Surveillance Feedback Bulletin

MenAfriNet

2024 | Semester 1

Feedback bulletin on bacterial meningitis

Epidemiological situation, weeks 1-26

During epidemiologic weeks 1-26 of 2024, a total of 4,248 suspect cases were reported from MenAfriNet districts that submitted data from Burkina Faso and Niger. In total, specimens were collected from 96% of suspect cases. Thirty-one percent of suspect cases were confirmed by PCR or culture tests, and an additional 7% 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 Niger, both obtained through the STELab platform.

Table 1. Epidemiological situation, weeks 1-26

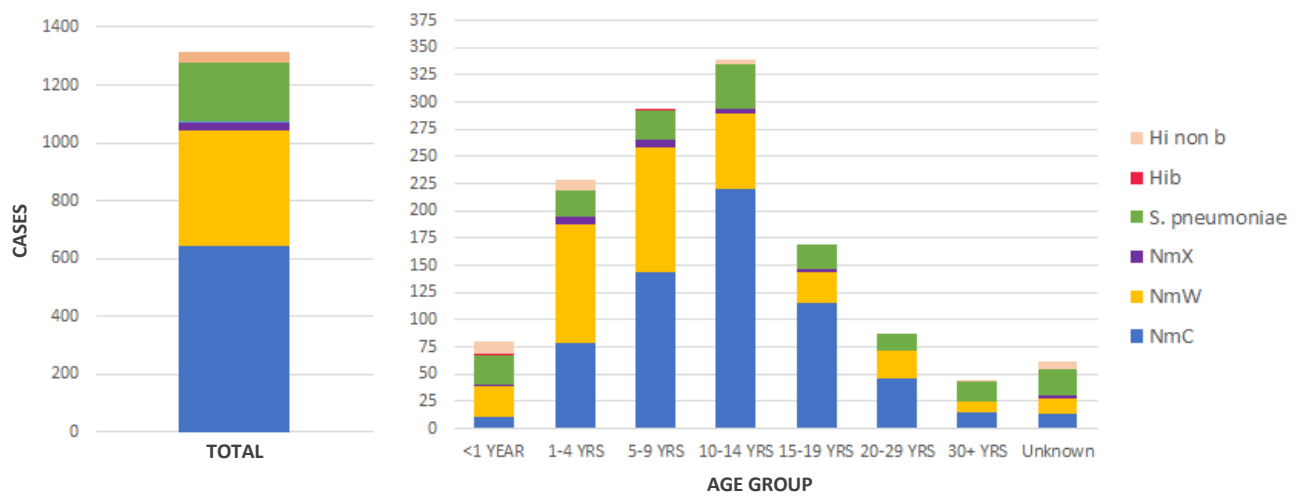
	Burkina Faso	Niger	Total
Characteristics	**N (%)**		
Epidemiologic			
Population under Surveillance	23,592,836	26,312,032	49,904,868
MenAfriNet districts reporting in CBS system†	69 / 70 (99)	72/72 (100)	141/142 (100)
Aggregate suspected cases*	929	3,228	4,157
Case-based surveillance cases	1,039	3,245	4,284
Deaths∞	32 (3)	133 (4)	165 (4)
Laboratory§			
Specimens collected	1,002 (96)	2,943 (91)	3,945 (92)
Specimens received at NRL	773 (74)	2,671 (82)	3,444 (80)
Specimens analyzed by PCR or culture¥	782 (75)	2,670 (82)	3,452 (81)
Specimens analyzed with gram stain	597 (57)	911 (28)	1,508 (35)
Probable bacterial meningitis**	192 (18)	128 (4)	320 (7)
Confirmed bacterial meningitis	120 (12)	1,199 (37)	1,319 (31)

Abbreviation: CBS, Case-based surveillance; CSF, cerebrospinal fluid; NRL, National Reference Lab; PCR, Polymerase Chain Reaction (real-time)
† 6/7 (Burkina Faso) and 9/9 (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 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 semester 1 of 2024 were *Neisseria meningitidis* serogroup C (NmC) and serogroup W (NmW), accounting for 49% and 30% of total confirmed cases, respectively. Serogroups C and W were most common in children age 1-14 years, while *S. pneumoniae* and NmW were most common in infants <1 year. Serogroup X (NmX) accounted for 2% of total confirmed cases. *Haemophilus influenzae* accounted for 3% of confirmed cases.

Figure 1. Age distribution of confirmed bacterial meningitis pathogens

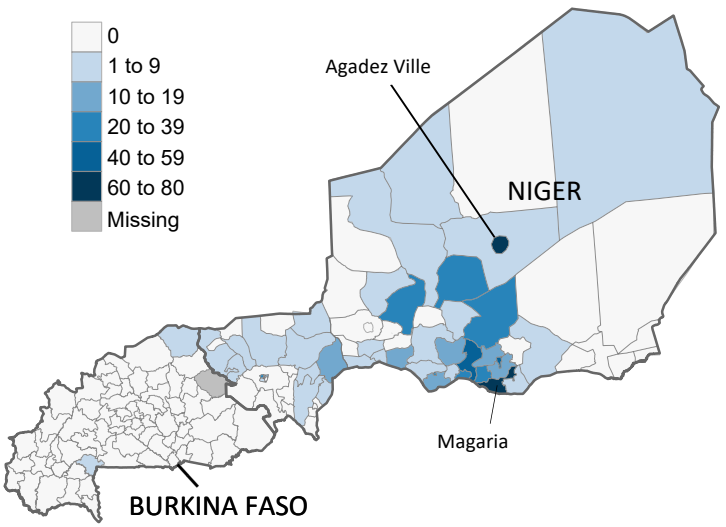


Spatial Distribution of Confirmed Bacterial Meningitis Pathogens

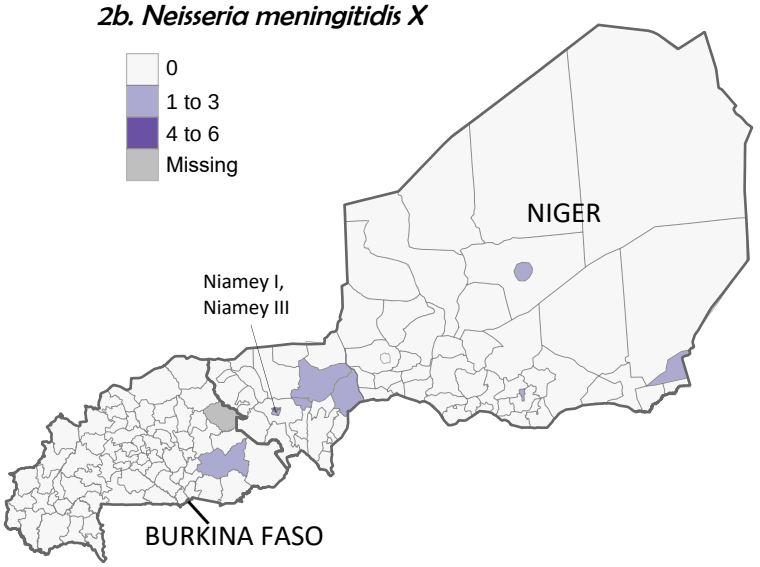
Among the available lab data reported from Burkina Faso and Niger, *Neisseria meningitidis* continues to be detected, with 644 cases of serogroup C, 399 cases of serogroup W, and 24 cases of serogroup X confirmed. Zero NmA cases were reported. The highest reported incidence of serogroup W during epidemiologic weeks 1-26 was in Niamey I and Niamey III, Niger. Niamey I, II, III, IV, and V reported outbreaks due to NmW. NmC outbreaks were reported in the Agadez, Tillaberi, Tahoua, and Zinder regions of Niger. Between May and July of 2024, the pentavalent meningococcal ACWYX conjugate vaccine (Men5CV) was introduced through reactive vaccination campaigns in 13 districts of the affected regions (Niamey I-V, Agadez Commune, Bilma, Tchirozerine, Kollo, Tahoua Commune, Gazaoua, Magaria, Aderbissinatt, and Mayahi).

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

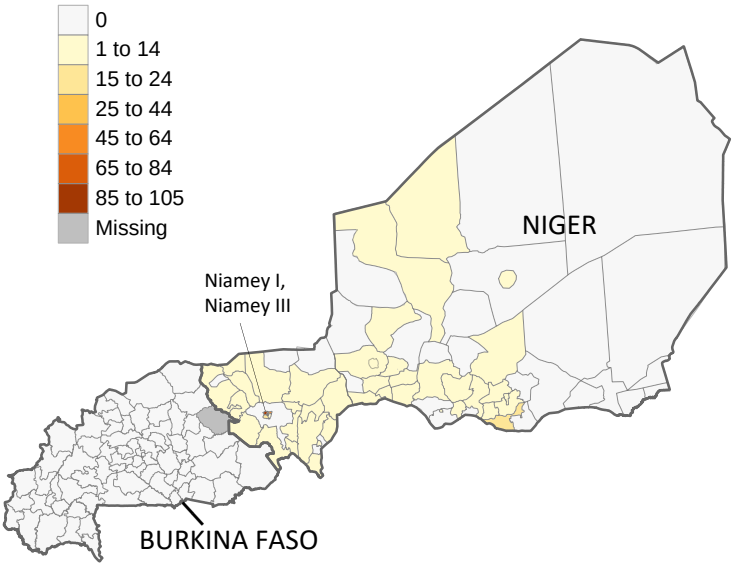
2a. Neisseria meningitidis C



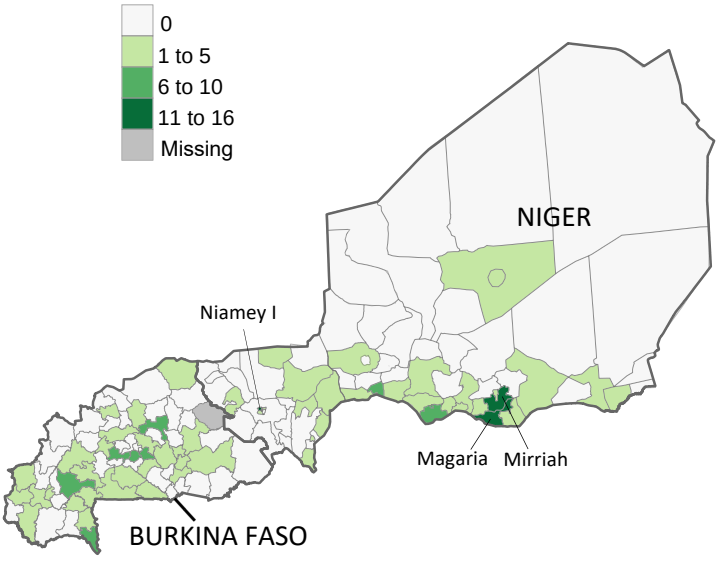
2b. Neisseria meningitidis X



2c. Neisseria meningitidis W



2d. Streptococcus pneumoniae



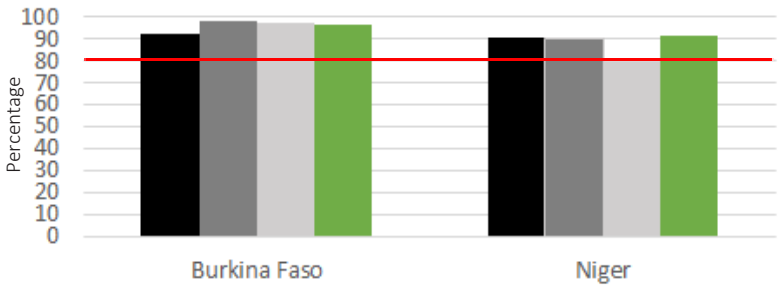
**S.pneumoniae serotype data were not available at the time of this bulletin's publication*

MenAfriNet case-based surveillance performance indicators

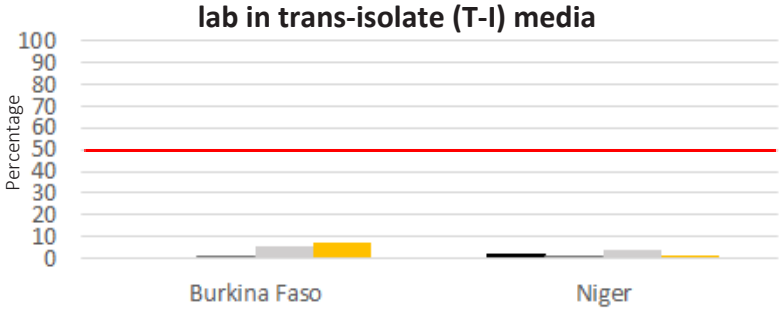
Specimen collection remained high in Burkina Faso and improved in Niger, with both countries crossing the target indicator (Figure 4a). Gram stain testing at periphery labs appears to have decreased in Burkina Faso and increased slightly in Niger (Figure 4c). The decline of gram testing in Burkina Faso may partially be due to incomplete lab data entry. Specimen transport times from CSF collection to arrival at the NRL improved in both countries, with Burkina Faso and Niger surpassing the performance indicator (Figure 4e). Once received at the NRL, both countries have high rates of confirmatory testing on these samples by PCR or culture (Figure 4f). While the data in Niger show an increase in culture contamination at the national level, it is important to note that the majority of culture data were missing, and this was based on 45 observations. Collaboration between lab, data, and surveillance officers in both countries will help to better inform how to improve data completeness and strengthen surveillance data quality.

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

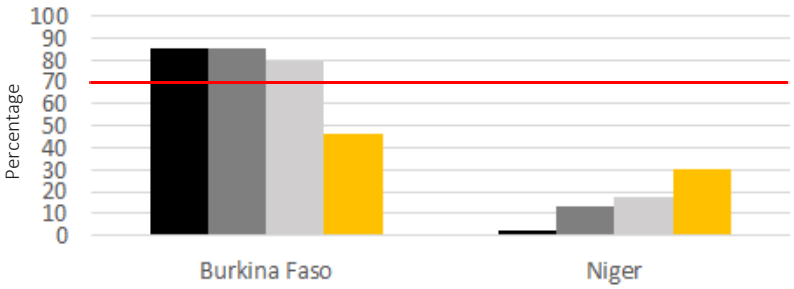
4a. Percent cases with specimen collected



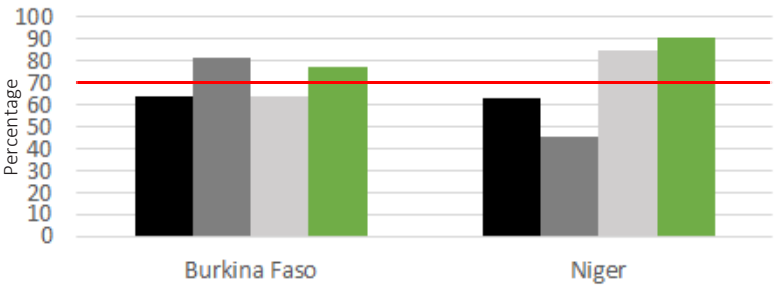
4b. Percent of specimens received at any lab in trans-isolate (T-I) media



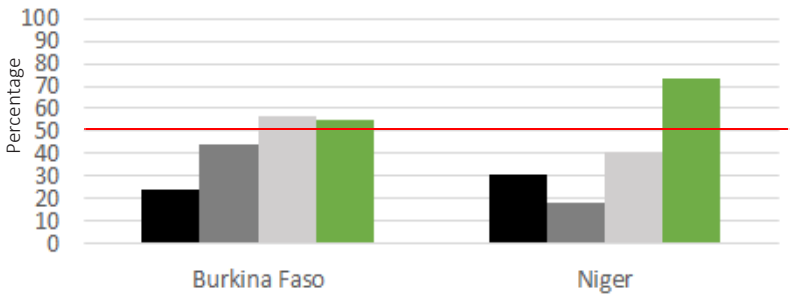
4c. Percent specimens tested by Gram stain at non-NRL lab



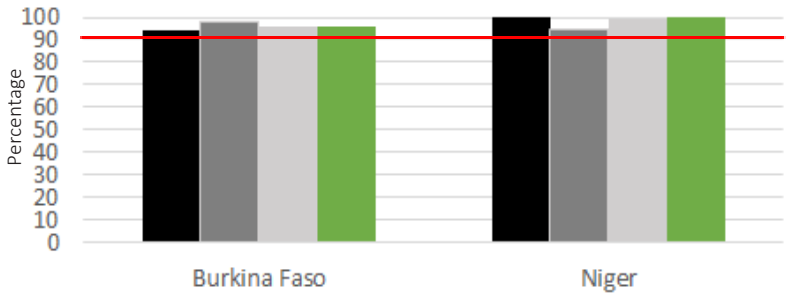
4d. Percent specimens received at NRL



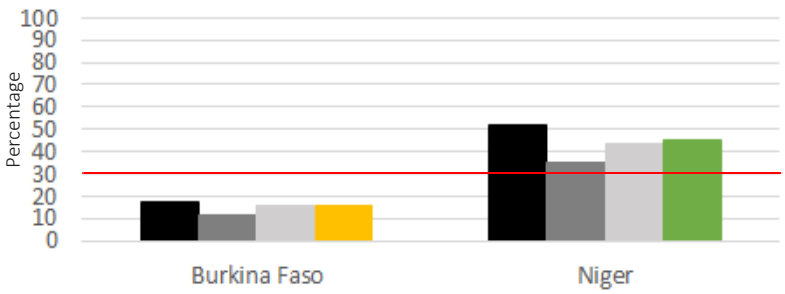
4e. Percent cases with <7 days delay between CSF collection and date of receipt at NRL



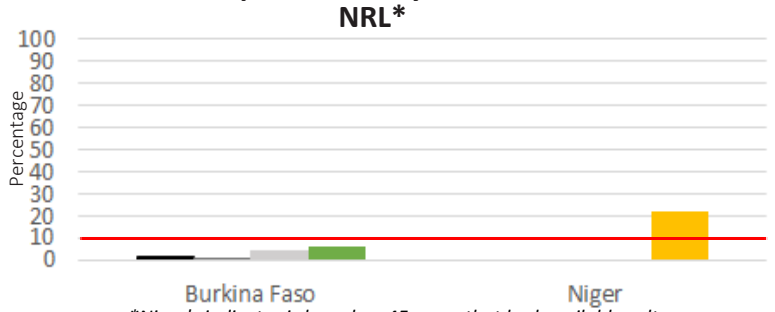
4f. Percent specimens analyzed by culture or PCR upon arrival at NRL



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*



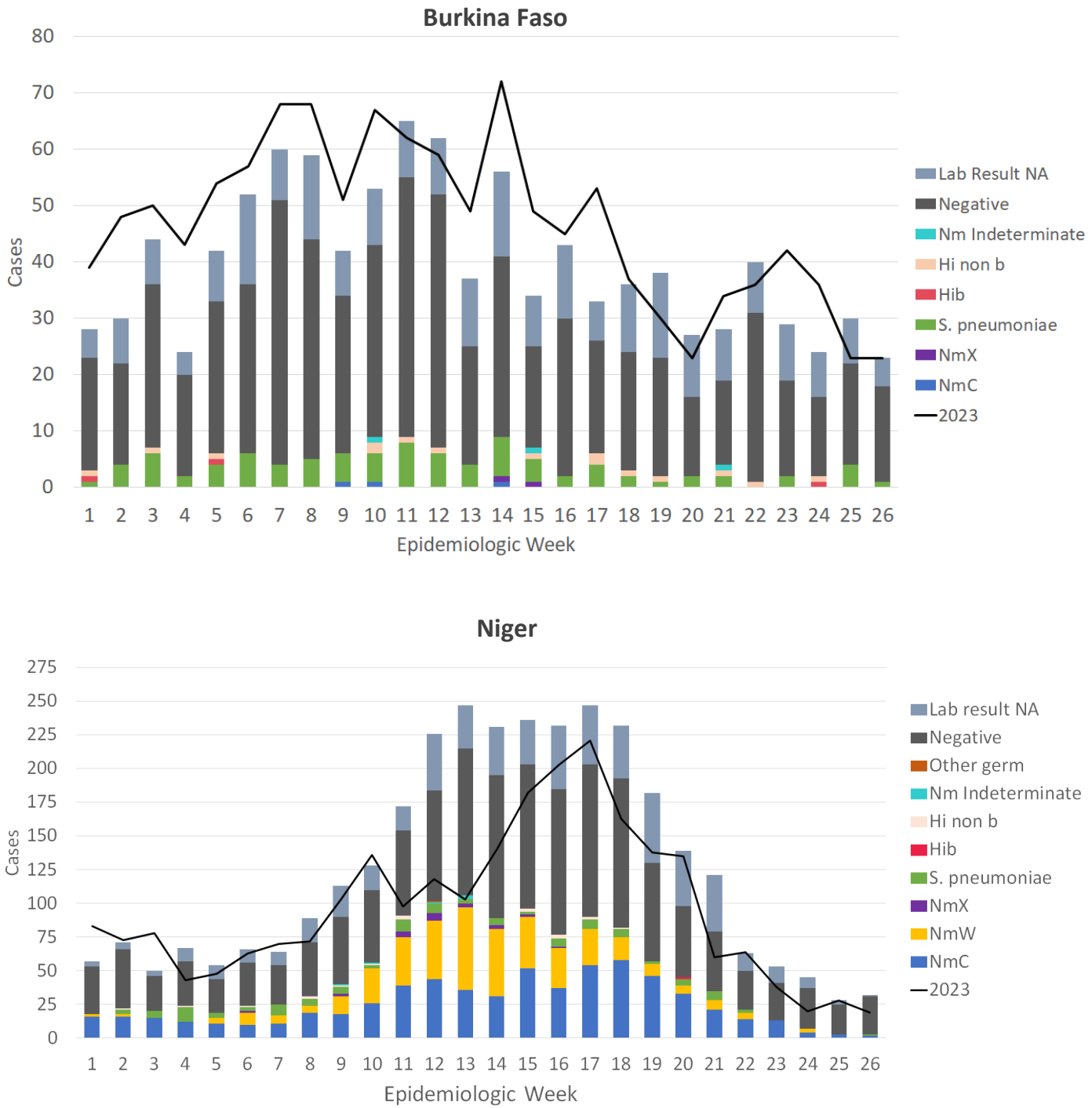
Niger's indicator is based on 45 cases that had available culture test results at the national level

Key: 2021 2022 2023 2024 S1 (meets target) 2024 S1 (does not meet target) Indicator target

Epidemiologic trends over time

The number of total cases reported from Burkina Faso decreased from 1,218 cases in 2023 semester 1 to 1,039 cases in 2024 semester 1. In Niger, a higher number of cases was reported in semester 1 of 2024 compared to the previous year, increasing from 2,499 to 3,245 cases. There was low case positivity in Burkina Faso throughout the first semester of 2024 with a weak seasonal pattern. The incidence of cases in Burkina Faso in 2024 is similar to that of the previous year. In Niger, the seasonality of case onset is more pronounced with a clear peak in cases between weeks 12 and 18. Niger's peak in cases this year lasted longer in than the previous year (weeks 12-18 in 2024 versus 15-18 in 2023). Spn was the dominant pathogen among confirmed cases in Burkina Faso, and NmC and NmW are the primary pathogens among confirmed cases in Niger.

Figure 5. Epidemic curves by country, weeks 1-26, 2024 (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.*