

HIGHLIGHTS

Fractional Dose IPV Shown Effective To Stop Outbreaks

New study shows fractional dose IPV (fIPV) boosts mucosal immunity in previously OPV-vaccinated children

A new study published this month in the Journal of Infectious Diseases has shown that a single dose of fractional dose inactivated poliovirus vaccine (fIPV) boosts mucosal immunity to a similar degree as a full dose of IPV, in children previously immunized with oral polio vaccine (OPV). During the current IPV shortage, this vaccine is not recommended for outbreak response, however, if it is used, then this finding provides further evidence in support of fIPV rather than full dose IPV at a time of IPV global supply shortage. These latest findings show that fIPV also has a significant role to play in outbreak response. Mucosal immunity is needed to interrupt person-to-person spread of the virus in a community, so is a critical factor in outbreak response. Used in conjunction with OPV, even a single dose of this formulation could now play a key role in such settings, by rapidly boosting mucosal immunity at a similar level to a full-dose IPV while using a fifth of the vaccine amount. This has clear benefits both on cost and supply.

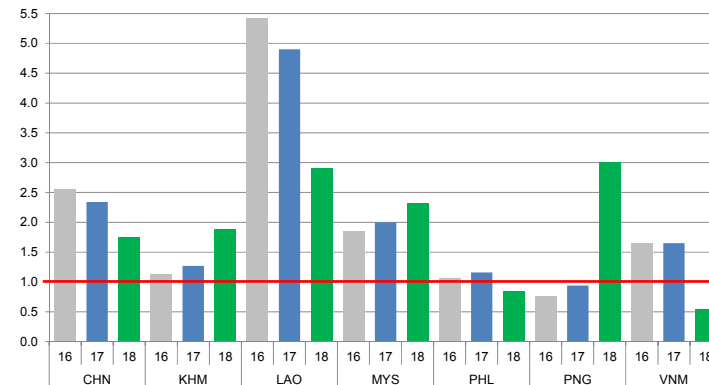
Full article is available here:

<https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiy389/5049361>

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Chart 1. Non-polio AFP rate (per 100 000 persons < 15 years of age), 2016–2018*



* AFP rate annualized as of week 34

Chart 2. Adequate specimen collection rate, 2016–2018

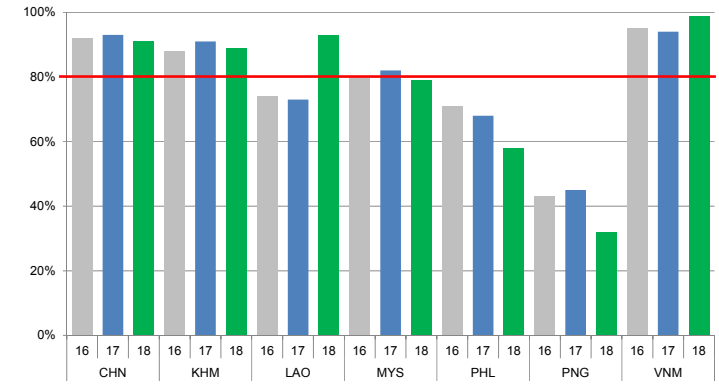


Chart 3. Percentage of reported AFP cases by number of polio vaccination doses, 2018

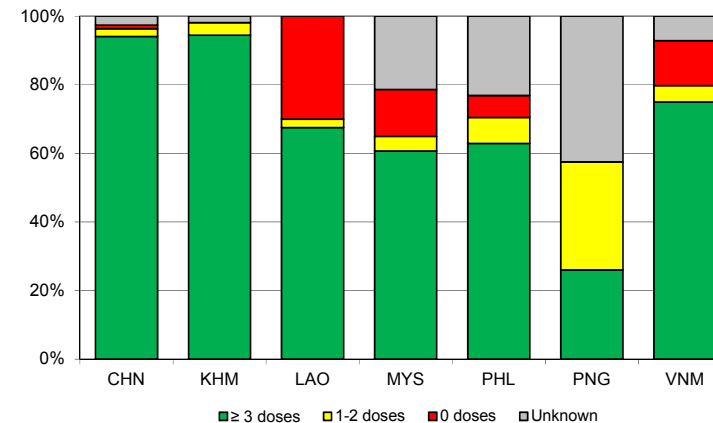
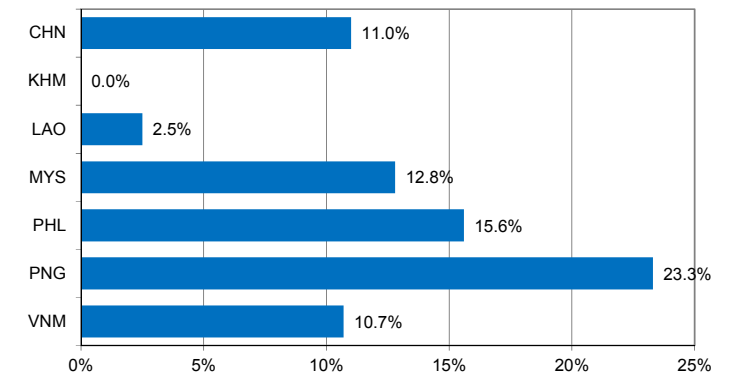


Chart 4. Percentage of reported AFP cases with pending classification > 90 days after onset, 2018



Note: Priority countries were selected for the charts. Official WHO acronyms have been used for abbreviation: CHN (China), KHM (Cambodia), LAO (Lao People's Democratic Republic), MYS (Malaysia), PHL (Philippines), PNG (Papua New Guinea), and VNM (Viet Nam).

Table 1. Classification of AFP cases with onset in 2018 and key surveillance indicators

Country/area	2017	2018												
	Total reported cases	Annual expected cases <15 years of age	Total reported cases	Classification						Indicators			Latest report date	Days since last report ⁵
				Confirmed wild poliovirus	Vaccine-derived poliovirus (VDPV)	Polio-compatible	Discarded (Non-polio)	Pending		Non-polio AFP rate ²	% with adequate specimens ³	% investigated ≤ 2 days of notification ⁴		
								Total	> 90 days ¹ # (%)					
≥ 1	≥ 80%	≥ 80%	≤ 30											
Australia	61	46	38	0	0	2	27	9	2 (5.3%)	1.26	50%	84%	24-Aug-18	5
Brunei Darrusalam	1	1	1	0	0	0	0	1	0 (0.0%)	1.53	100%	100%	07-Jul-18	53
Cambodia	57	44	54	0	0	0	48	6	0 (0.0%)	1.88	89%	85%	29-Aug-18	0
China	5278	2256	2590	0	1	0	1625	964	286 (11.0%)	1.76	91%	100%	22-Aug-18	7
China, Hong Kong SAR	15	9	6	0	0	0	5	1	0 (0.0%)	1.02	100%	100%	21-Aug-18	8
China, Macao SAR	2	1	1	0	0	0	1	0	0 (0.0%)	1.53	100%	100%	13-Aug-18	16
Japan	-	161	-	-	-	-	-	-	-	-	-	-	-	-
Lao People's Democratic Republic	103	21	40	0	0	0	31	9	1 (2.5%)	2.91	93%	73%	24-Aug-18	5
Malaysia	154	77	117	0	0	0	59	58	15 (12.8%)	2.32	79%	74%	20-Aug-18	9
Mongolia	6	9	5	0	0	0	3	2	0 (0.0%)	0.85	100%	80%	01-Aug-18	28
New Zealand	13	9	4	0	0	0	0	4	2 (50.0%)	0.68	50%	100%	26-Jun-18	64
Papua New Guinea	29	34	73	0	6	0	12	55	17 (23.3%)	3.01	32%	77%	28-Aug-18	1
Philippines	462	338	186	0	0	0	135	51	29 (15.6%)	0.84	58%	94%	17-Aug-18	12
Republic of Korea	68	67	34	0	0	0	24	10	0 (0.0%)	0.78	91%	100%	10-Aug-18	19
Singapore	7	6	5	0	0	0	4	1	0 (0.0%)	1.27	80%	100%	10-Aug-18	19
Viet Nam	385	234	84	0	0	0	22	62	9 (10.7%)	0.55	99%	86%	13-Jun-18	77
Pacific island countries and areas	16	11	1	0	0	0	1	0	0 (0.0%)	0.14	0%	100%	24-Aug-18	5
Total	6657	3324	3239	0	7	2	1997	1233	361 (11.1%)	1.49	87%	97%		

1. Number (%) of reported cases pending classification more than 90 days from date of onset of paralysis to date of last report
2. Annualized non-polio AFP rate per 100 000 population under 15 years of age
3. Percentage of reported cases with two stool specimens collected 24 hours apart and within 14 days of onset of paralysis
4. Percentage of reported cases investigated within two days of notification
5. Countries are expected to submit data at least once per month to WPRO

	Reached or surpass target
	Nearly reached target 0.5-0.99 for non-polio AFP rate; 60-79% for other indicators
	Substantially below target

Table 3. Laboratory confirmation of polio isolates from environmental samples in 2017–2018 ¹

Country/area	Intratyptic differentiation lab ²	2017												2018																
		Total number of samples processed	Total number of samples with polio isolates	Polio isolates									NPEV	Pending ITD	Discordant pending sequencing	Total number of samples processed	Total number of samples with polio isolates	Polio isolates									NPEV	Pending ITD	Discordant pending sequencing	
				Type 1			Type 2			Type 3								Type 1			Type 2			Type 3						
				Wild	Sabin	VDPV	Wild	Sabin	VDPV	Wild	Sabin	VDPV						Wild	Sabin	VDPV	Wild	Sabin	VDPV	Wild	Sabin	VDPV				
Australia	VIDRL	6	2	0	0	0	0	0	1	0	1	0	4	0	0	17	2	0	2	0	0	0	0	0	0	0	0	12	0	0
China (total)		325	188	0	213	0	0	0	0	0	650	0	1158	0	0	132	97	0	134	0	0	0	1	0	357	1	542	0	0	
China, Fujian	Prov. Lab/CCDC	53	22	0	8	0	0	0	0	0	42	0	331	0	0	40	29	0	7	0	0	0	0	0	72	1	289	0	0	
China, Gansu	Prov. Lab/CCDC	12	10	0	10	0	0	0	0	0	29	0	18	0	0	6	4	0	2	0	0	0	0	0	5	0	14	0	0	
China, Guangdong	Prov. Lab/CCDC	48	39	0	18	0	0	0	0	0	87	0	108	0	0	28	25	0	15	0	0	0	0	0	63	0	124	0	0	
China, Guangxi	Prov. Lab/CCDC	36	20	0	22	0	0	0	0	0	36	0	94	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
China, Heilongjiang	Prov. Lab/CCDC	42	17	0	12	0	0	0	0	0	34	0	112	0	0	9	7	0	1	0	0	0	0	0	16	0	3	0	0	
China, Shandong	Prov. Lab/CCDC	48	28	0	18	0	0	0	0	0	90	0	272	0	0	23	8	0	13	0	0	0	0	0	36	0	61	0	0	
China, Shanghai	Prov. Lab/CCDC	22	18	0	17	0	0	0	0	0	65	0	51	0	0	5	3	0	2	0	0	0	0	0	6	0	7	0	0	
China, Xinjiang	Prov. Lab/CCDC	36	34	0	108	0	0	0	0	0	267	0	115	0	0	21	21	0	94	0	0	0	1	0	159	0	44	0	0	
China, Yunnan	Prov. Lab/CCDC	28	0	-	-	-	-	-	-	-	-	-	57	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
Malaysia	IMR	24	0	-	-	-	-	-	-	-	-	-	22	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
Philippines	RITM	40	8	0	1	0	0	0	0	0	7	0	21	0	0	52	3	0	2	0	0	0	0	0	1	0	16	4	0	
Total		395	198	0	214	0	0	0	1	0	658	0	1205	0	0	201	102	0	138	0	0	0	1	0	358	1	570	4	0	

1. Based on year of collection of sample, if available. Otherwise, based on year of receipt at reference laboratory.

2. CCDC (Chinese Center for Disease Control and Prevention, China); IMR (Institute of Medical Research, Malaysia); RITM (Research Institute for Tropical Medicine, Philippines); VIDRL (Victorian Infectious Diseases Reference Laboratory, Australia)

Table 4. Vaccine-derived poliovirus¹ identified from laboratory testing², 2000–2018

Country/area	2000–2009 ³	2010	2011	2012	2013	2014	2015	2016	2017	2018
Australia									aVDPV2 (1 env)	
Cambodia	2006 - 1 Total - 2									
China	2009 - 1 Total - 27	aVDPV2 (3 AFP + 1 contact + 1 non-AFP) aVDPV3 (1 AFP + 1 non-AFP)	aVDPV1 (1 AFP) aVDPV2 (2 AFP + 1 contact) cVDPV2 (2 AFP) iVDPV2 (1 AFP + 1 non-AFP) iVDPV3 (1 AFP)	aVDPV1 (1 AFP) aVDPV2 (2 AFP) cVDPV2 (2 AFP + 1 contact) iVDPV2 + iVDPV3 (1 AFP)	aVDPV2 (1 non-AFP) iVDPV2 + iVDPV3 (1 AFP)	aVDPV1 (1 non-AFP) aVDPV2 (2 AFP) iVDPV3 (1 AFP)	aVDPV1 (1 AFP) aVDPV2 (1 AFP) iVDPV2 (1 AFP) aVDPV2 (1 env)	aVDPV3 (1 AFP)	aVDPV3 (1 AFP) iVDPV3 (1 AFP) ⁴	?VDPV2 (1 env) iVDPV3 (2 AFP) aVDPV3 (1 env)
China, Hong Kong SAR	2005 - 3									
Japan	2005 - 1 Total - 2									
Lao People's Democratic Republic	2004 - 3						cVDPV1 (8 AFP + 21 contacts)	cVDPV1 (3 AFP + 4 contacts)		
Mongolia	2003 - 1									
Papua New Guinea										cVDPV1 (6 AFP + 2 contacts)
Philippines	2001 - 3					aVDPV2 (1 AFP)				
Viet Nam				aVDPV2 (2 AFP)						

1. Prefix letter refers to the VDPV category: "cVDPV" = circulating VDPV, "iVDPV" = immunodeficiency-associated VDPV, "aVDPV" = ambiguous VDPV, "?VDPV" = pending. Suffix number refers to the poliovirus serotype (types 1, 2 or 3).

2. Source of specimens could be AFP cases, contacts, non-AFP cases or environmental

3. Refers to year of last VDPV case, and aggregate total of VDPV cases for 2000-2009

4. Continuous excretion for 4 months; potential immunodeficient person.