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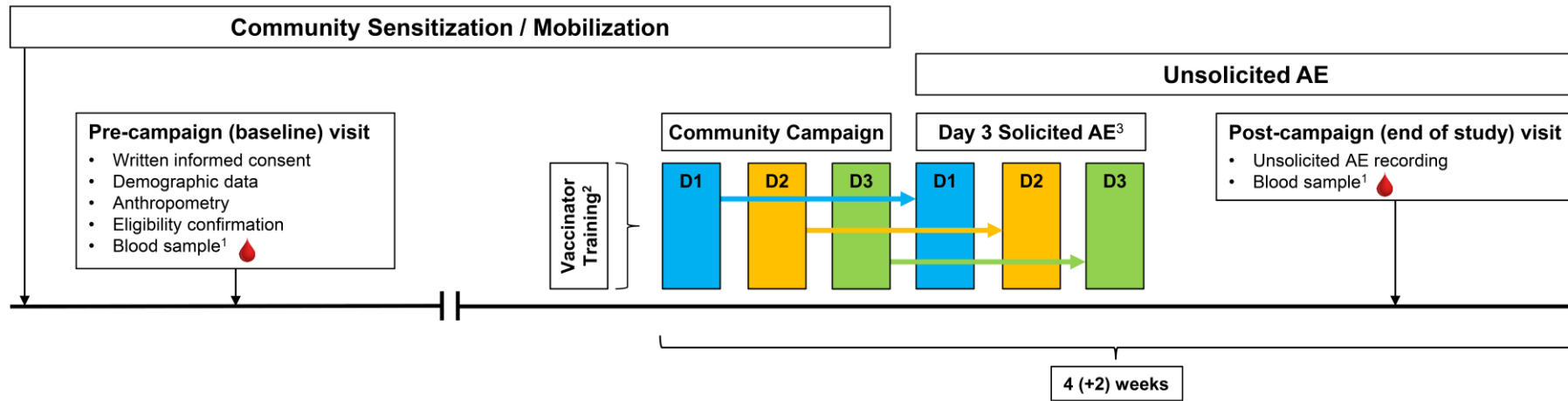
Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Bashorun AO, Badjie Hydara M, Adigweme I, et al. Intradermal administration of fractional doses of the inactivated poliovirus vaccine in a campaign: a pragmatic, open-label, non-inferiority trial in The Gambia. *Lancet Glob Health* 2021; published online Dec 21. [https://doi.org/10.1016/S2214-109X\(21\)00497-6](https://doi.org/10.1016/S2214-109X(21)00497-6).

Supplementary Tables

Figure S1: Overview of trial schedule.



¹ 2.0 mL 24-59-month-olds only; ² Up to 2 hours on each administration method; ³ Tenderness, erythema, induration, fever, diarrhoea, vomiting, reduced feeding/eating, drowsiness, irritability (Table S1); AE – adverse events; D – day.

Supplementary Tables

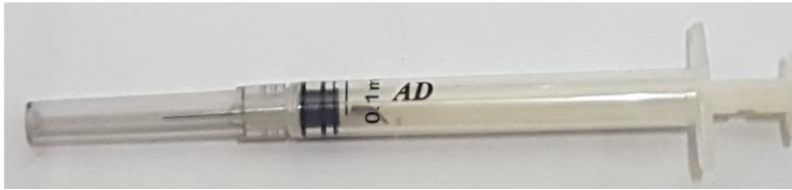
Figure S2: Process for allocation of given vaccination teams to given administration methods. Each team consisted of a public health officer experienced at giving ID injections and a nurse with little or no ID injection experience. N&S – needle and syringe; DSJI – disposable syringe jet injector; IDA – intradermal device

	Team	Day 1	Day 2	Day 3	Total vaccinees per team
<p>Six x 2 person vaccination teams defined and trained</p> <p>↓</p> <p>Allocated to cover a given geographical area on each day of campaign</p> <p>↓</p> <p>Randomised (A – F)</p>	A	N&S	DSJI	IDA	~ 300
	B	IDA	N&S	DSJI	~ 300
	C	DSJI	IDA	N&S	~ 300
	D	N&S	N&S	N&S	~ 300
	E	DSJI	DSJI	DSJI	~ 300
	F	IDA	IDA	IDA	~ 300
	Total vaccinees per day	~ 600	~ 600	~600	~ 1800

Supplementary Tables

Figure S3: (A) Auto-disable 0.1 mL Needle and Syringe; (B) Disposable Syringe Jet Injector (Tropis®); (C) Intradermal Adaptor.

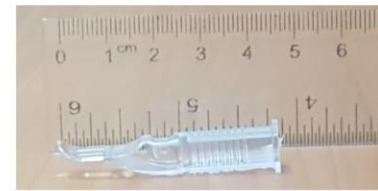
A



B



C



Supplementary Tables

Table S1: Temporal changes in polio vaccination in The Gambia impacting on study participants prior polio vaccination history.

	October 2013	Pre-April 2015 EPI schedules	April 2015 to April 2016 EPI schedule	Post April 2016
Birth		tOPV	tOPV	bOPV
2 months	tOPV campaign targeting 6-week-olds to <5-year-olds	tOPV	tOPV	bOPV
3 months		tOPV	tOPV	bOPV
4 months		tOPV	tOPV plus IPV	bOPV plus IPV
9 months		tOPV	tOPV	bOPV
18 months		tOPV	tOPV	bOPV

tOPV – trivalent oral poliovirus vaccine; IPV – inactivated poliovirus vaccine; bOPV – bivalent poliovirus vaccine

Supplementary Tables

Table S2: Injection site and systemic adverse event grading criteria

Local	Grade 0 (normal)	Grade 1	Grade 2	Grade 3	Grade 4
Tenderness	No tenderness to touch	Mild discomfort to touch only.	Cries or obviously distressed by touch	Cries or obviously distressed by passive limb movement	Requires hospitalization for the management of tenderness
Erythema/redness (size as well as grade will be collected)	No erythema	Erythema present but \leq 2.5cm in diameter	Erythema present and $>$ 2.5cm in diameter but with $<$ 50% of the surface area of the extremity segment (e.g. thigh) involved	Erythema affecting \geq 50% of the surface area of the extremity segment (e.g. thigh) involved OR ulceration OR secondary infection OR phlebitis OR sterile abscess OR drainage	Potentially life-threatening consequences (e.g. Necrosis involving dermis or deeper tissues or exfoliative dermatitis) requiring intervention
Induration/swelling (size as well as grade will be collected)	No induration	Induration present but \leq 2.5cm in diameter	Induration present and $>$ 2.5cm in diameter but with $<$ 50% of the surface area of the extremity segment (e.g. thigh) involved	Induration affecting \geq 50% of the surface area of the extremity segment (e.g. thigh) involved OR ulceration OR secondary infection OR phlebitis OR sterile abscess OR drainage	Potentially life-threatening consequences (e.g. Necrosis involving dermis or deeper tissues or exfoliative dermatitis) requiring intervention
Systemic					
Acute systemic allergic reactions	No acute reaction	Local urticaria	Mild angioedema	Symptomatic bronchospasm (wheeze)	Anaphylaxis, life threatening bronchospasm (wheeze) or laryngeal oedema (stridor)
Temperature	$<$ 37.5°C	37.5 - 37.9°C	38.0 - 38.9°C	39.0 - 39.9°C	\geq 40°C
Vomiting	No vomiting	1-2 episodes in 24 hours	$>$ 2 episodes/24 hours	Requires naso-gastric rehydration	Results in hypotension or requires iv hydration and inpatient hospital treatment
Diarrhoea	Normal stool consistency and frequency	2 - 3 loose stools in 24 hours	4-5 loose stools in 24 hours	6 or more loose stools in 24 hours	Results in hypotension or requires iv hydration and inpatient hospital treatment
Reduced feeding/eating	Feeding/eating normally	Feeding/eating minimally reduced compared to normal	Feeding/eating significantly reduced compared to normal	Not feeding/eating at all	Requires hospitalization due to lack of feeding/eating
Drowsiness	Normal level of alertness/ behaviour	Sleeping more than normal but wakes easily. Not interfering with activities for age (e.g. feeding/play)	Sleeping more than normal. Somewhat difficult to wake, some interference with normal activities for age (e.g. feeding/play)	Very sleepy, difficult to wake and wakes only briefly. Prevents normal activities for age (e.g. feeding/play)	Requires hospitalization due to drowsiness
Irritability	Normal behaviour. Not irritable	Crying more than normal but settles/ comforted easily	Crying more than normal, difficult to settle/comfort and affecting normal activities for age (e.g. feeding/play)	Crying more than normal and cannot be settled or comforted. Preventing normal activities (e.g. feeding/play)	Requires hospitalization due to irritability

Derived from the Division of AIDS Table for Grading the Severity of Adult and Pediatric Adverse Events (Version 2.0, November 2014) and the Common Terminology Criteria for Adverse Events (CTCAE) Version 4.0, Published May 28, 2009 (v4.03, June 14, 2010)

Supplementary Tables

Table S3: Baseline demographic and anthropometric characteristics (≥ 24 months of age)

	N&S (N=601)	DSJI (N=598)	IDA (N=551)	Total (N=1750)
Age (months) Mean (SD)	41.4 (9.9)	40.6 (10.3)	40.5 (10.0)	40.8 (10.1)
Sex Male n (%)	312 (51.9%)	294 (49.2%)	269 (48.8%)	875 (50.0%)
Ethnic Group				
Mandinka n (%)	228 (37.9%)	301 (50.3%)	281 (51.0%)	810 (46.3%)
Jola n (%)	168 (28.0%)	154 (25.8%)	136 (24.7%)	458 (26.2%)
Other n (%)	205 (34.1%)	143 (23.9%)	134 (24.3%)	482 (27.5%)
Maternal schooling				
No school n (%)	308 (51.2%)	266 (44.5%)	258 (46.8%)	832 (47.5%)
1-9 years: Lower/Upper Basic n (%)	201 (33.4%)	183 (30.6%)	195 (35.4%)	579 (33.1%)
>9 years: Secondary/College n (%)	92 (15.3%)	149 (24.9%)	98 (17.8%)	339 (19.4%)
Maternal occupation				
At home, housewife n (%)	471 (78.4%)	418 (69.9%)	350 (63.5%)	1239 (70.8%)
Small trader, non-skilled worker n (%)	83 (13.8%)	127 (21.2%)	163 (29.6%)	373 (21.3%)
Professional and other n (%)	47 (7.8%)	53 (8.9%)	38 (6.9%)	138 (7.9%)
Height for age z-score < -2SD n (%)	140 (23.3%)	122 (20.4%)	88 (16.0%)	350 (20.0%)
Weight for height z-score < -2SD n (%)	38 (6.3%)	35 (5.9%)	31 (5.6%)	104 (5.9%)
Prior number of OPV doses (Median (IQR))	7.0 (6.0 - 8.0)	7.0 (6.0 - 7.0)	7.0 (6.0 - 7.0)	7.0 (6.0 - 7.0)

N&S – needle and syringe; DSJI – disposable syringe jet injector; IDA – intradermal device; IQR – interquartile range; SD - standard deviation

Supplementary Tables

Table S4: Unadjusted and adjusted differences in the immune response rates comparing DSJI or IDA based fIPV administration with N&S based administration.

Serotype 2		IR_{DSJI/IDA} – IR_{N&S} (% , [97.5% CI])
DSJI	Unadjusted	-3.7 (-8.7 to 1.1)
	Adjusted§	-3.3 (-8.3 to 1.5)
IDA	Unadjusted	2.9 (-0.9 to 6.8)
	Adjusted§	0.7 (-3.3 to 4.7)
Serotype 1		
DSJI	Unadjusted	-3.5 (-8.0 to 0.6)
	Adjusted‡	-3.7 (-8.0 to 0.1)
IDA	Unadjusted	-1.6 (-5.6 to 2.2)
	Adjusted‡	-0.8 (-4.6 to 2.7)
Serotype 3		
DSJI	Unadjusted	-4.4 (-8.0 to -0.9)
	Adjustedl	-3.7 (-7.2 to -0.6)
IDA	Unadjusted	-5.5 (-9.4 to -1.9)
	Adjustedl	-2.1 (-5.6 to 0.8)

DSJI – disposable syringe jet injector; IDA – intradermal device; CI – confidence intervals; adjusted for § age, sex, baseline seropositivity; ‡ age, sex, number of prior OPV doses, time taken to vaccinate, maternal occupation; l age, sex, baseline seropositivity

Supplementary Tables

Table S5: Multilevel logistic regression model examining the associations with serotype 1 immune response rates allowing for clustering within vaccination teams.

Serotype 1			Unadjusted		Adjusted	
		N	OR (95% CI)	p-value	OR (95% CI)	p-value
Administration method	N&S	320				
	IDA	299	0.67 (0.30-1.49)	0.33	0.71 (0.32-1.59)	0.412
	DSJI	288	0.48 (0.22-1.01)	0.054	0.48 (0.22-1.03)	0.058
Age (months)	24 - <36	270				
	36 - <48	316	1.34 (0.67-2.68)	0.409	1.38 (0.68-2.79)	0.369
	≥48	321	1.84 (0.87-3.89)	0.111	1.85 (0.87-3.94)	0.111
Sex	Male	455				
	Female	452	0.99 (0.55-1.80)	0.982	1.05 (0.57-1.91)	0.880
Ethnicity	Mandinka	406				
	Jola	247	0.67 (0.32-1.39)	0.28		
	Other	254	0.74 (0.35-1.56)	0.424		
Height-for-age z score	> -2	712				
	≤ -2	195	0.99 (0.48-2.02)	0.968		
Prior number of OPV doses	0-5	108				
	6-7	600	1.93 (0.88-4.23)	0.1		
	8-10	199	1.72 (0.68-4.37)	0.255		
Designation of vaccinator	Nurse	529				
	PHO	378	0.93 (0.51-1.68)	0.799		
Time taken to vaccinate (minutes)	< 1	393				
	1 - <2	494	1.33 (0.73-2.43)	0.347		
	≥ 2	20	1.18 (0.15-9.22)	0.874		
Maternal education§	No school	430				
	1-9 years	314	1.00 (0.52-1.95)	0.99		
	>9 years	163	1.04 (0.46-2.40)	0.918		
Maternal occupation‡	At home	650				
	Small trade	188	0.68 (0.34-1.37)	0.284		
	Profession	69	0.60 (0.22-1.60)	0.305		
Baseline seropositivity	Negative	103				
	Positive	804	2.99 (1.49-5.97)	0.002	2.99 (1.49- 6.03)	0.002
ICC	Team: 0					

N&S – needle and syringe; IDA – intradermal adapter; DSJI – disposable syringe jet injector; PHO – public health officer; OPV – oral poliovirus vaccine; OR – odds ratio; CI – confidence interval; ICC – Intraclass correlation coefficient; § 1-9 years: lower and upper basic school, >9 years: secondary and/or college education; ‡ small trade: small trader/unskilled worker, profession: professional and other skilled work

Supplementary Tables

Table S6: Multilevel logistic regression model examining the associations with serotype 2 immune response rates allowing for clustering within vaccination teams.

Serotype 2			Unadjusted		Adjusted	
		N	OR (95% CI)	p-value	OR (95% CI)	p-value
Administration method	N&S	353				
	IDA	327	1.94 (0.88-4.25)	0.098	1.62 (0.75-3.52)	0.222
	DSJI	312	0.55 (0.28-1.09)	0.087	0.48 (0.24-0.97)	0.041
Age (months)	24 - <36	279				
	36 - <48	344	0.66 (0.35-1.25)	0.201	0.76 (0.39-1.46)	0.409
	≥48	369	1.12 (0.57-2.23)	0.741	1.28 (0.62-2.63)	0.502
Sex	Male	494				
	Female	498	0.94 (0.57-1.57)	0.822	0.96 (0.57-1.61)	0.874
Ethnicity	Mandinka	455				
	Jola	257	0.68 (0.38-1.24)	0.207		
	Other	280	0.94 (0.50-1.76)	0.841		
Height-for-age z score	> -2	796				
	≤ -2	196	0.79 (0.43-1.45)	0.449		
Prior number of OPV doses	0-5	111				
	6-7	636	0.27 (0.06-1.12)	0.071	0.27 (0.06-1.15)	0.076
	8-10	245	0.20 (0.05-0.85)	0.029	0.20 (0.05-0.91)	0.038
Designation of vaccinator	Nurse	576				
	PHO	416	0.66 (0.40-1.10)	0.109		
Time taken to vaccinate (minutes)	< 1	431				
	1 - <2	537	0.85 (0.50-1.45)	0.551	0.73 (0.42-1.26)	0.261
	≥ 2	24	0.43 (0.12-1.53)	0.191	0.25 (0.07-0.97)	0.045
Maternal education§	No school	475				
	1-9 years	339	0.86 (0.49-1.52)	0.601		
	>9 years	178	0.79 (0.40-1.57)	0.501		
Maternal occupation‡	At home	692				
	Small trade	224	2.24 (1.05-4.79)	0.037	2.20 (1.00-4.85)	0.049
	Profession	76	2.02 (0.62-6.62)	0.247	2.02 (0.60-6.77)	0.254
Baseline seropositivity	Negative	53				
	Positive	939				
ICC	Team: 0.003					

N&S – needle and syringe; IDA – intradermal adapter; DSJI – disposable syringe jet injector; PHO – public health officer; OPV – oral poliovirus vaccine; OR – odds ratio; CI – confidence interval; ICC – Intraclass correlation coefficient § 1-9 years: lower and upper basic school->9 years: secondary and/or college education; ‡ small trade: small trader/unskilled worker-profession: professional and other skilled work; || Baseline seropositivity was not included in the regression because all the 53 individuals that were seronegative at baseline had an IR

Supplementary Tables

Table S7: Multilevel logistic regression model examining the associations with serotype 3 immune response rates allowing for clustering within vaccination teams.

Serotype 3			Unadjusted		Adjusted	
		N	OR (95% CI)	p-value	OR (95% CI)	p-value
Administration method	N&S	433				
	IDA	411	0.55 (0.21-1.40)	0.21	0.45 (0.17-1.19)	0.107
	DSJI	448	0.38 (0.18-0.81)	0.012	0.44 (0.21-0.92)	0.028
Age (months)	24 - <36	399				
	36 - <48	444	1.20 (0.72-2.01)	0.486	1.23 (0.72-2.09)	0.445
	≥48	449	1.87 (1.05-3.33)	0.034	1.84 (1.02-3.32)	0.044
Sex	Male	634				
	Female	658	1.05 (0.68-1.65)	0.815	1.16 (0.73-1.84)	0.532
Ethnicity	Mandinka	618				
	Jola	331	1.36 (0.73-2.55)	0.33		
	Other	343	1.12 (0.65-1.94)	0.674		
Height-for-age z score	> -2	1032				
	≤ -2	260	0.73 (0.43-1.24)	0.243		
Prior number of OPV doses	0-5	152				
	6-7	858	1.19 (0.63-2.25)	0.589		
	8-10	282	1.95 (0.86-4.43)	0.111		
Designation of vaccinator	Nurse	717				
	PHO	575	0.62 (0.32-1.20)	0.156		
Time taken to vaccinate (minutes)	< 1	566				
	1 - <2	692	1.12 (0.71-1.77)	0.635		
	≥ 2	34	1.41 (0.32-6.24)	0.648		
Maternal education§	No school	616				
	1-9 years	418	1.02 (0.61-1.68)	0.95		
	>9 years	258	1.24 (0.66-2.31)	0.501		
Maternal occupation‡	At home	915				
	Small trade	280	0.93 (0.54-1.58)	0.776		
	Profession	97	0.97 (0.40-2.33)	0.94		
Baseline seropositivity	Negative	243				
	Positive	1049	5.22 (3.28-8.29)	<0.001	5.20 (3.27-8.28)	<0.001
ICC	Team: 0.012					

N&S – needle and syringe; IDA – intradermal adapter; DSJI – disposable syringe jet injector; PHO – public health officer; OPV – oral poliovirus vaccine; OR – odds ratio; CI – confidence interval; ICC – Intraclass correlation coefficient; § 1-9 years: lower and upper basic school->9 years: secondary and/or college education; ‡ small trade: small trader/unskilled worker-profession: professional and other skilled work

Supplementary Tables

Table S8: Multilevel logistic regression examining associations with immune response allowing for clustering within vaccination teams and within subjects within teams.

Factor	Category	N	Unadjusted		Adjusted	
			OR (95% CI)	p-value	OR (95% CI)	p-value
Administration method	N&S	299				
	IDA	320	1.07 (0.47-2.44)	0.879	0.98 (0.44-2.20)	0.961
	DSJI	288	0.35 (0.18-0.69)	0.002	0.36 (0.18-0.71)	0.047
Serotype*	1	907				
	2	992	0.74 (0.47-1.18)	0.208	0.63 (0.39-1.00)	0.051
	3	1292	0.71 (0.46-1.10)	0.127	0.85 (0.54-1.32)	0.465
Baseline seropositivity	Negative	103				
	Positive	804	4.12 (2.56-6.62)	<0.001	4.31 (2.63-7.04)	<0.001
Age (months)	24 - <36	270				
	36 - <48	316	0.99 (0.59-1.64)	0.955	1.00 (0.60-1.67)	0.996
	≥48	321	1.74 (1.01-3.01)	0.048	1.67 (0.97-2.89)	0.066
Sex	Male	455				
	Female	452	0.98 (0.64-1.51)	0.923		
Ethnicity	Mandinka	406				
	Jola	247	0.93 (0.52-1.64)	0.793		
	Other	254	0.97 (0.56-1.66)	0.902		
Height-for-age z score	> -2	712				
	≤ -2	195	0.80 (0.47-1.35)	0.397		
Prior number of OPV doses	0-5	108				
	6-7	600	1.11 (0.57-2.17)	0.767		
	8-10	199	1.08 (0.50-2.33)	0.849		
Designation of vaccinator	Nurse	529				
	PHO	378	0.70 (0.40-1.23)	0.213		
Time taken to vaccinate (minutes)	< 1	393				
	1 - <2	494	1.05 (0.67-1.64)	0.820		
	≥ 2	20	0.75 (0.20-2.82)	0.672		
Maternal education	No schooling	430				
	1-9 years: lower/upper basic	314	0.98 (0.60-1.60)	0.934		
	>9 years: secondary/ college	163	0.91 (0.51-1.65)	0.764		
Maternal occupation	At home/ housewife	650				
	Small trader/non-skilled	188	1.13 (0.66-1.96)	0.654		
	Professional and other	69	1.04 (0.45-2.40)	0.921		
ICC	Team: 0.03					
	Participants within teams: 0.52					

N&S – needle and syringe; IDA – intradermal adapter; DSJI – disposable syringe jet injector; PHO – public health officer; OPV – oral poliovirus vaccine; OR – odds ratio; CI – confidence interval; ICC – Intraclass correlation coefficient; *Serotype is repeated per individual while other variables appear once for every individual; Team - Correlation between observations within the same vaccination team; Study id| Team – Correlation between observations within the same subject and team.

Supplementary Tables

Table S9: Logistic regression model examining the association between markers of injection quality and immune response to ID fIPV

	Unadjusted		Adjusted[‡]		Adjusted[§]	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Serotype 1						
ID fluid bleb size (mm)	1.12 (1.00-1.26)	0.053	1.15 (1.01-1.31)	0.039	1.09 (0.94-1.27)	0.251
Fluid loss onto skin (µL)						
Dry	1.00	0.841	1.00	0.873	1.00	0.910
<5	1.03 (0.53-2.01)		0.99 (0.49-1.97)		0.94 (0.47-1.91)	
5 - <10	0.93 (0.21-4.16)		0.74 (0.16-3.54)		0.90 (0.18-4.41)	
10 - <20	0.50 (0.14-1.79)		0.50 (0.13-1.90)		0.57 (0.14-2.23)	
≥20	1.26 (0.28-5.61)		1.09 (0.22-5.28)		1.42 (0.28-7.14)	
Good quality injection ^l						
No	1.00	0.043	1.00	0.054	1.00	0.312
Yes	1.87 (1.02-3.43)		1.89 (0.99-3.62)		1.47 (0.70-3.08)	
Serotype 2						
ID fluid bleb size (mm)	1.13 (1.02-1.24)	0.019	1.13 (1.02-1.26)	0.020	1.11 (0.97-1.25)	0.118
Fluid loss onto skin (µL)						
Dry	1.00	0.232	1.00	0.252	1.00	0.297
<5	1.21 (0.68-2.16)		1.16 (0.64-2.11)		1.27 (0.69-2.34)	
5 - <10	1.67 (0.38-7.28)		2.06 (0.46-9.32)		2.73 (0.60-12.5)	
10 - <20	0.37 (0.13-1.04)		0.38 (0.13-1.12)		0.58 (0.19-1.76)	
≥20	1.31 (0.38-4.46)		1.48 (0.41-5.37)		2.24 (0.61-8.28)	
Good quality injection ^l						
No	1.00	0.006	1.00	0.006	1.00	0.048
Yes	2.07 (1.23-3.49)		2.17 (1.24-3.78)		1.95 (1.00-3.79)	
Serotype 3						
ID fluid bleb size (mm)	1.09 (1.00-1.19)	0.040	1.06 (0.97-1.17)	0.203	1.02 (0.92-1.14)	0.687
Fluid loss onto skin (µL)						
Dry	1.00		1.00		1.00	
<5	1.07 (0.64-1.81)	0.429	0.98 (0.57-1.69)	0.374	0.85 (0.49-1.47)	0.386
5 - <10	0.63 (0.23-1.69)		0.57 (0.20-1.66)		0.50 (0.17-1.50)	
10 - <20	0.56 (0.19-1.69)		0.48 (0.15-1.53)		0.42 (0.13-1.40)	
≥20	0.59 (0.26-1.33)		0.50 (0.20-1.19)		0.45 (0.17-1.19)	
Good quality injection ^l						
No	1.00	0.016	1.00	0.044	1.00	0.178
Yes	1.74 (1.11-2.72)		1.66 (1.01-2.73)		1.47 (0.84-2.56)	

Supplementary Tables

|| Fluid loss onto the skin of $<10 \mu\text{L}$ and bleb size $\geq 5\text{mm}$; ‡ Adjusted for prior number of OPV doses-height for age-baseline seropositivity-ethnic group-maternal occupation-maternal schooling level-and designation; § Additionally adjusted for administration method

Supplementary Tables

Table S10: Local and systemic reactogenicity data on day 3 post-vaccination

	N&S (n=915)	DSJI (n=920)	IDA (n=866)	Total (n=2701)
Tenderness n/N (%)				
No tenderness	913/915 (99.8%)	919/920 (99.9%)	864/866 (99.8%)	2696/2701 (99.8%)
Grade 1	2/915 (0.2%)	1/920 (0.1%)	2/866 (0.2%)	5/2701 (0.2%)
Grade 2	0/915	0/920	0/866	0/2701
Grade 3	0/915	0/920	0/866	0/2701
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	2/915 (0.2%)	1/920 (0.1%)	2/866 (0.2%)	5/2701 (0.2%)
Erythema n/N (%)				
No erythema	914/915 (99.9%)	920/920 (100.0%)	866/866 (100.0%)	2700/2701 (100.0%)
Grade 1	1/915 (0.1%)	0/920	0/866	1/2701 (<0.1%)
Grade 2	0/915	0/920	0/866	0/2701
Grade 3	0/915	0/920	0/866	0/2701
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	1/915 (0.1%)	0/920	0/866	1/2701 (<0.1%)
Mean erythema (mm) in those with any erythema	2.5	-	-	2.5
Induration n/N (%)				
No induration	912/915 (99.8%)	915/920 (99.5%)	866/866 (100.0%)	2693/2701 (99.7%)
Grade 1	2/915 (0.2%)	4/920 (0.4%)	0/866	6/2701 (0.2%)
Grade 2	0/915	1/920 (0.1%)	0/866	1/2701 (<0.1%)
Grade 3	0/915	0/920	0/866	0/2701
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	2/915 (0.2%)	5/920 (0.5%)	0/866	7/2701 (0.3%)
Mean induration in those with any induration	1.75 (0 - 11.28)	1.68 (0 - 4.15)	-	1.70 (0.34 - 3.06)

Supplementary Tables

	N&S (n=915)	DSJI (n=920)	IDA (n=866)	Total (n=2701)
Temperature (°C)				
Mean (95% CI)	36.0 (36.0 – 36.0)	36.1 (36.0 - 36.1)	36.1 (36.0 - 36.1)	36.0 (36.0 - 36.1)
≤ 37.4°C	911/915 (99.6%)	916/920 (99.6%)	857/866 (99.1%)	2684/2701 (99.4%)
37.5 – 38.0°C	3/915 (0.3%)	2/920 (0.2%)	6/866 (0.7%)	11/2701 (0.4%)
38.1 – 39.0°C	1/915 (0.1%)	2/920 (0.2%)	2/866 (0.2%)	5/2701 (0.2%)
> 39.0°C	0/915	0/920	0/866	0/2701
Vomiting n/N (%)				
No vomiting	907/915 (99.1%)	909/920 (98.8%)	851/866 (98.3%)	2667/2701 (98.7%)
Grade 1	6/915 (0.7%)	7/920 (0.8%)	10/866 (1.2%)	23/2701 (0.9%)
Grade 2	2/915 (0.2%)	3/920 (0.3%)	5/866 (0.6%)	10/2701 (0.4%)
Grade 3	0/915	1/920 (0.1%)	0/866	1/2701 (<0.1%)
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	8/915 (0.9%)	11/920 (1.2%)	15/866 (1.7%)	34/2701 (1.3%)
Diarrhoea n/N (%)				
No diarrhoea	883/915 (96.5%)	873/920 (94.9%)	835/866 (96.4%)	2591/2701 (95.9%)
Grade 1	28/915 (3.1%)	42/920 (4.6%)	29/866 (3.4%)	99/2701 (3.7%)
Grade 2	4/915 (0.4%)	4/920 (0.4%)	2/866 (0.2%)	10/2701 (0.4%)
Grade 3	0/915	1/920 (0.1%)	0/866	1/2701 (<0.1%)
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	32/915 (3.5%)	47/920 (5.1%)	31/866 (3.6%)	110/2701 (4.1%)

Supplementary Tables

	N&S (n=915)	DSJI (n=920)	IDA (n=866)	Total (n=2701)
Feeding n/N (%)				
Feeding normally	904/915 (98.8%)	905/920 (98.4%)	853/866 (98.5%)	2662/2701 (98.6%)
Grade 1	12/915 (1.4%)	15/920 (1.6%)	12/866 (1.4%)	38/2701 (1.4%)
Grade 2	0/915	0/920	0/866	0/2701
Grade 3	1/915 (0.1%)	0/920	1/866 (0.1%)	1/2701 (<0.1%)
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	13/915 (1.2%)	15/920 (1.6%)	13/866 (1.5%)	39/2701 (1.4%)
Drowsiness n/N (%)				
No drowsiness	915/915 (100.0%)	912/920 (99.1%)	861/866 (99.4%)	2688/2701 (99.5%)
Grade 1	0/915	7/920 (0.8%)	5/866 (0.6%)	12/2701 (0.4%)
Grade 2	0/915	1/920 (0.1%)	0/866	1/2701 (<0.1%)
Grade 3	0/915	0/920	0/866	0/2701 (<0.1%)
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	0/915	8/920 (0.9%)	5/866 (0.6%)	13/2701 (0.5%)
Irritability n/N (%)				
No irritability	913/915 (99.8%)	914/920 (99.4%)	861/866 (99.4%)	2688/2701 (99.5%)
Grade 1	2/915 (0.2%)	6/920 (0.7%)	3/866 (0.4%)	11/2701 (0.4%)
Grade 2	0/915	0/920	2/866 (0.2%)	2/2701 (0.1%)
Grade 3	0/915	0/920	0/866	0/2701
Grade 4	0/915	0/920	0/866	0/2701
Any grade 1 – 4	2/915 (0.2%)	6/920 (0.7%)	5/866 (0.6%)	13/2701 (0.5%)

N&S – needle and syringe; IDA – intradermal adapter; DSJI – disposable syringe jet injector

Supplementary Tables

Table S11: Adverse events

		N&S (n=917)	DSJI (n=929)	IDA (n=874)	Total (n=2720)
Blood and Lymphatic system disorders	Any AE-n/N (%)	4/917 (0.4%)	2/929 (0.2%)	1/874 (0.1%)	7/2720 (0.3%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Ear and labyrinth disorders	Any AE-n/N (%)	1/917 (0.1%)	1/929 (0.1%)	0/874 (0.0%)	2/2720 (0.1%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Gastrointestinal disorders	Any AE-n/N (%)	40/917 (4.4%)	55/929 (5.9%)	42/874 (4.8%)	137/2720 (5.0%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
General disorders and administration site conditions	Any AE-n/N (%)	31/917 (3.4%)	7/929 (0.8%)	18/874 (2.1%)	56/2720 (2.1%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	1/874 (0.1%)	1/2720 (<0.1%)
Infections and infestations	Any AE-n/N (%)	122/917 (13.3%)	126/929 (13.6%)	194/874 (22.2%)	442/2720 (16.3%)
	Severe (grade 3)-AE n/N (%)	2/917 (0.2%)	0/929 (0.0%)	1/874 (0.1%)	3/2720 (0.1%)
Injury-poisoning and procedural complications	Any AE-n/N (%)	9/917 (1.0%)	1/929 (0.1%)	7/874 (0.8%)	17/2720 (0.6%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Metabolism and nutrition disorders	Any AE-n/N (%)	5/917 (0.6%)	2/929 (0.2%)	0/874 (0.0%)	7/2720 (0.3%)
	Severe (grade 3)-AE n/N (%)	1/917 (0.1%)	0/929 (0.0%)	0/874 (0.0%)	1/2720 (<0.1%)
Musculoskeletal and connective tissue disorders	Any AE-n/N (%)	2/917 (0.2%)	1/929 (0.1%)	0/874 (0.0%)	3/2720 (0.1%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Respiratory-thoracic and mediastinal disorders	Any AE-n/N (%)	5/917 (0.6%)	12/929 (1.3%)	0/874 (0.0%)	17/2720 (0.6%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Skin and cutaneous tissue disorders	Any AE-n/N (%)	15/917 (1.6%)	11/929 (1.2%)	13/874 (1.5%)	39/2720 (1.4%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)
Vascular disorders	Any AE-n/N (%)	0/917 (0.0%)	1/929 (0.1%)	0/874 (0.0%)	1/2720 (<0.1%)
	Severe (grade 3)-AE n/N (%)	0/917 (0.0%)	0/929 (0.0%)	0/874 (0.0%)	0/2720 (0.0%)