

Andre Arsene Bita Fouda¹, Marie-Pierre Preziosi², Anderson Latt³, Clement Lingani⁴, Lorenzo Pezzoli², Fernandez Katya², Antoine Durupt², Mable Carole Tevi Benissan², Pierre Manuel Bita Ongolo⁵, Renee Solange Abouem⁵, Ado Bwaka⁴, Benido Impouma¹, Charles Shey Umaru Wiysonge¹.

¹World Health Organization Regional Office for Africa, Brazzaville, Congo, ²World Health Organization Headquarters, Geneva, Switzerland, ³World Health Organization Emergency Hub, Dakar, Senegal, ⁴World Health Organization Inter Country Support Team for West Africa, Ouagadougou, Burkina Faso, ⁵Georgia State University

- Bacterial meningitis disease decrease from 2011 to 2023
- Meningitis epidemic remains a burden in African meningitis belt despite the tremendous efforts done by countries and World Health Organization and other Partners
- Nigeria and Niger are the most affected
- The predominant pathogens which caused epidemics were *Neisseria meningitidis* serogroups C, and W and *Streptococcus pneumoniae*

BACKGROUND

- Meningitis is a devastating disease.
- Despite efforts to control bacterial meningitis epidemics through immunization, surveillance, laboratory, and case management, they seem to remain a major public health problem in the African meningitis belt.
- The objective of this study was to describe the epidemiology of meningitis epidemics from 2011 to 2013 in the African meningitis belt

METHODS

- A retrospective cross-sectional study was carried out.
- Cases, incidence, deaths, case fatality rates (CFR), occurrence of bacterial meningitis epidemics pathogens, were variables considered collected in World Health Organization database.
- The study population was over 400 million people living in the 26 countries of the sub-Saharan meningitis belt, stretching from Senegal in the west to Ethiopia in the east

RESULTS

- From 2011 to 2023 the annual cumulative attack rate (incidence) decreased from 13.6/100,000 inhabitants to 3.6/100,000 inhabitants. The median is 7.6/100,000 and the average is $8.07 \pm 2.86/100,000$ inhabitants (figure 1).
- From 2011 to 2023 12 countries of sub-Saharan African meningitis belt experienced bacterial meningitis epidemics (Benin, Burkina Faso, Cameroun, Chad, Democratic Republic of Congo (DRC), Ethiopia, Ghana, Nigeria, Niger, Senegal, South Sudan, Togo).
- The number of health districts that reported epidemics varies of years. In 2017, the highest number of health districts reported epidemics (45) as follows: Nigeria (37), Niger (4), Benin (2), Togo (2), and Cameroon (1).
- The predominant pathogens were *N. meningitidis* serogroups C, and W. Nigeria and Niger are the countries that reported mostly meningitis epidemics caused mainly by *N. meningitidis* C. Nigeria reported meningitis epidemics during 9 out of 13 years from 2013 to 2023 accepted in 2022. Whereas Niger experienced meningitis epidemics for 8 out of 13 years.
- Ghana reported meningitis epidemics caused by *S. pneumoniae* in 2016 and 2020 while Togo experiences it in 2023. Mixed epidemics were reported by Niger in 2018 (*N. meningitidis* C, X) and Ghana in 2016 and 2020 (*S. pneumoniae* and *N. meningitidis* W) and (*S. pneumoniae* and *N. meningitidis* X) respectively. Strains most circulating in meningitis belt are *N. meningitidis* C (ST-102017), *N. meningitidis* W (ST C11), and serotypes 1 and 5 (Figure 2). *S. pneumoniae*

RESULTS CONTINUED

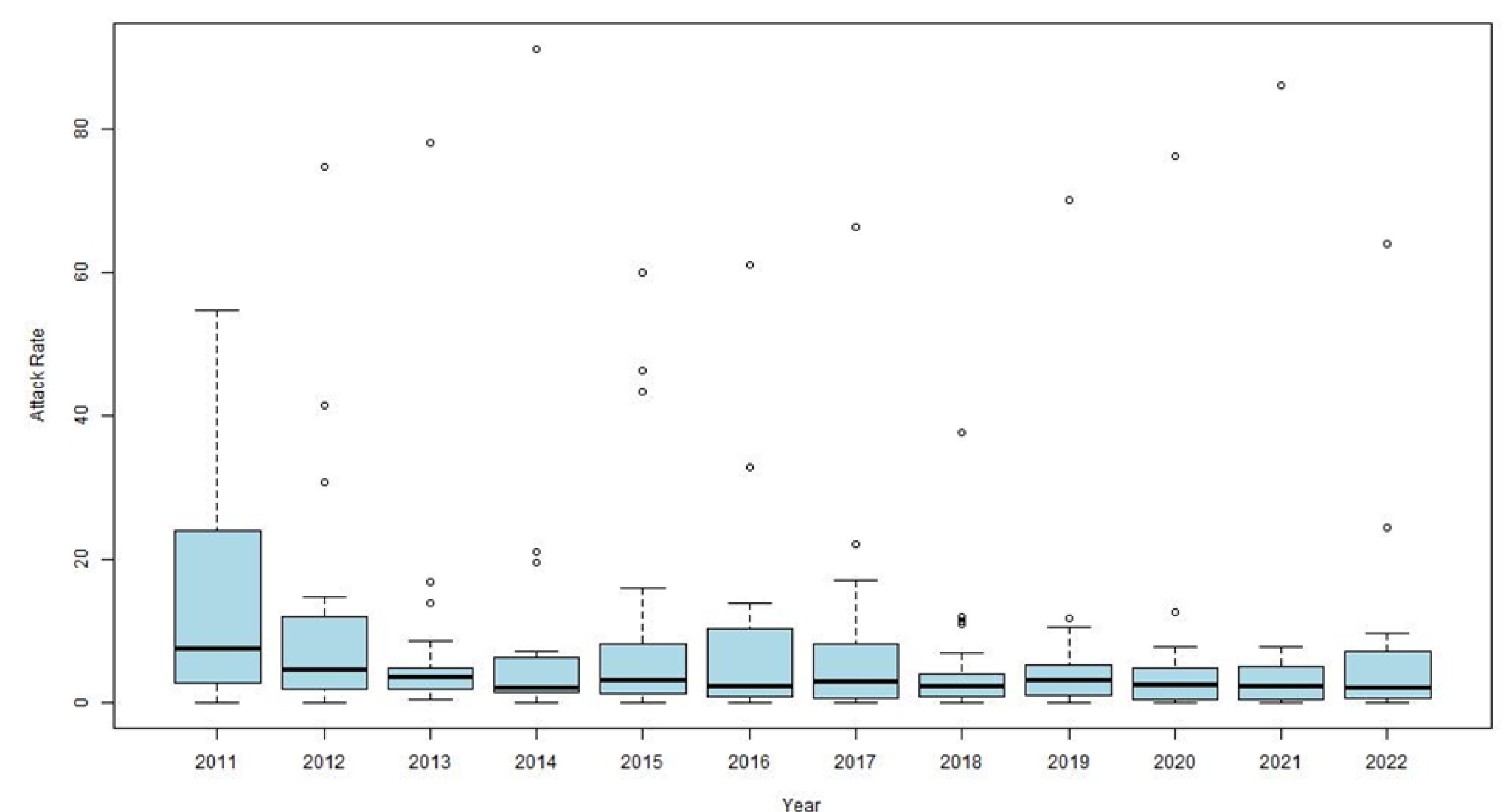


Figure 1: Evolution of annual cumulative incidence rate from 2011-2023

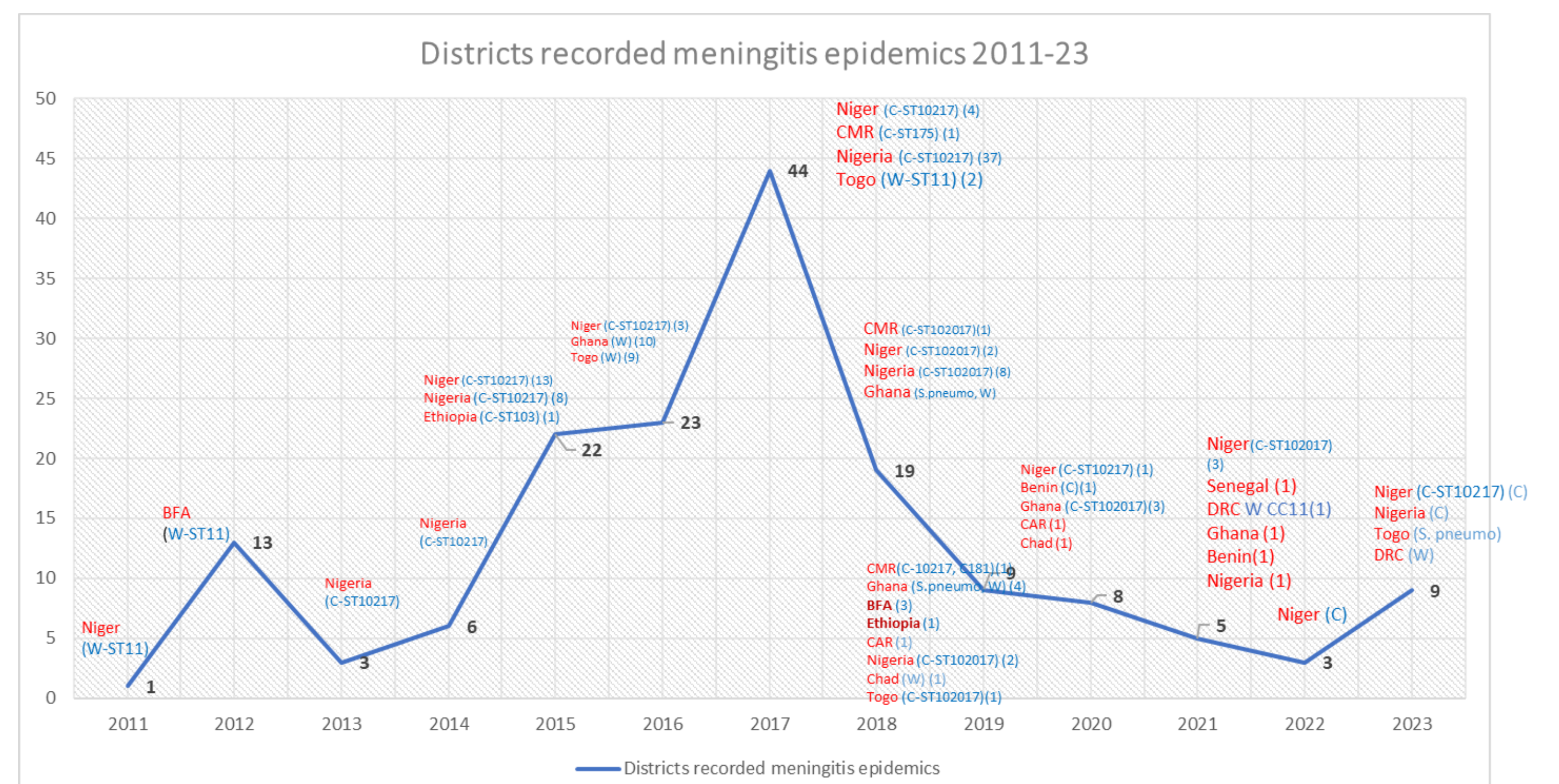


Figure 2: Meningitis epidemics in African meningitis belt 2011-23

CONCLUSIONS

- Despite tremendous efforts made resulted to the elimination of meningitis A meningitis epidemics remain a burden.

ADDITIONAL KEY INFORMATION

- Author correspondent: Prof Andre Arsene Bita Fouda, World Health Organization Regional Office for Africa, Brazzaville, Congo, abita@who.int
- No conflicts of Interest
- Acknowledgements: Ministries of Health of countries of African Meningitis Belt, World Health Organization African region