GARDP
Global Antibiotic Research & Development Partnership

Neonatal sepsis

Antimicrobial resistance (AMR) is a major and rapidly growing global public health threat. Responsible for more than 700,000 deaths a year, it poses a significant threat[1] to the attainment of the UN Sustainable Development Goals (SDGs), in particular SDG3, which aims to ensure healthy lives and promote wellbeing for all.[2]

The Global Antibiotic Research and Development Partnership (GARDP) is a not-for-profit research and development organization that addresses global public health needs by developing and delivering new or improved antibiotic treatments, while endeavouring to ensure their sustainable access.

Initiated by the World Health Organization (WHO) and the Drugs for Neglected Disease *initiative* (DND*i*) in May 2016, GARDP is an important element of WHO's Global Action Plan on Antimicrobial Resistance that calls for new public-private partnerships to encourage R&D of new antimicrobial agents and diagnostics. Following a successful incubation period, GARDP became an independent legal entity in 2019.

GARDP's programmes incorporate access and stewardship strategies to ensure treatments are affordable and available to all those who need them.

Partnerships are central to GARDP's model and include WHO, pharmaceutical and biotechnology companies, academia, governments, health authorities, philanthropic organisations and civil society from across the world.

Globally, nearly half of all deaths in young children are in neonates[3] (newborns up to 28-days-old). Newborns are at significant risk from serious blood-stream infections, such as sepsis.

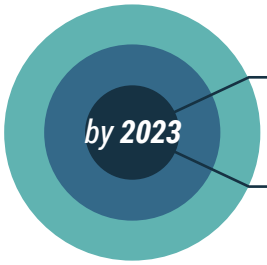
AMR is making the situation worse, as currently available treatments become less effective. An estimated 214,000 neonatal sepsis deaths a year result from drug-resistant infections.[4] A major challenge is the knowledge gap, as there is very little evidence to support the appropriate treatment of serious and drug-resistant infections in neonates.

Despite increasing rates of resistance to the WHO recommended treatment regimen for neonatal sepsis, which reaches up to 80 percent in some cases,[5] the lack of alternative treatment options means the guidelines recommending them have not been updated for more than 50 years. Tackling AMR is critical to achieving the SDG3 targets to end preventable deaths in newborns and reduce neonatal mortality.

GARDP'S NEONATAL SEPSIS PROGRAMME

GARDP aims to develop new antibiotic treatments and provide an evidence base for the use of antibiotics, both old and new, in neonates with confirmed or suspected sepsis. The neonatal sepsis programme will incorporate a clinical trial network across the world, as part of a global children's antibiotic platform.

OBJECTIVES



- Develop a new antibiotic treatment for suspected neonatal sepsis in areas with high levels of resistance to the WHO recommended regimen
- Develop evidence-based treatment(s) for neonatal sepsis caused by confirmed (or highly suspected) multidrug-resistant Gram-negative bacteria

TO DATE, GARDP HAS

- Set up a global observational study on neonatal sepsis,[5] in partnership with St. George's, University of London, Penta and hospitals across the world. The study which began in Delhi, India in 2018 will collect and analyse clinical information, including antibiotic use, treatment length and mortality rates for suspected sepsis in up to 3000 babies across 19 hospitals and/or neonatal units in Bangladesh, Brazil, China, Greece, India, Italy, Kenya, South Africa, Thailand, Vietnam, and Uganda.
- Developed two strategies (known as target product profiles, or TPPs) to develop and re-purpose antibiotics to make new antibiotic treatments to treat neonatal 'sepsis.'
- TPP 1 has been designed to meet the needs of objective one. GARDP has identified the antibiotic fosfomycin as an initial candidate to assess in combination with other antibiotics as potential components for an improved empiric regimen.
- A pharmacokinetic and safety trial to establish the correct dosing of fosfomycin in newborns has been conducted in Kenya and is in the analysis and reporting phase.
- TPP 2 has been designed to meet the needs of objective two – to develop an antibiotic to treat confirmed (or highly suspected) neonatal sepsis caused by multidrug-resistant Gram-negative bacteria.

LOOKING AHEAD

- By the end of 2019, GARDP aims to choose which antibiotic candidates to take forward into a large-scale clinical trial. The decisions will be taken based on the data from the fosfomycin clinical trial, the observational study and ongoing evaluations and other published data.
- This will help to increase the evidence-base needed to develop and deliver a new first-line antibiotic treatment for clinically-diagnosed (suspected) neonatal sepsis.

A GLOBAL COLLABORATION

The neonatal sepsis programme has partners and/or study sites (11 observational study and 1 clinical trial site) in

Bangladesh
Belgium
Brazil
China
Greece
India
Italy
Kenya
South Africa
Thailand
Vietnam
Uganda
UK

For a full list of partners see **gardp.org/partners**

1 O'Neill, J. (Chair) Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations: The Review on Antimicrobial Resistance, 2016
2 The 2030 Agenda for Sustainable Development, 2015.
3 WHO Factsheet on Child Mortality, 2018
4 Laxminarayan, R., Matsoso, P., Pant, S, et.al., Access to effective antimicrobials: A worldwide challenge. The Lancet. (2016, January 9)
5 GARDP Press Release. Researchers gather in New Delhi to kick off observational study for newborns with sepsis, July 2018