A FIELD GUIDE FOR EPIDEMIC RESPONSE TO MENINGOCOCCAL MENINGITIS OUTBREAK

Ministry of Health, Uganda

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IMMUNISE NOW

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Purpose of this guide

The purpose of this field guide is to equip service providers who will be carrying out planning, training, social mobilisation, disease surveillance and implementing meningococcal mass immunisation with adequate information on meningococcal meningitis epidemic response and the vaccine that prevents it.

SECTION 1: MENINGOCOCCAL MENINGITIS

1.0 **Introduction**

Meningitis is an infection of the meninges; which are the thin lining that surrounds the brain and the spinal cord and causes high mortality and disability among survivors. Several different bacteria can cause meningitis and Neisseria meningitidis is one of the most important because of its potential to cause epidemics.

In Uganda, there are several districts that lie within the Sub-Saharan meningitis belt, including districts in West Nile, North and North-Eastern districts. The districts of Karamoja region are thus in this meningitis belt.

2.0 Epidemiology of Meningococcal meningitis

2.1 Causative agent

Epidemic meningitis is caused by bacteria, N. meningitidis serotypes A, C, Y, and W135. Serotype B causes sporadic cases.

2.2 Mode of transmission

The bacteria are found in the nasal cavity and throat of infected persons, and are transmitted from person to person through droplets of respiratory or throat secretions. The average incubation period is 4 days, ranging between 1 and 10 days. N. meningitidis only infects humans; there is no animal reservoir. An infected person remains contagious from time of infection up to 24 hours after initiation of effective treatment. The most important source of infection is asymptomatic carriers (Up to 50% of infected persons).

2.3 Risk factors for transmission

Overcrowding as in IDP camps and manyatas that brings together a high density of susceptible people is an important risk factor for transmission. Population movement (travel, migration, nomadism, and displacement) facilitates quick circulation of virulent strains between areas. Delayed case reporting due to poor access to health services or poor health seeking behaviours increase spread of the causative organisms.

Close and prolonged contact (e.g. sneezing and coughing on someone, living in close quarters or dormitories, sharing eating or drinking utensils, etc.) facilitate the spread of the disease.

2.4 Case Definition

A: A suspected case

Sudden onset of fever 38^{o}C AND **any 2 of the following:**

- Headache
- Stiff neck
- Vomiting
- Altered consciousness
- Photophobia
- Petechial or purpural rash

- Meningitis epidemic situation

Among children below 5 years of age suspect meningitis in the presence of:

- Acute fever
- Irritability and lethargy
- Bulging fontanelle
- Convulsions
- Petechial rash
- Hypotonia
- Vomiting
- Stiff neck
- Meningitis epidemic situation

B. Probable case

- A suspected case **AND** cloudy or purulent CSF, with gram-negative diplococci.
- A suspected case with ongoing epidemic and epidemiological link to a confirmed case

C. Confirmed case

- A suspected or probable case **AND** positive latex agglutination test (rapid diagnostic test) or positive culture of N.Menigitidis.

2.5 Epidemic Threshold

Meningitis surveillance activities are carried out to enable one to identify an epidemic in its early phases in order to apply disease control strategies early enough to reduce morbidity and mortality and control the epidemic. The epidemic threshold is: ***10 cases per 100,000 people per week or higher, averaged over at least two consecutive weeks***

Random fluctuation occurs in small populations; therefore the areas under surveillance should have a population of not less than 30,000 inhabitants. ***The sub county level is the most ideal unit for this calculation in Uganda.***

2.6 Complications of Meningitis

Shock
Dehydration and electrolyte imbalance
Paralysis of limbs
Hydrocephalus
Hearing impairment/ Deafness
Blindness
Brain damage and mental retardation
Epilepsy
Death

3.0 Case Management

Meningococcal disease (either meningitis or septicaemia) is potentially fatal and should always be viewed as a medical emergency.

Epidemic Conditions

During epidemics of confirmed meningococcal disease, case management needs to be simplified to permit the health system to respond to rapidly increasing numbers of cases.

After confirmation of the epidemic, every suspected case of meningitis should be considered and treated as a case of meningococcal meningitis. A few specimens (about 5) can be taken weekly from randomly selected cases for rapid testing, culture and sensitivity to enable continuous monitoring of causative strain and drug sensitivity pattern, and ensure that the control measures implemented are applicable to the situation.

3.1 Treatment of cases during meningococcal meningitis epidemic

During most epidemic situations, drug shortages, logistical constraints, high admission rates, compliance problems and lack of trained personnel will require developing a standard and simplified treatment protocol that can address all of the above problems. A single, long acting intramuscularly (IM) dose of an antibiotic is an excellent solution.

Chloramphenicol in oil suspension, a long acting antibiotic, is the drug of choice for all age groups, particularly in areas with limited health facilities. Meningococci are extremely sensitive to chloramphenicol and the symptoms of meningitis should improve within 48 hours. For patients who do not improve rapidly, an additional dose of the same drug is recommended 48 hours later. There is no documented resistance to oily Chloramphenicol. In case this happens, Ceftriaxone is the recommended 2nd line treatment for meningococcal meningitis.

3.1.1 Dosing scheme for oily Chloramphenicol

Age group	Dose	Volume	Administration route and site
2 - 11 months	500 mg	1 vial	Intramuscular, 1 buttock
1 – 2 years	1.0 gm	2 vial	Intramuscular, 2 buttocks
3 – 6 years	1.5 mg	3 vial	Intramuscular, 2 buttocks
7 – 10 years	2.0 mg	4 vial	Intramuscular, 2 buttocks
11 – 14 years	2.5 gm	5 vial	Intramuscular, 2 buttocks
> 15 years	3.0 gm	6 vial	Intramuscular, 2 buttocks

3.1.2 Dosing Scheme of Ceftriaxone

Adults:

Give 2grams daily, intramuscularly of intravenously. If given I/M, administer the dose into 2 different sites (buttocks).

Infants and children below 50Kg:
Give 80mg/Kg daily, by intravenous infusion only.

3.1.3 Other alternative treatments in the absence of oily Chloramphenicol

a) Using ordinary Chloramphenicol

Adults

Injectable Chloramphenicol (Intramuscular) at an initial dose of 750 mg every six hours for the first two days. Then the dose should be reduced to 500 mg every six hours to complete a total treatment course of 7 to 14 days. The continuation dose may be given orally.

Children:

For suspect or proven cases for meningococcal meningitis in children:
Intravenous Chloramphenicol at a dose of 50 to 100 mg per kg body weight per day in 4 divided doses for 10 days. If IV administration is impossible, the IM route is recommended.

b) Using Crystalline penicillin

Adults: Crystalline Penicillin at a dose of 4 million units every 6 hours for a total treatment course of 7 – 10 days, given intravenously or intramuscularly.
Children: Crystalline Penicillin at a dose of 200,000 to 400,000 units per Kg body weight in 4 divided doses for 10 days, given intravenously or Intramuscularly.

3.1.4 Supportive Treatment

Intravenous Fluids

For people that are unconscious, very ill, and/or unable to drink or eat, intravenous fluids should be given in course of treatment: alternating between normal saline and Dextrose 5%. 50mls of 50% dextrose should be given as a bolus when necessary e.g. when the patient is hypoglycaemic.

Other symptomatic treatment

Analgesics and antipyretics (Paracetamol, Ibuprofen, and Indomethacin) should be given when necessary. Feeding of patients is key to good treatment outcomes.

4.0 Prevention:

Epidemic Conditions

4.1 Vaccination

The best way of limiting the spread of meningococcal disease outbreaks is by vaccination. Effective polysaccharide vaccines exist for two of the major meningococcal serogroups, A and C. Polysaccharide vaccines are also available for serogroups Y and W-135. A tetravalent vaccine (A,C,Y,W135) is also available but is more expensive.

A mass vaccination campaign, if appropriately carried out, attaining high coverage, is able to halt an epidemic of meningococcal disease within 2 weeks. Vaccine efficacy is 90% from 2 years and above.
Laboratory diagnosis and confirmation of epidemic sero-groups will guide the type of vaccine needed; either meningococcal polysaccharide bivalent A/C (if serogroup A or C is confirmed as the causative agent) or meningococcal polysaccharide tetravalent vaccine A/C/Y/W135 if sero group W135 or Y is confirmed. Vaccination will be concentrated in the affected districts and sub-counties.

The currently available vaccines have limitations of poor immunogenecity in children and a short protection period (around three years). Group A vaccine are poorly immunogenic in children under one year of age, and Group C vaccines have a poor response in children under two years of age. However, children in these age groups are at increased risk from the disease during an epidemic. The decision to vaccinate children less than the recommended age should be made cautiously and based on the epidemiological findings of the particular area or region. Vaccine failures in children too young to mount an immune response will undermine public confidence in this and other vaccination programs.

In all defined epidemics of Group A and Group C meningococcal disease, attack rates diminish rapidly with increasing age in individuals 30 years of age or above. Therefore, few cases are expected or will be prevented by vaccinating persons older than 30 years of age.

Based on these facts, the recommended age group for vaccination against group A meningococcal disease is usually 2- 30 years.

4.2 Refugee and IDP population

Following confirmation of two cases, mass vaccination is recommended if the serogroup(s) identified is/are included in either the bivalent (A/C) or tetravalent (A/C/Y/W135) vaccine. At risk populations e.g. 2 – 30 years of age should be given priority.

4.3 Chemoprophylaxis

Chemoprophylaxis of contacts of meningitis cases is NOT recommended during an epidemic for several reasons.

5.0 Surveillance

A. Once a suspect case is identified at the Health Centre, the clinician or health unit in-charge should search the village from which the case comes and nearby communities for other cases (active search)
B. The health unit in-charge should send a report to the HSD/DDHS by the fastest available means requesting the assistance to collect CSF samples from as many patients as possible (5 – 10 specimens are needed for epidemic confirmation). The CSFs should be placed on transport (Trans Isolate) media and sent to the reference Central Public Health Laboratory (CPHL) for culture, sero-grouping, and antimicrobial sensitivity.

C. Each clinician or health unit in-charge should calculate weekly attack rates (AR) and case fatality ratio (CFR) for meningitis throughout the meningitis season.

Attack Rate: This rate usually refers to the incidence of new cases during an epidemic. The denominator is the total number of exposed contacts during the same period of time

$$\textbf{Attack rate (AR)} = \frac{\text{No of new cases of CSM in an area in a given period}}{\text{Average total population at risk in the same time period}} \times 100{,}000$$

$$\textbf{Case fatality ratio (CFR)} = \frac{\text{Number of death from CSM in a given period}}{\text{Number of CSM cases diagnosed in the same time period}} \times 100$$

D. The clinician or health unit in-charge should send the form (HMIS weekly reporting form) summarizing the cases, deaths, weekly ARs and CFRs to the DDHS by the fastest available means each Friday.

E. At the end of every week the DDHS should collect the forms and compile data for the whole district. The DDHS should report weekly by radio at a specified time the number of cases, deaths and weekly attack rates for the district to the national level.

Note:

- The in-charge at the Health facility is responsible for case detection, verification, treatment, identifying new areas of involvement, and determining weekly attack rates.
- As the Health Workers at Health Centres II and III are not allowed or able to perform a Lumbar Puncture (LP), they can only identify suspected cases. It is the District Health Team (the DDHS or a medical officer at health centre IV) who should investigate the suspected cases reported by the health centre, and perform the LPs to determine if this is a probable case of meningitis.
- Once epidemic meningitis is confirmed, the DDHS or the in-charge of the health centre IV should supply oily Chloramphenicol to the health centres for case management.
- The DDHS or in-charge of HCIV should make every effort to confirm 5 - 10 cases in the district or HSD by culture and/or latex agglutination tests (rapid test). This will necessitate working closely with the Central Public Health Laboratory and the regional referral Laboratories.

5.1 Community based surveillance

- In order to enhance early case detection in the community and quick referral for treatment, the community should be actively involved. A community

based health worker, e.g. Community Owned Resource Person (CORP), a health inspector or health assistant should be designated and trained to identify suspected cases in the community. He/she will work collaboratively with the village health team and the staff in the local health centre. His/her major duties should be to identify and report to the health centre and village health team suspected cases in the village, referral of the cases to health centres, and identification of those that are reluctant to seek health care.

5.2 Specimen Collection for Laboratory Diagnosis of Meningitis

The most common specimen taken from patients for direct examination and culture is the CSF collected by Lumbar Puncture done using aseptic technique. Meningococci are isolated most readily when specimens are obtained prior to initiation of antibiotic therapy and are transported immediately to the laboratory.

N. Meningitidis is a fragile organism highly susceptible to drying, chilling and heat. Do not refrigerate or incubate the CSF specimen while transporting it to the laboratory, but transport the specimens in transisolate transport media provided by the CPHL.

6.0 Health Education

The community should be sensitized about the meningitis outbreak with emphasis on the following key messages;

a) Avoid massive gatherings or areas of concentration as this enhances transmission of the disease
b) Report any sudden death in the community/village to the nearest health workers
c) Report and any person with fever and neck stiffness to the nearest health unit for early/timely treatment
d) Avoid taking antibiotics for prophylaxis as it leads to:
    a. Resistance
    b. Effectiveness doubtable (no protective effect according to studies done by WHO)
    c. False confidence
    d. Leads to unnecessary delays in seeking treatment and care for possible cases
e) Mobilise people in your village in the age group 2 – 30 years, to go for vaccination at the designated vaccination posts previously used during vaccination campaign.

ANNEX 1: MINISTRY OF HEALTH, EPIDEMIOLOGICAL SURVEILLANCE DIVISION, CSM SURVEILLACE FORM

Village_____ Sub County_____ County_____ District_____

Population of Sub County where cases have been identified_____

Case No	Name	Sex	Age	Date of Onset of Illness	Signs and Symptoms	Laboratory Confirmation	Treatment	Outcome

Remarks_____

_____

SECTION 2:

1.0 Meningococcal Meningitis Vaccination Campaign

1.1 Objectives

1. To vaccinate 95% of health workers below 30 years of age with a polysaccharide meningococcal vaccine, regardless of previous immunisation history
2. To Vaccinate 80% of all persons aged 2-30 years in epidemic affected sub-counties
3. To ensure safe injection practices and proper waste disposal in every sub-county during the meningitis vaccination campaign

The aim of conducting a meningitis vaccination campaign is to ensure that all persons aged 2-30 years of age are vaccinated against meningitis, so that a population immunity barrier is built to interrupt transmission of meningitis

1.2 Meningitis Campaign Target Age Group

The target age group for the meningococcal meningitis vaccination campaign is all persons aged 2 to 30 years of age. All persons in this age group are eligible to getting the meningococcal vaccine because it includes most persons who are at risk of getting meningitis in an outbreak setting.

- They are the commonly affected age group in meningococcal outbreaks. In Nakapirpirit alone, 87% of suspected meningitis cases whose age was known were in the age range 1 to 30 years.

Persons above 30 years are commonly immune to meningitis disease because they were either immunized by previous meningitis vaccination campaigns (1990-1992) or have been naturally exposed to the meningococcal bacteria.

Therefore, District Director(s) of Health Services (DDHS) and Health sub-district (HSD) in-charges should liase with education officials, teachers, matrons of educational institutions and non-formal educational institutions and community leaders to ensure that the target age group is reached with meningococcal vaccine during the mass immunisation days.

1.3 Special Considerations

In order to maximise safety and benefit of the campaign, certain situations should receive special consideration:

→ Persons who are sick should receive the meningococcal vaccination and thereafter be referred for treatment.

→ Persons suffering from meningitis or having recently recovered from the infection or having complications related to previous infection with meningitis should be vaccinated and referred for appropriate treatment.

All persons within the target age group sick or not should be immunised.

1.4 Vaccinating children below 2 years of Age

Children below 2 years of age are known to be at increased risk from the disease during an epidemic. However, immunization of these children is not recommended because the vaccine used in this campaign has poor immunogenecity, thus very low efficacy, in children of this age group. Group A vaccines are poorly immunogenic in children under one year of age, and Group C vaccines have a poor response in children under two years of age. Therefore;

1. All mothers/guardians of children under 2 years at the time of the vaccination should be encouraged not to bring them for vaccination. They should be educated on the signs and symptoms of meningitis in children so that:
   - The children are brought to the nearest health facility for early and effective treatment
   - Avoid the complications of meningitis, which are more common in this age group.
2. Social mobilization of the community should emphasize that it is not highly encouraged for children below 2 years of age to be brought for the meningitis vaccination. Nevertheless if a child of this age group is brought to the immunization post and mother insists on the child being vaccinated, go ahead and give the vaccine.

1.5 Activities for meningococcal meningitis mass immunisation

1.5.1 Planning and coordination

Being an outbreak, the DHT and the District Epidemic Response Committee in collaboration with the existing NIDs/SNIDS committees at the district and lower levels are expected to actively participate in the planning, coordination and implementation of this activity at the respective levels.

In addition, the District Education Officers (DEO), Inspectors of Schools and at lower levels, heads of educational institutions should be brought on board. This is to ensure that they are able to participate in planning and implementation especially social mobilization (disseminating messages on the planned mass immunisation)

Other influential personalities/opinion leaders to work with include: Heads of other departments within the district, Local councils and

administrative offices, Religious and cultural leaders, Traditional birth attendants etc.

1.5.2 Micro planning

There will be no time for elaborate micro planning at district and sub county levels. However, the district is expected to use the experience of the previous campaigns and knowledge and skills of epidemic response and control to conduct training and micro planning at the district and sub county level.

1. Resource requirements for the implementation mass immunisation activities for meningococcal meningitis include:

   - Health workers
   - Logistical requirements – vaccines, immunisation equipment (ADs, disposable syringes and needles for reconstituting the vaccine and safety boxes), conditions of the fridges and the available storage capacity, gas cylinders, vaccine carriers, cold boxes frozen icepacks
   - Funds
   - Transport
   - Existing structures and capacities for social mobilisation.

2. Working figures – like:

   - Target populations,
   - Number of sub – counties,
   - Educational institutions,
   - Immunization posts and any other information deemed necessary

3. Partnership and support of district leaders, including major NGOS in those districts for the planning and implementation of mass vaccination for meningitis.

1.5.3 Training

Training will be carried out at the central, district and sub-county levels in a cascade manner. That is the central trainers will train the district trainers who will in turn train the sub county supervisors and post workers.

The Target group to be trained at all levels include:

District level	- District trainers (mainly DHT including in Charges or representatives of Health Sub districts) Representative of RDC'S office, CAO, and LC V plus the DEO, Inspector of Schools and community Development officer.
Sub – county level-	Sub – county supervisors, health workers (service

providers), inspectors of schools, heads of formal and non formal educational institutions, sub county and parish chiefs, LC111 chairpersons and other mobilisers as identified by the social mobilisation committee.

The purpose of training is to ensure that the health workers and the mobilisers are equipped with adequate knowledge/information on:

- The causes,
- Signs and symptoms
- Case management
- Prevention of meningococcal meningitis and
- The justification for the mass immunisation

In addition, the training will put more emphasis on provision of quality service during the implementation of mass immunisation activities.

The duration of training at all levels will be 2 days, and the training content will include:

- Overview of meningococcal meningitis in Uganda,
- Justification for meningococcal meningitis mass immunisation activities,
- Epidemiology of meningococcal meningitis
- Meningococcal meningitis outbreak control activities
- Micro planning and training for the mass immunisation,
- Social mobilization activities,
- Estimation of vaccines and logistics for mass immunisation activities,
- Meningococcal meningitis vaccine including its packaging and administration,
- Organisation of the immunisation posts,
- Roles of post workers, Monitoring and supervision during mass vaccination,
- Surveillance for meningococcal meningitis
- Adverse events following immunisation (AEFI) and their management,
- Data collection tools during the mass vaccination

1.5.4 Social Mobilisation for the Meningitis Vaccination Campaign

Involvement of local civic, traditional and religious leaders, youth groups, women councils, teachers associations and NGOs in mobilising the population for the meningitis vaccination campaign is critical. Any rumour or misconception about the vaccine should be clarified with facts. Therefore, regardless of the limited time available for social mobilisation, key people and groups should participate in specific promotional activities. Remember that the meningitis campaign involves an injection.

The aim is to ensure that all the above are well informed of the need for the vaccination, and know when and where the vaccination is taking place. This is extremely important for the success of the exercise. In order to achieve the

above, social mobilisation activities should be planned and started early enough using the following structures:

- Existing Multi sectoral Social mobilisation Committees (formed during NIDS/SNIDS or Child Days)
- Involve traditional and religious leaders, political leaders, youth groups, women councils, Ministry of Education and Sports, Ministry of Gender, District Education Officers, Inspectors of Schools, Head teachers and teachers associations, Community Development Officers and NGOs
- Use local radio stations
- Plan to use film vans

1.5.4.1 Implementation of social mobilisation activities.

Social mobilisation activities should be continuous and intensified. The activities should include:

- Making house to house visits and making proper arrangements with schools (where they are open)
- Announcing meningococcal meningitis mass vaccination days during community meetings like political rallies, announcements in church/places of worship, schools and any other opportunity
- Mobilising leaders to convince parents and youth to respond to the mass vaccination for meningococcal meningitis.
- *Hanging posters and banners in the community if any*
- Passing circulars in offices indicating the days for the mass vaccination, target age group and location of the immunisation posts.
- Distributing brochures/leaflets
- Using Radio stations and newspapers available locally to mobilize the communities.

NB. All social mobilisation activities at all levels should use uniform messages about the meningococal meningitis mass vaccination. Try to identify the local word for meningococcal meningitis so that the people will understand it very easily.

Social mobilisation messages could include messages such as the following;

+ **Why the meningitis vaccination campaign?**

The number of cases reported in the district as seen in the health facilities in the district indicate that there is a meningitis outbreak. Although effective treatment is now available in all health facilities in the district, this campaign is important to interrupt the transmission of the disease from one person to the other.

+ **When will the meningitis vaccination campaign be conducted?**

The mobiliser should know the dates when the immunisation is going to take place and pass on this information to the communities.

+ **Where will the meningitis vaccine be given from?**

- Meningitis vaccine will be given in all vaccination posts previously used during NIDs/SNIDs implementation,
- Carefully planned mobile teams may be used for special populations.

+ **Who should receive the meningitis vaccine**?

Messages to mobilisers

- Target group - All persons aged 2 to 30 years will receive meningitis vaccine.
- There is no contraindication for meningitis vaccine.
- Persons in the target age group that are admitted in hospitals/health facilities should receive meningitis vaccination.
- **All** persons aged 2 to 30 years, even if previously vaccinated should be brought for meningitis vaccination during the campaign. Persons above 30 years or below 2 years are not included in the target age group; however, if they come to the vaccination post, they can receive the vaccine on special considerations and should be recorded separately.

+ **Who will give the injection?**

Trained health workers will be giving the meningitis vaccine injection

+ **Ensuring safe injections in meningitis vaccination campaign.**

- Each injection is administered safely with a single sterile Auto-Disabling

syringe and needle. The Auto–disabling syringe and needle presents the lowest risk of person to person transmission of blood borne disease-causing organisms because it cannot be reused.

- Use the right/matching diluent for the meningitis vaccine
- Dispose the used syringes and needles in safety boxes
- Supervisors during the campaign will inspect injection safety practices of all vaccinators
- Adverse events following meningitis immunisation (AEFI) will be monitored. Use guidelines on how to monitor AEFI provided during the measles vaccination campaign.

All social mobilisation activities at all levels should use uniform messages about the meningitis vaccination campaign. Most people in outbreak-affected sub-counties will have knowledge of meningitis and its consequences. Therefore, all social mobilisers should try to identify and use the local knowledge of meningitis for people to understand it very easily.

The Key messages for the meningitis vaccination campaign.

K Meningitis is a very contagious disease that frequently kills infected persons if untreated early at the health facilities

K To control meningitis in epidemic affected sub-counties/districts, meningitis vaccine will be given in specified campaign days.

K Each injection is administered safely by a trained health worker with a single sterile syringe and needle. Auto-disabling syringes and needles plus safety boxes will be used for administering the vaccine. There is no risk of infections because auto-disabling syringes cannot be reused.

K Report any case of suspected meningitis to your nearest Health facility for early treatment

Social mobilisation activities could include:

K Making house to house visits

K Announcing meningitis vaccination campaign days during community meetings for example LC 1 meeting, announcements in church/places of worship, schools and any other opportunity

K Mobilising leaders to convince the community to respond to the meningitis vaccination campaign.

K Using Radio stations and newspapers available locally to mobilise for meningitis vaccination campaign.

2.0 Estimating meningitis vaccine and other logistics requirements

2.1 Size of the Target Population

The number of persons 2 to 30 years of age should be worked out by the DDHS using the 2002 National Housing and population census figures. The size of the target population for meningitis vaccination campaigns will be approximately 70% of the total district/sub-county population.

Calculating the target population for meningitis vaccination Campaign is:

Population 2-30 years = Total District Population x 0.7
(Target popn for meningitis campaigns)

2.2 Vaccine requirements

The vaccine requirements for a meningitis vaccination campaign will be equal to the size of the target population plus an additional 20% for wastage and reserve.

Estimation of vaccine:

Target population for the campaign x 1.20 = Vaccine doses required.

For example, if the target population for meningitis vaccination campaigns in District 'y' is 128, 235

The amount of meningitis vaccine required (in doses) for the district will be:

128,235 x 1.20 = 153,882 doses

Estimation for other logistic requirements

Estimating the Auto-disabling syringes and needles (ADS)

Target popn for the campaign x 1.20 = Number of expected Auto- disabling syringes and needles.

Estimation of mixing syringes.

Number of mixing syringes and needles = Number of vaccine vials (one needle and one syringe, one vial)

Estimation of safety boxes

$$\text{Number of safety boxes} = \frac{\text{Auto disabling + Mixing syringes and needles}}{100}$$

NB. These calculations are based on bundling concept of vaccines and injection materials.

2.3 Immunisation posts

Two vaccination strategies will be used.

a) Fixed posts – The same number of immunisation posts used for previous polio and measles NIDs should be used for meningitis vaccination campaign. In areas

where new immunisation posts are going to be created or shifted to a more convenient place, the community leaders should participate in the decision-making about the changes and location of extra immunisation posts.

b) Mobile teams/ teams for identified special groups.

3.0 The vaccine

There are two vaccines widely available that protect against different types of meningococcal meningitis. One protects against types A, C, Y, and W-135 of the disease, while the second protects against types A and C. A third trivalent A, C, W conjugate vaccine is currently being used in a small number of countries but should become more widely available soon.

3.1 Packaging of the vaccine

The vaccines are packaged as a lyophilised powder with diluent in single and multi-dose vials. The vaccine that will be used during this mass immunisation is packed in 50-dose vial and/or 10-dose vial.

3.2 Storage of the vaccine

Menengococcal vaccine is stored between +2°c and +8°c at all levels.

3.3 Administration of meningoccoccal vaccine

The vaccine is administered by subcutaneous or intra muscular injection in the upper arm. (*Look at manufacturer's specifications for different batches to ascertain recommended route*)

3.3.1 Required Materials for meningitis vaccine administration at every immunization post (checklist)

- 1-2 tables
- Chairs, benches, mats etc for sitting
- 1-2 vaccine carriers with frozen ice packs and sponge
- Meningitis vaccine and diluent, packed in polythene bags
- Gullipots, dressing jar (if available otherwise can use clean plastic bowls)
- A thermometer in the vaccine carrier
- Auto-disabling hypodermic syringes, 0.5 ml with fixed 23G x 1" needles per person
- 5 ml disposable syringes and needles for reconstituting the meningitis vaccine – one per vial
- Safety box for disposing syringes/needles (1 box is required for every 100 Auto – disabling syringes)
- File for opening glass vials (if available)

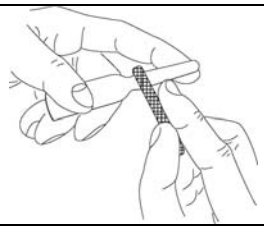
- Cotton wool (1 roll per post)
- Tally sheets and a pen
- A container with boiled cool water for cleaning injection site (3-5 litres)
- A jerrycan of water, basin and soap for hand washing
- A poster or any other alternative to mark the post
- Containers (2)- 1for empty vials, 1 for wet swabs
- PHN bag or polythene bag
- Plastic sheeting – 1 metre per post
- Paraffin 2 litres and a box of matches per post

3.3.2 Reconstituting the meningococal vaccine

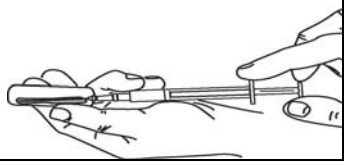
Step 1: Wash your hands
Wash your hands with clean water and soap and drip-dry tituting vaccines.
Step 2: Inspect the vaccine vial or ampoule
Check the expiry date on the vaccine and *status of vial monitor (if there is any*) to ensure that the vaccine has not passed the discard point. Discard any vaccine without laabel
Step 3: Flick the vial or ampoule
Make sure that all of the vaccine powder is at the bottom of the vial. Flick or tap the vial with your finger.
Step 4: Open the vaccine vial or ampoule
The centre of the metal cap is pre-cut so that it can easily be removed. Lift the centre of the metal cap and bend it back, using a metal file.
Step 5: Inspect the diluent ampoule or vial
Make sure the ampoule is not cracked.
Step 6: Read the label on the diluent ampoule or vial
Make sure that you are using the diluent the manufacturer sent with the vaccine and the expiry date has not passed.
Use only the ampoule or vial sent by the manufacturer for the specific powder vaccine. Each vaccine has its own diluent and must not be reconstituted with anything else.

Step 7: Open the glass ampoule

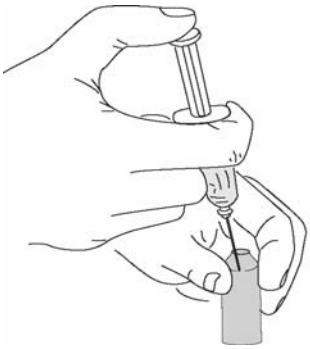
Hold the ampoule between your thumb and middle finger. Use your index finger to support the top. Take the metal file that is packed with the ampoules and scratch hard around the neck of the ampoule you wish to open. Hold the top of the ampoule in a clean swab and gently break off the top. It breaks where you made the scratch.	Figure 1: "Scratching and breaking" the neck of the vial

In case of injury while breaking the ampoule, discard the ampoule as the content may have been contaminated. Cover the wound/cut before opening a new ampoule.	

Step 8: Draw diluent into a mixing syringe

Use a new disposable mixing syringe (5 ml) and a mixing needle (76 mm, 18 gauge) to reconstitute each supply. Put the needle in the open top of the ampoule. Pull back the plunger to draw **all the diluent** from the ampoule into the syringe.	**Figure 2:Taking fluid from an ampoule** 

Step 9: Reconstitute the vaccine

Insert the mixing syringe that is filled with diluent into the vaccine vial or ampoule. Hold the plunger end of the mixing syringe between your index and middle fingers and push the plunger in with your thumb. This empties the diluent into the vaccine vial or ampoule. ➢ To mix the diluent and vaccine, draw them up slowly into the syringe and inject them slowly back into the vial or ampoule. Repeat several times. ➢ Do not reuse disposable mixing syringes. **Discard the needle and syringe in a safety box**	**Figure3:nserting diluent into a vaccine vial** 

Step 10: Handling reconstituted vaccines

Put the reconstituted vaccine in the sponge of the vaccine carrier. Reconstituted vaccine should be used for 12 hours only and discarded. Open vial policy does not apply.

3.3.3 How to administer the Meningococcal vaccine

Step 1. Use a sterile packed syringe and needle for each injection. Therefore, check the AD package to ensure that it is intact (sealed)

Step 2. Load a sterile AD syringe with a 0.5ml of reconstituted meningococcal vaccine

Step3: Remember to put back the vial in the sponge after drawing the vaccine

Step 4. For a child, ask the parent/caretaker to expose the upper arm, and instruct him or her to hold the child well to restrict movement. For an adult, explain to him/her the procedure – injection site and the need to support the arm.

Step 5. Clean the injection site with a cotton swab moistened with cool boiled water

Step 6. With the fingers of the left hand, **gently pinch up** the skin on the left outer upper arm

Step 7. Hold the syringe at an acute angle to the client's arm

Step 8. DO NOT TOUCH THE NEEDLE. With the right hand, push the needle into the **pinched up** skin, push the plunger slowly and **inject the 0.5ml of the vaccine subcutaneously.**
Caution: Avoid injecting in the vein or muscle

Step 9. Withdraw the needle and discard the needle and syringe in the provided safety box immediately. Do not attempt to recap the needle

Step 10. Apply gentle pressure on the injection site using dry swab to prevent any bleeding. **DO NOT MESSAGE OR RUB THE INJECTION SITE.**

Step 11. Give the client/parent/caretaker health advice like:
Do not rub or put anything on the injection site
In case of any side effect seek medial advice immediately from a qualified health work from a health facility
used syringe and needle.

Step 12: Wash hands before administering vaccine to every client when ever necessary.

3.5 How safe is meningococcal vaccine and what are its potential side-effects?

Mild reactions include:

Soreness. Some people experience redness or pain at the injection site. These symptoms usually last one to two days.

Fever. A small percentage of people who receive the vaccine develop a fever.

Severe adverse reactions, including allergic reactions (anaphylaxis, urticaria, wheeze, angioedema), somnolence and neurological reactions (e.g., seizures, paraesthesia and anaesthesia), have been reported very rarely.

Administration summary: meningococcal vaccine

Type of vaccine	**Purified bacterial capsular polysaccharide (AC, AC/W135, Y)**
Number of doses required	One
Schedule	Not less than three months; older than three years recommended

Target age group during this mass immunisation	2 - 30 years
Booster	Every three to five years
Contraindication	Severe adverse reaction to previous dose
Adverse reactions	Occasional mild local reaction, mild fever
Special precautions	Children aged under two years of age are not protected by the vaccine
Dosage	0.5 ml
Injection site	Upper arm
Injection type (mode of administration)	Subcutaneous (SC) or Intramuscularly (IM)
Storage	Store between 2°C–8° C

3.6 Management of the side effects

These are transient, therefore:

- Reassure/comfort the client
- Give mild analgesics,
- In case of severe reactions refer the patient to the nearest health facility with a qualified health worker for proper management. Preferably Health centre 4 or a hospital
- Remember to fill in the Adverse Events following immunisation (AEFI) form

3.7 Recording/issuing of meningitis vaccines, and its logistics

All items received for meningitis vaccination campaigns should be recorded in the same manner that medical supplies are recorded/issued using the stock card. Receipts and distribution lists should be made prior to the campaign dates.

3.8 Meningitis campaigns vaccination posts

Types of immunisation posts

Vaccination posts to be employed during the meningitis vaccination campaign may be Fixed (permanent or temporary) or temporary.

Permanent - Fixed Immunization posts

These posts are located at permanent health facilities. Immunization will be provided at the health facilities the whole day for the five days during the campaign. These sites will also serve as depots for storage and distribution of vaccine to temporary fixed sites and mobile teams.

Temporary - Fixed Immunization posts

These posts are located at schools, churches, bus depots, roadblocks, market areas or any other central or site used for previous campaigns. Immunization will be provided at these sites for either the duration of the campaign or partially depending on the population density.

Mobile - Immunization posts

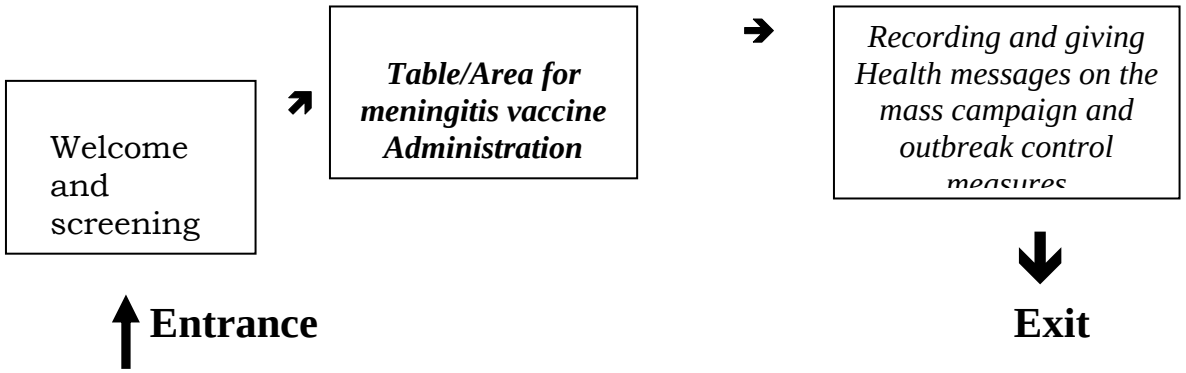
These posts move from community to community reaching populations that are living in Hard-to-reach areas who may not have access to a fixed site, too small in size to justify an all-day fixed post or unlikely to visit the fixed sites.

4.0 Immunisation posts Location/organisation

The Post needs to be well organised to create conducive environment for efficient delivery of immunisation services. The following areas are essential:

- *Waiting area*
- Registration/screening
- Immunisation table
- Check point/ recording area (Tallying area)

Diagram 1: Flow chart for clients during mass meningitis campaign.



4.1 Elements of an immunisation post

- Should have adequate shade
- Should have good client flow
- Should have two health workers for meningitis vaccine administration, a mobiliser for giving messages/crowd control and a recorder for tallying
- Should have a sign that stands out clearly to signify a vaccination post

4.2 Where to place an immunisation post

- Should be situated in an area easily accessible to the community and should have adequate space for crowds of people (preferably the same site where NIDs/SNIDS was conducted).
- Preferably in a building, veranda or under a good shade.
- The site should be located in a clean environment with a place of convenience (latrine).

4.3 Staffing at the immunisation post and their roles.

- 2 Health workers
- 1 mobiliser

- 1 volunteer

4.3.1. Roles of the Mobiliser

- Assist in the setting up of the vaccination point each day
- Welcomes the parent/Caretaker for coming
- Controls the crowd
- Ensures a one-way-flow through the post
- Gives health advice
- Inform the crowd of any delays etc
- Makes house-to-house education on meningitis

Making an extra effort makes a difference!
Look for all eligible clients from the community in order to reach the entire target population

4.3.2. Roles of the Vaccinator (Health Worker) at Immunisation Table

- Ensure adequate vaccine and diluent are packed in the vaccine carrier with frozen icepacks.
- Ensure adequate availability of auto – disabled syringes and needles plus the mixing syringe and needle.
- Dilute the meningitis vaccine and records used vials
- Prepare the AD syringes for vaccine administration
- Ensure that the vaccination area remains safe and clean
- Ensure correct storage of vaccine
- Vaccinates the persons in the targeted age group
- Ensure procedure safety
- Ensures that one disposable syringe and needle re-constitutes one vial of meningitis vaccine.
- Ensures safety procedure by using appropriate techniques and use of ADS per person to administer 0.5 ml dose of meningitis vaccine subcutaneously or intramuscularly.
- Gives health advice on meningitis vaccine and possible side effects.
- Monitor and respond to community reactions

4.3.3 As a supervisor at the post, the health worker

- Supervises all activities at the vaccination post.
- Makes sure the tally sheets are completed appropriately
- Ensures that all the equipment/logistics, tally sheets, balances of vaccines are returned to the storage centre.

- Ensures that all used syringes and needles are disposed of by burning (using the recommended procedure).

In addition, each sub-county will have 2 (two) supervisors. Preferably, they must be qualified health workers. One of them will have a roving supervisory role while the other will be static at the sub-county vaccines store.

The sample of tally sheets to use during the mass immunisation are indicated in Annex 2.

4.3.4 Roles of the static supervisor at the sub-county

- Supervises the distribution of vaccine, icepack and tally sheets at the distribution centre.
- Receives tally sheets from the posts, returned vaccines and other logistics
- Liases with the roving supervisor to crosscheck and compile returns from the immunisation posts for onward submission to the HSD/District.
- Disseminates prime messages on meningitis
- Enlists reactions of community on vaccination and EPI in general
- Build alliance with opinion and community leaders
- Detect rumours from the community and report them immediately

4.3.5 Roles of the roving sub-county supervisor

- Co-ordinates all meningitis vaccination campaign activities at sub-county level, monitors and supervises all activities at immunisation posts during the campaign period and advises operational staff accordingly.
- During meningitis campaign implementation, carries extra vaccines, logistics/supplies for distribution to immunisation posts with shortages.
- After each round, collects tally sheets and compiles sub-county summary report for onward submission to the District Director of Health services within two days of completion of the campaigns.

During the actual implementation of meningitis vaccination campaigns, supervisors at all levels should be actively visiting posts and vaccinating teams to monitor, assist and help solve any problems as they arise. The sub-county supervisors may change roles from time to time

4.4 Contingency plans

(a) If few clients come to be vaccinated

If by end of day one your vaccination post has achieved 40% or less of the target population, do not wait until it is very late.

- Send mobilisers around into the community to look for eligible clients from house-to-house.
- Ask clients leaving the post for assistance to remind /call those clients who have not yet reported for vaccination.
- Consider the benefits of using mobile teams

(b) If too many clients come to be vaccinated

- Do not panic
- Seek assistance from the clients, ask them for patience.
- Organize the queue and explain to them that every client will be vaccinated.
- Reassure clients frequently to prevent them from leaving before they are vaccinated.
- Try to seek assistance from your supervisor or other volunteers, if possible.

(c) If there is shortage of vaccine

- Do not wait until vaccine is completely finished. If you foresee a shortage, try to find more vaccine from the nearest post/health unit.
- Send "somebody" by the quickest means to obtain more vaccine.
- Explain to the clients that more vaccine is coming.
- Try to seek assistance from your supervisor or other volunteers
- Try to contact the mobile team.

(d) If there is a shortage of tally sheets

- Do not lose information
- Use the back of the tally sheets or any other kind of paper
- Try to obtain more tally sheets from your supervisor.

5.0 How to maintain injection safety during immunisation session

- Always wash your hands with soap before the session and ensure having a clean working environment and use of clean hands all the time.
- Use polythene sheeting on the table where the immunisation items will be laid.
- Lay the immunisation table in an orderly manner (dressing jar/clean plastic bowl for cotton swabs, Gullipots for cool boiled water for cleaning the site of injection, Scissors for cutting vitamin A capsules, Kidney dishes/clean plastic bowl for holding the pair of scissors)
- Observe the non-touch technique
- Reconstituted meningitis vaccine should be used within 12 hours.

- Discard all the reconstituted vials at the end of the session.
- Discard any vial without a label
- Ensure proper reconstitution and administration of the vaccine.

5.1 Safe Disposal of Used Syringes and Needles

- Needles should not be recapped after use.
- Every used syringe and needle should be put in the safety boxes provided.
- Each vaccination team should have sufficient safety boxes to dispose of all the used syringes and needles. Each team should have a safety box for every 100 syringes.
- The safety boxes should not be overfilled or made wet.
- Do not put the used swabs and empty vaccine vials in the safety box.
- Burn all the filled safety boxes at the end of each session
- Every immunisation post should ensure that all the used items (burnt safety boxes and cotton wool swabs) are buried.

NB: "Health workers (supervisors) at Post must be responsible for safe disposal of all immunization waste generated during the campaigns"

6.0 Monitoring and supervision

During the planning and implementation of meningitis vaccination campaigns, supervision at all levels play a very big role in the effective coverage of the target populations and the quality of service provided during the campaign. High risk and hard to reach populations should receive more intensive supervision.

Therefore the supervisors selected at all levels should be technically knowledgeable and have adequate supervision skills.

Therefore, there is need to know: -

- Proportion of target population immunised
- Quality of services provided/injection safety
- Major lessons learnt and proposed adjustments to strategy implementation
- Projected impact on the meningitis outbreak (morbidity and mortality)

a) Proportion of target population immunised

How to record the information on the Tally Sheet during the meningitis vaccination campaign.

- The recorder/health worker at the post fills the tally sheet.
- Use one tally sheet per day of the vaccination campaign period

- Each person who receives meningitis vaccine is represented by striking one 'O' at a time on the tally sheet.
- The columns are arranged by age group.
- At the end of the day, the number of people immunised are added up and recorded in the total column.

b) Information derived from the Tally Sheet includes:

- Completed details of the post
- Number of persons vaccinated by age group
- Number of meningitis vaccine vials received at beginning of the day
- Number of meningitis vaccine vials used.
- Number of meningitis vaccine vials returned unopened to storage facility
- Number of vials discarded/wasted and reasons for discarding
- Problems encountered at the post.
- Post staffing
- Post and sub-county supervisor's name.

At the end of the exercise the results are compiled at the sub – county and district levels using the forms attached.

c) Quality of services provided

Monitoring of injection safety during the exercise

- Availability of adequate quantities of auto-disable syringes
- Presence of safety boxes for used auto disable syringes and needles
- Appropriate disposal of used syringes and needles soon after use
- Avoiding needle recapping

d) Adverse events following immunisation

- Trained health workers should investigate and respond to adverse events following immunisation (AEFI)
- Guidelines provided by UNEPI on investigation and response for AEFI should be used.
- Documentation of the frequency of AEFI
- Are all key steps to ensure safe immunisation adhered to and implemented?
- Where possible, attempt to establish the likely causes of the reported AEFI

e) Management of Adverse Events Following Immunisation

All persons vaccinated who get mild reactions should be reassured/comforted through counseling. Remember, the reactions following immunization are transient and should be managed symptomatically (Use analgesics, anti-

histamines where neccessary). In addition, a case investigation form should be filled in by the health worker who sees the client and forwarded to the DDHS and UNEPI Programme manager.

If a person develops a serious reaction to meningitis vaccination that requires admission, s/he should be managed immediately as an emergency (use hydrocortisone, prednisone and/ adrenaline, if indicated).

7.0 Documentation of Activities

After the mass immunisation is completed, the detailed reports highlighting the planning and implementation of the exercise including lessons learnt should be submitted to all stakeholders.