recommendations for improvement and will generate evidence to design intervention phase 2, which will aim at testing a set of locally developed culturally acceptable sustainable interventions to improve data quality and use.

Phase 1

In four African countries (Central African Republic, Ethiopia, Tanzania and Uganda) and with a special focus on small or sick newborns, we will:

- 1) **Map** newborn indicator data availability in existing routine health information systems (RHIS).
- 2) Assess newborn key indicator **data quality** in existing RHIS
- 3) Understand newborn indicator **data use** by different stakeholders in existing RHIS
- 4) Analyse technical, organizational and behavioural **enabling factors** in RHIS to improve newborn indicator data quality and use
- 5) Measure the effect of the **COVID-19 pandemic** on newborn RHIS data.

Traversal to these five objectives we aim at:

- collecting staff **recommendations** for improvement;
- identifying the **resource requirements** to routinely assess newborn indicator data availability, quality and use.

Sample size: A total sample of **145 sites from 15 regions in 4 countries** - Central African Republic (CAR), Ethiopia, Tanzania and Uganda. The sample has been calculated based on a) the Lot Quality Assurance Sampling (LQAS) survey techniques, requiring a minimum of 19 facilities in each country/region, and b) feasibility within the existing resources. In CAR the currently expected sample will be 10-12 facilities, due to the ongoing conflict.

Data collection: Data will be collected predominantly using Every Newborn-Measurement Improvement for Newborn & Stillbirth Indicators (**EN-MINI**) Tools. This set of open access tools were collaboratively co-created by Every Newborn – Birth Indicators Research Tracking in Hospitals (EN-BIRTH) phase 2 research partners at LSHTM, Ifakara Health Institute Tanzania and icddr Bangladesh. Data will be extracted by local trained personnel, coordinated by experienced supervisors, using pre-defined field-tested data extraction tools, and following standard operating procedures (SOP). Data will be analyzed based on pre-defined plan of analysis, pre-tested on small sample.

Phase 2

Phase 2 will use evidence generated in phase 1 and a theory of change with focus on high quality care in health facilities caring for small and sick newborns in LMIC and specifically Africa, to:

- 6) **Co-create practical sustainable intervention(s)** to improve routine newborn data availability, quality and use of data for action to improve newborn health and wellbeing.

- 7) To test **effectiveness and cost** of the co-created intervention

PROJECT DURATION

The total duration of the project is expected to be **5 years**.

LIST OF COUNTRIES

The project will be conducted within the platform of countries included in the CUAMM network: **Ethiopia, Uganda, Tanzania, CAR**.

PARTNERS

- 1) London School of Hygiene and Tropical Medicine, London, England
- 2) WHO Collaborating Centre MCH Trieste IRCCS Burlo
- 3) CUAMM Doctor with Africa
- 4) Fondazione Chiesi as funders

STAKEHOLDER ENGAGEMENT AND EVIDENCE UPTAKE PLAN

The IMPULSE study is advised by **National Advisory Groups (NAG)** in each study country and by an **International Advisory Group (IAG)**. We are inviting as member of NAG representatives from a wide set of stakeholders, including: MoH; Academia and Scientific Societies, WHO COs, other development partners, professional organizations, parents organizations, and other networks active in newborn measurement e.g. Vermont Oxford Network).

GANTT CHART

Activities and deliverables to be completed	July 21 - June 22		July 22 - June 23		July 23 - May 2024	
	Y1	Y1	Y2	Y2	Y3	Y3
YEAR 1 July 2021 – June 2022						
Country team selection, implementation plan and budget	Sep-21					
Data collection tools and SOPs ready		Jan-22				
Field testing of tools conducted		May-22				
YEAR 2 July 2022 – June 2023						
Data collection completed in 3 countries			Nov-22			
Data collection completed in all 4 countries				Apr-23		
Preliminary data analysis (data from all countries)				May-23		
Preliminary results stakeholder discussion workshop(s) conducted				May-23		
YEAR 3 July 2023 – May 2024						
Draft outline study proposal for Phase 2 prepared					Oct-23	
Completed data analysis and results					Nov-23	
Results implications workshop(s) conducted					Nov-23	
Phase 2 study proposal drafted					Nov-23	
Results disseminated to international stakeholders etc.					Nov-23	May-24
Publication(s) minimum 2 drafted						Jan-24
Submission of final revised Phase 2 study proposal						Jan-24
Publication(s) minimum 2 submitted to journals						Mar-24

KEY REFERENCES

- 1) UN IGME. Levels & trends in child mortality: report 2018. Estimates developed by the United Nations interagency group for child mortality estimation (UN IGME). New York: United Nations Children's Fund; 2018.
- 2) Lawn JE, Blencowe H, Oza S, You D, Lee AC, Waiswa P, et al. Every newborn: progress, priorities, and potential beyond survival. *Lancet*. 2014;384(9938): 189–205.
- 3) WHO. SURVIVE AND THRIVE: Transforming care for every small and sick newborn. Geneva: World Health Organization; 2019
- 4) Moxon SG, Lawn JE, Dickson KE, Simen-Kapeu A, Gupta G, Deorari A, et al. Inpatient care of small and sick newborns: a multi-country analysis of health system bottlenecks and potential solutions. *BMC Pregnancy Childbirth*. 2015;15 Suppl 2:S7.
- 5) Moller AB, Patten JH, Hanson C, Morgan A, Say L, Diaz T, Moran AC. Monitoring maternal and newborn health outcomes globally: a brief history of key events and initiatives. *Trop Med Int Health*. 2019 Oct 17.
- 6) Countdown to 2030 Collaboration. Countdown to 2030: tracking progress towards universal coverage for reproductive, maternal, newborn, and child health. *Lancet*. 2018 Apr 14;391(10129):1538-1548.
- 7) UNICEF, WHO. Every newborn: an action plan to end preventable deaths. Geneva: World Health Organization; 2014
- 8) UNICEF, WHO. METRICS REPORT CARDS. Improving and using the data to accelerate progress to end preventable maternal and newborn deaths and stillbirths
- 9) Day LT, Ruysen H, Gordeev VS, Gore-Langton GR, Boggs D, Cousens S, Moxon SG, Blencowe H, Baschieri A, Rahman AE, Tahsina T, Zaman SB, Hossain T, Rahman QS, Ameen S, El Arifeen S, Kc A, Shrestha SK, Kc NP, Singh D, Jha AK, Jha B, Rana N, Basnet O, Joshi E, Paudel A, Shrestha PR, Jha D, Bastola RC, Ghimire JJ, Paudel R, Salim N, Shamb D, Manji K, Shabani J, Shirima K, Mkopi N, Mrisho M, Manzi F, Jaribu J, Kija E, Assenga E, Kisenge R, Pembe A, Hanson C, Mbaruku G, Masanja H, Amouzou A, Azim T, Jackson D, Kabuteni TJ, Mathai M, Monet JP, Moran A, Ram P, Rawlins B, Sæbø JI, Serbanescu F, Vaz L, Zaka N, Lawn JE. "Every Newborn-BIRTH" protocol: observational study validating indicators for coverage and quality of maternal and newborn health care in Bangladesh, Nepal and Tanzania. *J Glob Health*. 2019 Jun;9(1):010902.
- 10) Milner KM, Lawn JE. Counting every small and sick newborn: better data, better care. *Arch Dis Child*. 2019 Nov 12. pii: archdischild-2019-317657.
- 11) Moxon SG, Blencowe H, Bailey P, Bradley J, Day LT, Ram PK, Monet JP, Moran AC, Zeck W, Lawn JE. Categorising interventions to levels of inpatient care for small and sick newborns: Findings from a global survey. *PLoS One*. 2019 Jul 11;14(7):e0218748.
- 12) Blencowe H, Krusevec J, de Onis M, Black RE, An X, Stevens GA, Borghi E, Hayashi C, Estevez D, Cegolon L, Shiekh S, Ponce Hardy V, Lawn JE, Cousens S. National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis. *Lancet Glob Health*. 2019 Jul;7(7):e849-e860.
- 13) Lee AC, Blencowe H, Lawn JE. Small babies, big numbers: global estimates of preterm birth. *Lancet Glob Health*. 2019 Jan;7(1):e2-e3.