

Epidemiological situation, weeks 14 - 26

During epidemiologic weeks 14-26 of 2022, a total of 923 suspect cases were reported from MenAfriNet districts that submitted data from Burkina Faso and Niger, a decrease from 1,392 cases during the first quarter. Specimens were collected from 86% of suspect cases, and 17% of suspect cases were confirmed (Table 1). Due to the ongoing implementation of a new meningitis surveillance data management system in Niger, national case-based surveillance data were not accessible at the time of this bulletin's publication. Data sources used for analyses in this quarter's bulletin were national case-based meningitis surveillance data from Burkina Faso and case-based national reference laboratory data from Niger. Please note that the use of laboratory data from Niger likely results in an underestimate of the number of specimens collected reported below.

	Burkina Faso	Niger	Total
Characteristics	N (%)		
<i>Demographics</i>			
Population under Surveillance	22,184,452	24,465,620	46,650,072
Districts submitting data†	51/70 (73)	30/72 (42)	81/142 (57)
Aggregate suspected cases*	394	454	848
MenAfriNet suspected cases	469	NR	469
Deaths [∞]	15	NR	15
<i>Laboratory</i> [§]			
Specimens collected	452 (96)	345 (76)	797 (86)
Specimens received at NRL	306 (65)	345 (76)	652 (71)
Specimens analyzed by PCR or culture [¥]	235 (50)	345(76)	582 (63)
Specimens analyzed with gram stain	370 (79)	NR	370 (79)
Probable bacterial meningitis**	105 (22)	NR	105 (22)
Confirmed bacterial meningitis	46 (10)	113 (25)	159 (17)

Abbreviation: CSF, cerebrospinal fluid; NRL, National Reference Lab; PCR, Polymerase Chain Reaction (real-time). NR, not reported

† MenAfriNet districts submitting case-based data (denominator = Total number of MenAfriNet districts performing case-based surveillance)

* Data source: Weekly district-level aggregate reports of clinically defined meningitis cases and meningitis-related deaths. This number is used as total suspect cases in Niger due to the unavailability of national case-based surveillance data and is used as the denominator to calculate certain performance indicators.

[∞] Deaths listed as outcome in case-based data

[§] Denominator for laboratory characteristics = number of MenAfriNet suspected cases

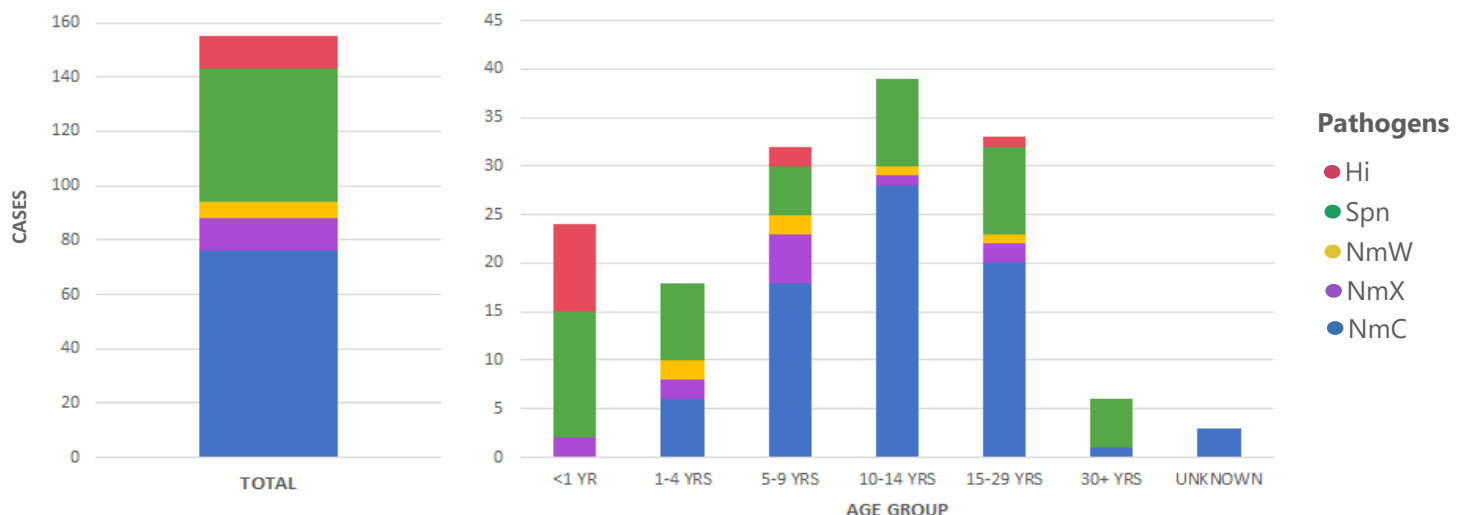
[¥] CSF analyzed by PCR or culture at any lab (district, region, or national levels)

** Tested negative for all pathogens and serogroups. 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 were *Neisseria meningitidis* serogroup C (NmC) and *Streptococcus pneumoniae* (Spn), together accounting for 81% of total confirmed cases. NmC was most common in children and young adults between 5-29 years old, and Spn was most common in infants <1 year of age. The number of confirmed NmW cases increased in quarter 2, affecting individuals aged 1-29 (Figure 1).

Figure 1. Age distribution of confirmed bacterial meningitis pathogens



Spatial Distribution of Confirmed Bacterial meningitis Pathogens

Neisseria meningitidis continues to be detected throughout Burkina Faso and Niger, with serogroup C (NmC) as the dominant serogroup. In total, 76 confirmed cases were reported to be caused by NmC, 12 by NmX, and 6 by NmW. Zero NmA cases were reported. The number of NmC cases detected during the second quarter of 2022 decreased from the previous quarter as the outbreak in Niger resolved following reactive vaccination. Compared to the previous quarter, an increase of confirmed NmW cases was detected from one case in quarter 1 to 6 cases in quarter 2, all occurring in Niger. The district of Madarounfa reported three cases, and single cases were confirmed in Ville de Niamey, Ville de Zinder, and Dakoro.

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

Figure 2a. *Neisseria meningitidis* C

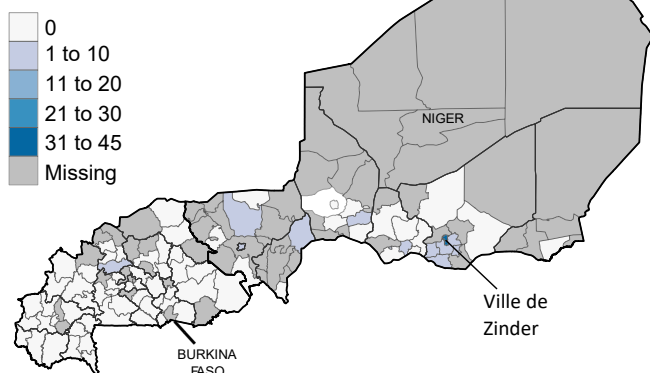


Figure 2b. *Neisseria meningitidis* X

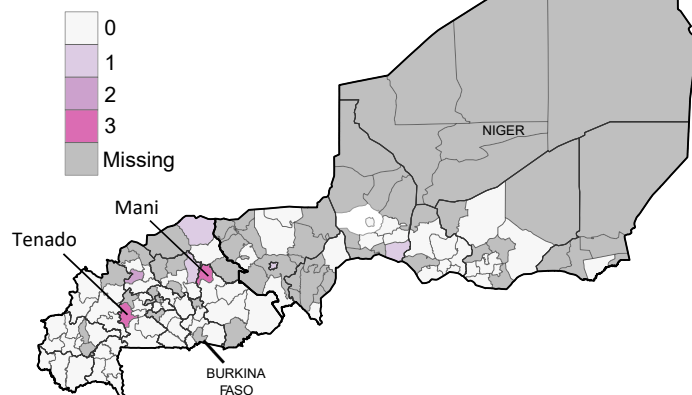


Figure 2c. *Neisseria meningitidis* W

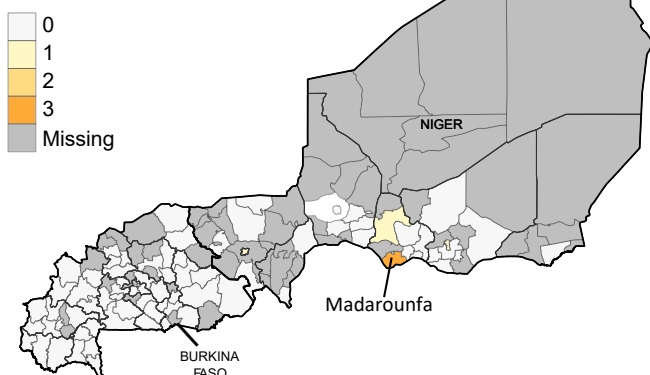


Figure 2d. *Haemophilus influenzae*

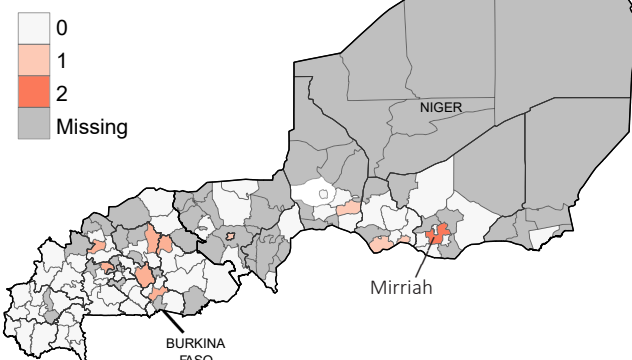


Figure 2e. *Streptococcus pneumoniae*

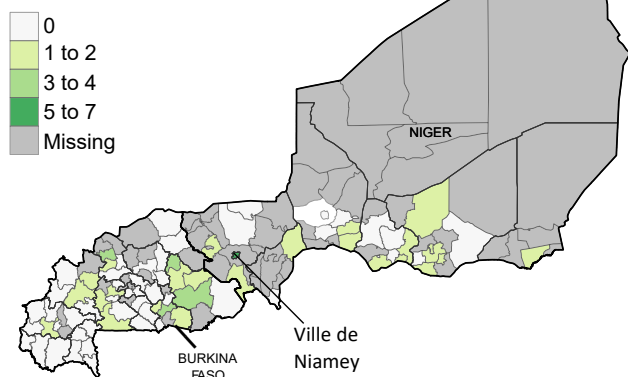
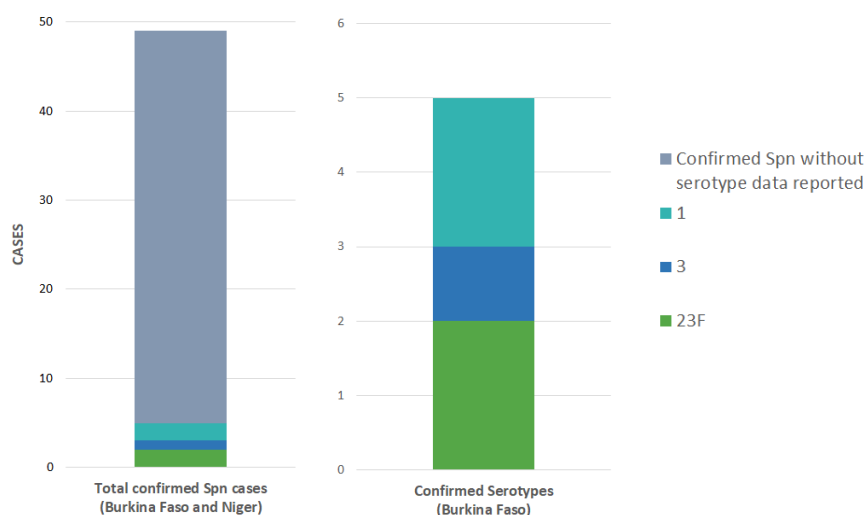


Figure 3. *S. pneumoniae* serotypes reported by country

Burkina Faso was the only country that reported *S. pneumoniae* serotype results for inclusion in this bulletin. Among 26 total confirmed *S. pneumoniae* cases reported in Burkina Faso, 5 (19%) had serotype results reported. Of these, serotypes 1 (n=2) and 23F (n=2) were the most commonly detected (Figure 3).

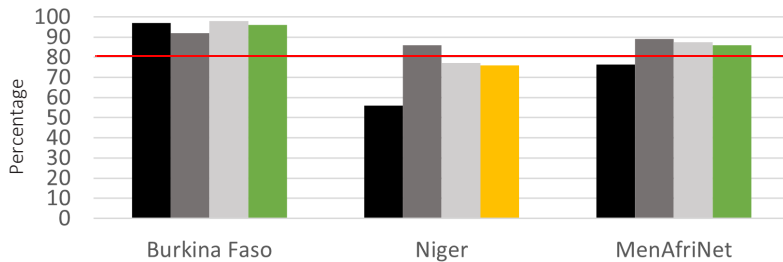


MenAfriNet case-based surveillance performance indicators

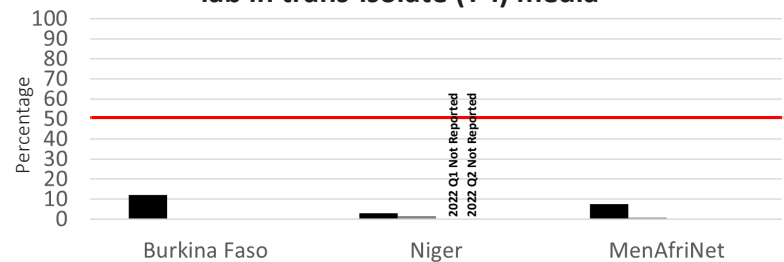
Specimen collection remains high in Burkina Faso (Figure 4a), however, the percent of specimens received at the NRL and analyzed by a confirmatory test did not meet the indicator targets during the second quarter (4c and 4d). In Niger, specimen collection falls slightly short of the performance indicator, but the percentage of specimens received at the NRL and analyzed for confirmatory lab testing remained high. While specimen transport times remain below the target in both countries, a significant improvement was observed in Niger during quarter 2 (Figure 4e). In both countries, further investigation is needed to understand reasons behind the low percent or missing data associated with specimens received at any lab in TI media, and the extent to which this might affect culturing capacity at an NRL.

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

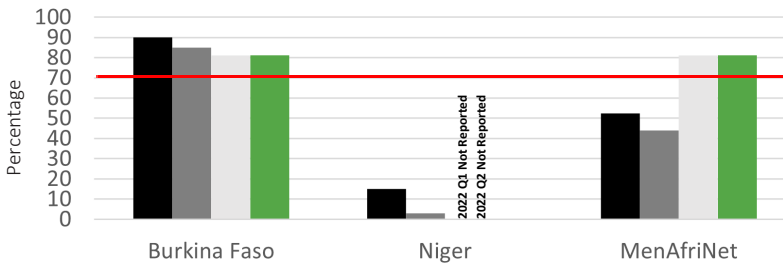
4a. Percent cases with specimen collected



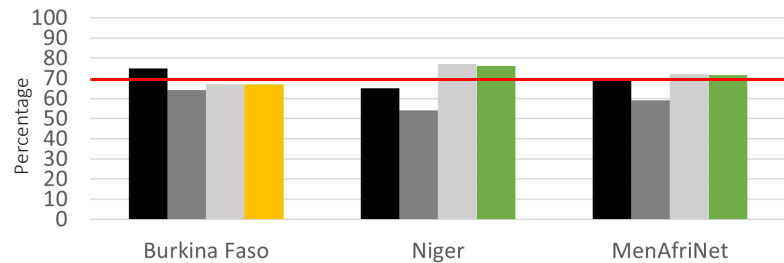
4b. Percent of specimens received at any lab in trans-isolate (T-I) media



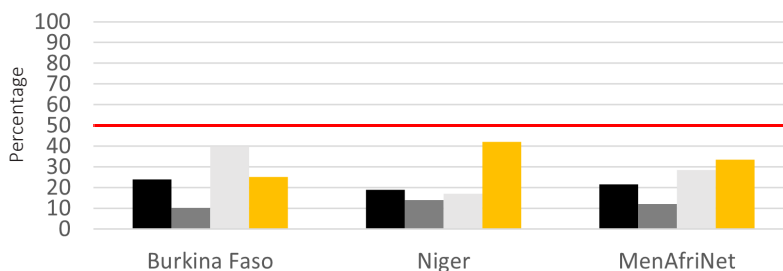
4c. Percent specimens tested by Gram stain at non-NRL lab



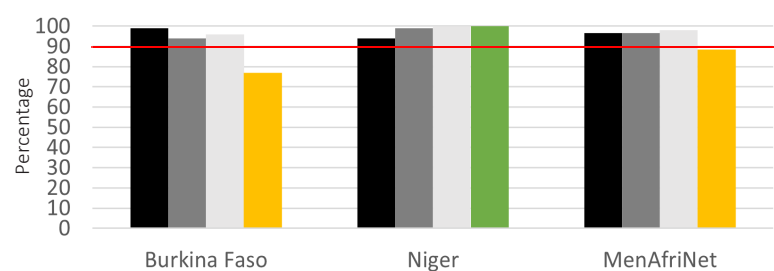
4d. Percent specimens received at NRL



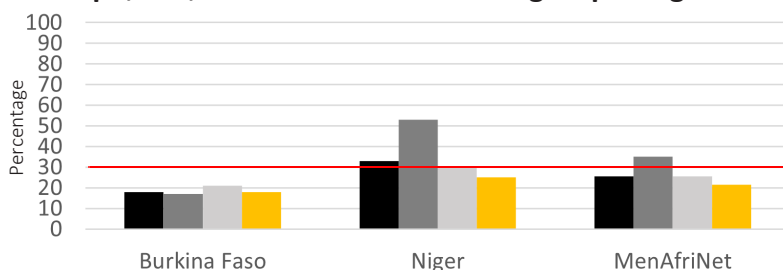
4e. Percent cases with <7 days delay between CSF collection and date of receipt at NRL



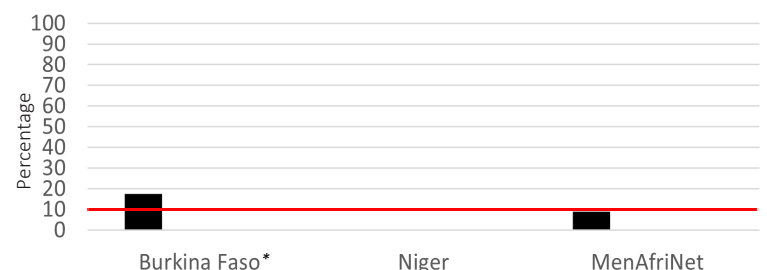
4f. Percent specimens analyzed by culture or PCR upon arrival at NRL



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



*Note: 92%, 90%, and 80% of data used to calculate this indicator were missing in 2021, 2022 Q1, and 2022 Q2, respectively. As a result, the low contamination reported during these years is likely an underestimate of the true rate of contamination.

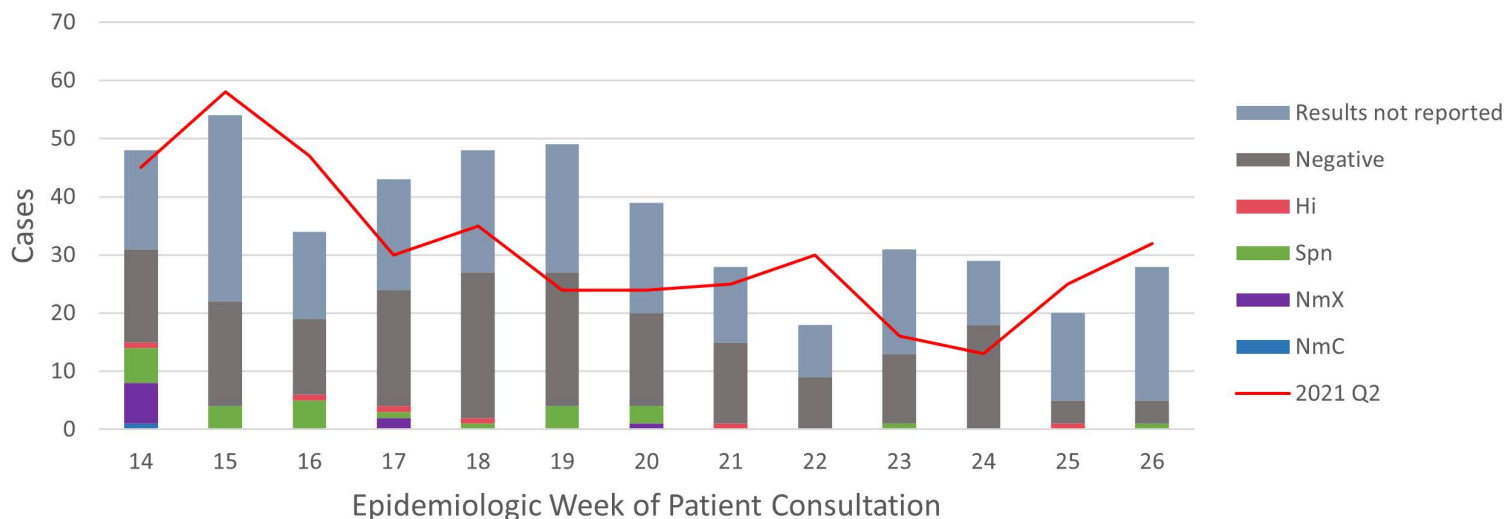
Key: 2020 2021 2022 Q1 2022 Q2 (meets target) 2022 Q2 (does not meet target) Indicator target

Epidemiologic trends over time

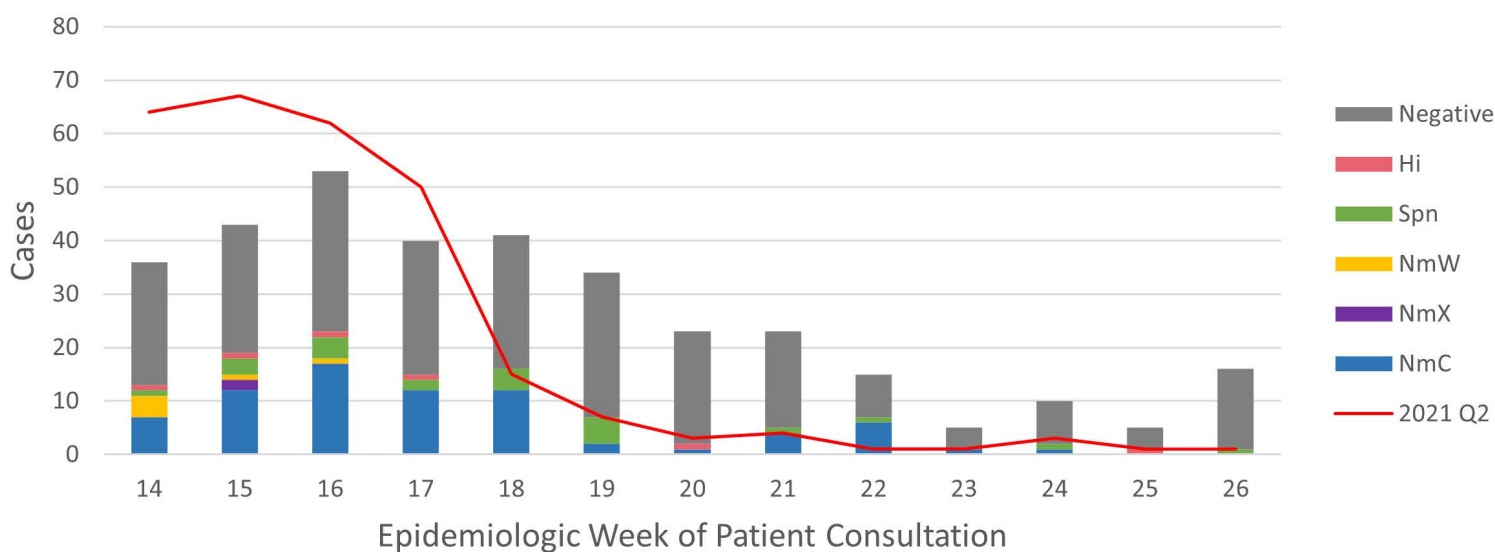
The cumulative number of cases reported from epi weeks 14-26 was higher in both Niger and Burkina Faso compared to the same period during 2021. The overall trends of cases reported in Q2 in 2021 and 2022 were similar in Burkina Faso. In Niger, however, the reduction of cases appears to be more gradual in 2022 Q2 without a sudden decline, as recorded in EW 18 of 2021. Pathogens were detected most during the first half of the second quarter during epi weeks 14-20 in Burkina Faso, and weeks 14-22 in Niger. In both countries, a decrease in cases is observed as the meningitis season ends (EW 26). The proportion of cases with results not reported in Burkina Faso is relatively consistent throughout EW 14-26. Further action and country engagement is needed to understand the barriers to confirmatory lab testing capacity in Burkina Faso.

Figure 5. Epidemic curves by country, weeks 14-26, 2022 (Note y-axes vary by country)

Burkina Faso



Niger



The COVID-19 pandemic negatively impacted bacterial meningitis surveillance, laboratory, and data management capacities throughout the meningitis belt. The urgent in-country demands and needs of the COVID-19 response resulted in reduced availability of health staff dedicated to meningitis surveillance, control, and outbreak response activities in countries within the MenAfriNet consortium. This is reflected in the epidemiologic and laboratory data published in this bulletin.

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 less than 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 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.*