PROGRESS AND CHALLENGES TOWARD POLIOMYELITIS ERADICATION IN INDONESIA

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Abstract. Poliomyelitis is one of few diseases that can be eradicated. The virus cannot survive outside the body and effective vaccine is available to protect children and stop transmission. Today, there are 3 million children each year saved by the oral polio vaccine (OPV) and globally the reported cases have declined from 50,000 to 7,000 in 1999. At present, 20 countries may remain at risk of continued transmission, mostly in Africa and Asia. In the region of SEARO, wild poliovirus is still transmitted in India, Nepal and Bangladesh. Efforts to eradicate polio had been made in Indonesia, through a four-pronged strategy; routine immunization, National Surveillance Days (NIDs), surveillance of Acute Onset of Flaccid Paralysis (AFP) cases, and supplementary immunizations. No polio cases have been detected in Indonesia since 1995, but some problem will remain until the whole SEARO region is certified polio-free. Filling the immunization gap and revitalizing the AFP surveillance program are among the highest priority activities.

INTRODUCTION

Polio has been known throughout history, but it is almost certain that children from the 21st century will only know about it from their history books (WHO,1997a). Poliomyelitis is highly infectious; it spreads to siblings and may invade the nervous system and cause paralysis in a matter of hours. It cannot be cured. Its effect is irreversible, but it can be prevented. The virus cannot survive outside the human body and an effective vaccine is available to stop transmission, making polio eradicable (WHO,1996).

The World Health Assembly resolution in 1988 set the target to eradicate poliomyelitis in 2000, and specified that the global eradication was to be achieved within the Expanded Program on Immunization (EPI) and within the context of strengthening primary health care (WHO, 1996).

Before the development of the vaccine, polio paralyzed or killed about 500,000 children a year. Today, an estimated 3 million children are saved by the OPV. Globally, reported cases declined from around 350,000 in 1998 to 7,000 in 1999. Since the World Health Assembly resolved to eradicate polio in 1998, more than 190 countries have succeeded in stopping poliovirus transmission and at least 20 countries may remain at risk of continued transmission. Afghanistan, Angola, Bangladesh, Chad, Congo, Ethiopia, India, Iraq, Nigeria, Pakistan, Sierra Leone, Somalia and Sudan are among countries with a high risk of polio transmission (Averhoff, 2000b). In Southeast Asia, regional polio transmission is confined to India, Nepal, Bangladesh and Myanmar. The total number of poliomyelitis cases in the region in 1999 was 1,160 and dropped to 91 cases in 2000. No polio cases have been reported in Indonesia since 1995, but maintenance is one problem before it becomes polio-free (WHO, 1996; Departemen Kesehatan, 2000).

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PRE-ERADICATION: OUTBREAKS AND ROUTINE IMMUNIZATION

Polio had been endemic in Indonesia before the vaccine era. Outbreaks had been documented since 1948 in Biliton; 1951 in Bandanaire; Balikpapan, Jakarta and Bandung; 1952 in Surabaya, Malang, Sidoarjo, Tuban; 1954 in Semarang and Jogyakarta; 1956 in Palu; 1958 in Bangka; and 1976 in Bali. After the immunization program commenced, in 1978 and 1980, out-

breaks occurred in West Java, in 1980 in East Java, Bali and Central Kalimantan and 1982 in Irian Jaya (Departemen Kesehatan, 2000). No reliable data of oral polio vaccine (OPV) immunization coverage was found officially before the EPI was adopted in 1978.

EPI was begun in 1978 in Indonesia, and since 1980, OPV was added and given with the DTP vaccine. With increasing coverage, the incidence of proven polio cases lessened and in 1995 wild poliovirus was confined to 4 provinces, East Java, Central Java, and North and South Sumatra (Departemen Kesehatan, 2000; Averhoff, 2002a).

ERADICATION: THE STRATEGY

Indonesia adopted the Polio Eradication Initiative and conducted a four-pronged strategy:

1. High routine immunization coverage.
2. National Immunization Day.
3. High quality of Acute Onset of Flaccid Paralysis (AFP) surveillance.
4. Mopping up in areas or among populations where transmission of wild poliovirus persisted or was suspected.

Since OPV immunization had been introduced to the routine immunization program, the coverage increased to meet the Universal Children Immunization (UCI). After coverage 80% and almost evenly distributed to all districts, an eradication plan was set up (Departemen Kesehatan, 2000); sustain routine immunization coverage above 80% (evenly); conduct a National Immunization Day (NID)- later to become PIN-Pekan Imunisasi Nasional); conduct active high quality AFP surveillance; conduct mopping-up in areas suspected or proven to have Wild Polio Virus (WPV) transmission.

Table 1
Distribution of wild poliovirus in Indonesia in the year 1995.

Province	District	Strain of polio virus
1. East Java	Malang	Polio-1 (case)
	Probolinggo	Polio-1 (case)
2. Central Java	Cilacap	Polio-1 (contact)
	Cilacap	Polio-1 (contact)
3. North Sumatra	Kodya Medan	Polio-3 (contact)
4. South Sumatra	Ogan	Polio-1 (contact)
	Komering Ulu	Polio-2 (contact)

The aim of eradication was not only to reduce clinical cases, but also to stop WPV transmission among human being. The fact that other virus can cause poliomyelitis (such as enterovirus 71, etc) had no influence on the eradication program.

Routine immunization is used to increase overall herd immunity, and supplementary immunization, such as NIDs, SubPIN, mopping up is used to stop transmission.

Basic biological reasons for eradication initiatives are (WHO, 1997a): humans are the only host and reservoir of WPV; WPV is short-lived outside the body; the only known mode of transmission is the fecal-oral route; there are effective and cheap vaccines available.

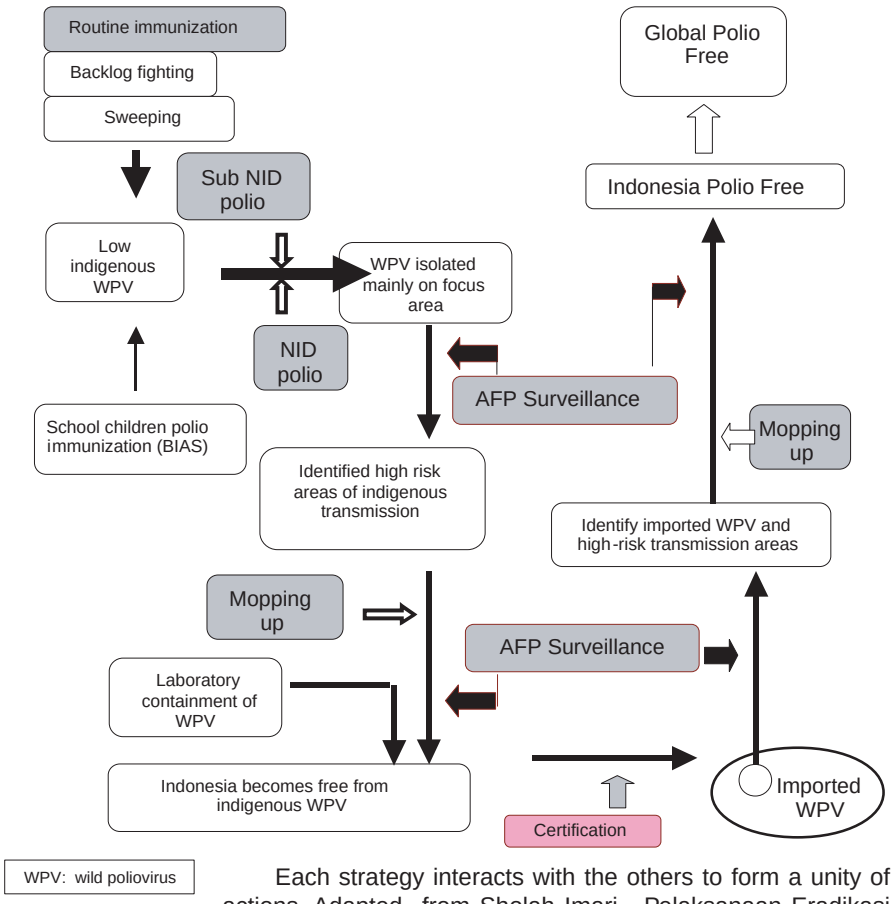
Activities in the strategy should be done simultaneously, interwoven as a unified action, as seen in Fig 1.

IMPLEMENTATION

The program was planned and implemented at the Central Government (Ministry of Health, Ministry of Internal Affairs, etc), provincal and district levels. Several organizations were set up to maintain cooperation between all activities at all level. Implementation involved many government and non-government institutions and departments, such as the Department of Health, Department of Internal Affairs and external and internal non-government bodies (Departemen Kesehatan, 2000; Imari, 2002).

1. Panitia Eradikasi Polio Nasional Tingkat Pusat (National Polio Eradication Committee). The main task was to execute all necessary actions related to the program.

2. Tim Sertifikasi Nasional Eradikasi Polio Nasional (Certification Team for Polio-Free). The team defined and set up the criteria for Polio Free Indonesia, analyzed data and information needed and proposed the results to the SEARO Certification team.



Each strategy interacts with the others to form a unity of actions. Adapted from Sholah Imari, Pelaksanaan Eradikasi Polio Global di Indonesia, buku Rujukan Eradikasi Polio di Indonesa, 2002: 15.

Fig 1–Strategic implementation of Global Polio Eradication in Indonesia.

3. Kelompok Kerja Ahli Surveilans AFP Tingkat Pusat (Central Expert Committee). Acted as an expert group to finalize polio compatible cases, propose the SubPIN and mopping-up.

4. Tim Nasional Pengamanan Virus Polio Liar di Laboratorium (National Laboratory Containment team). The team coordinate and control all laboratory containment needed after a region was declared polio-free and stopped polio immunization.

5. Tim Teknis Surveilans AFP Pusat. The team responsible for required surveillance activities.

6. Jaringan Laboratorium (Laboratory Network). Three laboratories examined specimens and identified specific serotypes.

7. Kelompok Kerja Eradikasi Polio WHO. A group of WHO medical officers to back-up technical support in surveillance and immunization in Indonesia.

Implementation of the strategy in Indonesia began in the early 1990s, and started with routine immunization/basic immunization in the EPI program. High routine immunization coverage was followed by supplementary immunization against WPV. The results were evaluated through solid surveillance performance, and any suspected transmission is cleared by supplementary immunization.

High immunization coverage

Indonesia began the eradication program by increasing routine immunization coverage from

1982. OPV was given as two drops of Sabin oral vaccine, given four times, during the neonatal period, and at the ages of two, three and four months. Routine immunization coverage exceeds 80% of the target population, at district and village levels. In the immunization correction program, the sweeping and backlog-fighting programs complete any defect detected. In 1997, 17,111 of 66,744 villages (35.6%) had low coverage and all villages (100%) had been swept successfully. In 1998, 21.1% of villages under coverage and sweeping were done properly, funded by WHO and UNICEF (WHO, 1998).

Stopping WPV transmission

In the body, cells with poliovirus receptor (PVR) facilitate the attachment of the WPV, scattered in the upper respiratory tracts, alimentary tract and the nervous system. The PVR will only accept one virus for attachment to proceed to the replication phase. In case all PVR contain OPV, any WPV that enter the body will not be able to attach, replicate and will pass from the gut. The limited survival time in the environment causes significant reduction of WPV. On the other hand, OPV will replicate and multiply, purge to the surrounding environment and re-replicate in any contact, including their siblings. If the instillation of OPV is done together at one time, the effect of immunization will spread and multiply tremendously and it will be difficult for WPV to find new host and survive. This principle is used in Global Eradication Program, by implementing polio immunization simultaneously in NIDs. By repeating NIDs for a few rounds, the transmission of WPV will cease. Supplementary immu-

Table 2
Routine immunization coverage.

	1996	1997	1998	1999	2000
Province	Po4	Po4	Po4	Po4	Po4
Aceg	88.3	87.5	83.0	79.7	68.1
North Sum	103.0	102.8	102.4	99.7	89.3
West Sum	88.2	87.8	90.0	65.1	86.7
Riau	88.5	98.5	72.6	97.1	95.9
Jambi	103.5	101.6	98.8	98.8	95.4
South Sum	85.6	80.5	86.8	90.1	92.4
Bengkulu	83.0	90.1	96.0	103.0	89.7
Lampung	105.3	96.2	98.3	97.2	87.8
Dki Jaya	56.6	61.4	83.5	92.2	101.4
West Java	76.4	80.6	77.0	73.4	91.9
Central Java	83.7	85.4	85.6	89.8	93.4
Yokyakarta	80.1	84.5	89.9	100.5	99.7
East Java	79.5	79.7	80.8	83.4	88.4
West Kalim	71.3	82.9	87.2	100.7	89.5
Cent Kalim	99.7	103.9	97.5	116.5	82.6
South Kalim	81.8	72.4	87.3	74.7	94.1
East Kalim	90.0	89.7	88.4	88.6	66.8
North Sula	95.6	99.3	95.9	100.0	113.0
Centr Sula	88.2	88.6	87.3	92.0	85.7
South Sula	75.9	95.4	98.4	84.6	91.1
Southw Sula	93.4	100.2	100.5	85.2	95.5
Bali	98.7	104.8	109.6	107.6	94.9
West Nusat	90.0	96.3	94.2	93.9	98.0
East Nusat	44.1	56.8	85.0	53.3	87.4
Maluku	70.2	83.6	75.8	75.8	61.5
Irian	69.6	95.3	84.8	55.4	63.3
Total	82.0	89.5	85.7	84.8	90.3

Table 3
Coverage of NID in 1995, 1996 and 1997.

Province	1995		1996		1997	
	Round1	Round2	Round1	Round2	Round1	Round2
Aceh	109.5	111.2	106.9	109.3	113.8	113.9
Sumut	133.6	138.8	106.0	110.7	108.9	110.4
Sumbar	117.6	121.0	110.8	111.2	112.6	114.0
Riau	121.9	130.2	109.5	114.4	110.0	110.5
Jambi	112.3	115.5	116.1	112.4	108.1	107.2
Sumsel	125.2	138.8	116.1	115.9	128.9	111.0
Bengkulu	116.9	123.8	118.0	119.9	119.1	120.9
Lampung	137.1	141.0	111.1	112.4	140.3	141.2
Dki Jaya	184.6	196.5	120.3	123.7	113.6	117.8
Jabar	126.0	104.5	108.7	103.3	108.7	105.1
Jateng	117.9	121.6	105.2	102.5	103.5	101.7
Di Yogya	114.0	102.6	101.2	104.8	105.5	102.3
Jatim	115.9	120.7	108.0	110.1	107.0	106.6
Kalbar	117.7	123.8	109.7	112.8	135.2	139.3
Kalteng	105.8	111.8	110.0	113.0	113.0	114.9
Kalsel	116.3	120.0	108.3	111.9	109.7	110.1
Kaltim	120.0	124.4	111.8	113.1	103.4	105.5
Sulut	126.7	131.0	111.8	114.1	109.4	109.1
Sulteng	140.1	127.8	112.7	116.8	111.2	114.2
Sulsel	121.6	127.3	110.1	112.4	111.5	115.6
Sultra	124.4	128.6	114.4	118.4	114.8	118.2
Bali	123.7	128.5	110.8	111.6	103.4	109.7
NTB	118.2	123.0	108.7	102.2	107.1	102.3
NTT	118.6	103.3	108.4	101.8	104.9	101.2
Maluku	101.8	104.2	108.0	106.7	106.9	109.1
Irja	113.8	116.5	99.1	103.5	101.0	101.1
National	123.1	120.5	109.5	108.2	110.3	108.9

nization is used to stop transmission (WHO, 1997a,b; 1998).

Supplementary immunizations: PIN and subPIN

The basic principle of eradication is to stop transmission by polio immunization in large areas, simultaneously. Implementation of this principle is NID, SubNID or mopping up. Indonesia helds a National Immunization Day as a National Immunization Week or PIN due to geographical constraints, in three consecutive years, 1995, 1996 and 1997. Immunization was done in September and October, as this was the lowest WPV transmission period in Indonesia. In each round, every child under five years old in Indonesia was immunized with two drops of OPV, regardless of immunization status. All immunization was done simultaneously on the same day. The immunization coverage for PIN in 1995 was 101.8-106.4%, in 1996 105.5-107.7% and in 1997 104.9-106.8%. The success of PINs was result of multifactorial and multi-sectoral participation, such as high level governmental support, effective social mobilization, active participation of PKK (semi-NGO), active support from all Indonesian private sectors and ample funding from GOI, WHO, UNICEF, Rotary, and local governments. After PIN, in provinces with high risk of wild poliovirus transmission, as detected by surveillance, immunization was done simultaneously, as a SubPIN. Criteria for a SubPIN were immunization

coverage less than 80%, inadequate AFP surveillance, and high risk of poliovirus transmission. In the year 2000, SubPIN was done in armed conflict provinces, Irian Jaya, Maluku, Aceh and East Nusa Tenggara (Averhoff, 2002a).

After three rounds of NIDs, there was an economical and political turmoil and some activities must be added, to optimize the program: immunization coverage should exceed 80% evenly, up to the village level; in areas identified by AFP surveillance as vulnerable for WPV transmission SubPIN, should be done; additional polio immunization given to school children in School Children Immunization Month (BIAS), to 3rd to 6th grade as the lower grade had been immunized in PINs; mopping up in areas where WPV transmission was suspected; laboratory containment.

BULAN IMUNISASI ANAK SEKOLAH (BIAS), School Children Immunization Month)

The opportunity to add a booster in school age is in the BIAS program. In 1997, a survey had shown that the protection rate in schoolchildren was low, so to fill the protection gap, mass immunization was done in primary schools for children in 3rd to 6th grades. Children in lower grades had already received polio immunization in NIDs. These immunizations were done in October and November, months of lowest WPV transmission (Departemen Kesahatan, 2000).

Mopping up

In areas with low immunization coverage and weak surveillance performance, or suspected WPV transmission, mopping up was executed (Departemen Kesahatan, 1999). In 1999, mopping up was done only in Merauke, Irian Jaya, a very remote area, due to weak surveillance and low routine immunization coverage.

Laboratory network

After conducting the NIDs, clinical based surveillance had to be changed to a laboratory based. The cases are diagnosed not by clinical signs and symptoms only, but mostly by the results of fecal culture, to prove whether there is still WPV transmitted in the area. Surveillance activities should detect AFP cases as throughly

Table 4
Coverage of mopping-up immunization in 1998.

Province	District	Mopping-up coverage	
		1	2
Di Aceh	Aceh Utara	115.9	100.5
Sumut	Asahan	100.8	105.3
	Tapanuli ut	94.7	108.7
Sumbar	Kod Padang	104.1	100.0
	Pd Pariaman	106.3	102.5
Riau	Indragiri	105.3	105.7
Sumsel	Mura	102.9	102.9
	Bangka	100.0	100.0
Bengkulu	Rejang Lebong	101.1	105.2
Lampung	Lampung Tengah	101.2	101.1
Dki Jaya	Jak Selatan	104.4	104.2
	Jak Timur	113.1	118.9
Jabar	Serang	94.3	96.4
	Ciamis	97.2	101.1
	Ko Tangerang	61.2	61.7
	Bandung	115.8	116.7
Jateng	Wonosobo	100.5	100.5
	Semarang	100.5	103.6
	Demak	101.7	100.0
	Blora	105.2	104.4
	Klaten	101.4	100.8
	Boyolali	100.6	99.6
	Sragen	101.1	100.7
Di Yogya	Bantul	100.0	100.0
	Sleman	100.0	100.0
Jatim	Ponorogo	101.6	102.2
	Kediri	113.0	118.1
	Blitar	106.0	104.7
	Tulungagung	105.4	107.3
	Probolinggo	106.1	106.5
	Situbondo	98.7	99.7
	Kodya Surabaya	104.4	106.5
	Kodya Mojokerto	90.4	109.3
	Kodya Malang	105.5	102.4
Kalbar	Pontianak	103.9	102.6
Kalteng	Kapuas	99.9	99.9
Kalsel	Pasir	100.2	106.1
Sulsel	Pinrang	105.1	107.6
	Bone	106.3	111.4
	Bantaeng	100.5	101.9
Sultra	Kolaka	108.7	109.6
Bali	Badung	100.3	101.4
	Bangli	101.1	100.5
NTB	Lombok Timur	109.4	113.6
NTT	Kodya Kupang	105.2	100.3
	Manggarai	101.7	100.1
Total		99.3	100.7

as possible, and the laboratory examination will decide whether a case is due to polio virus or other causes. District surveillance officers should do their best to detect any case of AFP in their area, verified clinically by the specialist and then the laboratory makes the final decision (WHO, 1997b; Departemen Kesehatan, 1999).

MONITORING AND EVALUATION OF THE ERADICATION PROGRAM

Surveillance of acute onset of flaccid paralysis

This program was implemented in 1995, to guide supplementary immunization and no wild poliovirus has been detected since. The performance of AFP surveillance improved dramatically since 1997, after rounds of PINs. All cases with acute (less than two weeks interval), flaccid paralysis, aged less than 15 years, should be investigated. A case was defined as an AFP, if the case met the criteria, for which no other cause could be immediately identified, or any patient in whom a clinician suspected a case of polio, regardless of age. In every case, 60 days follow-up should be done to evaluate the possibility of any residual paralysis. Stool specimens should be collected immediately, consist of two samples taken within 24-48 hours interval and all specimens should reach the accredited laboratory in a good condition (Departemen Kesehatan, 1999; Hovi and Stenvik, 2000; Imari, 2002).

AFP surveillance is a prerequisite to achieve and certify polio eradication in Indonesia. Two main indicators monitor the quality of surveillance:

1. The sensitivity of AFP reporting (at least 1:100,000 population less than 15 years of age).

2. Two adequate stool specimens from at least 80% of AFP cases.

Key strategies to achieve adequate AFP surveillance performance. (Departemen Kesehatan, 2000; Imari, 2002).

Hospital-based surveillance. Active hospital-based surveillance is important to improve the timeliness and sensitivity of case finding. District surveillance officers are required to visit all hospitals in their jurisdiction with pediatric patients on a weekly base to search for AFP cases, and fill in the FP-PD form as the hospital report. All zero reporting must be scrutinized through tough active surveillance. Since 1997, hospital active surveillance has been implemented in about 75% of all hospitals in Indonesia. Indonesia was the first country to

Table 5
Coverage of mopping-up in Merauke, 1999.

Subdistrict	Coverage I	Coverage II
Jair/Gentiri	100.0	94.2
Mandobo/Tanah Merah	96.3	63.1
Mindiptana	92.5	91.9
Waropko	100.0	94.7
Kouch	78.3	90.7
Bomakia	44.4	27.3
Total	88.9	79.9

Table 6
Laboratory performance in the laboratory network.

Laboratory	1997		1998		1999	
	No. of specimens (%)	NPEV	No. of specimens (%)	NPEV	No. of specimens (%)	NPEV
Biofarma	311 (38.0)	12.1%	480 (55)	6.6%	478 (36.1)	7.1%
Litbang	259 (31.7)	8.8%	279 (32)	7.6%	415 (31.4)	10.4%
Surabaya	248 (30.3)	19.8%	45 (13)	8.4%	430 (32.5)	7.0%
Total	818	13.3%	804	7.1%	1,323	8.1%

NPEV : Non-polio enterovirus

introduce weekly zero reporting of AFP cases to SEARO.

Community based surveillance. The key strategy is to develop community-based surveillance by using key informants, such as teachers in elementary schools, high schools and pondok pesantren to report AFP cases. Active social marketing is important, to increase community participation. Weekly zero reporting of AFP cases has been conducted in 61.4% of about 7,000 primary health centers.

PROGRESS AND CHALLENGES: INDONESIAN CASE

1. Global and regional status of polio eradication (Averhoff, 2002a; WHO, 2000).

There is a rapid progress toward the global goal of polio eradication. Wild poliovirus was still occurring in 20 countries in South Asia and Africa by the end of 2000, a lesser figure in more than 30 countries in 1999. Progress in India was unprecedented; with only 16 cases compared with more than 80 the year before. Progress was somewhat slow in Pakistan and Afghanistan, which remain polio-endemic. All polio-free countries are at risk of virus re-introduction until all virus circulation is interrupted globally. In the year 2001, the Indian subcontinent was still the main source of wild poliovirus importation into neighboring countries or even distant polio-free countries. The Indian subcontinent exported wild poliovirus to the Netherlands, Malaysia (1991-1992), Iran (last case in 1998), Western China (1999) and most recently, Bulgaria (2001). Until all wild poliovirus transmission is interrupted fully, all polio-free countries, particularly in Southeast Asia, are at a high risk of re-importing the wild poliovirus.

2. Current status of polio eradication in Indonesia (Departemen Kesehatan, 2000; Averhoff, 2002a). Wild poliovirus has not been isolated in Indonesia since 1995 (more than 5 years), and Indonesia was the second country in the Southeast Asian region to become polio free, documented by high quality AFP surveillance between 1996-1998. Indonesia conducted good NIDs in three consecutive years, 1995,1996 and 1997. The improving performance of AFP surveillance, did not detect any wild poliovirus after 1995. An international review of AFP surveillance in 1997 noted that routine and supplementary immunizations, as well as AFP surveillance were conducted properly. Despite current challenges faced by the country and the effects of decentralization of health services, routine immunization was still done with a lesser outcome.

3. Immunization coverage decreased and AFP surveillance was ineffective in areas of armed conflict, which increased after the political crisis in 1998-1999. It was decided then that SubNIDs would be done in conflict areas: Aceh, North Maluku, NTT, and Irian Jaya. The estimated target was 1,4 million (population 0-59 months), done in two rounds (OPV+vitamin A) and (OPV + measles vaccine), conducted during August-September and September-October 2000. Immu-

Table 7
Performance of AFP surveillance.

Year	AFP Cases			Adequacy of specimen	Compatible /non-polio cases	Proven wild polio cases
	AFP reported cases	AFP rate	Non-polio AFP rate			
1995	21	0.03		18.0	14	6
1996	82	0.13	0.01	21	10	0
1997	804	1.24	1.19	48.3	36	0
1998	796	1.23	1.21	72.7	14	0
1999	684	1.06	1.00	80.0	21	0
2000	583	0.91	0.78	82.4	22	0
2001	603	0.94	0.81	78.7	0	0

Table 8
Performance of AFP surveillance in armed conflict areas.

Year	AFP Indon	AFP Aceh	AFP NTT	AFP Maluku	AFP Irian Jaya
1998	1.28	1.40	0.43	0.38	0.38
1999	1.03	0.80	0.67	0.13	0.50
2000	0.93	0.47	0.79	0.13	0.13
2001	0.45	0.0	0.69	0.0	0.0
2001 No. expected (Actual) May 2001	644 (122)	7 (0)	14 (4)	8 (0)	8 (0)

Table 9
Performance of AFP surveillance by AFP rate and the adequacy of specimens.

Year	No. AFP reported	AFP rate	% of adequate specimens	Polio compatible	No. viruses isolated
1995	21	0.03	18.0	14.0	0
1996	82	0.13	21.0	10.0	0
1997	841	1.19	49.0	36.0	0
1998	810	1.21	73.0	14.0	0
1999	682	0.99	80.0	41.0	0
2000	598	0.84	80.0	65.0	0
2001	122 (May 2001)	0.46	80.0	12.0	0

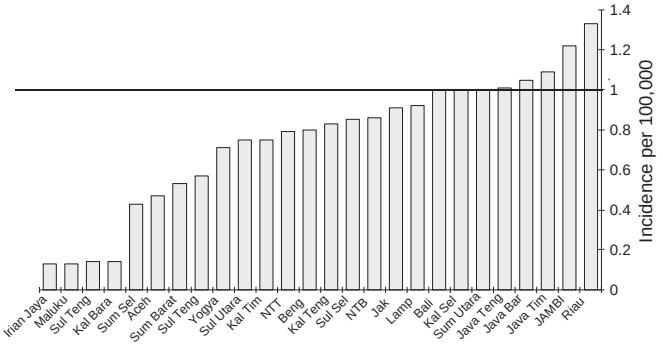


Fig 2–Performance of surveillance AFP (rate) in 2000.

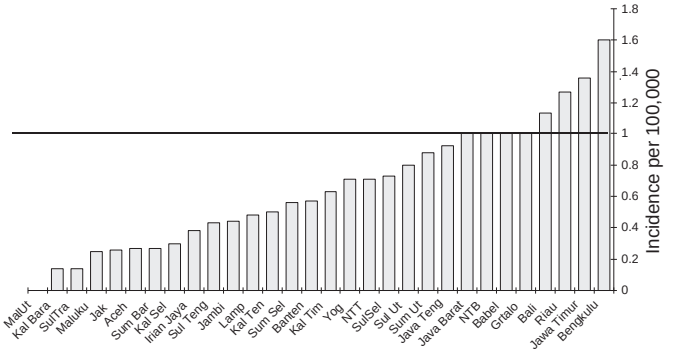


Fig 3–Performance of surveillance AFP (rate) in 2001.

nization coverage on round I was 93%, and on round II 89%. The percentage of doses house-to-house, 5-20%, specific data on measles vaccine and injection safety practices were unknown.

4. Surveillance activities reached certification quality in 1996, were able to be sustained until 1998, and performance began to decrease from 1999. Performance of AFP surveillance became more ineffective in the years 2000-2001 (AFP rate less than 1.0: 100.000), especially in areas of armed conflict. The units in the health offices became weaker; as more than 40% of surveillance personnel were replaced, not only at the health center level as detected in 1998-1999, but also at the district level. Weak surveillance is a threat to the certification process and the circulation of imported WPV, as

most cases of polio are asymptomatic and low level transmission may continue undetected for a period of time, as shown in several countries.

5. Finding of National Level Immunization Program Assessment April 2001: immunization coverage falling between 1997-1999; overestimates of actual coverage of routine immunization; difficulty in identifying pockets of very low coverage; immunization services at risk under decentralization and economic crisis.

If routine immunization coverage was around 80% with around 80% efficacy (maybe less in tropical areas of Indonesia), real protectivity was around 64%, leaving around 30% of newborns since 1997 (last NIDs) not fully protected. This group represents the "immunity gap" in Indonesia. Transmission of vaccine-derived neurovirulent poliovirus, as documented in Haiti, could potentially occur in areas of low coverage, and remain undetected (Averhoff, 2002a).

6. Risk factors for polio eradication in Indonesia are the process of decentralization, economic crisis, and conflicts/internally displaced people, which may disrupt routine immunization services and AFP surveillance and a potential reintroduction of polio might go undetected.

7. The eradication program in Indonesia has been done with a large investment. It was done with high quality, and attained polio-free certification standard requirement. The components of the strategy were done properly, such as high immunization coverage, three rounds of NIDs, high quality AFP surveillance and supplementary immunizations. These actions should be maintained at high quality, until all if the Southeast Asian Region is free from wild poliovirus transmission.

8. Indonesia should improve the detection of AFP cases by revitalizing the AFP surveillance program, by training all new surveillance personnel, establishing an active surveillance network amongst hospitals, district health offices, private doctors and health centers.

9. Supplementary Immunization Activities were done to fill the immunization gap. PIN were conducted on 12th September and 9th October 2002, with high coverage. The PINs ensure the population's immunity, stop the transmission of undesired polio virus and also serve as a part of the actions to rebuild the immunization infrastructure after the decentralization of the health services. It is important to convince the representatives that eradication programs and other contagious disease programs should not be fully decentralized.

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