



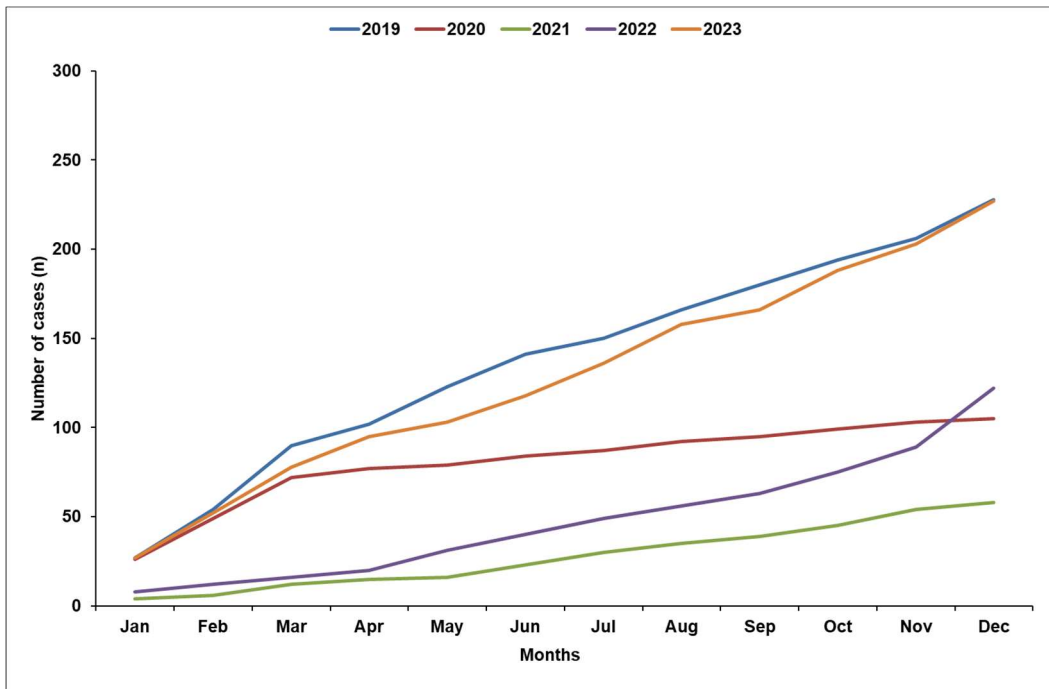
I·H·M·

**National Reference Centre for
Meningococci and *Haemophilus influenzae*
(NRZMHi)****Data of the laboratory surveillance of meningococci (2023)****Introduction**

The German National Reference Centre for Meningococci and *Haemophilus influenzae* (NRZMHi) has been assigned for the laboratory surveillance of invasive meningococcal disease (IMD) by the Robert Koch Institute (RKI). In 2023, 389 samples from 347 individuals were submitted to the NRZMHi. *Neisseria meningitidis* was confirmed in samples of 327 patients, 226 of them were from primarily sterile compartments (latter figure corresponds to the number of cases with IMD). In 33 samples (clinical samples and non-viable meningococci) detection of meningococci was carried out exclusively by molecular methods (15% out of 226). During the same period, 253 IMD cases were notified to the RKI (data as of 02.02.2024, SurvStat@RKI). Given that all IMD cases processed at the NRZMHi were notified retrospectively, a 90% coverage of IMD cases at the NRZMHi is assumed (87% in 2022).

In 2023, the incidence of IMD in Germany (0.3/100,000, data as of 02.02.2023, SurvStat@RKI) increased significantly compared to the previous year (2022: 0.17/100,000).

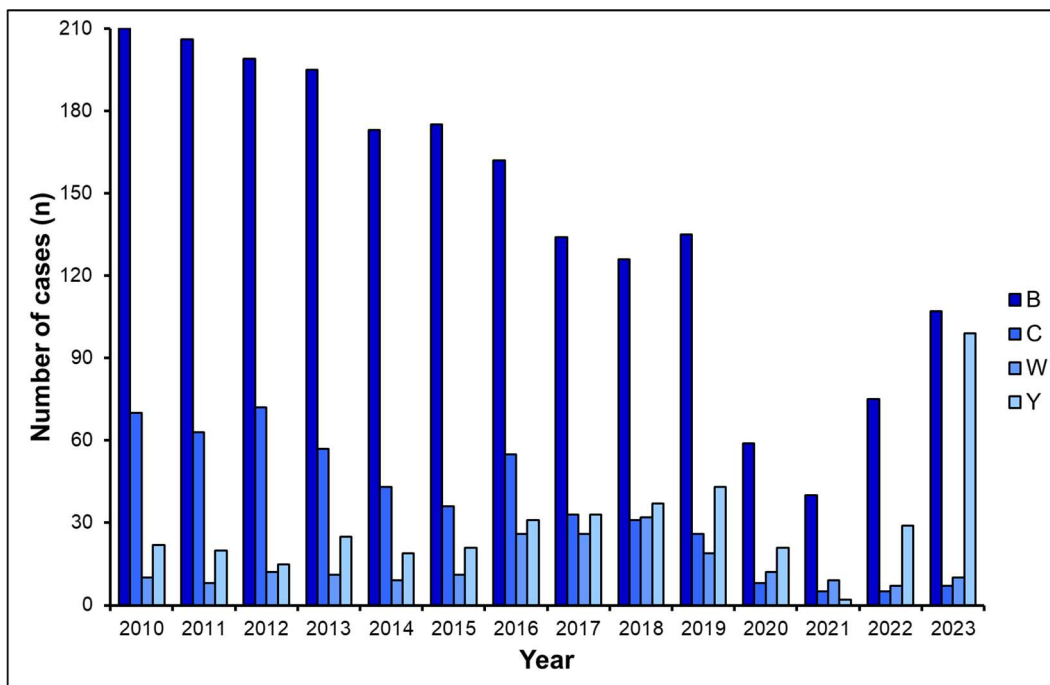
Trend of IMD cases 2019-2023



Cumulative graph of the number of IMD cases processed at the NRZMHi 2019 - 2023.

After the COVID-19 pandemic, the number of IMD cases submitted to the NRZMHi gradually increased since spring 2022 and reached the pre-pandemic level in 2023.

Frequency of serogroups B, C, W and Y (2010-2023)



The increase of MenY cases in 2022 continued and resulted in a similar level of MenB and MenY cases in 2023.

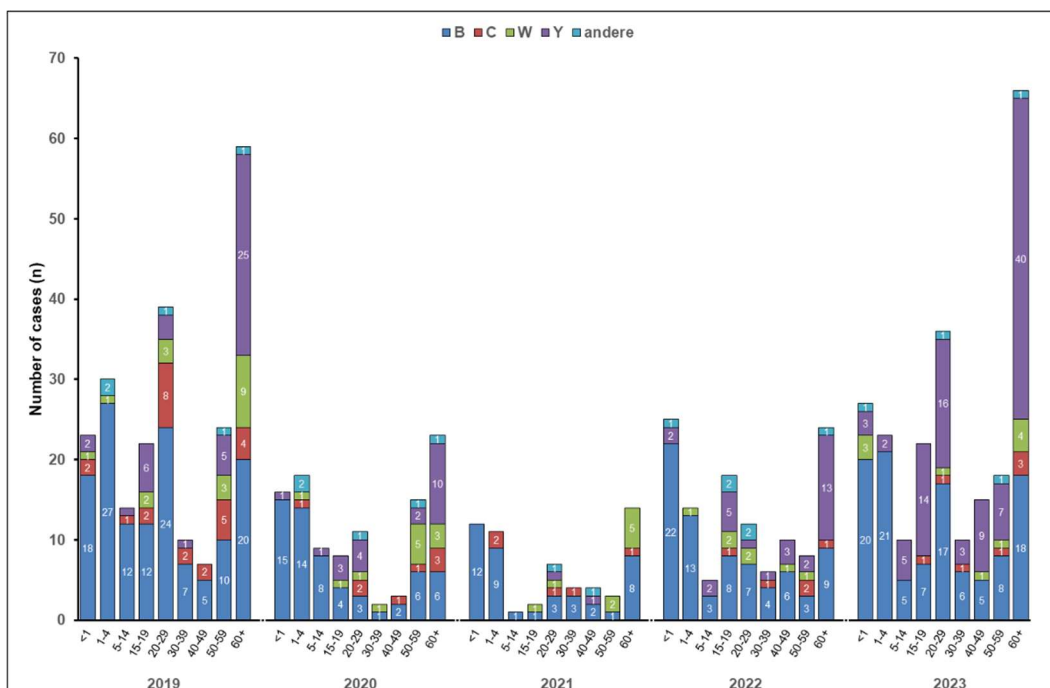
Serogroups according to federal states (2023)

Federal states	Serogroups					IMD cases analysed at the NRZMHI	Incidence/ 100.000
	B	C	W	Y	others*		
BW	14	1	1	16	1	33	0,34
BY	12		1	25	2	40	0,33
BE	8	1	1	2		12	0,35
BB	4			3		7	0,31
HB	2					2	0,44
HH	6	1		1		8	0,53
HE	6		2	10		18	0,3
MV	3					3	0,18
NI	9			8		17	0,22
NW	21	3	3	22		49	0,35
RP	5			2		7	0,19
SL	3			1		4	0,4
SN				3	1	4	0,15
ST	5		1			6	0,27
SH	1		1			2	0,17
TH	2			3		5	0,24
unkn.	6	1		2		9	

*others comprise serogroup E (n=2) cases. Furthermore, in two cases the serogroup could not be determined.

BW: Baden-Wuerttemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB Bremen, HH: Hamburg, HE: Hesse, MV: Mecklenburg-Western Pomerania, NI: Lower Saxony, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia, unkn: unknown

IMD cases according to age groups (2019 - 2023)



In comparison to case numbers in 2019, the proportion among MenY cases increases significantly in the age groups older than 4 years.

Antimicrobial susceptibility of invasive meningococcal isolates

(According to EUCAST breakpoints 2023)

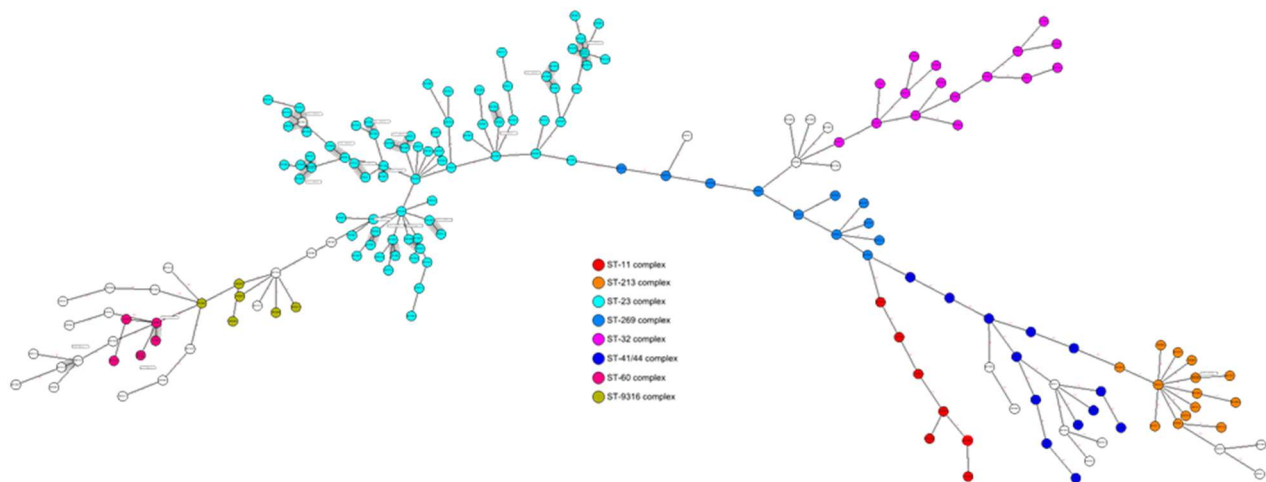
Antibiotics	susceptible	resistant
Penicillin	176	17 (8.8%)
Cefotaxime	191	2
Ciprofloxacin	192	1
Rifampicin	190	3

The proportion of penicillin-resistant isolates is comparable to 2022 (7.2%).

One meningococcal isolate was resistant to Pen, Ctx and Rif and another two isolates were resistant to Pen and Ctx and to Pen and Cip, respectively. Furthermore, one isolate harboured a β -lactamase

Meningococcal typing based on whole genome sequencing

Whole genome sequencing was applied to 189 IMD isolates from 2023 and analysed by core genome multilocus sequence typing.



The figure shows a minimum spanning tree of the genome sequences based on the cgMLST scheme of Ridom SeqSphere+. Isolates assigned to common clonal complexes according to multilocus sequence typing are labelled in different colours.

It is assumed that strains which differ in six or less allele differences belong to a genetic cluster (shaded in grey). In total 18 genetic clusters were detected (15 MenY clusters and 3 MenB clusters). Only few cases were epidemiologically linked.

Disclaimer

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