Established Systems and Procedures for Environmental Surveillance for *Burkholderia pseudomallei* in Bangladesh

Project Information

- **Department: Public Health Programs**
- **Unit: One Health**

OBJECTIVE

The primary objective of this project is to implement an environmental surveillance system for the detection of the gram-negative bacterium *Burkholderia pseudomallei*, which causes the widespread occurrence of Melioidosis, with a focus on monitoring its presence in water and soil environments.

REGIONS OF WORK

This project will be implemented in Bangladesh.

BENEFICIARIES

The project will enhance the capacities of healthcare professionals involved in environmental surveillance as well as laboratory technicians, thereby strengthening the healthcare system in Bangladesh to be equipped to detect potential outbreaks of Melioidosis.

PROJECT PHASES

The project involves three phases:

Phase I – Initiation of the communication with the project-related stakeholders, contracting in-country consultants, development of the environmental surveillance protocol and reporting form and channels, and procuring lab supplies and reagents.

Phase II – Conducting environmental surveillance by collecting data, testing samples, and producing lab reports.

Phase III – Analyzing the gathered data and producing comprehensive reports, in addition to conducting a dissemination workshop to present the project's results.

PROJECT DESCRIPTION

The 'Environmental surveillance for *Burkholderia pseudomallei* in Bangladesh' is a one-year project that aims to establish a robust environmental surveillance system for the detection of the gram-negative bacterium *Burkholderia pseudomallei*. This will be achieved through the development of a comprehensive environmental investigation protocol and the establishment of effective reporting channels. The project also aims to enhance the capabilities of key personnel involved in environmental surveillance and laboratories. The project will conduct environmental surveillance activities including the collection of soil and water samples, followed by conducting essential laboratory tests to detect *Burkholderia pseudomallei*. Upon completion of these activities, the gathered data will be analyzed to produce a comprehensive report that will serve as a valuable resource for further action and decision-making. The project will include a dissemination workshop during which the environmental surveillance findings will be shared with stakeholders, policymakers, and field workers, ultimately raising awareness about *Burkholderia pseudomallei* and its implications in Bangladesh."

Project Start and End Date	**October1, 2023 to September 30, 2024**
Funded by	**Center for Disease Control and Prevention (CDC).**
Collaborators	**CDC – Bacterial Special Pathogen Branch (BSPB) and Bangladesh Livestock Research Institute (BLRI)**

Currently . . .

Melioidosis, a disease of significant public health and clinical concern, is endemic in tropical and sub-tropical regions worldwide. It is caused by the Gram-negative bacterium *Burkholderia pseudomallei* and primarily spreads through contact with contaminated water and soil. Melioidosis was first observed in Bangladesh in 1964. However, it wasn't endemic until 1988, when a local Bangladeshi infant marked the first domestic case. Subsequently, numerous cases were documented, with the disease appearing endemic in ten districts of Bangladesh, particularly in the north and northeast. Based on the presence of *B. pseudomallei* in humans and the environment, melioidosis-endemic countries are categorized as "definite" or "probable." Bangladesh falls into the "probable" category, as though numerous melioidosis cases have been confirmed through culture testing, no evidence of the organism's presence in the environment has been reported yet. Hence, discovering *B. pseudomallei* in soil samples can help pinpoint the environmental source and assess the level of exposure in the country. As of now, Bangladesh has not conducted a national surveillance study to investigate the presence of the bacterium in ambient samples.

What's next . . .

This project will show a proof of concept for detection of *B. pseudomalle* in environmental samples. It will help in establishing environmental surveillance to detect *B. pseudomallei* in soil and water samples as well as allowing identifying its genomic through next generation sequencing.

GHD|EMPHNET Information: Global Health Development (GHD) and Eastern Mediterranean Public Health Network (EMPHNET) works at achieving its mission by responding to public health needs with deliberate efforts that allow for health promotion and disease prevention.

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