Preparedness and Response to Cerebrospinal Meningitis Outbreaks

A GUIDE FOR HEALTH WORKERS AND AUTHORITIES IN NIGERIA

Prepared by the
Nigeria Centre for Disease Control and Prevention
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About NCDC

Nigeria Centre for Disease Control and Prevention (NCDC) is Nigeria's national public health institute with the mandate to ensure a healthier and safer Nigeria through the prevention and control of diseases and events of public health importance. The agency is focused on enhancing national and regional health security through evidence-based prevention, integrated disease surveillance, and response activities, using a One Health approach, guided by science and led by a skilled workforce. NCDC operations and activities are guided by six key goals:

- Strengthen the infrastructure and supporting systems at the NCDC to ensure an enabling environment is in place to meet its mandate
- Strengthen existing surveillance systems for timely detection, assessment, notification, and reporting of priority diseases and conditions including public health events of international concern in line with the IHR
- Enhance laboratory capacity to detect and support infectious disease surveillance systems and response through detection, prevention, and control
- Reduce the health-related consequences of public health emergencies and disasters
- Create an efficiently managed and evidence-based organisation with a clear focus on health promotion and disease prevention.
- Ensure functional and sustainable health security systems at the subnational level

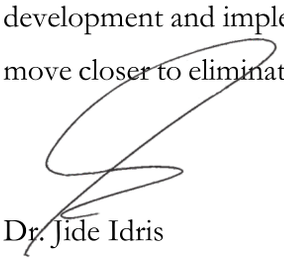
NCDC operates through six directorates: Disease Prevention and Health Promotion, Surveillance and Epidemiology, Public Health Laboratory Services, Health Emergency Preparedness and Response, Subnational Support and the Department of Planning Research and Statistics

Foreword

Nigeria has a long history of recurring Cerebrospinal Meningitis (CSM) outbreaks, particularly in states within the meningitis belt. These outbreaks have caused significant morbidity and mortality, prompting the need for a structured and coordinated response. The first Preparedness and Response Plan for Cerebrospinal Meningitis was developed in 2017 to guide national and subnational preparedness efforts, improve surveillance, and enhance outbreak response capacity. Over the years, new challenges have emerged, including evolving epidemiological trends, antimicrobial resistance concerns, and the introduction of new vaccines.

This 2024 Revised Version builds upon the foundations of the previous editions, incorporating lessons learned from past outbreaks, advancements in medical knowledge, and best practices in public health emergency management. It aligns with the World Health Organization's Defeating Meningitis by 2030 Roadmap and integrates innovative strategies such as enhanced surveillance, rapid laboratory diagnostics, improved case management protocols, risk communication, and the deployment of the Meningococcal Pentavalent Conjugate Vaccine (Men5CV).

This document serves as a vital guide for health workers, policymakers, emergency responders, and community leaders to ensure a proactive and coordinated response to meningitis outbreaks. All stakeholders must commit to its implementation to reduce the burden of CSM in Nigeria. I extend my deepest appreciation to all partners, agencies, and frontline health workers who have contributed to the development and implementation of this plan. Through sustained collaboration and commitment, we can move closer to eliminating bacterial meningitis epidemics in Nigeria and securing national health resilience.



Dr. Jide Idris

Director General of Nigeria Centre for Disease Control and Prevention

Acknowledgments

The Nigeria Centre for Disease Control and Prevention (NCDC) expresses its profound gratitude to all individuals, institutions, and organisations whose contributions have been invaluable in the development of this 2024 Preparedness and Response Guide for Cerebrospinal Meningitis (CSM) Outbreaks in Nigeria. This revised plan is a product of extensive collaboration, technical expertise, and shared commitment to enhancing Nigeria's capacity to prevent, detect, and respond to meningitis outbreaks. We extend our sincere appreciation to the Federal Ministry of Health and Social Welfare for its leadership, policy direction, and continuous support in strengthening epidemic preparedness and response systems.

We acknowledge the CSM Technical Working Group (TWG) and the Incident Management System (IMS) Team, whose expertise and commitment were instrumental in shaping this plan. The development of this guide would not have been possible without the invaluable partnership and technical support from key national and international organisations. We deeply appreciate the continued collaboration of the World Health Organization (WHO), Africa CDC, US CDC, United Nations Children's Fund (UNICEF), African Field Epidemiology Network (AFENET), Médecins Sans Frontières (MSF), and the International Coordinating Group (ICG) on Vaccine Provision.

We also recognize the dedication of state epidemiologists, disease surveillance officers, laboratory scientists, and frontline healthcare workers for their relentless efforts in surveillance, risk communication, case management, and vaccination campaigns. Furthermore, we extend our gratitude to Ministries, Departments, and Agencies (MDAs), civil society organizations (CSOs), community-based organizations, faith-based organizations, and traditional and community leaders, whose advocacy and grassroots engagement have been crucial in promoting awareness and facilitating community-based interventions. Through sustained collaboration and innovation, we can strengthen Nigeria's health security and move closer to achieving the global goal of defeating meningitis by 2030.

Acronyms

AEFI	Adverse Event Following Immunisation
AFENET	African Field Epidemiology Network
CCE	Chief Consultant Epidemiologist
CHIPs	Community Health Influencers and Promoters
US CDC	United States Centre for Disease Control & Prevention
CSF	Cerebrospinal Fluid
CSM	Cerebrospinal Meningitis
DSNO	Disease Surveillance and Notifications Officers
EOC	Emergency Operations Centre
EPRC	Emergency Preparedness and Response Committee
FMoHSW	Federal Ministry of Health and Social Welfare
HF	Health Facility
IAP	Incidence Response Action Plan
ICG	International Coordinating Group
IDPs	Internally Displaced Persons
IDSR	Integrated Disease Surveillance and Response
IFAIN	International Foundation Against Infectious Diseases in Nigeria
IHR	International Health Regulations
IMS	Incident Management System
IMST	Incident Management Support Team
IMT	Incident Management Team
LGA	Local Government Area
MDAs	Ministries Departments and Agencies
MSF	Médecins Sans Frontières
NCC	Nigerian Communications Commission
NCDC	Nigeria Centre for Disease Control & Prevention
NEMA	National Emergency Management Agency
NIMET	Nigerian Meteorological Agency
Nm	Neisseria meningitides
NOA	National Orientation Agency
NPHCDA	National Primary Health Care Development Agency
PCR	Polymerase Chain Reaction

RRT	Rapid Response Team
SEMA	State Emergency Management Agency
SERS	Strengthening Epidemic Response System
SMoHSW	State Ministry of Health and Social Welfare
SPHCDA	State Primary Health Care Development Agency
SPHCMB	State Primary Health Care Management Board
TI	Trans Isolate
TP	Total Population
UNICEF	United Nations Children's Fund
UNMC	University of Nebraska Medical Centre
VCM	Voluntary Community Mobilisers
WHO	World Health Organization

Overview of Cerebrospinal Meningitis

Cerebrospinal Meningitis (CSM) is a disease characterised by inflammation of the meninges—the protective membrane covering the brain and the spinal cord—which can be caused by a variety of microbial pathogens including viral, fungi, and bacterial organisms (1). The focus of this document is bacterial meningitis, which is the major cause of epidemics. The main aetiological agents in bacterial meningitis are *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae* (2). *Neisseria meningitidis (Meningococcus)* is a leading cause of bacterial meningitis (3). Differences in the chemistry of the polysaccharide capsule allow definition of 12 serologically distinct meningococcal capsular groups, of which 6, designated A, B, C, W (previously designated W135), X, and Y, are responsible for almost all cases of the disease (4). Meningococcal disease is a global problem, but disease rates vary by a factor of 10-100-fold in different geographic locations at one point in time and in the same location at different times (4). The onset of cases in the sub-Saharan Africa region typically begins during the dry season, possibly related to drying and damage to the *nasopharyngeal mucosa*, and subsides with the rainy season, and may re-emerge the following dry season (4).

Regional Situation

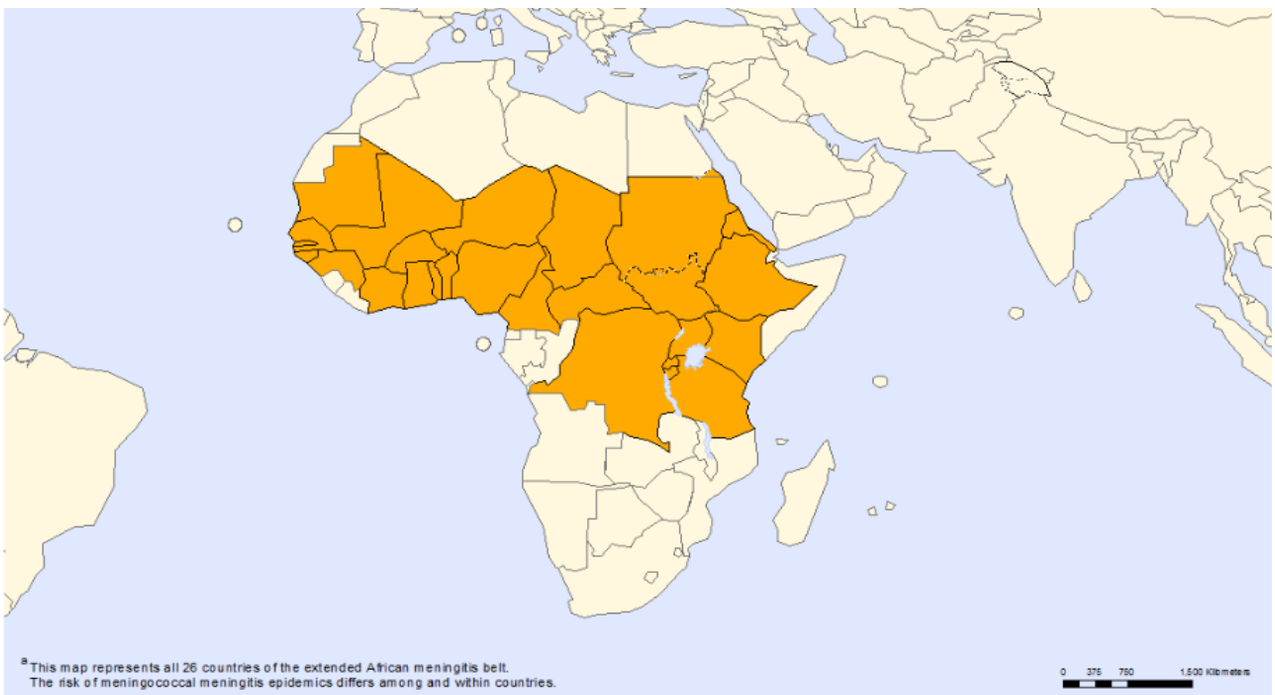
Large epidemics of CSM in Africa have led to the identification of the African Meningitis Belt, which extends from Senegal in the west to Ethiopia in the east and includes 26 countries: Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Mali, Mauritania, Niger Republic, Nigeria, Rwanda, Senegal, South Sudan, Sudan, Tanzania, Togo, and Uganda (**Figure 1**).

Despite significant progress in reducing the incidence of CSM over the past 20 years, there were still an estimated 2.5 million new cases globally and 230,000 deaths from CSM in 2019 (5). Epidemics in the meningitis belt were traditionally associated with *Neisseria meningitidis* serogroup A. The development and deployment of serogroup A meningococcal conjugate vaccine (MenAfriVac-A) in several countries within the meningitis belt brought hope for the eradication of the disease in this region (6). However, progress was set back by a serogroup C outbreak during the dry season of 2014–15 in Niger, with more than 8,500 cases and 550 deaths (6).

Since then, sequential outbreaks of serogroup C have occurred in Niger and North-Western Nigeria caused by sequence type (ST)-10217, which had not been previously identified elsewhere. This new strain is now

well-established in the Region, with subsequent outbreaks reported since 2015. Studies have shown that factors such as low socioeconomic status, sociocultural practices, climatic conditions, immunological susceptibility, migration, and behavioural factors are risk factors for epidemic CSM in Nigeria (7).

Figure 1: African Meningitis Belt *Source: Meningitis Outbreak Response in Sub-Saharan Africa. WHO guideline*

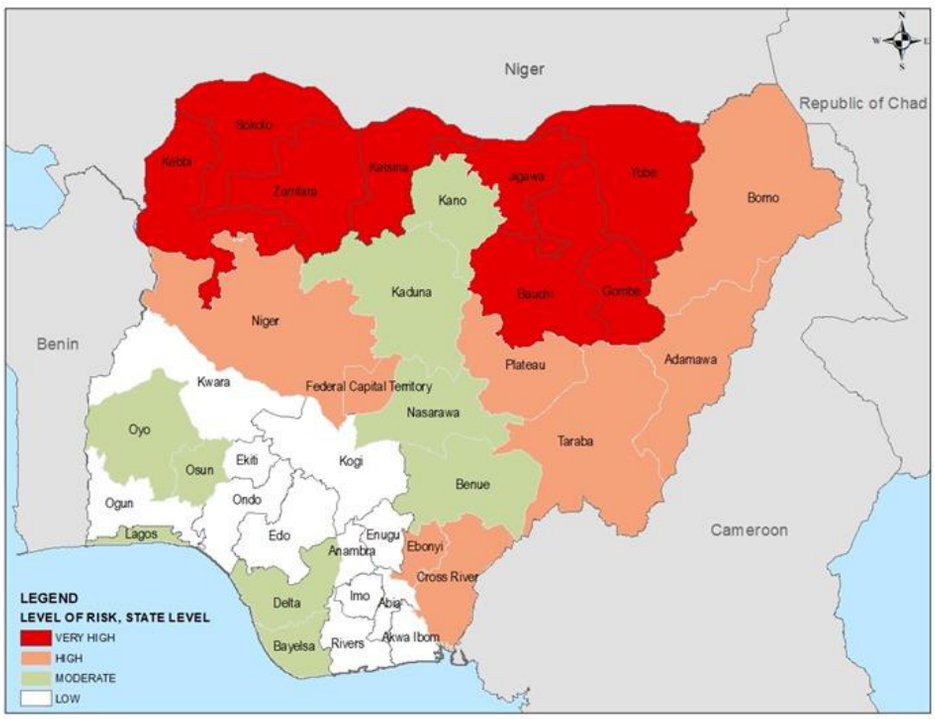


National Situation

The *Integrated Disease Surveillance and Response (IDSR)* Technical Guidelines in Nigeria classify CSM as one of the epidemic-prone diseases. Outbreaks of the disease are detected through event-based and case-based surveillance strategies where a cerebrospinal fluid (CSF) sample is taken from each patient suspected of having the disease and tested for pathogen confirmation (8). Since the first reported CSM outbreak in Zungeru, Northern Nigeria, in 1905, CSM outbreaks have become a recurrent issue in Nigeria.

The highest burden of CSM in Nigeria occurs in states located in the meningitis belt, including all 19 states in the northern region, the Federal Capital Territory (FCT), and some southern states such as Bayelsa, Cross River, Delta, Ekiti, Oyo, Ogun, Ondo, Osun. While 25 of Nigeria's 36 states report CSM outbreaks, a risk analysis conducted in 2024 classified states into categories of very high, high, and moderate risk levels (Figure 2).

Figure 2: States in The Meningitis Belt in Nigeria by Risk Level



In recent years, the number of suspected CSM cases reported in the country has increased (Table 1). The recent 2023/2024 outbreak in Nigeria recorded 4,915 suspected cases with 319 total deaths (case fatality rate [CFR] = 7.3%), which was predominantly due to Neisseria meningitidis serogroup C. The 2023/2024 outbreak also saw the first global introduction of Men5CV, a pentavalent meningococcal conjugate vaccine protecting against Neisseria meningitidis serogroups A, C, W, X, and Y.

Table 1: The CSM trend in Nigeria by Outbreak Season

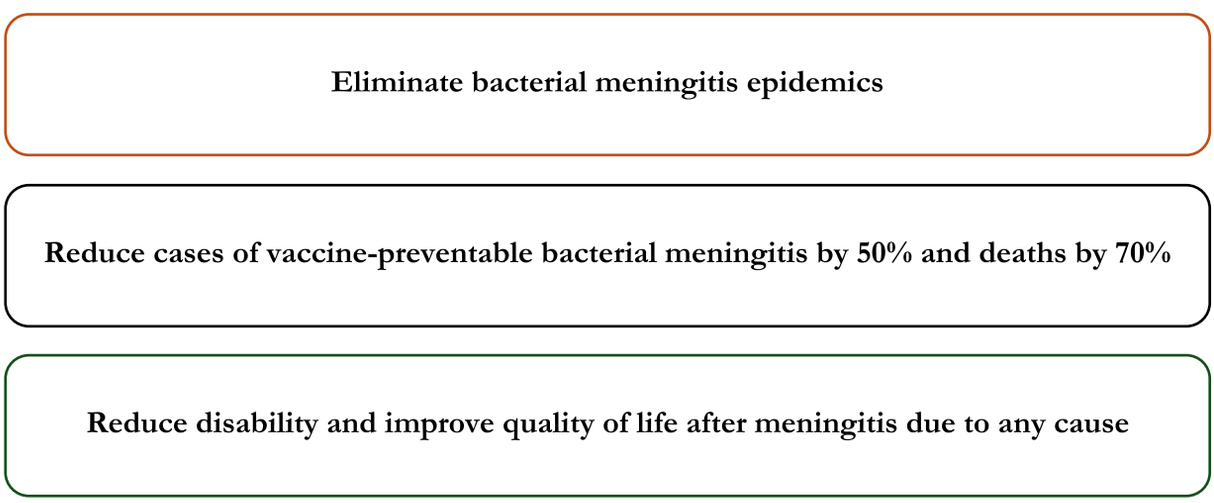
CSM Season	Suspected Cases	Deaths	Case Fatality Rate %	States
2016/2017	14,513	1,166	8.0	24
2017/2018	3070	232	7.6	18
2018/2019	914	65	7.1	15
2019/2020	641	24	3.7	28
2020/2021	496	15	3.0	32
2021/2022	944	131	14	33
2022/2023	1,914	134	7.0	22
2023/2024	4,915	361	7.3	23
***Note**: CSM outbreak season typically occurs between October to May*				

Defeating Meningitis by 2030 Global Roadmap

Nigeria participated in developing the World Health Organization's (WHO) global strategy for defeating meningitis and remains a prominent voice in the WHO African Regional Office (AFRO) on issues concerning meningitis. On the 28th of September 2021, WHO launched the Defeating Meningitis by 2030 (DM2030) global roadmap, which includes three visionary goals (Figure 3).

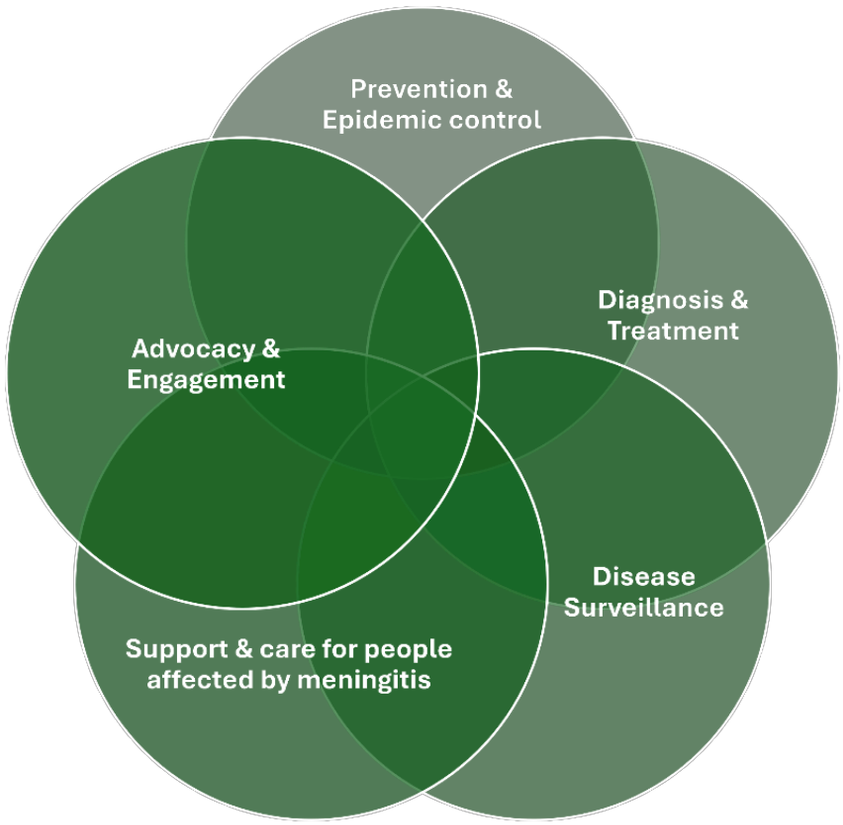
Five DM2030 pillars (Figure 4) support the visionary goals. The five pillars are interconnected: diagnosis is closely linked to surveillance; surveillance informs prevention and epidemic control; support and care for patients and families should commence during treatment at the time of diagnosis; and advocacy and engagement are necessary for the success of every pillar (9).

Figure 3: Visionary goals to eliminate bacterial meningitis epidemics



According to the WHO, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmary. The Defeating Meningitis by 2030 Roadmap recognises CSM sequelae and the need for their identification and management. The long-term effects experienced by CSM survivors, from past outbreaks or sporadic infections, remain devastating. Nigeria has adopted the roadmap and developed a national strategic plan to defeat meningitis in response to the global call to defeat meningitis by 2030.

Figure 4: The overlapping 5 pillars supporting Defeating Meningitis by 2030 visionary goals



CSM Sequelae

Up to 30% of CSM survivors have some type of neurological or neuro-behavioural sequelae (10). These include seizures, hearing and vision loss, cognitive impairment, neuromotor disability, and memory or behaviour changes. Few studies have documented the long-term (greater than five years) consequences or examined whether the age at the time of CSM infection contributes to worse outcomes. Because over 1 in 5 CSM survivors experience complications, the inclusion of aftercare beyond the medical sector, such as the social welfare and education sectors, is important for improving survivors' quality of life.

In Nigeria, children below the age of 15 years are at higher risk of CSM. Those who recover from CSM are at risk of developing sequelae. Currently, in Nigeria, there is no active system to identify and track individuals with CSM sequelae. There is also no coordinated sequelae support system to connect individuals with essential services (e.g., occupational health therapy, rehab, special education) and there is a data gap on sequelae prevalence and type, which limits informed decision-making, policy, as well as resource allocation.

Scope

This document is designed to guide national and sub-national healthcare workers, authorities, and key stakeholders to prevent, prepare for, detect, and respond to bacterial meningitis epidemics. This guideline covers the following areas: coordination, surveillance and epidemiology, case management, laboratory diagnosis, risk communication, and social mobilisation, preventive and reactive vaccination, and climate change.

Aim and Objectives

Aim

To guide healthcare workers, authorities, and relevant national, state, and local government stakeholders on the prevention, preparedness, detection, and response to CSM outbreaks in Nigeria.

Specific Objectives

- To guide the prevention, early detection, and response to suspected meningitis cases and prompt reporting of such cases from health facilities to higher levels for public health actions.
- To guide the activation of response coordination structures at national and sub-national levels during outbreaks.
- To strengthen surveillance and laboratory confirmation at all levels and the use of this information for immediate public health control measures.
- To guide preparedness and response plans for meningitis outbreaks

Standard Case Definitions for CSM

CSM is a life-threatening condition that presents abruptly and can progress rapidly. Clinical manifestation may be more difficult to identify in children and infants. It also has a wide range of differential diagnoses including malaria and other infections, which can make its diagnosis challenging. A high index of suspicion is therefore necessary to make an early diagnosis of CSM and institute required interventions for optimal outcomes. The following standard case definitions should be used to detect and report cases:

Suspected case

Any person with a sudden onset of fever (>38.5˚C rectal or 38.0˚C axillary) AND any meningeal sign such as neck stiffness, altered consciousness, Kernig's, Brudzinski's, nuchal rigidity or signs of raised intracranial pressure, including bulging fontanelle in toddlers.

Probable meningitis case

Any suspected case with turbid, cloudy, or purulent CSF on visual inspection; OR with a CSF leukocyte count >10 cells/mm3 on doing a cell count; OR with bacteria identified by Gram stain of the CSF.

In Infants

CSF leucocyte count >100 cells/mm3; OR CSF leucocyte counts 10–100 cells/mm3 AND either an elevated protein (>100 mg/dl) or decreased glucose (<40 mg/dl) level.

Confirmed case

Any suspected or probable case that is laboratory-confirmed by culturing or identifying (i.e., by polymerase chain reaction, immunochromatographic dipstick, or latex agglutination) a bacterial pathogen (*Neisseria meningitidis*, *Streptococcus pneumoniae*, *Haemophilus influenzae* type b) in the CSF.

During an outbreak and in the absence of testing, cases can be classified as:

- **Clinically Compatible**: Any suspected case with prolonged fever, high rise in body temperature ranges from 38.5˚C rectal or 38.0˚C axillary, altered consciousness, convulsions, and diarrhoea from a community experiencing a CSM outbreak

- **Epidemiologically Linked**: Any case coming from a community with an ongoing outbreak or known exposure to a confirmed CSM case.

Preventing Meningitis Outbreaks

There are four essential principles employed in the prevention of meningitis outbreaks:

- Health Promotion
- Personal Hygiene
- Vaccination
- Case management

Health Promotion

To prevent CSM outbreaks, stakeholders at the national, state**,** and LGA levels including healthcare workers, civil society organizations, and social mobilization officers, are required to prioritize continuous education and awareness about meningitis (causes, signs & symptoms, preventive measures, treatment, routine immunization**,** and sequelae) in Nigeria, particularly in identified high-risk states. CSM is seasonal in Nigeria and occurs during the dry season (October-May), stakeholders should conduct early public awareness programmes to strengthen preparedness and prevent outbreaks. Engaging diverse audiences and leveraging community structures and media will improve the reach and support early response efforts.

Personal Hygiene

CSM is a serious disease that spreads rapidly, especially in crowded environments such as internally displaced persons (IDP) camps, schools, prisons, and other areas where individuals are in prolonged close contact. By practicing good personal hygiene, the risk of transmission can be significantly reduced. Below are practical steps to help individuals protect themselves and their community from contracting CSM:

Priority Hygiene Practices

- Sleep in well-ventilated spaces to reduce the risk of droplet infections
- Avoid sharing towels, handkerchiefs, toothbrushes, or water bottles to minimize the risk of bacterial transfer
- Avoid sharing utensils for eating and avoid drinking from the same containers with others
- Avoid touching your face, especially your eyes, nose, or mouth, with unwashed hands
- Clean your surroundings, including your bed space and frequently touched surfaces like door handles, switches, and tables.

Hand Hygiene: The First Line of Defence

Hand washing is an easy, important hygiene practice that can contribute to the prevention of CSM spread. Wash hands frequently with soap under clean running water, especially:

- After coughing or sneezing
- Before touching your face
- After touching shared surfaces
- When caring for the sick

Note: When soap/ashes and water are not available, use alcohol-based hand sanitizer to kill germs effectively but ensure to wash your hands with soap/ashes under running water as soon as you have access to soap/ashes and water.

Respiratory Hygiene and Etiquette

Practicing good respiratory hygiene helps limit the spread of bacteria through droplets. Follow these tips to practice respiratory hygiene and etiquette:

- Always cough or sneeze into your bent elbow or cover your nose and mouth with a tissue.
- Dispose of the used tissue immediately in a covered bin and wash your hands.
- Avoid spitting in public places to prevent bacterial spread.

Vaccination

Vaccination is one of the most effective ways to protect against certain types of CSM. There are vaccines for three primary bacteria that can cause CSM:

- Neisseria meningitidis
- Streptococcus pneumoniae
- Haemophilus influenzae type-b (Hib)

Currently, in Nigeria, vaccines for *Neisseria meningitidis* serogroup A (MenAfriVac), *Streptococcus pneumoniae* (pneumococcal conjugate vaccine: PCV), and *Haemophilus influenzae* type-b (pentavalent vaccine) are available through the routine immunisation program for children under five years of age. However, vaccines for other *Neisseria meningitidis* serogroups (e.g., C, W, X, Y) are only available through emergency request mechanisms during outbreaks for reactive campaigns from global stockpiles through the International Coordinating Group (ICG).

In 2024, Nigeria successfully conducted the first global use of Men5CV, a novel meningococcal pentavalent conjugate vaccine, protecting against Neisseria meningitidis serogroups A, C, W, X, and Y. The use of Men5CV should be prioritized in logistics planning. The NPHCDA is expected to preposition the Men5CV vaccine in anticipation of the outbreak season to mitigate casualties while awaiting the finalization of the ICG vaccine request.

Case Management

Prompt and effective case management is crucial in preventing CSM outbreaks. Early detection and effective treatment reduce the spread of infection, as well as prevent severe complications and deaths. In addition, the isolation of cases will help interrupt the chain of transmission, especially in crowded situations and settings.

Preparedness Strategy for CSM

In preparation for the CSM epidemic season, which is usually from October to June with cases peaking in March or April, all states and LGAs should actively plan to prevent, detect, and respond to outbreaks of CSM. Preparedness for CSM outbreaks entails preparedness at all levels: community, health facilities, LGAs, states, and the nation. The following activities are recommended to strengthen preparations for the epidemic season and should be conducted during July, August, and September:

Table 2: Table Showing Preparedness Level and Activities by Pillar

LEVEL	ACTIVITIES
Community	**Health Promotion** o Engage with local leaders such as religious, traditional, and community leaders to enhance the reach and impact of prevention efforts and ensure community buy-in for vaccination and surveillance. o Conduct campaigns to inform the community about symptoms, transmission, prevention, and hygiene practices. o Educate the community about the importance of seeking early medical attention for suspected cases to ensure timely treatment and better outcomes. o Align with global CSM efforts, including World Meningitis Day (October 5). **Adherence to routine immunization efforts** o Enhance community engagement activities and advocacy to the community to gain support and promote adherence to routine immunization. **Surveillance and Epidemiology** o Train community members as local informants to assist in identifying symptoms, monitoring, and reporting suspected CSM cases to health authorities, such as DSNO, PHCs, or local health facilitates, promptly.
Health Facility	**Surveillance** o Conduct training on case definitions, distribute printed material on case definitions, and ensure standardized case-based forms are used for accurate and consistent diagnosis and treatment. o Ensure awareness of health care workers (HCWs) on how, and to whom, to

LEVEL	ACTIVITIES
	report cases, including zero reporting. o Ensure availability of printed SOPs and tools for reporting procedures. **Case Management** o Ensure HCWs are aware of referral health facilities for treatment when services are unavailable at their current location. o Conduct facility-level training on lumbar puncture technique, specimen collection, Trans Isolate (TI) utilization, and handling. o Ensure the availability of printed clinical job aids and data collection tools. o Collaborate with logistics to ensure availability of sample collection materials (LP kits) and support training on proper use. **Laboratory** o Support training on sample collection commodities such as TI medium utilization and specimen transportation. o Provide directories of reference laboratories for accurate specimen confirmation and serotyping. o Ensure HCW have access to directories of reference laboratories for accurate specimen confirmation and serotyping. o Ensure SOPs and tools for sample processing and reporting are available. **Vaccination** o Update the Reaching Every Ward (REW) micro plan to ensure the catchment area population is captured in planning for potential reactive vaccination. o Ensure functionality of the cold chain o Support logistical processes and SOPs for managing supplies and vaccines **Logistics** o Ensure adequate supplies of medical countermeasures for CSM o Ensure availability of printed SOPs and logistics management and information system (LMIS) tools
LGA	**Coordination** o Ensure the LGA Public Health Emergency Committee meets bi-annually

LEVEL	ACTIVITIES
	○ Conduct simulation exercises in hotspot areas. **Case Management** ○ Provide information on designated CSM treatment centres and inform health facilities about the nearest treatment centres to ensure proper referral and timely management of cases. ○ Share with health facilities updated job aids, SOPs, clinical data collection forms, case definition forms. **Surveillance** ○ Train HCW on case definitions, data collection and reporting procedures. ○ Distribute printed clinical job aids and data collection tools to health facilities. ○ During on-site visits, support and train health facility surveillance focal person on data collection and management. **Laboratory** ○ Conduct sample management/transport.on-the-job training of HF lab teams. ○ Ensure proper sample management and transportation. ○ Ensure awareness of specimen collection before starting antibiotic treatment and observe proper methods of ventilating/storing specimens for transport. ○ Ensure HCW awareness on specimen collection before antibiotic treatment and the proper methods for ventilating and storing specimens prior to transport. **Logistics** ○ Ensure adequate supplies of MCMs - such as LP kits, testing reagents, medications, consumables, SBC and surveillance forms - are prepositioned at designated sample collection centres/health facilities surveillance materials including reporting forms. ○ Ensure availability of updated and printed SOPs and LMIS tools. **Vaccination** ○ Conduct tabletop reviews and update existing micro plans. ○ Take inventory of cold chain equipment (slow and fast CCE). ○ Plan adequately for waste management.

LEVEL	ACTIVITIES
State	**Coordination** o Ensure the LGA Public Health Emergency Committee meets bi-annually. o Convene the State Epidemic Preparedness and Response (SEPR) Committee with representatives from the State Ministry of Health (SMOH) and SPHCDA/SPHCB o Conduct epidemic preparedness response plan at the PHEOC where key health facilities, reference laboratories, and partners attend to draft a preparedness plan. o Mobilize resources to stock State strategic reserve. o Conduct simulation exercises in hotspot areas. o Ensure the PHEOC is functional and equipped with the updated and reviewed SOPs to serve as a centralized hub for coordinating epidemic response activities. o Ensure that pillar specific SOPs are developed and disseminated to standardize procedures across the state. o Ensure state completes the CSM Preparedness Checklist (Annex A). o Ensure updated state 4W list of health sector stakeholders and partners. o Conduct simulation exercise to test EPR plan. **Laboratory** o Establish a state public health laboratory network (hub and spoke) and conduct training of LGA lab focal persons on sample management and transport. o Pre-position diagnostic reagents, test kits, and surveillance materials: Ensure availability of essential laboratory supplies at LGAs and health facilities based on NCDC National Reference Laboratory guidance and recommendation. **Surveillance and Epidemiology** o Train LGA DSNOs on case-based forms, line list compilation, and reporting procedures to enhance data collection and reporting among DSNOs o Ensure the appropriate personnel at the LGA and health facility levels are trained in surveillance and reporting. o Provide estimates of populations at risk and hotspot mapping of CSM for proper preparedness, readiness and response planning. o Ensure availability of updated case definitions, SOPs and data collection tools.

LEVEL	ACTIVITIES
	Vaccination o Ensure updated inventory of cold chain equipment (slow & fast CCE) at state level. o Update existing state micro-plans. **Logistics** o Carry out needs assessment and provide estimates of quantities of drugs, vaccines, and relevant MCM supplies. Ensure adequate stockpiles are maintained in readiness for epidemic response in line with risk assessment. o Develop/update and disseminate relevant SOPs for inventory management to standardize procedures across the state. o Ensure training of logistics officers on LMIS. Conduct simulation exercises. **Case Management** o Conduct trainings on LP technique, CSF sample collection, TI use and handling o Identify designated CSM treatment centres and HFs know the referral pathways. o Ensure availability of updated clinical job aids and data collection tools to LGAs.
National	**Coordination** o Provide advisories to states on preparedness for CSM outbreak season. o Analyse results of each State's level of preparedness using the CSM assessment checklist to evaluate state readiness level. Provide feedback on the result of the analysis to states with recommendations to enhance preparedness. o Strengthen the EPR Committee to function effectively o Conduct advocacy to relevant stakeholders at the state level to promote the institutionalization of funding for Emergency Preparedness and Response (EPR) through dedicated budget lines. o Conduct simulation exercise to test EPR plan o Ensure updated 4W list of health sector stakeholders and partners **Surveillance and Epidemiology** o Analyse the outcomes of previous year's epidemics and vaccination campaigns to identify states/LGAs at risk of being affected in upcoming epidemic season. o Ensure training in use of standard reporting forms and procedures and ensure

LEVEL	ACTIVITIES
	that all states have trained personnel capable of accurate data collection and reporting. o Ensure availability of updated printed SOPs and tools for reporting procedures **Vaccination** o Conduct annual national forecasting, quantification, and procurement of response commodities to ensure the provision of adequate supplies of Men5CV vaccines are available in the Strategic National Stockpile. o Work with relevant MDAs (NCDC, NPHCDA, NAFDAC) to preposition and fast-racking MCMs such as medicines, diagnostics, and vaccines for response. **Logistics** o Conduct annual national forecasting, quantification, and procurement of response commodities to ensure adequate supplies of drugs and other MCMs are available in the Strategic National Stockpile. o Ensure proper supply chain management and timely distribution. o Ensure LMIS training of logistics officers. **Laboratory Diagnosis** o Work with NCDC supply chain and stakeholders to conduct forecasting, quantification, preposition laboratory reagents. Ensure critical diagnostic supplies are allocated to appropriate sample collection and diagnostic sites based on vulnerability assessments. o Conduct optimization of state laboratory network and conduct training of state lab focal persons on sample management, transport, testing. o Engagement of biomedical engineer to calibrate equipment at state laboratories. o Conduct external quality assurance (EQA) of laboratories in the network o Provide support and supervision to states. **Case management** o Review case management guidelines and support states in adaptation, with the inclusion plan for maintenance of essential services during large outbreaks. o Ensure availability of updated clinical job aids and data collection tools o Conduct ToT on case management / lumbar puncture

Needs Assessment and Resource Mapping

All too often, the epidemiology team of the State Ministry of Health does not have the resources to respond effectively to an outbreak of diseases. It is therefore important to determine what resources the State has (or is lacking), and what is required for CSM emergency operations to be carried out effectively. If logistical planning and preparations have taken place before the event, this will make it easier to determine which resources are available and which are lacking and must be procured elsewhere. The following tables outline how to estimate the number of cases, vaccines, and antibiotics needed to respond effectively to a CSM outbreak.

Table 3: Estimating the number of expected cases

VARIABLES	VALUE
Population at risk	
Number of estimated cases: Likely cumulative attack rate for the season (based on past epidemics)	*(e.g., 500/100,000)*
Number of cases notified as of this date (to be subtracted)	
Number of expected cases	
The margin of error (25 %)	
Basis for needs estimation	

Table 4: Vaccines need estimation

VACCINE NEED ESTIMATION
Estimate population at risk (unvaccinated) • *Last epidemic year (s) immunization coverage /LGA* **Target population** • *2 - 15 yo (45%)* • *2 - 30 yo (70%)* **Number of doses** • *(For Vacc Cov of 100%/1)* **Factor of loss** • *Multiply x 1.17* **Security Stock** • *Multiply x 1.25* • *Subtract Existing Stock (ED)* • *Period to be covered = Function of:* ○ *level of existing stocks* ○ *delays of shipping* ○ *previous epidemic trends* ○ *availability of funds*

Table 5: Antibiotics need estimation

ANTIBIOTIC NEED ESTIMATION	
Total population in district	*95 484*
Likely cumulative attack rate for the season (based on past epidemics)	*120/100 000* *95 484 × 120/100 000 = 114*
Estimated number of cases during the season (population × cumulative attack rate), less the number of documented cases	*114 less 20 = 94*
Plus, additional 25 % buffer stock	*94 + 22 = 116*
Antibiotics needed: Ceftriaxone treatment (10 1g-vials per adult)	*116 × 10 = 1 160 vials of ceftriaxone*
Plus, water for injection, needles, and syringes	

Note: Other supplies needed for supportive treatment can be estimated based on the number of expected cases

Surveillance and Epidemiology

Understanding thresholds in CSM outbreak surveillance is key to undertaking timely public health action to support response.

Alert and Epidemic Thresholds

Epidemiological data should be analysed as cases are being reported by wards and LGAs to quickly determine which wards/LGAs have reached Alert and Epidemic Thresholds (the definitions of which are dependent on the population size). The updated total population for each ward and settlement should be obtained from the immunization unit in the LGA secretariat to have an updated denominator to calculate attack rates.

Table 6: Definitions of Alert and Epidemic Thresholds

ALERT THRESHOLD	DEFINITION
Populations 30,000–100,000	Attack rate of 3 suspected cases per 100,000 inhabitants in one week
Populations < 30,000	2 suspected cases in one week **OR** Increase in the number of cases compared to previous non-epidemic years
EPIDEMIC THRESHOLD	**DEFINITION**
Populations 30,000–100,000	Attack rate of 10 suspected cases per 100,000 inhabitants in one week
Populations < 30,000	5 suspected cases in one week **OR** Doubling number of cases over three weeks

Note 1: Wards with a population of less than 30,000 that have recorded confirmed cases of CSM and are reporting suspected cases can be merged with nearby wards within the same LGA for calculating attack rates for ICG prioritization (adjoining wards for vaccination).

Note 2: For wards with a population greater than 100,000 that have recorded suspected CSM cases, the analysis should be conducted at the settlement level to determine when the Alert and Epidemic thresholds have been reached.

Surveillance Response Activities during the CSM Epidemic Season

During each epidemic season, states and LGAs should report all CSM cases to the NCDC through SORMAS and standardized line lists. States should also develop situation reports to be shared with the national. The state epidemiologist, with support from the NCDC, must calculate attack rates and monitor ward and LGA thresholds at least weekly. During each CSM season, LGAs with weekly attack rates or case counts below the alert thresholds (pre-alert phase), and LGAs in alert or epidemic phases should continually collect, report, and analyse data to enable timely outbreak responses, at the different levels of reporting using the following guide:

Table 7: Surveillance Activities at Pre-Alert, Alert, and Epidemic Phases (COMMUNITY)

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
COMMUNITY LEVEL		
Pre-Alert	• Use appropriate community case definitions (**community case definition**: any person with fever AND neck stiffness) • Identify and record suspected cases on the rumour log within your catchment area • Notify the local health facility surveillance focal person (FSFP) of community cases for verification	• Immediate reporting of ALL community cases to the health facility surveillance focal person using the IDSR rumour log as described in the CBS/EBS guidelines
Alert	• Continue all **Pre-Alert** activities **AND** • Maintain high situational awareness	• Immediate reporting of all community cases and unknown deaths to health facility surveillance focal person using the IDSR rumour log as described in the CBS/EBS guidelines
Epidemic	• Continue all **Alert** activities **AND** • Support in conducting active case search during an outbreak in the community.	• Immediate reporting of all community cases and unknown deaths to HF surveillance focal person using the IDSR rumour log as described in guidelines

Table 8: Surveillance Activities at Pre-Alert, Alert, and Epidemic Phases (HEALTH FACILITY)

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
HEALTH FACILITY LEVEL		
Pre-Alert	• Use appropriate case definitions (Standard case definition) • For health facilities that are not designated CSM treatment centres, establish a link with CSM treatment centre to aid referral of cases • Refer all suspected cases to a designated CSM treatment centre for evaluation and treatment. • Obtain CSF on ALL suspected cases and send them to the designated testing laboratory along with the laboratory form (IDSR 001B) • Complete the IDSR case-based reporting form for ALL suspected CSM cases (IDSR 001A) • Upload ALL suspected CSM case data on SORMAS • Inform LGA DSNO and State Lab Focal person if materials to collect or transport CSF to reference lab are not available • Active case search and contact tracing	• Immediate reporting of ALL suspected cases and deaths to LGA DSNO using IDSR reporting tools (IDSR 001A, IDSR 001B, IDSR 001C and SORMAS). • WEEKLY zero-reporting to LGA DSNO
Alert	• Continue all **Pre-Alert** activities **AND** • If patients are seen directly at a secondary or tertiary health facility inform the LGA DSNO about the case and send the IDSR case-based forms to the DSNO of the LGA corresponding to the patient's home	• Immediate reporting of ALL suspected cases and deaths to LGA DSNO using IDSR reporting tools (IDSR 001A, IDSR 001B, IDSR 001C and SORMAS). • DAILY zero-reporting to LGA DSNO • DAILY line list of all cases reported to LGA DSNO using a standard template (Annex E).

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
		Note: Photos, SMS, or email can be used to send the line list to the LGA DSNO to ensure timely reporting
Epidemic	• Continue and intensify all **Alert** activities **AND** • Inform LGA DSNO about any cases from outside the catchment area for state/LGA to support cross-border surveillance.	• Immediate reporting of ALL suspected cases and deaths to LGA DSNO using IDSR reporting tools (IDSR 001A, IDSR 001B, IDSR 001C and SORMAS). • DAILY zero-reporting to LGA DSNO • DAILY line list of all cases using standard template submitted to LGA DSNO (Annex F) **Note**: Photos, SMS, or email can be used to send the line list to the LGA DSNO to ensure timely reporting

Table 9: Surveillance Activities at Pre-Alert, Alert, and Epidemic Phases (LGA)

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
LOCAL GOVERNMENT AREA (LGA) LEVEL		
Pre-Alert	• Ensure that health facilities are using appropriate and updated case definitions (Standard case definition). • Ensure that health facilities know the designated CSM treatment centres for referral of suspected cases for evaluation and treatment • Ensure that treatment facilities have adequate testing supplies and surveillance reporting tools • Ensure that CSF from ALL suspected cases has been collected and sent to reference laboratory along with	• Immediate reporting of ALL suspected cases to State DSNO using the appropriate IDSR reporting tools (IDSR 001A, IDSR 001B, IDSR 001C and SORMAS). • WEEKLY zero-reporting to State DSNO • Share all populated case-based

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
	IDSR laboratory form (IDSR 001B) with SORMAS auto generated EPID number. • Investigate all suspected cases and complete IDSR case-based forms for all suspected cases, if not already completed by the health facility (IDSR 001A) • Compile WEEKLY data from health facilities (Annex B) • Provision of CSM sequelae reporting tools • **Note:** If for any reason the DSNO is unable to generate an Epid number from SORMAS, assign a temporary ID. Immediately when an Epid number is generated from SORMAS, replace the temporary ID and follow up with state lab focal person to do the same	forms to State DSNO and upload on SORMAS, if not already uploaded by the facility. • Ensure that health facilities are using reporting of ALL suspected cases and deaths to LGA DSNO using IDSR reporting tools (IDSR 001A, IDSR 001B, IDSR 001C and SORMAS). • DAILY zero-reporting to LGA DSNO
Alert	• Continue all **Pre-Alert** activities **AND** • Alert all health facilities in LGA that the Alert Threshold has been crossed • Contact silent health facilities to ensure that they know the case definition and reporting procedures. • Conduct active case search when neighbouring communities have reached an epidemic threshold • Harmonize Excel line-listed cases with data on SORMAS DAILY. • Conduct cross-border surveillance at LGA, state, and international borders. • Use CSM sequelae surveillance tools to follow-up laboratory-confirmed, clinically compatible cases and all cases that developed complications during and after case management (Annex 4).	• Immediate reporting of ALL suspected cases and deaths to State DSNO using the appropriate IDSR reporting tools (IDSR001A, IDSR001B IDSR001C and SORMAS) • DAILY zero-reporting to State DSNO • Continuous update of standardized line list template with each new suspected case • Send the updated line list to the State by 6:00 pm DAILY • Share all populated case-based forms to State DSNO and upload on SORMAS, if not already uploaded by the facility. **Note**: Information can be sent by phone, email, SMS, or other

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
		methods depending on availability in LGA. Photos can be taken of case-based forms and sent to State DSNO to ensure timely reporting
Epidemic	• Continue all **Alert** activities **AND** • If one ward/LGA in the State has reached Epidemic Threshold, all other neighbouring wards/LGAs should intensify surveillance activities	• Immediate reporting of ALL suspected cases and deaths to State DSNO using the appropriate IDSR reporting tools (IDSR001A, IDSR001B IDSR001C, and SORMAS) • DAILY zero-reporting to State DSNO • Continuous update of standardized line list template with each new suspected case • Send the updated line list to the State by 6:00 pm DAILY • Share all populated case-based forms to State DSNO and upload on SORMAS, if not already uploaded by the facility. **Note**: Information can be sent by phone, email, WhatsApp, SMS, or other methods depending on availability in LGA. Photos can be taken of case- based forms and sent to State DSNO to ensure timely reporting.

Table 10: Surveillance Activities at Pre-Alert, Alert and Epidemic Phases (STATE)

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
STATE LEVEL		
Pre-Alert	• Ensure that LGAs and health facilities are using appropriate case definitions (Standard case definition). • Ensure that health facilities know the designated CSM treatment centres for referral of suspected cases for evaluation and treatment • Ensure that treatment facilities have adequate testing supplies and surveillance forms/templates • Develop a database of Almajiri /Tsangaya schools and assign health monitors in schools • Ensure that CSF from ALL suspected cases has been collected and sent to reference laboratory along with IDSR laboratory form (IDSR 001B) with SORMAS auto generated EPID number. • Investigate all suspected cases and complete IDSR case-based forms for all suspected cases, if not already completed by the health facility or LGA (IDSR 001A) • Compile WEEKLY data from LGAs and analyse to monitor if any ward or LGA has reached Alert or Epidemic Threshold **Note:** If for any reason the DSNO is unable to generate an EPID number from SORMAS assign a temporary ID. Immediately when an EPID number is generated from SORMAS, replace the temporary ID and follow up with the NRL CSM focal person to do the same	• Immediate reporting of ALL suspected cases to NCDC using the appropriate IDSR reporting tools (IDSR forms and SORMAS) and standardized line list template. • WEEKLY zero-reporting to NCDC • Calculate attack rates and case fatality rates.
Alert	• Continue all **Pre-Alert** activities **AND** • Alert neighbouring LGAs that the Alert Threshold has been crossed to enhance active case search in health facilities within the LGA with focus on communities bordering the affected LGA	• Immediate reporting of ALL suspected cases to NCDC using the appropriate IDSR reporting tools (IDSR forms & SORMAS) and standardized line list

	• Contact silent LGAs to ensure that they know the case definition and reporting procedures • Collate and update all cases on SORMAS daily from all LGAs • Harmonize Excel line listed cases with data on SORMAS DAILY • Conduct cross-border surveillance of national and international borders. • Deploy 7-1-7 matrix for assessment of the performance of surveillance, reporting, investigation, and response systems • Analyse collated data DAILY to monitor if any ward or LGA has reached Alert or Epidemic Threshold • Use CSM sequelae surveillance tools to follow up on laboratory-confirmed, clinically compatible cases and all cases that developed complications during and after case management (Annex 9).	template. • Send line list to NCDC DAILY by 6.00 PM • Calculate attack rates and case fatality rates
Epidemic	• Continue all **Alert** activities **AND** • Activate IMS and ensure that the surveillance team in State IMS has direct, regular communication with the surveillance team at the national level • At the affected LGA, the State Epidemiologist to collaborate with partners to conduct an active case search at homes and facilities with the help of community volunteers • Carry out analysis of affected groups and share situation report to NCDC and all other stakeholders	• Immediate reporting of ALL suspected cases to NCDC using the appropriate IDSR reporting tools (IDSR forms and SORMAS) and standardized line list template. • Send line list to NCDC DAILY by 6.00 PM • Calculate attack rates and case fatality rates. • Notify NCDC immediately when one ward/LGA has reached Epidemic Threshold. • Share DAILY situation report and line lists to NCDC

Table 11: Surveillance Activities at Pre-Alert, Alert, and Epidemic Phases (NATIONAL)

PHASES	SURVEILLANCE ACTIVITIES	REPORTING
NCDC		
Pre-Alert	• Ensure State and LGAs have adequate IDSR reporting tools (SORMAS and paper base) • Monitor the trend of CSM cases reported on SORMAS and line list from states/LGAs and other sources (e.g., EWARS, TATAFO, SITAware) • Maintain regular communication with the states • Analyse collated data WEEKLY from States at Ward and LGA levels to monitor if any ward or LGA has reached Alert or Epidemic Threshold • Advocacy to state on enhanced surveillance activities in communities where vaccination has taken place with Men5CV	• Provide feedback to States with Wards/LGAs with increasing case counts to ensure appropriate monitoring and response. • Calculate attack rates and case fatality rates.
Alert	• Continue all **Pre-Alert** activities **AND** • Harmonize laboratory, line listed and SORMAS data DAILY • Carry out data quality management to have reliable data. • Analyse collated data DAILY from States to monitor if any Ward or LGA has reached Alert or Epidemic Threshold • Use the 7-1-7 matrix for assessment of the performance of surveillance, reporting, investigation, and response systems	• Contact State Epidemiologist and/or State IM, surveillance team to discuss the increased number of cases and plans for vaccination campaign. • Calculate attack rates and case fatality rates.
Epidemic	• Continue all **Alert** activities **AND** • Ensure constant follow-up with states to share all surveillance formation (line list and uploaded cases on SORMAS) by 8:00 pm daily. • Develop situation reports and disseminate them to all stakeholders DAILY • DAILY meeting between the Surveillance and Vaccine teams to discuss the available data to inform ICG requests during the response	• Provide written communication to all State Epidemiologists and partners describing which States/LGAs have reached the Epidemic Threshold and a list of contiguous LGAs in bordering States that should increase their surveillance.

Enhanced Surveillance

Following the rollout of Men5CV in Nigeria in 2024, there is a need to carry out enhanced surveillance in LGAs where reactive campaigns have occurred. Enhanced surveillance relies on the above routine surveillance guidelines and forms but with an additional focus on the comprehensive vaccine status of cases. This will help to:

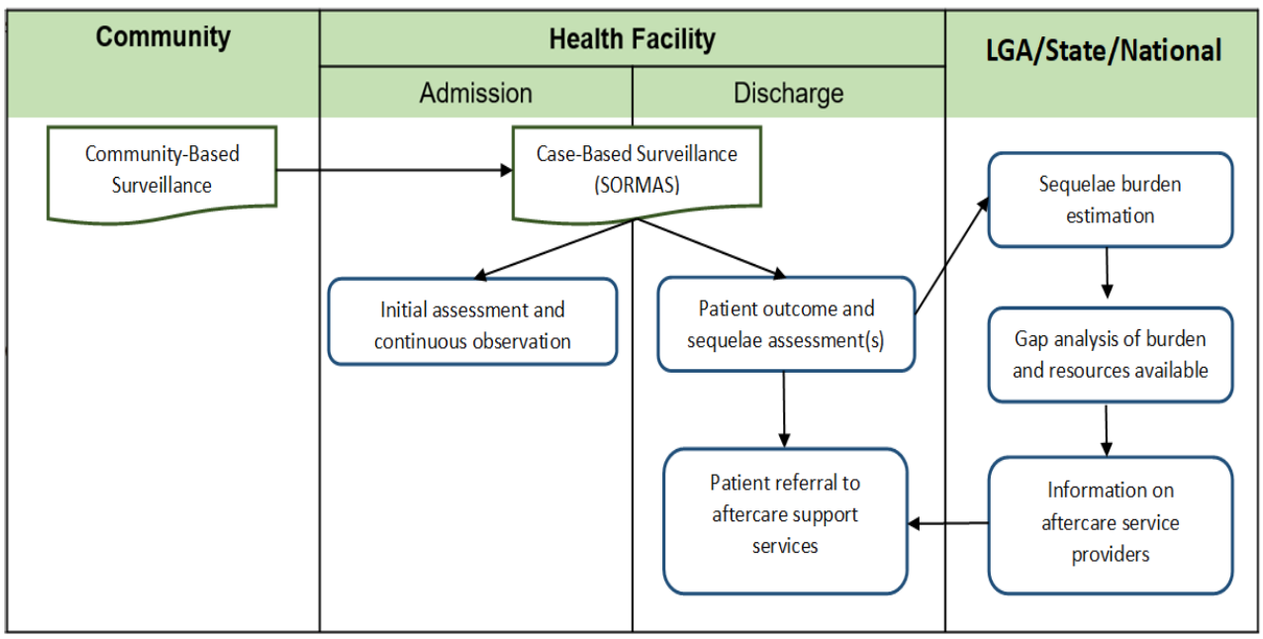
- Detect and confirm outbreaks, monitor trends, estimate disease burden, monitor the emergence of epidemic strains, and monitor vaccine impact on CSM epidemiology.
- Achieve early case detection, reporting, investigation, and confirmation of reported meningitis cases within the 1st week of onset
- Increase CSF collection and testing rate to at least 50% of all suspected cases

Enhanced surveillance data should be collected using an enhanced CIF (Annex 3), which focuses on the vaccination status of Men5CV for all suspected cases whose samples have been collected.

Sequelae Surveillance

There is a critical need to document identified cases to better understand the full spectrum of long-term sequelae and ensure survivors are connected to care. To inform effective prevention, treatment, and rehabilitation strategies, a questionnaire at discharge will suffice to gather data on the prevalence or incidence and types of sequelae among laboratory-confirmed and clinically compatible CSM cases. Case-based surveillance during outbreaks is a feasible method to track sequelae. However, the DM2030 Nigeria action plan outlines strengthening early recognition and management of sequelae by establishing routine sequelae surveillance and eventually linking survivors with sequelae to aftercare. Activities conducted at the community level, health facility, and LGA/state/national can support sequalae surveillance (Figure 5). Detailed sequelae surveillance protocols are being developed by NCDC to ensure standardization and systematic collection of sequelae data.

Figure 5: Proposed activities to be conducted at community, health facility, and LGA/State/National to support sequalae surveillance



Recommendations for Post-epidemic Phase

After each epidemic phase, evaluate the surveillance activities to identify gaps in surveillance and issues that need to be addressed before the next epidemic season. The following activities should be completed during each post-epidemic phase:

- Evaluate the detection, reporting, analysis, and response of the recently concluded outbreak to outline the gaps, and lessons learned and make recommendations for improvement.
- Continue utilizing enhanced surveillance process, and expansion to additional LGAs if new vaccination campaigns were implemented.
- Mobilise adequate resources to conduct these evaluations, which are essential to improve control and response measures during future epidemics.
- Continue weekly reporting of cases and laboratory results to monitor trends.
- Epidemic is declared over when the attack rate decreases to below the Alert Threshold over four consecutive weeks.

Outbreak Response Strategies

Outbreak response should be initiated within 7 days after the communication of the outbreak according to the 7-1-7 benchmark. The activation of PHEOC at the state level is triggered by the epidemic threshold level for the respective population size and other predetermined criteria. At the national level, a dynamic risk assessment is conducted to define the scope and magnitude of the event and the level of operational response required by the national government and stakeholders, including the activation of the IMS. Responding to outbreaks of CSM should be focused on the following thematic areas:

I. Coordination
II. Laboratory Diagnosis
III. Case Management
IV. Risk Communication and Community Engagement
V. Vaccination
VI. Logistics
VII. Surveillance and Epidemiology
VIII. Aftercare

I. Coordination

This guideline recommends the use of the Incidence Management System (IMS) for coordinating CSM outbreak response at all levels by operationalizing the PHEOC. It is very important to note that there is flexibility, scalability, and modularity in employing the five functions of an IMS (Figure 6). Depending on the scope and nature of the outbreak, some components may not require personnel, and when they do, not more than one. In other instances, the entire structure can be repurposed to accommodate specific response components (Figure 7).

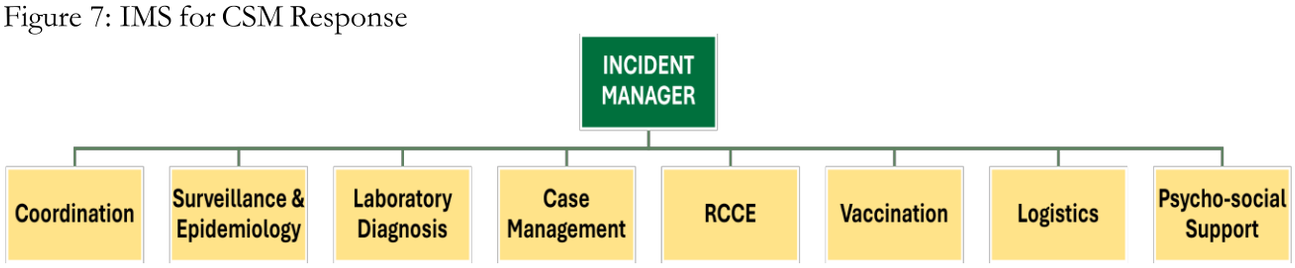
Criteria for Setting up an EOC for CSM Outbreak

At any response level, the approval to activate an IMS for a CSM outbreak at the national level falls under the responsibility of the Director-General of the NCDC, as the agency designated by the FMHSW. At the State level, the Honourable Commissioner for Health has the responsibility to authorise the activation of the IMS. In practice, a physical space is required for the following areas of responsibility:

- All IMS functions (Management, Operations, Planning and Logistics)
- Break-out / meeting rooms
- Media and communications space
- Public Information Centre (Toll-Free Call Centre)

Figure 6: Structure of the CSM Incidence Management System

Figure 7: IMS for CSM Response



Ideally, the EOC should be adequately equipped with furniture, communication equipment (e.g. audiovisual gadgets, TV screens for video calls, internet connection etc.) information display dashboards, office equipment, stationery, and emergency first aid kits. The EOC should have a toilet and kitchenette. It is recommended that copies of maps and reference materials are stored in the EOC facility for quick access. Also, equipment and supplies should be sufficient for the prolonged operation of a fully staffed EOC.

Developing and Implementing an Incident Action Plan (IAP)

At the start of the IMS operation, a detailed and costed Incident Action Plan must be developed which defines the goal and objectives of the CSM outbreak response. An IAP should be written during an IAP meeting led by the planning section with a representative from each functional area as well as SMEs. The initial IAP ideally should be developed within four hours of activation of the IMS. It should address the priority areas of the response. As outlined below, the primary steps should be taken in sequential order to ensure a comprehensive IAP is developed:

- Establish incident response goals and objectives
- Agree on response strategies for each objective and key performance indicators for each objective
- Develop high-impact response activities with corresponding timelines for implementation
- Assign roles and responsibilities for persons who will implement the listed activities
- Cost the assigned activities and mobilize resources for implementation
- Initiate implementation by tracking the status of activities in activity tracker dashboard (Annex 5).
- Evaluate the performance of the activity tracker weekly and provide recommendations
- Develop and publish periodic situation reports (SITREPs).
- The IMS planning section coordinates the development and implementation IAP

IMS De-escalation

Towards the end of the emergency response operations (which usually coincides with a period of plateaued decline after the last peak of cases of the epidemic), the EOC should begin to make and implement plans for de-escalating operations in preparation for deactivation which include the following:

- Recall all RRTs deployed to the field via capacity transfer to onsite staff.
- Scaling down of frequency of EOC coordinating meetings.

IMS De-activation

The IM will recommend the deactivation of IMS by transitioning from emergency operations to watch mode. A press briefing is developed which is communicated to the public informing stakeholders of the containment of the outbreak and deactivation of the IMS to routine watchful activities. The decision to deactivate emergency operations is data-driven and guided by the following situations:

- Epidemic is declared over when the Attack Rate decreases below the Alert Threshold over four consecutive weeks.

- Expanded EOC capabilities are no longer required.
- IAP objectives have been met
- Considerable decline in media or political interest

It should however be noted that despite IMS deactivation, a small team of 2-3 persons is left with the IM for a minimum period of 3-4 weeks to routinely monitor enhanced surveillance activities and plan the after-action review for the CSM outbreak.

Recovery Plan

- ✓ Transition cases from emergency designated treatment centres to routine health facilities for continued care, especially where complications have developed (hearing loss, physiotherapy, etc.
- ✓ Arrangement for returning cases to their Settlements.
- ✓ Continued psychosocial counselling efforts for patients with need.

Evaluation Report: IMS Intra-Action and After-Action Review

After-Action Reviews should be conducted within three months of the IMS de-activation. The Incident Manager is responsible for ensuring it is conducted and the findings documented for dissemination among stakeholders. Recommendations should be used to strengthen preparedness for the next epidemic season.

II. Laboratory Diagnosis

Once a patient meets the case definition for CSM, authorized health personnel must endeavour to collect CSF specimens through lumbar puncture for laboratory confirmation before the commencement of antibiotic therapy whenever possible (see Annex I). This is very important for clinical and public health management. CSF is the best clinical specimen to use for the isolation, identification, and characterisation of the etiological agents. Informed consent should be obtained before doing this, especially for children. Collection of this specimen should be delayed until the following contraindications are ruled out:

- Coma
- Raised intracranial pressure as evidenced by drowsiness, diplopia, abnormal pupillary responses, unilateral or bilateral motor posturing or papilledema
- Shock or cardiovascular compromise.
- Respiratory distress.
- Focal neurological signs.

- Recent seizures (within 30 minutes) or not regained normal consciousness level after a seizure.
- Coagulopathy/thrombocytopenia.
- Local infection (in the area where an LP would be performed)

Diagnostic Procedure

Once the CSF arrives in the microbiology laboratory, the following is required:

- Note the physical appearance for classification of a probable case
- Every CSF sample should be subjected to a rapid test (RDT) after centrifugation of the sample
- Every -positive sample by RDT should be confirmed by PCR or Culture
- Turnaround time for CSF preliminary results (e.g., Gram stain, chemistry) should be 6-24 hours, for culture and PCR it should be 48-72 hours and an additional 24 hours for Antimicrobial Sensitivity Testing (AST)

The IM/State Epidemiologist/State Laboratory Focal Person should be contacted where RDT or T-I medium is not available. The NCDC Call Centre may also be contacted for guidance. CSF samples must be labelled with the patient's Epid number and have an IDSR case-based form (CIF) filled to accompany the samples. In line with WHO standards, all suspected cases should have CSF samples collected for laboratory diagnosis. See laboratory protocol for sample collection, packaging, transportation, and testing (Annex 6) for details of procedures to be followed to confirm cases.

III. Case Management

Management of CSM patients is by administration of appropriate antibiotics and supportive treatment. Antibiotic treatment should be commenced immediately without delay but, whenever possible, a CSF sample should be taken first. Where lab results are available, antibiotic choice is based on sensitivity test results. In cases without laboratory confirmation or sensitivity testing (delayed or absent), the following regimen is recommended:

Table 12: Empiric Antibiotics for cerebrospinal meningitis (CSM) cases

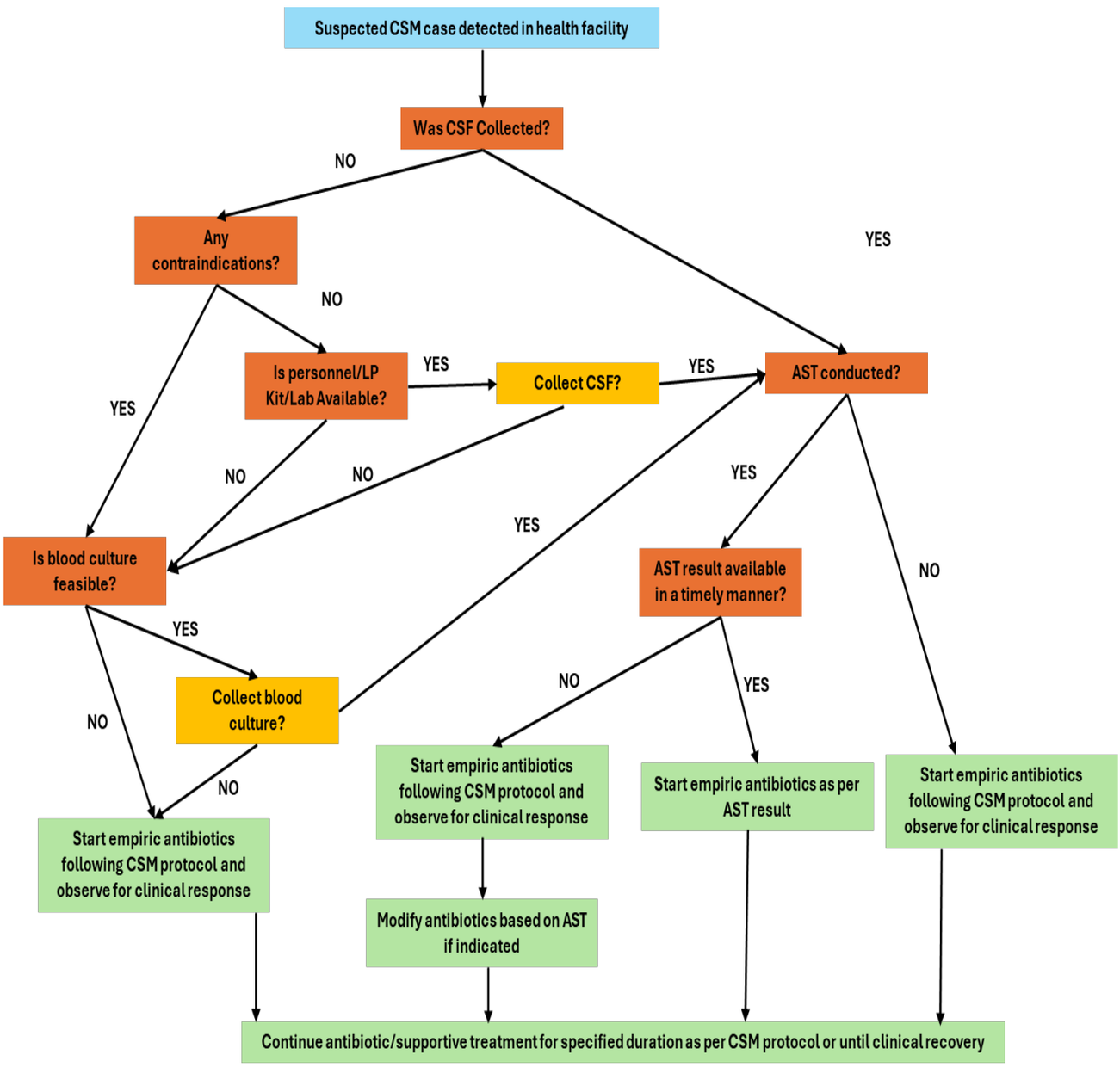
During Outbreak		
Type of Outbreak	***Meningococcal meningitis epidemic***	
Duration of treatment	***5 – 7 days ****	
Choice of antibiotics	***Firstline***	***Alternative***
Neonates *[Most likely pathogens Group B Streptococcus, Gram-negative bacilli (E. coli), Listeria monocytogenes]*		
First week of life	*Ampicillin* ***50*** *mg/kg IV* ***every 12 hours*** ***and*** *gentamicin* ***5*** *mg/kg IV* ***once daily***	*Cefotaxime* ***50*** *mg/kg IV* ***every 12 hours*** ***or*** *Ceftriaxone* ***100*** *mg/kg/day IV* ***and*** *gentamicin* ***5*** *mg/kg IV* ***once daily***
After 1st week to 2 months of life	*Ampicillin* ***50*** *mg/kg IV* ***every 8 hours*** ***and*** *gentamicin* ***7.5*** *mg/kg IV* ***once daily***	*Cefotaxime* ***50*** *mg/kg IV* ***every 6 hours*** ***or*** *Ceftriaxone* ***100*** *mg/kg/day IV* ***and*** *Gentamicin* ***7.5*** *mg/kg IV* ***once daily***
In children aged ≥2 months-14 years:	*Ceftriaxone 100mg/kg/day IV (max* ***2-4*** *g/day in* ***2 divided doses****)*	*Cefotaxime* ***50*** *mg/kg IV* ***every 8 hours***
In children aged>14 years and adults:	*Ceftriaxone* ***2*** *g IV* ***every 12 hours***	*Cefotaxime* ***2*** *g IV* ***every 6 hours***
****In a Pneumococcal meningitis epidemic, the duration should be 10-14 days antibiotic prophylaxis for close contacts (during outbreaks) [as determined by clinician]*** ➢ *Close contacts include household contacts, and anyone recently exposed to oral secretions (e.g., school, childcare center).* ➢ *Antimicrobial prophylaxis should be given to close contacts of cases of meningococcal disease, ideally within 24 hours of patient identification.* ➢ *Single-dose ciprofloxacin* ***500mg PO (contraindicated in pregnancy)*** *or ceftriaxone* ***250mg (adults)*** *and* ***125mg (children)*** *IM should be used.*		
Outside Outbreak		
Neonates	*Ampicillin / Cefotaxime + Gentamicin IV for* ***21 days (****same dose as above)*	
Children above 2 months and adults	*Ceftriaxone +/- ampicillin IV for* ***7-10 days*** *(same dose as above)*	

Source: World Health Organization (WHO)

Clinicians, LP specialists, and laboratorians need to work together to identify, test, and treat CSM patients

and confirm the diagnosis. A decision tree can be used to determine the treatment pathway (Figure 8).

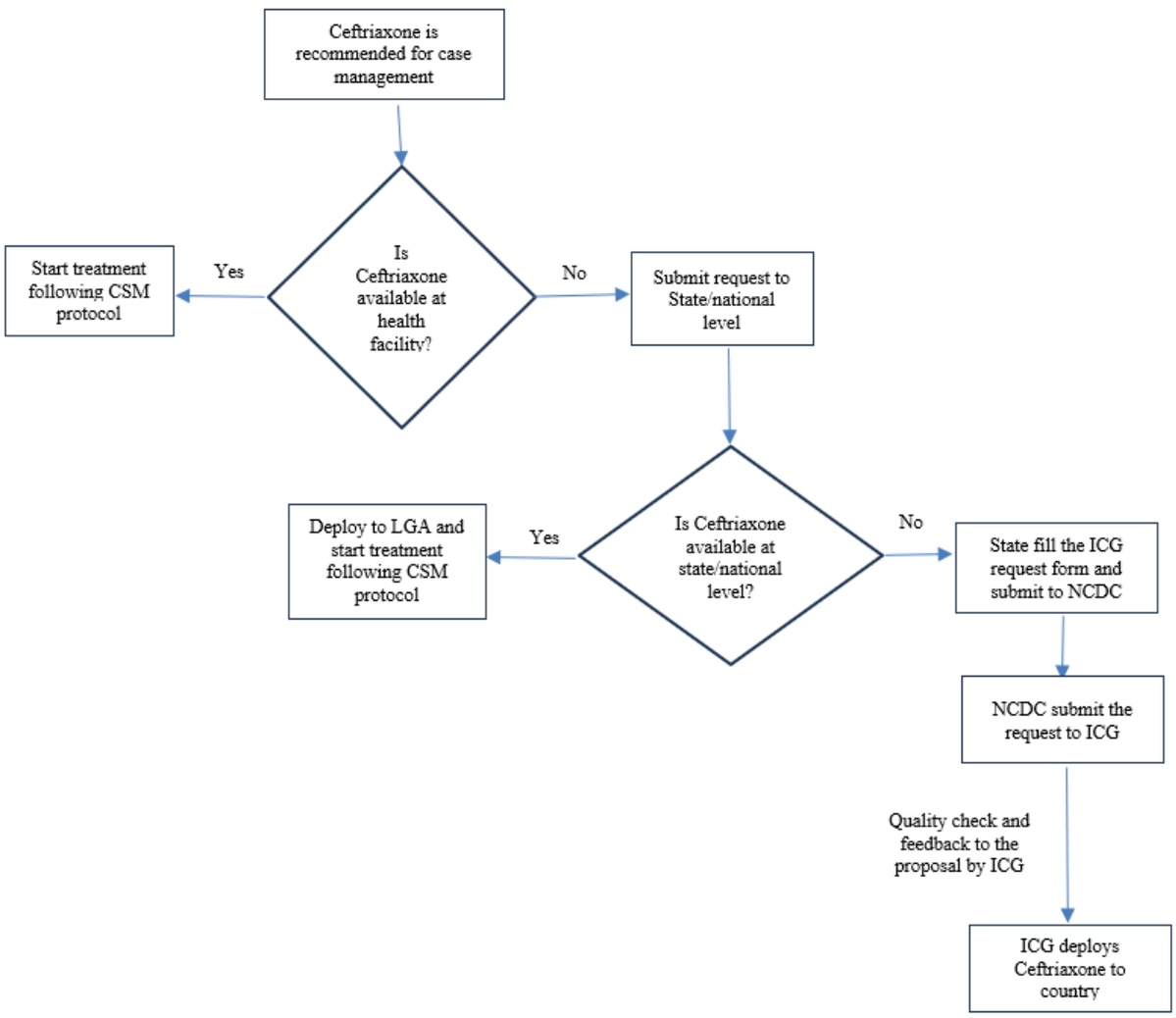
Figure 8: Flow diagram to determine the treatment pathway



During meningitis outbreaks, and in case of insufficient country stockpile, ceftriaxone should be immediately requested from ICG for emergency response (Figure 9). The medicine can be requested as part of the vaccine applications or as a standalone submission in the absence of a concurrent vaccine request. However, application requests should not prevent or delay laboratory confirmation efforts or reactive vaccination (where needed). The availability of AST and timely result turnaround time is an important aspect for adequate antibiotic therapy and preventing potential risks associated with the inappropriate use of antibiotics and the emergence of antimicrobial-resistant pathogens. Upon ICG

approval for ceftriaxone, there is a specific set of reporting requirements to be completed during and after the outbreak. National stakeholders should be prepared to share relevant information about laboratory confirmation as well as planned and implemented outbreak control measures with the ICG (11).

Figure 9: Flow diagram on how to request ceftriaxone from ICG



Infection Prevention and Control (IPC) Measures

For CSM, standard IPC measures and droplet precautions are applicable. These include:

- Hand hygiene including washing (before and after) and attending to patients with appropriate gloving.
- Facial protection during aerosol-generating procedures
- Gown wearing during procedures that can generate splashes such as venipuncture and spinal taps.
- Injection safety practices (needle and sharp disposals, avoid needle recapping, etc.)
- Respiratory hygiene such as cough and sneezing etiquette.

- Environmental cleaning with disinfectants including linens hygiene.
- Waste management practices like segregation, safe disposal of sharps, etc.
- Patient care equipment especially items soiled with blood, body fluids, or other bodily secretions.

Antimicrobial Resistance (AMR) Concerns

A WHO resolution warned of the impending threat of antibiotic resistance. The Meningitis Research Foundation considers AMR to be a major emerging threat to the progress made in the past 20 years in the fight against CSM. Protection against AMR spread will need a global change of direction towards more effective vaccination programmes and better use of antibiotics to deal with it (12).

To preserve the effectiveness of antibiotics and prevent the spread of AMR in the context of CSM treatment, health workers and authorities have the responsibility to act as AMR stewards. This includes promoting the appropriate use of antibiotics, implementing infection prevention and control measures, and conducting surveillance to monitor the emergence and spread of resistant strains. It is recommended that AMR monitoring for CSM should be strengthened in Nigeria.

IV. Risk Communication and Community Engagement

The main aim of communication is to drive public awareness for positive social behavioural change and community engagement for CSM outbreak prevention and control. This will require the implementation of community and public engagement activities focusing on different target groups and their information needs by:

- Ensuring prompt and open communication to the public on the outbreak status.
- Emphasizing the importance of early identification and reporting of suspected cases to designated health authorities/facilities for treatment and prevention of further spread.
- Scaling up messaging for community and all stakeholders' participation in prevention, detection, reporting, and control.

Other activities will include:

- Deploying all relevant social mobilisation and communication strategies.
- Airing of radio messages, jingles, and social media spots that drive important prevention and control messages.
- Sensitising and mobilising existing social networks for community mobilisation and education in high-risk/priority LGAs.
- Engagement of Tsangaya and other learning centres to ensure that they avoid exposure to the risk

factors promoting the outbreak of CSM in the community.

- Monitoring, tracking, evaluating and improving social mobilisation interventions and documenting their impact on response.
- Online and offline social listening of rumours to adequately manage "infodemics" and address the issues of stigmatization in the communities.
- Train Key informants and CHIPS (Community Health Influencers, promoters, and Services) agents on both Active Case Search and community sensitization
- Review/adapt, print, disseminate, and distribute relevant Standard Operating Procedures (SOPs)
- Advocacy at the strategic levels on the need for a budget line and timely release of funds for preparedness, response, and post-outbreak RCCE activities.
- Advocacy for the increased workforce to the decision-making bodies at strategic levels for RCCE

Identifying Target Audience

There is a need to identify the target audience as part of the communication strategy for CSM response due to the varying messaging styles and platforms needed to reach each category. The following audience segmentations are recommended, recognizing that the audience may be modified based on local context.

- Healthcare workers.
- Community members.
- Tsangaya and boarding school students
- Community health Influencers and promoters (CHIPs).
- Policy makers.
- Journalists.
- Civil Society Organizations (CSOs)
- Community based organizations and faith-based organizations (CBOs, FBOs, WDCs etc)
- Ministries, Departments, and Agencies (MDAs).

Drafting key messages

- Give clear and concise information but not too many messages
- Adapt messages to social, cultural, and economic circumstances of the target population and their abilities to cope with the social behaviour being promoted for change.
- Create a matrix of target audience and relevant techniques of communication during an outbreak.

Table 13: Examples of forms/ways of communication

ONE WAY COMMUNICATION	TWO WAY COMMUNICATION
Movies	One-on-one dialogue
Community Theatre	Group discussions
Loudspeaker/ town announcer	Individual counselling
Banner	Home visits
Billboard	Community talk
T-shirt	Compound meeting
IEC Materials and print	Social media platforms/interactions
Poster	Roadshows and rallies
Leaflet	Interviews
Booklet	Radio call in program
Newspaper	Television call in program
Magazine	

Coordination of Activities

- To minimise misinformation, States are encouraged to coordinate all information going out from their respective governments. The Commissioners for Health or designated persons should speak to the public after updates have been shared with the NCDC. This is to ensure the whole system is in harmony.
- States should avoid using, or explain, key epidemiological terms while engaging the media to prevent misinformation. States should ensure timely harmonization of information with the NCDC before it is disseminated. The State-owned media representatives in the Communication and Social Mobilisation Committee should help with the distribution of media releases.

Outcome/Impact Review of Communications Activities

The communication team should review the outcomes of communication interventions using appropriate tools. For further information and guidance, States should reach out to the NCDC RCCE pillar.

V. Vaccinations

Alert Phase

As soon as the Alert Threshold has been crossed in a Ward or LGA, preparations should commence for possible reactive vaccination. As soon as an Epidemic threshold is reached by such an LGA, responding rapidly with vaccination becomes the key strategy for controlling the spread. Reactive vaccination is carried out in areas with confirmed CSM cases and possibly in contiguous areas with serotyping results. Therefore:

- CSF samples should be taken from ALL suspected cases to allow for the determination of the circulating causal pathogens, which guides the choice of vaccine to use.
- A minimum of 10 positive samples per LGA are required for better decision-making for appropriate reactive vaccination. Efforts should therefore be made to ensure there are at least 10 positive samples

Note: The preparedness pillar should ensure:

- Pre-positioning of vaccines using data from previous outbreaks
- The affected States are encouraged to download the ICG request form (https://www.who.int/groups/icg/meningitis/stockpiles) or obtain from NPHCDA to avoid late submission of vaccine requests, especially in the absence of a national stockpile.
- Regular updates of micro plans as captured in the surveillance chapter
- Urgency in collecting and collating all relevant information for reactive vaccination since late implementation reduces the effectiveness of vaccine response.

Epidemic Period

Once the Epidemic Threshold has been crossed in an LGA and the pathogen responsible is preventable by vaccination, it is essential that a vaccination campaign is conducted promptly in both the population affected and any neighbouring LGA or Ward that may be at risk of an outbreak. A vaccination micro-plan and accompanying budget for each area targeted for a reactive vaccination should be finalized immediately. The State Immunization Officer, State Epidemiologist, and the State Disease Surveillance and Notification Officer need to support the Local Immunization Officer and LGA DSNO to do this immediately once the threshold is reached, with support from national emergency preparedness and response teams (NCDC, NPHCDA other government agencies and partners) (Figure 10).

The State Epidemiologist and their team should carry out the following:

- The analysis of the geographic distribution of cases, which orientates more targeted actions.
- The analysis of cases by age group which can lead to different age groups being targeted for

vaccination or the use of different vaccines for different age groups.

- For special situations (e.g. epidemics among displaced persons, or in refugee camps or closed institutions), different decision criteria can be applied in these situations with a lower threshold (2 confirmed cases) for action and immediately inform NCDC.

Enough vaccines must be immediately requested from the National Primary Health Care Development Agency (NPHCDA). If the NPHCDA, which maintains the national stocks, does not have sufficient vaccine supplies, it shall request this from the International Coordinating Group (ICG) on Meningitis Vaccine Provision, which manages the international emergency stockpile.

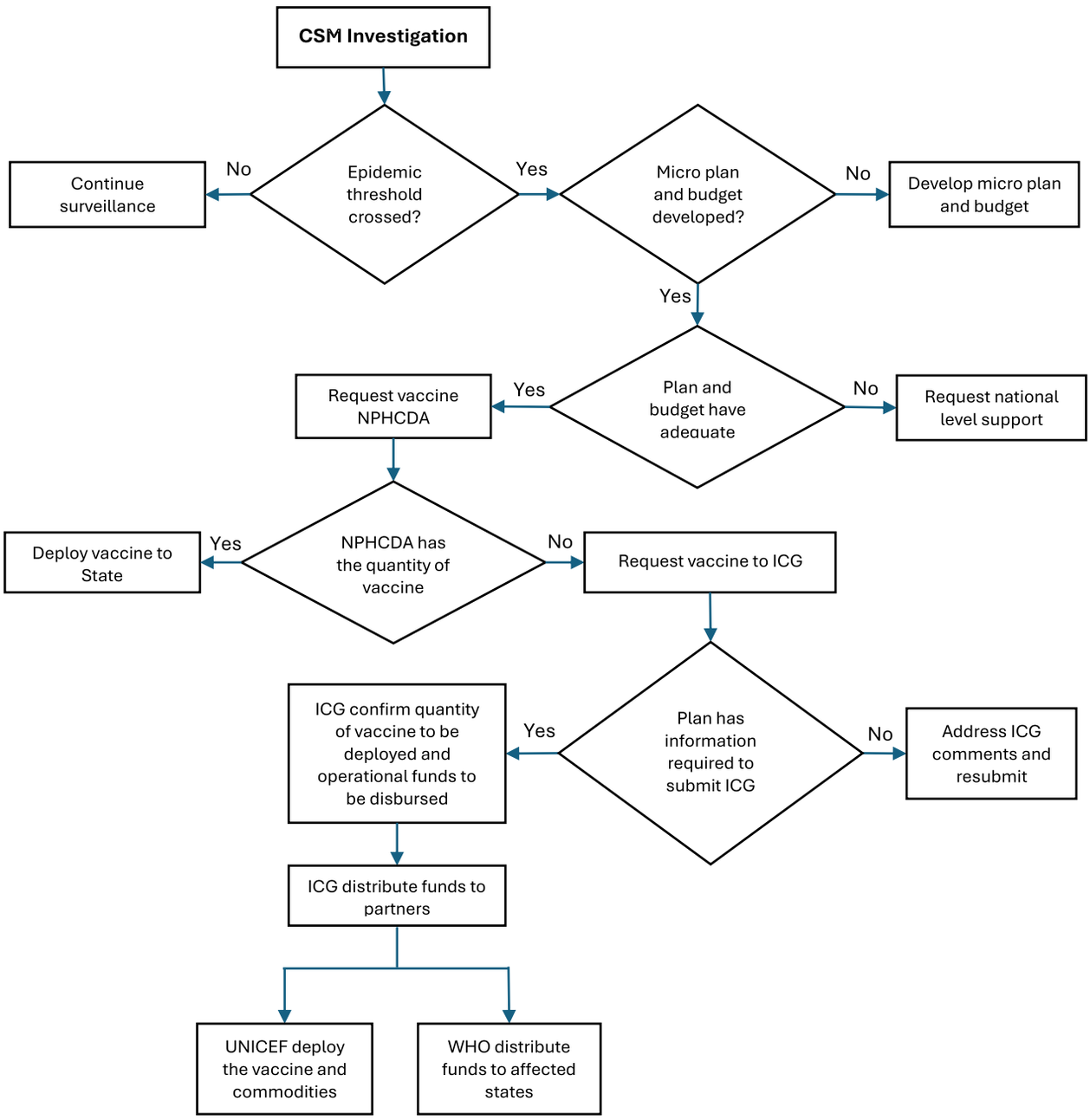
The request can be submitted to the ICG secretariat within 7 days after the LGA crosses the epidemic threshold. Once vaccine supplies have been confirmed, a public vaccination campaign should be launched in the target area.

Other activities to be carried out are detailed below:

- A detailed ward-level micro plan.
- A rapid cold chain inventory to identify gaps.
- Implementation trainings at all levels (state and LGA teams, health workers and other vaccination team members, independent monitors etc).
- Activation of ACSM activities and printing of publicity and post banners.
- Printing of all relevant data tools.
- Bundled vaccine distribution plan (vaccines, syringes, data tools & other dry materials).
- Preparations to manage the waste from the campaign.
- Procurement of AEFI kits and a system for monitoring adverse events following vaccination will be needed.
- A post-campaign coverage survey to estimate immunization coverage.

See Annex 13 for the SOP on procedures and processes involved in the vaccination campaign for the CSM outbreak.

Figure 10: Flow diagram on ICG request



VI. Logistics

Logistics is an embedded support function in epidemic response operations. Logistical constraints and choices can alter strategic decisions and impact the conduct of operations.

The logistics response activities include:

- Local and international procurement.
- Receiving, storing, and distribution of medicines, consumables, and other supplies

- Inventory management of MCM supplies.
- Ensure effective transportation of samples from health facility to the designated laboratory and closest CSM reference laboratory network.
- Waste management.
- Technical support in the physical organization of the treatment area
- Transport and rotation for field response teams (in & out, field).

VII. Surveillance and Epidemiology

Activities to be carried out by the surveillance and epidemiology pillar during a CSM outbreak are detailed in Chapter 5.

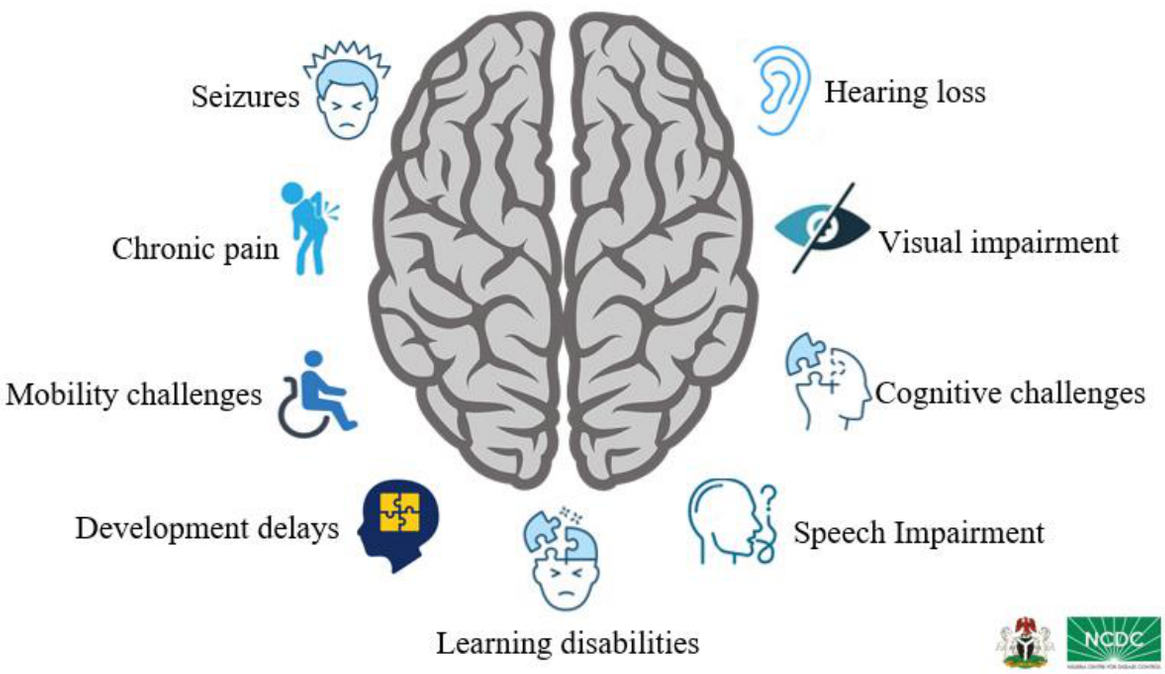
VIII. Aftercare

Aftercare may involve monitoring complications, managing pain, and addressing cognitive and emotional challenges. This may include monitoring psychosocial needs, sequelae, and rehabilitation.

CSM Sequelae

CSM survivors often suffer from severe short- and long-term aftereffects that develop due to the damaged nervous system (Figure 11). Children below the age of 15 years, which is a sizeable school-age demographic, are at greater risk for CSM and its sequelae in Nigeria. Pillar 4 of the DM2030 calls for policies and services to ensure that individuals affected by meningitis sequelae receive timely and appropriate assessment, treatment, rehabilitation, and long-term follow-up care.

Figure 11: CSM Sequelae



While the understanding of CSM sequelae is still evolving, there are key actions that health facilities, LGAs, states, and the national level can take to support CSM survivors during and after the outbreak response.

Table 14: Various levels of prevention of CSM sequelae

LEVEL	ACTIVITIES
Community	**Health Promotion** • Engage with religious, traditional, and community leaders to raise awareness about CSM sequelae and facilitate access to aftercare services. • Conduct public health campaigns to inform communities about the potential long-term effects of CSM, emphasizing the importance of seeking timely

LEVEL	ACTIVITIES
	medical care and rehabilitation services. • Empower communities to support meningitis survivors by raising awareness about aftercare and encouraging access to support services.
Health Facility	**Case Management** • Physicians should closely monitor all cases of meningitis aftercare (follow up within 4 weeks). • Facilitate access to essential services, such as rehabilitation and mental health care, by providing referrals and/or direct support. Additionally, offer psychosocial counselling and community-based programs to help survivors and their families rebuild their lives. • Conduct facility-level training on identifying and documenting CSM sequelae. • Ensure availability of printed job aids and data collection tools.
LGA & States	**Coordination** • Promote community-based programs to identify sequelae and disabilities, based on standardized instruments (especially for child development and hearing) and refer them for assessment and appropriate care. • Establish a system for detection, monitoring, and management of meningitis sequelae after discharge from hospital at all levels of health care and in community settings, including schools (special education needs, disability sensitization and psychosocial support) • Develop and operationalize standardized referral mechanisms for sequelae treatment and support
National	**Surveillance** • Implement standardized surveillance tool that leverages routine surveillance mechanisms to identify sequelae and estimate burden • Liaise with relevant stakeholders to develop guidelines for the management of sequelae

Mental Health and Psychosocial Support

CSM outbreaks can emotionally and psychologically burden both patients and their families (13). CSM survivors, bereaved families, and communities recovering from outbreaks may experience emotional and behavioural challenges, which require psychosocial support. Outbreaks are associated with an increased risk of anxiety disorders, depression, and severe mental conditions (10). Interventions to improve outcomes are an emerging theme in CSM response plans. Integrating mental health and psychosocial support (MHPSS) into outbreak response facilitates the delivery of all-inclusive care to the affected community (14).

CSM can cause significant psychological effects, including post-traumatic stress disorder (PTSD), emotional dysregulation, learning difficulties, decreased concentration, and personality changes. Survivors often experience emotional fragility and social isolation (15). The sudden and severe nature of CSM can result in lasting emotional trauma for both survivors and their families. This includes fear of recurrence and anxiety about medical procedures (13).

Healthcare workers should provide psychosocial support to patients and their families during and after hospitalisation to help mitigate long-term emotional and psychological effects. This can be done in collaboration with MHPSS subject matter experts, CSOs, and community leaders to facilitate community support groups for survivors and their families to share experiences and learn coping strategies. MHPSS interventions may include:

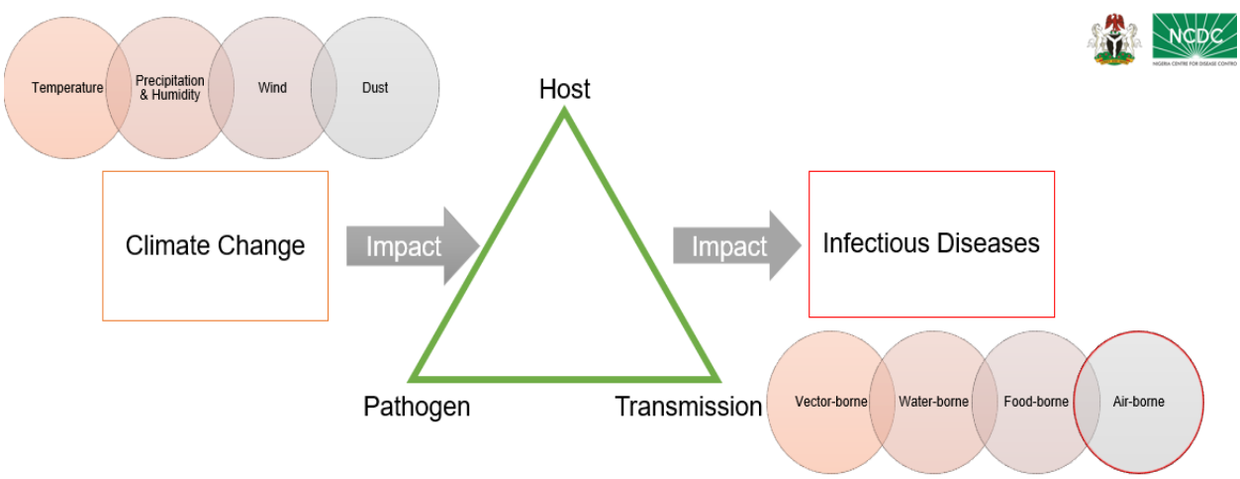
- Emotional support system or group therapy
- Mental health check-ups, follow up & referral system protocol
- CSM Aftercare toolkit and resources
- Aftercare pillars in TWG

Integrating MHPSS into response plans will ensure early and ongoing psychosocial support to improve the quality of life for survivors and their families.

Climate Change and CSM

Climate change is causing long-term shifts in global temperature and weather patterns, directly contributing to more frequent and severe heat waves, wildfires, floods, and tropical storms. These events can trigger humanitarian emergencies, displacing populations and overwhelming local resources. Indirect effects of climate change on health may arise from malnutrition due to reduced food production, the spread of infectious disease and food- and water-borne illness, and increased air pollution (16). The burning of fossil fuels, deforestation, and industrial processes have led to increased greenhouse gas emissions and climate change.

Figure 12: Climate change, human infectious disease, and human society (17) Adapted from Wu et al 2016. (17)



CSM is a climate-sensitive disease. Key climatic factors associated with CSM are air temperature, atmospheric dust, and relative humidity (18). Nigeria's desertification "frontline states" at the edge of the advancing Sahara Desert, are most affected by CSM. Therefore, heightened vigilance is advised in Sokoto, Kebbi, Borno, Katsina, Zamfara, Yobe, Jigawa, Bauchi, Adamawa, Gombe, Kaduna states, where desert-like conditions (low humidity, no windbreaker trees, heat) create an environment conducive to CSM transmission and infection. **Health authorities in these states should prioritize surveillance, early detection, and rapid response to potential outbreaks in the context of climate change.**

Impact of Climate Change on CSM

Climate change can impact CSM epidemiology in Nigeria by:

- **Expanding the geographical scope of CSM:** Increased temperatures, dust storms, and reduced humidity may expand the geographical range of CSM, affecting regions previously considered low risk.

- **Increased intensity of outbreaks:** Elevated temperatures and arid conditions can create an environment conducive to increased transmission of CSM. The severity of outbreaks may also intensify due to weakened immune systems and other factors associated with climate change. The use of meningitis vaccines may mitigate the impact of climate change on the intensity of outbreaks
- **Population movement and human migration**: Climate-induced migration and displacement can lead to overcrowding in certain areas, increasing the risk of disease transmission, including CSM.
- **Shift in Seasonal Patterns:** Climate change may alter the typical seasonal patterns of CSM outbreaks, leading to increased transmission during the expected periods. Delayed rainfall may prolong outbreaks and early onset of Harmattan may trigger early outbreaks.

Climate-Informed Surveillance and Early Warning Systems for CSM

The climate acts as an important driver of spatial and seasonal patterns of infections, year-to-year variations in incidence (including epidemics), and longer-term shifts in populations at risk (18). Utilisation of climate projections and weather data can be used to develop early warning systems (EWS). Regular updates are required and should be shared at the national, subnational, and LGA levels for health security interventions and resource allocations. Maps and GIS modelling are essential tools for disease surveillance and outbreak prediction. They are used to visualize the geographical distribution of cases, predict the spread of disease, and identify high-risk areas. The Nigerian Meteorological Agency (NiMET) provides updates on infectious disease vigilance maps, which is an analysis and communication tool in public health.

NiMet provides climatic information for CSM by:

- Developing early warning systems to predict outbreaks CSM amongst other diseases based on climatic conditions
- Using climate data to identify high-risk areas and advice health sectors

Annexes

Annex 1: CSM Preparedness Checklist

CHECKLIST FOR ASSESSING PREPAREDNESS FOR CSM RESPONSE AT STATE LEVEL

State: _____ Date: _____

S/N	ITEM	YES Level of Implementation < 50%	50-80%	> 80%	NO	REMARKS
1	**Coordination**					
	Have the members of the Epidemic Preparedness and Response (EPR) been appointed and have they met in the last 3 months?					
	Can EPR be functional within 48 hours?					
	Can Rapid Response Team (RRT) be functional within 24 hours?					
	Can funds and human resources be mobilised in 24 hours?					
	Has a simulation exercise been conducted with representative of all functional areas below?					
	At least 1 risk communication message has been developed and provided to LGAs in the last one month					
	Are SOPs and surveillance forms available in health facilities?					
2	**Capacity building (If yes, include the numbers trained)**					
	Have trainers been identified?					
	Have clinicians been identified and/or trained on case management and CSF collection?					
	Have nurses been identified and/or trained?					
	Laboratory personnel have been identified and trained.					
	Has RRT been identified and/or trained?					
	At least 1 risk communication message has been developed and provided to LGAs in the last one month.					
	Are SOPs and surveillance forms available in health facilities?					

S/N	ITEM	YES Level of Implementation < 50%	50-80%	> 80%	NO	REMARKS
3	**Epidemiology & Surveillance**					
	Is the CSM standard case definition available in health facilities?					
	Is there a substantive State Epidemiologist in the state MoH?					
	Have DSNOs been trained in register review, case search, alert and rumour surveillance?					
	LGA DSNOs have been trained on charting and analysis of weekly trends					
4	**Laboratory**					
	A Public health laboratory for CSF analysis has been identified					
	Do laboratories have adequate Pastorex, TI media and supplies?					
	Transport support and link with the National Reference lab for CSF testing available					
	Location/distance to nearest laboratory with PCR diagnostic capacity?					
5	**Case management (If yes, please provide number)**					
	Has a CSM Treatment Centre been identified?					
	Can the centre become functional within 48 hours?					
	What is the bed capacity of the center?					
	Are medicines (Ceftriaxone and oily chloramphenicol) and consumables available?					
	Is there a protocol displayed for case management at health facilities?					
	Are hospital-acquired infection (HAI) control materials such as gloves, gowns, alcohol soap available in all health facilities?					
	Is there a protocol for the safe management of waste in every health care facility?					
	Essential drugs in stock (Refer to essential drug list)					

S/N	ITEM	YES Level of Implementation < 50%	50-80%	> 80%	NO	REMARKS
6	**Social mobilisation and sensitization**					
	Are printed IEC materials in appropriate languages available?					
	Do communities know about treatment centers?					
	Have community mobilisers/VCM and supervisors been identified and trained?					
	Is a list of private practitioners, traditional healers, religious leaders, local community development committees, churches, mosques and schools available?					
7	**Vaccine and logistics (supplies & transportation)**					
	Is there CSM polyvalent vaccine in stock at the state level?					
	What quantity of the polyvalent vaccine is available?					
	Is site for vaccine storage determined at state and LGA levels?					
	Vaccine requirement determined for LGAs?					
	Vehicles for logistics, vaccine deliveries in place					
	Is there a list of all supplies for CSM response available?					

Annex 2: Weekly Reporting of Epidemic Prone Diseases and Other Public Health Events

Community alert reporting form **[Send this form immediately to your supervisor or nearby health facility]**	
1. Name of COMMUNITY INFORMANTS/AGENTS focal person reporting:_____	
2. Telephone number:_____Community_____LGA_____	
3. Date reporting (day, month, year)__ __/__ __/__ __ __ __	
4. Type of illness/Condition/Event/Alert (please describe): _____	
5. When did this happen (Date: Day/Month/Year); Time	__ __/__ __/__ __ __ __
6. Date/time this was detected (Date: Day/Month/Year); Time:	__ __/__ __/__ __ __ __
7. Where did this happen? **(Location: community, ward/LGA, LGA)**	
8. How many people have been affected?	
9. Has anyone died? If yes, how many	
10. Are there sick or dead animals involved?	
11. Is the event ongoing as at the time of this report?	
12. What action has been taken?	

Annex 3: Community-Based Surveillance (Community Informants /Agents) Suspected Diseases and Public Health Events Monthly Log Sheet

Community-Based Surveillance Suspected Diseases and Public Health Events Monthly Log Sheet

LGA_____Ward/SubLGA_____

Community:_____Month_____ Year_____

Serial Number	Type of illness/ Condition/ Event/Alert	When did this happen? (DD/MM/YYY)	Where did this happen? (Community, LGA)	How many have been affected?	How many died?	what action was taken?

Annex 4: Case-based Surveillance Reporting Form IDSR 001A

REPORTING HEALTH FACILITY		REPORTING LGA	REPORTING STATE
IDENTIFICATION NUMBER			IDSR 001A

Immediate/ Case-based Reporting Form
From Health Facility/Health Worker to LGA health team

Acute Flaccid Paralysis/Poliomyelitis (AFP)	Buruli ulcer	Cholera	Diphteria	Dracunculiasis (Guinea Worm)	Dengue	Influenza due to new subtype e.g H5N1	Leprosy	Lymphatic Filariasis	Maternal deaths	Measles	Meningitis	Monkey pox	Neonatal Tetanus (NNT)	Noma	Onchocerciasis	Perinatal deaths	Pertusis	Rabies (Dog bite)	Rubella	Trachoma	Tuberculosis (TB)	Viral Hemorrhagic Fever e.g. Lassa fever	Yaw & endemic syphilis or bejel	Yellow Fever	Others/specify* e.g.Ebola, MERS SARS, Small pox, Plague, Anthrax, Plague, Zika Virus, Chikungunya etc

Date form received at SMOH or the national level:		/ / (Day/Month/Year)				
Name of Patient:						
Date of Birth (DOB):	/ /	/ / (Day/Month/Year)	**Age (If DOB unknown):**	Year:	Month (if <12):	Day (NNT only)
Sex:	M=Male; F=Female					
Patient's Address:		**Urban:**	**Rural:**			
Settlement/Village						
Ward		**LGA:**		**State:**		

Exact residential address:		If applicable or if the patient is neonate or child, please write full name of mother and father of the patient					
Date seen at Health Facility (dd/mm/yyyy):	/ /		**Date Health Facility notified LGA:**	/ /		**Date of Onset:**	/ /
Number of vaccine doses received:		**9 = unknown**					
		For cases of Measles, NT (TT in mother), Yellow Fever, and Meningitis (For Measles, TT, YF - by card & for Meningitis, by history)					
Date of last vaccination:		/ / (Measles, Neonatal Tetanus (TT in mother), Yellow Fever and Meningitis only)					
Close contact with infected poultry		1 = Yes; 2 = No					
Close contact with suspected or confirmed case of Avian influenza		1 = Yes; 2 = No					
Associated with an outbreak?		1 = Yes; 2 = No					
In/Out Patient		1 = Inpatient; 2 = Outpatient					
Outcome		1 = Alive; 2 = Dead; 9 = Unknown					
Final Classification of case		1 = Confirmed; 2 = Probable; 3 = Discarded; 4 = Suspect					
Final Classification for Measles		1 = Laboratory Confirmed; 2 = Confirmed by Epidemiological linkage; 3 = Clinical Compatible; 4 = Discard; 5 = Suspect with lab pending					
Person completing form (Name) :					**Signature:**		
Title:	**Address:**						
Date form sent to LGA:	/ / (Day/Month/Year)	Date Form Received at LGA:	/ / (Day/Month/Year)	Signature:			

Annex 5: Case-based Laboratory Reporting Form IDSR 001B

Lab Specimen Collection/Reporting Form (for Immediate Case-based Surveillance) IDSR 001B

If Lab Specimen Collected							
For Health Facility: If lab specimen is collected, complete the following information and send a copy of this form to the lab with the specimen.							
Date of specimen collection: _____/_____/_____ ____________							
Type of specimen:	Stool		Blood		CSF		Others (Specify):
Date specimen sent to lab: _____/_____/_____							
ID Number:							
For the Lab: Complete this section and return the form to LGA/ health facility or clinician							
Date lab received specimen: __/______/_____							
Specimen Condition:			Adequate		Not adequate		
Disease/Condition:							
Type of Test:							
Result:		**+ = Positive**	**- = Negative**	**P = pending**			
Malaria	P. Falciparum						
	P. Vivax						
Cholera (culture)							
Cholera direct exam; specify the method used: ____________________							
Meningitis: N meningitides	Culture						
	Latex						
	Gram stain						
Meningitis: S. pneumonia	Culture						
	Latex						
	Gram stain						
Meningitis: H. influenza	Culture						
	Latex						
	Gram stain						
Shigella dysenteriae	Culture						
	Type	SD Type 1	Other Shigella types		No Shigella		
Result:		+ = Positive	- = Negative	I= Indeter.	P=Pending		
Viral Detection	Yellow fever (IgM)						
	Measles (IgM)						
	Rubella (IgM)						
	Dengue (IgM)						
	Ebola (IgM)						
	Lassa (Ig M)						
	Marburg (IgM)						
	A/H5N1 (RT-PCR)						
Other lab test (specify)	Results:						
Date lab sent results to LGA//health facility:			____ /____ /______				
Name of lab sending results:							
Other pending results:							
Name of lab technician sending the results:					Signature:		
Date LGA/ receive lab results: ____/___/_______			LGA/:				
Date lab results sent to health facility by LGA/: _____/_____/______							
Date lab results received at the health facility: _____/______/_______							

Annex 6: Line List-Reporting from Health Facility to LGA and for Use During Outbreaks – IDSR 001C

SN	IDNumber	Datatype (Case-BasedLine List)	StateOfResidence	Reporting LGA	Ward	Settlement	Urban/Rural	ngHealtl	NamesOfPatient	DateOfBirth	AgeInyears	AgeInmonths	Sex	DateOfonset	DateSeenHealthFacility	DateofadmissionHealthFa	DateHealthfacilitynotified	NumberOfVaccinedoses	DateOfLastvaccination	Inoutpatient	Outcome	Sample collection	DateSpecimencollected	DateSpecimenSenttolab	Culture confirmation	PCR confrimation	Clinical Compatible	Epi Link	Sequelae	Eip-wee	Year
1																														
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														

- ID Number
- Data Type (Case-Based, Line List)
- State of Residence
- Reporting LGA
- Ward
- Settlement
- Urban / Rural
- Names of Patients
- Date of Birth
- Age in Years
- Age in Months
- Sex
- Date of Onset
- Date Seen at Health Facility
- Date of Admission Health Facility
- Date Health Facility Notified
- Number of Vaccine Doses
- Date of Last Vaccination
- In/Outpatient
- Outcome
- Sample Collection
- Date Specimen Collected
- Date Specimen Sent to Lab
- Culture Confirmation
- PCR Confirmation
- Clinical Compatible
- Epi Link
- Sequelae
- Epi-week
- Year

Annex 7: CSM Case Investigation Form

* REQUIRED FIELD

Epid Number/Unique Case ID*: _____

Enter the details for the location of case investigation.

State*: _____	**LGA*: _____**	**Ward: _____**

1. Current Status*	
□ Alive	□ Dead

2. Data Collector Information	
Name of data collector	
Data collector Institution	
Data collector telephone number	
Email	
Form completion date (dd/mm/yyyy)	___/___/__
3a. Case Identifier Information	
Given name(s)*	
Family name*	
Sex*	□ Male □ Female
Date of Birth (dd/mm/yyyy)	___/___/___ □ Unknown
Telephone (mobile) number*	
Age* (years, months)	___ years ___ months □ Unknown
Email	
Address*	State: _____ LGA: _____ Ward: _____ Village/landmark: _____
Country of residence	
Case status	□ Suspected □ Confirmed
3b. Interview respondent information (if the person providing the information is not the patient)	
First name*	
Surname *	
Sex*	□ Male □ Female

Date of Birth (dd/mm/yyyy)	___/___/__
Age* (years, months)	___ years ___ months □ Unknown
Relationship to patient	
Respondent address	
Telephone (mobile) number	

4. Patient symptoms (from disease onset) *			
Ask the suspected case about <u>each</u> of the following symptoms within the last 2 weeks.			
Fever (≥38 °C) or history of fever	□ Yes	□ No	□ Unknown
Headache	□ Yes	□ No	□ Unknown
Stiff neck	□ Yes	□ No	□ Unknown
Sore throat	□ Yes	□ No	□ Unknown
Chill	□ Yes	□ No	□ Unknown
Fatigue	□ Yes	□ No	□ Unknown
Muscle pain	□ Yes	□ No	□ Unknown
Chest pain	□ Yes	□ No	□ Unknown
Cough	□ Yes	□ No	□ Unknown
Seizures	□ Yes	□ No	□ Unknown
Joint pain	□ Yes	□ No	□ Unknown
Confusion or difficulty concentrating)	□ Yes	□ No	□ Unknown
Shortness of breath	□ Yes	□ No	□ Unknown
Photophobia (Sensitivity to light)	□ Yes	□ No	□ Unknown
Nausea	□ Yes	□ No	□ Unknown
Vomiting	□ Yes	□ No	□ Unknown
Sleepiness or difficulty waking.	□ Yes	□ No	□ Unknown
Any other symptom	□ Yes	□ No	□ Unknown If yes, specify symptom …….
Date of first symptom onset (dd/mm/yyyy)	___/___/___	□ Unknown	
Clinical presentation (select all that apply)	□ Bacteremia	□ Meningitis	□ Pneumonia □ Septic arthritis □ Cellulitis □ Pericarditis □ Osteomyelitis □ Purpura fulminans □ Other: _____

5. Sample collection*	
Date CSF sample collected (dd/mm/yyyy)	___/___/__
Were other samples collected?	□ Yes □ No □ Unknown If yes, which samples: If yes, date taken (dd/mm/yyyy) ___/__/___
6. Treatment history*	*Add all underlying conditions and health behaviors in NBS TREATMENT HISTORY*
Did the patient receive antibiotics?	□ Yes □ No □ Unknown If yes, name or type of antibiotic given: _____
Were any antibiotics given prior to specimen collection?	□ Yes □ No □ Unknown If Yes, name or type of antibiotic given: _____
7. Vaccination history*	
Has the patient ever received any meningococcal vaccine?	□ Yes □ No □ Unknown If Yes, date of vaccination (dd/mm/yyyy) ___/___/___ and dose _____
*If no, indicate reason:	□ Religious Exemption □ Medical Contraindication □ Underage □ Parental Refusal □ Unknown □ Other: _____

8. Case pre-existing condition(s) and exposure history	
Pregnancy	□ Yes □ No □ Unknown If yes, specify trimester: □ First □ Second □ Third □ NA
Hypertension	□ Yes □ No □ Unknown
Overweight	□ Yes □ No □ Unknown
Heart disease *(not hypertension)*	□ Yes □ No □ Unknown
Asthma requiring medication	□ Yes □ No □ Unknown
Chronic lung disease (non-asthma)	□ Yes □ No □ Unknown
Diabetes	□ Yes □ No □ Unknown
HIV	□ Yes-on ART □Yes-not on ART □ No □ Unknown

Any other pre-existing condition(s)	□ Yes □ No □ Unknown If yes, specify:
Did the patient travel anywhere during the two weeks prior to onset and up until the patient was diagnosed/treated?	□ Yes □ No □ Unknown If Yes, date of travel (DD/MM/YYYY) and location: ___/___/___
Did the patient spend 8 or more hours on an airplane (or bus, train, etc.)?	□ Yes □ No □ Unknown
Did the patient attend any gatherings (e.g., public, church/religious, family, etc.), conventions, meetings, parties, dinners, sporting events, festivals, or other group events during the two weeks prior to onset?	□ Yes □ No □ Unknown

9. Contact	
Where was the patient living	□ Single-family dwelling □ Duplex, triplex, etc. □ Apartment/Condo/Townhome □ Dormitory □ Military barracks □ Hospital or rehab facility □ Nursing home or similar □ Retirement home □ Camp □ Other: _____ □ Unknown
Was the patient in a detention center, correctional facility, halfway house, or shelter (e.g., jail, prison,)?	□ Yes □ No □ Unknown
How many people live in the patient's household?	State Number: _____
During the two weeks prior to onset, did any member of the patient's household have a similar illness?	□ Yes □ No □ Unknown
Did the patient attend, visit, or work at a school?	□ Yes □ No □ Unknown
Did the patient attend, stay, visit, or work at a childcare center, home daycare, nursing home, or similar facility?	□ Yes □ No □ Unknown
Did anyone associated with the facility have a similar illness during the two weeks prior to onset?	□ Yes □ No □ Unknown

Annex 8: Sample of CSM Situation Report

Nigeria Centre for Disease Control and Prevention
Protecting the health of Nigerians

www.ncdc.gov.ng PLOT 801 EBITU UKIWE STREET, JABI ABUJA, NIGERIA.
TOLL FREE CALL: 6232. **Email**: info@ncdc.gov.ng **@NCDCgov**

Cerebrospinal Meningitis Situation Report

REPORT 4

Epidemiological week 25: (17 to 23 June 2024)

Key Points

Table 1:Summary of current week (25), cumulative Epi week 40 – 25 (2023/2024 Season)

Reporting Period	Suspected cases	Confirmed cases	Deaths (Suspected cases)	Case Fatality Ratio (CFR)	States and LGAs affected
Current week (Week 25)	6	0	0	0%	State(s): 1 LGA(s): 3
Cumulative (Epi week 40 - 25 of 2023/2024)	4805	378	359	7.5%	State(s): 24 LGA(s): 171

Table 2: Weekly trend of CSF collection & confirmed cases from week 21 - 25, 2023/2024 season

Epi-Week	Suspected Cases	Sample Collection	Confirmed Cases	CSF Collection Rate %	Serotype				
					NmC	*NmW*	*NmX*	*Spn*	*HiB*
21	61	18	3	16.67	2	0	0	1	0
22	65	11	2	18.18	1	0	0	0	1
23	41	6	0	0.00	0	0	0	0	0
24	7	0	0	0.00	0	0	0	0	0
25	6	0	0	0.00	0	0	0	0	0
Total	180	35	5	14.29	3	0	0	1	1

Highlights

- From the beginning of Epi week 40 of 2023 to Epi week 25, 2024 the following twenty- three (24) states reported suspected CSM cases: Adamawa, Bauchi, Bayelsa, Borno, Delta, Ebonyi, Edo, Ekiti,FCT, Gombe, Jigawa, Kaduna, Kano, Katsina, Kebbi, Kwara, Niger, Osun, Oyo, Plateau, Sokoto, Taraba, Yobe and Zamfara

In the reporting week

Annex 9: CSM Enhanced Surveillance Case Investigation Form

Instruction: The Local Government Disease Surveillance and Notification Officer (DSNO) or any person assigned by the LDSNO, should administer this form to suspected CSM cases **ONLY** in LGAs where the Men5CV reactive vaccination was conducted.

[INTRODUCTORY SCRIPT]

Section 1: Biodata (Suspected Case)

1. **Patient Name**_____
   (Surname, First)
2. **Epid number:** _____
   (Please ensure that the Epid number matches that on SORMAS for this case)
3. Name of reporting health facility _____
4. Date seen at facility: _____(DD/MM/YY)
5. Age _____ (as at last birthday in years)
6. Sex
   - ☐ Male
   - ☐ Female
   - ☐ Unknown
7. Patient Address
   a. Patient state of residence _____
   b. Patient LGA of residence _____
   c. Patient ward of residence_____
8. Date of Men5CV campaign in the LGA _____(DD/MM/YY)
   (Auto-populated based on patient's LGA of residence)

Section 2: Investigations Conducted

1. Was lumbar puncture done?
   - ☐ Yes
   - ☐ No
   - ☐ IDK

[If no/IDK, skip to Q3]

2. Was the CSF sample collected?
   - ☐ Yes
   - ☐ No
   - ☐ IDK
3. Was/is the patient on antibiotics?
   - ☐ Yes
   - ☐ No
   - ☐ IDK

[If no/IDK, skip to 7]

4. Which antibiotics is/was the patient on? Specify_____

5. Dosage of the antibiotics _____
(Probe for answer or ask for prescription/case file)

6. If yes to Q1 & Q2, was the CSF sample collected before or after the commencement of antibiotics?
   - ☐ Before
   - ☐ After
   - ☐ IDK
7. Date of discharge/referral/death? _____ (DD/MM/YY)

<u>Section 3</u>: Vaccination status

1. Has the patient received meningococcal vaccine?
   - ☐ Yes
   - ☐ No
   - ☐ IDK

[If no or IDK, skip to the last section]

2. If yes, to Q1, what type of meningococcal vaccine has the patient received? (Multiple options allowed)
   - ☐ MEN5CV conjugate vaccine (MEN5CV)
   - ☐ MenA conjugate vaccine (MACV**)**
   - ☐ MenACWY (CV)
   - ☐ MenACW (PS)
   - ☐ MenACWY (PS)

3. If yes to MEN5CV, what's the evidence?
   - ☐ Verbal
     - If verbal and no card,
       i. Where? _____ (State/LGA/Ward)
       ii. When? _____ (DD/MM/YY)
       iii. Route of administration_____ (Specify)
   - ☐ Vaccination card
       i. Date of last dose _____(DD/MM/YY)
       ii. Lot Number (if available) _____

4. If yes to MenA conjugate vaccine (MACV), what's the evidence?
   - ☐ Verbal – no card
       i. When? _____ (DD/MM/YY)
   - ☐ Vaccination card
       i. Date of last dose_____(DD/MM/YY)
       ii. Lot Number (if available) _____

5. If yes to MenACWY (CV), what's the evidence?
   - ☐ Verbal – no card
     i. When? _____ (DD/MM/YY)
   - ☐ Vaccination card
     i. Date of last dose_____(DD/MM/YY)
     ii. Lot Number (if available) _____

6. If yes to MenACW (PS), what's the evidence?
   - ☐ Verbal – no card
     i. When? _____ (DD/MM/YY)
   - ☐ Vaccination card
     i. Date of last dose_____(DD/MM/YY)
     ii. Lot Number (if available) _____

7. If yes to MenACWY (CV), what's the evidence?
   - ☐ Verbal – no card
     i. When? _____ (DD/MM/YY)
   - ☐ Vaccination card
     i. Date of last dose_____(DD/MM/YY)
     ii. Lot Number (if available) _____

Case verified by:

Name _____

Designation _____

Organisation _____

Phone Number _____

Location _____

Date _____

Geo-coordinates _____

Thank you

Annex 10: Sample Sequelae Surveillance Form

Complications during hospitilisation:			
List all observations			
Complications at discharge: *Check all that apply*	☐ **Seizures** ☐ **Hearing Loss** ☐ **Vision Loss** ☐ **Cognitive Challenges**	☐ **Physiological Challenges** ☐ **Weakness** ☐ **Speech** ☐ **Others** _____	
Other Observations:			
Follow ups	☐ **1 month**	☐ **6 months**	☐ **12 months**

Annex 11: Terms of Reference of IMS Teams and Officers

The IM is supported by a team as follows:

- ✓ Planning officer
- ✓ Secretariat Support Staff
- ✓ Media Officer
- ✓ Safety Officer (when there is an established need or security concerns)

Planning Officer

- Develop and monitor strategies to achieve incident response objectives, **as guided by IM.**
- Organises assigns and supervises the use of all EOC resources.
- Documentation (Secretariat Support).
- Ensures minutes of meetings are taken and action points are well captured for tracking.
- Ensures a comfortable working environment is established and maintained for EOC staff.
- Sends notifications or invitations of meetings to all members of the EOC team.
- Uses appropriate group emails and chat platforms to facilitate information dissemination to EOC.
- Ensures documentation of all EOC processes and activities from activation to de-activation.

Safety and Security Officer

- Ensures a minimum basic level of security is maintained at EOC and for personnel.
- Liaises with security formations for technical services where required.
- Monitors the safety of all EOC personnel deployed to the field.

Media officer

- Provides advice to the IM on sharing outbreak status.
- Responds to rumours from the public and manages it for the IM on outbreak response operations.
- Serves as an external liaison with stakeholders on issues surrounding outbreak response.
- Develop FAQs and disseminate same to the public as necessary.

The team leads for other pillars (surveillance and epidemiology, laboratory diagnosis, case management, vaccines, and logistics as well as communications and social mobilisation) who are appointed by the IM as jointly agreed by members of the EOC, provide technical coordination of all team members around various pillar activities of the outbreak response. The terms of reference for these teams are:

Surveillance and Epidemiology

- To ensure appropriate data capturing tools (IDSR DCTs) are available for use in States/LGAs and at incident scenes e.g. health facilities, designated treatment centres, etc.

- To retrieve daily line lists from LGAs and collate them for transmission to the national level.
- To maintain and update the State line list daily.
- To conduct daily analysis of cases (time, place, person) for informed decision-making at the EOC.
- To provide accurate data that will feed into SITREP production.
- To support operational research on the outbreak.
- To provide feedback.
- To monitor the appropriate use of case definitions.
- To monitor rumour from formal and informal sources.
- Timely and complete transmission of outbreak data.

Laboratory Diagnosis

- To ensure the implementation of protocols for sample management including collection, storage, transportation, and processing.
- To ensure appropriate sample storage, processing, documentation, and result dissemination to IM.
- To ensure proper documentation of laboratory resources including consumables, commodities, and reagents.
- To address identified gaps in laboratory diagnosis of cases of the outbreak.
- To provide technical guidance on all laboratory-related matters for the outbreak control.
- To support the logistic team in quantifying laboratory needs (e.g. consumables, commodities).

Case Management

To ensure the Rapid Response Teams (RRTs) deployed to support case management efforts at the field implement national guidelines and protocols for case management

- To assess human resource capacities for case management during the outbreak.
- To provide on-site and off-site training/mentoring of health workers managing cases on the field.
- To identify and map dedicated treatment facilities in all LGAs/States.
- To disseminate outbreak case management protocols to all treatment centres.
- Coordinate the distribution of medical countermeasures and deployment of RRTs to identified treatment centres during outbreaks or emergencies.
- To track treatment outcomes and complications from all treatment centres.
- To ensure the collection of relevant specimens and transportation to the testing laboratory, if not analysed on-site.
- To support the management of all Adverse Events Following Immunization (AEFI) cases during vaccinations.

Vaccines and Logistics

- To support the development of vaccination micro plans and ensure compliance with their implementation.
- To provide a forecast of requirements for vaccines and other immunization supplies.
- To support all resource mobilisation efforts and provide guidance to IM on distribution.
- To ensure availability of bundled vaccines, Cold Chain equipment, and other supplies.
- To ensure availability of drugs for treatment in all designated centres.
- To contract for and purchase goods and services needed for the outbreak response operations e.g. transportation services, waste management services, courier etc.
- To ensure availability of AEFI kits and data tools at all vaccination posts.
- To distribute vaccines and other supplies to designated States/LGAs/Wards.
- To monitor logistics utilization (vaccine and drugs accountability etc).
- To ensure proper waste management during vaccinations.
- To ensure AEFI surveillance for up to 42 days following campaigns.
- Risk Communication and Social Mobilisation.
- To identify key messages and narratives for the outbreak response.
- To describe clearly the media audience that should be reached.
- To ensure all public information is streamlined according to risk communication plans.
- To develop and produce appropriate radio or TV jingles for media education and enlightenment campaigns.
- To measure and monitor public engagement on key traditional and social media platforms.
- To identify social risk factors that surround the outbreak.
- To identify and map stakeholders that support risk communication and community engagement activities.
- To develop an advocacy and social mobilisation plan that ensures an alignment of stakeholders.
- To support social mobilisation, public enlightenment/education, sensitizations before vaccination campaigns.

Annex 12: Weekly Activity Tracker Template

ACTIVITY DASHBOARD TRACKER				
KEY			0 - RED	NOT DONE
			1 - YELLOW	ONGOING
			2 - GREEN	COMPLETED
NUMBER	ACTIVITY	TRACKER	CHALLENGE(S)	REMARK
RESPONSE PILLAR (INSERT PLEASE)				
		1		
		2		
		1		
		2		
		0		

Annex 13: Sample of a Situation Report

CEREBROSPINAL MENINGITIS OUTBREAK IN NIGERIA
Situation Report
(1st May, 2017)

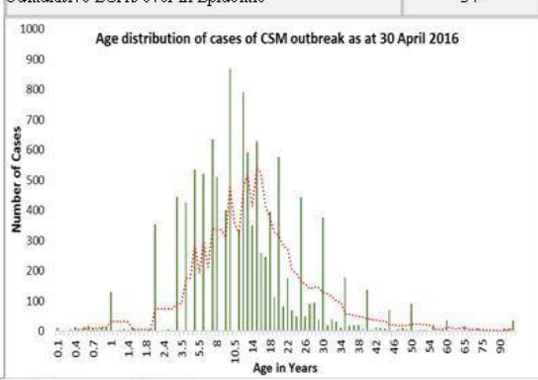
Highlights

- From 13th December, 2016 to 30th April, 2017, 11,647 suspected cases and 960 deaths (8.2%) were reported
- Of the 364 laboratory confirmed cases, 260 (71.4%) were *Neisseria meningitidis* serogroup C
- In the last four weeks (Epi-week 14-17), 43 Local Government Areas (LGAs) have reached alert/epidemic threshold in six States — Zamfara, Sokoto, Kano, Katsina, Kebbi and Yobe
- Tsanyawa LGA in Kano State has reached alert threshold
- Technical teams still supporting coordination and response activities in the most affected States
- On-going reactive vaccination campaign in Sokoto State by National Primary Health Care Development Agency (NPHCDA)
- Due to its urgency, the CSM-EOC is set to deploy the first batch of medical teams to Zamfara and Sokoto States within the next two days
- The Government of Nigeria continues to work with global health partners to mobilize additional vaccines,

Epi summary

- The first case occurred in Zamfara State during Epidemiology Week 50 (December 12– 18, 2016)
- A total of 11,647 cases with 960 deaths (CFR=8.2%) have been reported
- Of the reported cases, 717 (6.2%) were laboratory tested; of which 364 (50.8%) were confirmed positive for bacterial meningitis
- *Neisseria meningitides* serogroup C remains the predominant (71.4%) cause of meningitis amongst those who tested positive
- A total of 5541 (47.7%) cases were in the 5-14 year age group
- In the six most affected States — Zamfara, Sokoto, Katsina, Yobe, Kebbi and Kano — a total of 13 LGAs have reach the alert threshold and are therefore under enhanced surveillance, while 30 LGAs have reached the epidemic threshold, with full outbreak investigation and control measures being implemented

Key Indicators	Number
Total cases reported	11,647
Total Deaths	960
Confirmed cases	364
Total samples tested	717
States that have reported at least one suspected case	23
States with at least one LGA currently in Epidemic	4
States with at least one LGA currently in Alert	6
Current LGAs in Alert	13
Current LGAs in Epidemic	30
Cumulative LGAs ever in Epidemic	34



Annex 14: How to Collect Cerebrospinal Fluid

Preparing for lumbar puncture

If possible, three tubes (1 ml each) of CSF should be collected for microbiology, chemistry, and cytology. If health facilities cannot do chemistry, two tubes are sufficient. If only one tube of CSF is available, it should be sent for microbiology. Where specimen transport for microbiology will take over one hour away from the collection point, the contents of the tube should be transferred to the T-I medium. Where multiple tubes are collected, the tube with the least amount of CSF in it should be sent for microbiology.

The following materials should be assembled in preparation for lumbar puncture.

1. Skin disinfectant: 70% alcohol swab and povidone-iodine swab
2. Sterile gloves
3. Sterile gauze
4. Surgical mask
5. Adhesive bandage or tape
6. LP kit for collection of CSF
7. Bevelled lumbar puncture needles with a stylet (the use of needles without a stylet is sometimes associated with spinal epidermoid tumours) (22 gauge/89 mm for adults and 23 gauge/64 mm for children
8. Sterile tubes (cryogenic and dry tubes)
9. Syringe and needle
10. T-I medium should be refrigerated at 4°C before use (if CSF cannot be analysed immediately in a microbiological laboratory). T-I should be incubated at 37°C.
11. Transport container
12. Adhesive labels
13. Sharps container

Lumbar puncture procedure

1. Standard bio-safety precautions apply to all steps in the lumbar puncture procedure
2. Gather all materials from the CSF collection kit and a sharps container for used needles
3. Wash hands and wear a surgical mask and sterile latex or nitrile gloves that are impermeable to liquids and change gloves between every patient
4. Label the collection tubes with the appropriate information: patient's name, date and time of specimen collection, and Hospital or other Unique Identification Number. Be sure this number matches the number on both the request and report forms

5. Ensure that the patient is kept motionless during the lumbar puncture procedure, either sitting up or lying on the side (for children, it is done preferably lying on the side with the body arched), with his or her back well arched so that the head almost touches the knees to separate the lumbar vertebrae during the procedure. Aim for maximum flexion of the spine (curl into fatal position), but avoid over-flexing the neck, as this may cause respiratory compromise
6. Disinfect the skin along a line drawn between the posterior superior iliac crests with 70% alcohol and povidone-iodine to clean the surface and remove debris and oils. Allow to dry completely.
7. Aim for the L3-4 or L4-5 inter-space [Imagine or draw an imaginary line between the top of the iliac crests. This intersects the spine at approximately the L3-4 inter-space. Position the needle in the midline with the bevel pointing towards the ceiling (when in lateral decubitus position) or to the side (when sitting)]
8. Introduce into the skin with the bevel of the needle pointing in an upward direction and gradually re-orientate such that the needle is parallel to the bed and perpendicular to the back slightly aiming toward the umbilicus in the direction
9. Advance the needle into the spinous ligament (increased resistance). Continue to advance the needle within the ligament until there is a fall in resistance. Remove the stylet. If CSF is not obtained replace the stylet and advance the needle slightly then recheck for CSF
10. Remove CSF (1 ml minimum, 3-4 ml if possible) and collect into sterile screw-cap tubes. If 3-4 ml CSF is available, use 3 separate tubes and place approximately 1 ml into each tube. DO NOT COLLECT CSF INTO A SYRINGE, use screw cap bottles only.
11. Withdraw the needle and cover the insertion site with sterile gauze and adhesive tape. Discard the needle in a sharps box
12. Remove mask and gloves and wash hands with antibacterial soap and water immediately after removing gloves

Note: In the event of a needle-stick injury or other skin puncture or wound, wash the wound liberally with soap and water. Encourage bleeding. Report a needle-stick injury, any other skin puncture, or any contamination of the hands or body with CSF to the supervisor and appropriate health officials immediately as prophylactic treatment of the personnel performing the procedure may be indicated.

Inoculating and Transporting Trans-isolate (T-I) Medium

T-I is a biphasic medium that is useful for the primary culture of meningococci and other etiological agents of bacterial meningitis (Streptococcus pneumoniae and Haemophilus influenzae) from CSF. T-I media should be stored at 4°C and warmed for at least 30 minutes to room temperature (25°C) before use.

- Check the TI vial for sterility (if it is turbid, please discard it).
- Label the T-I bottle with the appropriate information: patient name, date and time of CSF inoculation, and Epid ID number. Be sure this number matches the number on both the case-based and laboratory forms
- Use sterile forceps to pull the small lid in the middle of the aluminium cover of a T-I bottle away from the rubber stopper (Do not completely remove the aluminium cover) and disinfect the stopper with 70% alcohol. Allow to dry (30-60 seconds)
- DO NOT use povidone-iodine as it may be carried into the medium by the passing needle and would inhibit the growth of bacteria.
- Use a sterile syringe and needle to inoculate 0.5-1.0 ml of CSF into the T-I medium. The remaining CSF should be kept in the collection tube. DO NOT REFRIGERATE. INOCULATED TIs should be always kept at room temperature (20-25°C) before Gram staining and other tests (where available) or during transport. Discard the needle and syringe in a sharps box.
- After inoculation through the disinfected dry stopper, invert the T-I bottle several times to mix.
- If transport to the designated testing laboratory is expected to be delayed for more than a day, insert a venting needle (sterile cotton-plugged hypodermic needle) through the rubber stopper of the T-I bottle, which will encourage the growth and survival of the bacteria. Be sure that the venting needle does not touch the broth.
- Incubate the inoculated T-I medium at 35-37°C in a candle jar overnight or until transport is possible. If transportation is delayed for more than 4 days, remove the vented T-I bottle from the incubator or candle jar and place it at room temperature until shipment.
- Remove the venting needle wipe the rubber stopper with 70% alcohol and replace the metallic cover before shipping.
- Always transport the TI vial at room temperature in a sealed plastic bag to minimise the risks of contamination.

Note: If the T-I bottle can be transported to the testing laboratory the same day, do not vent the bottle until it arrives in the receiving laboratory.

Samples must be accompanied by a laboratory form that should have the following information

- ✓ Patient's name
- ✓ Epid ID number
- ✓ Patient's age and sex
- ✓ Date and time of specimen collection

- ✓ Clinical diagnosis and relevant patient history
- ✓ Antibiotics patients have received or currently receiving
- ✓ Name and phone contact details of the sender

On the specimen container label

- ✓ Patient's name
- ✓ Epid ID No

Sample Packaging

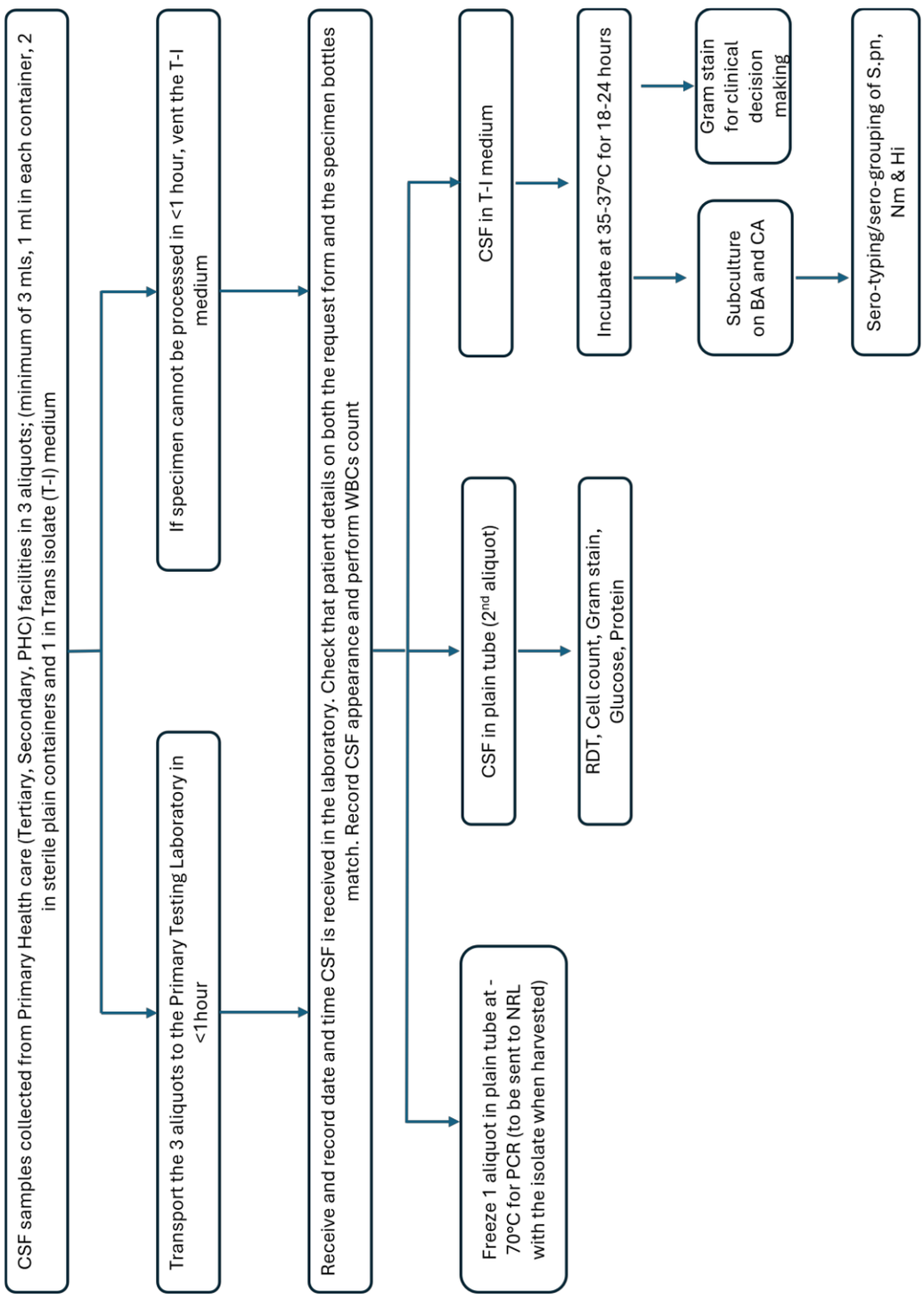
Sample container is:

- ✓ Wrapped in absorbent paper
- ✓ Placed in a Ziploc bag and thereafter
- ✓ Placed in a solid carrier to ensure triple packaging
- ✓ Shipped/transported as soon as possible

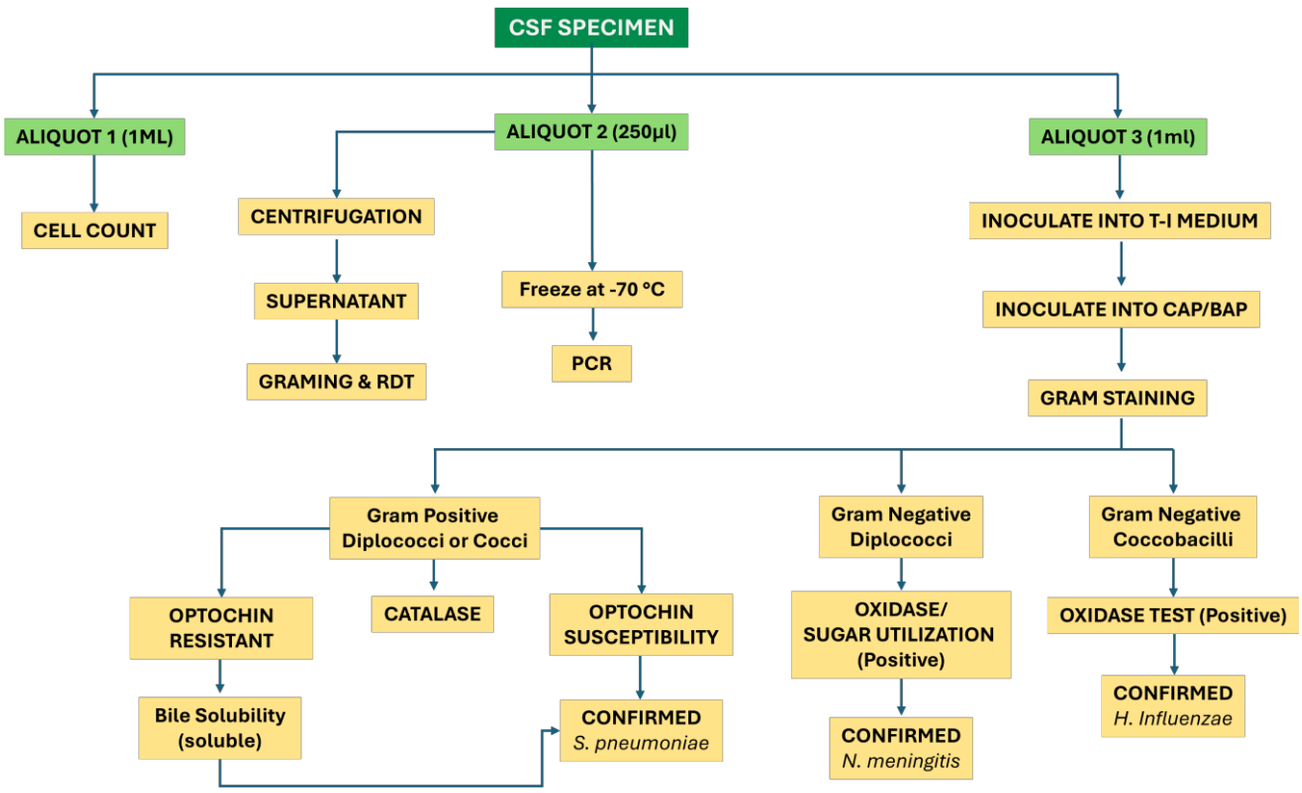
Note: Any sample for culture should NOT be refrigerated at any time.

Annex 15: Algorithm for CSF Diagnosis

Schematic processing of CSF Samples



Laboratory testing Algorithm



Annex 16: Vaccines and Logistics SOP

To access the ICG emergency vaccine stockpile. The following are needed to access the emergency vaccine stockpile:

1. Provide evidence of a meningococcal disease outbreak
2. Provide laboratory confirmation of the *Neisseria meningitides* serogroup responsible for the outbreak
3. Develop and provide plan(s) of action for the vaccination campaign(s)
4. Provide proof of necessary storage and transportation resources to ensure the safe and effective delivery and maintenance of the vaccines to, and in the area affected

- Request forms can be downloaded at: *http://www.who.int/csr/disease/meningococcal/icg/en/*
- ICG email address: ICGsecretariat@who.int

Preparing a Vaccination Micro-Plan

A vaccination micro-plan must be prepared for every LGA/ward targeted for a vaccination campaign. It is the responsibility of the State health authorities to complete and submit the plan to the national authority for onward submission to ICG to prepare for the campaign and to secure the necessary vaccines. The vaccination micro-plan should include:

1. The names of LGAs, wards, and settlements targeted for vaccination
2. The total population currently present in the target areas
3. The population targeted for vaccination.
4. The type and quantity of vaccine needed.
5. The quantity of additional supplies needed – Auto-Disable (AD) syringes safety boxes dilution syringes (10 ml), cotton wool, and gloves.
6. The number of teams conducting the campaign (each team requires vaccinator recorders, crowd controllers, town announcers, and a supervisor).
7. The number of supervisors – at the team, ward, LGA, State and central levels.
8. The mechanism for training the vaccination teams.
9. Logistic needs – cold-chain equipment, vehicles, kettle, soap, and AEFI kits.
10. The mechanism for managing waste resulting from the campaign.
11. The plans for vaccination campaign coverage surveys.
12. Plan for risk communication and social mobilisation.
13. Plan for hard-to-reach settlements.

Components of Ward-Level Micro Planning

1. Total population
2. The target population of CSM vaccine (1- X years) = X% of Total Population (LGA or ward or settlement)
3. List of Settlements, their estimated population and distance from the nearest Health Facility (HF)
4. List of permanent settlements, their estimated population, and distance from nearest HF
5. List of temporary settlements (including nomads) their estimated population and distance from the nearest HF
6. List of urban settlements, their estimated population, and distance from the nearest HF
7. List of rural settlements, their estimated population, and distance from the nearest HF
8. Settlement: a group of people with common interests that stay together to earn their living
9. List of health facilities: public and private

Estimation of fixed vaccination posts

1. Number of persons to be immunized per day per fixed post
2. Urban/densely populated areas: 350 children per day, and 1,750 children in 5 days
3. Rural/sparsely populated areas: 250 children per day, and 1,250 children in 5 days

Example:

Estimation of the number of vaccination posts in urban LGA, with a target population of 42,000

Target population/number of persons to be immunized in 5 days

42,000 / 1,750 = 24 team posts

Estimation of the number of vaccination posts in rural LGA, with a target population of 21,000

Target population/number of children to be immunized in 5 days

21,000 / 1,250 = 17 post

Total number of immunization posts required for the 2 LGAs = 24+17 =41

Human Resources requirements

1. Vaccination post supervisor
2. Vaccinators (2/team)
3. Recorders (1/team)
4. Crowd controller (1/team) and Community leader (1/team)

Vaccines and supplies requirements

1. CSM Vaccines (Wastage factor 1.18)
2. Adverse Event Following Immunization (AEFI) Kit: 1 /vaccination team
3. AEFI Data tools: 1 Data toolset /team
4. Safety boxes (Number of prefilled CSM)/100 X Wastage factor 1.05)
5. Cotton Wool: 500 gm of 1 roll of cotton wool per vaccination team
6. Marker Pens (2 Marker pens to mark filled safety box per team/wastage factor 1.1)
7. Vaccination card and data tools. NB: Not for fingertip marking
8. List of schools per Ward (Nursery, Primary) with the number of eligible people
9. List of private schools
10. List of public schools:
11. Number of eligible people:
12. Name of contact person in each school for planning and coordination of vaccination activities
13. List of FBO schools with several eligible people
14. Name of contact person in each school for planning and coordination of vaccination activities
15. List of worship centres (e.g. mosques, churches)
16. Estimation of eligible people attending churches:
17. Day and time of worship
18. List of markets
    - Type of markets
    - Frequency of markets
    - Best day/days to visit for immunization.
    - Best time and best location of vaccination posts
19. List of other relevant places
20. List of motor parks, recreational facilities, and any other place where eligible people can be found
21. Best day/days to visit for immunization
22. Best time
23. Best location of fixed posts

Cold Chain Requirements

1. Icepacks
2. Vaccine carriers
3. Cold boxes
4. Freezers
5. Ice liner freezer
6. Refrigerator
7. Generators

Fuel for generators for 16 hours per day x 7 days x No. of litres per hour of the type of generator (1 day before, 5 days of implementation, and 1 day after the campaign)

Dry Storage Capacity available required

1. Minimum requirement per Ward: one room of 3 x 4 x 3 meters
2. Availability of disposal sites:
3. Incineration facilities
4. Transport Facilities
5. Bicycles
6. Motorbikes
7. Vehicles
8. Canoes/Engine boats

Others

1. Health Facility Catchment Area Map
2. Mapping of Settlements served by the HF
3. Distance of each Settlement from the HF

The Target Population of a Settlement

1. Location of vaccination posts
2. Location of schools and other important places where eligible people can be found
3. Location of the community leaders' and community influencers' houses
4. LGA Map: Aggregation of ward maps
5. State Map: Aggregation of LGA maps

Cold Chain equipment

There is a requirement for extensive Cold Chain storage space for the Men C vaccine (single dose in prefilled syringes).

1. At the national level, cold chain equipment required is cold rooms.
2. At the subnational level, a mix of cold rooms and refrigerators will be required while LGAs will require refrigerators.
3. At the state and LGA levels, freezers will be required to produce icepacks for both vaccine transportation and immunization posts during implementation.
4. Storage capacities need to be estimated for both storage and icepack production.
5. At the ward and facility levels, including temporary posts; cold chain equipment is required for storage at the ward level and implementation at vaccination posts.
6. Each ward will need 4 large Cold Boxes for vaccine and icepack storage and each vaccination post will require 2 Giostyle vaccine carriers.
7. ONLY Giostyle vaccine carriers are to be used
8. For the ward level, 24 icepacks are required for vaccine storage, and depending on the number of posts
9. At the Vaccination posts, each Giostyle vaccine carrier will require 4 icepacks. For icepacks: The formula is:

- Icepacks for vaccine carriers = No. Of Giostyle VCs x No. of posts x 4 x 3 x 1.05 (planning for 3 days)
- Icepacks for cold boxes =No. of cold boxes required for storage x 24 x 2 x 1.05 (for 2 cycles of storage)

For estimation of storage space

- Each dose of (MenVac –C for example) requires 2.6cc of storage space.
- To calculate the volume of storage required for a given target population, the formula is: Storage volume required = TP x coverage (95%) x 1.18 x 2.6/1000
- For estimation of icepack producing space: Each icepack 0.3/0.4lts occupies 0.5lts storage space.
- The volume required is calculated as follows
  - Freezing space required = No. of icepacks required x 0.5Lts

The budget should include

- Allowances for members of the vaccination team
- Social mobilisation costs (including allowances for staff)

- Costs of logistic equipment (fuelling, transportation)
- Costs of waste management
- Cost of immunization coverage survey

Composition and Roles of the LGA Vaccination Coordination Team

- LGA Director of PHC – Chairperson
- LGA Immunization Officer
- LGA DSNO
- LGA Health Educator
- LGA Cold Chain Officer
- Ward Focal Persons
- The most senior district Head
- Religious leader
- Maternal and Child Health Coordinator (MCHC)
- State Technical Facilitator
- LGA Facilitators
- Others

This team will perform the following roles:

1. Advocacy to LGA stakeholders and high-level traditional institutions and religious leaders.
2. Conduct planning meetings with LGA TFI.
3. Identify senior health workers as post supervisors.
4. Ensure that personnel selected to support the vaccination exercise (vaccinators, supervisors, ward focal persons) are following the selection criteria adopted by the state.
5. Plan and conduct training at LGA and ward levels for both pre-implementation and implementation phases.
6. Supervise the development of daily implementation plans by catchment area for fixed post vaccinations.
7. Identify the required number of vaccinators (according to vaccination micro plans).
8. Monitor the quality of the campaign in the LGA, identifying areas of weakness and ensuring that appropriate corrective actions are taken on time.
9. Conduct daily review meetings.
10. Submit daily call-in data.
11. Give daily feedback to state MoHSW/CSM EOC.

Composition and Roles of (LGA/Ward) Vaccination Team

1. A supervisor who is a senior health worker
2. Vaccinator (health worker who is allowed by law to give injections)
3. Recorder (who can read and write)
4. Crowd controller/**s**creener for age and residency:
5. Community leader or representative for male queue and
6. Female leader for the female queue/House to house mobiliser.
7. Town announcer

Roles of Vaccination Post Supervisor

Responsibilities are:

- Develop the catchment area map together with the community leader
- Ensure the community leaders selected are mature and respected persons within the catchment area who can influence change in the community.
- Ensure plans are in place and understood by the community
- Ensure the town announcers social mobilisers and community leaders conduct house-to-house mobilisation daily.
- Ensure the availability of cold chain and logistics materials based on the daily implementation work plan.
- Ensure the availability of vaccine injection devices and AEFI kits based on the daily implementation work plan.
- Ensure screening is done appropriately.
- Ensure the vaccination post is functioning according to the daily work plan of the vaccination post.
- Ensure proper vaccine administration at the post.
- Monitor, manage, and audit all AEFI cases and report such to the Ward Focal Person daily.
- Conduct daily data collection, collation, and submission to the ward level
- Collect the safety boxes from the fixed post to the ward-designated areas every day.
- Monitor the waste management issues in the outpost
- Attend daily ward review meeting

Annex 17: Epidemic Preparedness and Response Committee

EPR committees shall be established at all levels and strengthened where available with defined terms of reference, plan of action, and operational guidelines. The committee shall meet quarterly and when deemed necessary. Rapid response teams equipped with adequate resources and logistics for rapid intervention shall be established at all levels. Adequate funds shall be provided at all levels to secure contingency stocks of medicines, vaccines, and supplies and for pre-positioning of emergency stocks. Epidemic management protocol and Standard Operating Procedures (SOPs) shall be made available to health personnel at all levels. The EPR committee shall monitor LGA weekly data on epidemic-prone diseases to prediction of impending epidemics.

National/Subnational Epidemic Preparedness Response Committee Composition

The EPRC shall be composed of:

- HMH/Hon. Commissioner for Health.
- Director PHC/Public Health.
- Director of Hospital Services.
- Director of Pharmaceutical Services.
- Director of Nursing Services.
- Director of Medical Laboratory Services.
- DG NEMA/Executive Secretary, SEMA.
- CCE/State Epidemiologist.
- Director of Finance.
- Representative of partner agencies.

Terms of Reference of State Epidemic Preparedness and Response Committee

- Plan and coordinate surveillance and epidemic response activities.
- Resource mobilisation.
- Meet regularly with the Epidemic Rapid Response Team.
- Monitor and evaluate response interventions.
- Review response plan where necessary.

Note: States are to consider including a clinician and laboratorian from the Federal Tertiary Hospital in the state as members

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Contributors

S/N	NAME	ORGANIZATION / Department
1	Dr Jide Idris	NCDC / ODG
2	Dr Gbenga Joseph	NCDC /HEPR
3	Dr Eze Emmanuel	NCDC / DPRS
4	Dr Fatima Saleh	NCDC / Surveillance & Epidemiology
5	Fareedah Mohammed Munir	NCDC / ODG
6	Ahmed Ladan Muhammed	NCDC / Surveillance & Epidemiology
7	Ifeanyi Emmanuel Abali	NCDC / HEPR
8	Michael Popoola	NCDC / NRL
9	Paul Labaran Majam	NCDC / DPHP
10	Dr Ogunniyi Olakunle Biodun	NCDC / HEPR
11	Dr Muhammad Shakir Balogun	AFENET
12	Dr Mie Okamura	WHO
13	Dr Isha Berry	CDC Foundation
14	Dr Farah Husain	US CDC, Nigeria
15	Dr Hashim Abdulmumin Bala	AFENET
16	Azeez Babatunde Oyero	NCDC
17	Achugamonye Chinwendu	AFENET
18	Adedayo Adigun	SMoHSW Oyo
19	Ahmad Olakunle Olanrewaju	NCDC / DPRS
20	Aisha Inuwa	NCDC / DPHP
21	Anokwu A. Oluchi	NiMET
22	Anwar Abubakar	NCDC / HEPR
23	Dr Bala Buratai	NCDC / DPRS
24	Bawa Bitrus	SMoHSW Bauchi
25	Omaiye Benson Igoche	AFENET
26	Bright Friday Onweh	NCDC
27	Celestine Ameh	AFENET

S/N	NAME	ORGANIZATION / Department
28	Chijioke Mba	IHVN
29	Christine Lascols	US CDC Atlanta
30	Danjuma Abdullahi	COMO
31	Dr Ali Wada	NCDC / HEPR
32	Dr Oladipupo Ipadeola	US CDC Nigeria
33	Dr Muhammad Isa Goni	NCDC / HEPR
34	Dr Mohammed Isyaka	SMoHSW Yobe
35	Dr Joshua Ofoli	WHO CO - EPR
36	Dr Shafique Nass	WHO CO - EPR
37	Dr Ahmad Muhammad	SMoHSW Zamfara
38	Dende Billyaminu Ibrahim	NCDC / Surveillance
39	Dr Nnenna Ananaba	CDC Nigeria
40	Dr Nuhu Bile	SMoH Gombe
41	Joy Mariam Eke	NPHCDA
42	Farida Ciroma	NCDC / Surveillance
43	Hannatu Bello	NCDC / DPRS
44	Ikehionwu John	GU
46	Iliya Danladi Cheshi	NCDC / Surveillance
47	John Neatherlin	US CDC Atlanta
48	Joseph Imafidon Aighekhuomwin	WACID
49	Obiageli Nebolisa	NCDC / Surveillance
50	Olajumoke Adaramola	NCDC / HEPR
51	Omaiye Benson	AFENET
52	Pharm Fatima Bukar	NCDC / HEPR
53	Prof Ehimario Igumbor	NIMR
54	Pui Nbulan	AFENET
55	Rhoda Omorodian	CoMO
56	Rimamdeyati Usman Yashe	NCDC / Surveillance
57	Saadatu Umaimah Ibrahim	NCDC

S/N	NAME	ORGANIZATION / Department
58	Sanni Salisu	NCDC / Surveillance
59	Sarah Peter	NCDC / DPHP
60	Ugochi Ezenwelu	CDC CO
61	Mardiyya Isyaku Aliyu	NCDC / HEPR
62	Markus Saerimam Nzunde	NCDC
63	Mr Hassan Shehu	NPHCDA

FEDERAL MINISTRY OF HEALTH

NIGERIA CENTRE FOR DISEASE CONTROL AND PREVENTION

PREPAREDNESS AND RESPONSE TO CEREBROSPINAL MENINGITIS OUTBREAKS

Plot 801, Ebitu Ukiwe Street, Jabi, Abuja, Nigeria

6232 (Toll-Free Call Centre)

info@ncdc.gov.ng

@NCDCgov

@NCDCgov

NCDC

NCDCgov

t.me/NCDCgov (Telegram)