Clinical trial results:
A Phase 3, Randomized, Observer-blind, Controlled, Multi-Center Study to Evaluate the Lot to Lot Consistency of Investigational Meningococcal ACWY Conjugate Vaccine when One Dose is Administered to Healthy Adolescents 11-18 Years of Age and to Compare the Safety and Immunogenicity of Investigational Meningococcal ACWY Conjugate Vaccine with that of Licensed Meningococcal ACWY Conjugate Vaccine (Menactra™) when One Dose is Administered to Healthy Subjects 11-55 Years of Age

Due to a system error, the data reported in v1 is not correct and has been removed from public view.

Summary

EudraCT number	2014-003504-79
Trial protocol	Outside EU/EEA
Global end of trial date	16 January 2008

Results information

Result version number	v2 (current)
This version publication date	12 June 2016
First version publication date	03 January 2015
Version creation reason	• Correction of full data set The occurence rates were incorrectly entered, they need to be changed.

Trial information

Trial identification

Sponsor protocol code	V59P13

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT00450437
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Novartis Vaccines & Diagnostics, Inc.
Sponsor organisation address	350 Massachusetts Ave, Cambridge, MA, United States, 02139
Public contact	Posting Director, Novartis Vaccines, RegistryContactVaccinesUS@novartis.com
Scientific contact	Posting Director, Novartis Vaccines, RegistryContactVaccinesUS@novartis.com

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	Yes

EMA paediatric investigation plan number(s)	EMEA-000032-PIP01-07
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	Yes

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	04 April 2008
Is this the analysis of the primary completion data?	No

Global end of trial reached?	Yes
Global end of trial date	16 January 2008
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

This study will evaluate the lot to lot consistency, safety and immune response of the Investigational Meningococcal ACWY conjugate vaccine in healthy US adolescents and adults.

Protection of trial subjects:

This trial was performed with the ethical principles that have their origin in the Declaration of Helsinki, that are consistent with Good Clinical Practice (GCP) according to International Conference on Harmonisation (ICH) guidelines, the applicable regulatory requirements(s) for the country in which the study is conducted, and applicable standard operating procedures (SOPs). Specifically, this trial was based on adequately performed laboratory and animal experimentation; it was conducted under a protocol reviewed and approved by the Institutional Review Board (IRB) and by scientifically and medically qualified persons; the benefits of the study were in proportion to the risks; the rights and welfare of the subjects were respected; the physicians conducting the trial did not find the hazards to outweigh the potential benefits; each subject, or where applicable, each subject's legally acceptable representative(s) gave his or her written informed consent before any protocol-driven tests or evaluations were performed. Copies of the ICH GCP guidelines and of the Declaration of Helsinki were included in the investigator's study file.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	01 March 2007
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	Yes

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	United States: 3539
Worldwide total number of subjects	3539
EEA total number of subjects	0

Notes:

Subjects enrolled per age group	
In utero	0
Preterm newborn - gestational age < 37 wk	0
Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	349
Adolescents (12-17 years)	1669
Adults (18-64 years)	1521
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Subjects were recruited from 44 centers.

Pre-assignment

Screening details:

All enrolled subjects were randomized 1:1:1:1 to Menveo Lot 1, Menveo Lot 2, Menveo Lot 3, or Menactra, and stratified by age group.

Period 1

Period 1 title	Overall Study (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator, Monitor, Data analyst, Carer, Assessor

Arms

Are arms mutually exclusive?	Yes
Arm title	Investigational MenACWY Vaccine (11 to 18 Years)

Arm description:

One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.

Arm type	Experimental
Investigational medicinal product name	MenACWY
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Powder and solution for solution for injection
Routes of administration	Intramuscular use

Dosage and administration details:

1 dose of 0.5 mL

Arm title	Licensed Meningococcal Vaccine (11 to 18 Years)

Arm description:

One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.

Arm type	Active comparator
Investigational medicinal product name	MenACWY
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for injection
Routes of administration	Intramuscular use

Dosage and administration details:

1 dose of 0.5 mL

Arm title	Investigational MenACWY Vaccine (19 to 55 Years)

Arm description:

One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.

Arm type	Experimental

Investigational medicinal product name	MenACWY
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Powder and solution for solution for injection
Routes of administration	Intramuscular use

Dosage and administration details:

1 dose of 0.5 mL

Arm title	Licensed Meningococcal Vaccine (19 to 55 Years)

Arm description:

One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.

Arm type	Active comparator
Investigational medicinal product name	MenACWY
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for injection
Routes of administration	Intramuscular use

Dosage and administration details:

1 dose of 0.5 mL

Number of subjects in period 1	Investigational MenACWY Vaccine (11 to 18 Years)	Licensed Meningococcal Vaccine (11 to 18 Years)	Investigational MenACWY Vaccine (19 to 55 Years)
Started	1640	540	1023
Completed	1594	524	999
Not completed	46	16	24
Consent withdrawn by subject	10	2	-
Inappropriate enrollment	4	1	3
Protocol deviation	-	1	-
Unable to classify	1	-	1
Lost to follow-up	31	12	19
Administrative reason	-	-	1
Protocol deviation	-	-	-

Number of subjects in period 1	Licensed Meningococcal Vaccine (19 to 55 Years)
Started	336
Completed	325
Not completed	11
Consent withdrawn by subject	1
Inappropriate enrollment	-
Protocol deviation	-
Unable to classify	-

Lost to follow-up	9
Administrative reason	-
Protocol deviation	1

Baseline characteristics

Reporting groups	
Reporting group title	Investigational MenACWY Vaccine (11 to 18 Years)
Reporting group description:	
One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.	
Reporting group title	Licensed Meningococcal Vaccine (11 to 18 Years)
Reporting group description:	
One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.	
Reporting group title	Investigational MenACWY Vaccine (19 to 55 Years)
Reporting group description:	
One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.	
Reporting group title	Licensed Meningococcal Vaccine (19 to 55 Years)
Reporting group description:	
One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.	

Reporting group values	Investigational MenACWY Vaccine (11 to 18 Years)	Licensed Meningococcal Vaccine (11 to 18 Years)	Investigational MenACWY Vaccine (19 to 55 Years)
Number of subjects	1640	540	1023
Age categorical			
Units: Subjects			
Age continuous			
Units: years			
arithmetic mean	14.2	14.1	39
standard deviation	± 2.2	± 2.2	± 9.6
Gender categorical			
Units: Subjects			
Female	769	251	774
Male	871	289	249

Reporting group values	Licensed Meningococcal Vaccine (19 to 55 Years)	Total	
Number of subjects	336	3539	
Age categorical			
Units: Subjects			
Age continuous			
Units: years			
arithmetic mean	38.7		
standard deviation	± 9.9	-	
Gender categorical			
Units: Subjects			
Female	252	2046	

Male	84	1493	

Subject analysis sets

Subject analysis set title	Investigational MenACWY (11 to 55 Years)
Subject analysis set type	Per protocol

Subject analysis set description:

One dose of the investigational meningococcal ACWY (three lots combined) conjugate vaccine was administered intramuscularly.

Subject analysis set title	Licensed MenACWY (11 to 55 Years)
Subject analysis set type	Per protocol

Subject analysis set description:

One vaccination of the licensed meningococcal ACWY conjugate vaccine was administered intramuscularly.

Subject analysis set title	Investigational MenACWY Lot 1 (11 to 18 years)
Subject analysis set type	Per protocol

Subject analysis set description:

One dose of the investigational meningococcal ACWY conjugate Lot 1 vaccine was administered intramuscularly.

Subject analysis set title	Investigational MenACWY Lot 2 (11 to 18 years)
Subject analysis set type	Per protocol

Subject analysis set description:

One dose of the investigational meningococcal ACWY Lot 2 vaccine was administered intramuscularly.

Subject analysis set title	Investigational MenACWY Lot 3 (11 to 18 years)
Subject analysis set type	Per protocol

Subject analysis set description:

One dose of the investigational meningococcal ACWY Lot 3 vaccine was administered intramuscularly.

Reporting group values	Investigational MenACWY (11 to 55 Years)	Licensed MenACWY (11 to 55 Years)	Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects	2663	876	548
Age categorical Units: Subjects			
Age continuous Units: years			
arithmetic mean	23.7	23.5	14
standard deviation	± 13.6	± 13.6	± 2.2
Gender categorical Units: Subjects			
Female	1543	373	254
Male	1120	503	294

Reporting group values	Investigational MenACWY Lot 2 (11 to 18 years)	Investigational MenACWY Lot 3 (11 to 18 years)	
Number of subjects	548	544	
Age categorical Units: Subjects			

Age continuous Units: years			
arithmetic mean	14.2	14.3	
standard deviation	± 2.2	± 2.3	
Gender categorical Units: Subjects			
Female	259	256	
Male	289	288	

End points

End points reporting groups

Reporting group title	Investigational MenACWY Vaccine (11 to 18 Years)
Reporting group description:	
One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.	
Reporting group title	Licensed Meningococcal Vaccine (11 to 18 Years)
Reporting group description:	
One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.	
Reporting group title	Investigational MenACWY Vaccine (19 to 55 Years)
Reporting group description:	
One dose of the investigational meningococcal ACWY conjugate vaccine (obtained by extemporaneous mixing of components before injection) was administered intramuscularly.	
Reporting group title	Licensed Meningococcal Vaccine (19 to 55 Years)
Reporting group description:	
One dose of the licensed meningococcal ACWY conjugate vaccine (supplied as a single 0.5 mL injection) was administered intramuscularly.	
Subject analysis set title	Investigational MenACWY (11 to 55 Years)
Subject analysis set type	Per protocol
Subject analysis set description:	
One dose of the investigational meningococcal ACWY (three lots combined) conjugate vaccine was administered intramuscularly.	
Subject analysis set title	Licensed MenACWY (11 to 55 Years)
Subject analysis set type	Per protocol
Subject analysis set description:	
One vaccination of the licensed meningococcal ACWY conjugate vaccine was administered intramuscularly.	
Subject analysis set title	Investigational MenACWY Lot 1 (11 to 18 years)
Subject analysis set type	Per protocol
Subject analysis set description:	
One dose of the investigational meningococcal ACWY conjugate Lot 1 vaccine was administered intramuscularly.	
Subject analysis set title	Investigational MenACWY Lot 2 (11 to 18 years)
Subject analysis set type	Per protocol
Subject analysis set description:	
One dose of the investigational meningococcal ACWY Lot 2 vaccine was administered intramuscularly.	
Subject analysis set title	Investigational MenACWY Lot 3 (11 to 18 years)
Subject analysis set type	Per protocol
Subject analysis set description:	
One dose of the investigational meningococcal ACWY Lot 3 vaccine was administered intramuscularly.	

Primary: Lot to Lot Consistency of MenACWY as Measured by hSBA GMT Vaccine Group Ratios, Ages 11 to 18 Years

End point title	Lot to Lot Consistency of MenACWY as Measured by hSBA GMT Vaccine Group Ratios, Ages 11 to 18 Years
End point description:	
The consistency of immune response for the three lots of Meningococcal ACWY (MenACWY), as measured by human serum bactericidal activity (hSBA) geometric mean titer (GMT) response using human complement (hSBA GMTs) directed against Neisseria meningitidis serogroups A, C, W, and Y (healthy subjects 11 to 18 years of age).	
End point type	Primary

End point timeframe:
28 days after vaccination

End point values	Investigational MenACWY Lot 1 (11 to 18 years)	Investigational MenACWY Lot 2 (11 to 18 years)	Investigational MenACWY Lot 3 (11 to 18 years)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	359[1]	357[2]	359[3]	
Units: Titer				
geometric mean (confidence interval 95%)				
Serogroup A	29 (23 to 38)	33 (25 to 42)	31 (24 to 40)	
Serogroup C	77 (58 to 102)	58 (43 to 77)	64 (48 to 86)	
Serogroup W	87 (70 to 108)	111 (89 to 138)	82 (66 to 102)	
Serogroup Y	48 (37 to 62)	61 (47 to 79)	53 (41 to 69)	

Notes:

[1] - N serogroup C: 499
N serogroup W: 340
N serogroup Y: 345
[2] - N serogroup C: 493
N serogroup W: 341
N serogroup Y: 345
[3] - N serogroup C: 491
N serogroup W: 343
N serogroup Y: 346

Statistical analyses

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenA

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[4]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.89
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.68
upper limit	1.16

Notes:

[4] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenA

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[5]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.95
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.73
upper limit	1.23

Notes:

[5] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenA

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[6]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.06
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.81
upper limit	1.38

Notes:

[6] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenC

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 990

(instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[7]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.2
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.9
upper limit	1.6

Notes:

[7] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenC

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 992 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[8]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.33
Confidence interval	
level	95 %
sides	2-sided
lower limit	1
upper limit	1.77

Notes:

[8] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenC

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 984 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[9]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.9
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.68
upper limit	1.2

Notes:

[9] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenW

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 681 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[10]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.79
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.63
upper limit	0.97

Notes:

[10] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenW

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 683 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[11]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.06
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.86
upper limit	1.13

Notes:

[11] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenW

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 684 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[12]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.35
Confidence interval	
level	95 %
sides	2-sided
lower limit	1.09
upper limit	1.67

Notes:

[12] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenY

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 690 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[13]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.79
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.61
upper limit	1.02

Notes:

[13] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenY

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[14]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	0.91
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.7
upper limit	1.18

Notes:

[14] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenY

Statistical analysis description:

The study would be considered a success if the two-sided 95% confidence intervals (CIs) for the hSBA GMT ratios comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y at 1 month after vaccination was contained within the equivalence interval (0.5, 2.0).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[15]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.16
Confidence interval	
level	95 %
sides	2-sided
lower limit	0.89
upper limit	1.5

Notes:

[15] - The equivalence margin was (0.5, 2.0). If the two sided 95% CIs for the ratio of the hSBA GMT at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Primary: Number of Participants With at Least One Severe Systemic Reaction, Ages 11 to 55 Years

End point title	Number of Participants With at Least One Severe Systemic Reaction, Ages 11 to 55 Years

End point description:

Safety of Investigational Meningococcal ACWY and of a licensed meningococcal ACWY conjugate vaccine as measured by the number of participants presenting at least one severe systemic reaction during the first 7 days (Days 1-7) following a single vaccination.
Note: severe adverse events: unable to perform normal daily activity

End point type	Primary

End point timeframe:

6 days after vaccination

End point values	Investigational MenACWY (11 to 55 Years)	Licensed MenACWY (11 to 55 Years)		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	2649	875		
Units: Number of subjects				
number (not applicable)				
Number of Participants With at Least One Severe Sy	94	24		

Statistical analyses

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. sft.

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine; sft, safety

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)

Number of subjects included in analysis	3524
Analysis specification	Pre-specified
Analysis type	non-inferiority[16]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-1
upper limit	2

Notes:

[16] - MenACWY was considered noninferior to Menactra if the upper limit of the two-sided 95% CI of the difference in the percentage of subjects experiencing at least one severe systemic reaction [MenACWY minus Menactra] was less than 6%.

Primary: Percentage of Seroresponders, Ages 11 to 18 Years

End point title	Percentage of Seroresponders, Ages 11 to 18 Years[17]

End point description:

Immunogenicity of a single injection of Meningococcal ACWY (3 lots pooled) to that of a licensed meningococcal ACWY conjugate vaccine, defined as the percentage of subjects with seroresponse directed against Neisseria meningitidis serogroups A, C, W, and Y (healthy adolescents 11 to 18 years of age).
Seroresponse to MenACWY: For a subject with hSBA titer <1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer ≥ 1:8; for a subject with hSBA titer ≥ 1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer of at least 4 times the baseline.

End point type	Primary

End point timeframe:

28 days after vaccination

Notes:

[17] - The end point is not reporting statistics for all the arms in the baseline period. It is expected all the baseline period arms will be reported on when providing values for an end point on the baseline period.
Justification: there is no statistical analysis presented for this endpoint.

End point values	Investigational MenACWY Vaccine (11 to 18 Years)	Licensed Meningococcal Vaccine (11 to 18 Years)		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	1075[18]	359[19]		
Units: Percentage of subjects				
number (confidence interval 95%)				
Serogroup A	75 (72 to 77)	66 (61 to 71)		
Serogroup C	75 (73 to 77)	73 (69 to 77)		
Serogroup W	75 (72 to 77)	63 (57 to 68)		
Serogroup Y	68 (65 to 71)	41 (35 to 47)		

Notes:

[18] - N serogroup C: 1483
N serogroup W: 1024
N serogroup Y: 1036
[19] - N serogroup C: 501
N serogroup W: 288
N serogroup Y: 294

Statistical analyses

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenA
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.	
Comparison groups	Investigational MenACWY Vaccine (11 to 18 Years) v Licensed Meningococcal Vaccine (11 to 18 Years)
Number of subjects included in analysis	1434
Analysis specification	Pre-specified
Analysis type	non-inferiority[20]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	8
Confidence interval	
level	95 %
sides	2-sided
lower limit	3
upper limit	14

Notes:

[20] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenC
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine. The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 1894 (instead of 1434, which refers to MenA).	
Comparison groups	Investigational MenACWY Vaccine (11 to 18 Years) v Licensed Meningococcal Vaccine (11 to 18 Years)
Number of subjects included in analysis	1434
Analysis specification	Pre-specified
Analysis type	non-inferiority[21]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-2
upper limit	7

Notes:

[21] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenW
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine. The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 1312 (instead of 1434, which refers to MenA).	
Comparison groups	Investigational MenACWY Vaccine (11 to 18 Years) v Licensed Meningococcal Vaccine (11 to 18 Years)

Number of subjects included in analysis	1434
Analysis specification	Pre-specified
Analysis type	non-inferiority[22]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	12
Confidence interval	
level	95 %
sides	2-sided
lower limit	6
upper limit	18

Notes:

[22] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenY

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 1330 (instead of 1434, which refers to MenA).

Comparison groups	Investigational MenACWY Vaccine (11 to 18 Years) v Licensed Meningococcal Vaccine (11 to 18 Years)
Number of subjects included in analysis	1434
Analysis specification	Pre-specified
Analysis type	non-inferiority[23]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	27
Confidence interval	
level	95 %
sides	2-sided
lower limit	20
upper limit	33

Notes:

[23] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Primary: Percentage of Seroresponders, Ages 19 to 55 Years

End point title	Percentage of Seroresponders, Ages 19 to 55 Years[24]

End point description:

Immunogenicity of a single injection of Meningococcal ACWY (3 lots pooled) to that of a licensed meningococcal ACWY conjugate vaccine, defined as the percentage of subjects with seroresponse directed against Neisseria meningitidis serogroups A, C, W, and Y (healthy subjects 19 to 55 years of Age).
Seroresponse to MenACWY: For a subject with hSBA titer <1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer ≥ 1:8; for a subject with hSBA titer ≥ 1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer of at least 4 times the baseline.

End point type	Primary

End point timeframe:

28 days after vaccination

Notes:

[24] - The end point is not reporting statistics for all the arms in the baseline period. It is expected all the baseline period arms will be reported on when providing values for an end point on the baseline period.
Justification: there is no statistical analysis presented for this endpoint.

End point values	Investigational MenACWY Vaccine (19 to 55 Years)	Licensed Meningococcal Vaccine (19 to 55 Years)		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	963[25]	321[26]		
Units: Percentage of subjects				
number (confidence interval 95%)				
Serogroup A	67 (64 to 70)	68 (63 to 73)		
Serogroup C	67 (64 to 70)	58 (53 to 64)		
Serogroup W	50 (46 to 55)	41 (35 to 47)		
Serogroup Y	56 (51 to 60)	40 (34 to 46)		

Notes:

[25] - N serogroup C: 961
N serogroup W: 484
N serogroup Y: 503
[26] - N serogroup C: 318
N serogroup W: 292
N serogroup Y: 306

Statistical analyses

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenA

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.

Comparison groups	Investigational MenACWY Vaccine (19 to 55 Years) v Licensed Meningococcal Vaccine (19 to 55 Years)
Number of subjects included in analysis	1284
Analysis specification	Pre-specified
Analysis type	non-inferiority[27]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-7
upper limit	5

Notes:

[27] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenC

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 1279 (instead of 1284, which refers to MenA).

Comparison groups	Investigational MenACWY Vaccine (19 to 55 Years) v Licensed Meningococcal Vaccine (19 to 55 Years)

Number of subjects included in analysis	1284
Analysis specification	Pre-specified
Analysis type	non-inferiority[28]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	9
Confidence interval	
level	95 %
sides	2-sided
lower limit	3
upper limit	15

Notes:

[28] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenW

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 776 (instead of 1284, which refers to MenA).

Comparison groups	Investigational MenACWY Vaccine (19 to 55 Years) v Licensed Meningococcal Vaccine (19 to 55 Years)
Number of subjects included in analysis	1284
Analysis specification	Pre-specified
Analysis type	non-inferiority[29]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	9
Confidence interval	
level	95 %
sides	2-sided
lower limit	2
upper limit	17

Notes:

[29] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenY

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 809 (instead of 1284, which refers to MenA).

Comparison groups	Investigational MenACWY Vaccine (19 to 55 Years) v Licensed Meningococcal Vaccine (19 to 55 Years)
Number of subjects included in analysis	1284
Analysis specification	Pre-specified
Analysis type	non-inferiority[30]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	16

Confidence interval	
level	95 %
sides	2-sided
lower limit	9
upper limit	23

Notes:

[30] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for the between group difference (investigational vaccine minus licensed vaccine) in percentage of seroresponders one month after vaccination is > -10%.

Secondary: Lot to Lot Consistency for the Percentage of Subjects With Seroresponse, Human Serum Bactericidal Activity (hSBA) Titer ≥ 1:8, and ≥ 1:4, Ages 11 to 18 Years

End point title	Lot to Lot Consistency for the Percentage of Subjects With Seroresponse, Human Serum Bactericidal Activity (hSBA) Titer ≥ 1:8, and ≥ 1:4, Ages 11 to 18 Years

End point description:

The consistency of the immune response for three lots of Meningococcal ACWY, as measured by the percentage of subjects with seroresponse, hSBA titer ≥ 1:4 and ≥ 1:8, directed against N meningitidis serogroups A, C, W, and Y (healthy adolescents 11 to 18 years of age).
Seroresponse to MenACWY: For a subject with hSBA titer <1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer ≥ 1:8; for a subject with hSBA titer ≥ 1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer of at least 4 times the baseline.

End point type	Secondary

End point timeframe:

28 days after vaccination

End point values	Investigational MenACWY Lot 1 (11 to 18 years)	Investigational MenACWY Lot 2 (11 to 18 years)	Investigational MenACWY Lot 3 (11 to 18 years)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	359[31]	357[32]	359[33]	
Units: Percentage of subjects				
number (confidence interval 95%)				
Seroresponse in serogroup A	71 (66 to 76)	75 (70 to 79)	77 (73 to 82)	
Seroresponse in serogroup C	78 (74 to 82)	73 (69 to 77)	74 (70 to 78)	
Seroresponse in serogroup W	74 (69 to 78)	80 (75 to 84)	70 (65 to 75)	
Seroresponse in serogroup Y	66 (61 to 71)	72 (67 to 77)	65 (60 to 70)	
hSBA Titer ≥ 1:8 in serogroup A	72 (67 to 77)	76 (71 to 80)	78 (74 to 82)	
hSBA Titer ≥ 1:8 in serogroup C	86 (82 to 89)	84 (81 to 87)	83 (79 to 86)	
hSBA Titer ≥ 1:8 in serogroup W	95 (92 to 97)	97 (95 to 99)	96 (93 to 98)	
hSBA Titer ≥ 1:8 in serogroup Y	86 (82 to 89)	89 (85 to 92)	88 (85 to 92)	
hSBA Titer ≥ 1:4 in serogroup A	76 (72 to 81)	79 (74 to 83)	81 (77 to 85)	
hSBA Titer ≥ 1:4 in serogroup C	89 (86 to 91)	88 (85 to 91)	88 (85 to 91)	
hSBA Titer ≥ 1:4 in serogroup W	95 (92 to 97)	97 (95 to 99)	97 (94 to 98)	
hSBA Titer ≥ 1:4 in serogroup Y	89 (85 to 92)	92 (89 to 95)	93 (90 to 96)	

Notes:

[31] - N serogroup C: 499
N serogroup W: 340
N serogroup Y: 345
[32] - N serogroup C: 493

N serogroup W: 341
N serogroup Y: 345
[33] - N serogroup C: 491
N serogroup W: 343
N serogroup Y: 346

Statistical analyses

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[34]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-10
upper limit	3

Notes:

[34] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[35]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-6
Confidence interval	
level	95 %
sides	2-sided
lower limit	-12
upper limit	0

Notes:

[35] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[36]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-9
upper limit	4

Notes:

[36] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 992 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[37]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	5
Confidence interval	
level	95 %
sides	2-sided
lower limit	0
upper limit	10

Notes:

[37] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 990 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[38]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	4
Confidence interval	
level	95 %
sides	2-sided
lower limit	-1
upper limit	10

Notes:

[38] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 984 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[39]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-6
upper limit	5

Notes:

[39] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the

percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 681 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[40]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-6
Confidence interval	
level	95 %
sides	2-sided
lower limit	-13
upper limit	0

Notes:

[40] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 683 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[41]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	4
Confidence interval	
level	95 %
sides	2-sided
lower limit	-3
upper limit	11

Notes:

[41] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 684

(instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[42]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	10
Confidence interval	
level	95 %
sides	2-sided
lower limit	4
upper limit	17

Notes:

[42] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 690 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[43]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-6
Confidence interval	
level	95 %
sides	2-sided
lower limit	-13
upper limit	1

Notes:

[43] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[44]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-6
upper limit	8

Notes:

[44] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with seroresponse comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[45]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	7
Confidence interval	
level	95 %
sides	2-sided
lower limit	0
upper limit	14

Notes:

[45] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for percentage of subjects with seroresponse at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[46]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-10
upper limit	3

Notes:

[46] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[47]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-6
Confidence interval	
level	95 %
sides	2-sided
lower limit	-12
upper limit	0

Notes:

[47] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[48]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-9
upper limit	4

Notes:

[48] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 992 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[49]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-3
upper limit	6

Notes:

[49] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 990 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[50]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-2
upper limit	7

Notes:

[50] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 984 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[51]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-3
upper limit	6

Notes:

[51] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 681 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[52]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-5
upper limit	1

Notes:

[52] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 683 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[53]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-4
upper limit	2

Notes:

[53] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 684 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[54]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-2
upper limit	4

Notes:

[54] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 690 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[55]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-8
upper limit	2

Notes:

[55] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[56]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-8
upper limit	2

Notes:

[56] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:8 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[57]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	0
Confidence interval	
level	95 %
sides	2-sided
lower limit	-5
upper limit	5

Notes:

[57] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:8 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[58]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-9
upper limit	4

Notes:

[58] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[59]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-5
Confidence interval	
level	95 %
sides	2-sided
lower limit	-11
upper limit	1

Notes:

[59] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenA

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain A were contained within the equivalence interval (-10%, 10%).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[60]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-8
upper limit	4

Notes:

[60] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain A with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 992 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[61]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-3
upper limit	5

Notes:

[61] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 990 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[62]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	0
Confidence interval	
level	95 %
sides	2-sided
lower limit	-4
upper limit	4

Notes:

[62] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenC

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain C were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 984 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[63]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	0
Confidence interval	
level	95 %
sides	2-sided
lower limit	-4
upper limit	4

Notes:

[63] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain C with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 681 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[64]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-2
Confidence interval	
level	95 %
sides	2-sided
lower limit	-5
upper limit	1

Notes:

[64] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 683 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)
Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[65]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-4
upper limit	2

Notes:

[65] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenW

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain W were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 684 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)

Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[66]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-2
upper limit	3

Notes:

[66] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain W with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 2 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 2 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 690 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 2 (11 to 18 years) v Investigational MenACWY Lot 1 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[67]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-8
upper limit	1

Notes:

[67] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval for all pairs of vaccine lots, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 2 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 1 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 1 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 718, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 1 (11 to 18 years) v Investigational MenACWY Lot 3 (11 to 18 years)

Number of subjects included in analysis	718
Analysis specification	Pre-specified
Analysis type	equivalence[68]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-4
Confidence interval	
level	95 %
sides	2-sided
lower limit	-9
upper limit	0

Notes:

[68] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 1 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Statistical analysis title	Equivalence Lot 2 and Lot 3 MenY

Statistical analysis description:

Lot-to-lot consistency would be concluded if the two-sided 95% confidence intervals (CIs) for the percentage of subjects with hSBA titer ≥1:4 comparing Investigational vaccine MenACWY Lot 2 to Investigational vaccine MenACWY Lot 3 for Neisseria Meningitidis strain Y were contained within the equivalence interval (-10%, 10%).
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 691 (instead of 716, which refers to MenA).

Comparison groups	Investigational MenACWY Lot 3 (11 to 18 years) v Investigational MenACWY Lot 2 (11 to 18 years)
Number of subjects included in analysis	716
Analysis specification	Pre-specified
Analysis type	equivalence[69]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	-1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-5
upper limit	3

Notes:

[69] - The equivalence margin was (-10%, 10%). If the two sided 95% CIs for the percentage of subjects with hSBA titer ≥1:4 at one month following vaccination was within this equivalence interval, Investigational vaccine MenACWY Lot 2 and Investigational vaccine MenACWY Lot 3 would be equivalent for Neisseria Meningitidis strain Y with respect to the immune response to the vaccine lot.

Secondary: Percentage of Subjects With Seroresponse, Human Serum Bactericidal Activity (hSBA) Titer ≥ 1:8, and hSBA Titer ≥ 1:4, Ages 11 to 55 Years

End point title	Percentage of Subjects With Seroresponse, Human Serum Bactericidal Activity (hSBA) Titer ≥ 1:8, and hSBA Titer ≥ 1:4, Ages 11 to 55 Years

End point description:

Immunogenicity of a single injection of MenACWY (3 lots combined) to that of a licensed meningococcal ACWY conjugate vaccine, defined as the percentage of subjects with seroresponse directed against N meningitidis serogroups A, C, W, and Y (healthy subjects 11 to 55 years of age).
Seroresponse to MenACWY: For a subject with hSBA titer <1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer ≥ 1:8; for a subject with hSBA titer ≥ 1:4 at baseline, seroresponse is defined as a postvaccination hSBA titer of at least 4 times the baseline.

End point type	Secondary

End point timeframe:
28 days after vaccination

End point values	Investigational MenACWY (11 to 55 Years)	Licensed MenACWY (11 to 55 Years)		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	2038[70]	680[71]		
Units: Percentage of subjects				
number (confidence interval 95%)				
Seroresponse in serogroup A	71 (69 to 73)	67 (63 to 71)		
Seroresponse in serogroup C	72 (70 to 74)	67 (64 to 70)		
Seroresponse in serogroup W	67 (64 to 69)	52 (47 to 56)		
Seroresponse in serogroup Y	64 (61 to 66)	41 (37 to 45)		
hSBA≥1:8 in serogroup A	72 (70 to 74)	69 (65 to 72)		
hSBA≥1:8 in serogroup C	83 (81 to 84)	79 (76 to 82)		
hSBA≥1:8 in serogroup W	95 (94 to 96)	89 (86 to 91)		
hSBA≥1:8 in serogroup Y	85 (83 to 87)	70 (66 to 73)		
hSBA≥1:4 in serogroup A	75 (74 to 77)	73 (69 to 76)		
hSBA≥1:4 in serogroup C	87 (86 to 88)	85 (83 to 88)		
hSBA≥1:4 in serogroup W	96 (95 to 97)	91 (88 to 93)		
hSBA≥1:4 in serogroup Y	90 (88 to 91)	77 (74 to 81)		

Notes:

[70] - N serogroup C: 2444
N serogroup W: 1508
N serogroup Y: 1539

[71] - N serogroup C: 819
N serogroup W: 580
N serogroup Y: 600

Statistical analyses

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenA
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.	
Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[72]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	4
Confidence interval	
level	95 %
sides	2-sided
lower limit	0
upper limit	8

Notes:

[72] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with seroresponse one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenC

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 3263 (instead of 2718, which refers to MenA).

Comparison groups	Licensed MenACWY (11 to 55 Years) v Investigational MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[73]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	5
Confidence interval	
level	95 %
sides	2-sided
lower limit	1
upper limit	9

Notes:

[73] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with seroresponse one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenW

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 2088 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[74]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	15
Confidence interval	
level	95 %
sides	2-sided
lower limit	11
upper limit	20

Notes:

[74] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with seroresponse one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenY

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 2139 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed

	MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[75]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	23
Confidence interval	
level	95 %
sides	2-sided
lower limit	19
upper limit	28

Notes:

[75] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with seroresponse one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenA

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[76]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	4
Confidence interval	
level	95 %
sides	2-sided
lower limit	0
upper limit	8

Notes:

[76] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:8 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenC

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 3263 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[77]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	3

Confidence interval	
level	95 %
sides	2-sided
lower limit	0
upper limit	7

Notes:

[77] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:8 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenW

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 2088 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[78]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	6
Confidence interval	
level	95 %
sides	2-sided
lower limit	4
upper limit	9

Notes:

[78] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with with hSBA ≥ 1:8 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenY

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 2139 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[79]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	15
Confidence interval	
level	95 %
sides	2-sided
lower limit	12
upper limit	20

Notes:

[79] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:8 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenA
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.	
Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[80]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	3
Confidence interval	
level	95 %
sides	2-sided
lower limit	-1
upper limit	7

Notes:

[80] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:4 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenC
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine. The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 3263 (instead of 2718, which refers to MenA).	
Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[81]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	1
Confidence interval	
level	95 %
sides	2-sided
lower limit	-1
upper limit	4

Notes:

[81] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:4 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenW
Statistical analysis description:	
Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine. The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 2088 (instead of 2718, which refers to MenA).	
Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)

Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[82]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	6
Confidence interval	
level	95 %
sides	2-sided
lower limit	3
upper limit	8

Notes:

[82] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:4 one month after vaccination is > -10%.

Statistical analysis title	Vaccine group difference Inv. Vac., Lic. Vac. MenY

Statistical analysis description:

Abbreviations: Inv. Vac., Investigational MenACWY vaccine; Lic. Vac. Licensed MenaCWY vaccine.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 2139 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[83]
Method	ANOVA
Parameter estimate	Vaccine group difference
Point estimate	12
Confidence interval	
level	95 %
sides	2-sided
lower limit	9
upper limit	16

Notes:

[83] - Immunogenicity of the Investigational MenACWY vaccine would be considered non-inferior to that of the Licensed MenACWY vaccine if the lower limit of the two-sided CI for percentage of subjects with hSBA ≥ 1:4 one month after vaccination is > -10%.

Secondary: Human Serum Bactericidal Activity (hSBA) Geometric Mean Titers, Ages 11 to 55 Years

End point title	Human Serum Bactericidal Activity (hSBA) Geometric Mean Titers, Ages 11 to 55 Years

End point description:

Human Serum Bactericidal Activity (hSBA) Geometric Mean Titers, Ages 11 to 55 Years
Immunogenicity of a single injection of MenACWY (3 lots combined) to that of a single injection of a licensed meningococcal ACWY conjugate vaccine, as measured by hSBA GMTs directed against N meningitidis serogroups A, C, W, and Y (healthy subjects 11 to 55 years of age).

End point type	Secondary

End point timeframe:

28 days after vaccination

End point values	Investigational MenACWY (11 to 55 Years)	Licensed MenACWY (11 to 55 Years)		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	2038[84]	680[85]		
Units: Titer				
geometric mean (confidence interval 95%)				
Titers in serogroup A	29 (26 to 32)	22 (19 to 26)		
Titers in serogroup C	55 (49 to 62)	39 (33 to 47)		
Titers in serogroup W	100 (90 to 112)	57 (49 to 66)		
Titers in serogroup Y	53 (47 to 60)	21 (18 to 25)		

Notes:

[84] - N serogroup C: 2444
N serogroup W: 1508
N serogroup Y: 1539
[85] - N serogroup C: 819
N serogroup W: 580
N serogroup Y: 600

Statistical analyses

Statistical analysis title	Non-inferiority of Inv.vac., Lic.vac. MenA

Statistical analysis description:

The study would be considered a success if the lower limit of the two-sided 95% CIs for the hSBA GMT ratios comparing Investigational MenACWY vaccine to Licensed MenACWY vaccine for Neisseria Meningitidis strain A at 1 month after vaccination was to be above 0.5.

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[86]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.32
Confidence interval	
level	95 %
sides	2-sided
lower limit	1.12
upper limit	1.56

Notes:

[86] - The equivalence lower limit was 0.5. If the lower limit of two sided 95% CIs for the ratio of the hSBA GMT (GMT for investigational vaccine / GMT for licensed vaccine) at one month following vaccination was above this limit, Investigational MenACWY vaccine would be non-inferior to Licensed MenACWY vaccine for Neisseria Meningitidis strain A with respect to the immune response.

Statistical analysis title	Non-inferiority of Inv.vac., Lic.vac. MenC

Statistical analysis description:

The study would be considered a success if the lower limit of the two-sided 95% CIs for the hSBA GMT ratios comparing Investigational MenACWY vaccine to Licensed MenACWY vaccine for Neisseria Meningitidis strain C at 1 month after vaccination was to be above 0.5.
The no. of subjects analyzed varied by serogroup. For MenC, the no. of subjects analyzed was 3263 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)

Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[87]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.4
Confidence interval	
level	95 %
sides	2-sided
lower limit	1.17
upper limit	1.67

Notes:

[87] - The equivalence lower limit was 0.5. If the lower limit of two sided 95% CIs for the ratio of the hSBA GMT (GMT for investigational vaccine / GMT for licensed vaccine) at one month following vaccination was above this limit, Investigational MenACWY vaccine would be non-inferior to Licensed MenACWY vaccine for Neisseria Meningitidis strain C with respect to the immune response.

Statistical analysis title	Non-inferiority of Inv.vac., Lic.vac. MenW

Statistical analysis description:

The study would be considered a success if the lower limit of the two-sided 95% CIs for the hSBA GMT ratios comparing Investigational MenACWY vaccine to Licensed MenACWY vaccine for Neisseria Meningitidis strain W at 1 month after vaccination was to be above 0.5.
The no. of subjects analyzed varied by serogroup. For MenW, the no. of subjects analyzed was 2088 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)
Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[88]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	1.76
Confidence interval	
level	95 %
sides	2-sided
lower limit	1.51
upper limit	2.05

Notes:

[88] - The equivalence lower limit was 0.5. If the lower limit of two sided 95% CIs for the ratio of the hSBA GMT (GMT for investigational vaccine / GMT for licensed vaccine) at one month following vaccination was above this limit, Investigational MenACWY vaccine would be non-inferior to Licensed MenACWY vaccine for Neisseria Meningitidis strain W with respect to the immune response.

Statistical analysis title	Non-inferiority of Inv.vac., Lic.vac. MenY

Statistical analysis description:

The study would be considered a success if the lower limit of the two-sided 95% CIs for the hSBA GMT ratios comparing Investigational MenACWY vaccine to Licensed MenACWY vaccine for Neisseria Meningitidis strain Y at 1 month after vaccination was to be above 0.5.
The no. of subjects analyzed varied by serogroup. For MenY, the no. of subjects analyzed was 2139 (instead of 2718, which refers to MenA).

Comparison groups	Investigational MenACWY (11 to 55 Years) v Licensed MenACWY (11 to 55 Years)

Number of subjects included in analysis	2718
Analysis specification	Pre-specified
Analysis type	non-inferiority[89]
Method	ANOVA
Parameter estimate	hSBA GMT ratios
Point estimate	2.49
Confidence interval	
level	95 %
sides	2-sided
lower limit	2.11
upper limit	2.95

Notes:

[89] - The equivalence lower limit was 0.5. If the lower limit of two sided 95% CIs for the ratio of the hSBA GMT (GMT for investigational vaccine / GMT for licensed vaccine) at one month following vaccination was above this limit, Investigational MenACWY vaccine would be non-inferior to Licensed MenACWY vaccine for Neisseria Meningitidis strain Y with respect to the immune response.

Secondary: Number of Subjects With Local and Systemic Reactions, Ages 11 to 55 Years

End point title	Number of Subjects With Local and Systemic Reactions, Ages 11 to 55 Years

End point description:

Safety profile following a single injection of MenACWY (3 lots combined) or a single injection of a licensed meningococcal ACWY conjugate vaccine administered to healthy adolescents or adults (11 to 55 years of age).

End point type	Secondary

End point timeframe:

Days 1 to 7

End point values	Investigational MenACWY (11 to 55 Years)	Licensed MenACWY (11 to 55 Years)		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	2649	875		
Units: Number of participants				
number (not applicable)				
Pain	1105	424		
Erythema	414	126		
Induration	324	88		
Chills	168	50		
Nausea	260	65		
Malaise	279	99		
Myalgia	452	149		
Arthralgia	197	54		
Headache	731	237		
Rash	69	20		
Fever ≥38°C	32	6		
Any Other Reaction	555	183		
Analgesic/Antipyretic Medication Used	533	178		
Stayed Home	69	17		

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Serious adverse events were collected from study day 1 to 180.

Adverse event reporting additional description:

A total of 3539 subjects were enrolled in the study; 3524 were vaccinated to receive MenACWY (2649 subjects) or Menactra (875). Overall, 15 subjects were not vaccinated and were excluded from the safety analysis.

Assessment type	Non-systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	10.1

Reporting groups

Reporting group title	Licensed Meningococcal Vaccine (11 to 55 years)

Reporting group description:

One vaccination of the licensed meningococcal ACWY polysaccharide-protein conjugate vaccine was administered intramuscularly.

Reporting group title	Investigational MenACWY Vaccine (11 to 55 years)

Reporting group description:

One dose of the investigational meningococcal ACWY (three lots combined) conjugate vaccine was administered intramuscularly.

Serious adverse events	Licensed Meningococcal Vaccine (11 to 55 years)	Investigational MenACWY Vaccine (11 to 55 years)	
Total subjects affected by serious adverse events			
subjects affected / exposed	5 / 875 (0.57%)	23 / 2649 (0.87%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Injury, poisoning and procedural complications			
Accidental Overdose			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Burns Second Degree			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Clavicle Fracture			

subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Craniocerebral Injury			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Dislocation Of Sternum			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Fall			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Intentional Overdose			
subjects affected / exposed	0 / 875 (0.00%)	2 / 2649 (0.08%)	
occurrences causally related to treatment / all	0 / 0	0 / 2	
deaths causally related to treatment / all	0 / 0	0 / 0	
Ligament Rupture			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Overdose			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Road Traffic Accident			
subjects affected / exposed	0 / 875 (0.00%)	3 / 2649 (0.11%)	
occurrences causally related to treatment / all	0 / 0	0 / 3	
deaths causally related to treatment / all	0 / 0	0 / 0	
Toxicity To Various Agents			

subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Spinal compression fracture			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Congenital, familial and genetic disorders			
Vitello-Intestinal Duct Remnant			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Vascular disorders			
Circulatory Collapse			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Nervous system disorders			
Dystonia			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Epilepsy			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Hypoaesthesia			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Myoclonic Epilepsy			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

Simple Partial Seizures			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Syncope			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
General disorders and administration site conditions			
Chest Pain			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Respiratory, thoracic and mediastinal disorders			
Pulmonary Embolism			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Respiratory Failure			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Psychiatric disorders			
Depression Suicidal			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Suicide Attempt			
subjects affected / exposed	0 / 875 (0.00%)	2 / 2649 (0.08%)	
occurrences causally related to treatment / all	0 / 0	0 / 4	
deaths causally related to treatment / all	0 / 0	0 / 0	
Musculoskeletal and connective tissue disorders			
Epiphysiolysis			

subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Intervertebral Disc Protrusion			
subjects affected / exposed	1 / 875 (0.11%)	0 / 2649 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Infections and infestations			
Appendicitis			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Meningitis Viral			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Pneumonia			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Staphylococcal Infection			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Tonsillitis			
subjects affected / exposed	0 / 875 (0.00%)	1 / 2649 (0.04%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

Frequency threshold for reporting non-serious adverse events: 5 %

Non-serious adverse events	Licensed Meningococcal Vaccine (11 to 55 years)	Investigational MenACWY Vaccine (11 to 55 years)	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	572 / 875 (65.37%)	1613 / 2649 (60.89%)	
Nervous system disorders			
Headache			
subjects affected / exposed	240 / 875 (27.43%)	740 / 2649 (27.94%)	
occurrences (all)	308	969	
General disorders and administration site conditions			
Chills			
subjects affected / exposed	50 / 875 (5.71%)	169 / 2649 (6.38%)	
occurrences (all)	56	210	
Injection site induration			
subjects affected / exposed	88 / 875 (10.06%)	324 / 2649 (12.23%)	
occurrences (all)	91	348	
Injection site erythema			
subjects affected / exposed	126 / 875 (14.40%)	414 / 2649 (15.63%)	
occurrences (all)	133	449	
Malaise			
subjects affected / exposed	100 / 875 (11.43%)	280 / 2649 (10.57%)	
occurrences (all)	111	323	
Injection site pain			
subjects affected / exposed	424 / 875 (48.46%)	1106 / 2649 (41.75%)	
occurrences (all)	471	1234	
Gastrointestinal disorders			
Nausea			
subjects affected / exposed	66 / 875 (7.54%)	265 / 2649 (10.00%)	
occurrences (all)	78	320	
Musculoskeletal and connective tissue disorders			
Myalgia			
subjects affected / exposed	150 / 875 (17.14%)	453 / 2649 (17.10%)	
occurrences (all)	169	514	
Arthralgia			

subjects affected / exposed occurrences (all)	59 / 875 (6.74%) 67	211 / 2649 (7.97%) 250	

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
21 May 2007	Amendment 1 issues dealt with 1) Changing two former immunogenicity secondary objectives to primary objectives, as well as changing immunogenicity endpoint from 4-fold rise in hSBA titer to seroresponse (defined as either an hSBA titer ≥ 1:8 or 4-fold rise in titer depending on the subject's baseline titer level). Changes were made to the endpoints to harmonize endpoint definitions across different regulatory agency input. 2) Increasing the number of adults aged 35 -55 years in each of the vaccine group, for a total of 400 more adults aged 35 -55 years.
20 December 2007	Amendment 2 issues dealt with modifying the calculations of power to demonstrate non-inferiority.

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported

Online references

http://www.ncbi.nlm.nih.gov/pubmed/19812260

http://www.ncbi.nlm.nih.gov/pubmed/19476428