

Surveillance Feedback Bulletin

2023 | Quarter 1

Quarterly feedback bulletin on bacterial meningitis

Epidemiological situation, weeks 1-13

During epidemiologic weeks 1-13 of 2023, a total of 1,500 suspect cases were reported from MenAfriNet districts that submitted data from Burkina Faso and Niger, an increase from 1,392 cases during quarter 1 of the previous year. Specimens were collected from 98% of suspect cases, 20% were confirmed by PCR or culture tests, and 20% were probable cases (Table 1). MenAfriNet data sources used for analyses in this guarter's bulletin were national case-based meningitis surveillance data from Burkina Faso and Niger, both obtained through the STELab platform.

Table 1. Epidemiological situation, weeks 1-13

	Burkina Faso	Niger	Total	
Characteristics	N (%)			
Epidemiologic	•			
Population under Surveillance	22,882,385	25,369,415	48,251,800	
MenAfriNet districts reporting in CBS system [†]	66/70	67/72	133/142 (93)	
Aggregate suspected cases*	584	999	1,583	
MenAfriNet suspected cases	642	858	1,500	
Deaths [∞]	17 (3)	20 (2)	37 (2)	
Laboratory [§]				
Specimens collected	631 (98)	690 (80)	1321 (88)	
Specimens received at NRL	440 (69)	532 (62)	972 (65)	
Specimens analyzed by PCR or culture [¥]	399 (62)	523 (61)	922 (61)	
Specimens analyzed with gram stain	533 (83)	85 (10)	618 (41)	
Probable bacterial meningitis**	180 (28)	118 (14)	298 (20)	
Confirmed bacterial meningitis	74 <mark>(</mark> 12)	226 (26)	300 (20)	

Abbreviation: CBS: Case-based surveillance: CSF. cerebrospinal fluid: NRL, National Reference Lab: PCR. Polymerase Chain Reaction (real-time)

8/12 (Burkina Faso) and 36/41 (Niger) MenAfriNet districts reported 0 cases both through the aggregate reporting system and CBS system.

Data source: Weekly district-level aggregate reports of clinically defined meningitis cases and meningitis-related deaths. Deaths listed as outcome in case-based data

δ

Denominator for laboratory characeristics = number of MenAfriNet suspected cases CSF analyzed by PCR or culture at any lab (district, region, or national levels)

Tested negative or missing culture/PCR result. Macroscopic aspect of cerebrospinal fluid (CSF) turbid, cloudy or purulent; or with a CSF leukocyte count >10 cells/mm3 or with bacteria identified by Gram stain in CSF; or positive antigen detection in CSF. Further details of probable meningitis cases can be found here (page 4): https://apps.who.int/iris/bitstream/handle/10665/312141/9789290234241-eng.pdf

Meningitis pathogens

The leading causes of confirmed bacterial meningitis cases in guarter 1 were Neisseria meningitidis serogroup C (NmC) and Streptococcus pneumoniae (Spn), accounting for 60% and 35% of total confirmed cases, respectively. Confirmed cases among 1-29 year-olds were predominately due to NmC, with the largest number of cases among individuals aged 5-19 years. The highest number of Spn was among 5-14 year-olds. <1 and 30+ year age groups had the largest portion of confirmed cases attributable to Spn. Serogroups X and W accounted for 2% of total confirmed cases, and Haemophilus influenzae non-b accounted for 4%.

Figure 1. Age distribution of confirmed bacterial meningitis pathogens



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Spatial Distribution of Confirmed Bacterial meningitis Pathogens

Among the available lab data reported from Burkina Faso and Niger, *Neisseria meningitidis* continues to be detected, with 177 cases of serogroup C, 3 cases of serogroup X, and 2 cases of serogroup W confirmed. Zero NmA cases were reported. In Niger, a confirmed NmC outbreak was reported in the Zinder region during epi week 46 of 2022 to epi week 7 of 2023, during which 665 cases and 27 deaths were reported. A reactive vaccination campaign was implemented during epi week 1 in Dungass district. Since completion of the campaign, Dungass has not crossed the alert or epidemic threshold during the meningitis season. Matameye crossed the epidemic threshold during epi week 9. Additional reactive vaccination campaigns were implemented in these districts during epi week 16. No outbreaks were reported in Burkina Faso, and a low number of confirmed cases were reported from Burkina Faso during the first quarter.









2c. Neisseria meningitidis W



2e. Streptococcus pneumoniae*



*Spn serotype data not available in data submitted this quarter.





MenAfriNet case-based surveillance performance indicators

Specimen collection remains at or above the target threshold in both Burkina Faso and Niger (Figure 4a). In Niger, a significant improvement is seen in the percent of specimens received at the NRL, which allows for more confirmatory testing of samples (Figure 4d). Specimen transport times from CSF collection to arrival at the NRL remains an obstacle in Burkina Faso, but performance dramatically improved in Niger during this first quarter, with over 50% of specimens received at the NRL in less than 7 days (Figure 4e). This improvement may be attributable to a new speimen transport system that was implemented. Once received at the NRL, both countries have high rates of confirmatory testing on these samples by PCR or culture (Figure 4f).

Figures 4a-4h. Annual Trends of Surveillance and Laboratory Performance Indicators



Niger

Burkina Faso









2022

2023 Q1 (meets target)

4b. Percent of specimens received at any lab in trans-isolate (T-I) media







4f. Percent specimens analyzed by culture or PCR upon arrival at NRL



4h. Percent contaminated among samples tested by culture at NRL



2023 Q2 (does not meet target)

2020

2021

Key:

Indicator target

Epidemiologic trends over time

The overall number of suspect cases was higher in Burkina Faso this year compared to epi weeks 1-13 of 2022 and lower in Niger compared to the previous year. The overall chronology of peaks in cases in Burkina Faso are comparable between the two years, with a slightly flatter curve in 2023. In Niger, a reactive vaccination campaign was implemented during epi week 1, which may have contributed to the lower number of cases in the weeks that followed, before the peak in epi weeks 9-10, when the district of Mirriah crossed the epidemic threshold.



Figure 5. Epidemic curves by country, weeks 1-13, 2023 (Note y-axes vary by country)



Appendix A: MenAfriNet Threshold Calculation

Indicator / Threshold	Numerator	Denominator	
Percentage of cases with specimens collected Threshold: > 80%	Number of suspected cases with specimens collected	Number of suspected cases	
Percentage of specimens specimen received at any lab in trans-isolate (T-I) Threshold: > 50%	Number of specimens received at any lab in trans-isolate (T-I) tube	Number of suspected cases with specimens collected	
Percentage of specimens specimen tested at labs other than the NRL by a Gram stain test Threshold: > 70%	Number of specimens specimen tested at district or regional lab by a Gram stain test	Number of suspected cases with specimens collect	
Percentage of specimens specimens received at the NRL Threshold: > 70%	Number of specimens received at NRL	Number of suspected cases with specimens collect	
Percentage of cases with a delay of <7 days between specimen collection date and date specimens received at NRL Threshold: > 50%	Delay between specimen collection date and date specimens received at NRL is within 7 days	Number of specimens received at NRL	
Percentage of specimens specimen received at the NRL and analyzed by a confirmatory test (culture, PCR) Threshold: > 90%	Number of specimens analyzed by a confirmatory test at NRL level (culture, PCR)	Number of specimens received at the NRL	
Percentage of specimens confirmed at the NRL for Hi, Spn, and Nm, and other pathogens. Threshold: > 30 %	Number of specimens confirmed at the NRL for Hi, Spn and Nm and other pathogens	Number of specimens analyzed by a confirmatory test at NRL (culture, PCR)	
Percentage of specimens contaminated for culture procedure at the NRL Threshold: < 10 %	Number specimens contaminated for culture procedure at the NRL	Number of specimens tested by culture at NRL*	

*This value changed from number of specimens received by an NRL (reflected in previous years' MenAfriNet bulletins) to number of specimens tested by culture at an NRL. This will be the denominator used to calculate this indicator in the future.