

Supplementary table 1

Overview of confounding factors considered for inclusion in this study. Factors found to be significant in univariate analyses only were not considered for inclusion in this study.

Risk factor	Association with meningococcal disease, Odds ratio (95% CI)	Included/excluded from analysis (with reason)	Reference
Exposure to person from jail	18.5 (3.9-90.8)	Excluded (population level data unavailable)	23
Overcrowding	10.7 (3.9-29.5)	Included	21
Recent analgesia use	2.4 (1.5-4.0)	Excluded (population level data unavailable)	21
Number of days at social gatherings	1.8 (1.2-2.6)	Excluded (population level data unavailable)	21
Sharing food, drink, pacifier	1.6 (1.0-2.7)	Excluded (population level data unavailable)	21
Respiratory infection in household member	1.5 (1.0-2.5)	Included as rate of ILI	21
Freshman in dormitories	3.6 (1.6-8.5)	Not formally included (population level data unavailable), but rates of crowding may act as a proxy	28
Sharing bedrooms with 2 or more people	7.4 (1.5-36.1)		19
Preceding illness	2.9 (1.4-5.9)	Not formally included (population level data unavailable), but rates of ILI may act as a proxy	29
Kissing	3.7 (1.7-8.1)	Excluded (population level data unavailable)	29
University student	3.4 (1.2-10)	Excluded (population level data unavailable)	29
Religious observance	0.09 (0.02-0.6)	Excluded (population level data unavailable)	29
Meningococcal vaccination	0.12 (0.04-0.4)	Taken into consideration in analysis by exclusion of vaccine serogroups where relevant	29

Supplementary table 2

Distribution of the co-variables for the Norwegian dataset used for adjusted analyses.

Variable	Age group	Gender	Mean	Standard deviation (SD)	Minimum	Maximum
Smoking Prevalence (%)	16-19	M,F	24.13	4.04	18.20	33.50
	20-24	M,F	37.19	4.60	28.80	46.60
	25-29	M,F	41.00	4.70	31.40	48.70
	30-34	M,F	42.72	3.38	33.80	48.40
	34-39	M,F	41.99	3.44	34.70	47.60
	40-44	M,F	38.49	2.62	34.80	42.90
	45-49	M,F	40.08	3.37	32.40	45.10
	50-54	M,F	36.24	3.79	28.70	43.30
	55-59	M,F	35.32	4.89	18.60	42.40
≥60	M,F	26.50	2.68	21.50	33.10	
Flu (weekly rate)			905.02	575.02	207.00	2638.00
Crowding rate (%)			10.17	3.31	7.00	16.00