

Epidemiology and surveillance of meningococcal disease in Spain

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Background

Towards the end of 2000 meningococcal C conjugate (MCC) vaccine was included in the Spanish childhood vaccination schedule at 2, 4 and 6 months of age. At the same time a catch-up campaign using this vaccine was undertaken. Although this campaign was mainly targeted at children aged under six years, in 15 out of 19 regions this age range was extended up to adolescence. Reported cases of meningococcal serogroup C disease (MenC disease) have since declined continuously. The global effectiveness of the vaccine is 95% and coverage is approximately 98% in routine scheduled vaccination.

Methods

In Spain meningococcal disease is statutorily notifiable by all doctors, cases being reported on a weekly basis along with demographic, clinical and microbiological information. Regional Public Health Authorities receive, collate and analyse the information before sending it to the National Centre of Epidemiology. 80% of the total reported cases are confirmed. PCR as well as culture analysis is used for confirmation. Vaccine efficacy (VE) was calculated by means of the screening method ($VE = 1 - [PCV \cdot (1 - PPV)] / [(1 - PCV) \cdot PPV]$).

Results

Meningococcal disease due to serogroup C have undergone a significant reduction since the introduction of conjugate vaccine compared to the season preceding the vaccination (overall reduction 65% and 90% in children under 10 year of age).

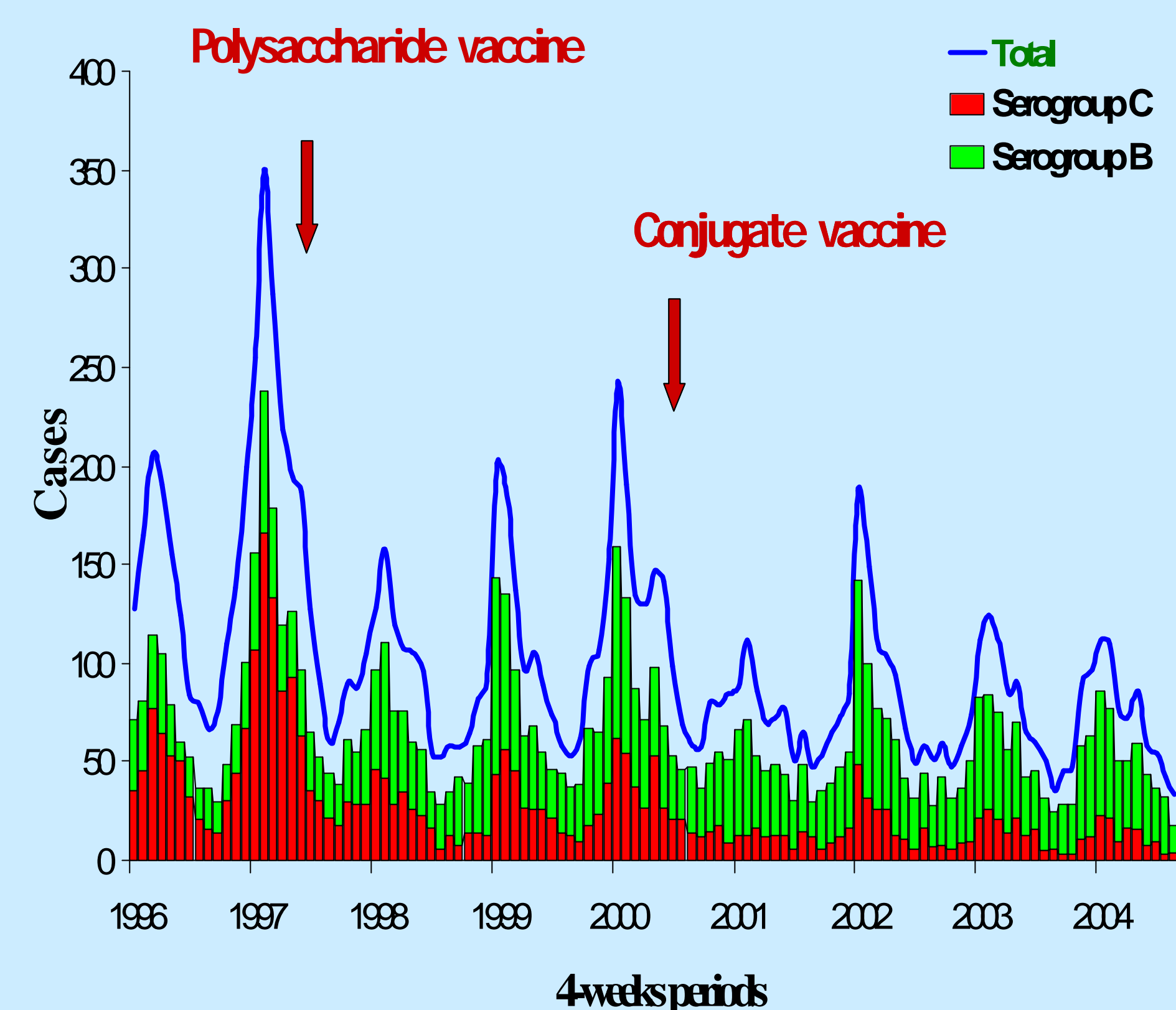
Other serogroups (except B no substantial change) have undergone slight increases.

CFR due to serogroup C was high (27%) in the 2003-04 epidemiological year.

MCC vaccine displayed high effectiveness values [catch-up campaign (97.7%), routinely vaccinated (94.7%)]. However, a loss of vaccine protection ($p < 0.001$) was in evidence when time elapsed since vaccination was taken into account

	Deaths		CFR	
	1999-00	2003-04	1999-00	2003-04
Serogroup B	45	36	7,3	6,9
Serogroup C	53	40	12,9	26,8
Total deaths	134	93	8,2	9,6

Meningococcal disease. Total cases and serogroups B and C. Spain 1996-2004.



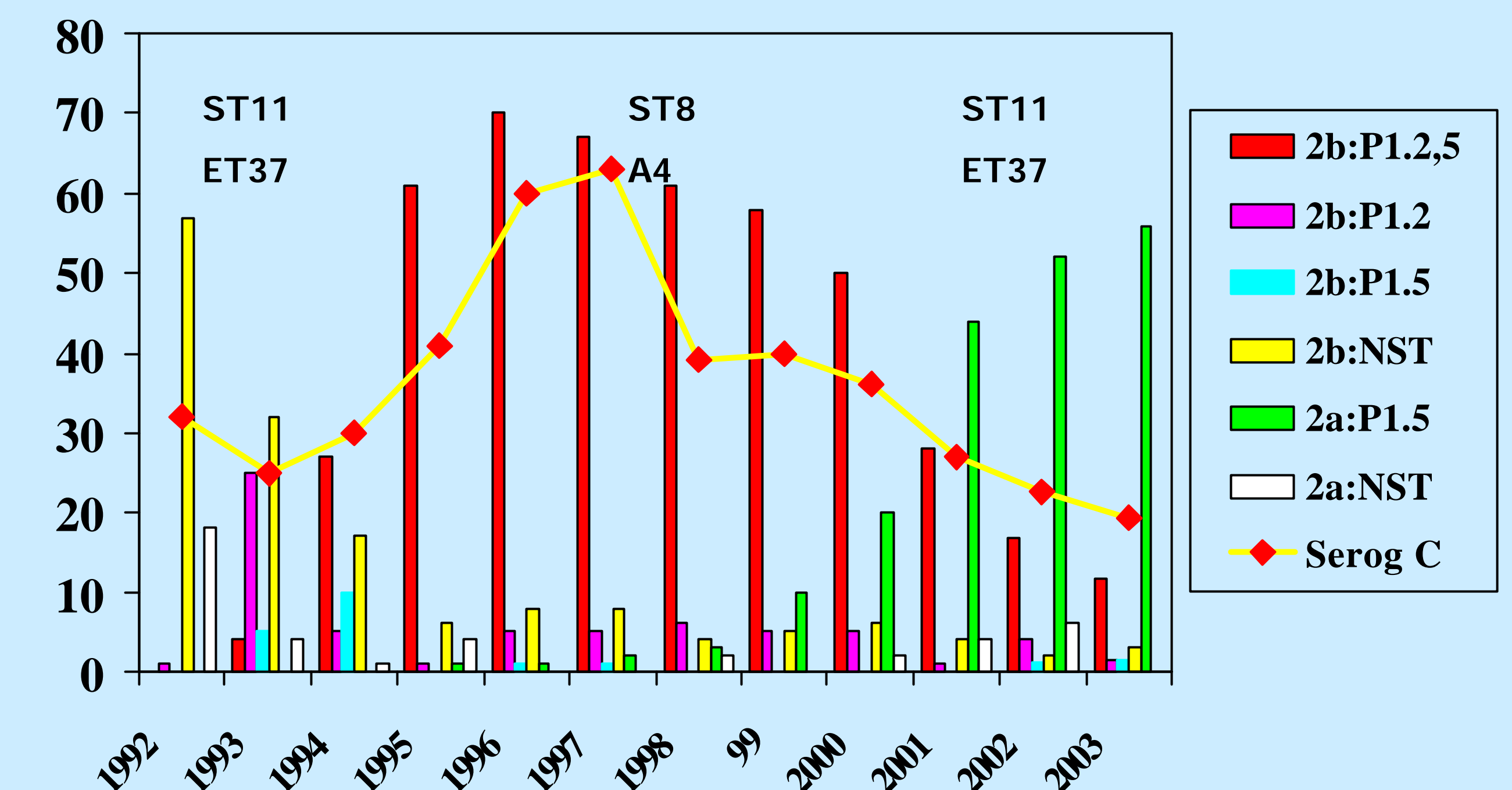
Cases and incidence rate/100,000 of meningococcal disease. Percentage change of 2003-2004 from 1999-2000

Case ascertainment	1999-2000		2003-2004		% Change
	Cases	Rates	Cases	Rates	
Total confirmed	1,085	2,72	741	1,81	- 33,5
SG B	615	1,54	516	1,26	- 18,2
SG C	411	1,03	149	0,36	- 65,0
Non grupable	31	0,08	41	0,10	25,0
Other SG	20	0,05	28	0,07	40,0
SG Unknown	8	0,02	7	0,02	-
Probable cases	541	1,35	224	0,55	- 59,3
Total	1,26	4,07	965	2,35	- 42,3

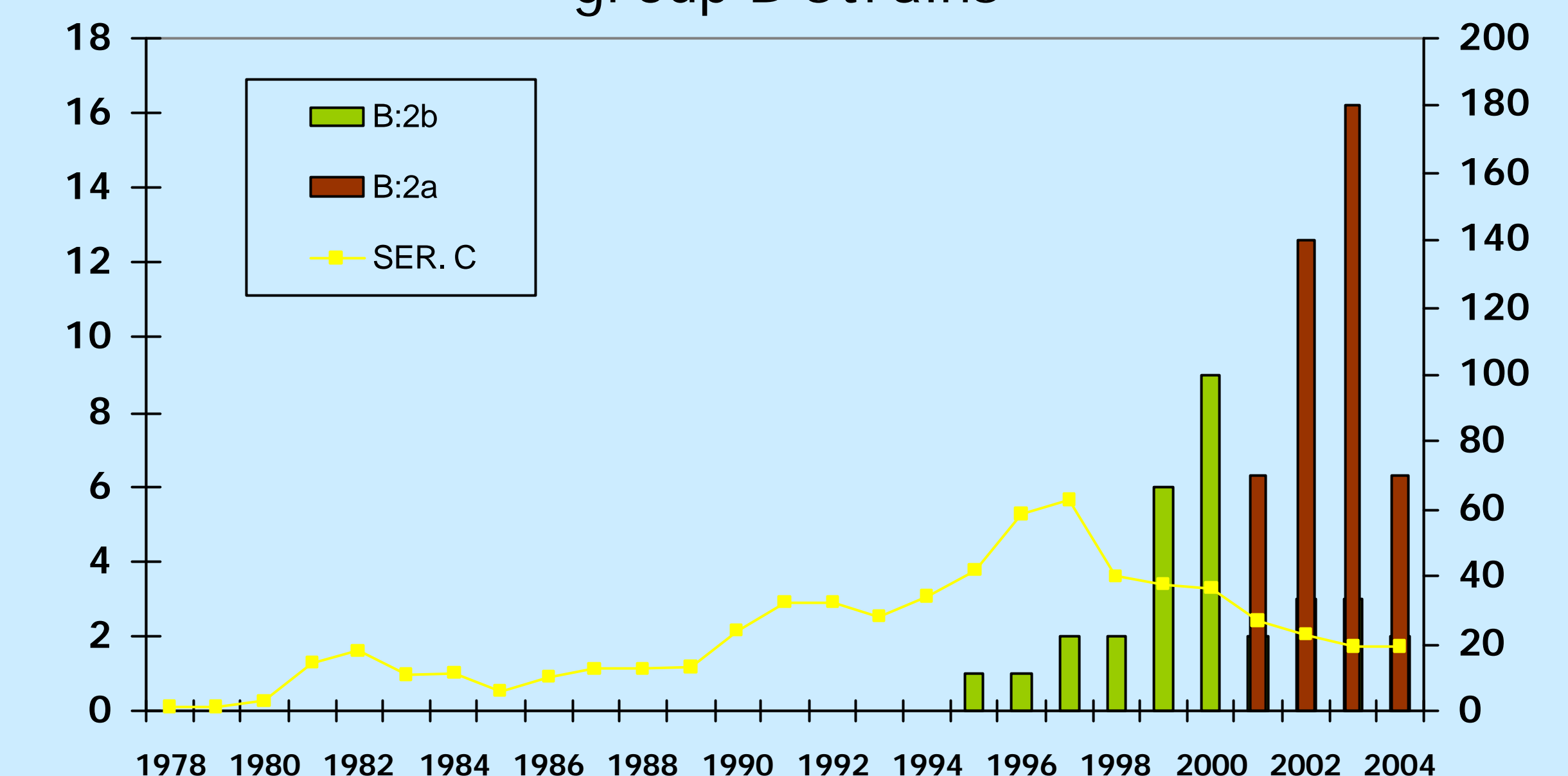
Vaccine effectiveness (VE) of catch-up and routine childhood immunization programs by time elapsed since vaccination

Program	Time since vaccination	Time since vaccination	Cases (vaccinated)	VE (95% CI)
CATCH-UP	Overall		63 (15)	97.7 (95.8-98.7)
	Time since vaccination	< 1yr	31 (3)	99.2 (97.4-99.7)
		1-2 yr	12 (3)	97.5 (85.1-95.6)
		> 2 yr	20 (9)	93.9 (73.3-98.6)
ROUTINE PROGRAMS	Overall		48 (21)	94.7 (90.6-97.0)
	Time since vaccination	< 1yr	29 (5)	98.5 (96.0-99.4)
		1-2 yr	12 (9)	76.7 (18.3-95.4)
		> 2 yr	7 (6)	55.7 (-356.0-95.7)

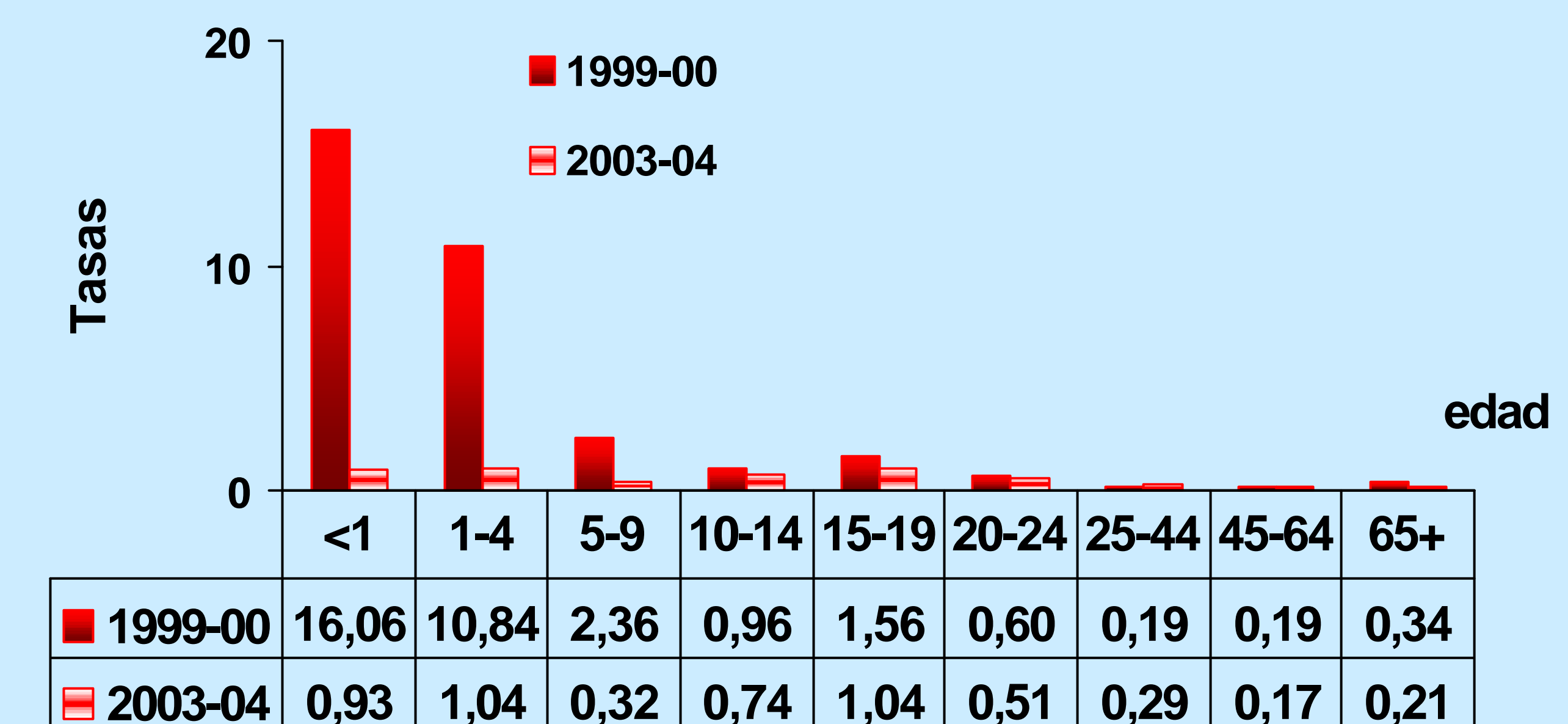
Distribution of the most common Sero/Subtypes in group C strains



Distribution of the most common serotypes in group B strains



Serogroup C incidence rate/100,000 by age group and epidemiological year



Conclusions

Meningococcal disease due to serogroup C has undergone a significant reduction since the introduction of conjugate vaccine.

Conjugate vaccine yields high efficacy values, but a loss of vaccine protection was in evidence when time elapsed since vaccination was taken into account.

Overall CFR (specially for serogroup C) was high in the 2003-04 epidemiological year.

A change in serogroup C genotype has been detected in recent years.

The prevalence of B:2a serotypes has shown a slight increase in recent epidemiological years.