The Cost of Illness of Invasive Meningococcal Disease Caused by Neisseria Meningitidis Serogroup B in the Netherlands, a Holistic Approach.

Appendix I. Supplementary Material

METHODS

Table S1. Consumer price index in the Netherlands[1]

Year	CPI	CPI Multiplier
2000	75.06	1.471
2001	78.17	1.412
2002	80.74	1.367
2003	82.43	1.339
2004	83.48	1.322
2005	84.88	1.301
2006	85.82	1.286
2007	87.20	1.266
2008	89.37	1.235
2009	90.44	1.221
2010	91.59	1.205
2011	93.73	1.178
2012	96.04	1.149
2013	98.44	1.121
2014	99.40	1.111
2015	100.00	1.104
2016	100.32	1.100
2017	101.70	1.085
2018	103.44	1.067
2019	106.16	1.040
2020	107.51	1.027

Notes: 2015=100

Abbreviations: CPI, consumer price index.

Table S2. Direct costs of the acute phase of invasive meningococcal disease and sequelae in the first year (1st year) and the subsequent years (2nd+ year).

	Costs 1st year			Costs 2nd + year			
	Base case	**Lower value**	**Upper value**	**Base case**	**Lower value**	**Upper value**	**Distribution**
IMD Acute phase							
Healthcare costs[a]							
0–6 m	€10,928	€7,223	€15,571	-	-	-	Gamma
6–24 m	€8,727	€6,819	€13,351	-	-	-	Gamma
2–4 y	€8,727	€7,223	€12,543	-	-	-	Gamma
5–9 y	€8,031	€7,223	€10,231	-	-	-	Gamma
10–19 y	€8,727	€7,223	€12,432	-	-	-	Gamma
20–64 y	€9,332	€6,939	€12,534	-	-	-	Gamma
≥65 y	€13,621	€5,088	€20,538	-	-	-	Gamma
Public health response costs[b]	€175.70	SD: 35					Gamma
Sequelae[c]							
Hearing loss							
Cochlear implant	€46,018	€36,815	€55,222	€3,574	€1,255	€5,893	Gamma
Moderate bilateral	€2,960	€2,368	€3,552	€225	€180	€270	Gamma
Moderate unilateral	€989	€791	€1,187	€157	€125	€188	Gamma
Neurological disability							
Severe neurological	€3,600	€2,253	€4,947	€570	€121	€1,020	Gamma
Mental retardation / low IQ	€8,401	€6,721	€10,081	€8,401	€6,721	€10,081	Gamma
Speech problems	€4,106	€3,285	€4,927		-		Gamma
Motor deficits	€2,437	€1,950	€2,925	€1,394	€1,116	€1,673	Gamma
Limb amputation	€74,473	€66,069	€82,877	€16,680	€13,344	€20,017	Gamma
Epilepsies / seizures	€669	€536	€803	-	-	-	Gamma
Skin scarring	€1,305	€724	€1,886	-	-	-	Gamma
Renal disease	-	-	-	€146	€117	€176	Gamma
Blindness / severe visual impairment	€2,750	€734	€4,767	€2,750	€734	€4,767	Gamma

Psychological impairments							
ADHD	€5,113	€4,091	€6,136	€5,113	€4,091	€6,136	Gamma
Depression 18 y-	€76	€60	€91	€76	€60	€91	Gamma
Depression 18 y+	€655	€524	€786	€655	€524	€786	
Anxiety 18 y-	€76	€60	€91	€76	€60	€91	Gamma
Anxiety 18 y+	€432	€346	€519	€432	€346	€519	
Separation anxiety	€76	€60	€91	€76	€60	€91	Gamma

Notes: [a] IMD acute phase costs were calculated and include: costs for GP visit, hospitalisation and Intensive Care Unit. [b] Public health response costs were based on the assumption of Welte et al, 2004[2] and were updated with costs retrieved from KNMP kennisbank[3]; medicijnkosten[4]; and Hakkaart-van Roijen et al. 2016[7] .. [c]Sequelae costs were calculated as indicated in the Supplementary Material and include costs for inpatient and outpatient care, and rehabilitation.

Abbreviations: ADHD, attention deficit hyperactivity disorder; GP, general practitioner; IMD, invasive meningococcal disease; IQ, intelligence quotient; m, months; SD, standard deviation; y, years.

Table S3. Parameters of the acute phase of invasive meningococcal disease

Parameters	Base case	Lower value	Upper value	Source
Number of GP Visits	1			Experts
Median stay at hospital by age (days)				
0–6 m	11	8	15	
6–24 m	9	8	11	
2–4 y	9	8	11	
5–9 y	8	8	10	Stoof et al, 2015[5]
10–19 y	9	8	12	
20–64 y	13	10	16	
≥65 y	15	6.5	23.5	
All ages	10	8	13	
Probability of ICU admission	36.10%			Loenenbach et al, 2020[6]
Median stay at ICU by age (days)				
0–6 m	4	2	6.3	
6–24 m	3	1.5	7	
2–4 y	3	2	6	
5–9 y	3	2	4	Stoof et al, 2015[5]
10–19 y	3	2	5	
20–64 y	3	2	5	
≥65 y	7	2	10	
All ages	3	2	5	
Number of follow-up visits for survivors without sequelae	1			Expert
Direct medical costs (2021)				Hakkaart-van Roijen et al, 2016[7]
GP visit	€36.65			
Hospital admission (price per day)				
General hospital	€528.63			
University hospital	€696.32			
Nursing day in ICU (including diagnostics + medication)	€2,237.79			
Follow-up visit				
Paediatrician	€112.17			
Neurologist	€109.95			

Abbreviations: GP, general practitioner; ICU, intensive care unit; IMD, invasive meningococcal disease; m, months; SD, standard deviation; y, years.

Table S4. Description of direct medical cost estimated per sequela.

Sequelae	Description
Hearing loss	
Cochlear implant	The first year, a similar approach as Pouwels et al[8] was applied using DBC costs to implantation (DBC-code 089999036) and rehabilitation (DBC-code 089999101). The following years, cost estimates by Beck et al[9] were applied and include: audiological assessment costs, maintenance costs of the cochlear implant and costs of 3 years of rehabilitation therapy.[10] This approach includes only one cochlear implant, additional costs for maintenance or replacement were not included.
Moderate unilateral	Costs were obtained from Linssen et al[11] and include: costs of two Ear Nose Throat consultations, a hearing aid, and annual costs for batteries, maintenance, and aftercare of the hearing aid.[7]
Moderate bilateral	Costs were calculated as for unilateral hearing loss.[7,11] However, cost items were multiplied by two (i.e., hearing aid, batteries, maintenance, and aftercare). Rehabilitation therapy was included (i.e., speech and language therapy), during the first year as patients were expected to quickly develop accustomed to moderate hearing loss.
Neurological disability	
Severe neurological	Costs were obtained from two economic studies by Scholz et al[12] and Beck et al.[9] Mean average costs were converted to Dutch price levels using the purchasing power parities.[13]
Mental retardation / low IQ	Direct medical costs were obtained from Olesen et al.[14]
Speech problems	Costs were calculated based on Beecham et al findings.[15] Forty-eight speech and communication therapist visits and 24 occupational therapist visits were assumed during the first year. The costs per speech therapist or occupational therapist visit were obtained from the Dutch Costing Manual.[7]
Motor deficits	Costs were calculated based on Beck et al approach.[9] Four sessions with a rehabilitation therapist and 40 sessions with a physiotherapist were assumed in the first year[15]. The contact with a therapist was assumed to last throughout childhood, however, based on a study of Wright et al,[16] the number of visits is reduced by 40% in the subsequent years to 2 rehabilitation visits and 24 physiotherapy visits.
Limb amputation	First year costs were derived from previously published cost-effectiveness analyses [8,17] which assumed that all survivors with amputation required hospitalization within a few weeks for treatment of amputations. Rehabilitation costs were derived from Visser et al,[18] in which the follow-up cost in the first year include costs for rehabilitation, prosthesis, adjustment to the house, domiciliary care and admission to a

	nursing home due to amputation of the limb. In the following years, follow-up costs include maintenance of prosthesis, domiciliary care, and admission to a nursing home.
Epilepsies / seizures	Seizures were assumed to only occur in the IMD acute phase. Treatment costs included: medication and biannual monitoring for the first two years (because children who remain free of symptoms after taking medication for 1–2 years can safely discontinue their medication). Resource use was based on an expert opinion (i.e., neurologist specialized in children). Costs for medical treatment[19] and neurologist visits[7] were obtained from literature.
Skin scarring	First year costs were derived from previously published cost-effectiveness analyses,[8,17] which assume that 33% of IMD survivors with scars needed to be hospitalized again for their treatment. Depending on the severity, the patient is treated by a rehabilitation therapist once every 3 months for severe complication (Expert opinion from Advisory board with MenB experts). For the base case, the average resource use was included. The costs related to skin scarring were only assumed in the first year. No costs for plastic surgery due to scars were included.
Renal disease	During the first year, no additional costs were assumed as were already included in the IMD acute phase cost.[3] Based on a study by Buysse et al, [20] we assumed that 6% would develop chronic kidney disease. The weighted average of the treatment costs for chronic kidney disease (CKD) stage 1–4 was obtained from Vekeman et al[21] and include dialysis, medication, outpatient care, and inpatient care such as surgery, non-surgical procedures, scans.
Blindness / severe visual impairment	Costs are based on two economic studies by Scholz et al[12] and Beck et al[9] Mean average costs were converted to Dutch price levels for 2020 using the purchasing power parities.[13]
Psychological impairments	
ADHD	Costs in children 8–18 years included: doctor's consultation (i.e., consultation at the GP, psychologist, medical specialist, physiotherapist, occupational therapist, speech therapist and alternative therapy), training, day-care treatment, hospitalization, medication, and diet.[22] An average duration of 10 years of treatment was assumed.[22]
Depression, anxiety and separation anxiety.	We assumed that 4% of the children with anxiety or depression were referred for treatment.[23] Anxiety costs were derived from Bodden et al.[23] Direct medical costs include doctor's consultations (i.e., psychologist, psychiatrist and GP), anxiety medication, pharmacists fee and institutionalized treatment.[23] Separation anxiety is only included until the age of 12 years.[24] Depression costs for children were assumed to be the same as anxiety costs.[23] For adults, 66% seek professional care.[25] Costs for anxiety were derived from Smit et al.[26] Costs for depression were derived from Bosmans et al.[27]

	Direct cost includes doctor's consultations (i.e., GP, physical therapy, mental health care), dietician visits, and medication. Estimated costs for anxiety and depression are not specific for IMD.

Abbreviations: ADHD, attention deficit hyperactivity disorder; DBC, Diagnose Behandeling Combinatie (dutch); GP, general practitioner; IQ, intelligence quotient; IMD, invasive meningococcal disease.

Table S5. Annual special educational cost per sequelae and age

Age (years)	Cochlear implant[28]	Severe neurological[29]	Mental retardation / low IQ[29]	Motor deficits[29]	Limb amputation[29]	Blindness / severe visual impairment[28]	ADHD[22]
4	€1,515	€12,962	€5,832	€8,563	€8,563	€ 1,515	€2,701
5	€1,515	€12,962	€5,832	€8,563	€8,563	€ 1,515	€2,701
6	€1,900	€12,962	€5,832	€8,563	€8,563	€ 1,900	€2,701
7	€1,515	€12,962	€5,832	€8,563	€8,563	€ 1,515	€2,701
8	€1,515	€13,633	€5,416	€9,281	€9,281	€ 1,515	€2,701
9	€1,515	€13,633	€5,416	€9,281	€9,281	€ 1,515	€2,701
10	€1,515	€13,633	€5,416	€9,281	€9,281	€ 1,515	€2,701
11	€1,515	€12,677	€5,416	€9,281	€9,281	€ 1,515	€2,701
12–18	€1,540	€12,677	€5,884	€10,264	€10,264	€ 1,540	€2,701

Abbreviations: ADHD, attention deficit hyperactivity disorder; IQ, intelligence quotient.

Table S6. Days of productivity loss due to premature mortality

		Base case[5]		SD	Distribution	Scenario 4[2]	
No. Days productivity loss		**Children**	**Parents**			**Children**	**Parents**
	0–6 m		11	2.2	gamma		3.32
	6–24 m		9	1.8			3.32
	2–4 y		9	1.8			3.32
	5–9 y		8	1.6			3.32
	10–14 y		9	1.8			3.32
	15–19 y	9		1.8		18.87	
	20–64 y	13		2.6		18.87	
	≥65 y	15		3.0		18.87	
	All ages	10		2.0		18.87	

Note: Scenario 4 refers to Welte et al[2] approach for the number of days of productivity loss of the patient or parent due to the IMD acute phase as shown in Table S9.

Abbreviations: IMD, invasive meningococcal disease; m, months; SD, standard deviation; y, years.

Table S7. Percentage of productivity loss due to sequelae

Sequelae	Productivity loss (%) Base case [a]	SD	Source
Hearing loss			
Cochlear implant	46.50%	0.2488	Dutch Public health and health care[30]
Moderate bilateral	27.0%	0.1971	Scholz et al, 2019[12]
Moderate unilateral	29.00%	0.2059	
Neurological disability			
Severe neurological	46.50%	0.2488	Scholz et al, 2019[12]
Mental retardation / low IQ	18.70%	0.1520	Dutch Public health and health care[30]
Speech problems	27.00%	0.1971	Scholz et al, 2019[12]
Motor deficits	46.50%	0.2488	Dutch Public health and health care[30]
Limb amputation	46.50%	0.2488	Dutch Public health and health care[30]
Epilepsies / seizures	0%	-	
Skin scarring	16.00%	0.1344	Scholz et al, 2019[12]
Renal disease[b]	52.00%	0.2496	
Blindness / severe visual impairment	46.50%	0.2488	Dutch Public health and health care[30]
Psychological impairments			
ADHD	38.00%	0.2356	Scholz et al, 2019[12]
Depression	38.00%	0.2356	
Anxiety	38.00%	0.2356	
Separation anxiety[c]	0%	-	

Notes: [a] Distribution beta, [b] The productivity loss only applies to 6% (one of the 16 patients) of the patients with renal disease due to chronic kidney diseases[12], [c] Until 12 years of age.

Abbreviations: ADHD, attention deficit hyperactivity disorder; IQ, intelligence quotient; SD, standard deviation.

Table S8. Parameters included in the sensitivity analysis

Parameters	Variation	Base value	Lower bound	Upper bound
MenB-related IMD cases	+/- 25%		Age dependent	
Case fatality rate	+/-20%		Age dependent	
Age at first child (years)[31]	+/-25%	29.9	22	37
Percentage long-term care [17,32]	Low/high value	25%	0%†	50%†
Percentage special education need[8,17]	Low/high value	50%	0%‡	100%‡

Abbreviations: MenB-related IMD, *Neisseria meningitis* serogroup B invasive meningococcal disease.

† Assumption: None or all survivors need long-term care, respectively.

‡ Assumption: Non or all survivors need special education, respectively.

Table S9. Scenarios included in the sensitivity analysis

Scenario 1: Direct medical costs	Cost data from Scholz et al[12] was applied for the direct medical costs of the sequelae, in which the costs were adapted using cost conversion methods (i.e., purchasing power parities).[13] Costs are shown in Table 3.
Scenario 2: Direct medical costs	Cost data from Beck et al[9] was applied for the direct medical costs of the sequelae, in which the costs were adapted using cost conversion methods (i.e., purchasing power parities).[13] Costs are shown in Table 3
Scenario 3: Public health response and outbreak management costs	The public health response and outbreak management cost found in Scholz et al[12] were applied using purchasing power parities.[13] These costs included post-exposure prophylactic antibiotic treatment with rifampicin or ceftriaxone of close contacts, GP visits, and costs for local public health authorities.
Scenario 4: Productivity losses during hospitalization of the acute phase	Welte et al[2] approach was used for the number of days of productivity loss of the patient or parent due to the IMD acute phase. For patients younger than 15 years of age, 3.32 days of work loss were assigned to one parent. For patients older than 15 years, 18.87 days of work loss were assumed by the patient.[2]
Scenario 5: Informal long-term care	It was assumed that 10% of the IMD patients with severe sequelae needed a lifelong caregiver, with none of the patients' needs institutional care.[12] The costs were estimated using the Dutch Costing manual and we assumed that on average, 9.9 hours of informal care was provided per week.[7,33]
Scenario 6: Informal long-term care	It was assumed that 10% of all IMD patients with a sequelae needed a lifelong caregiver, with none of the patients' needs institutional care.[12] The costs were estimated using the Dutch Costing manual and we assumed that on average, 9.9 hours of informal care was provided per week.[7,33]
Scenario 7: Sequelae probabilities	Probabilities of psychological impairments, i.e., ADHD, anxiety and separation anxiety, were excluded.
Scenario 8: Discounted costs	Costs were not discounted.
Scenario 9: Discounted costs	Costs were discounted with 1.5%.

Abbreviations: GP, general practitioner; ADHD, attention deficit hyperactivity disorder; IMD, invasive meningococcal disease.

Table S10. Direct medical cost related to sequelae in the first and following years recalculated to Dutch setting using purchasing power parity (PPP).

	Scholz et al[12]*^			Beck et al[9]*		
	Mean	**Lower bound**	**Upper bound**	**Mean**	**Lower bound**	**Upper bound**
Direct medical costs 1st year						
Hearing loss						
Cochlear implant	€47,535	€43,339	€52,423	€57,988	€40,591	€75,384
Moderate bilateral	€2,954	€2,364	€3,546	€1,687	€1,181	€2,193
Moderate unilateral	€2,954	€2,364	€3,546	€ 452	€ 317	€ 588
Neurological disability						
Severe neurological	€2,253	€1,366	€3,219	€4,947	€3,807	€11,077
Mental retardation / low IQ	€1,982	€1,138	€2,893	€8,017	€5,612	€10,422
Speech problems	€1,901	€1,101	€2,731	€5,062	€3,543	€6,581
Motor deficits	€481	€395	€591	€6,279	€3,768	€8,163
Limp amputation	€12,884	€5,888	€22,020	€24,713	€17,299	€32,127
Epilepsies / seizures	€4,484	-	€11,587	€2,590	€1,543	€4,005
Skin scarring	€2,004	€452	€4,600	€2,951	€2,066	€3,836
Renal disease	€10,073	€5,507	€16,329	€2,291	€1,886	€5,325
Blindness / severe visual impairment	€734	€587	€881	€4,767	€3,337	€6,197
Psychological impairments						
ADHD	€1,522	€1,116	€1,116	€1,575	€1,331	€1,868
Depression	€459	-	€2,314	€149	€111	€553
Anxiety	€266	€219	€317	€149	€111	€553
Separation anxiety	€2,461	€2,331	€2,710	€149	€111	€553
Direct medical costs 2nd year and following						
Hearing loss						
Cochlear implant	€1,255	€1,006	€1,447	€5,893	€4,125	€7,661
Moderate bilateral	€1,329	€1,063	€1,594	€301	€210	€391
Moderate unilateral	€1,329	€1,063	€1,594	€223	€156	€290
Neurological disability						
Severe neurological	€121	€54	€242	€1,020	€714	€1,326
Mental retardation/ low IQ	€81	€37	€161	€8,017	€5,612	€10,422
Speech problems	€41	€18	€81	–	–	–
Motor deficits	€41	€18	€81	€3,768	€2,637	€6,279
Limp amputation	€2,387	€470	€6,086	€1,633	€1,143	€2,123
Epilepsies/ seizures	€4,484	–	€11,587	€2,590	€1,543	€4,005
Skin scarring	€20	–	€40	–	–	–
Renal disease	€4,211	€42	€12,820	€1,031	€834	€1,943
Blindness/ severe visual impairment	€734	€587	€881	€4,767	€3,337	€6,197
Psychological impairments						
ADHD	€ 1,522	€ 1,116	€1,116	€1,575	€1,331	€1,868
Depression	€ 459	–		€149	€111	€553
Anxiety	€ 266	€ 219	€ 317	€149	€111	€553
Separation anxiety	€ 25	€ 18	€ 36	€149	€111	€553

Abbreviations: ADHD, attention deficit hyperactivity disorder; IQ, intelligence quotient. *Recalculated using purchasing power parities (PPP) to Dutch setting. ^ based on 1 on 1 consultation.

RESULTS

Figure S1. Graphical Abstract

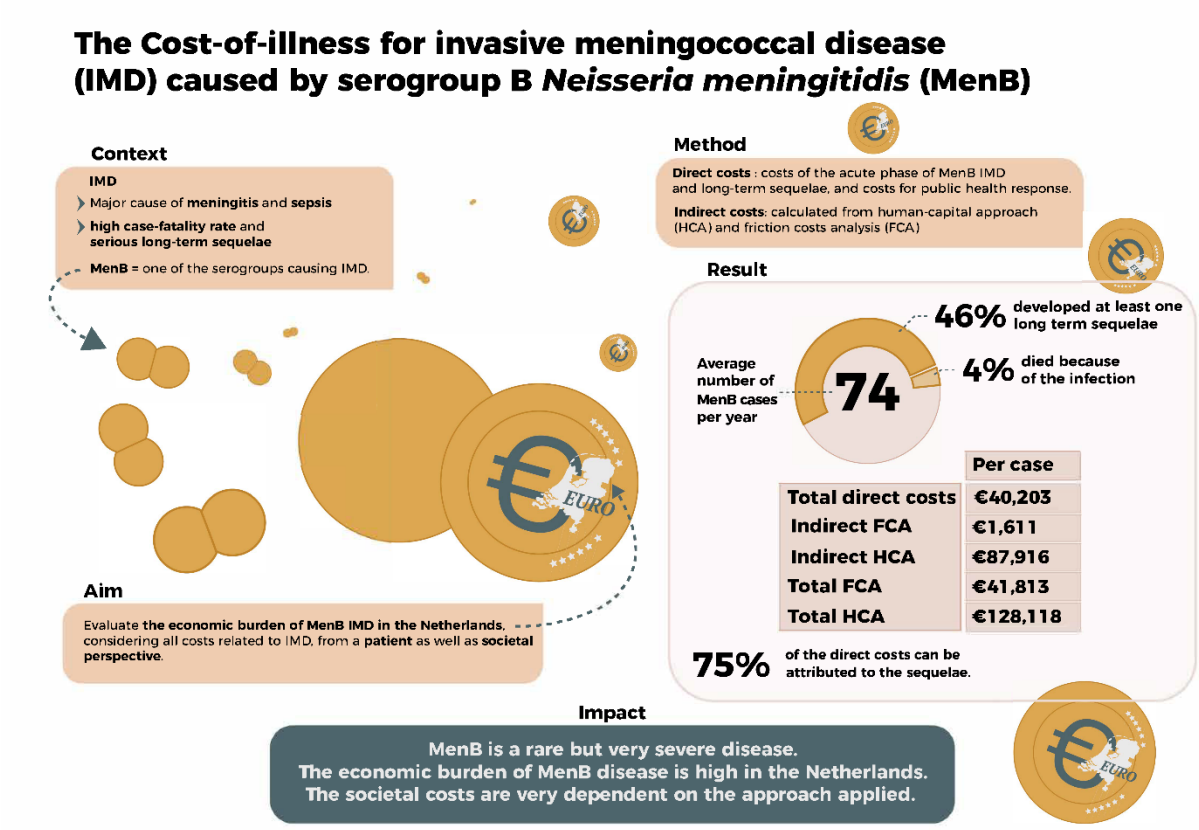
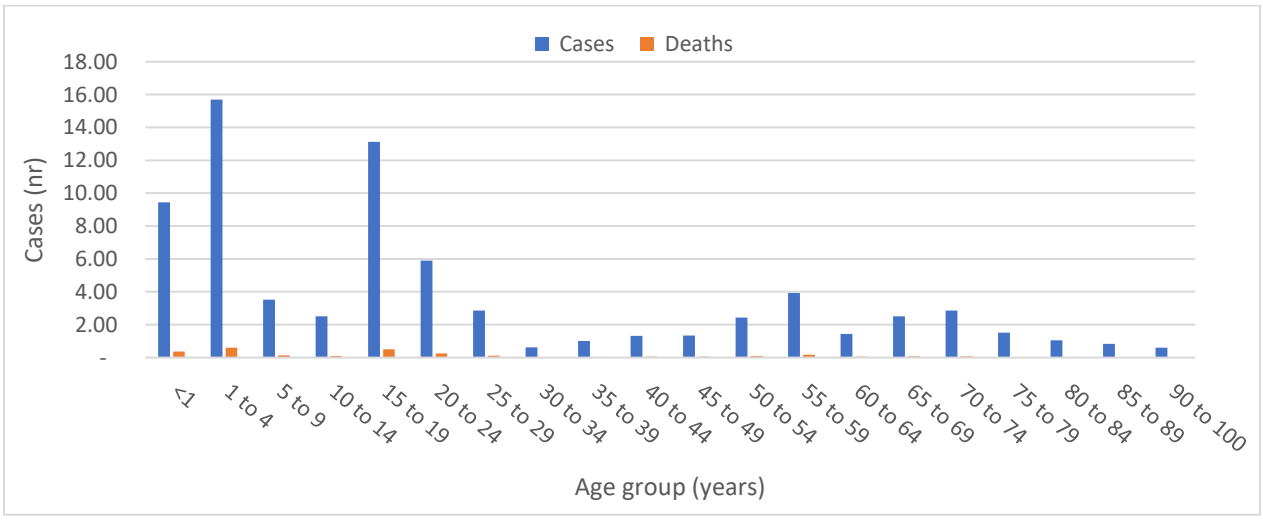


Figure S2. Average number of MenB-related invasive meningococcal disease cases and deaths by age.



Abbreviations: MenB, Neisseria meningitidis serogroup B; IMD, invasive meningococcal disease; nr, number.

Figure S3. Total direct cost by age group

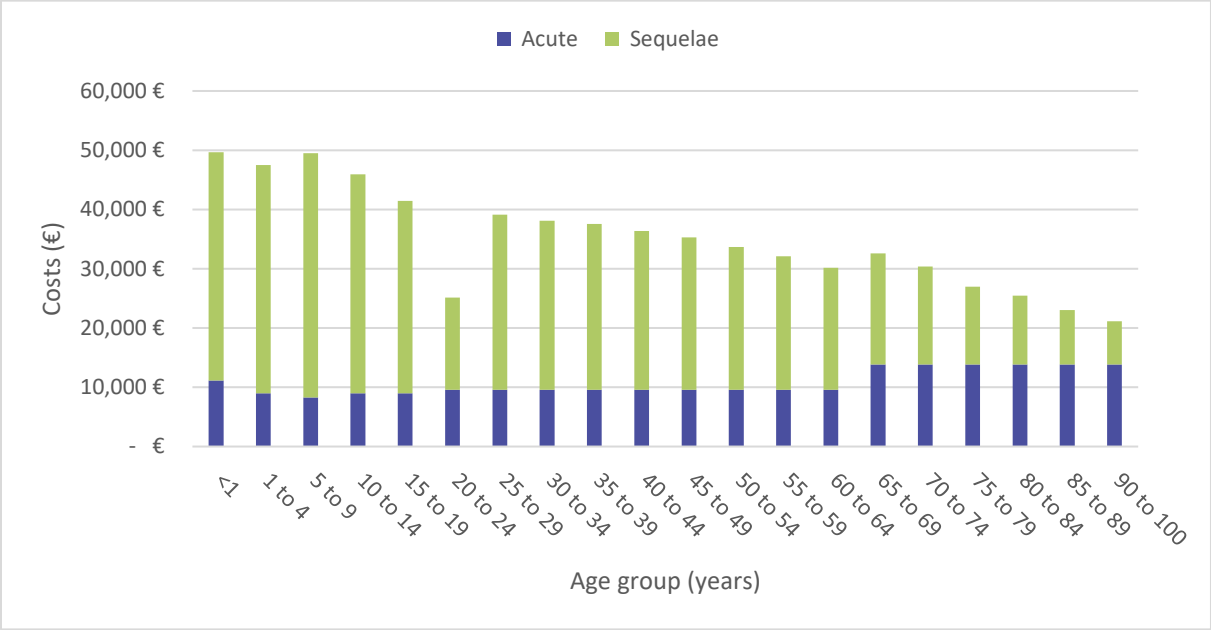


Table S11. Epidemiology and costs (direct and indirect) of the acute phase and sequelae of invasive meningococcal disease per age group

Age group	Epidemiology		IMD acute phase					Combined Sequelae					
	Cases	Deaths	Direct costs	Indirect costs Productivity loss				Cases	Direct costs	Indirect costs Productivity loss†			
				Acute phase		Pre-mature deaths				Patients		Parents	
				HCA	*FCA*	*HCA*	*FCA*			HCA	FCA	HCA	FCA
<1	10	0.4	€107,148	€9,340	€9,340	€119,728	€-	4.42	€369,879	€373,196	€-	€504,810	€7,551
1–4	16	0.6	€141,580	€12,578	€12,578	€212,664	€-	7.27	€609,186	€662,881	€-	€786,723	€12,429
5–9	4	0.1	€29,752	€3,225	€3,225	€58,021	€-	1.66	€148,480	€180,855	€-	€146,999	€3,585
10–14	3	0.1	€23,294	€2,620	€2,620	€53,096	€-	1.20	€96,096	€165,501	€-	€55,910	€2,512
15–19	13	0.5	€114,663	€9,218	€9,218	€305,014	€920	5.89	€415,794	€950,739	€2,868	€46,352	€6,218
20–24	6	0.2	€55,475	€1,676	€1,676	€171,785	€461	2.66	€90,424	€482,450	€1,294	€-	€-
25–29	3	0.1	€26,781	€3,220	€3,220	€90,473	€886	1.28	€82,777	€254,089	€2,489	€-	€-
30–34	1	0.0	€5,739	€690	€690	€18,804	€190	0.27	€17,121	€52,809	€533	€-	€-
35–39	1	0.0	€9,565	€1,456	€1,456	€30,121	€400	0.46	€27,981	€84,595	€1,123	€-	€-
40–44	1	0.1	€13,391	€2,038	€2,038	€37,134	€559	0.64	€37,520	€104,290	€1,569	€-	€-
45–49	1	0.1	€13,391	€2,171	€2,171	€32,219	€596	0.64	€35,998	€90,486	€1,673	€-	€-
50–54	2	0.1	€22,955	€3,722	€3,722	€40,726	€1,024	1.10	€57,846	€114,378	€2,877	€-	€-
55–59	4	0.2	€36,346	€4,623	€4,623	€43,308	€1,270	1.74	€85,584	€121,629	€3,567	€-	€-
60–64	1	0.1	€13,391	€1,703	€1,703	€7,808	€467	0.64	€28,813	€21,929	€1,310	€-	€-
65–69	3	0.1	€36,021	€696	€696	€3,328	€114	1.21	€48,711	€13,720	€469	€-	€-
70–74	3	0.1	€36,021	€696	€696	€1,469	€113	1.21	€42,974	€6,058	€465	€-	€-
75–79	1	0.0	€19,396	€-	€-	€-	€-	0.65	€18,355	€-	€-	€-	€-
80–84	1	0.0	€13,854	€-	€-	€-	€-	0.46	€11,611	€-	€-	€-	€-
85–89	1	0.0	€11,083	€-	€-	€-	€-	0.37	€7,324	€-	€-	€-	€-
90–100	1	0.0	€8,312	€-	€-	€-	€-	0.28	€4,365	€-	€-	€-	€-
TOTAL	**74**	**2.8**	**€738,156**	**€59,671**	**€57,644**	**€1,225,699**	**€6,999**	**34.1**	**€2,236,841**	**€3,679,604**	**€20,238**	**€1,540,794**	**€32,295**

Abbreviations: IMD, invasive meningococcal disease; FCA, friction-cost approach; HCA, human-capital approach.

† Total indirect costs due to productivity loss for patients and parents together were €5,043,056 for HCA and €50,748 for FCA.

Table S12. Number of cases and costs (direct and indirect) by sequelae type.

	Number of cases	Direct cost	Indirect costs			
			Patients		Parents	
			HCA	FCA	HCA	FCA
Hearing loss						
Cochlear implant	1.74	€634,513	€340,463	€1,873	€348,020	€7,373
Moderate bilateral	2.71	€19,939	€306,618	€1,686	€53,979	€1,144
Moderate unilateral	3.71	€15,211	€451,529	€2,483	€74,007	€1,568
Neurological disability						
Severe neurological	0.73	€200,851	€141,744	€780	€144,890	€3,070
Mental retardation/low IQ	0.36	€153,001	€27,942	€154	€71,024	€1,505
Speech problems	2.53	€10,013	€287,253	€1,580	€50,569	€1,071
Motor deficits	1.09	€302,351	€212,615	€1,169	€217,335	€4,605
Limb amputation	0.90	€595,745	€175,095	€963	€178,981	€3,792
Epilepsies / Seizures	1.27	€816	–	–		–
Skin scarring	4.55	€5,713	€305,542	€1,680	€90,769	€1,923
Renal disease	1.46	€4,298	€19,911	€110	€1,820	€39
Blindness	0.30	€91,372	€58,365	€321	€59,660	€1,264
Psychological impairments						
ADHD	6.88	€195,402	€1,097,011	€6,034	€137,219	€2,907
Anxiety	1.60	€6,459	€255,515	€1,405	€31,961	€677
Separation anxiety	4.24	€1,157	–	–	€80,556	€1,357
TOTAL	**34.1**	**€2,236,841**	**€3,679,604**	**€20,238**	**€1,540,794**	**€32,295**

Abbreviations: ADHD, attention deficit hyperactivity disorder; FCA, friction-cost approach; HCA, human-capital approach; IQ, intelligence quotient.

Table S13. Number of cases per sequelae type by age group

Age group	*Hearing loss*			*Neurological disability*				*Limb amputatio*	*Epilepsies/ seizures*	*Skin scarring*	*Renal disease*	*Blindness/ severe visual impairmen*	*Psychological impairments*		
	Cochlear implant	Moderate bilateral	Moderate unilateral	Severe	Mental retardation/ low IQ	Speech problems	Motor deficits						ADHD	Anxiety	Separation anxiety
<1	0.23	0.35	0.48	0.09	0.05	0.33	0.14	0.12	0.16	0.59	0.19	0.04	0.89	0.21	0.55
1–4	0.37	0.58	0.79	0.16	0.08	0.54	0.23	0.19	0.27	0.97	0.31	0.06	1.47	0.34	0.91
5–9	0.08	0.13	0.18	0.04	0.02	0.12	0.05	0.04	0.06	0.22	0.07	0.01	0.33	0.08	0.21
10–14	0.06	0.10	0.13	0.03	0.01	0.09	0.04	0.03	0.04	0.16	0.05	0.01	0.24	0.06	0.15
15–19	0.30	0.47	0.64	0.13	0.06	0.44	0.19	0.16	0.22	0.79	0.25	0.05	1.19	0.28	0.73
20–24	0.14	0.21	0.29	0.06	0.03	0.20	0.09	0.07	0.10	0.36	0.11	0.02	0.54	0.13	0.33
25–29	0.07	0.10	0.14	0.03	0.01	0.10	0.04	0.03	0.05	0.17	0.05	0.01	0.26	0.06	0.16
30–34	0.01	0.02	0.03	0.01	0.00	0.02	0.01	0.01	0.01	0.04	0.01	0.00	0.06	0.01	0.03
35–39	0.02	0.04	0.05	0.01	0.00	0.03	0.01	0.01	0.02	0.06	0.02	0.00	0.09	0.02	0.06
40–44	0.03	0.05	0.07	0.01	0.01	0.05	0.02	0.02	0.02	0.09	0.03	0.01	0.13	0.03	0.08
45–49	0.03	0.05	0.07	0.01	0.01	0.05	0.02	0.02	0.02	0.09	0.03	0.01	0.13	0.03	0.08
50–54	0.06	0.09	0.12	0.02	0.01	0.08	0.04	0.03	0.04	0.15	0.05	0.01	0.22	0.05	0.14
55–59	0.09	0.14	0.19	0.04	0.02	0.13	0.06	0.05	0.06	0.23	0.07	0.02	0.35	0.08	0.22
60–64	0.03	0.05	0.07	0.01	0.01	0.05	0.02	0.02	0.02	0.09	0.03	0.01	0.13	0.03	0.08
65–69	0.06	0.10	0.13	0.03	0.01	0.09	0.04	0.03	0.04	0.16	0.05	0.01	0.24	0.06	0.15
70–74	0.06	0.10	0.13	0.03	0.01	0.09	0.04	0.03	0.04	0.16	0.05	0.01	0.24	0.06	0.15
75–79	0.03	0.05	0.07	0.01	0.01	0.05	0.02	0.02	0.02	0.09	0.03	0.01	0.13	0.03	0.08
80–84	0.02	0.04	0.05	0.01	0.00	0.03	0.01	0.01	0.02	0.06	0.02	0.00	0.09	0.02	0.06
85–89	0.02	0.03	0.04	0.01	0.00	0.03	0.01	0.01	0.01	0.05	0.02	0.00	0.08	0.02	0.05
90–100	0.01	0.02	0.03	0.01	0.00	0.02	0.01	0.01	0.01	0.04	0.01	0.00	0.06	0.01	0.03
TOTAL	**1.74**	**2.71**	**3.71**	**0.73**	**0.36**	**2.53**	**1.09**	**0.90**	**1.27**	**4.55**	**1.46**	**0.30**	**6.88**	**1.60**	**4.24**

Abbreviations: ADHD, attention deficit hyperactivity disorder; IQ, intelligence quotient.

Table S14. Direct cost per sequelae type and age group

Age group	*Hearing loss*			*Neurological disability*				*Limb amputation*	*Epilepsies/ seizures*	*Skin scarring*	*Renal disease*	*Blindness/ severe visual impairment*	*Psychological impairments*		
	Cochlear implant	Moderate bilateral	Moderate unilateral	Severe	Mental retardation/ low IQ	Speech problems	Motor deficits						ADHD	Anxiety	Separation anxiety
<1	€96,190	€2,933	€2,285	€29,260	€23,242	€1,350	€46,520	€89,378	€110	€770	€665	€14,044	€62,309	€392	€432
1–4	€158,750	€4,823	€3,755	€50,435	€38,711	€2,222	€78,776	€148,812	€181	€1,268	€1,094	€23,192	€95,897	€645	€626
5–9	€37,112	€1,093	€850	€15,523	€9,626	€506	€21,924	€37,043	€41	€289	€247	€5,448	€18,541	€146	€91
10–14	€26,039	€782	€607	€9,639	€6,565	€366	€14,530	€25,519	€30	€209	€176	€3,807	€7,717	€104	€8
15–19	€124,746	€3,816	€2,956	€40,225	€30,452	€1,800	€62,034	€117,798	€147	€1,027	€854	€18,163	€10,938	€837	€0
20–24	€28,662	€885	€684	€8,677	€6,894	€420	€12,284	€26,617	€34	€240	€197	€4,164	€0	€667	€0
25–29	€26,256	€815	€628	€7,931	€6,302	€392	€11,225	€24,376	€32	€224	€180	€3,806	€0	€610	€0
30–34	€5,437	€170	€131	€1,636	€1,300	€84	€2,314	€5,046	€7	€48	€37	€785	€0	€126	€0
35–39	€8,893	€280	€214	€2,669	€2,122	€140	€3,775	€8,250	€11	€80	€61	€1,281	€0	€206	€0
40–44	€11,943	€381	€289	€3,566	€2,836	€196	€5,040	€11,074	€16	€112	€81	€1,710	€0	€275	€0
45–49	€11,477	€371	€279	€3,409	€2,711	€196	€4,815	€10,635	€16	€112	€77	€1,635	€0	€263	€0
50–54	€18,492	€610	€454	€5,445	€4,333	€336	€7,683	€17,119	€27	€192	€123	€2,610	€0	€422	€0
55–59	€27,441	€925	€680	€8,002	€6,370	€532	€11,276	€25,374	€43	€304	€181	€3,834	€0	€622	€0
60–64	€9,278	€322	€233	€2,668	€2,125	€196	€3,752	€8,566	€16	€112	€60	€1,277	€0	€208	€0
65–69	€15,772	€569	€403	€4,451	€3,550	€369	€6,246	€14,531	€30	€211	€100	€2,129	€0	€349	€0
70–74	€14,016	€531	€366	€3,859	€3,082	€369	€5,397	€12,879	€30	€211	€87	€1,844	€0	€305	€0
75–79	€6,082	€253	€166	€1,584	€1,269	€199	€2,198	€5,556	€16	€113	€35	€755	€0	€127	€0
80–84	€3,885	€171	€109	€976	€784	€142	€1,348	€3,537	€12	€81	€22	€465	€0	€80	€0
85–89	€2,507	€123	€74	€578	€467	€114	€788	€2,264	€9	€65	€13	€274	€0	€49	€0
90–100	€1,535	€85	€49	€317	€258	€85	€424	€1,373	€7	€49	€7	€149	€0	€28	€0
TOTAL	**€634,513**	**€19,939**	**€15,211**	**€200,851**	**€153,001**	**€10,013**	**€302,351**	**€595,745**	**€816**	**€5,713**	**€4,298**	**€91,372**	**€195,402**	**€6,459**	**€1,157**

Abbreviations: ADHD, attention deficit hyperactivity disorder; IQ, intelligence quotient.

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