平 成 7 年 度

帰国研修員フォローアップチーム報告書

— 小児麻痺根絶計画の理論と実際 —

平成7年10月

国 際 協 力 事 業 団
九州国際センター

序　　文

国際協力事業団は、フォローアップ事業の一環として集団研修コースの帰国研修員を対象に、当該分野の最新情報の提供、研修成果の確認、コースの評価並びに同分野のニーズ調査を目的としてフォローアップ調査団を派遣しています。

本報告書は、九州国際センターが平成7年8月6日から同年8月20日にかけて実施した、小児麻痺根絶計画の理論と実際セミナーのフォローアップ調査の結果を取りまとめたものです。今回の調査ではラオス、ヴェトナムの2ヵ国を訪問し、技術セミナーの開催及び両国の帰国研修員との面談を中心に調査活動を行ないました。

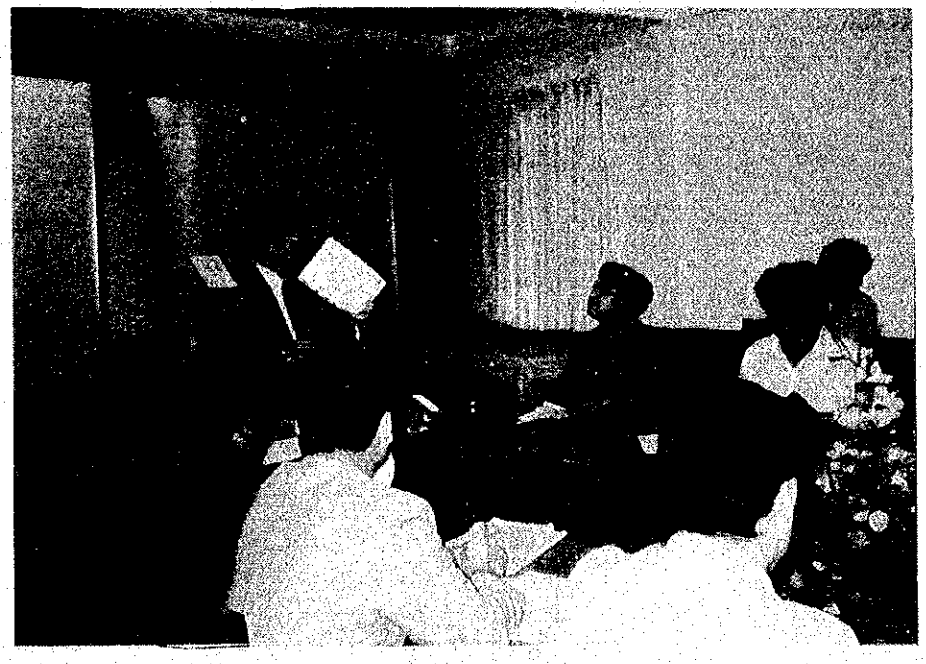
本報告書が広く関係者に利用され、今後の本研修コースのより一層の充実の参考となれば幸いです。

最後に、本調査にあたりご協力いただいた帰国研修員、帰国研修員所属先、各国政府関係者及び日本大使館、その他関係各位に感謝の意を表する次第です。

平成7年10月

国際協力事業団
九州国際センター
所長　表　　伸一郎

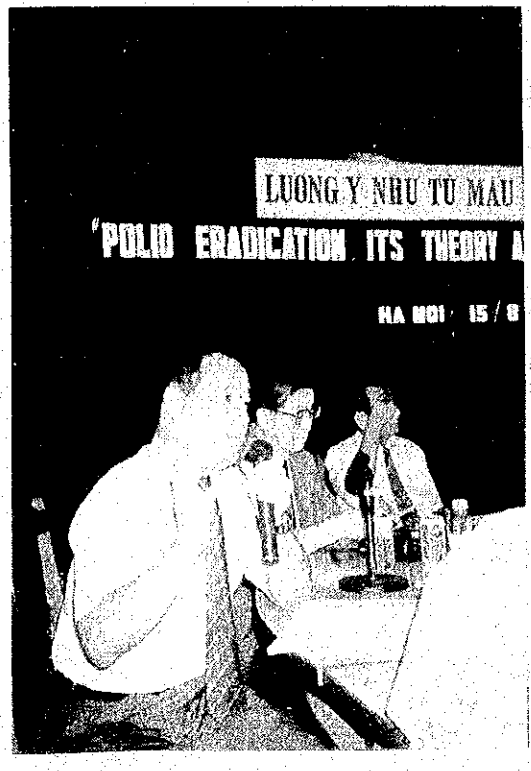
帰国研修員と（ヴィエンチャン）



講演する北村団長

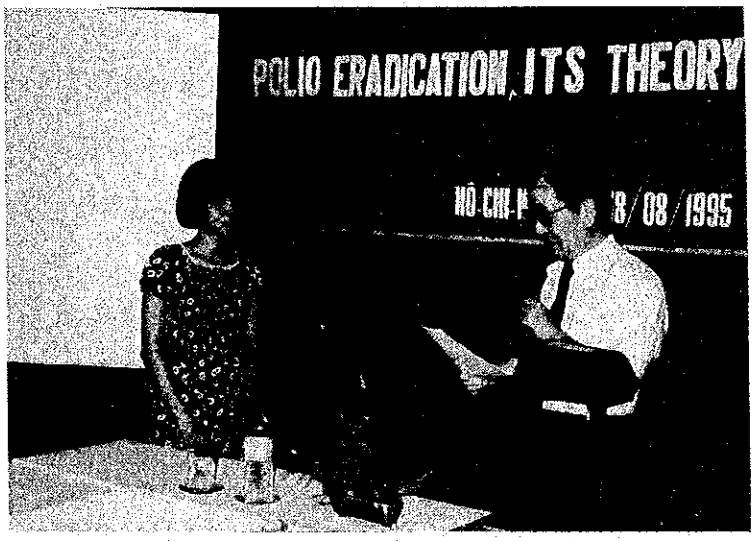
セミナー参加者たち

セミナーに参加した
帰国研修員たち
（ハノイ）



セミナーで質問に
答える浦部団員

ポリオワクチン研究
生産センターにて



セミナー参加者に
修了証書を授与
（ホーチミン・第６回
参加者）

WHO 遠田専門家
から説明を受ける

目　　次

Ⅰ．派遣チームの概要

1．派遣目的

国際協力事業団「帰国研修員フォローアップチーム派遣要項」に基づき、これまで6回の小児麻痺根絶計画の理論と実際セミナーに参加して帰国した研修員及びその所属機関を訪問して研修の成果を確認し、当該分野の抱える問題点と日本における研修に対するニーズを把握して本コースのより一層の充実に資するとともに、技術セミナーを開催し、わが国の当該分野の最新の研究の動向を紹介することを目的として、本調査団が派遣された。

2．団員構成

総　括	北村　敬	富山県衛生研究所　所長
技術指導	浦部大策	聖マリア病院新生児科 WHOコラボレーティングセンター室長 新生児教育担当部長
業務調整	瀬戸茂之	国際協力事業団　九州国際センター　研修課

3. 調 査 日 程

日順	月　日	曜日	訪　問　先　・　行　事	主な面談者
1	8月 6日	日	富山・福岡発	
2	8月 7日	月	東京発（バンコク経由）	
3	8月 8日	火	ヴィエンチャン着 午後　在ラオス日本大使館訪問 ラオス国保健省表敬訪問	
4	8月 9日	水	午前　国立衛生疫学研究所（NIHE）訪問（帰国研修員4名と面談） 午後　NIHEにて技術セミナー開催（参加者31名） 懇親会開催	
5	8月10日	木	午前　Dr. Somthana (Deputy Director of NIHE) 及びDr. Phengta (Chief of Epidemiology, NIHE) からポリオ根絶計画の現状についてブリーフィングを受ける 午後　大使公邸にて夕食会	
6	8月11日	金	午前　JICA公衆衛生プロジェクト派遣専門家と会談	
7	8月12日	土	資料整理	
8	8月13日	日	ヴィエンチャン発ハノイ着	
9	8月14日	月	午前　ヴェトナム国保健省訪問（帰国研修員5名に面談） JICAヴェトナム事務所訪問 午後　国立衛生疫学研究所訪問 ポリオワクチン研究生産センター訪問	
10	8月15日	火	午前　保健省にて技術セミナー開催（参加者17名） 午後　在ヴェトナム日本大使館訪問 JICAヴェトナム事務所に結果報告 懇親会開催	
11	8月16日	水	ハノイ発ホーチミン着	
12	8月17日	木	午前　保健省南部事務所訪問 午後　パスツール研究所訪問（帰国研修員2名に面談） WHO遠田専門家からメコンデルタ地帯のポリオの現状について説明を受ける	
13	8月18日	金	午前　保健省南部事務所にて技術セミナー開催（参加者21名） 午後　ホーチミン市郊外の施設（4ヵ所）を見学 懇親会開催	
14	8月19日	土	ホーチミン発（シンガポール経由）	
15	8月20日	日	東京着	

4. 主要面談者

(1) ラ　オ　ス（ヴィエンチャン）

和田雅夫	在ラオス日本大使館	特命全権大使
石崎吉男	同	二等書記官
Dr. Khemphet VANTHANOUVONG	Director of Cabinet, Ministry of Health	
Dr. Sithat INSISIENGMAY	Director of National Institute of Hygiene and Epidemiology (NIHE)	
Dr. Somthana DOUANGMALA	Deputy Director of NIHE, National EPI Manager	
Dr. Phengta VONGPHRACHANH	Chief of Epidemiology, NIHE	
黒岩宙司	Lao／WHO／JICA PHC Project	EPI Expert
中村　哲	同	Bacteriology Expert
高岡光信	同	Equipment Maintenance Expert
谷口世志子	同	Coordinator

(2) ヴェトナム（ハノイ）

宮崎雅夫	在ヴェトナム日本大使館	二等書記官
等々力　勝	JICAヴェトナム事務所	所長
辻野博司	同	所員
Dr. NGO VAN HOP	Director, Dept. of International Cooperation, Ministry of Health	
Dr. TRINH BANG HOP	Deputy Director, Dept. of International Cooperation Ministry of Health	
Ms. NGUYEN THI MINH CHAU	International Cooperation Dept. Ministry] of Health	
Dr. TRAN VAN TIEN	Deputy Director, National Institute of Hygiene and Epidemiology (NIHE)	
Ms. NGUYEN THU YEN	Medical Epidemiologist, Dept. of Epidemiology (NIHE)	
Dr. NGUYEN VAN MAN	Director, Polio Myelitis Vaccine Research and Production Center	

(3) ヴェトナム (ホーチミン)

Dr. NGUYEN VAN RET	Deputy Director of Manpower, Dept. of the Southern Part MOH Office
Dr. NGUYEN LUONG TUYEN	Foreign Cooperation Dept. MOH S.R.
Mr. BIN DUIPHAY	do
Dr. HA BA KHIEM	Director, Pasteur Institute of Ho Chi Minh City
遠 田 耕 平	Medical Officer, Expanded Programme on Immunization (EPI), WHO

Ⅱ. 技術セミナーの概要

1. 実 施 状 況

(1) ヴィエンチャン

8月9日（水）午後3時から2時間にわたって国立衛生研究所（NIHE）講堂にて、参加者31名（うち1名はNIHE副所長）を迎えて行なわれた。調査団挨拶に続いてNIHE副所長の挨拶があり、次第のとおりの順序で進行した。英語力に難のある参加者が多く、Dr. Phengata VONGPHRACHANH (Chief of Epidemiology, NIHE) が適宜通訳を行なった。

講師は北村調査団長、浦部団員に加えてJICA公衆衛生プロジェクト派遣専門家の黒岩宙司氏（EPI）の3名で会った。

参加者の内訳は、NIHE所属40％、各病院所属36％、市・郡所属14％、その他10％となっている。

セミナー終了後、北村調査団長から参加者に対して修了証書が手渡された。

同時に行なわれたセミナーに対するアンケートは、回収数24（回収率80％）であった。集計結果は以下のとおり。

1. セミナーの水準について

   高すぎた 2、適切 22、低すぎた 0

2. 最も有益だったトピックは？

   Virology of Polio Virus 10

   Polio Eradication and its Surveillance 14

   Epidemiology of polio in Lao PDR as determined by ACTIVE SEARCH and Official Reporting 8

   （全てとした者6、無回答6）

3. セミナーに加えて欲しかったトピックは？

   - Strategies to eradicate Polio
   - Epidemiology and Surveillance about Polio Case
   - Surveillance in Lao PDR
   - Laboratory Diagnosis
   - Any Lesson on the actual action that deals with Polio Eradication
   - Any Lesson on Polio Eradication from another Country
   - Case Definition

4. セミナーの印象について

・Very impressive presentation despite the time is very short.

・I am very happy to attend this course.

・The number of participants is OK.

・This seminaris very useful for health officer to evaluate Polio Eradication.

5. 提案があれば

・時間が短かった、質問と討議の時間が十分とれなかった。　7名

・再度のセミナーを望む。　2名

・英語がわからない参加者のために、前もって講義ノートを受けとっておきたい。　1名

・英語がわからない参加者のためには通訳が必要ではないか。　1名

・JICAにリハビリ分野の援助を望む。　1名

(2) ハ　ノ　イ

8月15日（火）午前8時30分から11時まで、保健省会議室にて、参加者17名を迎えて行なわれた。保健省国際部長のMr. NGO VAN HOP（M.D.）の挨拶に続いて北村調査団長、浦部団員がそれぞれ講演を行なった。

参加者の内訳は、保健省6名、国立衛生研究所4名、ポリオワクチンセンター3名、パスツール研究所・国立エイズ委員会・UNICEF・ハノイ保健衛生サービス各1名であった。参加者のなかには帰国研修員5名が含まれていた。

セミナー終了後、北村調査団長から参加者に対して修了証書が手渡された。

同時に行なわれたセミナーに対するアンケートは参加者全員から回収された。集計結果は以下のとおり。

1. セミナーの水準について

高すぎた　2、適切　15、低すぎた　0

2. 最も有益だったトピックは？

Virology of Polio Virus　5

Polio Eradication and its Surveillance　5

3. セミナーに加えて欲しかったトピックは？

・Polio Eradication and its Surveillance

・Some Control Methods of Eradication for Polio Eradication Program in Viet Nam

・Experiences of Laboratory Diagnosis of Polio Virus

・Polio Eradication in Shangdong

・Progress toward Global Poliomiesis Eradication 1985-1994

・More Detail Aspect of good Surveillance for Polio Cases including Virological Surveillance

4. セミナーの印象について

・Is is a chance for Vietnamese and Japanese experts getting together to discuss matters concerns

5. 提案があれば

・地方ワクチン製造について職員の訓練をJICAが援助してくれると良いのだが。

・両国間で意見の交換や協力体制の強化を期待したい。

・実体験を得るためにスタッフをPAHOに派遣する経費をJICAが負担してくれると良いのだが。

・毎年この種のセミナーをヴェトナムで開催して欲しい。

・日本からポリオ根絶に関する文献がいただきたい。

・特にNIDsの後のポリオウイルスの循環について、進行中の根絶計画に関する勧告が知りたい。

(3) ホーチミン

8月18日（金）午後9時30分から11時30分まで、保健省南部事務所会議室にて、参加者21名を迎えて行なわれた。南部事務所長のProf. HA BA KHIMの挨拶に続いて北村調査団長、浦部団員がそれぞれ講演を行なった。

参加者のうち9名はパスツール研究所（2名は帰国研修員）であった。

講演のあと行なわれた質疑応答にはWHO専門家の遠田耕平氏がヴェトナム南部のポリオ根絶計画の進展状況について補足説明が加えられた。

セミナー終了後、北村調査団長から参加者に対して修了証書が手渡された。

同時に行なわれたセミナーに対するアンケートは14通が回収された。集計結果は以下のとおり。

1. セミナーの水準について

高すぎた 1、適切 11、低すぎた 2

2. 最も有益だったトピックは？

Virology of Polio Virus	0
Polio Eradication and its Surveillance	12

3. セミナーに加えて欲しかったトピックは？

- The Experience to Organize of NIDS in other countries
- A Summary of each Topic
- Laboratory Diagnosis
- Experience on other Countries on Polio Eradication
- The best way to Interrupt Polio Virus Transmission in a short time

4. セミナーの印象について

- The short time but good organize and interesting
- Practical. We hope to another more seminar of this type
- It is beneficial for our work
- Short time with a lot of information
- Nice presentation but time is very short for discussion
- Good to discuss with experts in different fields

5. 提案があれば

- もっとレクチャーを。
- セミナーのトピックをもっと詳細に知らせておくべきである。
- もっと討議を。
- 子供に対するOPV活動についての経験を。
- ポリオ根絶についてのレクチャーに視聴覚教育方法をもっと取り入れる必要がある。
- 医学校にポリオ根絶計画のレクチャーを導入する必要がある。

Seminar on Polio Eradication by JICA Follow-up Team

at NIHE on 9 August 1995
3:00 p.m. to 5:00 p.m.

1. Opening speech by the Follow-up team and Dr Somthana, National EPI Manager

2. Laboratory diagnosis of Polio virus

Saneo NONAKA M.D., PHD
Director, The Chemo-Sero-Therapeutic Research Institute

3. Virology of Polio virus

Takashi KITAMURA M.D., PHD
Director, Toyama Institute of Health

4. Polio Eradication and its Surveillance

Daisaku URABE M.D.
Chief of Education in Neonatelogy Department, St. Mary's Hospital

5. Epidemiology of Polio in Lao PDR as determined by ACTIVE SEARCH and Official Reporting

Chushi KUROIWA M.D.
JICA PHC Project, EPI Expert

6. Closing

THE WORKING PROGRAM OF SEMINAR
18/8/1995.

"POLIO ERADICATION, ITS THEORY AND PRACTICE"

1. Declaration of seminar and introduction of delegates.

2. Opening speech of Dr REP.

3. Lectures of the 3 Japanese experts:
   "Laboratory diagnosis of Polio virus" (Dr.NONAKA)
   "Virology of Polio viru8s" (Dr. KITAMURA)
   "Polio eradication and its surveillance system" (Dr.URABE)

4. Discusion and conclusion.

2. 講 義 内 容

(1) 北村団長の講義内容については、添付資料3.を参照。

(2) 浦部団員の講義内容は以下のとおり。

中国での自身のサーベイランス活動経験を基に、サーベイランス活動の重要性、及び下位レベルの仕事を監視する事の重要性をスライドを用いて話した。ラオスでもヴェトナムでも、サーベイランスネットワークの充実、感度の高いサーベイランスを確立する事が重要である為、中国ででの活動において特に苦労した点をそれぞれの国の状況と比較した状況で述べる事に留意した。

講義の内容の要旨は次の様な事である。

1. サーベイランス活動は患者の早期発見を主としており、鋭敏な患者発見網を形成する事がポリオ根絶活動には重要である。
2. サーベイランス網は幾つかの構成単位があり、各構成単位がポリオ根絶活動に真に協力しているかどうか、つまり、サーベイランス網が有効に機能しているかどうか、常に監視しておく必要がある。
3. ポリオ患者出現の背景には必ずワクチン接種過程に問題があり、患者総数が減っている時こそ上位レベルスタッフが直接患者の村に出向き、村レベルでの状況調査を行なうような活動が必要である。
4. 患者発見態勢などポリオ根絶活動そのものの鋭敏性はなかなか評価が難しいから、指標を設定して自分達の仕事の質をモニタリングすると効果的である。また上位レベルスタッフは下位レベルに仕事を命令として指令するだけではなく、直接下位レベル、特に村レベルまで出向き、抜き打ちで下位レベルの仕事状況を監視する事も必要である。
5. 国レベルでモーバイルチームを作り、特に仕事のレベルが遅れている地域を主体として各地を巡回視察してまわる、と言った活動をとれば、現地に存在する問題点の発掘、及び下位レベルの監督といった点で有用である。国レベルで感度の高いサーベイランス網を確立するでも、巡回サーベイランス活動は極めて有効である。

3. セミナーの成果と評価

技術セミナーは上述のようにヴィエンチン、ハノイ、ホーチミンの3ヶ所で開催され、日本における研修参加者の他に、これの10倍近い20～30名のEPI、ポリオ根絶関係者が参

加し、いずれの会場も盛況であった。研修参加者の追加教育の場として期待されているようである。

講義項目は、ポリオウイルスの検査技術（野中）、ポリオのウリスル学（北村）、ポリオサーベイランスの実際（浦部）の3本立てを予定していたが、野中の担当部分は、北村のポリオのウイルス学の中で解説する事になった。北村は、Fenner／WhiteのMedical Virology第3版（1994）を用いてポリオウイルスの属するピュルナウイルス科の性質から、ポリオウイルスの感染過程、麻痺性ポリオの発生病理、ポリオウイルス伝授の疫学、予防のための戦略（不活化ワクチンと経口生ワクチン）、ワクチンの改良の分子生物学、野生株とワクチン株の鑑別等について解説したあと、根絶の最終段階での戦略を、痘瘡との比較で検討した。浦部は中国山東省におけるサーベイランスの経験から、Active surveillanceの評価と、それに伴う問題点を解説した。

参加者の質問は具体的で中には、教科書的情報より更に一歩進んだ観察も披露され、真剣な取組み方が感じられた。日本における研修についての評価も高く、今後の続行も希望されたが、内容的には次の4点に力点をおいて欲しいと要望された。

(1) ウイルス感染症根絶の理論的基礎を他の疾患（痘瘡、麻疹、黄熱、A型肝炎、B型肝炎、等）との比較で解説する。

(2) ポリオサーベイランスの精度評価と根絶確認の理論的基礎。

(3) 野生株とワクチン株鑑別の分子疫学的手法（遺伝の解析その他）

(4) 免疫不全症（HIP感染、妊娠等）での全ワクチン授与の判断基準。

Ⅲ．小児麻痺根絶計画の現状

1．現状と問題点

ラオスにおいてポリオ根絶事業は1994年3月に整備され、EPI／ポリオ根絶事業として、急性弛緩性麻痺（AFP)、麻疹、新生児破傷風、コレラの4疾患のサーベイランスと、予防接種の強化（EPI）が併行して行われました。AFPの症例、国レベルの調査で、ウイルス分離がヴェンチャンで行なわれ、ポリオウイルスの型別同定が行なわれると、野生株とワクチン株の鑑別は、タイのNIHw機体に送付されました。回答の来る迄に一般に3ヶ月以上かかっていて、迅速な疫学的対応が事実上不可能となっている。この点は、野生株ウイルスの流布の有無が問題となり根絶事業の最終段階では重大な問題となっている。

EPIとサーベイランスはラオス国立衛生疫学研究所（NIHE）の2つの部門で別個に行なわれており、実状は、EPIが先行したため、組織、設備、機動力等を占有し、これに比して、サーベイランス部門は、衛生行政組織より上に来る情報をファイルする、受動的サーベイランスとなっている。研修コースへの参加者もEPI部門から選ばれ、サーベイランス部門に生かされています。EPIとサーベイランスを結合して、効果的な根絶活動を行う事が最も緊急な改善策であると見受けられる。

ヴェトナムでは事実上ハノイを中心とする北部と、ホーチミン市を中心とする南部に分けて平行的に行われた。北部では、厚生省を中心としてEPIが、NIHEを中心としてサーベイランスが行われ、北部で使用するワクチンの大部分は、NIHE付属のポリオワクチン研修所で生産されているが、その能力と品質を改善するため、1995年より日本ポリオ研究所の協力がはじまっている。サーベイランスの内容は秀れていて、日本の国立予防衛生研究所（予研）による迅速な野生株、ワクチン株の鑑別もこれに寄与し、1995年に入って、北部では野生株ポリオウイルス流布は止ったように見られた。

南部では使用ワクチンは専ら輸入ないし外国からの援助で与えられたものが用いられ、ホーチミン市西南方のメコンデルタに、野生株による麻酔性ポリオの発生は続いているが、その数は大幅に減少していて、サーベイランス、EPI上の問題点は、メコンデルタ地区の住民台帳の不備で、EPIの報告に、接種率105％、120％等が、不思議がらずに記録されている問題は、住民として登録されていない人口が少なからずあり、接種率、サーベイランスの把握率等の評価が困難になっている。

2. 日本における研修への期待

(1) ラ　オ　ス

今の現実の状況からしてラオスでは1995年までのポリオ根絶は無理であろうし、現状を顧みてもサーベイランスの質の問題、カンボジア、ラオス、タイとの国境地域の問題などなかなか一朝一夕では解決できそうに無い問題が山積みしている。(最近、タイで一例患者が発生したが、タイ側はラオスの患者だという、しかし我々はタイ側に主に居住している人間だと思っている。) 日本の研修に参加したメンバーは相応の成果を得て帰ってきているし、帰国後の活動上でも確実に重要な役割を担っており、ラオス側のポリオセミナーに対する期待は大きい。(ラオスでは研修参加者が別のポストに着く、或いはポリオ関係の仕事から離れるような事は起こっていない。) この様なポリオ根絶活動の現状、及び直面している問題点などの現実を鑑みると、これからも日本でのトレーニングは是非続けて欲しい。これまでのセミナーではポリオ根絶に感するブロードな内容をコンパクトにまとめてあり、実際参加してみて良い勉強になった。これからの研修内容として、できればもっと各国の実状に応じた問題への対応についての手がかりになりそうな内容が含まれると有難い。例えばラオスの場合、サーベイランスの面でまだまだ未熟であるが、ラオスという国土、地形、社会基盤の発展度、人口分布状態、気候風土、社会体制などを考えた上でどのような展開が可能かを考えるような場があれば有難い。

ラオスの場合、人口が希薄で交通の不便は遠隔地域が多い。乾季は暑さが厳しく、雨季になると交通の寸断される地域も多い。政府の予算が少ない為、ワクチン、車輌、コールドチェーン、実験室の整備及びウイルス診断などどれをとっても国際期間の援助無しには活動できない。このような環境の中でポリオ根絶活動を遂行して行くのに、他国の活動状況の情報は参考になった。1989年、初めてこのコースが始まった時、ポリオ根絶活動がどの様なものであるかを多くの参加者がまだ実感できず理解していなかった頃、既にこの活動を終わりかけていたブラジルからの参加者がいて直接活動の状況を聞けた事は凄い刺激になった。

このような活動をしていく上で、活動の進捗状況に応じた内容があるとうれしい。勿論多数の国で活動の問題点、進捗状況には違いがあるから、各国の進捗状況をふまえた講義内容を期待するのは難しいであろうが、似たような状況にある国の活動状況を学べるのは実に有効であると考える。

JICAにスカラーシップがあって、そのルートで実際に南米の根絶活動の状況を直接勉強できるような機会でもあれば有りがたいのだが。

日本での研修そのものに対する事ではないが、ラボ診断力の改善について要望があった。ラオスではこれまでSEAROに属するタイに便検体を送りウイルス診断を行なっていたが、タイNIHからの返答が遅い事に強い不満が聞かれた。最近の事例だが、便検体を送付した後3ヶ月後にポリオウイルスが検出されたかどうかの一次報告が届き、最終報告は7ヶ月経っても届かないとの事である。再三、ウイルス診断の結果について問い合わせしているが、十分な返答が得られていない。タイはSEAROに属するため、タイNIHでの結果はまずニューデリーに送られ、そこからマニラに送付されるとの事であった。ビユークラシズムが傷害になっているようである。ラオスから便検体をタイNIHに送付し、タイでウイルス分離を行なう現在の態勢はWHOのアレンジによるものであるが、ラオス側としてはリスポンスの遅さに不満が多く、できれば便検体は日本に送付したいとの意向であった。このような多国間の協力は、WHOでアレンジして貰うのが最もスムーズに行くであろうが、この点について日本側の協力の可能性について検討してもらいたいとの事であった。

(2) ヴェトナム

研修員全員、熊本での研修内容に満足している。毎年、帰国研修員が新しい知識を持ち帰るので、ヴェトナム国内のポリオ根絶活動の進捗状況に併せて活動の戦略を建てるのに役にたった。ヴェトナムは年々確実な成果を挙げてきているが、活動の主たる機動力に成ってきたのは帰国研修員である。現在、ヴェトナムの大きな問題点はメコンデルタ地域の流動人口に絞られてきており、内容がら隣接国との協調が要求されるようになってきている。このような他国との協調のあり方では南米諸国の活動が役に立つのではないかと考える。似た様な環境を持つ国の情報をもっと知りたい。

ヴェトナムは自国内のラボでウイルス診断を行なっているが、そのレベルが十分ではない事を認識している。最近、自国内のラボで陰性と出た便検体を日本に送ってチェックを行なった所ポリオウイルスが分離されたとの事で、これから先も便検体の検査に付いて日本側からの協力が得られる事を期待するとの事であった。これとは別に、ハノイのワクチン製作所で自国産のワクチン増産計画が進行中であり、日本から多くの援助、技術支援が行なわれているとの事であった。

Ⅳ. 応募者選定の現状と課題

(1) ラ　オ　ス

本コースのGIはこれまで、日本大使館からラ国外務省、国家計画委員会、保健省を経て国立衛生疫学研修所（NIHE）に送られて応募者が選定され、応募書類はGIとは逆ルートで日本大使館に提出されてきた。この間、応募書類が総理府に送られる場合があり、応募者選定から応募書類が日本側に届くまでに長時間を要している。

ラオスからはこれまで第2回を除いてすべての年度に研修員を受入ており、手続き面の問題を除いては適切な人選であったといれる。

但し、NIHE内部で時に本コースに最適な人選が期待しにくい状況が発生する可能性があり、今後小児麻痺根絶計画が最終段階をむかえる中で、適切な分野の応募者を人選することの重要性は高まりつつある。

(2) ヴェトナム

本コースを含めて当国では集団研修のGIの流れや応募者の書類の流れに大きな問題はないといれる。

ヴェトナムからも第2回を除いてすべての年度に研修員を受入ており、帰国後の活躍振りからも応募者の選定は適切であったといれる。

ヴェトナムにおいてもラオス同様、小児麻痺根絶計画の最終段階において適切な分野の応募者の人選の重要性はきわめて高いといれる。

Ⅴ．調査結果と提言

(1) 調 査 結 果

1) 研修員は帰国後、個々の分野に定着し、本来の業務に研修で習得したものを生かしており、当人及び関係者の研修内容に関する評価も高い。少くとも、ラオス、ヴェトナムでは、研修を個人的機会と捉え、習得後、米国やヨーロッパへ流れ出るという、東南アジアの国で起こりがちな事態は発生していなかった。

2) 行政組織を利用したサーベイランス体系はよく動いており、ポリオ症例、野生株の流布の減少の傾向も確かであり、ポリオ根絶の完成期に近づいていると言える。しかし、サーベイランス活動の盛んな都市近郊、交通の便利な地域に多く発見されている事は、Active surveillanceにより、未発見の流行focusが見つけられる可能性も否定出来ない。モデル地区を、種々な条件を代表的複数地域に設定して、Notificationのみによるサーベイランス、Active Surveillanceと比較して、サーベイランスの精度評価をしておき、必要があれば、改善の方策も考えるべきである。

3) ラオスでは、EPIとサーベイランスの両部門が設けられて、両部門が個々独立し活動していて、情報網、機動力がEPIに偏っていて、サーベイランスの質的評価も不十分である。EPIとサーベイランスを統合し、限られた資源を効果的に活用する事が望まれる。研修員も、EPI部門からのみ選ばれ、研修がサーベイランスに及んでいる。

(2) 提　　言

(研 修 内 容)

1) 根絶はSurveillance and containmentに基づいてはじめて可能になるとの基本的認識に立ち、サーベイランスの質的評価を可能とする理論的構成である。

2) ポリオ根絶の確認と理論的根拠を作り上げるような講義を加える。この場合、痘瘡根絶の事例と、ポリオの場合の相違点をはっきり認識させるような内容にする。

3) 少数の症例のウイルス学的評価と、鑑別、特に分子疫学的手法によるワクチン株と野生株の鑑別の最新手法を提供する。

4) 研修員が現場で体験した上で、より高次の技術と知識を持って、活動出来るよう再教育の、上級コースを、短期間設ける事も必要である。

(研修員の選抜)

1) 1ヶ国当りの参加者数を、その年度の重点地域では、1人以上とし、より効果的な研修成果が生かされるようにする。

2) EPIとサーベイランスの乖離を避けるよう、申請国に年を押し必要あれば、駐在、専門家に助言させる。

VI. 添 付 資 料

1. 帰国研修員リスト（ラオス）

番号	氏　　名	参加時期（回）	現　　職	面談の可否	アンケート回収
1	MR.BOUNPHENG PHILAVONG	89.10～12（第1回）	Ph.D Candidate at the School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, MD,USA	面談	回収
2	MR. SISAVANH SUNDARA	91.10～11（第3回）		欠席	未回収
3	MR.SAMPHANH KHAMSISNGSAVATH	92.10～11（第4回）	Information, Education and Communication, National EPI Level, National Institute of Hygiene and Epidemiology (NIHE)	面談	回収
4	MR. FENGTHONG TAYPHASAVANH	94. 1～3（第5回）	EPI Staff, National Institute of Hygiene and Epidemiology (NIHE)	欠席	回収
5	MR. CHANTHAVONG SAVATCHIRANG	94. 1～3（第5回）	responsible in logistics Unit and Cold Chain System, Div. of Immunization, Section of Preventive Medicine, National Institute of Hygiene and Epidemiology (NIHE)	面談	回収
6	MR. BOONSAVAI MEKSAVARN	95.1～3（第6回）	Senior Staff of EPI Headquarters, Div. of Immunization, Section of Preventive Medicine, National Institute of Hygiene and Epidemiology (NIHE)	面談	回収

帰国研修員リスト（ヴェトナム）

番号	氏　　名	参加時期（回）	現　　職	面談の可否	ｱﾝｹｰﾄ回収
1	MS. CAO VIET HOA	89.10～12（第1回）	Health Consultant-UNICEF Office, HANOI	面談	回収
2	MR. TRINH QUAN HUAN	90.10～11（第2回）	Deputy Director, Dept. of Hygiene and Epidemiology, Ministry of Health	面談	回収
3	MS. THUY NGUYEN THI THANH	90.10～11（第2回）	Dept. of Public Health, Pasteur Institute of Ho Chi Minh	面談	回収
4	MR. NGUYEN VAN BIEN	92.10～11（第4回）	Program Officer, The National AIDS Committee	面談	回収
5	MS. THANH KIM DUNG	94. 1～3（第5回）	Epidemiological Doctor, Polio Surveillance, National Institute of Hygiene and Epidemiology (NIHE)	面談	回収
6	MS. PHAM THI NGOC OANH	94. 1～3（第5回）	Laboratory of Enterovirus, National Institute of Hygiene and Epidemiology (NIHE)	面談	回収
7	MS. VAN THI THANH BINH	95. 1～3（第6回）	Medical Doctor, Polio Surveillance in Southern Region, Pasteur Institute of Ho Chi Minh	面談	回収

2. 帰国研修員及び所属先に対する集計

【ラオス】

研修員所属先への質問

（回収数　1）

1　応募者の選定に要する時間

1ヵ月未満	1ヵ月以上
0	最低６０日

2 応募者を選定する際の政策や戦略は？

・EPI/Polio Eradication に従事し、英語を話し、研修終了後ポリオ根絶のために働く者。

3　応募者の選定に際して、コースの内容目的、内容、レベルについて事前に十分な情報が得られましたか。

YES	NO
1	0

4　GIを適切な時期に受け取ったか。

YES	NO	Not Received
1	0	0

5　帰国研修員からどのようなレポートを受け取りましたか。

・熊本における活動に関する報告

・研修員によっては報告野ない者もいる。

6　帰国研修員は、研修参加後研修で得た技術を現職に生かしていますか。

YES		NO	No Answer
十分	いくらか	0	0
0	1		

帰国研修員に対しての質問

（帰国研修員　6名，回収数　5）

一般的な質問

1　帰国後、自国あるいは、外国で技術研修を受けましたか。

YES	NO
3	2

- Management on EPI（タイ，１０日間）
- Polio Eradication, srtategy and Development（中国、１ヵ月間）
- Epidemiology Training Programme (タイ。２ヵ月間)
- Master Degree of Public Health （タイ、１年間）
- Management and Planning (ヴェトナム、１ヵ月間)
- Solar Refrigerator, Instollation and maintenance (タイ、１週間)
- National Immunization Days,Polio Eradication (ラオス、１週間)

2　日本での研修を再度希望しますか。

YES	NO
5	0

コースの内容について

1研修の期間は適当でしたか。

YES	NO
5	0

2　一般オリエンテーションは有益でしたか。

YES	NO
5	0

3　コースの狙いは適当でしたか。

YES	NO
5	0

4　コースのレベルについての印象は？

低すぎた	適当	高すぎた
0	4	1

5　研修科目は適切でしたか。

YES	NO
5	0

6　テキストの内容は良かったですか。

YES	NO
5	0

7　講師に対して質問またはコメントはありますか。

8　どの科目について興味がありましたか。
- すべての科目が興味深かった。（３名）
- マラリア根絶計画の失敗と天然痘根絶計画成功の教訓（２名）
- ポリオ根絶の計画と戦略（２名）
- パンアメリカの保健協力とポリオ根絶計画から学ぶ教訓（１名）

9　宿泊施設についてコメントはありますか。

１０　あなたの国で、ポリオ根絶に関して最重要の問題は何ですか。

・EPI日常活動におけるPOPV3の予防接種率の低さ。
・サーベイランスシステムの弱さ。
・診断調査が適時行なわれないこと。（２名）
・アクティブサーベイランスの強化。（３名）
・EPIカバー率の増強。（２名）
・散発的発病の存在。
・予算。
・コミュニケーション。

１１　研修で習得した技術、知識はどの程度現職に役立っていますか。

すべて	ほとんど	いくらか	少し	なし
3	1	1	0	0

１２　技術移転に際しての最大の障害は何ですか。（複数回答あり）

人　材	設　備	資　金	国の研修機関	研究施設	学術／技術情報	技術文献
2	2	5	0	4	2	3

その他

１３　研修への参加は、所属先機関に利益をもたらしたと思いますか。

YES	NO
5	0

１４　研修参加により、昇給、昇進等が与えられましたか。

YES	NO
0	5

１５　研修参加により何か責任、義務、制約が発生しましたか。

YES	NO
4	1

１６　所属先は本コースに別の研修員を参加させる希望がありますか。

YES	必要な時のみ	NO
5	0	0

１７アフターケアサービスについて、ＪＩＣＡに要望はありますか。

・ポリオ根絶計画が成功した国々への帰国研修員の研修旅行。

１８　その他どのようなコメントでも

・コースに、日本以外の国でポリオ根絶に経験を有する講師を呼ぶことを希望します。

【ヴェトナム】

研修員所属先への質問

（回収数　5）

1　応募者の選定に要する時間

1ヵ月未満	1ヵ月以上
0	5（60日）

2 応募者を選定する際の政策や戦略は？

・メディカルドクターで英語を解し、ポリオ根絶計画に従事していること。

・40歳以下であること。

3　応募者の選定に際して、コースの内容目的、内容、レベルについて事前に十分な情報が得られましたか。

YES	NO
5	0

4　GIを適切な時期に受け取りましたか。

YES	NO	Not Received
5	0	0

5　帰国研修員からどのようなレポートを受け取ったか。

・The Summary Seminar on Polio Eradication, it's Theory and Practice.（2名）

6　帰国研修員は、研修参加後研修で得た技術を現職に生かしていますか。

YES		NO	No Answer
十分	いくらか	0	0
5	0		

帰国研修員に対しての質問

（帰国研修員　7名，回収数　7）

一般的な質問

1　帰国後、自国あるいは、外国で技術研修を受けましたか。

YES	NO
5	2

・Tropical Epidemiology （タイ、2週間）
・Applied Epidemiology （ハノイ、1ヵ月間）
・Polio Eradication （タイ、3週間）
・Applied Epidemiology （フランス、1ヵ月間）
・Epidemiological Researches (フランス、12ヵ月間)
・Surveillance of Polioviruses （ハノイ）

2　日本での研修を再度希望しますか。

YES	NO
6	0

（未回答　1）

コースの内容について

1 研修の期間は適当でしたか。

YES	NO
7	0

2　一般オリエンテーションは有益でしたか。

YES	NO
7	0

3　コースの狙いは適当でしたか。

YES	NO
7	0

4　コースのレベルについての印象は？

低すぎた	適当	高すぎた
1	6	0

5　研修科目は適切でしたか。

YES	NO
6	1

・研究関連問題が掛けている。たとえば研究過程や最新のオペレーションズリサーチといった。
（１９９０年参加）

6　テキストの内容は良かったですか。

YES	NO
7	0

7　講師に対して質問またはコメントはありますか。
・理論以外にもっと実習を。

8　どの科目について興味がありましたか。
・天然痘根絶計画成功の教訓。（１名）
・パンアメリカの保健協力とポリオ根絶計画から学ぶ教訓。
・他の国の研修員と情報交換できたこと。
・過去における日本の経験。
・サーベイランス。
・国際保健医療協力。

serves as a model for picornaviruses in general. These processes, described in general terms in Chapter 3, are summarized below and in Fig. 23-2.

The cell receptor for poliovirus is a novel member of the immunoglobulin superfamily, as are those for other picornaviruses (e.g., the adhesion protein ICAM-1 for most rhinoviruses and some coxsackieviruses), in contrast to the integrin VLA-2 for certain echoviruses. Following adsorption, penetration, and intracellular uncoating, VPg is removed from the virion RNA by cellular enzymes. The virion RNA, acting as mRNA, is then translated without interruption into a single polyprotein, which is cleaved autocatalytically into the intermediates P1, P2, and P3. P1 is then further cleaved to yield first VPO, VP1, and VP3 and finally the four structural proteins VP1, VP2, VP3, and VP4 (see Fig. 3-8). The P2 region codes for three nonstructural proteins including one with protease activity, and the P3 region codes for four proteins including the RNA-dependent RNA polymerase required for RNA replication.

Viral RNA synthesis takes place in a "replication complex" which comprises RNA templates and the virus-coded RNA polymerase and several other viral and cellular proteins, tightly associated with a newly assembled smooth cytoplasmic membrane structure. Synthesis of the complementary strand is initiated at the 3' terminus of the virion RNA and uses the protein VPg as a primer. The completed complementary strand in turn serves as a template for the synthesis of virion RNA, although the details of the process may differ. Most of the replicative intermediates found within the replication complex consist of a full-length complementary (minus sense) RNA molecule from which several nascent plus sense strands are being transcribed simul-

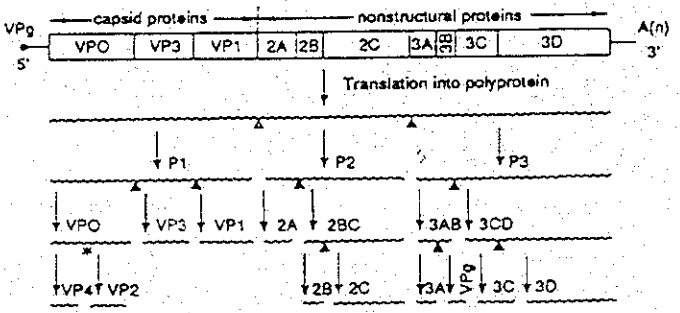


Fig. 23.2 Poliovirus RNA and posttranslational processing of the poliovirus polyprotein. (*Top*) Poliovirus RNA and its genetic organization. VPg, at the 5' terminus, is essential for RNA replication, but the RNA is infectious if VPg is removed because it can be synthesized from region 3B. The 3' terminus is polyadenylated, and there are short nontranslated sequences at each end (single lines). (*Bottom*) On entry into the cell, the virion RNA acting as messenger is translated into a polyprotein that is rapidly cleaved into polypeptides P1, P2, and P3 by the viral proteases 2A (open triangle) and 3C (closed triangles). P1, P2, and P3 are subsequently cleaved by protease 3C. VPO is cleaved into VP4 and VP2 by a third protease during capsid formation, so that VP1, VP2, VP3, and VP4 comprise the capsid. The organization of the genome and cleavage patterns are slightly different in different genera of picornaviruses.

taneously by viral RNA polymerase. The detailed sequence of steps involved in the morphogenesis of the virion was depicted in Fig. 3-8.

Because of the atypical absence of a 7-methylguanosine (m^7Gppp) cap on picornavirus mRNA, these viruses have been able to evolve an unusual mechanism for shutting down the translation of cellular mRNAs. Picornavirus protease 2A inactivates the cellular cap-binding complex eIF–4F, which is needed for binding of cellular mRNAs to ribosomes. Thus picornaviral replication is not only cytocidal but also very efficient, producing new virions after an eclipse period of less than 3 hours and yielding up to 10^5 virions per cell.

Polioviruses

Poliomyelitis was once a greatly feared disease; its tragic legacy of paralysis and deformity was a familiar sight in the 1950s. Today, by contrast, few medical students have seen a case, such has been the impact of the Salk and Sabin vaccines. The foundation for these great developments was laid by Enders, Weller, and Robbins in 1949, when they demonstrated the growth of poliovirus in cultures of nonneural cells. From this fundamental discovery flowed all subsequent work dependent on viral multiplication in cultured cell monolayers. Enders and colleagues were rewarded with the Nobel Prize. A new era in virology had begun.

Pathogenesis and Immunity

Following ingestion, poliovirus multiplies first in the pharynx and small intestine. It is not clear whether the mucosa itself is involved, but the lymphoid tissue (tonsils and Peyer's patches) certainly is. Spread to the draining lymph nodes leads to a viremia, enabling the virus to become disseminated throughout the body. It is only in the occasional case that the central nervous system becomes involved. Virus is carried via the bloodstream to the anterior horn cells of the spinal cord, in which the virus replicates. The resulting lesions are widely distributed throughout the spinal cord and parts of the brain, but variation in severity gives rise to a spectrum of clinical presentations, with spinal poliomyelitis the most common and the bulbar form less so. The incubation period of paralytic poliomyelitis averages 1–2 weeks, with outer limits of 3 days to 1 month. Acquired immunity is permanent but monotypic.

Pregnancy increases the incidence of paralysis, tonsillectomy increases the risk of bulbar paralysis, and inflammatory injections such as diphtheria–pertussis–tetanus (DPT) vaccine increase the risk of paralysis in the injected limb, after the usual incubation period ("provocation"). More serious in many developing countries where poliomyelitis is still common are the effects of intramuscular injections given deliberately when a child is incubating poliomyelitis ("aggravation"), a common practice in countries such as India, where injections are regarded as the best kind of therapy for all manner of illnesses.

Clinical Features of Poliomyelitis

It is important to realize that paralysis is a relatively infrequent complication of an otherwise trivial infection. Of those infections that become clinically

manifest at all, most take the form of a minor illness ("abortive poliomyelitis"), characterized by fever, malaise, and sore throat, with or without headache and vomiting that may indicate some degree of aseptic meningitis. However, in about 1% of cases muscle pain and stiffness herald the rapid development of flaccid paralysis. In bulbar poliomyelitis death may result from respiratory or cardiac failure (Fig. 23-3). Otherwise some degree of recovery of motor function may occur over the next few months, but paralysis remaining at the end of that time is permanent. In some cases further muscle atrophy may be observed many years after apparent recovery ("late postpolio muscle atrophy" or "postpolio syndrome").

Laboratory Diagnosis

Virus is readily isolated from feces, and sometimes from the throat, but not from cerebrospinal fluid (CSF). Any type of human or simian cell culture is satisfactory; the virus grows so rapidly that cell destruction is usually complete within a few days. Early changes include cell retraction, increased refractivity, cytoplasmic granularity, and nuclear pyknosis (Fig. 23-4). The serotype of the isolate is identified by neutralization tests.

The ubiquity of attenuated vaccine strains poses a difficult problem for diagnostic laboratories today. Because the nucleotide sequences of all vaccine strains and prevalent wild strains are now known, the two can be readily distinguished by nucleic acid hybridization. RNA is extracted from virus isolated in cultured cells or, alternatively, may be amplified by PCR directly from a fecal specimen. The U.S. Centers for Disease Control (CDC) have-

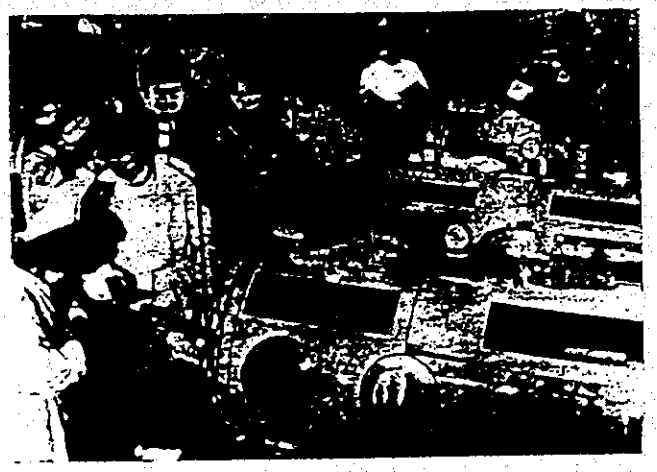


Fig. 23-3 Totally paralyzed poliomyelitis patients in mechanical respirators during the last epidemic in the United States before the advent of universal immunization (1955). [From L. Weinstein, *J. Infect. Dis.* 129, 480 (1974).]

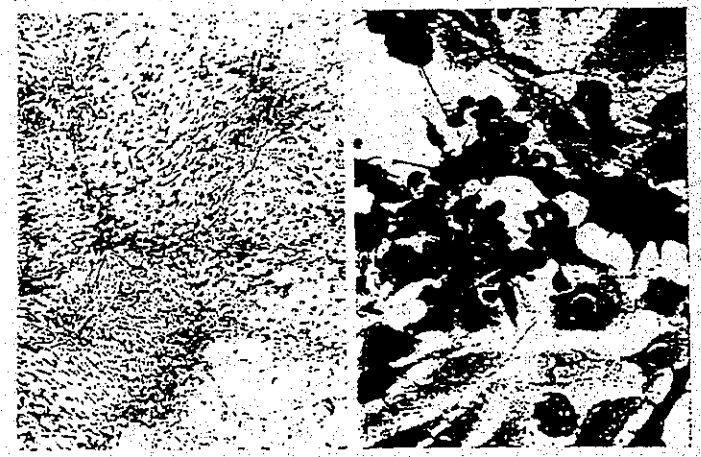


Fig. 23-4 Cytopathic effects induced by enterovirus in primary monkey kidney cell culture. (A) Unstained, low power. Note rapidly developing generalized cell destruction. (B) Hematoxylin and eosin stain, high power. Note disintegrating pyknotic cell. (Courtesy I. Jack.)

produced a panel of short labeled cDNA probes. A probe representing a conserved region of the genome is used initially for screening purposes, to identify the RNA as poliovirus; then probes specific for the three vaccine strains and for prevalent wild strains of the three serotypes identify the isolate in a dot-blot hybridization assay.

Epidemiology

Being enteric in their habitat and excreted for up to several weeks in feces, polioviruses spread mainly via the fecal–oral route. Direct fecal contamination of hands, thence food or eating utensils, is probably responsible for most case-to-case spread, especially under crowded conditions of poor hygiene and sanitation. Uncommonly, explosive epidemics have resulted from contamination of water supplies by sewage. Respiratory spread from the pharynx may also occur. In the tropics the disease is endemic throughout the year; in temperate countries before the introduction of vaccination it classically occurred in summer/autumn epidemics. The chain of infection is rarely obvious, because the vast majority of infections are inapparent.

Two major developments have greatly changed the epidemiology of poliomyelitis over the years. The first of these was the introduction of modern standards of hygiene and sanitation to the more advanced countries of the world which, paradoxically, had the effect of increasing the incidence of paralytic poliomyelitis in older children and adults. The reduction in the spread of viruses by the fecal–oral route limited the circulation of polioviruses and the incidence of infection in the community a whole. As a result, most people no longer had acquired immunity by the time they reached adolescence. The

consequence was a shift in the age incidence of paralytic poliomyelitis to include young adults, making the old term "infantile paralysis" a misnomer in Western nations. Primary infection of adults is, for reasons still unknown, much more likely to result in severe paralytic disease than is primary infection of young children. This was exemplified most strikingly in virgin soil epidemics occurring, long before the vaccination era, in isolated communities with no prior experience of the virus; most of the deaths occurred in adults.

The second major influence on the epidemiology of poliomyelitis has been the development and widespread usage of a highly successful vaccine. In those countries where a vigorous policy of immunization with oral poliovaccine (OPV) has been successfully pursued, not only has the disease been virtually abolished, but wild polioviruses are no longer endemic. In North America, Australasia, and much of Europe, the incidence of paralytic poliomyelitis has been reduced 1000-fold since 1955, and wild polioviruses are found only following importations from other parts of the world. However, in the developing countries of Africa and Asia immunization has generally not met with the success anticipated. Over 250,000 new cases of paralytic poliomyelitis continue to occur annually in the Third World. The city of Bombay, for instance, regularly has more cases than the United States, Canada, Western Europe, and Australia combined. Most paralytic poliomyelitis is caused by various genotypes within serotype 1, but serotype 3 has been increasing relatively since the introduction of vaccines, presumably because of the lower seroconversion rates and titers to the type 3 component of some OPV formulations; serotype 2 is the least common, the largest reservoir being in India. The problems, and current attempts to overcome them, are discussed below.

Control by Vaccination

In the late 1940s, the U.S. National Foundation for Infantile Paralysis organized a nationwide doorknock appeal, "The March of Dimes." The response was overwhelming, and the Foundation set about sponsoring a massive research drive on several fronts, in an attempt to turn Enders' recent discovery to advantage by developing a poliomyelitis vaccine. Salk was commissioned to work toward an inactivated vaccine, Sabin toward a live one. The formalin-inactivated (Salk) poliovaccine (IPV) was the first to be licensed and was enthusiastically embraced in North America, Europe, and Australia during the mid-1950s. Sweden, the country in which paralytic poliomyelitis first became apparent in epidemic form and which for many years continued to have the highest rate of poliomyelitis in the world, eliminated the disease by the use of Salk vaccine. Meanwhile, however, the live attenuated oral poliovaccine (OPV) of Sabin was adopted in the Soviet Union and Eastern Europe, where it was demonstrated to be so successful that the whole world except Sweden, Iceland, and Holland now uses OPV because of its greater convenience and lower cost. The several advantages of such living vaccines over their inactivated counterparts were set out in detail in Chapter 13. The near abolition of poliomyelitis in much of the Western World since the introduction of poliovaccine (see Fig. 15-1) represents one of the truly great achievements of medical science.

OPV is a trivalent vaccine, consisting of attenuated strains of all three

serotypes, derived empirically by serial passage in primary cultures of monkey kidney. Because of the diminishing availability of monkeys and the difficulty of ensuring that even laboratory-bred animals are free of simian viruses, manufacturers have moved to human diploid fibroblasts as a substrate for the production of poliovaccine. The vaccine strains acquired dozens of mutations during serial passage in cultured cells, leading to attenuation which was confirmed by absence of neurovirulence for monkeys. The three serotypes are pooled in carefully adjusted proportions to balance numbers against growth rate and hence to minimize the possibility of mutual interference. In the presence of molar magnesium chloride to protect the virus against heat inactivation the vaccine is stable for about a year under refrigeration.

To minimize the total number of visits OPV is most conveniently administered at the same time as other inoculations, that is, with DPT (diphtheria–pertussis–tetanus) at 2 months and 4 months of age, then again with MMR (measles–mumps–rubella) at 15 months. An additional dose should be given on entry into elementary school. No further boosters are required, except in the case of adults traveling to developing countries. The reason for the initial course of three doses is that, although one successful "take" would suffice, concurrent infection with another enterovirus may interfere with the replication of the vaccine viruses, as commonly occurs in the developing countries of the tropics. Earlier concern that breast-feeding may represent a contraindication has not been substantiated; though colostrum contains moderate titers of maternal IgA, milk itself does not contain enough antibody to neutralize the vaccine virus.

Two significant advantages of OPV over IPV follow from the fact that it multiplies in the alimentary tract. First, the subclinical infection elicits prolonged synthesis of IgA as well as the IgG antibodies which protect the individual against paralytic poliomyelitis by intercepting wild polioviruses during the viremic phase. The mucosal antibody prevents primary implantation of wild virus in the gut and hence diminishes the circulation of virulent viruses in the community. Indeed, wild polioviruses have now virtually disappeared from countries such as the United States; in sewage, vaccine strains exceed wild strains by over a millionfold. This striking replacement of wild virus by vaccine strains is facilitated by the fact that the latter are excreted in the feces and may spread to nonimmune contacts.

A consequence of the spread of vaccine virus to contacts is that it provides greater opportunities for selection of mutants displaying varying degrees of reversion toward virulence (see Chapter 7). Within 2–3 days of administration, the OPV type 3 strain recovered from the feces of the vaccinee generally displays a single nucleotide change at one particular position in the 5′ noncoding region which represents a reversion to that of the wild type. Although these partial revertants can be shown to have partially regained neurovirulence for monkeys, they only rarely produce paralysis in the vaccinee or in contacts. Acquisition of greater neurovirulence requires reversion to the wild-type nucleotide at one or more positions within the open reading frame for the capsid proteins. Very rarely (once per million vaccinees) the vaccinee, or an unvaccinated family contact, develops poliomyelitis. Because OPV-associated polio is 10,000 times more common in those who are immunocompromised in some way, only IPV should be used in such children.

Furthermore, because there are still significant numbers of parents who have never received poliovaccine, there are good arguments for immunizing unvaccinated family contacts prior to or simultaneously with their infants.

Research continues to improve the genetic stability of the type 3 component of OPV, which contains only 10 nucleotide substitutions (only 3 of which result in amino acid changes) compared with 57 (21 amino acids) in the more stably attenuated type 1 component. Genetic engineering has been employed to construct a chimera comprising a fully attenuated type 1 virus that incorporates the immunogenic region of type 3 capsid protein. Theoretically, when more becomes known about the determinants of virulence in polioviruses, it should be possible to synthesize and clone poliovirus cDNA containing appropriate nucleotide substitutions in predetermined locations. Meanwhile, it must be stressed that the OPV on which we rely today has proved itself as an outstandingly successful and safe vaccine which if delivered properly to all children throughout the world is perfectly capable of eradicating poliomyelitis forever.

In the more developed nations poliomyelitis has been so effectively conquered by OPV that it has become "the forgotten disease." Nevertheless, importation of virus remains an ever present threat, especially to pockets of unimmunized people, such as immigrants and their preschool children, who are often concentrated in urban ghettos. Thus it remains imperative that very high levels of immunization coverage are maintained to prevent such epidemics which could in turn be followed by reestablishment of endemicity.

Inactivated poliovaccine (IPV) became "the forgotten vaccine" following the development of OPV. Nevertheless, it retains a loyal band of advocates who believe it is as good or better, particularly now that IPV of improved potency is being produced as a result of a number of technologic improvements. Although human diploid cell strains do not grow sufficiently well to make them a commercial proposition for production of the very large amounts of virus required for IPV, nonmalignant, aneuploid monkey kidney cell lines such as Vero have now been approved for this purpose. The cells are grown on the surface of myriads of DEAE-Sephadex beads known as "microcarriers" suspended in large fermentation tanks. Poliovirus grown in such cells is purified by gel filtration and ion-exchange chromatography, affinity chromatography on Sepharose-immobilized antibodies, and/or zonal ultracentrifugation. The importance of removing aggregates of virions before inactivation with formaldehyde was established many years ago following the 1955 disaster in which clumped virus escaped inactivation and paralyzed numerous children in the United States. Two or three doses of today's IPV confer protection; this has encouraged a proposal that IPV replace OPV, particularly in the Third World where unsatisfactory seroconversion rates are sometimes reported even after the full course of three doses of OPV. As DPT is standard in most countries, it would not be too difficult to add IPV to the cocktail to make a quadruple vaccine. However, partly because of the expense, the current recommendation of the Expanded Programme of Immunization (EPI) is that we stick with OPV but improve its delivery.

In stark contrast to the dramatic success of the polio vaccination programs of the developed parts of the world, much less impact has been made on the disease throughout most of Asia and Africa. The reasons for this are complex,

ranging from chronically poor standards of sanitation that favor continued endemicity of polioviruses to lack of a health service infrastructure adequate to ensure vaccination coverage of the whole population, so that OPV is not delivered satisfactorily to the children, particularly in the most inaccessible rural villages. Many children never receive a full course of OPV. Even when they do, there may be doubts about whether the degree of refrigeration during storage and transport in the hot tropical climate has been adequate to retain the viability of the virus; greater attention is now being paid to maintenance of the cold chain. Suboptimal rates of seroconversion also raise the question of whether the current vaccine formulation or schedule needs to be adjusted. That poliomyelitis can indeed be eradicated in developing countries by comprehensive coverage with OPV has been demonstrated in South and Central America, where no cases of poliomyelitis caused by wild polioviruses have been seen since August 1991.

Wild polioviruses were eliminated from the United States and Canada during the 1970s, and in 1985 the Pan American Health Organization resolved to eradicate poliomyelitis from the western hemisphere by 1990. Regular EPI vaccination with OPV was supplemented by annual "national vaccination days," when all children under 14 years of age were given OPV, and by "mopping-up" vaccination in localities where cases of poliomyelitis had occurred. Both of these operations required much additional vaccine, the cost of which was largely covered by a special effort by Rotary International. The progress of eradication was monitored by greatly strengthened surveillance of flaccid paralysis and the careful laboratory investigation of every such case using modern methods of molecular epidemiology described in Chapter 14.

In 1988 the World Health Assembly adopted the ambitious target of worldwide eradication by the year 2000. Elimination of poliomyelitis from many or most countries in three of the six WHO regions [Europe, the Americas, and the Western Pacific (which includes China)] is likely to succeed, but there will be massive, perhaps insurmountable problems in achieving eradication from Africa and the Indian subcontinent.

(Annex)

Progress Toward Global Poliomyelitis Eradication, 1985–1994

In 1985, the Pan American Health Organization (PAHO) established as a goal the elimination of poliomyelitis from the Western Hemisphere by 1990; the last confirmed case of paralytic polio caused by wild poliovirus occurred in 1991 in Peru (*1*). In 1988, the World Health Assembly established the objective of global polio eradication by the year 2000 (*2*). Substantial progress toward this goal has resulted from the use of four strategies recommended by the World Health Organization (WHO): 1) maintenance of high vaccination coverage levels among children with at least three doses of oral poliovirus vaccine (OPV); 2) development of sensitive systems of epidemiologic and laboratory surveillance, including use of the standard WHO case definition*; 3) administration of supplementary doses of OPV to all young children (usually those aged <5 years) during National Immunization Days (NIDs)† to rapidly interrupt poliovirus transmission; and 4) "mopping-up" vaccination campaigns—localized campaigns targeted at high-risk areas where wild poliovirus transmission is most likely to persist at low levels (*3*). This report summarizes progress toward global polio eradication from 1985 through 1994 based on data submitted to WHO as of March 20, 1995.

Worldwide. From 1985 through 1990, routine vaccination coverage levels increased from 47% to 85% and stabilized at 80%–81% during 1991–1994 (Figure 1). From 1985 through 1994, the number of cases reported annually decreased 84%, from 39,361 to 6241 (Figure 1). The number of countries reporting polio cases decreased steadily, from 1985 (99 [51%] of 196) to 1988 (88 [45%] of 196) and 1994 (51 [24%] of 214) (Figure 2). In addition, the number of countries reporting zero polio cases increased from 1985 (84 [43%]) to 1988 (104 [53%]) and 1994 (145 [68%])§. The number of countries with endemic polio that conducted NIDs each year increased from 15 in 1988 to 37 as of April 14, 1995; 24 additional countries have scheduled their first NIDs for later in 1995.

A total of 94 countries have implemented surveillance for acute flaccid paralysis (AFP) to detect all cases of polio that meet the standard WHO case definition and to monitor the circulation of wild polioviruses. WHO has certified 12 regional reference laboratories and 60 national laboratories as members of the Global Polio Laboratory Network and has designated six geographic areas as emerging polio-free zones¶: the Western Hemisphere, Western and Central Europe, North Africa, Southern and Eastern Africa, the Middle East, and the Western Pacific.

African Region. Polio remains endemic in most countries of West and Central Africa. In 1994, a total of 448 cases were provisionally reported from 20 countries, a decrease of 73% from 1993 (1636 cases) and 98% from 1988 (4564 cases); 12 countries have not yet reported to WHO for 1994; seven countries did not report in 1993. The

*A confirmed case of polio is defined as acute flaccid paralysis (AFP) and at least one of the following: 1) laboratory-confirmed wild poliovirus infection, 2) residual paralysis at 60 days, 3) death, or 4) no follow-up investigation at 60 days.

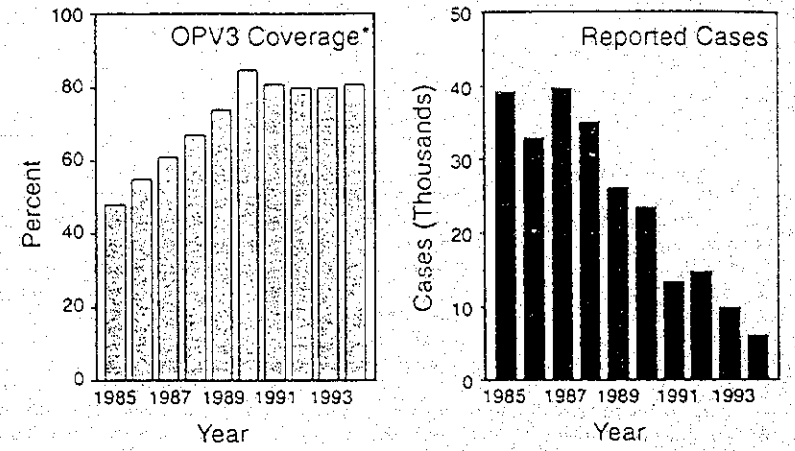
†Mass campaigns over a short period (days to weeks) in which two doses of OPV are administered to all children in the target age group, regardless of prior vaccination history, with an interval of 4–6 weeks between doses.

§The difference between the number of countries reporting polio cases or zero cases and the total number of countries reflects those not submitting reports.

¶Geographic areas where wild poliovirus either has disappeared or is at such a low level that eradication could be rapidly achieved.

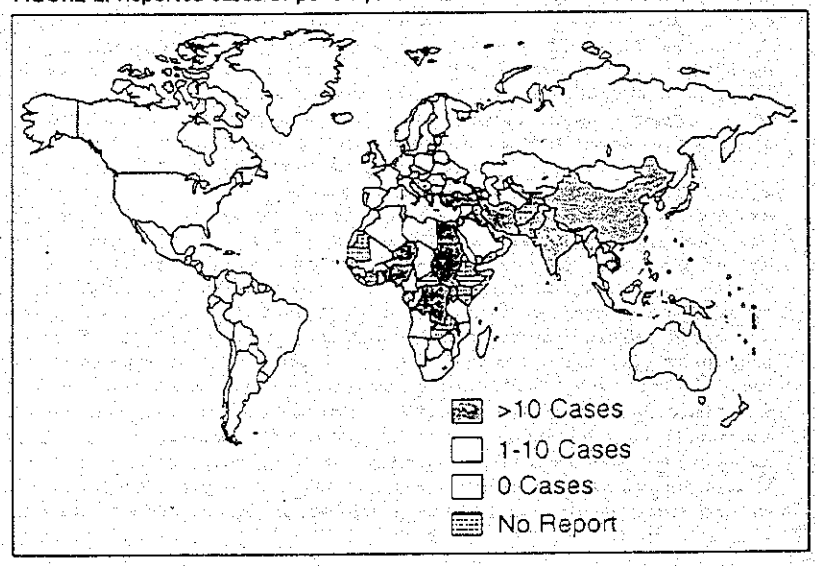
Poliomyelitis Eradication — Continued

FIGURE 1. Reported coverage with three doses of oral poliovirus vaccine (OPV3) and number of poliomyelitis cases, by year — worldwide, 1985–1994



*Percentage of children who received OPV3 by age 1 year.

FIGURE 2. Reported cases of poliomyelitis — worldwide, 1994



Poliomyelitis Eradication — Continued

number of countries reporting zero polio cases increased from eight in 1988 to 16 in 1994; most are island nations or located in southern Africa.

Region of the Americas. The last case of indigenous polio in the Americas was reported from Peru in 1991. In September 1994, an international commission convened by PAHO certified that indigenous transmission of wild poliovirus had been interrupted in the Americas (*1*).

Eastern Mediterranean Region. From 1988 through 1994, reported cases of polio decreased 58%, from 2342 to 973. In 1994, the 520 cases reported in Pakistan accounted for 53% of the regional total, although the number of cases within Pakistan declined 71% from 1993 (1803 cases). Pakistan conducted its first NIDs in April and May 1994. Coordinated NIDs are scheduled to be held during March–May 1995 in seven countries (Afghanistan, Iran, Iraq, Jordan, Lebanon, Pakistan, and Syria) and in Gaza, Jericho, and the West Bank (*4*). These countries reported 669 (69%) of the 973 cases reported in the region during 1994 (*4*).

European Region. The number of reported polio cases in the region has been stable during the 1990s; during 1994, a total of 211 cases were reported, compared with 202 cases in 1993 and 204 cases in 1988. NIDs are scheduled to be held during March–May 1995 in 10 countries (Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan, and Uzbekistan) (*4*). These countries accounted for 200 (95%) of the 211 cases reported in the region during 1994.

Southeast Asian Region. From 1988 through 1994, the number of reported cases of polio decreased 84%, from 25,711 to 4184. The number of cases reported in India in 1994 (3867 cases) accounted for 93% of the regional total and 62% of the global total.

Western Pacific Region. From 1988 through 1994, the number of reported polio cases decreased 80%, from 2126 to 425. In 1994, polio was reported by five of 35 countries in the region (Cambodia, People's Republic of China, the Lao People's Democratic Republic, Philippines, and Vietnam). The number of cases reported by China (158 cases) was a 71% decrease from 1993 (538 cases) and a 97% decrease from 1990 (5065 cases); WHO-recommended strategies for polio eradication were implemented in China in 1991.

Reported by: Expanded Program on Immunization, Global Program for Vaccines and Immunization, World Health Organization, Geneva. International Health Program Office; Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Polio Eradication Activity, National Immunization Program, CDC.

Editorial Note: Major achievements in the coordinated global campaign to eradicate polio include the substantial reduction in the global incidence of paralytic polio, the complete elimination of polio from the Region of the Americas, and the widespread implementation of NIDs and other WHO-recommended strategies. In particular, the number of reported cases declined dramatically in countries that conducted NIDs in late 1993 or the first half of 1994 (including China, Pakistan, Sudan, and Vietnam). In addition, during March–May 1995, coordinated NIDs targeting 56 million children aged <5 years will be conducted in 18 contiguous countries in Europe, Central and South Asia, and the Middle East (*4*).

The implementation of AFP surveillance is a critical element of WHO's eradication strategies. Eradication of disease requires a surveillance system that can detect a single case. Polio-endemic countries have implemented a system in which any AFP case in a person aged <15 years is reported as a suspected polio case. Two stool specimens

(Continued on page 281)

Poliomyelitis Eradication — Continued

are collected from each suspected case-patient at an interval of 24–48 hours to determine the presence of poliovirus; however, the standard WHO case definition permits an AFP case to be confirmed as polio if it meets any of four criteria, including the isolation of poliovirus from a stool specimen. Accurate and timely surveillance information about wild poliovirus transmission enables the targeting of supplementary vaccination activities toward remaining known reservoirs of poliovirus through intensive, localized vaccination campaigns (i.e., mopping-up vaccination). AFP surveillance also is being used to certify eradication at the national, regional, and global levels.

In 1994, the contiguous countries of Bangladesh, India, and Pakistan accounted for 73% of the global total of polio cases. Since 1988, importation of wild poliovirus from these polio-endemic countries of Southeast Asia has accounted for many of the outbreaks or sporadic cases of polio in previously polio-free countries of Europe, the Middle East, and North America. Because Southeast Asia remains a major global reservoir of polioviruses, full implementation of the WHO-recommended polio eradication strategies in these countries is a high priority.

The global eradication of polio by the year 2000 will require that all polio-endemic countries implement NIDs and other WHO-recommended strategies by 1997. Implementation of these strategies is especially important in the African Region, which has the largest number of countries not reporting polio surveillance data; the African Regional Office of WHO is assisting countries in strengthening polio surveillance and planning for NIDs. Although global routine vaccination coverage levels remained stable during 1990–1994, reported polio cases declined substantially, largely because of an increase in the number of countries conducting NIDs.

Despite substantial progress toward global eradication of polio, several challenges remain, including 1) increasing vaccination levels in unvaccinated subpopulations; 2) preventing the reintroduction of wild poliovirus into polio-free areas by eliminating reservoirs in polio-endemic countries (particularly in the Indian subcontinent); 3) increasing the awareness of donor agencies and governments in industrialized countries of the substantial financial and humanitarian benefits of global eradication of polio, thus engendering support from unaffected countries beyond that already provided by organizations such as Rotary International; 4) encouraging all countries that remain polio-endemic to make polio eradication a priority activity, including the implementation of NIDs and the initiation of AFP surveillance; and 5) providing support to vaccination program managers for training to develop managerial skills for implementing and maintaining effective vaccination and surveillance programs in all countries. The success of the polio eradication initiative will depend on finding solutions to these financial, managerial, political, and technical challenges.

References

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2. World Health Assembly. Global eradication of poliomyelitis by the year 2000. Geneva: World Health Organization, January 1995.
3. Hull HF, Ward NA, Milstien JB, de Quadros C. Paralytic poliomyelitis: seasoned strategies, disappearing disease. Lancet 1994;343:1331–7.
4. CDC. Mass vaccination with oral poliovirus vaccine—Asia and Europe, 1995. MMWR 1995;44:234–6.

4. 技術セミナー参加者リスト

(1) ラ　オ　ス（ヴェンチャン）

RECORD OF MEETING

1. TYTLE : Technical Seminar
2. DATE AND TIME : 1995 AUG. 9th 15:00 ~ 17:00
3. PLACE : NIHE, Lao PDR
4. PARTICIPANTS :

	NAME	POST	ORGANIZATION
1.	Dr. Kenechanh	Medical officer	NIHE
2.	Dr. Kongkeo	Epidemiology	NIHE
3.	DR. Souk thavone		Military hospital
4.	Dr Sonsy	EPI	Vientiane Municipality
5.	Dr. Nyphonh	Epidemiology	NIHE
6.	Dr Kongmany	Epidemiology	NIHE
7.	Mrs. Monekeo	MCH	Police hospital
8.	Mrs Kongchay	Epidemiology	Vientiane Municipality.
9.	DR Manivanh	Laboratory	Friendship hospital
10.	Ratkanaphone	BACTERIOLOGY	MAHAXOT HOSPITAL

RECORD OF MEETING

1. TYTLE : Technical Seminar
2. DATE AND TIME : 1995 AUG. 9th 15:00 ~ 17:00
3. PLACE : NIHE Lao PDR
4. PARTICIPANTS :

	NAME	POST	ORGANIZATION
1.	DR PHENGTA VONGPHRACHANH	CHIEF OF EPIDEMIOLOGY	NIHE, MOH
2.	Dr. Thongkhanh	Chef of epidemiology	Vientiane Province.
3.	Mr. KHOUNSAVANG	Chef of epidemiology	Vientiane Province
4.	Dr. Mani Van	Hospital 109.	
5.	Dr. Chandy Khammani	Hospital 103.	
6.	Mrs. Bouaphanh	Epidemiology	NIHE, MOH
7.	Ms. Yoko SHIMADA	Medical Coordinator	J.O.C.V / Lao
8.	Dr BOUAPHAN	Director	Sepsathirath
9.			
10.			

RECORD OF MEETING

1. TYTLE : Technical Seminar
2. DATE AND TIME : 1995 AUG. 9th 15:00 ~ 17:00
3. PLACE : NIHE, Lao PDR
4. PARTICIPANTS :

	NAME	POST	ORGANIZATION
1.	DR. Samphanh	EPI	NIHE
2.	DR. Soupham INTHRAT. Rehabilitation.		National Center for Medical Rehabilitation.
3.	DR. Khamlar Sobangth	P.M.I	MaHoSot.
4.	DR. INLAVANH. KEOBOUNPHANH	P.M.I	SETTHA Hospital
5.	DR BOUSSADA Amphay	P.M.I	Hospital Mamité
6.	DR DOUNGSAVANH Phondavanh	Pédiatrie	Hospital l'amité
7.			
8.			
9.			
10.			

(2) ヴェトナム (ハノイ)

RECORD OF MEETING

1. TYTLE : Seminar on Polio Eradication
2. DATE AND TIME : 1995 AUG. 15th 8:30 ~ 11:00
3. PLACE : MOH ハノイ
4. PARTICIPANTS :

	NAME	POST	ORGANIZATION
1.	TRINH QUAN HUAN	Deputy Director Dept. H-E	MOH
2.	NGUYEN VAN BIEN	Nat. AIDS committee	Viet Nam Vietnam.
3.	PHAM THI NGOC OANH	Lab Enterovirus	NIHE
4.	Nguyen thi Hien Thanh	chief of Lab.	NIHE
5.	Tran Minh Canh	vice of Director	polio vac center
6.	CAO VIET HOA		UNICEF
7.	THANH KIM DUNG		NIHE
8.	NGUYỄN THI QUÝ	Vice of Director	POLYOVAC CENTER
9.	NGUYEN VAN THAI		Dept Int' Cooperation
10.	NGUYEN VAN MAN	DIRECTOR	POLIOVAC
11	HA XUAN TAN	DIRECTOR	Hanoi Hygiene and Epidemiology Service

RECORD OF MEETING

1. TYTLE : Seminar on Polio Eradication
2. DATE AND TIME : 1995 AUG. 15th 8:30 ~ 11:00
3. PLACE : MOH
4. PARTICIPANTS :

	NAME	POST	ORGANIZATION
1.	Trinh Bang Hop	Deputy Director Internal & coope. Depart	Ministry of Health
2.	Dr. Phuong Thanh Hop	Department of Science and Training	MOH.
3.	NGUYEN THI THANH	Senior Officer	Dept of Planning and Finance
4.	PHAM THI NGOC OANH	Lab Entero viruses	NIHE
5.	NGUYEN THI MINH CHAU ~~Nguyen thi Hien Thanh~~	Officer in charge of Health Cooperation between Japan & VN ~~Chief of Enterovirus lab.~~	MOH ~~NIHE~~
6.	Dr. Ngo Van Hop ~~Tran Minh Canh~~	Director ~~vice of director~~	Int'l Cooperation Dept., MOH. ~~Poliovac center~~
7.	~~CAO VIET HOA~~		~~UNICEF~~
8.	~~THANH KIM DUNG~~		(NIHE
9.	PHAM-THI-SUU	vice of head department	7. PCH.
10.	~~NGUYEN THI QUY~~	~~vice of Director~~	~~POLYOVAC CENTER~~

(3) ホーチミン

RECORD OF MEETING

1. TYTLE : Seminar on Polio Eradication
2. DATE AND TIME : 1995 AUG. 18th 9:30 ~ 11:30
3. PLACE : MOH Southern-part Office
4. PARTICIPANTS : ホーチミン

	NAME	POST	ORGANIZATION
1.	HUỲNH TẤN TIẾN	(director) 699 Trần Hưng Đạo Q5 HCM	preventive medicine center
2.	Nguyễn-Thiều Hùng	BS tuyên truyền	L/viện Pasteur
3.	Nguyễn Thanh Nguyên	Dep. of management and Health economics EPI MANAGEMENT	Ministry of Training Center For Health Care Professionals-HCM
4.	Vũ Quốc Ái	(PASTEUR INSTITUTE HCM City)	PASTEUR INSTITUTE HCM CITY
5.	Trần Quang Chọc	EPI Management	Pasteur Institute HCM City
6.	PHẠM KIM CÚC	Dept. Public Health	Pasteur Institute
7.	PHAN VĂN TÚ	Lab. of Polio	Pasteur Institute HCMC
8.	Trần Thị Thanh Bình	EPI Staff	Pasteur Institute HCMC
9.	Nguyễn Thanh Long	Lab of polio	pasteur institute Hcm
10.			

RECORD OF MEETING

1. TYTLE : Seminar on Polio Eradication
2. DATE AND TIME : 1995 AUG. 18th 9:30 ~ 11:30
3. PLACE : MOH Southern-part Office
4. PARTICIPANTS : ホーチミン

	NAME	POST	ORGANIZATION
1.	TRAN CONG THANH	EPIDEMIOLOGIST (EPI staff)	PASTEUR INSTITUTE
2.	NGUYỄN THỊ THANH HÀ	EPIDEMIOLOGIST (EPI staff)	PASTEUR INSTITUTE.
3.	NGUYỄN ĐỖ NGUYÊN	EPIDEMIOLOGIST	Hcmc School of Med & Phar.
4.	CAO NGỌC NGA	MD. Inf. Dis. specialist	Hcmc. School of Med-and Phar.
5.	遠田 耕平	Expert	WHO
6.	Dr.	Deputy Director	
7.	Ms.		
8.	Mr.		
9.			
10.			

RECORD OF MEETING

1. TYTLE : Seminar on Polio Eradication
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4. PARTICIPANTS : ホーチミン

	NAME	POST	ORGANIZATION
1.	NGUYEN THI THANH THUY		PASTEUR INST
2.	VÕ CÔNG KHANH		CTI
3.	Hung Thê Loan		Office 2
4.	Hạ bá Khiêm		Pasteur Inst.
5.			
6.			
7.			
8.			
9.			
10.			

5. 技術セミナー修了証書（ラオスの例）

Certificate

This is to Certify that

_____

has attended a Seminar on

Polio Eradication -Its Theory and Practice-
on August 9th, 1995

at Vientiane, Lao People's Democratic Republic

Organized by
Japan International Cooperation Agency (JICA)
under the International Cooperation Programme
of the Government of Japan

TAKASHI KITAMURA
Team Leader of Technical Seminar
on Polio Eradication -Its Theory and Practice-
Japan International Cooperation Agency (JICA)

Date : August 9th 1995

6. 現 地 報 告 書

(1) ラ オ ス

It is my great pleasure to submit the summary report of the Follow-up Survey Team (hereinafter referred to as "the Team") for the Ex-participants of the group training course in SEMINAR ON POLIO ERADICATION, ITS THEORY AND PRACTICE (hereinafter referred to as "the Course").

The team, which was dispatched by the Japan International Cooperation Agency as a part of the technical follow-up programme for the ex-participants of the Course and consisted of three members headed by Dr.Takashi KITAMURA, Director of Toyama Institute of Health, arrived at the Lao PDR on August 8th, 1995 and then continued its follow-up activities for the period of 6 days.

Through the visit of this time, we are able to obtain many valuable comments and suggestions about the Course from the competent authorities concerned and also from the ex-participants and other people around them, we are quite sure that the information we obtained here should be greatly useful for the purpose of improving the Course as well as Japanese technical cooperation programme.

Finally I would like to express my hearty appreciation for your warm hospitality and kind cooperation extend to us during our stay in your country.

Sincerely yours

Takashi KITAMURA

Leader,
Follow-up Survey Team for the
Group Training Course in Seminar
on Polio Eradication, Its Theory and
Practice

Summary Report of
The Follow-up Survey Team for
Ex-participants to
The Group Training Course in Seminar on Polio Eradication, Its Theory and Practice

1. Objectives

The Objectives of the Team is to evaluate the effectiveness of the Course, to know the more crucial Problems which are lying over the trainees in the field and which are considered to be involved as key contents of seminar with special emphasis, and to transfer the latest knowledges to this field through the seminar.

Checking points are as follows:

a. How the ex-participants of the course are using the knowledge acquired through the seminar in respective working fields.

b. Present working situation of ex-participants in relation with the polio eradication programme.

c. The progress of polio eradication activity in throughout the country.

d. To investigate more crucial problems in the practical fields.

2. Period

From August 8th 1995 to August 13th 1995

3. Members

Mr.Takashi KITAMURA, M.D.
Director of Toyama Institute of Health

Mr.Daisaku URABE, M.D.
Vice Director of WHO Collaborating Center for Neonatology

Mr.Shigeyuki SETO
Training Division
Kyushu International Center
Japan International Cooperation Agency (JICA)

4. Results

a. In Lao PDR, EPI and Surveillance are independent divisions, and 6 ex-participants were selected from EPI division.

b. Among 6 ex-participants, 5 are working along with polio eradication activity in EPI division of Ministry of Health and remaining 1 doctor is now in Philippines. He is expected to come back to Lao PDR very soon.

c. All the ex-participants appreciate the Course Training, and the acquired knowledges have been fruitfully utilized in the filed. But their knowledge has not been shared well with staffs of the Surveillance division.

d. The number of staff in EPI division is 11 including secretary and cold chain engineer, and 6 in surveillance.
Surveillance division has to cover broader area of infectious diseases

e. Ex-participants strongly hopes the Course to be continued more and other EPI and Surveillance staffs to be trained also.

f. Because of the shortage of manpower and facilities, present surveillance system is rather passive. Active surveillance is now under planning.

g. One big problem was raised by the ex-participants and the other EPI staff members about laboratory diagnosis network. They sent stool specimens to Bangkok in January this year but they have not receive the results in August yet.

5. Conclusion

a. Ex-participants of the Course have been conducting tremendous work in their respective fields and the outcome of the Course is very successful.

6. Recommendation

In Polio eradication activity, sensitive surveillance system is essential. Especially in final stage of the activity, quick case finding will become more essential for following containment procedure. Here, introduction of two activities are recommended.

a. Active surveillance

This is useful to evaluate sensitivity of own surveillance system. Higher level staffs visit hospitals, rehabilitation centers or village doctors as an active search of non-reported AFP cases. This activity is useful for training of lower level staff as well as supervision of them.

b. Selection of a model survey area

For example, Vientiane Municipality area is selected as a model survey area. This area is actively surveyed by country level staffs regularly, while nationwide routine surveillance activities are left on the hand of provincial or district level staffs. Logical evaluation of the present system by introduction of active surveillance into several model areas representing not only municipalities but also rural, remote or mountainous areas, will become possible.

c. Strategic Combination of EPI and surveillance

EPI and surveillance activities should be more deeply combined strategically by regular strategic conferences and national training sessions

d. In final stage of Polio Eradication activities, quick and accurate laboratory diagnosis become essential. In order to overcome a present problem, it is recommended to send stool amples to NIH,Japan.

e. Up to now, 6 ex-participants were selected from EPI division who have not been conducted surveillance activities. In Lao PDR,active surveillance should be strengthened more,especially to investigate many remote areas. So that, staff members of surveillance division should be sent to the Seminar in Kumamoto. .

(2) ヴェトナム

It is my great pleasure to submit the summary report of the Follow-up Survey Team (hereinafter referred to as "the Team") for the Ex-participants of the group training course in SEMINAR ON POLIO ERADICATION, ITS THEORY AND PRACTICE (hereinafter referred to as "the Course").

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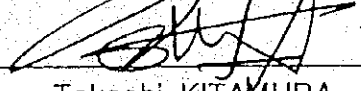
Through the visit of this time, we are able to obtain many valuable comments and suggestions about the Course from the competent authorities concerned and also from the ex-participants and other people around them, we are quite sure that the information we obtained here should be greatly useful for the purpose of improving the Course as well as Japanese technical cooperation programme.

Finally I would like to express my hearty appreciation for your warm hospitality and kind cooperation extend to us during our stay in your country.

Sincerely yours



Takashi KITAMURA

Leader,
Follow-up Survey Team for the
Group Training Course in Seminar
on Polio Eradication, Its Theory and
Practice

Summary Report of
The Follow-up Survey Team for
Ex-participants to
The Group Training Course in Seminar on Polio Eradication, Its Theory and Practice

1. Objectives

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Checking points are as follows:

a. How the ex-participants of the course are using the knowledge acquired through the seminar in respective working fields.
b. Present working situation of ex-participants in relation with the polio eradication programme.
c. The progress of polio eradication activity in throughout the country.
d. To investigate more crucial problems in the practical fields.

2. Period

From August 13th 1995 to August 19th 1995

3. Members

Mr.Takashi KITAMURA, M.D.
Director of Toyama Institute of Health

Mr.Daisaku URABE, M.D.
Vice Director of WHO Collaborating Center for Neonatology

Mr.Shigeyuki SETO
Training Division
Kyushu International Center
Japan International Cooperation Agency (JICA)

4. Results

a. In Viet Nam, we could meet all 7 ex-participants, 5 in Hanoi and 2 in Ho-Chi-Min city. Among 5 members in Hanoi, 2 are working in the national laboratory and 2 are in EPI, and 1 in UNICEF.

b. All ex-participants were selected ideally, and they are playing important roles in respective fields of Polio eradication programme.

c. Up to now, Viet Nam has achieved great progress in polio eradication activities and to this progress, 7 ex-participants have contributed remarkably.

d. Selection of the 7 ex-participants to the seminar was done quite reasonably.

e. In Viet Nam, there are two key stations for the polio eradication activities, one is in Hanoi and the other in Ho Chi Min city, the former covers the north region and the latter, the south. Both stations are set up in Pasteur Institute in respective cities. National laboratory is in Pasteur Institute.

f. In the first NIDs, ex-participants worked as programme promoting managers. After introduction of NIDs, almost all area has become polio free area except Mekong delta, southern area of Ho Chi Min city where many boat people, floating people are living. Viet Nam is now seeking the way to approach this area.

g. Mekong delta area has many difficulties with floating population who move over the country border with Cambodia.

5. Conclusion

a. Ex-participants of the Course have been conducting tremendous work in their respective fields and the outcome of the Course is very successful.

6. Recommendation

In Polio eradication activity, sensitive surveillance system is essential. Especially in final stage of the activity, quick case finding will become more essential for following containment procedure. Here, introduction of two activities are recommended.

a. Mobile survey team

Viet Nam is now very near to the goal of polio eradication activities. Active surveillance system is now functioning fruitfully. But at the final stage of the polio eradication programme, very sensitive case finding system is needed. Viet Nam has many remote areas and long country border with China, Lao and Cambodia, all of which has recurrent polio outbreak still. So that national level EPI staff members have to know what kind of problems are existing in village levels of these areas.

b. Selection of a model survey area

Very sensitive surveillance system become essential for the polio eradication activities. To evaluate sensitivity of present surveillance system, setting up a model survey area is recommended. This area is actively surveyed by country level staff members regularly, while nationwide routine surveillance activities are left on the hand of provincial or district level staff members.

Logical evaluation of the present surveillance system will become possible by introducing active surveillance into several model areas representing not only urban areas but also rural,

remote or mountainous areas.

Keen surveillance system will become crucial in the near future.

c. Combination with neighbouring countries

To overcome the problems in bordering areas, combination strategy is necessary with neighbouring countries. In this points, international agencies' support, especially WPRO's arrangement may be needed.

7. 収集資料リスト（ラオス）

1. NATIONAL EPI ORGANIZATION P 1

2. 1995 PLAN OF ACTION EPI AND POLIO ERADICATION PP 7
Ministry of Public Health Lao PDR, December 1994

3. NATIONAL PLAN OF ACTION 1991-1995 PP 9

4. LAO PDR 1994 PP 19

5. SUB-NATIONAL IMMUNIZATION DAYS PP 27

6. SURVEILLANCE SYSTEM OF LAO PDR PP 11

7. Guidelines for oral presentation by Dr. Phengta, NIHE, Lao PDR PP 3

収集資料リスト（ヴェトナム）

1. ヴェトナム南部メコンデルタ地域におけるポリオ根絶計画の進展
遠田 耕平、尾身 茂 ウイルス４５（１）５７－５９、１９９５

2. Discussion on the Additional Efforts for NID 1995 in south region of Viet Nam
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3. Field Report on Polio Surveillance in Minh Hai and Soc Trang PP 2

4. BASIC DATA 1993 (COMMUNITY HEALTH CENTER, LONG AN PROVINCE)
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5. Summary Country Report of AFP Surveillance South Vietna, 1995 as of 08/17/95 P 1