

Prevention and control of epidemic meningococcal disease in Africa

*Report of a WHO technical consultation
meeting*

*Ouagadougou, Burkina Faso
23-24 September 2002*



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World Health Organization
Department of Communicable Disease
Surveillance and Response

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Contents

List of abbreviations.....	iii
I Summary of key points	1
II Introduction and opening.....	2
III Objectives of the meeting.....	2
IV Prevention and control of meningococcal meningitis in Africa: overview of the current situation.....	3
A. Experiences in Africa	3
B. Recent experiences in Burkina Faso	8
V Panel discussions	11
A. Implications for meningitis surveillance of the emergence of <i>N. meningitidis</i> serogroup W135: epidemiological and laboratory aspects.....	11
B. Case management during epidemics of <i>N. meningitidis</i>	13
C. Availability of vaccines that protect against meningococcal meningitis.....	13
D. Medium- and long-term options for control of meningococcal meningitis in Africa	15
VI Group work.....	18
A. Review of the draft of the WHO strategy for prevention and control of epidemic meningococcal disease in Africa	18
VII Agenda for action 2002–2003	19
A. Surveillance.....	19
B. Outbreak response	20
C. Vaccine research and development	22
D. Advocacy and partnership.....	23
VIII References and background documents.....	24
Annexes	
1. Discours de Monsieur le Ministre de la Santé	25
2. Agenda	28
3. List of participants	30

List of abbreviations

AVP	Aventis Pasteur
CAMEG	Centrale d'Approvisionnement en Médicaments Essentiels
CEDEAO	Communauté Economique des Etats de l'Afrique de l'Ouest
CSF	Cerebrospinal fluid
DPC	Disease Prevention and Control
EPI	Expanded Programme on Immunization
GAVI	Global Alliance for Vaccines and Immunization
GMP	Good Manufacturing Practices
GSK	GlaxoSmithKline
ICG	International Coordinating Group on Vaccine Provision for Epidemic Meningitis Control
IDSR	Integrated Disease Surveillance and Response
IRCF	International Federation of the Red Cross and Red Crescent Societies
MOH	Ministry of Health
MSF	Médecins Sans Frontières
MVP	Meningitis Vaccine Project
NGO	Nongovernmental organization
PATH	Programme for Appropriate Technology in Health
TFI	Task Force Initiative (AFRO/EPI)
WAHO	West African Health Organization
WHO	World Health Organization
WR	World Health Organization Representative

I Summary of key points

- A key aspect of this meeting was its success in bringing together a wide range of partners including representatives from countries, World Health Organization Collaborating Centres, nongovernmental organizations, partner organizations, WHO, as well as scientists and invited experts, to review the problem of the control and prevention of meningococcal meningitis and the strategy drafted by WHO.
- The goal of the strategy is to eliminate meningococcal meningitis as a public health problem. It comprises four strategic objectives: 1) epidemiological surveillance; 2) epidemic response; 3) the role of currently available polysaccharide and future conjugate vaccines; and 4) advocacy and resource mobilization.
- With regard to epidemiological surveillance, it was agreed that there was a need to strengthen surveillance capacities, particularly in terms of laboratory investigation of suspected meningitis cases, data collection and management, and reporting and dissemination of epidemiological information. It is also important to extend enhanced meningitis surveillance throughout the African meningitis belt. There is also a need for more detailed analysis of surveillance data and for monitoring of surveillance performance indicators, including time from outbreak detection to response.
- In terms of epidemic response, it was agreed that there needed to be an improvement in case-management, including diagnosis and treatment, which should be rapid, efficacious and free of charge. The decision to launch an International Coordinating Group on Vaccine Provision appeal for vaccine, drugs and laboratory supplies was adopted.
- The consensus of the group was that the use of polysaccharide vaccines in a routine or preventive strategy was inappropriate because of concerns over programmatic feasibility, costs, efficacy and sustainability. The group proposed that the use of polysaccharide vaccines should be limited to the control of epidemic meningococcal disease (the reactive strategy).
- Participants were updated on the current situation with regard to meningococcal vaccines and the medium- and longer-term developments in the vaccine field. The need for an accessible and affordable vaccine containing the W135 antigen was stressed and it was noted that such a vaccine should be available at not more than US\$ 1 per dose for African countries.
- The growing recognition of the global dimension of meningococcal meningitis was welcomed, as was the support of major donors and partners. The participants agreed on the definition of a research agenda and proposed that subregional, regional and global partnerships should continue to be strengthened and that concrete messages and strategies for resource mobilization should be developed.
- Following review of the draft WHO strategy, the groups proposed a number of amendments to the different sections. Those dealing with activities in the near term have been summarized in the Agenda for Action. Meanwhile, the strategy itself will undergo revision on the basis of inputs received during the meeting.

II Introduction and opening

The WHO Representative for Burkina Faso, Dr Hacen, welcomed participants to the meeting and reminded them of the importance of the topic. Serious epidemics of meningococcal meningitis continue to threaten the populations of African countries and particularly their children and young people. A previous meeting held in Burkina Faso in 1996 gathered ministers of health of west African countries to reinforce and coordinate their actions to prevent and control these epidemics. Now these actions are further challenged by the emergence of *Neisseria meningitidis* W135 as an epidemic serotype, which caused a major epidemic in Burkina Faso in 2002. Dr Hacen concluded by introducing the Minister of Health for Burkina Faso.

The Minister spoke of the impact of meningitis epidemics (see Annex 1) and reminded the participants that the countries of Africa were looking forward to the outcome of this meeting with interest, in particular looking for:

- a consensus on the strategies to be adopted for the control of epidemics of meningococcal meningitis;
- greater availability of, and accessibility to, appropriate vaccines and medicines;
- coordination of actions at sub-regional, regional and global levels.

The Minister then officially opened the meeting.

III Objectives of the meeting

The current WHO strategy for control of epidemics of meningococcal meningitis is based on early detection through strengthened epidemiological surveillance, mass immunization campaigns when the epidemic threshold is exceeded and case management with appropriate antimicrobial therapy.

The efficacy of mass vaccination during the course of an epidemic depends on the timeliness of its initiation, the availability of vaccine and sufficient logistic support to achieve rapid coverage. This approach has been questioned by some experts who advocate preventive vaccination campaigns. Nevertheless, due to the characteristics of the current polysaccharide vaccine and problems of availability, preventive vaccination campaigns on a large scale cannot be envisaged.

During the last two epidemic seasons, *N. meningitidis* W135 has emerged as a serogroup with epidemic potential. In 2002 in Burkina Faso, more than 80% of cerebrospinal fluid samples tested were positive for *N. meningitidis* W135 whereas in Ethiopia, Ghana, Niger and Sudan, *N. meningitidis* serogroup A was the major pathogen.

The availability of tetravalent vaccine (A,C,Y,W135; the only vaccine containing the W135 antigen) is limited and it is too costly for most of the countries at risk. As a result, WHO and partners are collaborating with vaccine manufacturers and considering the production of a monovalent W135 vaccine.

In view of the rapid change in the epidemiology of meningococcal meningitis and the possible future development of new control strategies, WHO proposed this technical consultation meeting in Ouagadougou, Burkina Faso, to review the lessons learnt from recent experiences in the control of epidemics caused by *N. meningitidis*.

The objectives of the meeting were:

1. To review recent experiences and initiatives in prevention and control of meningococcal meningitis epidemics in Africa.
2. To review the draft WHO Strategy for the Prevention and Control of Meningococcal Meningitis in Africa.
3. To develop an agenda for action in prevention and control of meningococcal meningitis epidemics.

IV Prevention and control of meningococcal meningitis in Africa: overview of the current situation

A. Experiences in Africa

1. The importance of the problem

Meningococcal meningitis remains one of the most frequent and lethal epidemic infections in the African region. Over the past 10 years, reports from Member States indicate a total of 750 790 cases and 52 880 deaths (death rate 7%). Over the same time period, epidemics have been reported almost every year; the most severe affecting six countries in 1992, three countries in 1995, etc. The 1995–1996 epidemic season was the most serious, with a total of more than 201 000 cases and 14 500 deaths.

In the African meningitis belt, which extends from Senegal to Ethiopia, epidemics classically occur in the dry season, between October and April. In addition to ongoing endemic disease, epidemics occur on average every 10 to 14 years. However, the meningitis belt is extending southwards and it is not unusual to find epidemics in Angola, Namibia and Zimbabwe. In addition, the inter-epidemic period has tended to shorten and this challenges and complicates preparedness and response efforts. In Burkina Faso, epidemics have occurred in 1996, 1997, 1998, 2001 and 2002.

In the Eastern Mediterranean Region, meningococcal disease is a public health problem in most of the countries with frequent epidemics being reported in Egypt, Morocco, Tunisia and Yemen and localized outbreaks in Afghanistan, Djibouti and Pakistan. However, Saudi Arabia and Sudan are the countries most affected by meningococcal meningitis. Sudan is the only country in the region which falls within the African meningitis belt and it suffers large-scale epidemics every 8–12 years. The last major epidemic (December 1998 – July 1999) resulted in 33 035 cases and 2374 deaths. This epidemic had a second wave in 2000, which affected southern Sudan with 4031 cases and 328 deaths. In the 2001–2002 season, epidemics were again reported from both northern and southern Sudan, and also from Somalia.

During the Hajj and Umrah, Saudi Arabia receives millions of visitors. An epidemic of more than 1800 cases was described in 1987, and during the pilgrimages of 2000 and 2001 epidemics caused by *N. meningitidis* W135 were reported.

2. Implications

Large meningitis epidemics cause considerable suffering and poverty for the affected societies. Although the economic consequences of working days lost by patients and their families have still to be evaluated, the direct costs of epidemic response in terms of vaccine, medicines and logistics are significant for the fragile economies of the countries concerned.

Population movements into affected zones are restricted for fear of infection. In attempts to limit the spread of the disease, the response strategy is often highly disruptive to society, discouraging large gatherings; schools attendance and sports activities are often disrupted. One of the major preoccupations in most of the countries in the African meningitis belt is the impact of epidemics on the pilgrimage to Mecca. As a result, since the organizers of the Hajj fear the occurrence of epidemics among the pilgrims gathered in Mecca and national health services are concerned about the dissemination of meningitis in pilgrims returning from Mecca, there has been increased pressure to purchase tetravalent vaccine for pilgrims.

The occurrence of a meningitis epidemic, as with all other epidemics, necessitates an energetic response from the health system. Very often, as a result of insufficient budget, financial resources earmarked for other health care interventions have to be redirected to deal with the emergency. The same is true of human resources and logistics. As a result there is a relative "paralysis" of the health system during an epidemic period.

The public health, economic and social disruptions also have significant political implications. Governments have been asked to explain why meningococcal meningitis, an ancient and well-known disease, is not controlled effectively. They are under pressure to acquire vaccine and drugs. They are confronted with the necessity to coordinate national and international technical teams and resources mobilized for the response. Furthermore, ministries of health are often confronted with divergent technical advice from different health care partners.

3. Response to meningococcal meningitis epidemics

The country representatives participating in this meeting are well placed to provide more details of the way in which the countries concerned respond to the problem posed by recurrent epidemics of meningococcal meningitis. Faced with a declared epidemic, the typical response of the countries concerned consists above all of rapid mobilization of internal resources in terms of health care workers, medicines and vaccines, and logistics. Even though the confirmation and declaration of epidemics have been greatly improved, there is still much to do to ensure the availability of sufficient resources for rapid epidemic control. Very quickly, faced with the magnitude of the problem and the weak response capacity, countries are constrained to call for external assistance.

The level of preparedness for meningitis epidemics is generally insufficient. Few countries possess plans for epidemic preparedness and response that are sufficiently

elaborated, and even fewer have identified sufficient funds in their budget for an effective response. Some countries organize preventive vaccination campaigns with bivalent A and C polysaccharide vaccine but these are not carried out on a regular basis.

Taking into account the available scientific data, economic and logistic considerations, the production capacity necessary to produce sufficient quantities of vaccines and medicines, and the particular context of the countries affected, WHO developed technical guidance for interventions directed towards the control and prevention of meningococcal meningitis.

The guidelines emphasize the need for :

- strengthened epidemiological surveillance and laboratory capacity to rapidly detect epidemics and the responsible serogroup(s);
- the rapid organization of mass vaccination campaigns with a polysaccharide vaccine that protects against the circulating serogroup(s) if the epidemic is confirmed;
- case management with chloramphenicol (in oily suspension);
- social mobilization with a view to reaching out to the populations concerned and gaining their participation in the implementation of control measures.

The application of these guidelines allows a reduction in the duration of epidemics and of their impact.

In response to the wave of meningitis epidemics which struck the African region in 1995-96, WHO and partners organized a ministerial meeting in 1996 which concluded with the signature of a protocol of cooperation in the fight against epidemics, particularly the meningitis epidemics in west Africa. The growing strength of the response to meningitis epidemics allowed hope that the problem would be contained by the year 2000.

Working with partners, WHO put in place mechanisms for the coordination and provision of vaccine and financial resources, the International Coordination Group on Vaccine Provision for Epidemic Meningitis Control (ICG) for the provision of meningitis vaccine, and a network for the rapid mobilization of experts to provide technical support to countries in need (Global Outbreak Alert and Response Network, GOARN), and developed a research programme aimed at filling the gaps in essential scientific data.

WHO is deeply involved in advocacy for international assistance for countries affected by meningitis epidemics and, in the case of major epidemics, launches an appeal for international aid, aiming for rapid mobilization of the necessary resources. The ICG maintains an emergency stock of vaccine, oily chloramphenicol and injection materials in order to provide rapid support to countries. The coordination has allowed mass vaccination campaigns to be launched on the basis of a better supply of vaccine and funds, but it has not been able to ensure the optimal use of these since the choice of strategies – for example, based on preventive or reactive vaccination campaigns – has been guided not only by health needs but also by political ones.

4. Challenges

The emergence of strain W135 has increased the importance of timely laboratory investigation of epidemic meningococcal disease to identify the causal pathogen and inform outbreak response, i.e. decide on the appropriate vaccine for mass vaccination campaigns.

The challenge that lies ahead is to develop and sustain a surveillance infrastructure that combines the early detection of epidemics with timely laboratory investigation and the appropriate response.

5. Surveillance

The technical capacity must be in place to enable rapid detection of epidemics and allow the rapid identification of the serogroups of *N. meningitidis* responsible. This identification is critical for choosing the appropriate vaccine, planning the provision of vaccine supplies and organizing mass vaccination campaigns. Currently, surveillance of meningococcal meningitis, and particularly the laboratory component, is weak in many of the countries affected in both the African and Eastern Mediterranean Regions. Surveillance strengthening is urgently required.

6. Control and prevention strategies

Intervention strategies were the subject of debate and useful recommendations during the course of this meeting. As a general rule, the countries at risk in the African Region have limited resources and logistics which, in turn, reduces the efficacy of vaccination campaigns against meningitis, be they preventive or in response to an epidemic. In addition, the cost of a preventive strategy and the need to systematically repeat the campaign make it unsustainable.

The efficacy of interventions depends on epidemiological data, availability of resources, logistics, and the profile of the pathogen. The polysaccharide meningococcal vaccine, in its current form, has certain characteristics which prevent its utilization in the routine schedule of childhood vaccinations (e.g. a preventive strategy). However, the strategy advocated by WHO (i.e. the reactive vaccination approach, in which mass vaccination campaigns are initiated when the epidemic threshold is crossed, in contrast to preventive mass vaccination) is still being debated.

The fight against meningococcal meningitis could witness a decisive turning point with the development, availability and effective use of a conjugate vaccine incorporating the *N. meningitidis* W135 antigen, which will have the advantage of providing long-term immunity in young children and could be integrated into childhood immunization schedules.

7. Resources and availability of vaccine

The countries at risk of epidemics must themselves be able to regularly procure sufficient quantities of vaccine, medicines and other essential supplies to support efficacious public health interventions. However, the lack of financial resources in the countries concerned constitutes the principal factor limiting effective action against meningococcal meningitis epidemics.

The discussions during this consultation reflected, among other things, on the efficacy, cost, and availability of meningococcal vaccines as well as on the conditions for their use for effective response to epidemics of meningococcal meningitis. The recent recognition of *N. meningitidis* W135 as a serotype with epidemic potential has created further challenges.

After the epidemics caused by *N. meningitidis* W135 in 2000 and 2001, the Ministry of Health of Saudi Arabia required all pilgrims to be vaccinated with the tetravalent (A,C,Y,W135) polysaccharide vaccine and this has further highlighted the lack of availability of this vaccine.

8. Research

Much of the research aimed at establishing the efficacy of the reactive vaccination strategy to control and prevent meningococcal meningitis has been delayed by lack of funds, but the situation today differs from that of the 1990s. New vaccines are in development and are likely to become available for public health use starting in 2006. To fill the gap, polysaccharide vaccines against serogroups A and C at reasonable prices and tetravalent vaccines at an affordable price for meningitis belt countries are available, although in limited quantities. Defining the optimum strategy for their use, based on robust data, is critical. Impact studies are necessary to support the choice of strategy and prepare for the upcoming epidemic season in which the existing vaccines must be used judiciously.

9. Future perspectives

The perceived importance and the global dimension of meningitis epidemics has changed. The emergence of the new epidemic serogroup W135 is a reminder of the dynamic and unpredictable situation faced by affected countries and defines the beginning of a period of high vulnerability before the availability of conjugate vaccines for the control of epidemic meningococcal disease. This, as well as the increasing interest of Global Alliance for Vaccines and Immunization (GAVI) and other donors in the control of epidemic meningococcal disease, urges WHO to work with them to confront this period of high vulnerability and develop a sound long-term strategy.

In the meantime, the available tools must be used in an optimal manner. The production of a W135-containing polysaccharide vaccine should be increased and the price of this vaccine reduced for developing countries in order to allow an effective response to epidemics.

Particular stress must be put on laboratory strengthening to support the epidemiological surveillance of meningitis. To this end, national reference laboratories need to receive the support necessary in terms of reagents, training of personnel, and quality control. Emergency stocks of vaccine, medicines and injection materials need to be reinforced at national level.

10. Conclusions

Meningococcal meningitis remains one of the major public health problems in the African and Eastern Mediterranean regions and particularly in the countries of the African meningitis belt. Epidemics, traditionally occurring every 10–14 years in this part of the continent, are more and more frequent and are affecting more countries situated to the south of the meningitis belt.

These epidemics have a profound impact on health systems, economic activity, and political and social life. In response, the countries concerned have to mobilize their already limited resources and appeal for international assistance. WHO, for its part, supports the countries at risk by providing technical expertise, advocacy and fundraising activities.

Health services are confronted with major challenges in terms of means of control, vaccine, medicines, injection materials and logistics. The emergence of the serogroup W135 poses a new threat to vaccination as a method of epidemic control and stresses once again the necessity for close collaboration between the laboratory and the epidemiologists.

The development of a conjugate meningococcal vaccine incorporating the antigens present in Africa could mark a decisive turning point in the fight against meningococcal meningitis. In the meantime, the current control methods need to be used optimally in order to reduce the mortality, morbidity, disablement and suffering caused by meningococcal meningitis.

B. Recent experiences in Burkina Faso

Burkina Faso has suffered a series of meningitis epidemics in the past 10 years with a reduction in the inter-epidemic period which has been traditionally 10–14 years (Table 1). The epidemic in 2002 started when the district of Pama in the south-east of the country exceeded the epidemic threshold of 10 cases per 100 000 inhabitants. The peculiarity of the 2002 epidemic was that it was caused by *N. meningitidis* W135 (in contrast to the usual epidemic serogroups A and C).

Table 1: Recent epidemics of meningococcal meningitis in Burkina Faso

Year	No. of cases	No. of deaths
1996	42 967	4363
1997	22 293	2533
2001	12 790	1769

1. Chronology of the epidemic

In Burkina Faso there is weekly notification of diseases of epidemic potential. Detection of the epidemic at the level of health districts is made when the threshold of 10 cases per 100 000 inhabitants is reached. In 2002, the first cases were recorded in January during which time a total of 101 cases and 24 deaths were notified by the 53 health districts of Burkina Faso. From that time onwards, the epidemic progressed and more districts

crossed the epidemic threshold. The number of cases increased markedly and reached a peak in week 14, during which 2196 cases and 224 deaths were registered. The last district to be in the epidemic phase was Paul VI (Ouagadougou) in week 19. In all, the epidemic affected 30 health districts, particularly in the west central, eastern and northern regions of the country. The 2002 epidemic curve corresponds to the natural evolution of a meningitis epidemic (no mass vaccination campaign was carried out during the epidemic) and is superimposable on that of 2001.

2. Organization of the epidemic response

Management of the epidemic response was assured by crisis committees put in place at all levels of the health system. The lack of sufficient quantities of vaccine against *N. meningitidis* serogroup W135 and its high cost necessitated an adaptation of the response strategy which therefore focused on:

- strengthening of epidemiological surveillance
- early case detection and appropriate case management
- social mobilization.

Surveillance strengthening consisted of improvement of case detection at district level and rapid notification and analysis of data to enable early detection of the epidemic. Laboratory confirmation of cases was reinforced during a longitudinal study during the epidemic to follow *N. meningitidis* in five of the health districts which had reached the alert threshold. This allowed the identification of *N. meningitidis* W135 as the serogroup responsible for the epidemic (Table 2). A summary of the descriptive epidemiology based on 2971 notifications from 30 health districts is shown in Table 3.

Table 2: Laboratory confirmation of *N. meningitidis* serogroup W135 as the cause of the 2002 epidemic

Type of surveillance	No. of samples taken	No. of cultures positive	No. (%) of cultures positive for <i>N. meningitidis</i> W135
Longitudinal study	411	144	128 (88.9)
Routine	188	61	39 (63.9)

Table 3: Descriptive epidemiology of 2002 epidemic of meningococcal meningitis based on cases reported from 30 districts of Burkina Faso.

Characteristics	% of cases
Age 30 years or less	94.2
Sex	
Female	46.5
Male	53.5
Vaccination status (i.e. declared to have been vaccinated with AC polysaccharide vaccine)	47.3
Delay of 48 hours or more before consulting health centre	43.0

Access to care and effective treatment for all patients was one of the priorities of the Ministry of Health, with the support of partners. The laboratory results showed that the *N. meningitidis* W135 isolated from cases was susceptible to the antibiotics used in previous epidemics, including chloramphenicol. Oily chloramphenicol was recommended as first-line treatment. Measures taken for rapid and appropriate case management included:

- widespread dissemination of WHO treatment protocols throughout the health system;
- ensuring availability of antibiotics (113 890 vials of oily chloramphenicol and 18 550 of aqueous chloramphenicol) and injection materials;
- free access to treatment in all health centres.

Social mobilization took the form of awareness-raising in local communities.

3. Conclusions

The 2002 epidemic was characterized by an exceptional situation; the first epidemic of *N. meningitidis* serogroup W135 on a countrywide scale. Such a changing epidemiological picture could in future affect all the countries of the African meningitis belt.

Research is needed to characterize the determinants of this new situation in order to provide data for the better prediction of epidemics and better monitoring of meningococcal serogroups. Advocacy is needed to improve the availability and accessibility of vaccine against *N. meningitidis* W135.

V Panel discussions

A. Implications for meningitis surveillance of the emergence of *N. meningitidis* serogroup W135: epidemiological and laboratory aspects (Professor Koumaré, Dr Sow)

1. Introduction

Meningitis epidemics continue to place a heavy burden on the health systems of the countries of the African meningitis belt. Around 300 million people are exposed in this region of Africa and the epidemics affect several countries at a time. The epidemic cycle, traditionally averaging 10–14 years, has shortened. *N. meningitidis* includes 12 serogroups among which A, B, and C were, until the emergence of W135, responsible for 90 % of meningococcal infections and epidemics of meningitis. The emergence of W135 as an epidemic serogroup constitutes a new challenge for both surveillance and prevention of meningitis.

2. Epidemiological and laboratory challenges

The challenges to be addressed by meningitis surveillance in African countries include early detection, identification of the causative serogroup and implementation of prevention and control measures. The conditions necessary to meet these challenges are:

- the existence of a functional laboratory network;
- training and supervision of field workers during the pre-epidemic period;
- supervision of field workers during the epidemic;
- implementation of systems for transport of specimens;
- close collaboration between laboratory and epidemiological surveillance.

3. Strategy for surveillance

Faced with the emergence of *N. meningitidis* serogroup W135, WHO proposed a strategy aimed at early detection and control of meningitis epidemics. This strategy comprises:

- strengthened meningitis surveillance in districts that exceed the threshold of alert of 5 cases per 100 000 inhabitants;
- longitudinal surveillance during an epidemic in districts that exceed the epidemic threshold of 10 cases per 100 000 inhabitants;
- surveillance of endemic meningitis.

Three countries were selected for the implementation of this strategy during the 2001–2002 epidemic season – Burkina Faso, Mali and Niger. Burkina Faso experienced a large epidemic in 2002 in which the etiological agent was *N. meningitidis* serogroup W135 (see section IV.B of this report). In Mali, the situation remained calm and only one district, around Niafunké, experienced an alert situation for which *N. meningitidis* serogroup A was responsible. In Niger, five of the 42 districts of the country suffered an epidemic due to serogroup A.

As regards the laboratory results, 144 bacterial cultures were positive during the epidemic in Burkina Faso, of which 88.9% were *N. meningitidis* serogroup W135 and 2.1% serogroup A. In Niger, 32 specimens of cerebrospinal fluid (CSF) were collected and analysed, and *N. meningitidis* serogroup A was isolated from four of them. There were no cultures positive for serogroup W135.

Confirmation of laboratory results by WHO Collaborating Centre, National Institute of Public Health Laboratory, Oslo, Norway (Dr Caugant)

The WHO Collaborating Centre acted as an international reference centre for the confirmation of laboratory results from the 2002 epidemic in Burkina Faso. Samples from a study undertaken by EPICENTRE at Pissy were also received. From a total of 522 samples received, 154 were culture-positive for *N. meningitidis* and of these, 147 were serogroup W135: 2a: PI 5.2 and 7 were serogroup A: 21: PI 9. All the cultures were susceptible to the antibiotics tested (with the exception of sulfonamides). Overall there was excellent collaboration between the laboratories of Burkina Faso and the Collaborating Centre.

4. Feedback from the three countries on implementation of the surveillance strategy (Burkina Faso, Mali, Niger)

Strengths:

- early detection and confirmation;
- orientation of control measures on the basis of results obtained;
- engagement of national authorities in the implementation of surveillance for serogroup W135;
- involvement of laboratory networks (peripheral, central and WHO collaborating centres) to strengthen surveillance;
- strengthened capacity for diagnosis of meningitis in national laboratories;
- implementation of mechanisms for coordination of surveillance;
- renewal of interest of health sector partners in support of surveillance of meningitis in the countries.

Weaknesses:

- lack of knowledge at the district level of the epidemic thresholds;
- delays in transporting CSF specimens to the national laboratories from some districts;
- delays in data collection;
- irregular transmission of data;
- lack of systematic use of the laboratory for confirmation of cases of meningitis.

Future prospects:

- consolidation of the experience gained in surveillance;
- extension to other countries of the strategy for surveillance of meningitis;
- standardization of the surveillance protocol in the different countries;
- acceleration of implementation of the different components of integrated disease surveillance and response (WHO Integrated Disease Surveillance Strategy, IDSR), including that of the laboratory;

- establishment of a mechanism for coordination among the different partners involved in surveillance.

B. Case management during epidemics of *N. meningitidis* (Dr Thiombiano)

From 1984 to 2002, west Africa experienced a series of epidemics of meningitis. Up until 2000 these were caused by *N. meningitidis* serogroups A and C, then W135 from 2001. The shortened epidemic cycles of meningitis and the appearance of a new epidemic serogroup (W135) have made case management more difficult because health care workers were unprepared and because of the lack of resources, particularly of tetravalent polysaccharide vaccine (A,C,Y,W135).

In Burkina Faso, a two-pronged strategy was utilized in the management of epidemics:

1. Case management
 - Administration of oily chloramphenicol according to the WHO protocol.
 - Use of ceftriaxone in a limited fashion in children and pregnant women. Results were comparable to those with chloramphenicol. Ceftriaxone is a bactericidal antibiotic which costs about US\$ 25 (Centrale d'Approvisionnement en Médicaments Essentiels) per patient treated and offers an alternative to chloramphenicol for management of meningitis cases.
2. Prevention
 - Reactive and preventive vaccination.
 - Chemoprophylaxis (with spiramycin).
 - Rapid and effective case management.

It was concluded that only early treatment of cases and vaccination (with tetravalent A,C,Y,W135 vaccine) will achieve a reduction in mortality and incidence of meningococcal meningitis.

C. Availability of vaccines that protect against meningococcal meningitis (Dr Costa)

1. Current situation

The tetravalent A,C,Y,W135 polysaccharide vaccine is the only vaccine currently available for response to both epidemics of *N. meningitidis* serogroup A and the threat of W135. This vaccine is expensive and difficult to obtain, and its efficacy is not yet proven in epidemic response situations. The two pharmaceutical companies pre-qualified for the production of A,C vaccine are Aventis-Pasteur (AVP) and GlaxoSmithKline (GSK). Table 4 shows the estimated production of bivalent and tetravalent AC-containing vaccines in 2002. The possibility of identifying other producers has also been explored and the findings are summarized in Table 5.

Table 4: Expected production of *N. meningitis* polysaccharide vaccine in 2002

Vaccine	Producer	Millions of doses	Price per dose (US\$)
Bivalent (A,C)	AVP	40	0.25
Tetravalent (A,C,Y,W135)	AVP ^a	2–4	50
	GSK ^b	10.5	3–4

^aAventis Pasteur (AVP) produces exclusively for the US market.

^bGSK exports principally to Egypt, Indonesia, Saudi Arabia, Syrian Arab Republic, and United Arab Emirates.

Table 5: Summary of results of exploration of other producers of meningococcal vaccines

Producer	Country of producer	Current production situation
Chiron	Italy	Not interested in polysaccharide A,C vaccine. Producing monovalent C conjugate vaccine. Developing tetravalent A,C,Y,W135 conjugate vaccine.
Finlay	Cuba	Producing B and C vaccine under an agreement with GSK. Adequate fermentation capacity but needs upgrading. No capacity for filling or lyophilization. Investment of US\$ 15–20 million required.
Fiocruz	Brazil	Small fermentation capacity (3 million doses). Requires investment to achieve Good Manufacturing Practices (GMP). Has capacity for filling and lyophilization
Institute of Immunology Lanzhou	Croatia	Not interested in producing A and C
	China	Interested but national regulatory agency not fully functional. Has good capacity for GMP production.

Vaccine availability

- AVP foresees an increase in production to 50–60 million doses of the polysaccharide A,C vaccine for 2003–2004 but does not plan to increase the production of the tetravalent A,C,Y,W135.
- GSK has limited fermentation capacity and does not plan to increase production of the polysaccharide A,C vaccine. GSK's priority is to increase production of the tetravalent A,C,Y,W135 polysaccharide vaccine and to develop the tetravalent conjugate vaccine.
- Chiron has stopped production of the polysaccharide A,C vaccine and does not envisage restarting. Chiron will continue production of the monovalent C conjugate vaccine and is developing the tetravalent A,C,Y,W135 conjugate vaccine.

2. Proposed changes to the current vaccine strategy

Following the recent epidemic of *N. meningitidis* serogroup W135 in Burkina Faso, WHO proposed the following changes to the current vaccine strategy:

- Short term (i.e. 2003/next epidemic season). Based on the consensus emerging from an informal meeting between WHO/PATH/CDC/AMP, WHO should work with the current producers of tetravalent vaccine to rapidly increase production.

- Medium term (2004–2005). Based on a general consensus on its pertinence and utility in Africa, develop a monovalent W135 polysaccharide vaccine (but note that it needs to be available for the 2004 season because in 2005–2006 the conjugate vaccines will begin to become available).
- Long term (after 2006). Move to conjugate vaccines – monovalent serogroup A and/or W135 conjugate vaccines may be available on the market in 2006–2007; a tetravalent A,C,Y,W135 conjugate vaccine might be available by 2008–2009.

D. Medium- and long-term options for control of meningococcal meningitis in Africa

1. The Meningitis Vaccine Project (MVP; Dr Laforce)

Interest in conjugate vaccines was renewed at WHO after the epidemic of *N. meningitidis* serogroup A in 1996. In 1999 and 2000 important discussions were held with vaccine manufacturers and meetings of experts organized by WHO in 2000–2001 showed significant support for development of conjugated vaccines. MVP, a partnership between WHO and PATH, was created by the Bill and Melinda Gates Foundation in June 2001 with support for a 10-year project of the order of US\$ 70 million.

The goal of MVP is to eliminate epidemic meningitis as a public health problem in sub-Saharan Africa through the development, clinical testing, registration, and finally, widespread utilization of conjugate meningococcal vaccines. Thus the project aims to have a public health impact and is not designed simply to improve the availability of vaccines. To realize this goal, MVP's strategy is focused on:

- vaccine development
- clinical evaluation and licensing
- introduction and utilization
- financing
- long-term surveillance and safety monitoring.

Public health workers across Africa are closely involved in MVP. MVP is considering the following conjugate vaccines:

- A heptavalent conjugate vaccine (DTP_w, HepB, Hib, Nm A,C) for use in programmes of childhood immunization (e.g. Expanded Programme on Immunization – EPI). Field trials will begin in 2003 (in Ghana) and the product should be approved in 2005 and on the market by 2005–2006.
- Monovalent *N. meningitidis* A conjugate vaccine for mass vaccination campaigns for persons aged 1–29 years. This vaccine is destined for the populations of the African meningitis belt as well as other populations at risk in Africa. Given the current birth rate in meningitis belt countries, a vaccination campaign aimed at 1–29-year-olds must consider reaching 250 million people in 10 years. A partnership has been established with a developing country manufacturer to produce 25 million doses of vaccine per year at an indicative price of US\$ 0.40 per dose. The aim is to have the vaccine available for a large demonstration project (5 million people) in October–December 2006. The plan to achieve this is as follows:

Q4 2003	Clinical batches manufactured
2004 – 2006	Phase I–II clinical trials
Q4 2006	Phase III studies
2007	Licensing.

As regards *N. meningitidis* serogroup W135, there are two main conjugate vaccine options:

- a tetravalent A,C,Y,W135 vaccine (including the development of the manufacturing capacity for such a vaccine);
- a bivalent A,W135 vaccine developed for Africa.

Conjugate tetravalent vaccines are in development commercially but there is no certainty about when they will be available or what they will cost. On the other hand, vaccine manufacturers have no commercial interest in producing the bivalent A,W135 conjugate vaccine, although a monovalent serogroup A vaccine is commercially attractive. If *N. meningitidis* W135 emerges as a continuing menace, MVP will consider the development of a monovalent W135 conjugate vaccine.

2. A case for polysaccharide vaccine in routine immunization (Dr Robbins)

Early research (Gold et al., 1979) showed that one injection of meningococcal polysaccharide vaccine A or C elicits long-lived antibody levels in children older than 6 years. Meanwhile, two controlled trials with monovalent A polysaccharide vaccine in children under 2 years of age have shown low efficacy following a single dose (Peltola et al., 1977; Lennon, 1992).

Protective vaccination of entire populations with monovalent A vaccine has been suggested in the past, and reports from Benin (Hassan et al., 1998) and Niger (Campagne et al., 1999) suggested that preventive immunization could prevent deaths and would be less expensive than reactive mass vaccination campaigns.

According to the presenter, a strategy of reactive vaccination for epidemic containment prevents, at best, about 50% of cases and does not address the problem of endemic disease estimated at 50 000 cases per year in Africa. As an alternative strategy, the presenter recommended universal vaccination with the monovalent A polysaccharide vaccine given twice in infancy and tetravalent vaccine at 2 and 6 years of age. This could eliminate both epidemic and endemic disease and prepare the way for conjugate vaccines when they become available.

Intervention on vaccine availability by Médecins Sans Frontières (MSF, Dr Pecoul)

Dr Pecoul explained that MSF has been involved for the past 20 years in the fight against meningitis, supporting national health services in 15 countries, immunizing 3–5 million people each year, and ensuring appropriate treatment of meningitis cases. Although in agreement about the importance of surveillance and case management, MSF believes that the most pressing concern at present is the risk of epidemics caused by *N. meningitidis* W135 during the next season. There is an insufficient supply of vaccine to protect the 300 million people potentially affected, and the price of the existing tetravalent vaccine is beyond the means of African governments and international aid organizations. In the

short term, options are limited to negotiations with GSK concerning price and number of doses of the existing product.

In the longer term, MSF supports the development of a conjugate vaccine (i.e. the MVP). Following consultation with experts in vaccine development and use, MSF has concluded that it should be possible to produce, for African countries, a vaccine that includes the W135 antigen at less than US\$ 1 per dose. Dr Pecoul reminded the audience that the cost of producing the current monovalent vaccines is estimated at US\$ 0.15 per dose and the current bivalent A,C vaccine is sold at US\$ 0.24 per dose for African countries. He stressed that the production of a monovalent W135 vaccine must be carefully studied, including the possibility of transferring the necessary technology to a developing country producer.

VI Group work

A. Review of the draft WHO strategy on prevention and control of epidemic meningococcal disease in Africa

The groups focused their discussions on the following aspects:

- surveillance and laboratory needs
- outbreak response
- epidemic control strategies and vaccine development
- advocacy and resource mobilization.

Important conclusions on action in the short and medium term were drawn by the groups and have been incorporated into the Agenda for Action (see Section VII). Clear advocacy messages were enunciated, i.e. that the price of W135-containing vaccines should be reduced to less than US\$ 1 per dose and that sufficient vaccine should be made available to meet the needs of the African population.

Members of the group working on epidemic control strategies and vaccine development recommended that the use of polysaccharide vaccines should be limited to outbreak control (reactive strategy) in order to reduce the disease burden in populations affected by meningococcal meningitis outbreaks. The consensus of the group was that the use of polysaccharide vaccines in a routine strategy is inappropriate.

VII Agenda for action 2002 – 2003

A. Surveillance

<i>Specific objective</i>	<i>Key activities</i>	<i>Time-frame for implementation</i>	<i>Responsible</i>
1. Strengthen inter-epidemic and epidemic surveillance in countries at risk of EMD	1.1 Revise proposal for strengthening epidemic meningococcal disease surveillance in African meningitis belt; include surveillance performance indicators	Oct 2002	WHO HQ
	1.2 Conduct regional training for national, provincial and district surveillance officers, data managers, and laboratory technicians	Oct 2002	WHO AFRO
	1.3 Provide lumbar puncture kits, transport media and laboratory material for next epidemic season	Oct – Dec 2002	WHO HQ / AFRO / EMRO
	1.4 Develop plans of action for implementation of surveillance activities at district, provincial, national and sub-regional level	Nov 2002	WHO AFRO
2. Develop national and regional reference laboratories and establish links with WHO collaborating centres and other recognized meningococcal laboratories	2.1 Elaborate an inventory of national and international laboratories working on meningococcal disease and define existing strengths and constraints	Oct 2002	WHO HQ / AFRO / EMRO collaborating centres
	2.2 Convene a meeting of concerned partners and develop a plan of action	Apr 2003	WHO – collaborating centres and new partners

B. Outbreak response

<i>Specific objective</i>	<i>Key activities</i>	<i>Time-frame for implementation</i>	<i>Responsible</i>
1. Strengthen epidemic preparedness	1.1 Revise the national plans of action 1.2 Pre-position treatment drugs at health centre levels and define clear guidelines for ensuring free-of-charge treatment	Oct – Dec 2002 Oct – Dec 2002	MOHs MOHs
2. Strengthen epidemic response	2.1 Pursue negotiations with GSK for obtaining a tetravalent vaccine at affordable price (< US\$ 1) 2.2 Ensure wide dissemination and understanding of new alert and epidemic thresholds 2.3 Increase ICG emergency stock to a minimum of: 10 million doses of AC vaccine and injection material, 2 million doses of tetravalent vaccine, 300 000 vials of oily chloramphenicol, 300 diagnostic kits 2.4 Mobilize resources to fund initial production cost of W135-containing vaccine 2.5 Define eligibility criteria for limited stock of polysaccharide tetravalent vaccines for the next season 2.6 Ensure dissemination of eligibility criteria for obtaining supplies from ICG 2.7 Develop interim guidelines on simultaneous mass immunization (injection of combined antigens or simultaneous injections)	Oct – Dec 2002 Oct – Dec 2002 Nov 2002 Oct – Dec 2002 Nov 2002 Nov 2002 Jan – Apr 2003	WHO HQ – ICG partners MOHs – DPCs ICG Executive Subgroup WHO – ICG partners ICG Executive Subgroup ICG Executive Subgroup WHO HQ/AFRO/EMRO

B. Outbreak response *(continued)*

<i>Specific objective</i>	<i>Key activities</i>	<i>Time-frame for implementation</i>	<i>Responsible</i>
3. Improve case management	3.1 Ensure adequate supply of oily chloramphenicol for the upcoming epidemic seasons and identify/validate new sources	2002–2004	WHO – ICG partners
	3.2 Review current treatment protocols	Nov 2002 – Jul 2003	WHO
	3.3 Study the efficacy and cost-effectiveness of short-treatment courses with ceftriaxone	Jan – Apr 2003	MSF – Epicentre

C. Vaccine research and development

<i>Specific objective</i>	<i>Key activities</i>	<i>Time-frame for implementation</i>	<i>Responsible</i>
1. Explore alternatives for development of vaccine containing W135 antigen	1.1 Convene a technical meeting to study feasibility and time-frame for development of monovalent W135 and trivalent PS vaccines	Oct – Nov 2002	WHO HQ
2. Evaluate impact and effectiveness of reactive mass vaccination with the PS tetravalent vaccine	2.1 Finalize protocol and submit for funding 2.2 Implement during the 2002–2003 epidemic season	Nov 2002 Jan – Apr 2003	WHO HQ – CDC – Partners MOHs, WHO – CDC – Partners
3. Evaluate efficacy of different vaccine-delivery strategies	3.1 Evaluate efficacy of reduced doses of tetravalent PS vaccine	Jan 2003 – 2004	WHO Collaborating Centre, Oslo
4. Continue development of anti-meningococcal conjugate vaccines	4.1 Pursue development of monovalent A conjugate vaccine for Africa 4.2 Adapt vaccine development according to evolution of the serogroup epidemiology across the African meningitis belt	2002 – 2008 2002 – 2003	MVP MVP
5. Coordinate and support operational research to address main needs and fill current gaps on meningococcal meningitis prevention and control	5.1 Conduct an inventory of ongoing, planned and desired research projects 5.2 Establish a communications network among institutions, agencies and individuals conducting operational research on meningococcal meningitis 5.3 Establish a Technical Advisory Group on meningitis research 5.4 Consolidate a research agenda and submit to potential donors	Oct 2002 Oct – Dec 2002 Nov 2002 Oct 2002	WHO HQ WHO HQ – partners WHO HQ WHO HQ

D. Advocacy and partnership

<i>Specific objective</i>	<i>Key activities</i>	<i>Time-frame for implementation</i>	<i>Responsible</i>
1. Sensitize and mobilize country leaders and decision-makers in Africa to lobby vaccine providers to make appropriate vaccines available at an affordable price	1.1 Include meningitis on the agenda of all major regional/international health and political meetings and forums scheduled in 2002 – WHO Regional committee – CEDEAO (Communauté Economique des Etats de l'Afrique de l'Ouest) summit – GAVI board/partners meeting – TFI (Task Force Initiative) – WAHO (West African Health Organization) 1.2 Develop a comprehensive communication strategy vis-a-vis the international community to support the ICG appeal 1.3 Prepare a briefing document with key messages addressing main needs and gaps for meningitis control	Oct 2002 Oct 2002 Nov 2002 Dec 2002 Oct – Dec 2002 Oct 2002	Burkina Faso's MOH – WR WHO AFRO WAHO WHO HQ WAHO AFRO WHO – UNICEF – NGOs WHO AFRO
2. Establish strong inter-institutional partnership for advocacy	2.1 Identify international, regional and subregional institutions, nongovernmental organizations and networks concerned with meningitis control 2.2 Establish coordination mechanisms and develop an agenda for advocacy	Oct – Dec 2002 2002 – 2003	WHO AFRO
3. Promote community participation	3.1 Sensitize and advise emergency preparedness committees for improving community participation in outbreak control	2002 – 2003	MOHs –IRCF – UNICEF – NGOs

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Annex 1

Discours de Monsieur le Ministre de la Santé à l'Occasion de la Cérémonie d'Ouverture

Mesdames et Messieurs,

C'est un plaisir et un honneur pour moi de prendre la parole ce matin, devant cette auguste assemblée, réunie pour un combat dont on ne saurait saluer assez la noblesse. C'est pourquoi, je voudrais tout d'abord, au nom de Monsieur le Président du Faso, du Gouvernement du Burkina Faso et du Peuple burkinabè, souhaiter la bienvenue à Ouagadougou à tous les participants aux présentes rencontres internationales sur l'organisation de la lutte contre les épidémies de méningite en Afrique.

Mon pays, le Burkina Faso, a connu une série d'épidémies de méningite ces dix dernières années, et par conséquent, se sent particulièrement interpellé sur cette question. C'est ainsi, qu'il m'a été rappelé que mes services de santé ont notifié : En 1996, 42 967 cas dont 4 363 décès; en 1997, 22 293 cas dont 2 533 décès; en 2001, 12 790 cas dont 1769 décès; en 2002, 12 794 cas dont 1474 décès

Bien que le nombre de cas notifiés et le nombre de décès soient en régression constante, la préoccupation est grande car, comme vous venez de le dire, Monsieur le Représentant de l'OMS, cette situation n'est sans doute que la partie visible de l'iceberg. Et, tout comme le Burkina Faso, les autres pays de l'Afrique sub-saharienne, situés dans la ceinture africaine de la méningite, tels que le Bénin, l'Ethiopie, la Gambie, le Ghana, le Mali, le Niger, le Sénégal, le Soudan, le Tchad, le Cameroun et le Nigéria, connaissent, de façon régulière, des épidémies de méningite qui font de nombreuses victimes au sein des populations avec toutes les conséquences humaines, sociales et économiques que chacun de nous peut imaginer. Au cours de la dernière décennie, ces épidémies se sont manifestées de manière persistante et rapprochée, aggravant ainsi le lourd tribut que nos pays paient à ces épidémies, dans un contexte de ressources limitées et face aux nombreux défis auxquels nos pays doivent faire face.

Cette situation est d'autant plus préoccupante pour le Burkina Faso, et source d'inquiétude pour les autres pays de la ceinture africaine de la méningite, que l'épidémie que mon pays a connue cette année est due à une souche de méningocoque, différente de celles habituellement rencontrées lors des épidémies précédentes, souche que vous connaissez sous le nom de *Neisseria meningitidis* W 135.

Naturellement, bien que les autres pays de la ceinture africaine de la méningite n'aient pas connu d'épidémie à W 135, cette souche est en circulation dans la sous-région et peut, dans les années à venir, déclencher des épidémies à grande échelle.

Honorables participants, il me semble que le faciès épidémiologique de la méningite est en pleine mutation. En outre, la non disponibilité de quantité suffisante du vaccin contre le W135 d'une part, son coût élevé d'autre part, posent d'importants défis à la communauté scientifique internationale, aux partenaires de la Santé et aux pays à risque, pour l'identification de stratégies appropriées à mettre en œuvre dans la lutte contre les épidémies de méningite.

Sans que cela ne soit naturellement exhaustif, les principaux défis en matière de préparation et de réponse aux épidémies de méningite concernent certainement :

- La détection et la notification précoces des épidémies,
- La disponibilité en quantité suffisante et l'accessibilité aux vaccins, médicaments et consommables,
- Le soutien effectif des laboratoires par la formation du personnel, la dotation en réactifs, en consommables et un équipement adéquat,
- L'accessibilité financière aux soins, voir la gratuité totale de la prise en charge des cas de méningite,
- La coordination et la collaboration intersectorielle pour la gestion des épidémies,
- La coopération inter-pays, etc...

C'est la raison pour laquelle, j'affirme que la décision, prise par l'Organisation Mondiale de la Santé et le Groupe International de Coordination pour l'approvisionnement en vaccin Anti méningococcique (ICG), d'organiser, du 23 au 28 septembre 2002, trois rencontres pour l'organisation de la lutte contre la méningite cérébro spinale en Afrique, constitue un grand espoir pour nos pays.

Et le Burkina Faso est très honoré d'avoir été retenu pour abriter ces rencontres, ce choix traduisant, à mon sens, la confiance que l'OMS et la communauté scientifique internationale fait à notre pays.

Au nom du gouvernement et du peuple du Burkina Faso, j'exprime toute ma gratitude et ma reconnaissance aux organisateurs pour le choix de notre pays.

J'espère ardemment que la tenue de ces rencontres permettront :

- Aux experts de l'Organisation Mondiale de la Santé, du Groupe International de Coordination pour l'approvisionnement en vaccin Anti-méningococcique ;
- Aux représentants des pays de la ceinture africaine de la méningite ;
- Aux éminents chercheurs en matière de lutte contre les épidémies de méningite,

de mieux orienter les stratégies de lutte contre les épidémies de méningite, de renforcer les capacités des équipes nationales en charge de la lutte contre les épidémies et de faire un plaidoyer afin que le vaccin contre la souche W135 soit disponible en quantité suffisante et à un coût accessible pour les pays africains.

Mesdames et Messieurs, je ne pense pas me tromper en disant que les pays africains attendent de ces rencontres :

- Un consensus sur les stratégies adaptées à la lutte contre la méningite,
- Une plus grande disponibilité et une meilleure accessibilité aux vaccins et aux médicaments,
- Une coordination effective de la lutte aux niveaux sous-régional, régional et mondial.

En tout état de cause, il est souhaitable, qu'à terme, les résultats de vos rencontres permettent une meilleure prévention, une meilleure préparation et une meilleure réponse aux épidémies de méningite qui continuent de constituer, pour nos pays, de graves problèmes de santé publique.

Mesdames et Messieurs, c'est dire que les conclusions de vos travaux sont attendues avec un grand espoir par des dizaines de millions d'individus dont la survie est aujourd'hui entre vos mains.

Pour terminer, je voudrais remercier tous les partenaires qui oeuvrent inlassablement à nos côtés pour l'amélioration de la santé de nos populations.

Je souhaite que ce partenariat se consolide et se diversifie davantage.

En souhaitant pleins succès à vos travaux, je déclare ouvertes, les rencontres internationales pour l'organisation de la lutte contre les épidémies de méningite en Afrique.

Je vous remercie.

Annex 2

Agenda of the Technical Consultation Meeting on WHO strategy for the prevention and control of epidemic meningococcal disease in Africa

Day 1 : 23/09

8:00	Registration and administrative arrangements	MOH, WR Burkina Faso
8:30 – 9:00	Opening ceremony Objectives of the meeting	Dr Kabore/Dr Tarantola
9:00 – 9:15	Meningococcal meningitis in Africa: Overview of the state-of-art	Dr Lusamba, AFRO Dr Teleb, EMRO
9:15 – 9:30	Epidemiological overview of the 2001–2002 meningococcal epidemic season	Country representatives
9:30 – 10:00	Recent experiences in prevention and control of epidemic meningococcal disease – Burkina Faso – Ethiopia	
10:00 – 10:30	Coffee break	
10:30 – 12:00	<i>Discussion Panel.</i> <i>Chairman: Dr Lusamba</i> Emergence of W135: Implications for surveillance and control – Meningococcal Surveillance: Epi. And laboratory issues – Case management strengthening – Current availability of PS vaccines <i>Guests:</i>	Professor Koumare/Dr Sow, AFRO Dr Thiombiano, BF Dr A. Costa, WHO/V&B <i>Dr Cougant, NIPH</i> <i>Dr Rosenstein, CDC</i>
12:00 – 13:30	Lunch	
13:30 – 15:00	<i>Discussion Panel.</i> <i>Chairman: Dr Tarantola</i> Medium- and long-term options for control of meningococcal meningitis in Africa – The Meningococcal Vaccine Project – Role of the polysaccharide vaccine in routine immunization – Vaccine options for the transitional period <i>Guest:</i>	Dr Laforce, PATH Dr Robbins, NIH Dr Ryan, WHO/CSR <i>Dr Pecoul, MSF</i>

15:00 – 15:30	Coffee Break	
15:30 – 16:00	Presentation of draft on WHO strategy for prevention and control of EMD in Africa	Dr Santamaria, Dr Lusamba, AFRO/CSR
16:00 – 18:00	Group work • Surveillance • Laboratory services • Outbreak response • Role of preventive immunization and development of conjugate vaccines • Advocacy and partnership	
Day 2 24/09		
8:00 – 10:00	Continuation and wrap-up of group work	
10:00 – 10:30	Coffee Break	
10:30 – 12:30	Report on group work Discussion	
12:30 – 14:00	Lunch	
14:00	Agenda for Action for prevention and control of epidemic meningococcal disease in Africa	Chairman, Vice-Chairman
	Closing remarks	MOH – WR Burkina Faso

Annex 3

List of Participants

Technical Consultation Meeting on WHO strategy for the prevention and control of epidemic meningococcal disease in Africa

Country Representations

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