

Meningitis

Group presentation

Module-Introduction to public health

- Ojifa Akter-2435011
- Salla Sow-2512880

Agenda

One-Definition of meningitis

Two- Approaches and
Strategies to used measure
meningitis

Three-Approaches and
Strategies to used monitor
meningitis



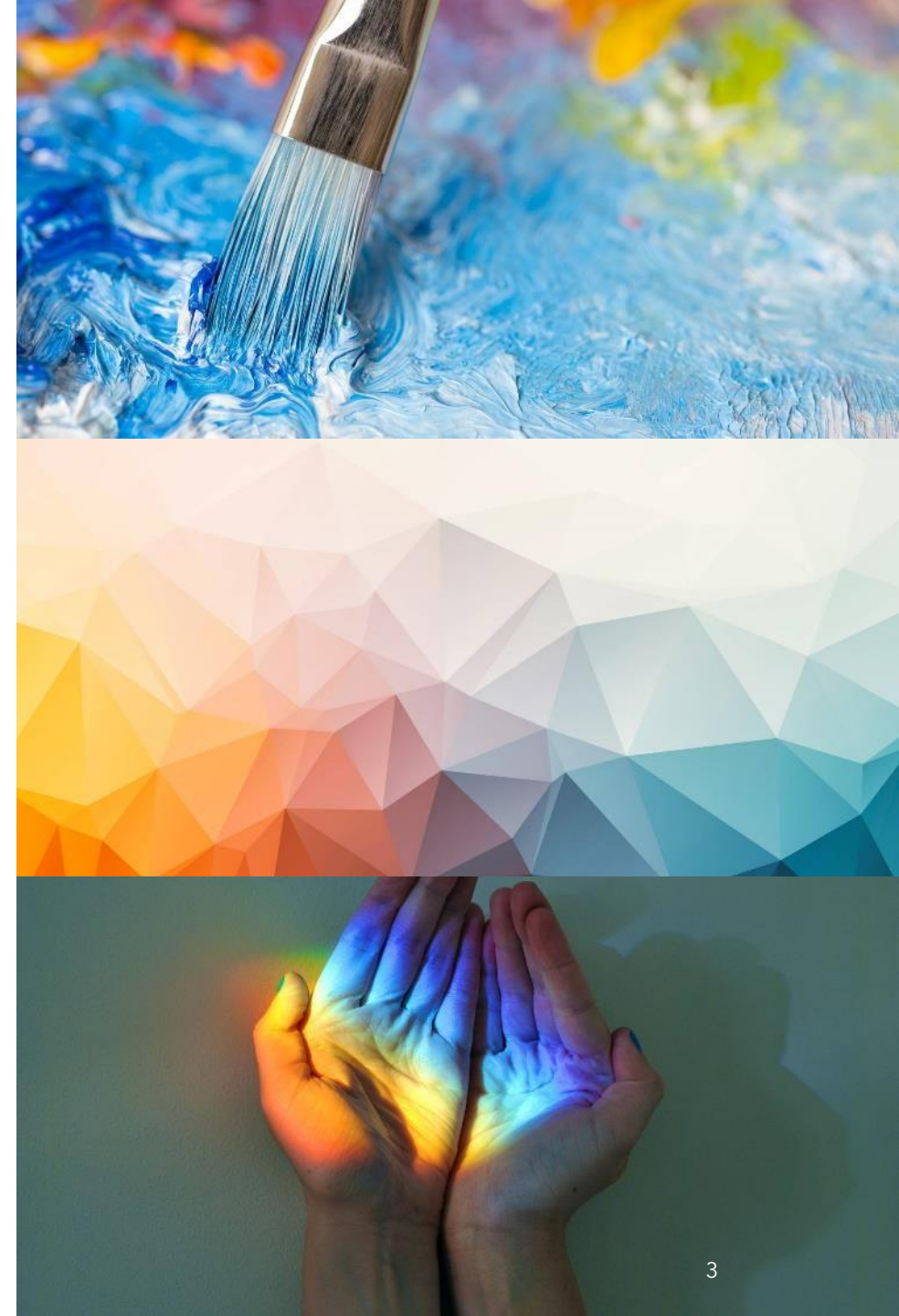
Introduction

Meningitis is a serious medical condition in which the protective membranes covering the brain and spinal cord (called the meninges) become inflamed. It is usually caused by an infection from bacteria, viruses, fungi, or parasites. The disease can develop quickly and may be life-threatening if not treated promptly.

Although outbreaks are rare, **invasive meningococcal disease still occurs in the UK.**

For example, about **378 confirmed cases were reported in 2024-2025** across the country (NHs website)

Vaccination programmes such as **MenACWY and MenB vaccines** are used to reduce the risk, particularly for teenagers and university students.



Approaches and Strategies to used measure meningitis

Outbreaks of infectious illnesses like meningitis are monitored and measured using a variety of methods. Disease surveillance is one of the primary strategies, and it entails the ongoing gathering and analysis of health data to identify and track disease cases. Healthcare workers can report cases to public health authorities through passive monitoring, or public health teams can actively look for cases in hospitals and labs through active surveillance.

Approaches and Strategies to used measure meningitis

Measuring the incidence rate, which is the number of new cases of a disease in a particular community over a certain time frame, is another critical approach. Health officials are able to determine how quickly a disease is spreading because of this. Prevalence is also used to calculate the overall number of current cases in a population at any given time, which aids in ascertaining the extent of the illness.

Approaches and Strategies to used measure meningitis

Outbreak investigations are also carried out to ascertain the origin of the infection, who is impacted, when the cases began, and where the disease is occurring. Additionally, laboratory testing is necessary to identify the precise pathogen responsible for the illness. With these methods, public health organizations may keep an eye on outbreaks, put control measures in place, and stop the virus from spreading further.

Approaches and Strategies to used monitor meningitis

Monitoring **meningitis** is essential for early outbreak detection, guiding vaccination programmes, and reducing illness and death. Meningitis can be caused by several pathogens such as bacteria, viruses, and fungi, with **bacterial meningitis** being the most severe. Public health systems use several **surveillance approaches and strategies** to monitor meningitis.

Approaches and Strategies to used monitor meningitis

Main Approaches and Strategies to Monitor Meningitis

1. Case-Based Surveillance

Case-based surveillance involves collecting detailed information about **every suspected or confirmed meningitis case** reported to public health authorities.

Approaches and Strategies to used monitor meningitis

Healthcare professionals report cases to national surveillance systems, providing information such as:

- patient age and sex
- symptoms and clinical presentation
- laboratory results
- vaccination status
- outcome (recovery or death)

Approaches and Strategies to used monitor meningitis

In the United Kingdom, meningitis cases are monitored through systems managed by the UK Health Security Agency.

2. Syndromic Surveillance

Syndromic surveillance focuses on **monitoring symptoms** associated with meningitis before laboratory confirmation.

How it works

Healthcare data systems analyse reports from:

- emergency departments
- primary care clinics
- hospital admissions

Approaches and Strategies to used monitor meningitis

Symptoms monitored may include:

- fever
- stiff neck
- severe headache
- sensitivity to light
- confusion

Benefits

- Early detection of outbreaks
- Rapid public health response

This method allows health authorities to identify unusual increases in meningitis-like symptoms in the population.

Approaches and Strategies to used monitor meningitis

3. Laboratory Surveillance

Laboratory surveillance is critical for confirming meningitis cases and identifying the **specific pathogen responsible**.

Methods used

Laboratory testing may include:

- PCR testing
- bacterial culture
- cerebrospinal fluid (CSF) analysis
- antigen detection tests

Approaches and Strategies to used monitor meningitis

Laboratory confirmation is especially important during outbreaks to determine which pathogen is responsible.

4. Outbreak Surveillance

Outbreak surveillance focuses on identifying clusters of meningitis cases within a specific location or population.

Common settings

Outbreaks may occur in:

- schools
- universities
- military barracks
- communities

Approaches and Strategies to used monitor meningitis

Key activities

- Identify clusters of cases
- Investigate sources of infection
- implement control measures such as vaccination campaigns or antibiotic prophylaxis

Outbreak surveillance is particularly important in regions such as the African meningitis belt, where large epidemics have historically occurred.

5. Sentinel Surveillance

Sentinel surveillance uses selected healthcare facilities to collect data on meningitis cases and monitor trends.

Approaches and Strategies to used monitor meningitis

How it works

Selected hospitals or clinics (sentinel sites):

- report meningitis cases regularly
- collect laboratory samples
- provide data on disease patterns

Purpose

- Monitor trends in meningitis incidence
- detect emerging strains
- evaluate vaccination programmes

Sentinel systems are often used in countries where nationwide surveillance may be difficult.

Approaches and Strategies to used monitor meningitis

6. Vaccination Coverage Surveillance

Vaccination surveillance monitors the uptake and effectiveness of vaccines against meningitis-causing pathogens.

Vaccines commonly monitored

- meningococcal vaccines
- pneumococcal vaccines
- Haemophilus influenzae type b (Hib) vaccine

Objectives

- measure vaccine coverage in the population
- identify groups with low vaccination rates
- assess the impact of immunisation programmes

Approaches and Strategies to used monitor meningitis

7. Molecular and Genomic Surveillance

Molecular surveillance involves analysing the **genetic characteristics of meningitis-causing pathogens**.

Methods

- genome sequencing
- strain typing
- molecular epidemiology

This approach is increasingly used to guide vaccination strategies and public health responses.

This approach is increasingly used to guide vaccination strategies and public health responses.

Referances

Reference List (Harvard Style)

- Centers for Disease Control and Prevention (2024) *Meningitis Surveillance and Reporting*. Available at: <https://www.cdc.gov>
- World Health Organization (2023) *Defeating meningitis by 2030: Global roadmap*. Available at: <https://www.who.int>
- World Health Organization (2023) *Meningitis surveillance guidance*. Available at: <https://www.who.int>
- UK Health Security Agency (2024) *Meningococcal disease surveillance in England*. Available at: <https://www.gov.uk>



Thank you

Do you have any
question?