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COMMENTARY

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NeoNET AFRICA partnership

A multidisciplinary partnership to combat neonatal sepsis deaths in Sub-Saharan Africa

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NeoNET AFRICA partnership

Neonatal sepsis is a global issue and a leading cause of death in the first 28 days of life[1,2]especially in low- and middle-income countries (LMIC) where 98% of neonatal deaths occur.[3]Despite the extremely high burden of neonatal sepsis and associated deaths, data on the causative pathogens, antibiotic resistance profile, and infection impact is lacking from many LMIC.[4-6]As recently as 2019, not a single African country had published population-level data on neonatal sepsis. The reasons for this include limited access to microbiology laboratories, poor healthcare infrastructure, and challenges in health care data management.[7]

The paucity of up-to-date neonatal sepsis data on disease incidence, profile and impact in African countries is problematic for several reasons. Firstly, under-reporting results in a lack of public advocacy and prioritization by policymakers with underinvestment in the public health interventions needed to tackle neonatal sepsis. Secondly, lack of data on the prevalent pathogens and antibiotic resistance profiles, hampers selection of effective antibiotic treatments for neonatal sepsis.[8,9]In addition, there has been limited progress in developing new antibiotics, few clinical trials to establish neonatal dosing, and pervasive problems securing antibiotic access and supply for both existing and new antibiotics in African neonatal units.[10,11]

In November 2023, a new multi-country, multidisciplinary collaborative network called NeoNET AFRICA was established in response to the challenges in diagnosing, treating, and preventing neonatal sepsis on the continent. The objectives of this partnership include development of a platform for data and specimen sharing, research and clinical collaboration, advocacy, and capacity development to reduce neonatal sepsis burden and impact. The NeoNET AFRICA inaugural meeting hosted at Stellenbosch University, South Africa, united 55 participants from 13 African countries and the United Kingdom, representing experts in wide-ranging fields from neonatology, epidemiology, public health, genomics, bioinformatics, to data science.

The four NeoNET AFRICA priority areas discussed at the inaugural meeting were: i) to establish research priorities for maternal and neonatal infection; ii) to enable neonatal sepsis data sharing; iii) to develop mechanisms to collect and share bacterial isolates and iv) to develop

local capacity and training opportunities to improve neonatal sepsis care, including diagnosis, treatment, and prevention. These priority areas and actions were ranked according to feasibility (Table 1).

Table 1: The main research concerns and proposed pathway to implementation identified during the NeoNet AFRICA inaugural meeting held in November 2023 in Stellenbosch, South Africa

Focus area	Priority	Feasibility	Action steps
Maternal & Newborn infection research	Laboratory and clinical decision tools	High	Develop and refine point-of-care testing (POCT) and treatment algorithms. Create standardised protocols across African neonatal units.
	Advocacy, Engagement, and Stakeholder Collaboration	High	Engage with ministries of health, healthcare workers, and families to develop public awareness campaigns and advocate for inclusion of neonatal sepsis in national health funding and programs.
Neonatal sepsis data sharing and isolate biobanking	Ethical and data safety considerations	Moderate	Engage supranational bodies (Africa CDC), country ministries of health and other stakeholders to develop the optimal model to facilitate data and specimen sharing for neonatal sepsis
Local capacity building & training for neonatal sepsis	Policymaker training	High	Develop advocacy and communication training
	Healthcare workers infection prevention and control (IPC) training	High	Specialized training for neonatal staff on infection prevention and control (IPC)
	Data science and epidemiology training	High	Development of training modules and training workshops
Processing of neonatal sepsis bacterial isolates	Sample collection	Moderate	Develop and distribute guidelines for sample collection. Standardize sample collection procedures and train staff on quality assurance measures.
	Laboratory diagnosis	Moderate	Quality improvement projects for laboratories to enhance neonatal sepsis laboratory diagnosis and reporting

Global neonatal mortality rates have declined in all regions other than sub-Saharan Africa, where over one million newborns die each year. A large-scale, sustainable reduction in the burden and impact of neonatal sepsis in sub-Saharan Africa can only be achieved by coordinated and cohesive efforts across disciplines, institutions, and countries. The NeoNET AFRICA partnership will address these and other barriers to tackling neonatal sepsis on the continent. Aligned to our aim of raising public health awareness of neonatal sepsis and advocating for accelerated action to end preventable infections in African countries, we have prepared a series of articles. This advocacy series will highlight the urgency of addressing the complex, inter-related issues of laboratory diagnosis, infection prevention, antibiotic treatment, health information systems, and maternal care for optimal neonatal outcomes, outlining potential solutions to reduce the impact of neonatal sepsis on the continent. We hope that NeoNET AFRICA and other initiative to improve neonatal care in sub-Saharan Africa will over time contribute to enhanced newborn survival, quality of life, reduced healthcare costs and societal productivity.

Fig 1: Participants of the inaugural NeoNET AFRICA meeting held at Stellenbosch University, Cape Town, South Africa.

List of NeoNET AFRICA partnership members as of November 2023:

Adrie Bekker, Albert Manasyan, Alex Stevenson, Andrew Argent, Andrew Whitelaw, Angela Dramowski, Awanda Ntshinka, Benjamin Nggada, Christina Obiero, Elizna Maasdorp, Felicity Fitzgerald, Gwendoline Chimhini, Francis Chikuse, Gugu Kali, Ilhaam Abrahams, James Cross, John Baptist Nkuranga, Jonathan Strysko, Jyothi Lakhwani, Larisse Bolton, Laurinda Vorster, Leonore Greybe, Lizel Lloyd, Mae Newton-Foot, Michael Harrison, Msandeni Chiume, Nelesh Govender, Ntombi Sigwebela, Olufunke Bolaji, Refilwe More, Rudzani Mashau, Runyararo Mano, Saffiatou Darboe, Sandi Holgate, Sarah Collins, Sarah Sturrock, Sithembiso Velaphi, Stephen Obaro, Susan Meiring, Tochi Okwor, Yuri Munsamy, Ziyaad Dangor. Online: Appiah-Korang Labi, Benjamin Blumel, Charlene Rodrigues, Clare Shortall, Iruka Okeke, Julia Bielicki, Katherina Kranzer, Kathryn Holt, Kirsty le Doare, Michelle Heys, Pui-Ying Iroh Tam, Uduak Okomo, Victoria Nakibuuka.

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