

## Epidemiological situation, weeks 1-52

During epidemiologic weeks 1-52 of 2023, a total of 4,732 suspect cases were reported from MenAfriNet districts that submitted data from Burkina Faso and Niger, an increase from 3,968 cases during 2022. In total, specimens were collected from 79% of suspect cases. Twenty percent of suspect cases were confirmed by PCR or culture tests, and 16% were probable cases (Table 1). MenAfriNet data sources used for analyses in this year's bulletin were provisional national case-based meningitis surveillance data from Burkina Faso and validated case-based meningitis surveillance data from Niger, both obtained through the STELab platform. Burkina Faso has completed its 2023 meningitis case-based data validation for 2023, but these data are under final review and not yet public.

Table 1. Epidemiological situation, weeks 1-52

	Burkina Faso	Niger	Total
Characteristics	N (%)		
<b>Epidemiologic</b>			
Population under Surveillance	22,882,385	25,369,415	48,251,800
MenAfriNet districts reporting in CBS system†	70/70 (100)	72/72 (100)	142/142 (100)
Aggregate suspected cases*	1,912	2,820	4,732
Case-based surveillance cases	1,891	2,734	4,625
Deaths <sup>∞</sup>	43(2)	146(5)	189(4)
<b>Laboratory<sup>§</sup></b>			
Specimens collected	1,854(98)	2,157 (79)	3,655(79)
Specimens received at NRL	1,171(62)	1,828(67)	2,999(65)
Specimens analyzed by PCR or culture <sup>‡</sup>	1,244 (66)	1,813(66)	3,057(66)
Specimens analyzed with gram stain	1,555(82)	414(15)	1,969(43)
Probable bacterial meningitis**	296(16)	232(8)	528(11)
Confirmed bacterial meningitis	177(9)	767(28)	944(20)

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

† 4/4 (Burkina Faso) and 17/17 (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

§ Denominator for laboratory characteristics = number of MenAfriNet suspected cases

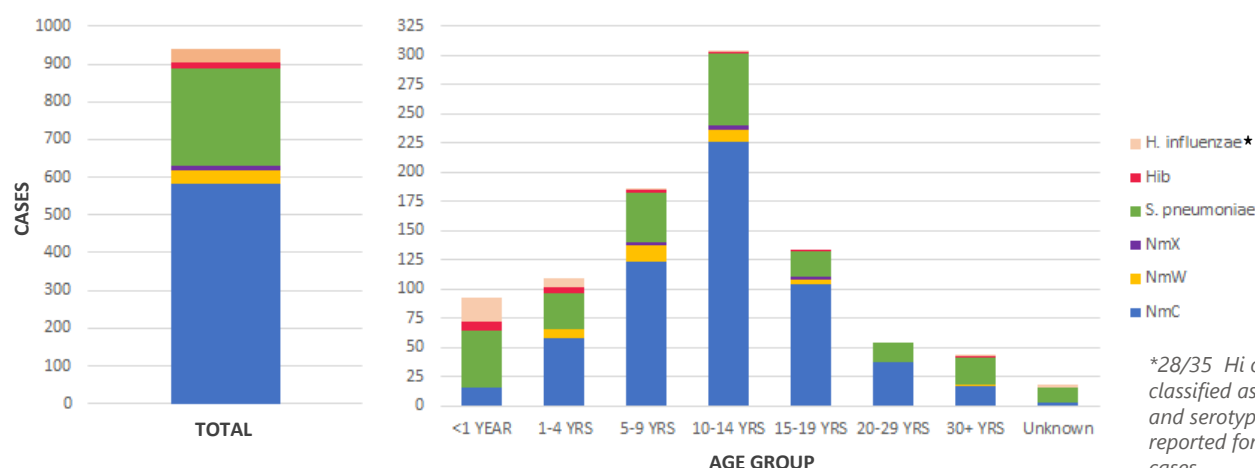
‡ CSF analyzed by PCR or culture at any lab (district, region, or national levels)

\*\* 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/mm<sup>3</sup> 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 2023 were *Neisseria meningitidis* serogroup C (NmC) and *Streptococcus pneumoniae* (Spn), accounting for 62% and 27% of total confirmed cases, respectively. Spn was most common in infants and children under 14 years of age. Confirmed cases among the 1-29 years age group were predominately due to NmC, with the 10-14 years age group most affected. Serogroups X and W accounted for 5% of total confirmed cases. *Haemophilus influenzae* type b (Hib) accounted for 2%, while Hi non b and Hi non-serogrouped cases accounted for 4% of confirmed cases.

Figure 1. Age distribution of confirmed bacterial meningitis pathogens

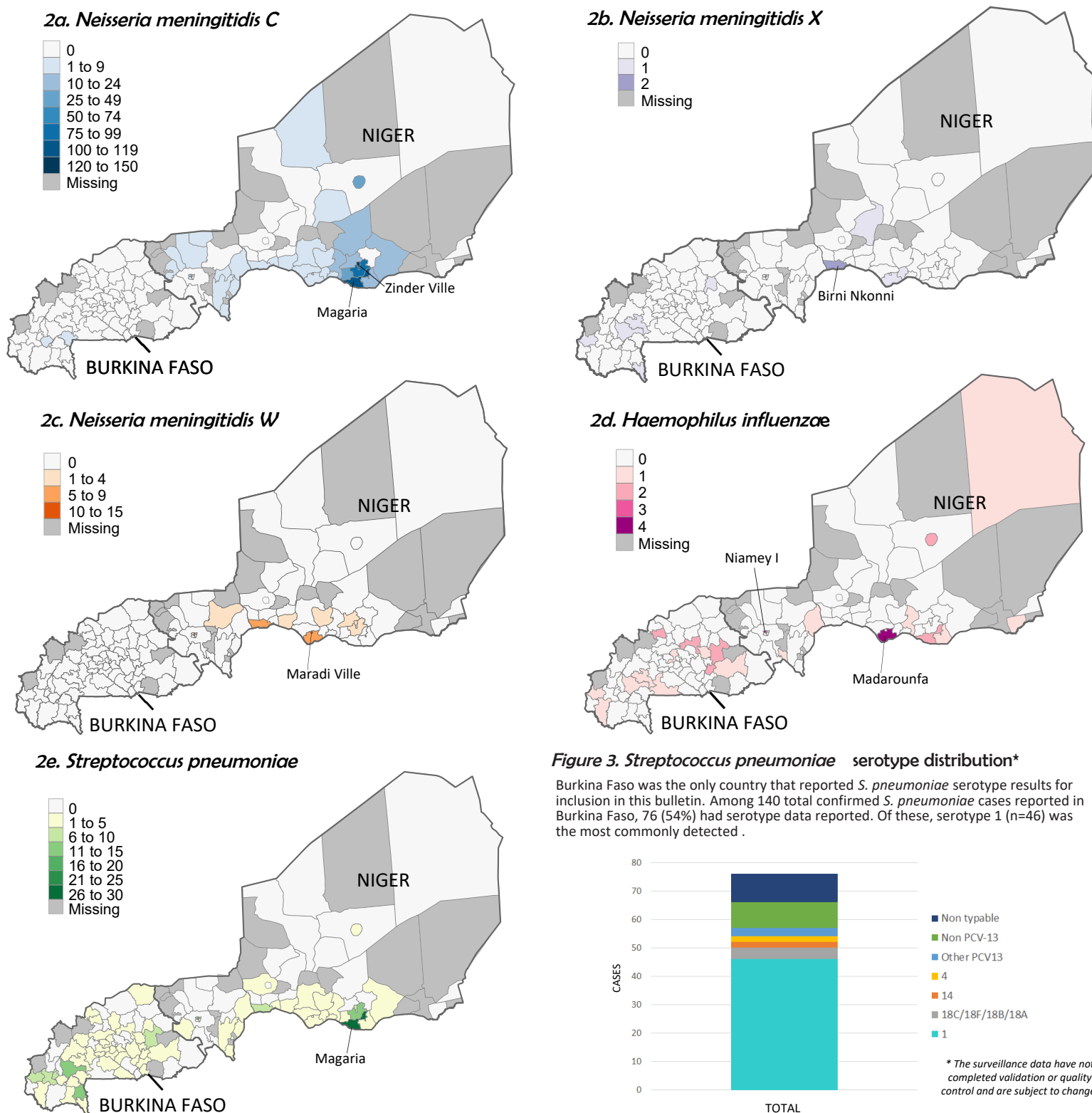


\*28/35 Hi cases were classified as Hi non-b in Niger, and serotype data were not reported for the remaining cases.

## 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 584 cases of serogroup C, 36 cases of serogroup W, and 10 cases of serogroup X confirmed. The highest reported incidence of serogroup W during 2023 was in Maradi Ville, Niger. Zero NmA cases were reported. In Niger, NmC outbreaks were reported in the Zinder and Agadez regions. During 2023, 1,796 out of 2,820 cases, and 118 out of 157 deaths were reported from Zinder, mostly from Dungass, Matameye, Mirriah and Zinder Ville districts. The 5-14 years age group was most impacted. In 2023, reactive vaccination campaigns were completed in health centers in Zinder including Dungass, Goure, Matameye, Mirriah and Zinder Ville Districts. In Burkina Faso, no district crossed the epidemic threshold in 2023.

Figures 2a-2d. District-level Distribution of *N. meningitidis* C, *N. meningitidis* W, *S. pneumoniae*, and *Haemophilus influenzae* across Burkina Faso and Niger

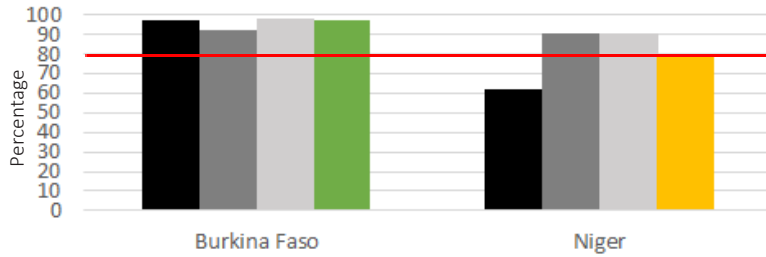


## MenAfriNet case-based surveillance performance indicators

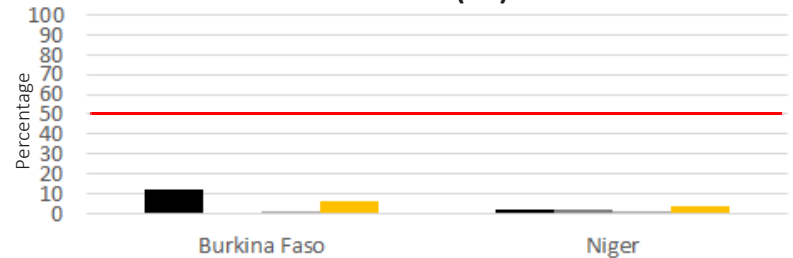
Specimen collection remained high in Burkina Faso, but the percent of specimens received at the NRL dropped slightly below the target in 2023 (Figures 4a and 4d). In Niger, specimen collection fell just below the target indicator, but percent of specimens received at the NRL increased compared to 2022 (Figures 4a and 4d). Specimen transport times from CSF collection to arrival at the NRL improved in both countries, with Burkina Faso surpassing the performance indicator for the first time in the last four years (Figure 4e). Once received at the NRL, both countries have high rates of confirmatory testing on these samples by PCR or culture (Figure 4f). Gram stain testing at periphery labs has been above the target percentage in Burkina Faso from 2020 to 2023. In Niger, greater than 88% of data for gram stain tests at a periphery lab were missing (2020-2024), so these numbers may be an underestimate of the true number of gram stain tests performed. Collaboration between lab, data, and surveillance officers in Niger will help to better inform how to improve data completeness through targeted support.

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

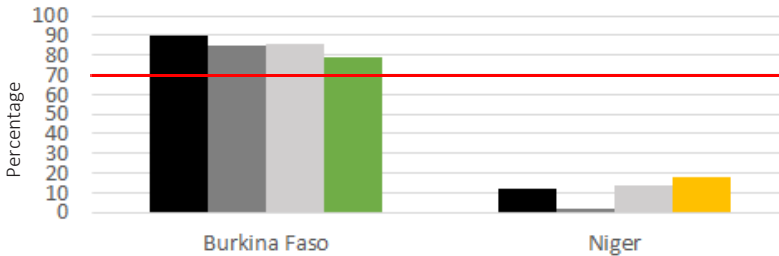
4a. Percent cases with specimen collected



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

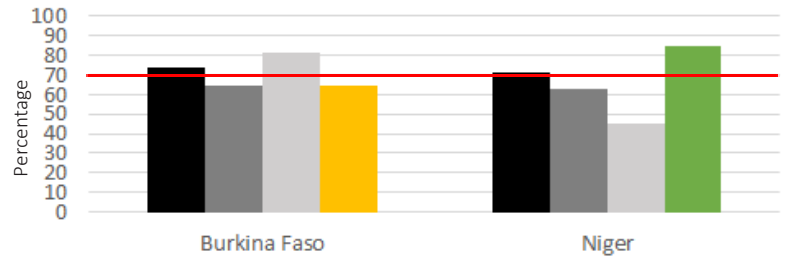


4c. Percent specimens tested by Gram stain at non-NRL lab\*

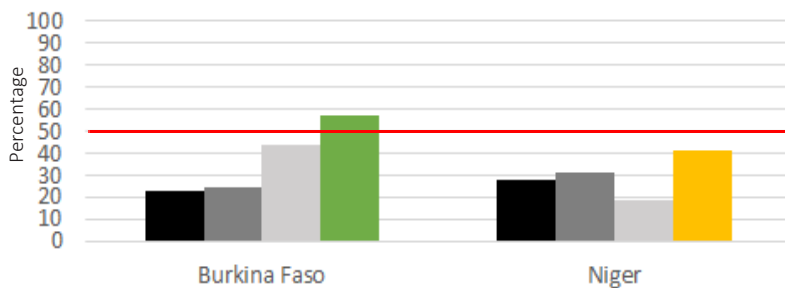


\*Greater than 88% of data for gram stain tests at a periphery lab were missing in Niger (2020-2024), so these numbers may be an underestimate of the true number of gram stain tests performed.

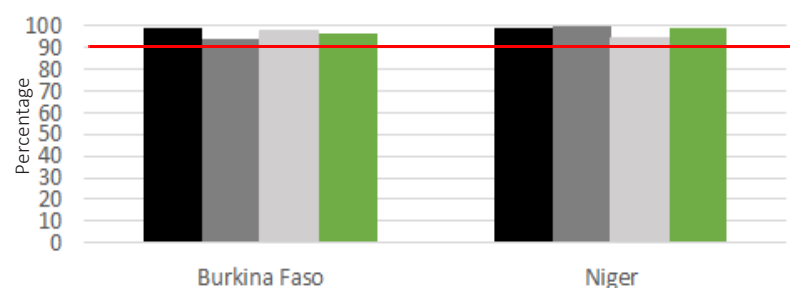
4d. Percent specimens received at NRL



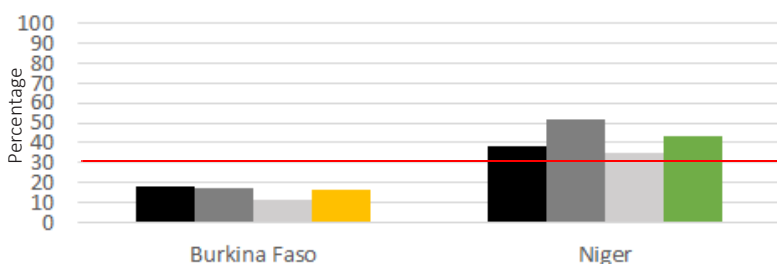
4e. Percent cases with <7 days delay between CSF collection and date of receipt at NRL



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



4g. Percent specimens confirmed at NRL for Hi, Spn, Nm, or other bacterial meningitis pathogen



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



\*Greater than 75% data for culture test results at the NRL are missing from the data used to calculate this indicator.

Key: 2020 2021 2022 2023 (meets target)

2023 (does not meet target)

Indicator target

### Epidemiologic trends over time

The number of total cases reported from Burkina Faso decreased from 2,140 cases in 2022 to 1,891 cases in 2023. In Niger, a significantly higher number of cases was reported in 2023 compared to the previous year, increasing from 1,828 to 2,734 cases. There was low case positivity in Burkina Faso throughout 2023; however, we still see a seasonal pattern of overall suspect cases, with more cases being reported during the epidemic season (weeks 1-26). In Niger, the seasonality is more pronounced with a clear peak in cases reported between weeks 15 and 17. The trends in cases reported in Niger is similar between 2022 and 2023, but with a higher magnitude during the 2023 meningitis season. Spn is the dominant pathogen among confirmed cases in Burkina Faso, and NmC is the primary pathogen among confirmed cases in Niger.

**Figure 5. Epidemic curves by country, weeks 1-52, 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.*