

End of Meningitis Outbreak in Nigeria, December 2016-June 2017

Event description

WHO was notified of an outbreak of meningitis by the Government of Nigeria on 20 February 2017. The first case was reported in Zamfara state during epidemiology week 50 (December 12-18, 2016). On 23 June 2017, the Nigeria Federal Ministry of Health officially declared the end of the 2016/2017 meningitis outbreak in the country. This declaration was made almost 8 weeks after the number of new meningitis cases reported each week during this outbreak fell below the epidemic and alert thresholds in all Local Government Areas.

Between December 2016 and 23 June 2017, a total of 14,513 cases with 1,166 deaths (Case Fatality Rate=8.0%) had been reported from 24 States. Of the reported cases, 1,002 (6.9%) were laboratory tested; of which 463 (46.2%) were confirmed positive for bacterial meningitis. *Neisseria meningitidis* serogroup C was the predominant (75.4%) cause of meningitis amongst those who tested positive.

Children between 5-14 year age group were the most affected, accounting for 6,791 (46.8%) cases. The states which were most affected by this outbreak were Zamfara, Sokoto, and Katsina, which accounted for nearly 89% of these cases.

Public health actions

The Nigeria Centre for Disease Control (NCDC) established a National Emergency Operations Centre (EOC) which coordinated the response to this national outbreak in collaboration with the National Primary Health Care Development Agency (NPHCDA). WHO and partners like UNICEF, CDC, University of Maryland, Nigeria Field Epidemiology and Laboratory Training Program (N FELTP), eHealth Africa, Medecins San Frontieres (MSF), and Rotary International were also instrumental in providing support. Rapid Response Teams (RRT) was deployed to the most affected States to strengthen surveillance, case management, laboratory capacity and risk communication. Some of the major interventions were:

- **Mass vaccination campaigns:** Reactive vaccination campaigns were successfully conducted in Zamfara, Sokoto, Yobe and Katsina States. About 2 million were eventually vaccinated during the course of this outbreak. The campaign was monitored by experts who had been deployed by WHO to the field. It had been conducted in Zamfara State for people aged 1 to 29 years using polysaccharide meningococcal A & C vaccine; however, in two wards namely, Gada and Kaffe people aged 2 to 29 years were vaccinated. In the nine LGAs in Sokoto State, it was completed using monosaccharide meningococcal conjugate C vaccine for people aged 1 to 20 years and in Yobe State for people aged 2 to 29 years using polyvalent ACW conjugate vaccine. The state governments ensured the vaccination reached the most at risk population.
- **Case Management and Laboratory Diagnosis:** New cases were successfully investigated and characterized in Sokoto and Zamfara State. Case management protocols had been distributed to health facilities in the most affected States. During the course of this outbreak, WHO deployed 50 health workers in 10 teams to Sokoto and Zamfara States. The first ever meningitis PCR tests were conducted in the National Reference Laboratory in Abuja.
- **Surveillance and Epidemiology:** Daily collection, collation, cleaning and harmonization of newly reported cases from the States to assess the impact of the response activities were undertaken. Monitoring of trends and feedback analysis was carried out. Descriptive epidemiology of cases was being reported weekly to Sokoto, Yobe, Zamfara and Katsina states.
- **Social mobilization:** This was done by sensitizing the communities, faith-based organizations, and traditional leaders. Additionally, there was the production and dissemination of communication materials as well as airing of jingles on local radio stations in the worst affected states.

Situation interpretation

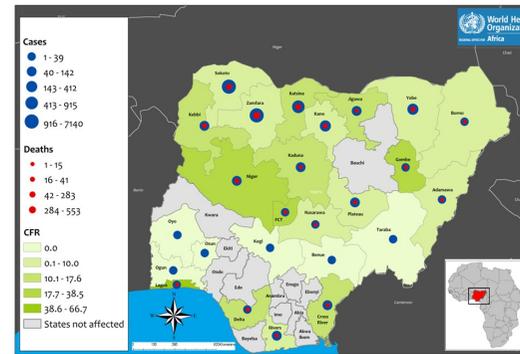
Nigeria lies in the meningitis belt of sub-Saharan Africa which has the highest rate of this disease. It extends from Senegal in the west to Ethiopia in the east, thus including 26 countries. The country experienced meningitis outbreak in 2015 in the same areas affected in 2016/2017. This outbreak in Nigeria which had started in Zamfara state on 18 December 2016, escalated into a full blown epidemic as a result of an exponential increase in the number of cases and deaths. Thus, the disease rapidly spread to other states. The outbreak had peaked in 2017 in week 14 and 15 and showed a steady decline from week 16.

Effective mass immunization campaigns had been carried out in the country prior to this outbreak against serotype A. However, this phenomenon had resulted in the emergence of new pathogens particularly serotype C. Since individuals were infected with this different and new strain of bacteria, immunity of the high-risk population (children aged 5-14 years) was low because of the cost of vaccines, lack of availability as well as delay in the acquisition of new vaccines. This was one of the main reasons for the high CFR of this outbreak. This coupled with the dry season in Nigeria caused this particular bacteria strain to persist for a longer time than usual, resulting in this outbreak.

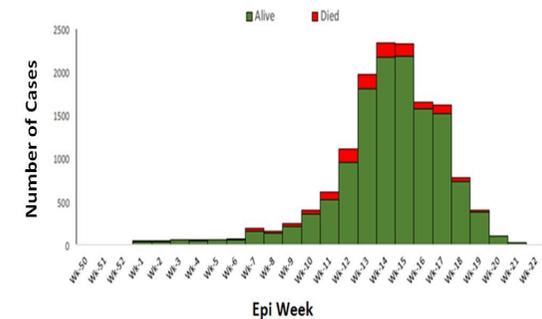
In addition, the other major public health challenges experienced by the country such as the humanitarian crisis, hepatitis E and lassa fever contributed to the escalation of this outbreak. This overstretched the government's capacity to respond effectively resulting in inadequate funding to support activities of the National Emergency Operations Centre. There was insufficient health care workforce resulting in a low rate of sample collection and limited laboratory confirmation. Therefore, the country was challenged to deal with this recurrent outbreak. However, the situation improved as control measures were scaled up considerably and there was a steady decline from week 16.

According to NCDC, to respond more effectively in the future, the planning process to ensure improved preparedness through workshops has already begun. It is simultaneously also improving the laboratory capacities with the operationalization of the new National Reference Laboratory in Gaduwa, Abuja with support from the Federal Ministry of Health, the US CDC and the WHO. Furthermore, national guidelines are being developed to better respond to future outbreaks.

Distribution of cases of Meningitis in Nigeria, December 2016-June 2017



Epidemic curves of Meningitis outbreak in Nigeria as of 8th June, 2017



Timeline of events of Meningitis outbreak in Nigeria

