MenMap
The Meningitis & Septicemia Mapping Network

MenMap Network Bulletin

Issue 1

Meningitis and Septicemia Mapping Network (MenMap): Background and Origin

2023/2024

Introduction

Invasive bacterial diseases (IBD) pose a significant public health challenge worldwide due to their high morbidity and mortality rates. Four primary bacteria cause these infections: *Neisseria meningitidis* (Nm, meningococcus), *Streptococcus pneumoniae* (Sp, pneumococcus), *Haemophilus influenzae* (Hi), and *Streptococcus agalactiae* (group B streptococcus, or GBS). While meningitis is the most well-known form of IBD, other clinical manifestations include septicemia, bacteremic pneumonia, and septic arthritis. *S. pneumoniae, H. influenzae type b (Hib), and N. meningitidis* are the leading causes of vaccine-preventable bacterial meningitis, with *S.pneumoniae* notably contributing to community-acquired meningitis outbreaks in Europe and the United States.

According to the World Health Organization (WHO), over one million cases of acute bacterial meningitis occur globally each year, primarily in low-resource regions, with a 10% fatality rate. The microbiological laboratory's early identification of the bacterial agent is crucial. In children over one month old, Nm, Sp, and Hi are the leading causes of acute bacterial meningitis. Meningococcal disease, for example, occurs sporadically in Europe and North America but causes epidemics in the African meningitis belt, spanning from Senegal to Ethiopia.

Failure to identify bacteria due to their fragility or early antibiotic treatment, coupled with challenges in traditional culture-based procedures, hampers the culture-confirmed diagnosis of IBD. Although PCR-based non-culture approaches are increasingly used to determine IBD, their use remains insufficient in several regions. In many Middle East and North Africa (MENA) countries, meningococcal disease continues to be a significant contributor to endemic and epidemic illness, but published epidemiological data are few, disjointed, and gathered using various methods.

Bacterial Meningitis Surveillance and Data Management Training in Egypt, 2023

Lab Training at WHO Collaborative Center-American University of Beirut, Lebanon, 2024

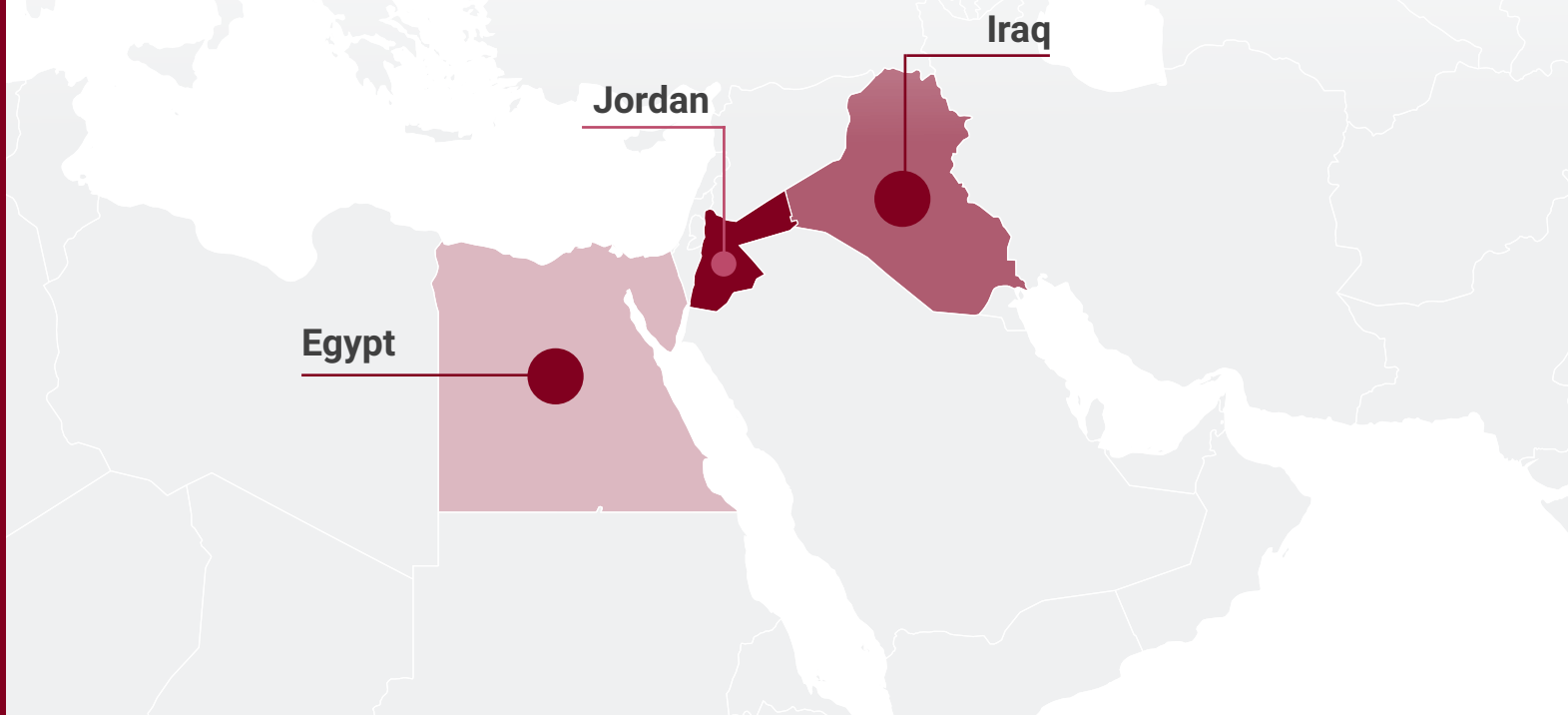
MenMap Network Origin

Bacterial meningitis is a global public health challenge, particularly prevalent in the MENA region. It remains a significant cause of morbidity and mortality, especially for infants and young children. Despite the high incidence of meningococcal disease in MENA countries, there is a notable lack of published data, impeding the formulation of evidence-based decisions crucial for effective vaccine intervention strategies.

Recognizing this need, GHD|EMPHNET, in collaboration with Sanofi, has established the Meningitis and Septicemia Mapping Network (MenMap). This network aims to enhance the understanding and management of vaccine-preventable IBD, caused by pathogens like *N. meningitidis, S. pneumoniae, and H. influenza.*

MenMap's initiatives span research, surveillance, laboratory diagnostic capacity strengthening, and public health policy advancement across the Middle East, North Africa, and Eurasia region to prevent, control, and treat bacterial meningitis and septicemia.

Countries the MenMap Network is Currently Active in



MenMap Network Objectives

The MenMap project's main goal is to

Implement real-time PCR testing techniques to improve diagnosis of IBD due to *N. meningitidis, S. pneumoniae, and H. influenza* in countries of North Africa, the Middle East and Eurasia (NAMEE) through a laboratory network (the MenMap Laboratories).

Target Audience

Entities, including public health institutions, Ministries of Health (MOHs), and governmental hospitals.

The general population of MENA region.

Patients (from 1 month to 18 years of age) infected or suspected of having meningitis.

MenMap Network Project Phases

The MenMap project involves three phases implemented on a yearly basis

Phase I

Preparations:

Enabling countries to network, and design assessment tools to review the current diagnostic landscape within their targeted area.

Phase II

Implementation:

Conducting hospitals assessment, providing training, supply laboratories, enroll cases, collect samples and data, reporting, and analysis.

Phase III

Closing:

Completing final reporting and conducting a project workshop.

Q&A Session During the Bacterial Meningitis Surveillance and Data Management Training in Jordan, 2023

Expected Outcomes

The MenMap Network is expected to

Advance research on the surveillance and laboratory diagnosis of vaccine-preventable IBDs.

Support public health policies aimed at preventing these infections and improving clinical practices for the prevention and treatment of bacterial meningitis and septicemia.

Build knowledge infrastructure, research, and communication capacity in the participating countries.

Bacterial Meningitis Surveillance and Data Management Training in Iraq, 2023