Clinical trial results:
A phase IV, open, non-randomized, multicentre study to assess the reactogenicity and immunogenicity of a booster dose of GSK Biologicals' combined reduced-antigen-content diphtheria, tetanus and acellular pertussis vaccine dTpa (Boostrix™) when administered in healthy adult subjects, after previous booster vaccination with dTpa in study 263855/029 (dTpa-029).

Summary

EudraCT number	2009-016012-21
Trial protocol	BE
Global end of trial date	08 May 2012

Results information

Result version number	v1
This version publication date	23 March 2016
First version publication date	21 May 2015

Trial information

Trial identification

Sponsor protocol code	113055

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01147900
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Synopsis
Sponsor organisation address	Rue de l'Institut 89, Rixensart, Belgium,
Public contact	Clinical Trials Call Center, GlaxoSmithKline Biologicals, 044 2089-904466, SKClinicalSupportHD@gsk.com
Scientific contact	Clinical Trials Call Center, GlaxoSmithKline Biologicals, 044 2089-904466, SKClinicalSupportHD@gsk.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?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	08 May 2012
Is this the analysis of the primary completion data?	Yes
Primary completion date	08 May 2012
Global end of trial reached?	Yes
Global end of trial date	08 May 2012
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

•To assess the persistence of anti-diphtheria, anti-tetanus, anti-PT, anti-FHA, and anti-PRN antibodies 8.5 and 10 years after the previous booster dose in study 263855/029 (dTpa-029).
•To assess the immunogenicity of the administered dTpa vaccine in terms of antibody response to all vaccine antigens, one month after a second booster vaccination in subjects who will receive:
- the Boostrix-REF vaccine and have previously received the same vaccine.
- the Boostrix-US vaccine and have previously received the same vaccine.
- the Boostrix-REF vaccine and have previously received the Boostrix-INV vaccine.

Protection of trial subjects:

All subjects were supervised for after vaccination with appropriate medical treatment readily available. Vaccines were administered by qualified and trained personnel. Vaccines were administered only to eligible subjects that had no contraindications to any components of the vaccines.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	15 June 2010
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	Belgium: 180
Worldwide total number of subjects	180
EEA total number of subjects	180

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)	0
Adolescents (12-17 years)	0

Adults (18-64 years)	180
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Subjects consisted of those previously vaccinated & boosted in GSK263855/029 study and contacted for participation in this booster (BST) study. Duration of this study was about 19 months, from Year 8.5 (8.5 years post BST in GSK263855/029 study) to one month post BST in this study (Year 10 [10 years post BST in GSK263855/029 study] + one month).

Pre-assignment

Screening details:

At Year 8.5, a total of 180 subjects (out of the 478 planned) were enrolled: 54, 60 and 66 subjects in the Boostrix-REF, Boostrix-US, and Boostrix-INV groups, respectively. At Year 10, a total of 177 subjects (out of the 180 planned) were enrolled: 55, 60 and 62 in the Boostrix-REF, Boostrix-US, and Boostrix-INV groups, respectively.

Period 1

Period 1 title	At Year 8.5
Is this the baseline period?	No
Allocation method	Non-randomised - controlled
Blinding used	Not blinded

Arms

Are arms mutually exclusive?	Yes
Arm title	Boostrix-US Group
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™-US formulation
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use
Dosage and administration details: Intramuscular, single dose	
Arm title	Boostrix-INV Group
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use
Dosage and administration details: Intramuscular, single dose	
Arm title	Boostrix-REF Group
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use

Dosage and administration details:
Intramuscular, single dose

Number of subjects in period 1	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group
Started	54	60	66
Completed	54	60	66

Period 2	
Period 2 title	At Year 10
Is this the baseline period?	Yes[1]
Allocation method	Non-randomised - controlled
Blinding used	Not blinded

Arms	
Are arms mutually exclusive?	Yes
Arm title	Boostrix-US Group
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™-US formulation
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use
Dosage and administration details: Intramuscular, single dose	
Arm title	Boostrix-INV Group
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use
Dosage and administration details: Intramuscular, single dose	
Arm title	Boostrix-REF Group

Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Boostrix™
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Injection
Routes of administration	Intramuscular use

Dosage and administration details:

Intramuscular, single dose

Notes:

[1] - Period 1 is not the baseline period. It is expected that period 1 will be the baseline period.

Justification: More subjects were enrolled in the second period, therefore it was considered the baseline period.

Number of subjects in period 2[2][3]	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group
Started	55	60	62
Completed	55	59	62
Not completed	0	1	0
Lost to follow-up	-	1	-

Notes:

[2] - 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: The worldwide number enrolled was based on the first period, while the second period is the baseline.

[3] - The number of subjects starting the period is not consistent with the number completing the preceding period. It is expected the number of subjects starting the subsequent period will be the same as the number completing the preceding period.

Justification: More subjects enrolled in the second period of the study.

Baseline characteristics

Reporting groups	
Reporting group title	Boostrix-US Group
Reporting group description: -	
Reporting group title	Boostrix-INV Group
Reporting group description: -	
Reporting group title	Boostrix-REF Group
Reporting group description: -	

Reporting group values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group
Number of subjects	55	60	62
Age categorical Units: Subjects			
In utero			
Preterm newborn infants (gestational age < 37 wks)			
Newborns (0-27 days)			
Infants and toddlers (28 days-23 months)			
Children (2-11 years)			
Adolescents (12-17 years)			
Adults (18-64 years)			
From 65-84 years			
85 years and over			
Age continuous Units: years			
geometric mean	23.5	23.4	23.3
standard deviation	± 1.44	± 1.21	± 1.17
Gender categorical Units: Subjects			
Female	29	31	36
Male	26	29	26

Reporting group values	Total		
Number of subjects	177		
Age categorical Units: Subjects			
In utero	0		
Preterm newborn infants (gestational age < 37 wks)	0		
Newborns (0-27 days)	0		
Infants and toddlers (28 days-23 months)	0		
Children (2-11 years)	0		
Adolescents (12-17 years)	0		
Adults (18-64 years)	0		
From 65-84 years	0		
85 years and over	0		

Age continuous Units: years geometric mean standard deviation	- 		
Gender categorical Units: Subjects			
Female	96		
Male	81		

End points

End points reporting groups

Reporting group title	Boostrix-US Group
Reporting group description: -	
Reporting group title	Boostrix-INV Group
Reporting group description: -	
Reporting group title	Boostrix-REF Group
Reporting group description: -	
Reporting group title	Boostrix-US Group
Reporting group description: -	
Reporting group title	Boostrix-INV Group
Reporting group description: -	
Reporting group title	Boostrix-REF Group
Reporting group description: -	

Primary: Number of seroprotected subjects against diphtheria and tetanus

End point title	Number of seroprotected subjects against diphtheria and tetanus[1]

End point description:

A subject seroprotected against diphtheria/tetanus was defined as a vaccinated subject who had an anti-diphtheria (anti-D)/anti-tetanus (anti-T) antibody concentration greater than or above (≥) 0.1 international units per milliliter (IU/mL).

End point type	Primary

End point timeframe:

At Year 8.5

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	65	
Units: Subjects				
Anti-D	53	59	65	
Anti-T	54	59	65	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-D and anti-T antibodies.

End point title	Concentrations for anti-D and anti-T antibodies.[2]

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seroprotection cut-off of the assay was 0.1 IU/mL for all antibodies assessed.

End point type	Primary

End point timeframe:

At Year 8.5

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	65	
Units: IU/mL				
geometric mean (confidence interval 95%)				
Anti-D	0.912 (0.728 to 1.141)	1.205 (0.984 to 1.474)	0.872 (0.711 to 1.068)	
Anti-T	1.889 (1.585 to 2.251)	1.991 (1.674 to 2.368)	1.846 (1.604 to 2.123)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of seroprotected subjects against diphtheria and tetanus.

End point title	Number of seroprotected subjects against diphtheria and tetanus.[3]

End point description:

A subject seroprotected against diphtheria/tetanus was defined as a vaccinated subject who had an anti-D/anti-T antibody concentration greater than or above (≥) 0.1 international units per milliliter (IU/mL).

End point type	Primary

End point timeframe:

At Year 10

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	60	61	
Units: Subjects				
Anti-D	53	60	61	
Anti-T	54	60	61	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-D and anti-T antibodies.

End point title	Concentrations for anti-D and anti-T antibodies.[4]

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seroprotection cut-off of the assay was 0.1 IU/mL.

End point type	Primary

End point timeframe:

At Year 10

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	60	61	
Units: IU/mL				
geometric mean (confidence interval 95%)				
Anti-D	0.767 (0.6 to 0.982)	1.099 (0.882 to 1.37)	0.681 (0.55 to 0.844)	
Anti-T	2.008 (1.65 to 2.444)	2.009 (1.701 to 2.372)	1.76 (1.518 to 2.041)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of seropositive subjects for anti-pertussis toxoid (anti-PT), anti-pertactin (anti-PRN) and anti-filamentous haemagglutinin (anti-FHA) antibodies.

End point title	Number of seropositive subjects for anti-pertussis toxoid (anti-PT), anti-pertactin (anti-PRN) and anti-filamentous haemagglutinin (anti-FHA) antibodies.[5]

End point description:

A seropositive subject for anti-PT/anti-PRN/anti-FHA antibodies was defined as a vaccinated subject who had anti-PT/anti-PRN/anti-FHA antibody concentrations greater than or equal to (≥) 5 Enzyme-linked immunosorbent assay (ELISA) units per milliliter (EL.U/mL).

End point type	Primary

End point timeframe:

At Year 8.5

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	65	
Units: Subjects				
Anti-PT [N=54;59;65]	42	48	60	
Anti-FHA [N=54;59;62]	54	59	62	
Anti-PRN [N=54;59;65]	54	59	65	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-PT, anti-PRN and anti-FHA antibodies.

End point title	Concentrations for anti-PT, anti-PRN and anti-FHA antibodies.[6]

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seropositivity cut-off of the assay was 5 EL.U/mL for all antibodies assessed.

End point type	Primary

End point timeframe:

At Year 8.5

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	65	
Units: EL.U/mL				
geometric mean (confidence interval 95%)				
Anti-PT [N=54;59;65]	10.933 (7.979 to 14.98)	13.372 (10.139 to 17.634)	18.034 (13.812 to 23.545)	
Anti-FHA [N=54;59;62]	72.653 (57.904 to 91.158)	96.144 (75.613 to 122.25)	102.604 (85.687 to 122.861)	
Anti-PRN [N=54;59;65]	161.349 (121.75 to 213.827)	179.027 (136.303 to 235.144)	134.616 (106.266 to 170.528)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of seropositive subjects for anti-PT, anti-FHA and anti-PRN antibodies.

End point title	Number of seropositive subjects for anti-PT, anti-FHA and anti-PRN antibodies.[7]

End point description:

A seropositive subject for anti-PT/anti-FHA/anti-PRN antibodies was defined as a vaccinated subject who had anti-PT/anti-FHA/anti-PRN antibody concentrations greater than or equal to (≥) 5 Enzyme-linked immunosorbent assay (ELISA) units per milliliter (EL.U/mL).

End point type	Primary

End point timeframe:

At Year 10

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	60	60	
Units: Subjects				
Anti-PT [N=52;59;59]	44	49	51	
Anti-PRN [N=54;60;60]	54	60	60	
Anti-FHA [N=54;60;60]	54	60	60	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-PT, anti-FHA and anti-PRN antibodies.

End point title	Concentrations for anti-PT, anti-FHA and anti-PRN antibodies.[8]

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seropositivity cut-off of the assay was 5 EL.U/mL.

End point type	Primary

End point timeframe:

At Year 10

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	60	60	
Units: EL.U/mL				
geometric mean (confidence interval 95%)				
Anti-PT [N=52;59;59]	11.627 (8.863 to 15.252)	13.987 (10.874 to 17.991)	15.728 (11.76 to 21.034)	
Anti-PRN [N=54;60;60]	131.814 (98.531 to 176.34)	158.239 (120.864 to 207.171)	115.209 (91.288 to 145.398)	
Anti-FHA [N=54;60;60]	75.574 (61.018 to 93.603)	98.182 (77.166 to 124.921)	98.441 (82.71 to 117.165)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of seroprotected subjects against diphtheria and tetanus

End point title	Number of seroprotected subjects against diphtheria and tetanus[9]

End point description:

A subject seroprotected against diphtheria/tetanus was defined as a vaccinated subject who had an anti-D/anti-T antibody concentration greater than or above (≥) 0.1 international units per milliliter (IU/mL).

End point type	Primary

End point timeframe:

At Year 10 pre booster vaccination (PRE) and at 1 month post Year 10 booster vaccination (POST)

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	60	
Units: Subjects				
Anti-D, PRE	53	59	60	
Anti-D, POST	54	59	60	
Anti-T, PRE	54	59	60	
Anti-T, POST	54	59	60	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-D and anti-T antibodies.

End point title	Concentrations for anti-D and anti-T antibodies.[10]

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seroprotection cut-off of the assay was 0.1 IU/mL for all antibodies assessed.

End point type	Primary

End point timeframe:

At Year 10 pre booster vaccination (PRE) and at 1 month post Year 10 booster vaccination (POST)

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	60	
Units: IU/mL				
geometric mean (confidence interval 95%)				
Anti-D, PRE	0.767 (0.6 to 0.982)	1.094 (0.874 to 1.368)	0.686 (0.552 to 0.853)	
Anti-D, POST	4.251 (3.646 to 4.957)	5.226 (4.353 to 6.275)	4.15 (3.543 to 4.862)	
Anti-T, PRE	2.008 (1.65 to 2.444)	1.987 (1.68 to 2.35)	1.752 (1.508 to 2.037)	
Anti-T, POST	7.581 (6.523 to 8.809)	8.456 (7.294 to 9.802)	8.792 (7.582 to 10.195)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of seropositive subjects for anti-PT, anti-FHA and anti-PRN antibodies.

End point title	Number of seropositive subjects for anti-PT, anti-FHA and anti-PRN antibodies.[11]

End point description:

A seropositive subject for anti-PT/anti-PRN/anti-FHA antibodies was defined as a vaccinated subject who had anti-PT/anti-PRN/anti-FHA antibody concentrations greater than or equal to (≥) 5 ELISA units per milliliter (EL.U/mL).

End point type	Primary

End point timeframe:

At Year 10 pre booster vaccination (PRE) and at 1 month post Year 10 booster vaccination (POST)

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	60	
Units: Subjects				
Anti-PT, PRE [N=52;58;58]	44	48	50	
Anti-PT, POST [N=54;59;60]	54	59	60	
Anti-PRN, PRE [N=54;59;59]	54	59	59	
Anti-PRN, POST [N=53;59;60]	53	59	60	
Anti-FHA, PRE [N=54;59;59]	54	59	59	
Anti-FHA, POST [N=53;59;60]	53	59	60	

Statistical analyses

No statistical analyses for this end point

Primary: Concentrations for anti-PT, anti-FHA and anti-PRN antibodies.

End point title	Concentrations for anti-PT, anti-FHA and anti-PRN

End point description:

Concentrations were expressed as geometric mean concentrations (GMCs). The seropositivity cut-off of the assay was 5 EL.U/mL.

End point type	Primary

End point timeframe:

At Year 10 pre booster vaccination (PRE) and at 1 month post Year 10 booster vaccination (POST)

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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	60	
Units: EL.U/mL				
geometric mean (confidence interval 95%)				
Anti-PT, PRE [N=52;58;58]	11.627 (8.863 to 15.252)	14.193 (11.003 to 18.306)	15.65 (11.643 to 21.035)	
Anti-PT, POST [N=54;59;60]	82.478 (66.951 to 101.606)	108.094 (87.703 to 133.227)	123.964 (103.458 to 148.533)	
Anti-PRN, PRE [N=54;59;59]	131.814 (98.531 to 176.34)	161.903 (123.574 to 212.12)	114.226 (90.201 to 144.652)	
Anti-PRN, POST [N=53;59;60]	445.751 (372.77 to 533.02)	448.475 (383.748 to 524.12)	448.839 (379.488 to 530.863)	
Anti-FHA, PRE [N=54;59;59]	75.574 (61.018 to 93.603)	96.098 (75.507 to 122.305)	97.698 (81.891 to 116.555)	

Anti-FHA, POST [N=53;59;60]	503.532 (426.524 to 594.444)	592.177 (516.831 to 678.507)	558.648 (489.266 to 637.869)	

Statistical analyses

No statistical analyses for this end point

Primary: Number of booster responders to pertussis toxoid (PT), filamentous haemagglutinin (FHA) and pertactin (PRN) antigens.

End point title	Number of booster responders to pertussis toxoid (PT), filamentous haemagglutinin (FHA) and pertactin (PRN) antigens.[13]

End point description:

A booster responder to PT/PRN antigens was defined as either a vaccinated subject seronegative at analysis baseline (Year 10) with anti-PT/anti-PRN antibody concentration greater than or equal to (≥) 5 EL.U/mL at one month post Year 10 booster vaccination, or as a vaccinated subject seropositive at analysis baseline (Year 10) and with anti-PT/anti-PRN antibody concentration with at least a 2-fold increase at one month post Year 10 booster vaccination. A seronegative/seropositive subject was defined as a vaccinated subject with anti-PT/anti-PRN antibody concentration ≥/< 5 EL.U/mL.

End point type	Primary

End point timeframe:

At 1 month post Year 10 booster vaccination

Notes:

[13] - 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: The analysis of the primary endpoint was descriptive i.e. no statistical hypothesis test was performed.

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	46	52	52	
Units: Subjects				
Booster responses to anti-PT [N=44;51;51]	44	51	48	
Booster responses to anti-PRN [N=45;52;52]	23	29	35	
Booster responses to anti-FHA [N=46;52;50]	43	47	48	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of subjects with any solicited local symptoms.

End point title	Number of subjects with any solicited local symptoms.

End point description:

Assessed solicited local symptoms were pain, redness and swelling at the injection site. Any = incidence of a particular symptom regardless of intensity grade.

End point type	Secondary

End point timeframe:

During the 4-day (Days 0-3) follow-up period after booster vaccination

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	55	59	62	
Units: Subjects				
Any Pain	50	55	54	
Any Redness	23	23	21	
Any Swelling	21	20	19	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of subjects with any solicited general symptoms.

End point title	Number of subjects with any solicited general symptoms.

End point description:

Assessed solicited general symptoms were fatigue, gastrointestinal, headache and fever [defined as axillary temperature ≥ 37.5 degrees Celsius (°C)]. Any = incidence of a particular symptom regardless of intensity grade and relationship to vaccination.

End point type	Secondary

End point timeframe:

During the 4-day (Days 0-3) follow-up period after booster vaccination

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	59	62	
Units: Subjects				
Any Fatigue	17	20	22	
Any Gastrointestinal Symptoms	10	9	13	
Any Headache	13	19	13	
Any Fever	1	1	1	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of subjects with any unsolicited adverse events (AEs).

End point title	Number of subjects with any unsolicited adverse events (AEs).

End point description:

An unsolicited AE is any AE (i.e. any untoward medical occurrence in a patient or clinical investigation subject, temporally associated with use of a medicinal product, whether or not considered related to the medicinal product) reported in addition to those solicited during the clinical study and any solicited symptom with onset outside the specified period of follow-up for solicited symptoms. Any unsolicited AE = any unsolicited AE regardless of intensity or relationship to vaccination.

End point type	Secondary

End point timeframe:

During the 31-day (Days 0-30) follow-up period after booster vaccination

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	55	60	62	
Units: Subjects				
Subjects with any unsolicited AE(s)	22	16	21	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of subjects with any serious adverse events (SAEs).

End point title	Number of subjects with any serious adverse events (SAEs).

End point description:

Serious adverse events (SAEs) assessed include medical occurrences that result in death, are life threatening, require hospitalization or prolongation of hospitalization, result in disability/incapacity or are a congenital anomaly/birth defect in the offspring of a study subject..

End point type	Secondary

End point timeframe:

At Year 8.5

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	54	60	66	
Units: Subjects				
Subjects with any SAE(s)	0	0	0	

Statistical analyses

No statistical analyses for this end point

Secondary: Number of subjects with any serious adverse events (SAEs).

End point title	Number of subjects with any serious adverse events (SAEs).

End point description:

Serious adverse events (SAEs) assessed include medical occurrences that result in death, are life threatening, require hospitalization or prolongation of hospitalization, result in disability/incapacity or are a congenital anomaly/birth defect in the offspring of a study subject.

End point type	Secondary

End point timeframe:

From Year 8.5 up to study end (one month post Year 10 booster vaccination)

End point values	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	55	60	62	
Units: Subjects				
Subjects with any SAE(s)	0	0	0	

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Serious adverse events (SAEs): Entire study period (From Year 8.5 to one month post Year 10) ; Unsolicited adverse events (AEs): During the 31 days post Year 10 booster vaccination; Solicited symptoms: During the 4 days post Year 10 booster vaccination.

Adverse event reporting additional description:

Total numbers of subjects at risk for SAEs are those at time points with highest numbers of subjects enrolled. For unsolicited and solicited AEs they correspond to the numbers of subjects with available results. Numbers at risk are the highest ones, at Year 8.5 for Boostrix-US Group, & Year 10 for the other groups.

Assessment type	Non-systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	10

Reporting groups

Reporting group title	Boostrix-US Group

Reporting group description:

Subjects in this group were healthy adult subjects aged 18 to 28 years at the time of enrolment and with previous completed primary and booster vaccination with a diphtheria-tetanus-whole cell pertussis vaccine completed by one additional booster dose of Boostrix™ vaccine, United States(US)-marketed formulation, at Day 0 in GSK 263855/029 study. These subjects received, as part of this NCT01147900 study, one further booster dose of Boostrix™ vaccine, US-marketed formulation, at Year 10, 10 years after booster vaccination in the GSK 263855/029 study. The Boostrix™ vaccine was administered intramuscularly in the deltoid muscle of the non-dominant arm.

Reporting group title	Boostrix-INV Group

Reporting group description:

Subjects in this group were healthy adult subjects aged 18 to 28 years at the time of enrolment and with previous completed primary and booster vaccination with a diphtheria-tetanus-whole cell pertussis vaccine completed by one additional booster dose of Boostrix™ vaccine, investigational formulation, at Day 0 in GSK 263855/029 study. These subjects received, as part of this NCT01147900 study, one further booster dose of Boostrix™ vaccine, reference formulation, at Year 10, 10 years after booster vaccination in the GSK 263855/029 study. The Boostrix™ vaccine was administered intramuscularly in the deltoid muscle of the non-dominant arm.

Reporting group title	Boostrix-REF Group

Reporting group description:

Subjects in this group were healthy adult subjects aged 18 to 28 years at the time of enrolment and with previous completed primary and booster vaccination with a diphtheria-tetanus-whole cell pertussis vaccine completed by one additional booster dose of Boostrix™ vaccine, reference formulation, at Day 0 in GSK 263855/029 study. These subjects received, as part of this NCT01147900 study, one further booster dose of Boostrix™ vaccine, reference formulation, at Year 10, 10 years after booster vaccination in the GSK 263855/029 study. The Boostrix™ vaccine was administered intramuscularly in the deltoid muscle of the non-dominant arm.

Serious adverse events	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 55 (0.00%)	0 / 60 (0.00%)	0 / 62 (0.00%)
number of deaths (all causes)	0	0	0
number of deaths resulting from adverse events			

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

Non-serious adverse events	Boostrix-US Group	Boostrix-INV Group	Boostrix-REF Group
Total subjects affected by non-serious adverse events			
subjects affected / exposed	50 / 55 (90.91%)	55 / 60 (91.67%)	54 / 62 (87.10%)
Nervous system disorders			
Headache (AE)			
subjects affected / exposed	5 / 55 (9.09%)	1 / 60 (1.67%)	3 / 62 (4.84%)
occurrences (all)	5	1	3
General disorders and administration site conditions			
Pain			
alternative assessment type: Systematic			
subjects affected / exposed[1]	50 / 55 (90.91%)	55 / 59 (93.22%)	54 / 62 (87.10%)
occurrences (all)	50	55	54
Redness			
alternative assessment type: Systematic			
subjects affected / exposed[2]	23 / 55 (41.82%)	23 / 59 (38.98%)	21 / 62 (33.87%)
occurrences (all)	23	23	21
Swelling			
alternative assessment type: Systematic			
subjects affected / exposed[3]	21 / 55 (38.18%)	20 / 59 (33.90%)	19 / 62 (30.65%)
occurrences (all)	21	20	19
Fatigue			
alternative assessment type: Systematic			
subjects affected / exposed[4]	17 / 54 (31.48%)	20 / 59 (33.90%)	22 / 62 (35.48%)
occurrences (all)	17	20	22
Gastrointestinal symptoms			
alternative assessment type: Systematic			
subjects affected / exposed[5]	10 / 54 (18.52%)	9 / 59 (15.25%)	13 / 62 (20.97%)
occurrences (all)	10	9	13
Headache (General Symptom)			
alternative assessment type: Systematic			
subjects affected / exposed[6]	13 / 54 (24.07%)	19 / 59 (32.20%)	13 / 62 (20.97%)
occurrences (all)	13	19	13
Infections and infestations			

Nasopharyngitis subjects affected / exposed occurrences (all)	6 / 55 (10.91%) 6	1 / 60 (1.67%) 1	4 / 62 (6.45%) 4

Notes:

[1] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.
[2] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.

[3] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.
[4] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.
[5] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.
[6] - The number of subjects exposed to this adverse event is less than the total number of subjects exposed for the reporting group. These numbers are expected to be equal.
Justification: The number of subjects exposed consists of the number of subjects who had their symptom sheet completed.

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported