Clinical trial results:
Immune Response to Pertussis After Vaccination With a Tdap-IPV Booster Vaccine in Children in the Republic of South Africa: Effect of Homologous and Heterologous Pertussis Vaccination Priming Background

Summary

EudraCT number	2022-002452-40
Trial protocol	Outside EU/EEA
Global end of trial date	11 January 2023

Results information

Result version number	v2 (current)
This version publication date	04 July 2024
First version publication date	15 October 2023
Version creation reason	

Trial information

Trial identification

Sponsor protocol code	TD500056

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT04300192
WHO universal trial number (UTN)	U1111-1223-5186

Notes:

Sponsors

Sponsor organisation name	Sanofi Pasteur
Sponsor organisation address	14 Espace Henry Vallée, Lyon, France, 69007
Public contact	Trial Transparency Team, Sanofi Pasteur, Contact-US@sanofi.com
Scientific contact	Trial Transparency Team, Sanofi Pasteur, Contact-US@sanofi.com

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	No
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	19 January 2024
Is this the analysis of the primary completion data?	No

Global end of trial reached?	Yes
Global end of trial date	11 January 2023
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

Humoral Immune Response: - To describe the long-term humoral immune responses to pertussis, diphtheria and tetanus after homologous and heterologous pertussis vaccine priming regimens. - To determine the effects of the priming regimen on humoral responses to booster vaccination with tetanus toxoid, reduced diphtheria toxoid and acellular pertussis- inactivated poliomyelitis vaccine (Tdap-IPV) vaccine. Cell-mediated Immunity: - To describe the long-term cell-mediated immune responses to pertussis after homologous and heterologous pertussis vaccine priming regimens. - To determine the effects of the priming regimen on cell-mediated immune response to booster vaccination with Tdap-IPV vaccine.

Protection of trial subjects:

Vaccinations were performed by qualified and trained study personnel. Subjects with allergy to any of the vaccine components were not vaccinated. After vaccination, subjects were also kept under clinical observation for 30 minutes to ensure their safety. Appropriate medical equipment were also available on site in case of any immediate allergic reactions.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	27 January 2021
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	South Africa: 274
Worldwide total number of subjects	274
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)	113
Adolescents (12-17 years)	161

Adults (18-64 years)	0
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

The study was conducted at 3 active sites in South Africa from 27 January 2021 to 11 January 2023. Subjects primed with whole-cell pertussis (wP) and/or acellular pertussis (aP) vaccines in various combination as per national recommendation during their first 2 years of life were enrolled in this study.

Pre-assignment

Screening details:

A total of 274 subjects were enrolled in the study, of which 1 subject was not assigned to any of the study groups and was not vaccinated due to determination of protocol deviation post-enrollment.

Period 1

Period 1 title	Overall study (overall period)
Is this the baseline period?	Yes
Allocation method	Not applicable
Blinding used	Not blinded

Arms

Are arms mutually exclusive?	Yes
Arm title	Group 1: Adacel Quadra® vaccine

Arm description:

Subjects primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as intramuscular (IM) injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 millilitres (mL) IM injection into the deltoid muscle on Day 0.

Arm title	Group 2: Adacel Quadra® vaccine

Arm description:

Subjects primed with primary pertussis vaccination (3 doses of wP vaccine followed by 1 dose of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Arm title	Group 3: Adacel Quadra® vaccine

Arm description:

Subjects primed with primary pertussis vaccination (2 doses of wP vaccine followed by 2 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Arm title	Group 4: Adacel Quadra® vaccine

Arm description:

Subjects primed with primary pertussis vaccination (1 dose of wP vaccine followed by 3 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Arm title	Group 5: Adacel Quadra® vaccine

Arm description:

Subjects primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Arm title	Group 6: Adacel Quadra® vaccine (HIV positive)

Arm description:

Subjects with human immunodeficiency virus (HIV) infection and primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Arm title	Group 7: Adacel Quadra® vaccine (HIV positive)

Arm description:

Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Arm type	Experimental
Investigational medicinal product name	Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine Adsorbed Combined with Inactivated Poliomyelitis Vaccine
Investigational medicinal product code	
Other name	Adacel Quadra®, Repevax®, Triaxis® Polio, ADACEL®-POLIO
Pharmaceutical forms	Suspension for injection
Routes of administration	Intramuscular use

Dosage and administration details:

0.5 mL IM injection into the deltoid muscle on Day 0.

Number of subjects in period 1[1]	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine
Started	103	29	4
Vaccinated	103	29	4
Completed	103	29	4
Not completed	0	0	0
Protocol deviation	-	-	-

Number of subjects in period 1[1]	Group 4: Adacel Quadra® vaccine	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)
Started	1	103	10
Vaccinated	1	102	10
Completed	1	102	7
Not completed	0	1	3
Protocol deviation	-	1	3

Number of subjects in period 1[1]	Group 7: Adacel Quadra® vaccine (HIV positive)
Started	23
Vaccinated	22
Completed	18
Not completed	5
Protocol deviation	5

Notes:

[1] - The number of subjects reported to be in the baseline period are not the same as the worldwide number enrolled in the trial. It is expected that these numbers will be the same.
Justification: One subject was not assigned to any of the study groups and was not vaccinated due to determination of protocol deviation post-enrollment.

Baseline characteristics

Reporting groups	
Reporting group title	Group 1: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as intramuscular (IM) injection on Day 0.	
Reporting group title	Group 2: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (3 doses of wP vaccine followed by 1 dose of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 3: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (2 doses of wP vaccine followed by 2 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 4: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (1 dose of wP vaccine followed by 3 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 5: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 6: Adacel Quadra® vaccine (HIV positive)
Reporting group description:	
Subjects with human immunodeficiency virus (HIV) infection and primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 7: Adacel Quadra® vaccine (HIV positive)
Reporting group description:	
Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	

Reporting group values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine
Number of subjects	103	29	4
Age categorical			
Units: Subjects			
Age continuous			
Here, '99999' was used as a space filler which denotes that standard deviation (SD) was not calculable because only one subject was involved in the analysis.			
Units: years			
arithmetic mean	14.0	12.5	12.0
standard deviation	± 0.685	± 0.509	± 0
Gender categorical			
Units: Subjects			
Female	60	10	2
Male	43	19	2

Reporting group values	Group 4: Adacel Quadra® vaccine	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)
Number of subjects	1	103	10
Age categorical			
Units: Subjects			

Age continuous			
Here, '99999' was used as a space filler which denotes that standard deviation (SD) was not calculable because only one subject was involved in the analysis.			
Units: years			
arithmetic mean	12.0	10.4	13.2
standard deviation	± 99999	± 0.803	± 1.32
Gender categorical			
Units: Subjects			
Female	0	50	2
Male	1	53	8

Reporting group values	Group 7: Adacel Quadra® vaccine (HIV positive)	Total	
Number of subjects	23	273	
Age categorical			
Units: Subjects			

Age continuous			
Here, '99999' was used as a space filler which denotes that standard deviation (SD) was not calculable because only one subject was involved in the analysis.			
Units: years			
arithmetic mean	10.8		
standard deviation	± 0.984	-	
Gender categorical			
Units: Subjects			
Female	10	134	
Male	13	139	

End points

End points reporting groups

Reporting group title	Group 1: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as intramuscular (IM) injection on Day 0.	
Reporting group title	Group 2: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (3 doses of wP vaccine followed by 1 dose of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 3: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (2 doses of wP vaccine followed by 2 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 4: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (1 dose of wP vaccine followed by 3 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 5: Adacel Quadra® vaccine
Reporting group description:	
Subjects primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 6: Adacel Quadra® vaccine (HIV positive)
Reporting group description:	
Subjects with human immunodeficiency virus (HIV) infection and primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Reporting group title	Group 7: Adacel Quadra® vaccine (HIV positive)
Reporting group description:	
Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Subject analysis set title	Group 1: Adacel Quadra® vaccine (FAS CMI subset)
Subject analysis set type	Per protocol
Subject analysis set description:	
Subjects primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0. Here, FAS=Full analysis set and CMI=Cell-mediated immunity.	
Subject analysis set title	Group 2: Adacel Quadra® vaccine (FAS CMI subset)
Subject analysis set type	Per protocol
Subject analysis set description:	
Subjects primed with primary pertussis vaccination (3 doses of wP vaccine followed by 1 dose of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Subject analysis set title	Group 3: Adacel Quadra® vaccine (FAS CMI subset)
Subject analysis set type	Per protocol
Subject analysis set description:	
Subjects primed with primary pertussis vaccination (2 doses of wP vaccine followed by 2 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.	
Subject analysis set title	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject analysis set type	Per protocol

Subject analysis set description:

Subjects primed with primary pertussis vaccination (1 dose of wP vaccine followed by 3 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Subject analysis set title	Group 5: Adacel Quadra® vaccine (FAS CMI subset)
Subject analysis set type	Per protocol

Subject analysis set description:

Subjects primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Subject analysis set title	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)
Subject analysis set type	Per protocol

Subject analysis set description:

Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Subject analysis set title	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)
Subject analysis set type	Per protocol

Subject analysis set description:

Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Primary: Geometric Mean Concentrations (GMCs) of Total Immunoglobulin G (IgG) Anti-pertussis Antibodies Against Pertussis Antigens at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentrations (GMCs) of Total Immunoglobulin G (IgG) Anti-pertussis Antibodies Against Pertussis Antigens at Day 0 (pre-vaccination)[1]

End point description:

GMCs of IgG anti-pertussis antibodies: anti-pertussis (anti-PT) toxin, anti-filamentous hemagglutinin (anti-FHA), anti-pertactin (anti-PRN) and anti-fimbriae (anti-FIM) types 2 and 3 were measured by multiplexed meso scale discovery electrochemiluminescence (MSD ECL) assay. Results were expressed in enzyme-linked immunosorbent assay (ELISA) units (EU)/mL. Analysis was performed on full analysis set (FAS) which included subjects who received a dose of the study vaccine and with pre-vaccination or post-vaccination blood sample results available. Here, '-99999 and 99999' were used as a space filler which denotes that 95 percent (%) confidence interval (CI) was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: EU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgG	9.13 (6.96 to 12.0)	9.01 (6.03 to 13.5)	10.9 (-99999 to 99999)	11.3 (-99999 to 99999)
Anti-FHA IgG	48.0 (38.8 to 59.2)	37.1 (26.2 to 52.5)	39.7 (-99999 to 99999)	23.7 (-99999 to 99999)
Anti-PRN IgG	7.63 (5.83 to 10.0)	2.81 (1.88 to 4.22)	3.98 (-99999 to 99999)	1.00 (-99999 to 99999)

Anti-FIM 2 & 3 IgG	38.7 (30.5 to 49.1)	15.1 (9.00 to 25.2)	9.33 (-99999 to 99999)	7.48 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: EU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgG	7.08 (5.76 to 8.71)	12.1 (5.83 to 25.0)	26.5 (17.2 to 40.8)	
Anti-FHA IgG	42.5 (35.8 to 50.4)	52.3 (25.3 to 108)	104 (63.4 to 170)	
Anti-PRN IgG	1.65 (1.41 to 1.93)	4.46 (1.86 to 10.7)	3.36 (2.05 to 5.50)	
Anti-FIM 2 & 3 IgG	2.11 (1.71 to 2.60)	13.0 (3.68 to 46.0)	1.83 (1.10 to 3.03)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin G Anti-pertussis Antibodies Against Pertussis Antigens at Day 30 (post-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin G Anti-pertussis Antibodies Against Pertussis Antigens at Day 30 (post-vaccination)[2]

End point description:

GMCs of IgG anti-pertussis antibodies: anti-PT toxin, anti-FHA, anti-PRN and anti-FIM types 2 and 3 were measured by multiplexed MSD ECL assay. Results were expressed in EU/mL. Analysis was performed on FAS. Here, 'number of subjects analysed' = subjects with available data for this endpoint and '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[2] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	101	29	4	1
Units: EU/mL				
geometric mean (confidence interval				

95%)				
Anti-PT IgG	102 (82.9 to 124)	141 (107 to 187)	142 (-99999 to 99999)	110 (-99999 to 99999)
Anti-FHA IgG	410 (351 to 479)	379 (306 to 470)	233 (-99999 to 99999)	199 (-99999 to 99999)
Anti-PRN IgG	484 (370 to 632)	250 (174 to 361)	410 (-99999 to 99999)	438 (-99999 to 99999)
Anti-FIM 2 & 3 IgG	2097 (1750 to 2513)	1039 (648 to 1664)	1542 (-99999 to 99999)	1133 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: EU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgG	117 (98.1 to 138)	117 (49.7 to 276)	148 (108 to 201)	
Anti-FHA IgG	366 (318 to 422)	439 (239 to 806)	549 (387 to 779)	
Anti-PRN IgG	74.0 (50.4 to 109)	174 (52.3 to 577)	87.1 (36.5 to 208)	
Anti-FIM 2 & 3 IgG	168 (117 to 242)	1226 (527 to 2853)	78.9 (39.6 to 157)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin G Anti-diphteria Antibodies at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin G Anti-diphteria Antibodies at Day 0 (pre-vaccination)[3]

End point description:

GMCs of IgG anti-diphteria antibodies were measured by multiplexed MSD ECL assay. Results were expressed in international units per millilitre (IU/mL). Analysis was performed on FAS. Here, '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[3] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: IU/mL				
geometric mean (confidence interval 95%)	0.104 (0.075 to 0.147)	0.123 (0.056 to 0.271)	0.432 (-99999 to 99999)	0.050 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: IU/mL				
geometric mean (confidence interval 95%)	0.279 (0.202 to 0.386)	0.039 (0.009 to 0.174)	0.103 (0.036 to 0.298)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin G Anti-diphteria Antibodies at Day 30 (post-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin G Anti-diphteria Antibodies at Day 30 (post-vaccination)[4]

End point description:

GMCs of IgG anti-diphteria antibodies were measured by multiplexed MSD ECL assay. Results were expressed in IU/mL. Analysis was performed on FAS. Here, 'number of subjects analysed' = subjects with available data for this endpoint; and '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[4] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	101	29	4	1
Units: IU/mL				
geometric mean (confidence interval 95%)	2.03 (1.69 to 2.44)	2.06 (1.48 to 2.89)	3.79 (-99999 to 99999)	6.49 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: IU/mL				
geometric mean (confidence interval 95%)	4.79 (4.03 to 5.68)	0.913 (0.206 to 4.04)	2.49 (1.44 to 4.32)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin G Anti-tetanus Antibodies at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin G Anti-tetanus Antibodies at Day 0 (pre-vaccination)[5]

End point description:

GMCs of IgG anti-tetanus antibodies were measured by multiplexed MSD ECL assay. Results were expressed in IU/mL. Analysis was performed on FAS. Here, '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[5] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: IU/mL				
geometric mean (confidence interval 95%)	0.706 (0.483 to 1.03)	1.51 (0.716 to 3.17)	2.38 (-99999 to 99999)	0.040 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	

Units: IU/mL				
geometric mean (confidence interval 95%)	0.528 (0.374 to 0.746)	0.112 (0.025 to 0.494)	0.319 (0.126 to 0.809)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin G Anti-tetanus Antibodies at Day 30 (post-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin G Anti-tetanus Antibodies at Day 30 (post-vaccination)[6]

End point description:

GMCs of IgG anti-tetanus antibodies were measured by multiplexed MSD ECL assay. Results were expressed in IU/mL. Analysis was performed on FAS. Here, 'number of subjects analysed' = subjects with available data for this endpoint; and '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[6] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	101	29	4	1
Units: IU/mL				
geometric mean (confidence interval 95%)	14.8 (12.8 to 17.2)	13.7 (10.3 to 18.2)	11.5 (-99999 to 99999)	13.3 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: IU/mL				
geometric mean (confidence interval 95%)	9.99 (8.58 to 11.6)	9.69 (3.91 to 24.0)	8.65 (5.08 to 14.7)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin A (IgA) Anti-pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin A (IgA) Anti-pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)[7]

End point description:

GMCs of IgA anti-pertussis antibodies: anti-PT toxin, anti-FHA, anti-PRN, anti-FIM types 2 and 3, and anti-heat-killed B. pertussis (HK Bp) were measured by multiplexed MSD ECL assay. Results were expressed in Arbitrary unit (AU)/mL. Analysis was performed on FAS CMI subset which included subset of subjects from the CMI subset and included in the FAS. Here, '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[7] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	31	29	4	1
Units: AU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgA	1.23 (0.871 to 1.75)	1.19 (0.917 to 1.55)	1.10 (-99999 to 99999)	0.580 (-99999 to 99999)
Anti-FHA IgA	3.44 (2.11 to 5.60)	2.10 (1.39 to 3.19)	3.71 (-99999 to 99999)	0.470 (-99999 to 99999)
Anti-PRN IgA	2.16 (1.22 to 3.82)	0.924 (0.714 to 1.20)	1.37 (-99999 to 99999)	0.390 (-99999 to 99999)
Anti-FIM 2 & 3 IgA	1.10 (0.728 to 1.67)	0.926 (0.722 to 1.19)	0.554 (-99999 to 99999)	1.00 (-99999 to 99999)
Anti-HK Bp IgA	7.24 (4.89 to 10.7)	5.23 (3.90 to 6.99)	7.56 (-99999 to 99999)	3.39 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	32	10	22	
Units: AU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgA	1.75 (1.23 to 2.50)	2.96 (1.56 to 5.62)	2.40 (1.56 to 3.69)	

Anti-FHA IgA	2.73 (1.65 to 4.52)	4.82 (1.78 to 13.1)	10.0 (6.10 to 16.5)	
Anti-PRN IgA	0.941 (0.683 to 1.30)	1.27 (0.600 to 2.70)	1.25 (0.746 to 2.09)	
Anti-FIM 2 & 3 IgA	0.979 (0.823 to 1.16)	1.10 (0.592 to 2.04)	0.855 (0.619 to 1.18)	
Anti-HK Bp IgA	6.05 (4.76 to 7.68)	9.63 (5.41 to 17.1)	9.74 (6.46 to 14.7)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Total Immunoglobulin A Anti-pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)

End point title	Geometric Mean Concentrations of Total Immunoglobulin A Anti-pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)[8]

End point description:

GMCs of IgA anti-pertussis antibodies: anti-PT toxin, anti-FHA, anti-PRN, anti-FIM types 2 and 3, and anti- HK Bp were measured by multiplexed MSD ECL assay. Results were expressed in AU/mL. Analysis was performed on FAS CMI subset which included subset of subjects from the CMI subset and included in the FAS. Here, '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[8] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	31	29	4	1
Units: AU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgA	8.31 (4.68 to 14.8)	6.48 (3.96 to 10.6)	15.4 (-99999 to 99999)	15.8 (-99999 to 99999)
Anti-FHA IgA	22.8 (14.4 to 36.2)	18.0 (12.3 to 26.5)	32.5 (-99999 to 99999)	2.90 (-99999 to 99999)
Anti-PRN IgA	15.2 (8.30 to 27.9)	13.5 (7.61 to 23.9)	36.2 (-99999 to 99999)	180 (-99999 to 99999)
Anti-FIM 2 & 3 IgA	27.2 (17.3 to 42.8)	12.5 (7.21 to 21.5)	41.3 (-99999 to 99999)	34.1 (-99999 to 99999)
Anti-HK Bp IgA	19.1 (14.5 to 25.2)	15.1 (11.4 to 20.1)	32.0 (-99999 to 99999)	15.5 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	32	10	22	
Units: AU/mL				
geometric mean (confidence interval 95%)				
Anti-PT IgA	7.59 (4.53 to 12.7)	11.9 (3.94 to 36.0)	7.40 (4.75 to 11.5)	
Anti-FHA IgA	12.0 (7.27 to 19.9)	30.8 (10.5 to 91.0)	27.7 (16.9 to 45.4)	
Anti-PRN IgA	7.07 (3.12 to 16.0)	15.5 (4.49 to 53.4)	9.56 (3.94 to 23.2)	
Anti-FIM 2 & 3 IgA	6.61 (3.36 to 13.0)	18.6 (5.61 to 61.3)	3.45 (1.60 to 7.40)	
Anti-HK Bp IgA	11.2 (8.45 to 14.9)	22.7 (11.7 to 44.3)	15.0 (10.4 to 21.6)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Subclasses of Immunoglobulin G Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentrations of Subclasses of Immunoglobulin G Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)[9]

End point description:

GMCs of IgG subclasses (IgG1, IgG2, IgG3, and IgG4) anti-pertussis antibodies: anti-PT toxin, anti-FHA, anti-PRN, anti-FIM types 2 and 3, and anti- HK Bp were measured by multiplexed MSD ECL assay. Results were expressed in EU/mL. Analysis was performed on FAS CMI subset which included subset of subjects from the CMI subset and included in the FAS. Here, 'number of subjects analyzed' = subjects with available data for this endpoint and 'n'= number of subjects with available data for each specific IgG subclasses. '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects. If number of subjects analyzed were as 0, then '5555' was used as a space filler for Geometric mean and '-55555 to 55555' was used as a space filler for 95% CI.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[9] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	31	29	4	1
Units: EU/mL				
geometric mean (confidence interval 95%)				
Day 0:Anti-PT IgG1 (n=19, 14, 2, 1, 23, 7, 20)	8946 (5194 to 15408)	8185 (4974 to 13470)	4884 (-99999 to 99999)	2957 (-99999 to 99999)
Day 0:Anti-PT IgG2 (n=19, 14, 2, 1, 23, 7, 20)	123 (91.3 to 165)	130 (88.2 to 191)	100 (-99999 to 99999)	933 (-99999 to 99999)
Day 0:Anti-PT IgG3 (n=19, 14, 2, 1, 23, 7, 20)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 0:Anti-PT IgG4 (n=19, 14, 2, 1, 23, 7, 20)	109 (90.8 to 131)	131 (73.0 to 235)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 0:Anti-FHA IgG1 (n=31,29,4,1,32,10,22)	39008 (24733 to 61522)	24107 (15635 to 37169)	21604 (-99999 to 99999)	14701 (-99999 to 99999)
Day 0:Anti-FHA IgG2 (n=31,29,4,1,32,10,22)	785 (457 to 1351)	485 (241 to 976)	282 (-99999 to 99999)	907 (-99999 to 99999)
Day 0:Anti-FHA IgG3 (n=31,29,4,1,32,10,22)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 0:Anti-FHA IgG4 (n=31,29,4,1,32,10,22)	197 (124 to 312)	415 (197 to 871)	100 (-99999 to 99999)	1671 (-99999 to 99999)
Day 0:Anti-PRN IgG1 (n=20,12,2,0,4,6,9)	25294 (11366 to 56285)	5446 (3575 to 8296)	9333 (-99999 to 99999)	5555 (-55555 to 55555)
Day 0:Anti-PRN IgG2 (n=20,12,2,0,4,6,9)	427 (206 to 884)	171 (91.7 to 318)	100 (-99999 to 99999)	5555 (-55555 to 55555)
Day 0:Anti-PRN IgG3 (n=20,12,2,0,4,6,9)	109 (91.4 to 129)	100 (-99999 to 99999)	100 (-99999 to 99999)	5555 (-55555 to 55555)
Day 0:Anti-PRN IgG4 (n=20,12,2,0,4,6,9)	251 (123 to 514)	100 (-99999 to 99999)	100 (-99999 to 99999)	5555 (-55555 to 55555)
Day 0:Anti-FIM 2 & 3 IgG1 (n=28 14, 0, 0, 7, 6, 3)	10565 (6461 to 17275)	4943 (3000 to 8144)	5555 (-55555 to 55555)	5555 (-55555 to 55555)
Day 0:Anti-FIM 2 & 3 IgG2 (n=28 14, 0, 0, 7, 6, 3)	259 (143 to 469)	140 (82.9 to 237)	5555 (-55555 to 55555)	5555 (-55555 to 55555)
Day 0:Anti-FIM 2 & 3 IgG3 (n=28 14, 0, 0, 7, 6, 3)	106 (93.9 to 120)	100 (-99999 to 99999)	5555 (-55555 to 55555)	5555 (-55555 to 55555)
Day 0:Anti-FIM 2 & 3 IgG4 (n=28 14, 0, 0, 7, 6, 3)	128 (96.4 to 170)	100 (-99999 to 99999)	5555 (-55555 to 55555)	5555 (-55555 to 55555)
Day 0:Anti-HK Bp IgG1 (n=27, 17, 3, 1, 13, 8, 8)	5863 (4110 to 8365)	3822 (3206 to 4557)	1911 (-99999 to 99999)	836 (-99999 to 99999)
Day 0:Anti-HK Bp IgG2 (n=27, 17, 3, 1, 13, 8, 8)	409 (236 to 708)	184 (101 to 332)	191 (-99999 to 99999)	1334 (-99999 to 99999)
Day 0:Anti-HK Bp IgG3 (n=27, 17, 3, 1, 13, 8, 8)	118 (93.0 to 150)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 0:Anti-HK Bp IgG4 (n=27, 17, 3, 1, 13, 8, 8)	118 (83.9 to 166)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	32	10	22	

Units: EU/mL				
geometric mean (confidence interval 95%)				
Day 0:Anti-PT IgG1 (n=19, 14, 2, 1, 23, 7, 20)	6028 (4027 to 9022)	12626 (6576 to 24243)	16471 (10776 to 25174)	
Day 0:Anti-PT IgG2 (n=19, 14, 2, 1, 23, 7, 20)	217 (123 to 381)	139 (62.4 to 308)	330 (169 to 646)	
Day 0:Anti-PT IgG3 (n=19, 14, 2, 1, 23, 7, 20)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	
Day 0:Anti-PT IgG4 (n=19, 14, 2, 1, 23, 7, 20)	629 (276 to 1433)	151 (55.1 to 413)	536 (240 to 1197)	
Day 0:Anti-FHA IgG1 (n=31,29,4,1,32,10,22)	58333 (37035 to 91880)	57991 (23283 to 144442)	118244 (66112 to 211483)	
Day 0:Anti-FHA IgG2 (n=31,29,4,1,32,10,22)	3226 (1878 to 5543)	1048 (387 to 2836)	3228 (1481 to 7036)	
Day 0:Anti-FHA IgG3 (n=31,29,4,1,32,10,22)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	
Day 0:Anti-FHA IgG4 (n=31,29,4,1,32,10,22)	1838 (742 to 4552)	167 (52.2 to 536)	1613 (422 to 6164)	
Day 0:Anti-PRN IgG1 (n=20,12,2,0,4,6,9)	16962 (-99999 to 99999)	7480 (2044 to 27381)	3024 (740 to 12352)	
Day 0:Anti-PRN IgG2 (n=20,12,2,0,4,6,9)	161 (-99999 to 99999)	100 (-99999 to 99999)	226 (81.4 to 627)	
Day 0:Anti-PRN IgG3 (n=20,12,2,0,4,6,9)	100 (-99999 to 99999)	169 (43.7 to 657)	436 (40.2 to 4729)	
Day 0:Anti-PRN IgG4 (n=20,12,2,0,4,6,9)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	
Day 0:Anti-FIM 2 & 3 IgG1 (n=28 14, 0, 0, 7, 6, 3)	4057 (2467 to 6673)	7901 (4177 to 14944)	4403 (-99999 to 99999)	
Day 0:Anti-FIM 2 & 3 IgG2 (n=28 14, 0, 0, 7, 6, 3)	197 (67.5 to 572)	184 (38.5 to 877)	390 (-99999 to 99999)	
Day 0:Anti-FIM 2 & 3 IgG3 (n=28 14, 0, 0, 7, 6, 3)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	
Day 0:Anti-FIM 2 & 3 IgG4 (n=28 14, 0, 0, 7, 6, 3)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	
Day 0:Anti-HK Bp IgG1 (n=27, 17, 3, 1, 13, 8, 8)	4789 (3126 to 7337)	4671 (2457 to 8877)	5401 (2456 to 11876)	
Day 0:Anti-HK Bp IgG2 (n=27, 17, 3, 1, 13, 8, 8)	265 (118 to 595)	483 (159 to 1462)	276 (108 to 703)	
Day 0:Anti-HK Bp IgG3 (n=27, 17, 3, 1, 13, 8, 8)	100 (-99999 to 99999)	100 (-99999 to 99999)	123 (75.2 to 202)	
Day 0:Anti-HK Bp IgG4 (n=27, 17, 3, 1, 13, 8, 8)	100 (-99999 to 99999)	100 (-99999 to 99999)	130 (69.6 to 245)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentrations of Subclasses of Immunoglobulin G Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)

End point title	Geometric Mean Concentrations of Subclasses of Immunoglobulin G Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)[10]

End point description:

GMCs of IgG subclasses (IgG1, IgG2, IgG3, and IgG4) anti-pertussis antibodies: anti-PT toxin, anti-FHA, anti-PRN, anti-FIM types 2 and 3, and anti- HK Bp were measured by multiplexed MSD ECL assay. Results were expressed in EU/mL. Analysis was performed on FAS CMI subset which included subset of

subjects from the CMI subset and included in the FAS. Here, 'number of subjects analyzed' = subjects with available data for this endpoint and 'n'= number of subjects with available data for each specific IgG subclasses. '-99999 and 99999' and '-999999 and 999999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects. If number of subjects analyzed were as 0, then '5555' was used as a space filler for Geometric mean and '-55555 to 55555' was used as a space filler for 95% CI.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[10] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	31	29	4	1
Units: EU/mL				
geometric mean (confidence interval 95%)				
Day 30:Anti-PT IgG1(n=30,29,4,1,32,10,22)	102830 (69880 to 151316)	94218 (67676 to 131171)	104494 (-999999 to 999999)	66855 (-99999 to 99999)
Day 30:Anti-PT IgG2(n=30,29,4,1,32,10,22)	985 (574 to 1691)	1516 (945 to 2433)	1158 (-99999 to 99999)	2345 (-99999 to 99999)
Day 30:Anti-PT IgG3(n=30,29,4,1,32,10,22)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-PT IgG4(n=30,29,4,1,32,10,22)	221 (133 to 368)	555 (270 to 1143)	280 (-99999 to 99999)	17387 (-99999 to 99999)
Day 30:Anti-FHA IgG1(n=31,29,4,1,32,10,22)	538864 (417937 to 694781)	475855 (368755 to 614062)	281955 (-999999 to 999999)	244138 (-999999 to 999999)
Day 30:Anti-FHA IgG2(n=31,29,4,1,32,10,22)	8750 (6110 to 12530)	10650 (7464 to 15197)	7215 (-99999 to 99999)	12366 (-99999 to 99999)
Day 30:Anti-FHA IgG3(n=31,29,4,1,32,10,22)	122 (97.3 to 152)	151 (99.4 to 231)	186 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-FHA IgG4(n=31,29,4,1,32,10,22)	988 (403 to 2422)	3783 (1266 to 11302)	657 (-99999 to 99999)	111012 (-999999 to 999999)
Day 30:Anti-PRN IgG1(n=31,29,4,1,27,10,21)	641550 (447748 to 919237)	361109 (248824 to 524064)	648330 (-999999 to 999999)	870487 (-999999 to 999999)
Day 30:Anti-PRN IgG2(n=31,29,4,1,27,10,21)	5284 (3388 to 8242)	4049 (2686 to 6104)	3630 (-99999 to 99999)	3956 (-99999 to 99999)
Day 30:Anti-PRN IgG3(n=31,29,4,1,27,10,21)	147 (105 to 205)	251 (140 to 449)	378 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-PRN IgG4(n=31,29,4,1,27,10,21)	1119 (377 to 3322)	1979 (607 to 6457)	244 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-FIM 2 & 3 IgG1(n=31,29,4,1,28, 10,21)	567808 (374973 to 859809)	259951 (149920 to 450737)	426132 (-999999 to 999999)	443077 (-999999 to 999999)
Day 30:Anti-FIM 2 & 3 IgG2(n=31,29,4,1,28,10,21)	9838 (5947 to 16278)	5315 (2784 to 10145)	11661 (-99999 to 99999)	4357 (-99999 to 99999)
Day 30:Anti-FIM 2 & 3 IgG3(n=31,29,4,1,28,10,21)	165 (106 to 257)	257 (143 to 465)	406 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-FIM 2 & 3 IgG4(n=31,29,4,1,28,10,21)	405 (182 to 899)	292 (158 to 542)	329 (-99999 to 99999)	714 (-99999 to 99999)

Day 30:Anti-HK Bp IgG1(n=31,29,4,1,30,10,22)	33863 (27766 to 41300)	22653 (17914 to 28644)	21659 (-99999 to 99999)	11928 (-99999 to 99999)
Day 30:Anti-HK Bp IgG2(n=31,29,4,1,30,10,22)	941 (624 to 1418)	503 (319 to 793)	344 (-99999 to 99999)	1522 (-99999 to 99999)
Day 30:Anti-HK Bp IgG3(n=31,29,4,1,30,10,22)	113 (94.8 to 136)	118 (93.0 to 149)	100 (-99999 to 99999)	100 (-99999 to 99999)
Day 30:Anti-HK Bp IgG4(n=31,29,4,1,30,10,22)	144 (93.0 to 223)	154 (106 to 223)	100 (-99999 to 99999)	548 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	32	10	22	
Units: EU/mL				
geometric mean (confidence interval 95%)				
Day 30:Anti-PT IgG1(n=30,29,4,1,32,10,22)	64677 (42746 to 97860)	81350 (29224 to 226456)	89645 (59770 to 134451)	
Day 30:Anti-PT IgG2(n=30,29,4,1,32,10,22)	2936 (2090 to 4124)	835 (338 to 2065)	2168 (1317 to 3569)	
Day 30:Anti-PT IgG3(n=30,29,4,1,32,10,22)	100 (-99999 to 99999)	127 (74.3 to 216)	111 (89.1 to 139)	
Day 30:Anti-PT IgG4(n=30,29,4,1,32,10,22)	5907 (2269 to 15379)	155 (57.5 to 419)	2454 (833 to 7228)	
Day 30:Anti-FHA IgG1(n=31,29,4,1,32,10,22)	492380 (361655 to 670358)	576671 (340082 to 977852)	751540 (496054 to 1138609)	
Day 30:Anti-FHA IgG2(n=31,29,4,1,32,10,22)	18055 (13640 to 23900)	7855 (3809 to 16195)	16246 (9201 to 28684)	
Day 30:Anti-FHA IgG3(n=31,29,4,1,32,10,22)	144 (104 to 199)	202 (89.0 to 456)	224 (117 to 427)	
Day 30:Anti-FHA IgG4(n=31,29,4,1,32,10,22)	16670 (5075 to 54759)	336 (50.7 to 2232)	6149 (1384 to 27328)	
Day 30:Anti-PRN IgG1(n=31,29,4,1,27,10,21)	102671 (45105 to 233707)	222876 (63950 to 776763)	114475 (44787 to 292594)	
Day 30:Anti-PRN IgG2(n=31,29,4,1,27,10,21)	985 (447 to 2172)	1676 (699 to 4014)	1290 (623 to 2674)	
Day 30:Anti-PRN IgG3(n=31,29,4,1,27,10,21)	721 (278 to 1870)	494 (101 to 2430)	954 (300 to 3039)	
Day 30:Anti-PRN IgG4(n=31,29,4,1,27,10,21)	181 (113 to 290)	352 (77.5 to 1596)	125 (89.6 to 176)	
Day 30:Anti-FIM 2 & 3 IgG1(n=31,29,4,1,28, 10,21)	96325 (52623 to 176323)	310333 (115799 to 831675)	22967 (11661 to 45237)	
Day 30:Anti-FIM 2 & 3 IgG2(n=31,29,4,1,28,10,21)	2517 (1303 to 4864)	6739 (3401 to 13351)	803 (332 to 1945)	
Day 30:Anti-FIM 2 & 3 IgG3(n=31,29,4,1,28,10,21)	320 (156 to 659)	190 (66.5 to 543)	146 (101 to 211)	
Day 30:Anti-FIM 2 & 3 IgG4(n=31,29,4,1,28,10,21)	215 (124 to 375)	100 (-99999 to 99999)	118 (83.8 to 165)	
Day 30:Anti-HK Bp IgG1(n=31,29,4,1,30,10,22)	9278 (7560 to 11387)	16829 (9999 to 28325)	12055 (9040 to 16075)	
Day 30:Anti-HK Bp IgG2(n=31,29,4,1,30,10,22)	296 (192 to 455)	675 (258 to 1763)	791 (509 to 1229)	

Day 30:Anti-HK Bp IgG3(n=31,29,4,1,30,10,22)	113 (94.8 to 135)	130 (72.0 to 234)	128 (87.6 to 187)	
Day 30:Anti-HK Bp IgG4(n=31,29,4,1,30,10,22)	284 (169 to 478)	119 (80.6 to 175)	229 (125 to 422)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentration of Spot Forming Cells (SFC) Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)

End point title	Geometric Mean Concentration of Spot Forming Cells (SFC) Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 0 (pre-vaccination)[11]

End point description:

GMCs of SFC subclasses (Interleukin [IL]-4, Interferon [IFN]-gamma [], and IL-17 secreting cells) anti-pertussis antibodies: Antigen complex and anti-HK Bp interferon were measured by FluoroSpot. The samples were run in triplicate, valid data were averaged, and converted to SFC/10^6 Peripheral blood mononuclear cells (PBMCS). Analysis was performed on FAS CMI subset which included subset of subjects from the CMI subset and included in the FAS. Here, 'number of subjects analyzed' = subjects with available data for this endpoint and 'n'= number of subjects with available data for each specific SFC subclasses. '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 0 (pre-vaccination)

Notes:

[11] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	30	28	4	1
Units: SFC/10^6 PBMC				
geometric mean (confidence interval 95%)				
Antigen complex IL-4 (n=30, 28, 4,1, 32, 10, 21)	13.6 (10.7 to 17.4)	12.7 (9.96 to 16.1)	10.0 (-99999 to 99999)	10.0 (-99999 to 99999)
Antigen complex IFN-γ (n=30, 28, 4,1, 32, 10, 21)	164 (93.0 to 288)	218 (123 to 387)	61.6 (-99999 to 99999)	22.5 (-99999 to 99999)
Antigen complex IL-17 (n=30, 28, 4,1, 32, 10, 21)	40.8 (27.8 to 59.9)	38.3 (26.1 to 56.3)	44.1 (-99999 to 99999)	23.0 (-99999 to 99999)
Anti-HK Bp IL-4 (n=27, 27, 4, 1, 31, 10, 20)	12.6 (9.92 to 16.1)	11.9 (9.64 to 14.7)	10.0 (-99999 to 99999)	26.0 (-99999 to 99999)
Anti-HK Bp IFN-γ (n=27, 27, 4, 1, 31, 10, 20)	1299 (871 to 1937)	1265 (843 to 1899)	1084 (-99999 to 99999)	5000 (-99999 to 99999)
Anti-HK Bp IL-17 (n=27, 27, 4, 1, 31, 10, 20)	58.9 (39.0 to 89.0)	38.9 (27.9 to 54.2)	42.5 (-99999 to 99999)	160 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	32	10	21	
Units: SFC/10^6 PBMC				
geometric mean (confidence interval 95%)				
Antigen complex IL-4 (n=30, 28, 4,1, 32, 10, 21)	38.8 (26.1 to 57.7)	13.5 (8.21 to 22.1)	14.6 (10.8 to 19.6)	
Antigen complex IFN-γ (n=30, 28, 4,1, 32, 10, 21)	181 (128 to 256)	128 (51.1 to 321)	136 (86.5 to 214)	
Antigen complex IL-17 (n=30, 28, 4,1, 32, 10, 21)	38.1 (28.4 to 51.1)	33.2 (14.8 to 74.8)	31.2 (21.7 to 44.8)	
Anti-HK Bp IL-4 (n=27, 27, 4, 1, 31, 10, 20)	18.0 (13.0 to 24.9)	13.6 (8.36 to 22.3)	12.0 (9.57 to 15.1)	
Anti-HK Bp IFN-γ (n=27, 27, 4, 1, 31, 10, 20)	862 (612 to 1213)	1341 (667 to 2695)	952 (534 to 1699)	
Anti-HK Bp IL-17 (n=27, 27, 4, 1, 31, 10, 20)	38.5 (26.9 to 55.2)	54.6 (25.4 to 117)	44.1 (28.8 to 67.6)	

Statistical analyses

No statistical analyses for this end point

Primary: Geometric Mean Concentration of Spot Forming Cells Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)

End point title	Geometric Mean Concentration of Spot Forming Cells Anti-Pertussis Antibodies Against Pertussis Antigens (FAS CMI subset) at Day 30 (post-vaccination)[12]

End point description:

GMCs of SFC (IL-4, IFN-, and IL-17 secreting cells) anti-pertussis antibodies: anti-antigen complex and anti- HK Bp interferon were measured by multiplexed FluoroSpot. The samples were run in triplicate, valid data were averaged, and converted to SFC/10^6 PBMCS. Analysis was performed on FAS CMI subset which included subset of subjects from the CMI subset and included in the FAS. Here, 'number of subjects analyzed' = subjects with available data for this endpoint and 'n'= number of subjects with available data for each specific IgG subclasses. '-99999 and 99999' were used as a space filler which denotes that 95% CI was not computable due to the low number of subjects.

End point type	Primary

End point timeframe:

Day 30 (post-vaccination)

Notes:

[12] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: As the endpoint was descriptive in nature, no statistical analysis was reported.

End point values	Group 1: Adacel Quadra® vaccine (FAS CMI subset)	Group 2: Adacel Quadra® vaccine (FAS CMI subset)	Group 3: Adacel Quadra® vaccine (FAS CMI subset)	Group 4: Adacel Quadra® vaccine (FAS CMI subset)
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	Subject analysis set
Number of subjects analysed	31	27	4	1
Units: SFC/10^6 PBMC				
geometric mean (confidence interval 95%)				
Antigen complex IL-4 (n=31, 27, 4, 1, 31, 10, 20)	20.1 (15.0 to 27.1)	15.9 (11.5 to 22.0)	12.3 (-99999 to 99999)	70.0 (-99999 to 99999)
Antigen complex IFN-γ (n=31, 27, 4, 1, 31, 10, 20)	290 (153 to 549)	347 (186 to 647)	348 (-99999 to 99999)	301 (-99999 to 99999)
Antigen complex IL-17 (n=31, 27, 4, 1, 31, 10, 20)	81.0 (56.1 to 117)	81.9 (60.6 to 111)	63.0 (-99999 to 99999)	83.0 (-99999 to 99999)
Anti-HK Bp IL-4 (n=31, 27, 4, 1, 30, 10, 19)	13.4 (10.7 to 16.7)	11.0 (9.55 to 12.8)	10.0 (-99999 to 99999)	48.0 (-99999 to 99999)
Anti-HK Bp IFN-γ (n=31, 27, 4, 1, 30, 10, 19)	1106 (703 to 1741)	1643 (1176 to 2294)	1929 (-99999 to 99999)	5000 (-99999 to 99999)
Anti-HK Bp IL-17 (n=31, 27, 4, 1, 30, 10, 19)	76.3 (52.8 to 110)	72.7 (57.5 to 91.9)	44.3 (-99999 to 99999)	212 (-99999 to 99999)

End point values	Group 5: Adacel Quadra® vaccine (FAS CMI subset)	Group 6: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	Group 7: Adacel Quadra® vaccine (HIV positive)(FAS CMI subset)	
Subject group type	Subject analysis set	Subject analysis set	Subject analysis set	
Number of subjects analysed	31	10	20	
Units: SFC/10^6 PBMC				
geometric mean (confidence interval 95%)				
Antigen complex IL-4 (n=31, 27, 4, 1, 31, 10, 20)	77.0 (51.8 to 114)	30.9 (13.7 to 69.6)	24.6 (15.1 to 40.0)	
Antigen complex IFN-γ (n=31, 27, 4, 1, 31, 10, 20)	236 (152 to 366)	337 (127 to 895)	186 (115 to 301)	
Antigen complex IL-17 (n=31, 27, 4, 1, 31, 10, 20)	45.8 (33.4 to 63.0)	82.8 (45.5 to 151)	49.6 (32.0 to 76.8)	
Anti-HK Bp IL-4 (n=31, 27, 4, 1, 30, 10, 19)	24.4 (16.9 to 35.2)	16.5 (8.68 to 31.2)	15.7 (10.5 to 23.6)	
Anti-HK Bp IFN-γ (n=31, 27, 4, 1, 30, 10, 19)	959 (671 to 1370)	2210 (1340 to 3643)	1084 (539 to 2178)	
Anti-HK Bp IL-17 (n=31, 27, 4, 1, 30, 10, 19)	46.6 (33.6 to 64.5)	79.7 (52.1 to 122)	42.3 (26.1 to 68.5)	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of Participants Reporting Immediate Unsolicited Injection Site Reaction and Systemic Adverse Events (AEs)

End point title	Number of Participants Reporting Immediate Unsolicited

	Injection Site Reaction and Systemic Adverse Events (AEs)

End point description:

An unsolicited AE was an observed AE that did not fulfill the conditions pre-listed in the case report book (CRB) in terms of diagnosis and/or onset window post-vaccination. An injection site reaction was an adverse reaction (AR) at and around the injection site. Systemic AEs were all AEs that were not injection or administration site reactions. Analysis was performed on the Safety analysis set which included all subjects who received the study vaccine and had any safety data available.

End point type	Secondary

End point timeframe:

Within 30 minutes post-vaccination

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: Participants				
Unsolicited Injection Site reaction	0	0	0	0
Unsolicited Systemic Adverse Events	0	0	0	0

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: Participants				
Unsolicited Injection Site reaction	0	0	0	
Unsolicited Systemic Adverse Events	0	0	0	

Statistical analyses

No statistical analyses for this end point

Secondary: Number Of Participants Reporting Solicited Injection Site Reaction and Systemic AEs

End point title	Number Of Participants Reporting Solicited Injection Site Reaction and Systemic AEs

End point description:

A solicited reaction was an "expected" AR (sign or symptom) observed and reported under the conditions (nature and onset) pre-listed in the protocol and CRB. An injection site reaction was an AR at and around the injection site. Systemic AEs were all AEs that were not injection or administration site reactions. Analysis was performed on the Safety analysis set which included all subjects who received the study vaccine and had any safety data available.

End point type	Secondary

End point timeframe:

Within 7 days post-vaccination

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: Participants				
Solicited Injection Site reaction	82	19	3	0
Solicited Systemic AEs	57	8	3	1

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: Participants				
Solicited Injection Site reaction	64	7	20	
Solicited Systemic AEs	23	6	7	

Statistical analyses

No statistical analyses for this end point

Secondary: Number Of Participants Reporting Unsolicited Injection Site Reaction and Systemic AEs

End point title	Number Of Participants Reporting Unsolicited Injection Site Reaction and Systemic AEs

End point description:

An unsolicited AE was an observed AE that did not fulfill the conditions pre-listed in the CRB in terms of diagnosis and/or onset window post-vaccination. An injection site reaction was an AR at and around the injection site. Systemic AEs were all AEs that were not injection or administration site reactions. Analysis was performed on the Safety analysis set which included all subjects who received the study vaccine and had any safety data available.

End point type	Secondary

End point timeframe:

Within 30 days post-vaccination

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: Participants				
Unsolicited Injection Site Reaction	8	3	0	0
Unsolicited Systemic AEs	15	5	0	0

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: Participants				
Unsolicited Injection Site Reaction	5	0	3	
Unsolicited Systemic AEs	18	1	9	

Statistical analyses

No statistical analyses for this end point

Secondary: Number Of Participants With Serious Adverse Events (SAEs) and Adverse Event of Special Interest (AESIs)

End point title	Number Of Participants With Serious Adverse Events (SAEs) and Adverse Event of Special Interest (AESIs)

End point description:

An SAE was any untoward medical occurrence that at any dose resulted in death, was life-threatening, required inpatient hospitalization or prolongation of existing hospitalization, resulted in persistent or significant disability/incapacity, was a congenital anomaly/birth defect, or was an important medical event. An AESI was defined as one of scientific and medical concern specific to the Sponsor’s product or program, for which ongoing monitoring and rapid communication by the Investigator to the Sponsor could be appropriate. Analysis was performed on the Safety analysis set which included all subjects who received the study vaccine and had any safety data available.

End point type	Secondary

End point timeframe:

From Day 1 throughout the study (Up to Day 30)

End point values	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine	Group 4: Adacel Quadra® vaccine
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	103	29	4	1
Units: Participants				
SAEs	0	0	0	0

AESIs	0	0	0	0

End point values	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)	Group 7: Adacel Quadra® vaccine (HIV positive)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	102	10	22	
Units: Participants				
SAEs	0	0	0	
AESIs	0	0	0	

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Unsolicited adverse event (AE) data was collected from Day 0 up to 30 days after vaccination. Solicited reactions data was collected within 7 days after vaccination. Serious adverse events data was collected throughout the study (i.e., up to Day 30)

Adverse event reporting additional description:

Analysis was performed on Safety analysis set which included all subjects who received the study vaccine and had any safety data available.

Assessment type	Systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	23.1

Reporting groups

Reporting group title	Group 1: Adacel Quadra® vaccine

Reporting group description:

Subjects primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 2: Adacel Quadra® vaccine

Reporting group description:

Subjects primed with primary pertussis vaccination (3 doses of wP vaccine followed by 1 dose of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 3: Adacel Quadra® vaccine

Reporting group description:

Subjects primed with primary pertussis vaccination (2 doses of wP vaccine followed by 2 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 4: Adacel Quadra® vaccine

Reporting group description:

Subjects primed with primary pertussis vaccination (1 dose of wP vaccine followed by 3 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 5: Adacel Quadra® vaccine

Reporting group description:

Subjects primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 6: Adacel Quadra® vaccine (HIV positive)

Reporting group description:

Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of wP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Reporting group title	Group 7: Adacel Quadra® vaccine (HIV positive)

Reporting group description:

Subjects with HIV infection and primed with primary pertussis vaccination (4 doses of aP vaccine during first 2 years of life) received a single dose of Adacel Quadra® vaccine as IM injection on Day 0.

Serious adverse events	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 103 (0.00%)	0 / 29 (0.00%)	0 / 4 (0.00%)

number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events			

Serious adverse events	Group 4: Adacel Quadra® vaccine	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 1 (0.00%)	0 / 102 (0.00%)	0 / 10 (0.00%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events			

Serious adverse events	Group 7: Adacel Quadra® vaccine (HIV positive)		
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 22 (0.00%)		
number of deaths (all causes)	0		
number of deaths resulting from adverse events			

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

Non-serious adverse events	Group 1: Adacel Quadra® vaccine	Group 2: Adacel Quadra® vaccine	Group 3: Adacel Quadra® vaccine
Total subjects affected by non-serious adverse events			
subjects affected / exposed	88 / 103 (85.44%)	20 / 29 (68.97%)	3 / 4 (75.00%)
Nervous system disorders			
Headache			
subjects affected / exposed	43 / 103 (41.75%)	6 / 29 (20.69%)	3 / 4 (75.00%)
occurrences (all)	45	6	3
General disorders and administration site conditions			
Injection Site Pain			
subjects affected / exposed	74 / 103 (71.84%)	18 / 29 (62.07%)	3 / 4 (75.00%)
occurrences (all)	74	18	3
Injection Site Erythema			
subjects affected / exposed	23 / 103 (22.33%)	3 / 29 (10.34%)	0 / 4 (0.00%)
occurrences (all)	23	3	0
Injection Site Swelling			

subjects affected / exposed	29 / 103 (28.16%)	9 / 29 (31.03%)	0 / 4 (0.00%)
occurrences (all)	29	9	0
Malaise			
subjects affected / exposed	31 / 103 (30.10%)	1 / 29 (3.45%)	0 / 4 (0.00%)
occurrences (all)	31	1	0
Gastrointestinal disorders			
Abdominal Pain			
subjects affected / exposed	1 / 103 (0.97%)	2 / 29 (6.90%)	0 / 4 (0.00%)
occurrences (all)	1	2	0
Musculoskeletal and connective tissue disorders			
Myalgia			
subjects affected / exposed	25 / 103 (24.27%)	1 / 29 (3.45%)	0 / 4 (0.00%)
occurrences (all)	25	1	0
Infections and infestations			
Upper Respiratory Tract Infection			
subjects affected / exposed	4 / 103 (3.88%)	0 / 29 (0.00%)	0 / 4 (0.00%)
occurrences (all)	4	0	0

Non-serious adverse events	Group 4: Adacel Quadra® vaccine	Group 5: Adacel Quadra® vaccine	Group 6: Adacel Quadra® vaccine (HIV positive)
Total subjects affected by non-serious adverse events			
subjects affected / exposed	1 / 1 (100.00%)	71 / 102 (69.61%)	8 / 10 (80.00%)
Nervous system disorders			
Headache			
subjects affected / exposed	1 / 1 (100.00%)	23 / 102 (22.55%)	4 / 10 (40.00%)
occurrences (all)	1	24	4
General disorders and administration site conditions			
Injection Site Pain			
subjects affected / exposed	0 / 1 (0.00%)	62 / 102 (60.78%)	5 / 10 (50.00%)
occurrences (all)	0	62	5
Injection Site Erythema			
subjects affected / exposed	0 / 1 (0.00%)	13 / 102 (12.75%)	2 / 10 (20.00%)
occurrences (all)	0	13	2
Injection Site Swelling			
subjects affected / exposed	0 / 1 (0.00%)	27 / 102 (26.47%)	3 / 10 (30.00%)
occurrences (all)	0	27	3
Malaise			

subjects affected / exposed	1 / 1 (100.00%)	5 / 102 (4.90%)	1 / 10 (10.00%)
occurrences (all)	1	5	1
Gastrointestinal disorders			
Abdominal Pain			
subjects affected / exposed	0 / 1 (0.00%)	1 / 102 (0.98%)	0 / 10 (0.00%)
occurrences (all)	0	1	0
Musculoskeletal and connective tissue disorders			
Myalgia			
subjects affected / exposed	0 / 1 (0.00%)	1 / 102 (0.98%)	1 / 10 (10.00%)
occurrences (all)	0	1	1
Infections and infestations			
Upper Respiratory Tract Infection			
subjects affected / exposed	0 / 1 (0.00%)	6 / 102 (5.88%)	1 / 10 (10.00%)
occurrences (all)	0	6	1

Non-serious adverse events	Group 7: Adacel Quadra® vaccine (HIV positive)		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	21 / 22 (95.45%)		
Nervous system disorders			
Headache			
subjects affected / exposed	4 / 22 (18.18%)		
occurrences (all)	4		
General disorders and administration site conditions			
Injection Site Pain			
subjects affected / exposed	17 / 22 (77.27%)		
occurrences (all)	17		
Injection Site Erythema			
subjects affected / exposed	5 / 22 (22.73%)		
occurrences (all)	5		
Injection Site Swelling			
subjects affected / exposed	11 / 22 (50.00%)		
occurrences (all)	11		
Malaise			
subjects affected / exposed	6 / 22 (27.27%)		
occurrences (all)	6		
Gastrointestinal disorders			

Abdominal Pain subjects affected / exposed occurrences (all)	2 / 22 (9.09%) 3		
Musculoskeletal and connective tissue disorders Myalgia subjects affected / exposed occurrences (all)	3 / 22 (13.64%) 3		
Infections and infestations Upper Respiratory Tract Infection subjects affected / exposed occurrences (all)	4 / 22 (18.18%) 5		

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
26 September 2019	Following changes were made: The word 'minutes' was added as per EC's comment; Added statement: "The parents or their child may withdraw their consent to the storage of samples at any time during the study. If at the age of 18, the child decides to withdraw his/her consent for the storage of his/her samples, he/she will have to contact the site who will inform the sponsor of the study to destroy his/her samples."; throughout the study the age of subject was changed from 8 through 12 years to 9 through 13 years; To align to Art 46 of Regulation (EC) No 1901/2006 for pediatric studies and also to the public disclosure of the study results modalities, the study results should be submitted no later than 6 months after the last visit of last subject (LVLS). As the cell-mediated immunity (CMI) results would be available later than 6 months after the LVLS, it was decided to release a first CSR with available data 6 months after the LVLS and the final clinical study report (CSR) when the CMI results are available; Text was updated to reflect that there was no coordinating investigator but there was a principal investigator; Planned study timelines were updated; Updated the exclusion criteria text to reflect: If the subject has a primary physician who is not the Investigator, the site must obtain the subject's/subject's parent or legal guardian's consent prior to contacting this physician and informing him/her of the subject's participation in the study; Updated text to reflect: All statistical analyses will be performed under the responsibility of the Sponsor's Biostatistics Platform using the SAS® software, Version 9.4 or newer (SAS Institute, Cary, North Carolina, USA);Updated table of study procedures.
14 October 2020	Following changes were made: The cover page was updated with details of the new regional trial manager; Number of subjects was corrected throughout; Corrected and clarified the synopsis and immunogenicity endpoints; Updated identity of study product; Updated visit procedures; Updated planned study calendar; Updated randomization and allocation procedures to provide clarification of subject number; Updated blood samples for CMI; Clarified sample storage and shipment to Global Clinical Immunology (GCI); Corrected sample storage and shipment to research-Eu Marcy l'Etoile, France; Corrected future use of stored serum samples for research; Updated immunogenicity assessment method. Updated the cover page to replace the age of subjects by the years of birth, updated details of the new medical study leader and global safety office; Updated synopsis, study design, schedule of study procedures and methodology; Updated inclusion and exclusion criteria; Updated background section, recruitment procedures, identity of study product; timelines in the planned study calendar section were updated.
18 October 2022	Following changes were made: Updated title page to reflect changes within the company; Replaced 'subject' with 'participant', 'trial' with 'study' and Research-EU Human Immunology Platform was replaced by Vaccine R&D, Clinical Exploratory Research Platform throughout the document; Clarified regarding the number of subjects concerned by blood sampling for the humoral immune response; Updated the study calender; Clarified on the HIV treatment medications; Updated the immunogenicity endpoints due to the development of a more sensitive assay; The exploratory assay for the quantification of the memory B cells by Fluorospot was suppressed because of the difficult interpretation of the results for IgM and IgA secreting cells. The dual color Fluorospot was replaced by a more sensitive triple Fluorospot to measure interferon (IFN)-γ, Interleukin (IL)-17, and IL-4 to interrogate the Th profile. The Luminex assay on culture supernatant was also suppressed as this assay is redundant and less sensitive than the Fluorospot assay.

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported