

DRAFT REPORT OF THE JOINT  
GOVERNMENT OF INDONESIA/UNICEF/USAID/WHO  
REVIEW OF THE PROGRAMME FOR  
THE CONTROL OF DIARRHOEAL DISEASES AND  
THE EXPANDED PROGRAMME ON IMMUNIZATION

24 NOVEMBER - 13 DECEMBER 1986

## PART A: EXECUTIVE SUMMARY

### Introduction

From 24 November to 13 December a joint Government/UNICEF/USAID/WHO programme review was conducted of the Expanded Programme on Immunization and the Programme for the Control of Diarrhoeal Diseases. The team consisted of 14 international and 18 national full time staff members. Six provinces (Jakarta, East Java, West Java, South Sulawesi, Aceh and South East Sulawesi) were selected to represent urban, high, medium and low population provinces. In each of the provinces, the teams were strengthened with 8 national staff from provinces not selected for this review and from other sectors. A total of 80 people participated in this review. Rotary International expressed its great interest in the country's immunization programme by sending an observer. The team conducted interviews in 6 provincial offices, 24 kabupaten health offices, 31 hospitals, 47 health centres, 107 pharmacies and drug sellers, and over 2500 randomly selected households in 180 randomly selected villages.

### I. Major Conclusions

#### I.1 Expanded Programme on Immunization (EPI)

Since the review of the EPI in 1982, remarkable progress has been made. Action has been taken to implement each of the 18 major recommendations. From a very limited programme providing only one dose of BCG and 2 doses of DPT, the programme has evolved into a comprehensive programme providing 1 dose of BCG, 3 doses of DPT, 3 doses of OPV and one dose of measles vaccine. Geographical expansion has been rapid and immunizations are now provided in 90% of the kecamatans. Over 60% of children under 15 months of age in Indonesia have received one or more doses of vaccine and therefore at least this percentage can be regarded as having access to the immunization services.

The coverage surveys showed that 33% (range 9% - 50%) of the infants in the selected provinces were fully immunized at the time of the review. Immunization of pregnant women for the prevention of neonatal tetanus (a disease which kills 80.000 neonates each year - 10 every hour) has doubled since the previous review in 1982.

However, while over 85% of pregnant women in the selected provinces use antenatal care services and can therefore be considered as having access to immunization services, only 51% (range 22% - 69%)

of pregnant women received 2 doses of tetanus toxoid. In most areas the level of measles immunization is still disappointingly low.

Although on a national scale surveillance is as yet not sensitive enough to register changes in the incidence of the target diseases of the programme, there are already clear indications from a growing number of individual reporting sites, that the programme is making an impact on the incidence of these diseases.

The immunization coverage surveys in the six provinces in general confirmed the reported immunization coverage in these provinces. A summary of the main findings of the surveys is shown in table 1, and details are in annex 1 to this summary report.

Table 1. Estimates of accessibility to immunization services, fully immunized children and women and proportion immunized in outreach sessions, immunization coverage surveys in six provinces of Indonesia, December 1986.

Province	Aceh	East Java	Jakarta	S.E.Sulawesi	S.Sulawesi	West Java
	%	%	%	%	%	%
<b>Children</b>						
At least one immunization <sup>1</sup>	49	80	84	59	63	84
Fully immunized <sup>2</sup>	9	50	25	12	18	23
Immunized in outreach session	30	69	35	76	61	62
<b>Pregnant women</b>						
Receiving ante-natal care <sup>3</sup>	72	85	93	54	73	89
At least one immunization	54	59	29	39	47	77
Fully immunized <sup>4</sup>	11	46	22	32	33	69
Immunized in outreach session	21	29	28	44	22	16

- 1) Shows minimum levels of access to immunization services
- 2) One dose of BCG, 3 doses of DPT, 3 doses of OPV, 1 dose of measles
- 3) Shows potential for tetanus immunization coverage
- 4) Two doses of tetanus toxoid

The team identified two key factors responsible for the recent dramatic improvement of the immunization programme. The first is the firm commitment of the government to increase the coverage with all EPI antigens, throughout the country, to reduce morbidity and mortality due to the vaccine preventable diseases. The second is the involvement of community organizations (Family Welfare Movement, Village Community Resilience Body, religious organizations, etc.) in the services at village level. The government, by strengthening of the infrastructure for the programme, has made the services widely accessible and community participation has contributed significantly to their actual use.

The review identified a number of key issues which need to be resolved for the further development of the programme.

These key issues are:

- I.1.1 "Missed opportunities" for immunization of children and women are occurring primarily in two ways: (1) children attending clinical facilities for illness and women bringing their children for care are not being screened for immunization status and given the needed immunizations; (2) many curative facilities do not offer immunization at all, or do it only in special immunization or well-child units.
- I.1.2 Hospitals and polyclinics have been recognized as major sources of transmission of communicable disease. By screening children for eligibility for immunization and providing the necessary protection the possible harm done in these medical care facilities will be reduced and coverage rates increased. Immunizations programmes have not been integrated in many hospitals and polyclinics. Studies in the outpatient departments in the major hospitals in the six provincial capitals showed that 76% of children in the target age group who were attending these outpatient departments for medical care were in need of immunization, did not have contraindications to immunization, but nevertheless did not receive the necessary immunization.
- I.1.3 Staff other than vaccinators have been trained to provide immunization, but in outreach situations MCH staff rarely provide immunizations, while in fixed facilities MCH staff rarely immunize children coming for treatment of illness. This lack of functional integration results in many missed opportunities for reaching children who need immunizations.

I.1.4 While initial enthusiasm by PKK, religious leaders, and others in implementing posyandu is high, many volunteers drop-out or work passively. This is, in part, due to lack of regular attention and encouragement by health staff, some of whom visit posyandu sessions rarely, others who use them only to perform specific health functions.

I.1.5 Immunization coverage levels such as those found in Java will result in changes of the epidemiology of diseases such as poliomyelitis and measles. Instead of the present, continuous endemic pattern, it can be predicted that these diseases will occur as sporadic outbreaks, emphasizing the need for improved surveillance.

I.1.6 Although considerable efforts have been made to train staff in the procedures and techniques of the programme with special reference to the importance of supervision, cold chain maintenance and vaccine management, there is not uniform application of the skills learned in training. Significant numbers of nurses and midwives are as yet untrained. Training in medical schools and schools for nursing staff does not always reflect government policies. Communication of Ministry policies to operational staff is less than optimal.

I.1.7 A systematic, audience-specific approach to EPI health education and information activities has not yet been developed.

I.1.8 Injections are rarely given with a sterile needle and sterile syringe for each person. Therefore, any injection, including those given for immunization, carries a high risk of transmission of viral diseases such as hepatitis B.

I.1.9 High drop-out rates for the multi-dose vaccines represent a failure to follow up on those individuals who, by definition, have access to health services.

I.2 Programme for the Control of Diarrhoeal Diseases (CDD)

Significant progress has been achieved in the CDD Programme since the last programme review in December 1983. During the current review 77% of mothers interviewed recognized an Oralit packet as being used in the treatment of diarrhoea, and 55% of these could prepare it correctly. ORS was found to be used in all but two

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of the 78 health facilities reviewed and to be available in 95% of the pharmacies and drug sellers visited. These findings indicate an increased use of oral rehydration salts compared with the low public acceptance found in the previous review.

Progress has been made in implementation of many of the recommendations of the previous review although the programme is not established in many parts of the country. Its more limited implementation compared with the EPI can be explained, in part, by the relatively shorter time since initiation of the programme. Continued emphasis on diarrhoea outbreak investigation has also contributed to the relative lack of progress.

Diarrhoeal diseases are estimated to cause at least 250,000 deaths in children under 5 years. Most of these deaths can be prevented by appropriate case management.

In addition to some general issues already mentioned above, the current review identified a number of specific key issues which must be promptly addressed if the CDD programme is to meet its target and achieve an impact on childhood diarrhoea morbidity and mortality.

Among these key issues the following have particular priority:

- I.2.1 The CDD programme has not yet been given a high enough priority, to adequately reflect the importance of diarrhoeal diseases as a national problem.
- I.2.2 A disproportionate amount of CDD programme staff time is devoted to outbreak investigation considering that less than 1% of reported diarrhoea cases are accounted for by cholera. As a consequence, programme components of higher priority cannot be given sufficient attention.
- I.2.3 At all levels responsibility for CDD programme components is divided among several sections or individuals. The structure for coordination of activities into a coherent programme is not yet in place. One aspect of this problem is the inadequate coordination of the CDD related activities of the Family Planning and Nutrition Programmes and the Family Welfare Movement.
- I.2.4 Knowledge of the standard treatment plans for diarrhoea is not widespread among health staff and, where known, they are not properly applied. Use of drugs and IV fluid in the treatment of diarrhoea remains excessive.

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- I.2.5 Health education and community participation in respect of all CDD strategies is inadequate.
  - I.2.6 Supervisory skills and supervision directed toward improving health worker performance are inadequate.
  - I.2.7 There is limited coordination between the multiple channels of ORS distribution.
  - I.2.8 There is limited awareness of key programme indicators and no adequate reporting system which would allow monitoring of programme progress throughout the country.

## II. Major recommendations

### II.1 General

The review team formulated the following major recommendations related to both programmes.

#### II.1.1 Integration of CDD and EPI in curative services

The opportunity provided by each presentation for clinical care should be taken to check the immunization status of each mother and child and to administer vaccine as required. Each assessment of a child under 5 should also include a review of the child's growth chart and the mother's knowledge of the management of diarrhoea. These activities could usually be done while waiting to see the doctor or nurse.

#### II.1.2 Training

Nurses and midwives in outpatient departments and in MCH centres need to be trained in EPI and CDD. Staff already trained should be adequately followed-up, supervised and retrained where necessary. Cadres require regular retraining. Further efforts should be made to incorporate training in CDD and EPI in the curricula of medical schools and schools for nursing and other paramedical staff. This training should reflect present knowledge on these programmes and should not contradict government policies.

Basic training in monitoring of local disease trends is essential to monitor progress of EPI and CDD activities.

II.1.3 Surveillance

During the period of strengthening the routine surveillance system, emphasis on strengthening the sentinel surveillance systems for both CDD and EPI to measure disease trends is recommended.

With the further development of EPI there will be an increasing need for outbreak investigations and outbreak control. These investigations require a sensitive surveillance system.

II.1.4 Supervision

The importance of adequate, regular supervision from province to kabupaten, from kabupaten to puskesmas and from puskesmas to village cadres should be stressed. Particular importance should be given to ensuring effective cold chain maintenance and vaccine control as well as monitoring of the correct management of diarrhoeal disease. Adequate stocks of useable vaccine and oral rehydration salts should be maintained.

II.1.5 Outreach services

Geographical expansion is needed, but should be carefully guided to ensure that the training and support required remains within the capacity of the health services. Further expansion of the health care section of posyandus should be undertaken only after careful evaluation in order to lessen the risk of overloading the still fragile structure. Priority should be given to under-served areas.

The community-based nature of the posyandu strategy, particularly its reliance on health volunteers, has made the posyandu a key source of public information on EPI and CDD. Full realization of the posyandu's service delivery and information potential requires that all health staff at mid and senior level management positions be involved actively with the posyandus and regularly visit each one of them in their area of jurisdiction.

II.1.6 Communications

Public knowledge of EPI and CDD is still very limited. A systematic approach to health education and information activities, employing modern techniques of communication and advertising, should be used to inform the public on the potential benefits of these health programmes. Similar efforts should be made to improve the knowledge and understanding of EPI and CDD by health professionals and workers.

In addition to these general recommendations applicable to both programmes, the review team formulated specific recommendations for EPI and CDD. The most important of these recommendations are :

## II.2 Major recommendations for the EPI

### II.2.1 Immunization schedule

The target of the programme is now to fully immunize all children before their first birthday.

Increased priority should be given to the provision of measles vaccine. Efforts should be made to assure that measles vaccine is available on a daily basis at all health facilities seeing eligible children.

A vial of vaccine should be opened even if only a single child is present.

Where poliomyelitis has not been controlled, use of OPV in the newborn period is important to provide early protection. In this situation, oral polio vaccine is given at birth or at first contact, with subsequent doses at 6, 10 and 14 weeks of age. Routine immunization with DPT and OPV can be safely and effectively initiated at 6 weeks of age. The EPI Global Advisory Group designed the following schedule to provide protection at the earliest possible age :

<u>Age</u>	<u>Vaccine</u>
Birth	OPV, BCG
6 weeks	OPV, DPT
10 weeks	OPV, DPT
14 weeks	OPV, DPT
9 months	Measles

### II.2.2 Integration of immunization in curative services

All children less than 2 years of age coming to a health facility for treatment of illness should be screened for their immunization status and appropriate immunizations given, in the absence of high fever. Children so ill that they need hospitalization should be given measles vaccine at admission and the balance of the immunizations prior to discharge from the hospital.

### II.2.3 Tetanus toxoid

The first priority should be to increase collaboration with the Ministry of Religion to ensure that TT immunization prior to marriage becomes a routine requirement, throughout the country, before the end of the current 4th Five Year Plan. This information should be recorded in the marriage book.

The next priority should be to ensure that each mother receives immunization during pregnancy with two doses of TT. Third priority should be directed to the immunization of all women in the reproductive age group. Immunization of schoolgirls is necessary to make impact on the longer term.

Many opportunities are presently being lost to update the tetanus immunization status of pregnant women attending health facilities for antenatal care and of all women attending health services for any care, especially when they attend with their young children.

Greater attention in training and retraining of TBA's regarding neonatal tetanus prevention is necessary.

### II.2.4 Elimination of poliomyelitis

The review team took note of the rapidly increasing immunization coverage levels for poliomyelitis. It would appear that, by 1990, over 80% coverage with third dose OPV can be achieved on Java. At such coverage levels, the virtual elimination of paralytic poliomyelitis would be expected to have been achieved. Therefore, it is recommended that the government consider adopting a goal of elimination of paralytic poliomyelitis from Java (and from any other provinces which achieve high levels of OPV coverage) by the end of the 5th Five Year Plan (1993/1994). This goal should be achieved within the context of the overall EPI as a natural outcome of achieving high levels of coverage with all antigens and not as a single antigen approach. Achievement of this goal entails a concomitant strengthening of the surveillance system and outbreak control mechanisms which are essential to focus programme activities to geographic areas and population groups still experiencing disease.

The review team is of the opinion that this target can be achieved by the Government of Indonesia and therefore should be adopted. National, provincial and local level action plans should be developed as a matter of priority.

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11.2.5 Sterilization and vaccine administration

It is recommended that a policy decision is made that injections are permitted only when a sterile needle and a sterile syringe are used. Implementation will require the development of a plan for training and motivation of staff as well as a plan for procurement of equipment.

II.3 Major recommendations for the CDD Programme

11.3.1 Functional organization of CDD Sub-directorate

The functional responsibilities, and allocation of time, of the national CDD Programme staff should be reorganized to reflect the following order of priority of programme components:

1. training in diarrhoea case management and supervision
2. health education and communications in all CDD strategies
3. supervision and monitoring
4. evaluation

Consideration should be given to transferring responsibility for surveillance and outbreak investigation to a general CDC surveillance unit.

Tasks and responsibilities should be clearly defined, consistent with this reorganization and consideration given to assigning responsibility for specific projects and geographic areas.

11.3.2 Provincial planning

A coordinated programme of all CDD activities, consistent with the integrated family health approach, should be planned and implemented in each province and kabupaten. The plans should include training, communications, ORS logistics and monitoring of all activities. Detailed job descriptions for all personnel should be prepared.

Close collaboration with other programmes, in particular, Nutrition, Family Planning, MCH and EPI will be required. Increased decision making authority and accountability based on performance should be given to the provinces to administer the CDD activities and funds.

### II.3.3 Diarrhoea case management

The diarrhoea case management strategy should be given highest priority. It should emphasize:

- use of home fluids when diarrhoea begins, to prevent dehydration
- use of Oralit (ORS) to treat dehydration
- continued feeding during diarrhoea
- early referral of severe cases and those not responding to treatment
- limiting the use of antibiotics and IV fluid to specific defined conditions
- no use of antidiarrhoeal drugs

This policy should be widely disseminated through various channels including information to private sector pharmacists/drug sellers. Indicators for monitoring case management should be tested and introduced.

In view of their lack of efficacy, their possible harmful affects in children and the enormous wastage of resources which they entail, the use of antidiarrhoeal drugs should be discontinued in the public sector. Legislation should be considered to limit advertising, manufacture and sale of such drugs.

### II.3.4 ORS distribution

Distribution of ORS through the various existing channels should be coordinated at central, provincial and kabupaten levels to ensure supply of ORS based on demand. Priority should be given to establishing a mechanism to ensure continuous supply of ORS to centres in their villages. An ORS distribution report, preferably combined with the monthly vaccine report, should be established. To allow uniform promotional messages for 200cc ORS packets, 1 litre ORS packets should be used only in inpatient facilities or those where larger volumes of ORS are required. Only 200cc packets should be distributed to puskesmas, posyandus and the public.

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Acknowledgement

The review team would like to express its gratitude for the full support and hospitality provided to it at all levels by Ministry of Health staff, government staff of other sectors, representatives of many non-governmental organizations and members of the communities visited.

Hundreds of health staff and thousands of others were interviewed and willingly provided information. Without their cooperation this review would not have been possible.

## PART B : REVIEW METHODOLOGY

### 1. Objectives of the Review

To review the national policies, strategies, plans and activities of the CDD and EPI programmes.

To evaluate the progress of the two programmes in relation to their targets.

To review the current and potential roles of community participation in support of acceleration of EPI and CDD.

To identify constraints to programme implementation.

To make recommendations for future programme implementation and for overcoming constraints.

To submit a report of the findings of the review team to the Ministry of Health.

### 2. Review team composition

The review was conducted by a core team of 13 full-time international participants, nominated by UNICEF, USAID or WHO, and 18 full-time national participants. The latter, in addition to the Ministry of Health, represented the Ministry of Religion, the Family Welfare Movement, the Indonesian Paediatric Association, the School of Public Health of the University of Indonesia and the Consortium of Health Sciences. (Annex 1) They were joined at provincial level by more than 50 part-time national participants. Staff of the provinces visited worked with the review team to facilitate field activities and to conduct the EPI cluster survey.

### 3. Outline of methodology

The review was officially opened on 24 November, 1986 by Dr. Adhyatma, Director General of Communicable Disease Control and Environmental Health. Following the opening ceremony and a brief presentation of the review methodology, participants spent one day in Jakarta working in six technical working groups to review assembled data, collect additional data and conduct interviews. One day was devoted to briefing participants on the use of data collection forms which had been specially designed for interviews at national,

province/kabupaten, health facility, health worker, dispensary/drug seller and community levels. Forms for separate EPI coverage and diarrhoea treatment household surveys were also explained.

For the period 27 November to 5 December six teams visited one province each and conducted interviews at the levels mentioned above. The six provinces visited were : Jakarta, East Java, West Java, South Sulawesi, Aceh, and South East Sulawesi. These had been selected to include urban, high population density and low population density provinces after excluding Bali, Irian Jaya, Maluku, Timor Timur and Yogyakarta from the sampling frame. A list of kabupaten visited appears in Annex 2.

In each province the core team members and provincial team members, drawn from EPI and CDD staff in other provinces and from other sectors, formed 10 teams each responsible for surveying clusters in the EPI coverage survey and for conducting interviews.

On 4 December the teams reported their findings to provincial authorities before returning to Jakarta. From 5 December to 12 December the review team compiled field visit findings, discussed identified problems, formulated recommendations and drafted a final report. The executive summary of the report was presented to His Excellency, the Minister of Health, Dr. Swardjono Surjaningrat, on 13 December.

# INDONESIA

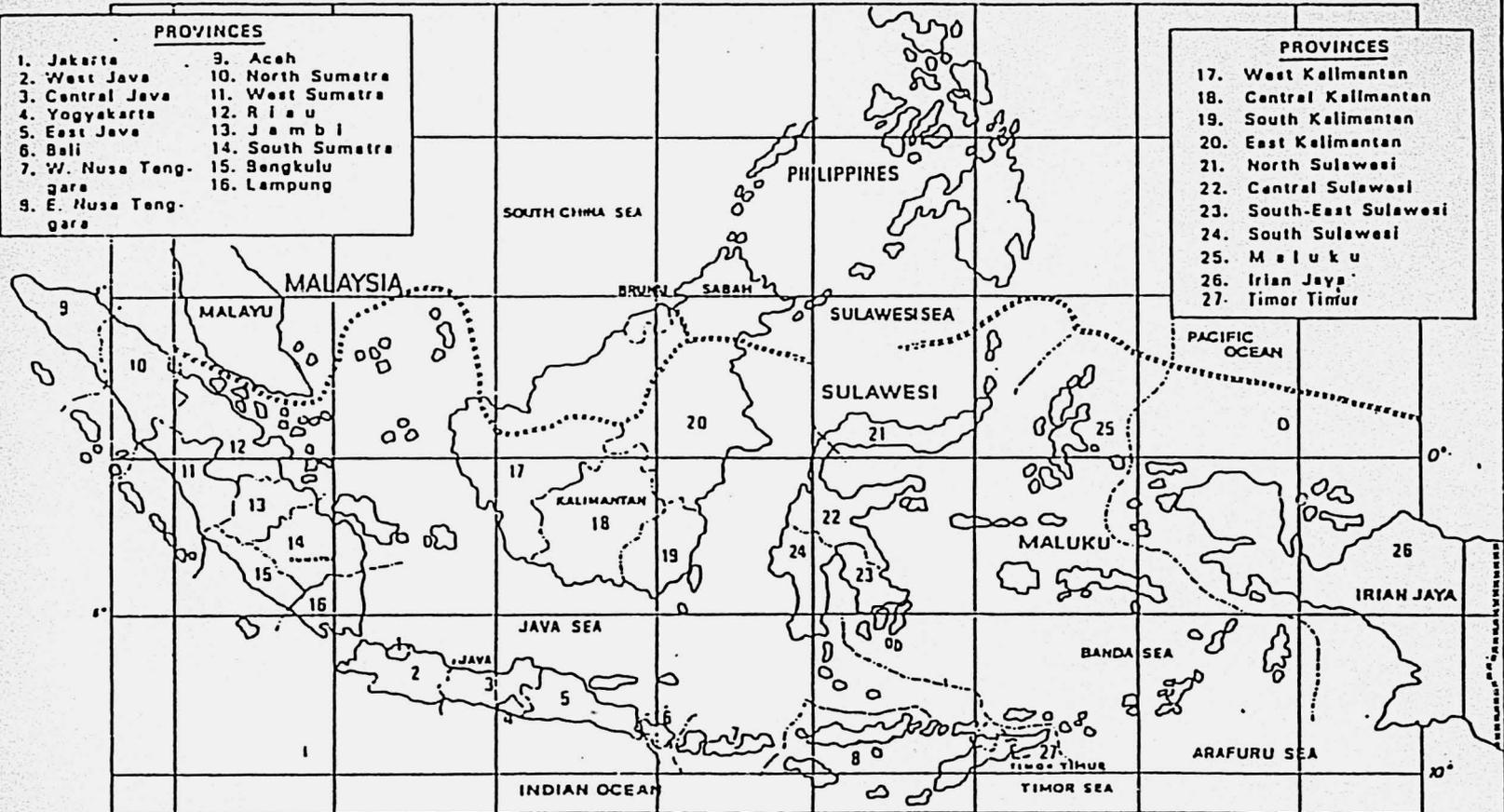
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### PROVINCES

- |                     |                   |
|---------------------|-------------------|
| 1. Jakarta          | 9. Aceh           |
| 2. West Java        | 10. North Sumatra |
| 3. Central Java     | 11. West Sumatra  |
| 4. Yogyakarta       | 12. Riau          |
| 5. East Java        | 13. Jambi         |
| 6. Bali             | 14. South Sumatra |
| 7. W. Nusa Tenggara | 15. Bengkulu      |
| 8. E. Nusa Tenggara | 16. Lampung       |

### PROVINCES

- |                         |
|-------------------------|
| 17. West Kalimantan     |
| 18. Central Kalimantan  |
| 19. South Kalimantan    |
| 20. East Kalimantan     |
| 21. North Sulawesi      |
| 22. Central Sulawesi    |
| 23. South-East Sulawesi |
| 24. South Sulawesi      |
| 25. Maluku              |
| 26. Irian Jaya          |
| 27. Timor Timur         |



### LEGEND

- International Boundary
- Provincial Boundary

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PART C : BACKGROUND INFORMATION

1. Brief description of the country

Indonesia is an archipelago in South-East Asia consisting of over 13 000 islands in six island groups spread over an area of nearly 2 million square kilometers. It is a country possessing many natural resources, including large oil reserves. The climate is tropical, with a high rainfall.

The main religion is islam, although christianity, hinduism and buddhism represent important minorities.

In 1981, it was estimated that 81.2% of males and 65.7% of females over the age of 10 were literate. In 1985, 84% of females age 7-12 years were attending school and 62% of those aged 13-15 years.

2. Demographic data

The following data were mostly drawn from the "Statistical Profile of Mothers and Children in Indonesia, 1985" issued by the Central Bureau of Statistics.

Population :	165.1 million	(1985)
Population 0-4 years :	23.6 million	(1985)
Number of livebirths per annum:	5.2 million	(1985)
Average annual population growth rate :	2.2%	(1981-85)
Percent rural population:	76%	(1984)
Crude birth rate	31 per 1000	(1985-1990)
Crude death rate	11 per 1000	(1985)
Infant mortality rate :	93 per 1000	(1981-1985)
Life expectancy at birth:	55.3 years	(1981-1985)

The average population density of the country in 1985 was estimated to be 86 person per square kilometer, however, it ranges from 3 in Maluku and Irian Jaya to 283 on the island of Java, where almost 60% of the population live.

3. Administrative divisions

Indonesia is divided into 27 provinces, further subdivided into 246 regencies (kabupaten) and 55 municipalities. There were 3548 districts (kecamatan) in 1985 comprising 67,981 villages.

In the municipal areas villages are further subdivided into localities (RW) and neighbourhoods (RT), the latter usually having between 20 and 60 houses.

#### 4. Overview of Health Services

##### Health facilities and manpower

There are 1246 hospitals in Indonesia with a total of around 103,500 beds. There are 5639 health centres (puskesmas), 17302 sub-centres (puskesmas pembantu) and 3479 mobile service units (puskesmas keliling). In addition, around 66,500 integrated service posts (posyandu) have been established in 65,000 villages. There are estimated to be over 400,000 village health workers and almost 100,000 traditional birth attendants.

The health manpower of the country is summarized in table 4.1

Table 4.1 Summary of health manpower in Indonesia

Category of Personnel	1983/84	1985/86 estimated
Medical specialists	2733	3009
General med. practitioners	7529	9963
Dentists	1292	1484
Pharmacists	795	1091
Other health scientists	124	1754
Nurse-midwives	44651	51131
Non-nursing paramedics	12011	15484
Nurse aid/health aids	29473	43278
Non-medical health personnel	63221	75789
<b>T o t a l</b>	<b>162129</b>	<b>202983</b>

### Non-governmental organizations and health

Involvement of non-governmental organizations in health development has been extensively encouraged since the formulation of National Health System in 1981. There are around 40 organizations which are now maintaining close cooperation with the Ministry of Health in implementing their health related activities. The Family Welfare Movement (PKK), Civil Servant Wives Association, Muhammadiyah, Indonesian Council of Churches, Catholic Health Services Association, Indonesian Child Welfare Institute, Rotary Club, Indonesian Women Congress, Indonesian Council for Disabled Child and many health professional organizations are giving active support to the network of national health service delivery.

### Private sector health care

In the private sector, health care is provided by medical and paramedical (midwife) practitioners who usually render ambulatory services, or by privately owned polyclinics, maternity homes and hospitals. These health services run well in cities where people who can afford to pay for the services are creating an increasing demand.

### Administrative structure of Ministry of Health

The administrative structure of the Ministry of Health relevant to the EPI and the CDD Programme is shown in Annex 3.

### The Integrated Family Health strategy

High infant mortality (80 per 1000 in 1985) and birth rates (31,5 per 1000 in 1985) are great challenges to health development of the country. Increased awareness of these problems and an understanding of their causes and links, among health care providers of different sectors, led to the adoption of an integrated approach in health and family planning, as the basic strategy in the Fourth Five Year Development Plan (1984/85-1988/89) to improve the population's health and welfare.

Since then, the National Family Planning Coordinating Board (BKKBN) and the Ministry of Health have, with the support of other relevant sectors, taken several steps to improve cooperation and coordination including the formation of a Central Family Planning/Health (KB/Kes) Task Force.

These steps will formalize the support to operational integration at health centre and community levels. The integrated health post (posyandu), based in the community and run by volunteer workers with health staff support is the first point of contact of the population with the integrated services.

PART D : DETAILED FINDINGS AND RECOMMENDATIONS OF THE REVIEW

1. CDD Programme : Planning and administration

1.1 History

Diarrhoea control efforts by the Directorate General of Disease Control during the 1970s focussed primarily on control of cholera outbreaks. Oral rehydration therapy was introduced in the early 1970s. National seminars on ORT have been held every four years since 1974. The Coordinating Body for Pediatric Gastroenterology in Indonesia was set up to coordinate clinical, research and public health aspects of diarrhoea control.

In 1981 the Ministry of Health established the national CDD programme within the Sub-Directorate of Cholera Control. Although the Sub-directorate has been renamed as the Sub-directorate of Diarrhoea and Helminthiases, its origins in the cholera control unit are reflected in its major emphasis on diarrhoea outbreak investigation and control. CDD activities were included in the 3rd and current 4th Five Year Plans.

A full-time CDD programme manager, 9 additional staff, and 8 administrative support persons run the programme.

1.2 Objectives and targets

The existing objectives of the programme as stated in the national CDD programme 4th Five Year Plan are:

- to reduce the mortality caused by acute diarrhoea and, specifically to reduce the case fatality rate to less than 2% (or, by as much as 25%) during a 5 year period through proper treatment of cases and control of epidemics.
- to reduce the morbidity caused by diarrhoea from 350 cases per 1000 population.

The programme impact and operational targets set for the end of the 4th Five Year Plan are shown in table 1.1.

Table 1.1 CDD Programme impact and operational targets for the 4th Five Year Development Plan

	1984/85 estimate	1988/89 target
<b>Programme impact targets <sup>a</sup>:</b>		
Infant mortality rate (per 1000 live births)	90	70
Infant diarrhoea mortality rate (per 1000 live births)	22.1	16.0
Under-five diarrhoea mortality rate (per 1000 children 0-4 years)	17.8	14.0
Under-five diarrhoea mortality rate (per 1000 children 0-4 years)	7.7	5.0
Under-five diarrhoea incidence (episodes per child)	2.0	1.6
<b>Operational targets</b>		
ORS access rate <sup>b</sup> (%)	60	100
ORT use rate <sup>c</sup> (%)	16	46
Proportion of health centres implementing CDD (%)	40	100
Ratio of diarrhoea cases treated by health facilities : cadres	75:25	55 : 45
Proportion of ORS distributed through non-governmental channels (%)		60

<sup>a</sup> Annual rates

<sup>b</sup> Proportion of the population with reasonable access to a provider of ORS and information on its use.

<sup>c</sup> Proportion of all diarrhoea episodes in children 0-4 years receiving appropriate ORT.

### 1.3 Strategies

The strategy for diarrhoea case management and progress in its implementation are presented in section 6. Other strategies for the reduction of diarrhoeal morbidity and mortality have not been as clearly defined. Responsibility for their implementation involves various other sections of the Ministry of Health, for example the Directorates of Water Supply and Environmental Health and the Nutrition Programme. These were not covered by the current review.

Promotion of breast feeding for as long as possible or upto 24 months of age and the introduction of weaning foods, with continued breastfeeding, from 4 months of age is national policy shared by the CDD, MCH and Nutrition programmes.

Targets for water supply and excreta disposal facilities are summarized in table 1.2.

Table 1.2 Targets for supply of safe water and sanitary excreta disposal.

Indicator	1984/85 estimate	1990 target	
		Urban	Rural
Proportion of population with access to a safe water source (%)	36	75	60
Proportion of the population with sanitary excreta disposal	31	40	50

1.4 Programme expansion

The CDD programme had originally pursued a plan of establishing CDD activities in increasing numbers of selected health centres. A special budget for each centre was provided, to support orientation of cadres in CDD and for monitoring and reporting by health centre personnel. Only 1031 of the existing 5639 health centres, have been established as "CDD health centres", due to limitations of budget and of central level manpower to carry out training of cadres.

The strategy has been changed and any health centre where staff have been trained under the integrated health programme is considered as a CDD health centre. Currently 3212 health centres (57%) have been covered. This figure is expected to reach 100% by 1988/89.

A pilot project in improving CDD Programme coverage was initiated with USAID, UNICEF and WHO support in 1984. This is being developed initially in one kabupaten of West Java Province. It has emphasized an intensified communications approach, with preliminary research into maternal knowledge, attitudes and practices regarding diarrhoea, coordinated message design for training and mass media efforts, and a multi-media promotion programme. It has also included training of health personnel and cadres (1 per 125 families) and a special logistics strengthening effort including supply of ORS through the private sector as well as Ministry of Health facilities. A provincial working group coordinates the efforts, and each of the sections of the national CDD programme is responsible for linking with the West Java project in their activity area (logistics, training, surveillance, etc.). Pending evaluation and availability of resources similar efforts may be initiated in other priority provinces.

1.5 Administrative structure

The Sub-directorate of Diarrhoea and Helminthiasis, responsible for the CDD programme is situated in the Directorate of Diseases with Direct Transmission under the Directorate General of Communicable Disease and Environmental Health.

Since the integrated family health activities were launched in 1983, special working groups have been developed to coordinate with other sectors in solving managerial problems, and those associated with planning, training, implementation of activities, monitoring and evaluation.

A recent decision by the Director General has re-established the CDD working group, to meet every 2 months, until March 1988.

Within the responsible Sub-Directorate, there are four sections:

<u>Section</u>	<u>Responsibility</u>
Surveillance section	Project monitoring
Outbreak control and investigation section	Control of cholera outbreaks
Control section	Training and health education
Evaluation section	Project planning and evaluation

In most provinces there is a person who works full-time on CDD programme activities.

A recent study by the Ministry of Health, Bureau of Organization, of organizational factors concerning the CDD programme has suggested the need for clarification of priorities, responsibilities, and technical issues, among both central and provincial staff involved in the programme.

### 1.6 Budget

The budget for the CDD programme for the current and past 2 fiscal years is shown in table : 1.3.

Table 1.3 : CDD programme budget, by source, 1984/85 - 1986/87

FFY	GOI	WHO	USAID	UNICEF	TOTAL
1984/85	Rp. 985,560,000	Rp. 63,250,000			Rp. 1,053,810,000
1985/86	Rp. 1,093,139,000	Rp. 260,510,250	Rp. 182,425,000	Rp. 19,732,000	Rp. 1,555,806,250
1986/87	Rp. 439,747,500	Rp. 308,670,000	Rp. 602,426,300	Rp. 107,291,000	Rp. 1,458,134,800
	Rp. 1,524,446,500	Rp. 672,430,250	Rp. 784,851,300	Rp. 127,023,000	Rp. 3,008,751,050

Recently, the development funds for 1986/87 in the health budget of the Directorate of Communicable Diseases Control and Environmental Health were cut by 46%. At central level, the

supplies and equipment budget for the CDD unit remains adequate, but all funds for transport have been cut. Travel of CDD staff for supervisory purposes is presently carried out using funds from USAID or WHO assistance.

Separate funds are available for epidemic control. The detailed budget for the CDD programme in 1986/1987 is shown in Annex 4.

1.7 Field visit findings

Workplans for CDD were available in 3 of the six provinces visited and in 11 of 24 kabupaten. Those that do exist consist primarily of goals rather than detailed plans of activities showing accountability and scheduling.

Transportation both at kabupaten and provincial levels is shared or lacking completely. The necessary government budget to cover running and maintenance costs was usually not available or inadequate.

Manpower resources are insufficient, with leadership at kabupaten level usually coming from a physician responsible for multiple CDC activities and in some cases also responsible for running a puskesmas.

Other kabupaten staff responsible for CDD activities also generally have other responsibilities related to diseases of direct transmission, principally tuberculosis. As the budget for training of cadres at the specially designated CDD health centres, and for supervision, has been cut, the activities of these persons with respect to CDD have become primarily clerical.

At provincial level more manpower is available, but again development activities are ill-defined, few funds are available for supervising, and action is primarily clerical.

At both provincial and kabupaten levels direction is shared between the local representatives of the central government CDC and the staff of the health section of the local government. Lack of designated accountability and clearly defined job descriptions exacerbates the managerial problem. Many staff have had no special training in CDD programme management or clinical care.

The lack of clear indicators of programme progress reportable on a routine basis greatly limits the value of data collection and makes analysis difficult.

At the puskesmas level diarrhoea control is seen primarily as treating patients with diarrhoea and providing health education about diarrhoea at the posyandu.

At all peripheral levels the only exception to the above pattern is seen in the control of "cholera" outbreaks, when extra funds become available and additional activities occur. Insufficient effort is made to use outbreak control to bring about permanent improvements in routine case management.

The CDD intensification being carried out in West Java (see section 1.4) shows substantial promise of increasing levels of effective diarrhoea case management by mothers, cadres, and health workers, although at present it is limited to a pilot project in Garut Kabupaten.

Elsewhere, however, CDD programmes have not progressed substantially in planning or administration, and the recent budget cuts have made improvement in this area difficult.

## 1.8 Key issues

- 1.8.1 The CDD programme has not yet been given a high enough priority, to adequately reflect the importance of diarrhoeal diseases as a national problem.
- 1.8.2 Due in part to its origins in the cholera control unit, disproportionate amount of CDD programme staff time is devoted to outbreak investigation although less than 1% of reported diarrhoea cases are accounted for by cholera. As a consequence, programme components of higher priority cannot be given sufficient attention.

1.8.3 At all levels responsibility for CDD programme components is divided among several sections or individuals. The structure for coordination of activities into a coherent programme is not yet in place.

1.8.4 There is limited awareness of key programme indicators and no adequate reporting system which would allow monitoring of programme progress throughout the country.

1.8.5 The programme objective of reducing the diarrhoea case fatality rate to less than 2% is meaningless as the current death-to-case ratio, based on reported figures, is 0.35% and existing surveillance mechanisms are inadequate to derive precise estimates of the case fatality rate. This objective reflects the programme's preoccupation with epidemic diarrhoea, to which it was directed.

## 1.9 Recommendations

1.9.1 The functional responsibilities, and allocation of time, of the national CDD Programme staff should be reorganized to reflect the following order of priority of programme components:

1. training in diarrhoea case management and supervision
2. health education and communications in all CDD strategies
3. supervision and monitoring
4. evaluation

Consideration should be given to transferring responsibility for surveillance and outbreak investigation to a general CDC surveillance unit.

Tasks and responsibilities should be clearly defined, consistent with this reorganization and consideration given to assigning responsibility for specific projects and geographic areas.

1.9.2 A coordinated programme of all CDD activities, consistent with the integrated family health approach, should be planned and implemented in each province and kabupaten. The plans should include training, communications, ORS logistics and monitoring of all activities. Detailed job descriptions for all personnel should be prepared. Based on performance increased decision making authority and accountability should be given to the provinces to administer the CDD activities and funds.

Close collaboration with other programmes, in particular, Nutrition, Family Planning, MCH and EPI will be required.

1.9.3 In the first half of 1987 a joint planning exercise should be undertaken involving relevant government directorates, non-governmental organizations, USAID, UNICEF and WHO, to establish a plan of action and identify resources for an expansion of the CDD programme.

1.9.4 A small number of performance-based programme indicators for routine monthly reporting, and an appropriate monitoring system should be developed, tested and adopted. The diarrhoea case fatality rate should be deemphasized as a programme indicator.

1.9.5 Steps should be taken to initiate regular meetings at kabupaten and puskesmas level, of health staff with other governmental and non-governmental agencies involved with CDD.

Recommendations specific to various aspects of CDD Programme development are presented in sections 3-6 and 9-13.

## 2. EPI : Planning and administration

### 2.1 History

The Expanded Programme on Immunization (EPI) began officially in 1977. Launched initially in 55 kecamatans, the EPI expanded in a phased manner such that, in 1986, vaccines are available in 3,221 (90%) of the 3,548 kecamatans. In the beginning of the EPI only BCG, DPT and TT vaccines were used. Polio vaccine (OPV) was added in 1978 and measles vaccine in 1982. By that year, therefore, all six EPI antigens were used by the EPI, at least in selected areas in the country. The progress in access as measured by the number of puskesmas providing vaccines has been significant (Annex 5). As of March 1986, over 90% of the total 5639 puskesmas in the country were providing at least the bacterial vaccines and 67% of puskesmas were providing the viral vaccines.

### 2.2 Objectives and targets

The primary objective of the EPI is to reduce morbidity and mortality in children by ensuring immunization against the six EPI target diseases before their first birthday.

The target for the EPI by the end of the current 4th Five Year Plan is that all children under 12 months of age will have access to immunization (defined as not having to travel more than 5 kms to obtain immunization services) and that 65% of all children will be fully immunized by their first birthday. "Fully immunized" is defined as having received one dose of BCG, three doses of DPT and OPV and one dose of measles vaccine.

### 2.3 Strategies

The EPI is based at the puskesmas of which there are an average of one per 30,000 population. At least one full-time vaccinator in each puskesmas conducts scheduled visits to conveniently located sites in the local villages. To an increasing extent in recent years, these have been integrated health service posts, known as posyandus, where MCH, family planning, CDD and nutrition activities are also carried out. The vaccinator should cover all the posts in his area at least once every three months.

Fixed centre immunization services complement this outreach strategy. A nurse or midwife is responsible for screening the immunization status of children and pregnant women who come to the health centre and for providing required vaccinations. Immunization is also offered at some hospitals and by private practitioners.

In addition, special activities are periodically carried out in selected areas. For example, mass campaigns to vaccinate all women in the childbearing age have been carried out in West Nusa Tenggara and Aceh provinces, in an effort to reduce the high rates of neonatal tetanus. Another approach has been to provide TT to women applying for their marriage license. Annual sweeps to complete unfinished immunization schedules are also conducted in most provinces.

#### 2.4 Disease reduction targets

Disease reduction targets have been specified for the 4th Five Year Plan (1981/85 - 1988/89) as follows :

<u>Disease</u>	<u>Reduction Target</u>
Diphtheria	Reduce morbidity by 50% and mortality by 40%
Pertussis	Reduce morbidity by 50% and mortality by 40%
Poliomyelitis	Reduce morbidity by at least 25%
Tuberculosis	Reduce morbidity from 2.5 per 1,000 to 2.0 per 1,000 population

## 2.5 Immunization Schedule

The immunization schedule for the EPI is shown in table 2.1.

Table 2.1 EPI immunization schedule

Vaccine	<u>Recommended Schedule</u>		<u>Eligible Age Groups</u>	
	<u>No. of Doses</u>	<u>Interval</u>	<u>Youngest</u>	<u>Oldest</u>
B C G	1	NA	Birth	14 months
D P T	3	4 weeks	3 months	14 months
Measles	1	NA	9 months	14 months
O P V	3	4 weeks	3 months	14 months
T T <sup>a</sup>	2	4 weeks	15 years	44 years
D T	2	4 weeks	6 years	9 years

<sup>a</sup> TT is also given in two doses (or a booster dose if TT had been previously given) to children in primary school class 6.

## 2.6 Contraindications policy

As it had been recognized that children with minor illnesses were being refused immunization, in 1984 the list of contraindications to immunization was minimized based on the recommendation of the National Pediatric Association and the National Advisory Committee on Immunization. All of the provinces have been informed of the new policy shown in table 2.2.

### 3.4 EPI/CDD training plans

Projected numbers of health staff to be trained in EPI and CDD before the end of the current 5 year plan, in 1988/89, are shown in Annex 7. The numbers of persons involved, particularly for peripheral level staff, are enormous.

Funds for planned EPI training will be made available through UNICEF and USAID support. Funds for CDD training have been made available by USAID (\$735,000), UNICEF (\$200,000) and WHO (\$60,000).

### 3.5 Field visit findings

Nearly 70% of staff involved in EPI activities have had some relevant training but only 25% of staff having CDD responsibilities. High staff turnover and the large numbers involved make the achievement and maintenance of training coverage difficult. Further training was considered necessary by staff at all levels.

### 3.6 Key issues

- 3.6.1 Large numbers of personnel remain to be trained at all levels. This situation is exacerbated by the high drop out of trained personnel.
- 3.6.2 New graduates from medical and nursing schools are often not taught the policies and practices of the national programmes, especially concerning contraindications for immunizations and diarrhoeal case management. Budgets are insufficient for extensive re-training.
- 3.6.3 Although WHO has defined comprehensive educational objectives for CDD and EPI, emphasis in training is on teaching theory by lectures with neglect of sound practice and management skills.
- 3.6.4 There is a lack of specific teacher training for trainers and there is a deficiency of good training aids in most facilities.
- 3.6.5 Little attempt has been made to determine whether training for the integrated programme has been done effectively.
- 3.6.6 There is little follow-up to evaluate the effectiveness of training and assessment of changes conforming with the training objectives.

3. Training of health personnel

3.1 EPI and CDD training courses held

The numbers trained in EPI and/or CDD since 1982 are shown in Annex 6.

Using a minimum of one kabupaten staff and one provincial level staff requiring training in EPI mid-level management and CDD supervisory skills, it is estimated that maximal coverage is around 85% for EPI and 35% for CDD training.

It is estimated that only 10% of doctors, less than 1% of nurses and around 6% of community level cadres have received special training in diarrhoea case management.

Thirty-two persons have been trained in CDD-related laboratory techniques either in Jakarta or at the ICDDR in Bangladesh. Others have visited Bangladesh for clinical or epidemiological training.

Each year a CDD planning and evaluation seminar is held which involves around 70 health staff in a detailed review of CDD activities.

3.2 Integration of EPI/CDD into training institution curricula

Two workshops attended by teachers and staff of a number of institutions have addressed this issue. Implementation has been variable and has not yet been evaluated.

3.3 Diarrhoea clinical training units

Following training at the ICDDR, in Bangladesh in 1984, 14 physicians and nurses were expected to establish a diarrhoea training unit in their respective hospitals in Jakarta (2), Yogyakarta, Semarang, Surabaya, Ujung Pandang and Palembang. A 1985 evaluation found 6 of these capable of conducting training courses. In addition to serving as ORT demonstration units, clinical training courses have been conducted for 381 health staff since 1984. In 1986, 4 other hospitals (Bandung, Padang, Medan and Denpasar) started to set up training units.

A 1985 evaluation of seven of these units, found six ready for training although no evaluation of their impact was attempted.

It should be noted that Rotary International has committed US\$6,115,000 for polio vaccine and \$15,000 for public information over a five year period beginning in July 1987.

Table 2.3 : Total national EPI budget, by fiscal year  
1980/81 - 1986/87 (Rupiah x 1,000,000)

80/81	81/82	82/83	83/84	84/85	85/86	86/87
1,624	3,049	3,501	3,096	4,044	7,042	5,192

Table 2.4 : EPI funds from external agencies, fiscal year  
1985/86

Agency or Organization	Funds (in US\$)
UNICEF	1,074,600
WHO	621,756
USAID	794,900
Ford Foundation	<u>73,800</u>
T o t a l	2,565,056

Note: Field visit findings, key issues and recommendations related to EPI planning and administration are incorporated into sections 8.6 to 8.8. Recommendations specific to various aspects of the EPI are also made in sections 3, 4, 7 and 9-13.

Table 2.2 Contraindications to immunization as formulated in 1984.

Vaccine	Contraindications
BCG	Skin disease at site of injection
DPT	Fever greater than 38 degrees centigrade or history of febrile convulsions. Further doses of DPT are contraindicated if there is a severe adverse reaction to a previous dose (i.e., high fever, convulsions, loss of consciousness, or shock).
DT, TT, OPV	None
Measles	Fever greater than 38 degrees centigrade or history of febrile convulsions.

The policy on contraindications explicitly states that minor ailments such as mild diarrhoea, colds, coughs, and conditions such as malnutrition and food or drug allergies are not contraindications to immunization. If a contraindication to DPT exists, then DT should not be used.

2.7 Administrative Structure

The administrative structure for the EPI at central level is shown in the organogram of the Directorate of Epidemiology and Immunization (Annex 3) which is located within the Directorate General of Communicable Disease Control and Environmental Health. All of the staff of the Sub-Directorate of Immunization have received training in the EPI Senior Level Planning and Management Course.

2.8 Budget

The annual Government of Indonesia (GOI) financial input for the EPI had been increasing substantially in recent years. In addition to this GOI budget, financial support is also obtained from the annual provincial expenditures. Due to the current national monetary situation, a significant operational budget reduction was experienced in 1986/1987 as shown in table 2.3. Funds from UN agencies, NGOs and bilateral agreements for the period April 1985 to March 1986 are shown in table 2.4 :

### 3.7 Recommendations

- 3.7.1 Acceleration and expansion of training activities should be given a higher priority.
- 3.7.2 Integration of EPI and CDD training in the regular medical and paramedical curricula should be further developed and progress in this area evaluated.
- 3.7.3 Immunization and diarrhoea training units should be established in all teaching hospitals, and at each provincial and kabupaten hospital before the end of the current Five Year Plan. Space should be allocated and units should meet specific criteria for certification. The full collaboration of the Directorate General of Medical Services should be sought for this effort.
- 3.7.4 The activities of existing Diarrhoea Training Units should be formally evaluated and regularly monitored. Sharing of experiences through, for example, a quarterly bulletin would stimulate performance.
- 3.7.5 Training should focus on developing defined skills and capabilities related to achieving national objectives and policies in EPI/CDD. Stress should be on field practice and the demonstration of correct diarrhoea case management, immunization techniques, vaccine management, and effective communication with mothers and cadres. Present deficiencies in skills should be identified and addressed. Training "modules" which allow full participation of trainees and minimize lecturing should be used.
- 3.7.6 All training should be followed-up to assess its effectiveness and to provide necessary support in applying new skills.
- 3.7.7 Paediatricians who follow national policies should be identified to be involved in training doctors and nurses at kabupaten and lower levels.

3.7.8 Training for peripheral staff should be further delegated to trained health centre doctors. They should train and supervise their health centre personnel and posyandu. Their supervision from higher levels should include an assessment of their achievement in this area.

3.7.9 Staff at kabupaten and puskesmas levels should be trained in simple data management, particularly in analysis, interpretation, and use of data for managing the CDD programmes.

See also recommendations 6.7.3 and 6.7.5.

4. Supervision

4.1 National level

At the national level EPI and CDD supervisory schedules are prepared for each year. In 1985/1986, 197 supervisory visits were conducted by EPI staff. The CDD programme schedules 2 visits to each of the 10 more accessible provinces per year, one visit annually to the other 17 provinces and during diarrhoeal disease outbreaks 2 visits per affected province. In 1985/86, however, 8 of the 17 difficult access provinces and one more accessible province were not visited by CDD staff.

Both the CDD Programme and the EPI have developed checklists for supervision at different levels, however, these are not often used. The EPI programme stresses monitoring of vaccine stocks and logistics, the cold chain and vaccination coverage. Neither programme emphasizes supervision of health worker performance.

4.2 Resources for supervision

The EPI programme has an adequate number of 4 wheel drive vehicles at national level and 2 in each province. There is also one motorcycle per kabupaten and one bicycle per kecamatan.

The CDD programme is less well equipped, with public transport usually being used for supervisory visits. At kabupaten and health centre levels there is no budget to cover transport costs which limits supervisory activity. Integration of supervisory activities would result in more efficient use of available resources.

4.3 Field visit findings

The team found that effective supervision was lacking at all levels. The need for supervision was not well appreciated throughout the health system. Several puskesmas had not been visited by kabupaten staff during the past year. Only one third of health staff interviewed claimed that checklists were used.

4.4 Key issues

4.4.1 Failure to develop and implement an effective supervisory system is delaying the achievement of national targets and decreasing the quality of the programme.

4.4.2 The objectives of supervision are not clearly defined. Effective supervision is not regarded as a priority at any level. There is a marked lack of supervisory skills at all levels and the concept of integrated supervision for EPI and CDD has not been developed.

4.4.3 Findings are not usually recorded. Checklists are rarely used and are inappropriate in design to facilitate programme improvement. Feedback other than on failure to produce reports is rare.

4.4.4 Lack of funds affects the motivation to carry out supervision, especially where transportation is costly.

#### 4.5 Recommendations

4.5.1 Integrated effective supervision should become a priority within the programme. This may require additional budget.

4.5.2 Objectives and simple checklists should be developed, for each level of supervision, which relate to achieving national targets. The supervisory mechanisms must be regular, supportive, and educational.

4.5.3 Resources should be released to train those who supervise at each level. Training in the CDD supervisory skills course is particularly needed for those responsible for supervision of CDD activities.

4.5.4 Greater efforts should be made to release transport allocated to the programme to enable supervision to occur.

4.5.5 Urgent attention should be given to developing simple monitoring checklists designed to identify problems and solve them, and which are related to programme objectives.

4.5.6 Each supervisory visit should result in feedback of a list of identified problems. These should be discussed at staff meetings and progress checked by the next supervising officer.

4.5.7 The development and distribution of a quarterly newsletter by each province would assist motivation. It should highlight progress towards objectives and problems to be overcome. It could provide the schedule for the next quarter. See also recommendation 6.7.4.

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## 5. ORS production and distribution

### 5.1 ORS production

ORS is manufactured in Indonesia in two packet sizes, for 200ml and 1 litre of solution. The generic name "Oralit" is used for ORS conforming to the WHO recommended formulation.

There are at least 14 pharmaceutical companies licensed to produce ORS in Indonesia. The production capacities of these companies range from 200,000 to 1 million packets per month. Two, Kimia Farma and Indofarma, are government affiliated operations and are the principal suppliers of drugs to the public sector. Table 5.1 shows 1984 Oralit production figures for the 5 principal producers. Current production capacity for ORS appears to be adequate.

One manufacturer is planning to make an ORS tablet which, when dissolved in 180ml of water, will make a solution in accordance with WHO recommendations.

Table 5.1 : Production of Oralit by 5 major manufacturers in Indonesia, 1984 (all figures in thousands)

Manufacturer	200 ml Packets	1000 ml Packets	Total litres	Percent of total
Kimia Farma	1,844	3,090	3,459	51
Indofarma	-	1,100	1,100	18
Combiphar	2,600	350	870	13
PRAFA	2,775	276	831	12
PHAROS	1,600	75	395	6
<b>T O T A L</b>	<b>8,819</b>	<b>4,970</b>	<b>6,734</b>	<b>100</b>

## 5.2 ORS distribution

There are 3 major channels for distributing ORS through the government health services: the CDD programme, the Nutrition Programme and INPRES. The mechanism of supply through the 3 channels is as follows:

The CDD Programme allocates funds to each province to buy ORS. The provinces then contract with a manufacturer who delivers the ORS direct to the provincial warehouses. The CDD programme allocates funds to each province based on population and need estimates. The CDD Programme maintains a buffer stock of ORS to send to provinces if diarrhoeal disease outbreaks occur.

The Nutrition Programme procures ORS at the national level, and the supplier delivers the product direct to the provinces. The Nutrition Programme determines needs on the basis of the number of villages participating in the UPGK Project, not on actual consumption.

INPRES is the primary mechanism for financing procurement of drugs for the Ministry of Health. Funds are allocated to each province on the basis of population. Provinces compile an estimation of drug needs for each kabupaten and arrange purchase from the prescribed producers. Decisions on the type and quantity of drugs are made by the kabupaten health office. Kimia Farma is the designated supplier of ORS.

The quantities of ORS supplied through each of these channels in fiscal year 1981/85 are shown in Table 5.2. The value of the total supply through these channels was estimated at \$788,000, based on the amount budgeted (CDD) or the prices actually paid (Nutrition and INPRES).

Table 5.2 : Distribution of Oralit in Indonesia, fiscal year 1984/85

Distribution Channel	200 ml packets	1000 ml packets	Total litres	Percent of total
(in thousands)				
<u>Public Sector:</u>				
CDD programme	3622	497	1222	18
Nutrition Programme		1120	1120	19
INPRES		2086	2086	31
<u>Commercial sector:</u>	5197	1267	2307	32
<b>T o t a l</b>	<b>8819</b>	<b>4370</b>	<b>6734</b>	<b>100</b>

Also shown in Table 5.2 is the amount of ORS distributed through commercial retailers, almost one third of the total. There are 118 commercial firms licensed to distribute drugs, with offices in 660 towns. The most developed of these provide transport, storage and marketing services as well as salesmen. There are 3 main types of pharmaceutical outlets in Indonesia. About 1200 "apotiks" sell a full range of prescription and over-the-counter (OTC) drugs. In addition, thousands of "toko obat" and "warung" sell OTC products. The toko obat specializes in OTC drugs while the warung also sells household goods and food. ORS is sold by apotiks and toko obat.

### 5.3 Quality control procedures

For INPRES distributed ORS, the producing companies certificate of analysis for each batch is submitted to the Food and Drugs Administration for review.

ORS procured through the CDD programme either at national or provincial levels is not subject to mandatory quality control although manufacturers tests are carried out and results routinely submitted to the Food and Drugs Administration.

For the Nutrition Programme ORS procured through UNICEF, the producing company's certificate of analysis is scrutinized and a sample from each 10th batch is analysed by a local independent laboratory. On the basis of the results from this laboratory, ORS is released to government warehouses. In addition, samples of one in four of the locally tested batches and one sample from each 100,000 sachets is sent to UNIPAC, Copenhagen for an external analysis. Results of testing for 1986 are shown in table 5.3.

Table 5.3 Quality control testing of UNICEF procured ORS in 1986

Packet size	Producer		Local laboratory		External Laboratory	
	Total	Passed	Total	Passed	Total	Passed
200 ml	80*	78*	17	17	4	2
1 litre	28	27*	16	16	3	2

\* All batches passed but certificates of analysis with typing errors were rejected and re-testing ordered.

#### 5.4 Field visit findings

At the kabupaten level there was generally found to be an adequate stock of ORS, even, in a few areas, an excess. Generally there are few shortages and stocks, based on recent utilization, were found to be adequate. Estimated stocks varied between 0-13 months at the extremes but usually enough for 5-9 months at average usage rates. Given that the kabupatens deliver ORS to health centres on a theoretical need rather than usage, the observed stock levels could be considered reasonable. Those kabupatens with zero stock at any time illustrate programme failures particularly as a buffer stock should be retained at kabupaten level for use in diarrhoeal disease outbreaks.

ORS distribution from the kabupaten level does not necessarily reflect use at peripheral levels. Furthermore, considerable distortion of stock figures is caused by the annual 'dropping' of the INPRES and Nutrition Programme ORS supply, in the latter case in amounts determined at national level unrelated to local demand.

Of the 48 health centres visited, 34 (70%) had maintained adequate stocks of ORS throughout 1985/86 and over 80% had adequate stocks at the time of the review. Given the long shelf life of ORS and the multiple supply channels, this situation can be improved upon.

#### 5.5 Key issues

- 5.5.1 There is limited coordination between the multiple channels of ORS distribution.
- 5.5.2 Some facilities, including district hospitals, are frequently without stocks of ORS.
- 5.5.3 Minimum buffer stock levels have not been fixed for all institutions.
- 5.5.4 Distribution of 2 ORS packet sizes and various packaging types to the public makes uniform messages difficult and causes confusion.
- 5.5.5 The reporting system for ORS use by health facilities is inadequate.
- 5.5.6 Not all ORS is subjected to adequate quality control procedures.

#### 5.6 Recommendations

- 5.6.1 Distribution of ORS through the various existing channels should be coordinated at central, provincial and kabupaten levels to ensure supply of ORS based on demand. Priority should be given to establishing a mechanism to ensure continuous supply of ORS to cadres in their villages. The feasibility of maintaining a single combined stock at provincial level should be explored.
- 5.6.2 Minimum buffer stock levels for province and kabupaten levels should be established and maintained by one of the major ORS suppliers.
- 5.6.3 To allow uniform promotional messages for 200ml ORS packets, 1 litre ORS packets should be used only in inpatient facilities or those where larger volumes of ORS are required. Only 200ml packets should be distributed to puskesmas, posyandus and the public.

- 5.6.4 An ORS distribution report, preferably combined with the monthly vaccine report, should be established.
- 5.6.5 Further negotiations should be made with INPRES to ensure they adopt the standard packaging colours/sizes, initially recommended in 1983.
- 5.6.6 Standard quality control procedures should be applied to all ORS procurement.
- 5.6.7 Mechanisms of close collaboration with the private sector distribution and promotion of ORS should be found.

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## 6. Diarrhoea case management

### 6.1 Policy

#### 6.1.1 Oral Rehydration Therapy

Since the last comprehensive programme review of the CDD programme in 1983 the policy on diarrhoea case management has evolved from the use of ORS for all diarrhoea case (supported by I.V. and antibiotics when indicated) to a policy incorporating the use of home fluids at the household level for the prevention of dehydration. Home fluids include soups, dilute juices and other fluids prepared in the home and also sugar and salt solution. Oralit (ORS) packets for 200 ml of solution are promoted for use at the community level for treating dehydration while, in principal, the 1 litre packets are for use at health centres and hospitals.

The current policy for treatment of dehydration is 3 tiered :

- Treatment of mild dehydration by cadres and at the posyandu, using Oralit.
- Referral of cases with moderate dehydration to the puskesmas for treatment with Oralit.
- Children with severe dehydration are started on ORS at the point of entry into the health system and referred to a hospital or puskesmas where IV fluids (Ringer's lactate) can be given.

#### 6.1.2 Feeding during diarrhoea

Continued feeding during diarrhoea is promoted as programme policy, however, many doctors still believe in withholding food.

#### 6.1.3 Drugs and antibiotics

The programme's policy on drugs and antibiotics in the treatment of diarrhoea limits their use to those cases where there is a clear indication. Tetracycline is recommended for the treatment of cholera cases and in epidemic situations for close contacts of confirmed or suspect cases. The routine use of antibiotics and antidiarrhoeal drugs in children under five years of age is actively discouraged.

Despite this policy routine drug treatment of diarrhoea is prevalent. A study in West Java in 1986 among child caretakers showed that of children treated for diarrhoea at a health centre, 76% were given "pills", 49% given injections and 24% given "syrup". Only 14% of the diarrhoea cases were given ORS and, of these, only 2% received ORS at the health centre while the remaining 12% were given the packets for preparation in the home. although this survey was limited to West Java, it raises serious concerns regarding current diarrhoea treatment practices in health clinics.

#### 6.1.4 Rice powder based ORS

Various studies of rice powder based ORS have been conducted in Indonesia, notably in Palembang. They are adequately documented in published reports. Rice powder based ORS is now utilized in several hospitals including the Infectious Diseases Hospital in Jakarta. In that hospital's excellent oral rehydration unit both ORS and rice powder based solutions are available from bulk dispensers. Staff noted that while the rice based powder solution was effective for mild dehydration, in moderately dehydrated cases the slower rate of ingestion, due to its consistency, limited its suitability.

#### 6.2 ORS access and ORT use rates

The 1986/87 estimate of access to ORS is 80%. Virtually all health facilities now have ORS available. The CDD Sub-directorate supplies ORS, has conducted orientation for 5-10% of cadres and provides a small budget for supervision, to around 20% of puskesmas. This level was achieved in 1985 and has not been expanded. Other puskesmas obtain ORS through one of the channels described in section 5.

A 1985 evaluation compared health workers, cadres and mothers knowledge concerning diarrhoea at, and around, a sample of CDD Programme puskesmas with those for a sample of non-CDD Programme puskesmas. No significant difference was found. The policy of support to selected individual puskesmas has now been largely abandoned.

Data from 22 sentinel puskesmas in 1984 showed that 66% of cases were reported as treated by the puskesmas and 33% by cadres working in the community. The puskesmas used, on average, one litre of ORS per case, the cadres, 0.6 litres.

Results of household surveys of diarrhoea morbidity, mortality and treatment are presented in section 9.5. The overall ORS use rate of 52.5% found in the most recent survey is generally considered to be an overestimate although reasons for this are not well explained. Sugar and salt solution was reported as used in 7.4% of cases and home fluids in 10%.

### 6.3. Field visit findings (health services)

#### 6.3.1 Access to ORS

As estimated by kabupaten level staff, just over 50% of the population of the 24 kabupatens surveyed have reasonable access to a trained provider of ORS. These estimates are based upon the number of cadres serving the population and the concentration of population around health centres. Estimates for individual kabupaten ranged from 0% to 100%, reflecting both differences in actual availability of packets and providers, but also differences in interpretation of the terms "reasonable access" and "trained provider". These findings highlight the need for better definition of programme indicators.

#### 6.3.2 Case management policy

The review team found that a standard policy on treatment of children with diarrhoea was said to be promoted in 19 of the 24 kabupatens surveyed. However, specific policies often differed greatly from national policy as shown in table 6.1. The poor understanding of the national policy on use of ORS may be due, in part, to the recent change in this policy.

Table 6.1 Claimed policy on diarrhoea case management based on interviews in 24 kabupaten health offices.

National policy	Number of kabupaten complying with national policy
Continued breastfeeding during diarrhoea	20
Continued solid foods during diarrhoea	18
Use of home fluids for prevention of dehydration	16
Use of ORS only for dehydrated cases	2

### 6.3.3 Policy on breastfeeding and weaning

Twenty one kabupatens claimed to promote a standard policy on breastfeeding and weaning practices, however, the national policies were consistently followed in only 4 of the 24 kabupatens surveyed. (table 6.2).

Table 6.2 Claimed policy on breastfeeding and weaning based on interviews in 24 kabupaten health offices

National policy	Number of kabupatens complying with national policy
Exclusive breastfeeding up to 4 months of age	7
Continuous breastfeeding up to 24 months of age	24
Introduction of weaning foods at 4 months of age	5

#### 6.3.4 Treatment of diarrhoea cases by health workers

Interviews with 161 health workers confirmed the low awareness of national policy and highlighted the lack of understanding or attention to the difference between diarrhoea alone, and diarrhoea with dehydration. (Table 6.3)

These deficiencies were reflected in observed practices. Many diarrhoea cases were not touched at all during assessment, and the history was confined to one or two questions about diarrhoea alone. Some patients admitted to hospital wards for diarrhoea were only mildly dehydrated, and had not been treated and observed in an ambulatory setting.

Table 6.3 Stated diarrhoea case management techniques used, based on interviews with 161 health workers. (Percentage of workers claiming to practice each element of case management)

	Doctors N = 49	Paramedics N = 88	Cadres N = 24
<b>Assessment of patients:</b>			
Ask about : diarrhoea	100	100	100
vomiting	71	56	50
Look at : mouth/tongue	43	18	21
breathing-rate	64	22	13
Feel : skin pinch	84	91	58
pulse rate	64	24	4
fontanelle	64	44	25
<b>Selection of treatment:</b>			
Use of ORS for:			
- no dehydration	93	71	79
- mild/moderate dehydration	71	56	63
- severe dehydration	43	27	25
<b>Education of mothers:</b>			
Advise to:			
- stop breastfeeding	7	7	8
- withhold/decrease home fluids	0	4	8
- withhold/decrease solid foods	36	31	17

Table 6.3 also shows poor understanding of treatment policies. Most of the health workers interviewed would treat non dehydrated patients with ORS and many would routinely use IV therapy for moderate dehydration.

Examination of patients records in health centres showed that ORS use was high. With the exception of those in some well-run hospital clinics, most patient records did not record any physical examination findings or dehydration status. Patients were not usually weighed routinely and Road to Health (KMS) cards were not requested or expected in almost all curative facilities visited.

In all but a few health facilities visited, almost all ambulatory diarrhoea pediatric patients were given "anti-diarrhoeal" drugs, frequently with antibiotics. Based on pharmacy stock records in one kabupaten hospital twice as many diarrhoea patients received "enterovioform" as received ORS in 1985/86.

On some hospital wards, intravenous therapy was found to be continued long after initial hydration.

#### 6.3.5 Education of mothers

Attention to education of mothers about management of diarrhoea at home was inadequate at almost all facilities. At most, mothers were merely given packets or ORS, with little or no instruction in mixing or in the amount and timing of administration. Only a few centres actually had the mother administer ORS under observation.

Discussion of appropriate feeding during diarrhoea was absent or limited.

Instruction was usually not given regarding the symptoms or signs indicating that the mother should bring the child back for further attention. No attempt to assess the mother's understanding of ORS use before she left the centre was usually made.

No flyer or other written instructions were given to mothers, although the West Java programme had prepared such flyers for eventual use.

Advice to mothers concerning prevention of diarrhoea was usually minimal and vague.

### 6.3.6 Visits to diarrhoea training units

Four hospitals in which diarrhoea training units had been established were visited and assessed (Jakarta IDH, Banda Aceh, Ujung Pandang and Sidoarjo hospitals). In general, the physical facilities were found to be of a high standard, staff well and trained and records well maintained. The use of antibiotics and intravenous fluids were appropriately limited, however, some cases apparently still being unnecessarily hospitalized.

Unfortunately the review team found the enormous potential of these training units to be underutilized. Reasons include poor linkages with the provincial and kabupaten health authorities, lack of plans for systematic training coverage of health personnel and lack of resources.

The Jakarta Infectious Diseases Hospital provided data which clearly demonstrates the impact of the introduction of improved case management, based on effective oral rehydration therapy. These data are summarized in table 6.4.

Table 6.4 Diarrhoea cases and deaths, 0-4 years, Infectious Diseases Hospital, Jakarta 1980-1985

Year	OP diarrhoea cases	IP diarrhoea cases	Admission rate (%) <sup>a</sup>	IP diarrhoea deaths	IP CFR (%)	All. diarrhoea deaths	Hospital CFR (%) <sup>b</sup>
1980	1207	454	26.8	57	12.6	62	3.7
1981	1575	508	24.4	31	6.1	39	1.9
1982	3269	492	13.1	45	9.2	48	1.3
1983	4121	452	9.9	36	8.0	44	1.0
1984	4044	607	13.1	24	4.0	26	0.6
1985	4327	846	16.4	14	1.7	19	0.4

OP = outpatients, IP = inpatients

<sup>a</sup> Assumed IP not counted among OP in reported data

<sup>b</sup> All diarrhoea deaths (OP and IP) as percentage of OP + IP cases

#### 6.4 Interviews with 107 pharmacists/drug sellers

The main finding of the interviews conducted at pharmacies (apotik), drug sellers (toko obat) and stores selling OTC drugs as a sideline (warung) is that "antidiarrhoeal" drugs are almost always offered as the first line of treatment.

The turnover of the 6 most frequently sold "antidiarrhoeal" compounds and ORS for the drug retailers interviewed is summarized in table 6.5. At least 15 other medicaments were mentioned as treatment for diarrhoea

None of the 6 products listed has a composition of proven benefit in the treatment of acute diarrhoea and some ingredients are potentially harmful. The constituents of these and some other "antidiarrhoeal" drugs found to be readily available are shown in Annex 8.

Table 6.5 Costs and turnover of the 6 "antidiarrhoeal" drugs most commonly cited among the 3 top selling products, and of ORS, from interviews with 107 pharmacists/drug sellers.<sup>a</sup>

Brand name of product	Number of respondents mentioning product in 3 best sellers	Number of cases treated per month per respondent	Cost of treating one child case (Rupiah)	Gross monthly turnover per respondent (Rupiah x 1000)
Zastrostop	10	20 (5 - 1500)	600 (50 - 1000)	11 (2 - 300)
Disrent	24	20 (3 - 300)	1550 (450 - 2700)	19 (3 - 300)
Esoasyca	15	20 (6 - 200)	3400 (2000 - 5200)	56 (15 - 1000)
Diaform	14	20 (10 - 1251)	225 (180 - 700)	5.5 (2 - 26)
Sulphaguanidine	11	25 (8 - 450)	165 (50 - 500)	25 (0.5 - 24)
Zeniform	13	40 (2 - 1250)	260 (80 - 750)	6 (1.5 - 375)
ORS <sup>b</sup>	-	25 (0 - 200)	600 (150 - 1500)	12.5 (1.2 - 225)

<sup>a</sup> Table shows median values for number of respondents in column 1 and ranges in brackets.

<sup>b</sup> Includes Oralit and Pharolit as well as ORS products not conforming to the WHO recommended formulation, e.g. Eltolit and Kristalyte

It may be noted from table 6.5 that ORS provides for the retailer a profit generating potential greater than that of 3 of the other products listed, even at current sales levels. However, most retailers sell a wide range of "antidiarrhoeal" products for which the total combined turnover is usually greatly in excess of that for ORS.

When questioned about current ORS stock levels only 5 of 80 respondents to the questions were without ORS, mostly warnings. Only 2 respondents claimed to have problems in acquiring ORS.

Concerning advice on feeding and fluid intake during diarrhoea 19 of 77 respondents recommended stopping or decreasing breast milk, 29 stopping or decreasing bottle feeding, 8 recommended reduced or suspended fluid intake and 25 reduction or cessation of solid foods. Around one third of respondents gave no advice on these matters and only 17 advised increasing fluids.

#### 6.5 Interviews with 184 households

Results of interviews with mothers conducted during the cluster household surveys are presented in table 6.6.

A high percentage of mothers recognized the packet, and could prepare ORS correctly and many had used it. There is still misunderstanding among many mothers, however, about the importance of continuing solid foods during diarrhoea.

Table 6.6 Knowledge of 184 mothers interviewed on diarrhoea case management.

Percentage of mothers who:			
Recognize ORS packet			77
Had used ORS			59
Correctly demonstrated how to prepare ORS			55. <sup>a</sup>
During diarrhoea:	<u>Stop</u>	<u>Decrease</u>	<u>Continue/Increase</u>
Breastfeeding	13	4	83
Bottlefeeding	39	8	53
Other fluids	11	6	83
Solid foods	23	18	59

<sup>a</sup> Of the 142 who recognized the ORS packet.

## 6.6. Key Issues

- 6.6.1 Knowledge of the standard treatment plans for diarrhoea is not widespread among health staff and, where known, they are not properly applied. Use of drugs and IV fluids in the treatment of diarrhoea remains excessive.
- 6.6.2 Most health workers fail to give sufficient priority to distinguishing between diarrhoea and dehydration, both in patient assessment and in treatment.
- 6.6.3 Inadequate attention is given to feeding during and after diarrhoea, particularly in the health education given to mothers.
- 6.6.4 Minimal attention is given to advising mothers of when skilled attention for diarrhoea cases should be sought.
- 6.6.5 Demonstration of mixing and administration of ORS in health facilities is rare as is actual rehydration of cases, orally, in health centres and hospital outpatients.
- 6.6.6 Moderately dehydrated patients are often inappropriately admitted to hospital for intravenous therapy which is often continued past the point of rehydration. ORS is not sufficiently used for severely dehydrated patients once they are able to drink.
- 6.6.7 Weighing of children at the posyandu, rarely leads to enquiry concerning diarrhoea as a cause of growth faltering, nor to mother education by the cadre (regarding increased feeding to overcome the weight loss, and future diarrhoea case management).

## 6.7 Recommendations

- 6.7.1 The diarrhoea case management strategy should be given highest priority. It should emphasize:
- use of home fluids when diarrhoea begins, to prevent dehydration
  - use of Oralit (ORS) to treat dehydration
  - continued feeding during diarrhoea
  - early referral of severe cases and those not responding to treatment
  - limiting the use of antibiotics and IV fluids to specific defined conditions
  - no use of antidiarrhoeal drugs

This policy should be widely disseminated through various channels including information to private sector pharmacists/drug sellers.

- 6.7.2 In view of their lack of efficacy, their possible harmful effects in children and the enormous wastage of resources which they entail, the use of antidiarrhoeal drugs should be discontinued in the public sector. Legislation should be considered to limit advertising, manufacture and sale of such drugs.
- 6.7.3 Health worker and cadre training programmes should provide more practice in patient assessment and in appropriate patient education, particularly related to feeding during diarrhoea and criteria for seeking medical care.
- 6.7.4 Supervisory and monitoring approaches which assess the appropriateness of inpatient and ambulatory case management, including the effectiveness of mother education, should be developed and implemented.
- 6.7.5 The Infectious Diseases Hospital in Jakarta should be formally designated as a national diarrhoea training unit (DTU). Adequate resources should be sought to enable it to conduct regular courses for doctors and nurses, particularly those who will serve as trainers in similar units in provincial and kabupaten hospitals. This unit could serve a coordinating role for technical support and evaluation of existing and future DTUs.
- 6.7.6 Simple wallcharts showing standard diarrhoea treatment plans related to degree of dehydration should be posted in every room where children with diarrhoea are treated.
- 6.7.7 A carefully designed flyer should be distributed showing in pictures how to mix and administer ORS, the appropriate use of foods and breastfeeding during diarrhoea, and the signs and symptoms upon which the mother should take the child to a health care provider.

See also recommendations presented in sections 3, 4, 10 and 11.

7. Vaccine supply and distribution

7.1 Quantities of vaccine distributed

Data was reviewed for the period April 1985 - March 1986, the government fiscal year, and is presented in Table 7.1.

Table 7.1\_ : Vaccine distribution in 1985/86 and current national level vaccine stocks <sup>a</sup>

Vaccine	Amount distributed in year	Average monthly use	Present stock	How long stock will last (Mnths) <sup>b</sup>
BCG	18,652,720	1,554,393	0 <sup>c</sup>	0
DPT	9,514,190	792,849	1,326,780	1.7
OPV	7,542,220	629,018	1,202,414	1.9
Measles	1,798,950	149,913	447,800	3.0
TT	14,868,720	1,239,060	2,270,730	1.8
DT	8,926,450	743,870	105,650	0.2

<sup>a</sup> All figures are numbers of doses.

<sup>b</sup> Assuming the same rate of use as in the period April 1985-March 1986.

<sup>c</sup> Programme budget for vaccine purchase in 1986/87 is exhausted. A loan agreement has been made with a producer to supply vaccine against payment in the 1987/88 fiscal year.

Bacterial vaccines are supplied directly from the vaccine manufacturer to the 27 provinces under direct contract payable from provincial budget allocations. A 'buffer' stock is held at the national programme headquarters to maintain vaccine supply to any province that exhausts its contract quota before the end of the year.

Viral vaccines are now imported through UNICEF funded by an IBRD loan. Rotary International has recently agreed to provide 122,000,000 doses of OPV to Indonesia estimated to be sufficient for 5 years starting from July 1987. All bacterial vaccines are purchased from government budget.

## 7.2 Vaccine distribution efficiency

A random selection of ten recent vaccine request/shipment transactions was analyzed.

The analysis, summarized in Annex 9 showed that province requests usually took only 1-2 days to reach the capital, the worst case being 8 days. The administrative work within the Directorate-General was found to be excellent with every request transferred to the Sub-Directorate on the same day.

Generally, the Sub-Directorate responded rapidly, usually in 2-3 days. The worst cases were two recent requests for BCG vaccine with delays of 12 and 24 days at time of the review. These were explained by the fact that the budget for BCG purchase had been exhausted and a new agreement had just been signed with the manufacturer. However, they indicate a logistics/management failure as depletion of the stock should have been anticipated through existing data collection/analysis systems.

## 7.3 Cold chain facilities

Cold chain facilities at national level are as shown in Table 7.2.

Table 7.2: National level EPI cold chain facilities

No	Cold Room Type	Size	Working	Alarm	In service since	Temperature when reviewed
1	Genaplast	65 m <sup>3</sup>	Yes	No	1980	4° C
2	Jetcool	36 m <sup>3</sup>	Yes	No	April 1986	- 20° C
3	Local Assembly	66 m <sup>3</sup>	Yes	No	1974	- 20° C

Cold rooms 1 and 3 each have double compressor/evaporator systems and in the event of failure of the mains electricity supply a generator starts automatically. This was demonstrated satisfactorily. For cold room 1 each compressor is run for one week at a time with a change-over each Monday when a 15 minute generator test is also carried out. A record of generator run dates/hours is maintained. Cold room 2 has only one compressor/evaporator system linked to a manual start generator.

#### 7.4 Other EPI supplies

Vaccination equipment and refrigeration spare parts are supplied by UNICEF annually and distributed to the provinces, also usually on an annual basis. The distribution of selected EPI supplies in 1985 is summarized in Table 7.3.

Table 7.3 : Distribution of selected EPI supplies in 1985

	Syringe 2nd	BCG Barrel	Needle DPT x 12	Needle BCG x 12	Lampglass #8	Wick #8
Aceh	600	250	600	500	200	200
Jakarta	1000	500	600	900	-	-
W. Java	3000	1200	3000	2500	900	900
E. Java	4000	1800	4000	3500	1300	1300
S. Sulawesi	700	350	800	800	375	375
S.E. Sulawesi	200	100	200	200	50	50
Indonesia	21,000	9650	21,600	19,100	6,725	6725

Distribution is based on estimates made at national level. Where some information is known concerning provincial stocks this is taken into account but this is not usual. A 'buffer' stock of each item is retained at national level should there be any shortage in the provinces.

Efforts have been made to establish a logistics monitoring system based on quarterly reports. This has fallen into disuse due to the lack of capacity at national level to analyse the data and provide feed-back to the provinces.

#### 7.5 Field visit findings

##### 7.5.1 Vaccine stocks

Generally, vaccine was available at all levels but wide variations in stock levels were noted (from 0 to 14 months' supply). While stock records are almost always completed, they are not used as a tool to signal re-order points. Particularly at province level, the shortage of storage space also leads to occasional depletion of stocks.

### 7.5.2 Cold Chain

Recent programme expansion has put pressure on storage capacities at provincial levels in particular. Despite this, maintenance of temperatures was found to be good in cold rooms and freezers at provincial level.

The situation at district level was not as good; only 17 of 23 refrigerators and freezers inspected were within an acceptable temperature range.

At health facility level the picture was variable. Almost all health facilities in Indonesia have been equipped with new vaccine storage refrigerators within the last two years therefore, temperature failures are mainly due to human error. Principal findings at health centre level are summarized in table 7.4.

Table 7.4 Cold chain findings in 59 health facilities

	Number	% of total
Refrigerator working	55	95
Thermometer in fridge	51	85
Temperature records maintained	41	70
Temperature satisfactory at time of visit	47	80
DPT/TT/DT frozen at time of visit	7	12
Expired vaccine in stock	7	12
Stock records available	50	85
Frozen cold packs or ice in fridge	46	80

Clearly there is still considerable room for improvement as 1 in 5 refrigerators had an unacceptable storage temperature, in other words upto 20% of vaccinations in health facilities visited may be carried out with damaged, possibly impotent vaccine. The province of Aceh was notably weak amongst those surveyed.

### 7.5.3 Other logistics

There are widely reported shortages of syringes and needles. Each vaccinator is initially supplied with ten 2ml syringes and 10 dozen needles in his kit. In 1985 approximately 10 additional syringes and 10 dozen needles were also made available to each health centre. In 1986 these amounts were doubled. Apart from many distribution problems leading to shortages or occasionally over-stocking, EPI syringes are used widely for other injection purposes leading to a continued shortage for immunization. Recent changes in syringe/needle types has caused confusion in some areas as older syringes/needles are not interchangeable with the new type.

### 7.5.4 Private sector cold chain

A surprising number of the pharmacies visited stock vaccines for sale to private practice doctors. Of 107 pharmacies visited 3 were found to stock one or more vaccines. Findings are presented in table 7.5. They clearly demonstrate the serious danger of untrained staff managing vaccine distribution.

Table 7.5 Cold chain findings in 32 pharmacies stocking EPI vaccines.

	Number	% of total
Total pharmacies	31	100
Keeping vaccine in fridge	25	80
Storage temp. < 8°C	9	30
Expired vaccine in stock	9	30

## 7.6 Key issues

### Cold chain

- 7.6.1 Storage space at provincial level is inadequate for the rapidly increasing vaccine needs.
- 7.6.2 Despite the need for absolute integrity of the cold chain at national level not all cold rooms at national level are fitted with secondary cooling systems.
- 7.6.3 Toxoid vaccines are too often being frozen (12% of stocks observed during the review).
- 7.6.4 Kabupaten and health facility cold chains are well equipped but staff require further support to improve maintenance.
- 7.6.5 The vaccine cold chain of commercial pharmacies is frequently inadequate.

### Vaccine distribution and stock records

- 7.6.6 Vaccine stock records are erratically maintained partly because they are not used as a monitoring tool to ensure continuity of supply.
- 7.6.7 With increasing demand delays in vaccine shipment of more than a few days are unacceptable.
- 7.6.8 Large amounts of vaccine held for quality control testing are distorting stock records at national level.

### Syringes and needles

- 7.6.9 There are widespread shortages of syringes and needles for immunization because those supplied are used for other purposes.
- 7.6.10 Changes in syringe types and sizes have caused some confusion.

## 7.7 Recommendations

- 7.7.1 Vaccine storage requirements at provincial level should be reviewed throughout the country and the necessary additional/replacement equipment supplied as soon as possible.

- 7.7.2 Cold chain maintenance procedures should be a subject for training and discussion with kabupaten and health facility staff during routine meetings and supervisory visits.
- 7.7.3 Clear temperature guidelines for each vaccine should be disseminated, perhaps in the form of a chart to be circulated to all cold chain managers.
- 7.7.4 Cold room 2 at national level should be fitted with a reserve cooling unit as soon as possible.
- 7.7.5 Data should be obtained from the vaccine manufacturer concerning the amount of vaccine supplied to commercial distributors. Storage guidelines should then be sent to all identified distributors and pharmacies and a system of random supervision introduced.

Vaccine distribution and stock records

- 7.7.6 Stock records need to be seen as a monitoring tool rather than as a recording chore. They should be a subject of training and discussion during routine meetings and supervisory visits.
- 7.7.7 A 'maximum acceptable delay' period should be set for each vaccine shipment (suggested 1 week). Should this period have elapsed the person concerned should then consult with the chief of the sub-directorate. Provinces should be informed of any delay.
- 7.7.9 Vaccine should be retained for quality control only until it has passed its expiry date and then destroyed. Vaccine samples for quality control should be recorded separately.

Syringes and needles

- 7.7.9 The EPI Sub-directorate should meet with representatives from the Directorate General of Community Health and the Family Planning Coordinating Board, the main other users of syringes and needles, to discuss requirements. Every vaccinator should have at least enough needles for each child he will vaccinate in any one day.
- 7.7.10 A clear explanation should be disseminated concerning the change from 'Record' to 'Luer' tip syringes.

## 8. Immunization performance

### 8.1 Reporting system

Data on immunizations performed by vaccinators are collected monthly at the kabupaten level and reported to the province. It takes about one month for reports from puskesmas to reach the central office.

Also at the puskesmas level an EPI activity report is integrated with other health programme reports, tabulated and sent directly to the Directorate General of Community Health in Jakarta. A copy is also sent to the kabupaten for discussion of results. This integrated health recording and reporting system was introduced in 1981. It continues to experience delays in analysis at central level. Typically, there is a four month delay for the provisional report from central level and there is usually almost one year delay for the final complete report.

### 8.2 Reports of immunization performed

In the ten years since the EPI began coverage rates have been slowly, but steadily, increasing. (Annex 10)

In 1983/1984 the third dose for DPT was introduced along with the introduction of OPV. By 1985/1986 the coverage rates for eligible children were 63%, 51% and 27% for DPT1, DPT2 and DPT3, respectively.

OPV was introduced in 1980/81 and by 1985/1986 the coverage rates for eligible children were 46%, 33% and 24% for OPV1, OPV2 and OPV3, respectively.

Measles immunization was started in 1981/1982. Coverage has increased significantly and by 1985/1986 the coverage rate for eligible children was 26%.

BCG vaccination was started in 1972 and was relatively well established before the EPI was launched in 1977. Coverage levels in eligible children had reached 55% by 1979/1980. Only modest increases have been achieved since then and by 1985/1986 the coverage rate for eligible children was 65%.

Coverage of pregnant women with TT has shown a steady increase, although the second dose coverage levels reached only 25% of pregnant women in 1985/1986. The national policy is to provide a booster dose of TT for pregnant women who have been previously vaccinated only if more than three years have elapsed since the last dose. Therefore, the number of pregnant women adequately protected against tetanus, and whose newborns are adequately protected from neonatal tetanus is expected to be higher than the coverage level for reported doses of TT2. Coverage rates for 1985/86 are compared with 1982/83 levels and 1988/89 targets in figure 8.1.

8.3 Immunization targets

The immunization coverage targets for all EPI antigens, except for TT, were revised upwards in 1985/1986 to reflect the progress in immunization coverage levels. Comparison of the 1985/1986 achievements with the 1987 targets showed that 19% (5/27) of provinces achieved the 1987 target of 70% for BCG, 11% (3/27) achieved the 1987 target of 45% for DPT3, and 7% (2/27) achieved the 1987 target of 45% for OPV3.

8.4 Drop-out rates

Drop-out rates for DPT1-DPT3, OPV1-OPV3, TT1-TT2, and BCG-Measles in 1985/1986 were 57%, 47%, 28%, and 59%, respectively. Although these drop-out rates are high, they represent an improvement over rates in previous years. The decreasing drop-out rates for DPT (34% decrease in drop-out rate from 1983/1984 to 1985/1986) are especially encouraging and represent, in part, the new policy of providing three doses of DPT in all EPI areas (at the time of the first EPI review it was the policy to only use third dose of DPT in areas where OPV had been introduced).

8.5 Coverage surveys

In 1984/1985 a total of 58 immunization coverage surveys were conducted in 15 provinces. In 1985/1986 a total of 87 immunization coverage surveys were conducted in 22 provinces.

8.6 Previous programme evaluations

Two special EPI evaluations were done in August 1980 and in August-September 1981 by joint Government/USAID/UNICEF/WHO review teams. A comprehensive review of the EPI and selected primary health care activities was conducted in September-October 1982 by a joint Government/WHO/UNICEF/USAID review team.

## 8.6 Field visit findings

Note: This section incorporates findings related to section 2, EPI planning and administration.

### 8.6.1 Health worker interviews

Selected findings of interviews with 151 health workers are presented in table 8.1.

Table 8.1 Knowledge of health workers on immunization schedule and contraindications.  
(% of respondents correctly knowing item)

Item	Doctors n = 41	Other health workers n = 85 <sup>a</sup>	Cadres n = 25
<b>Immunization schedule:</b>			
BCG	83	72	71
DPT	93	87	84
OPV	93	84	77
Mensles	85	87	71
TT	88	87	76
<b>Contraindication policy:</b>			
Mild fever	63	44	27
Cold or flu	54	44	19
Diarrhoea	32	32	20
Malnutrition	51	40	43

<sup>a</sup> Includes 48 nurses, 23 midwives and 14 vaccinators.

In addition, 16% of doctors and 28% of other health workers were considered to provide information on immunization side effects poorly. All categories of health workers were better informed about the immunization schedule than about the current policy on contraindications. It is common for health workers to refuse to immunize children with mild fever, diarrhoea or malnutrition.

Sterilization of vaccination equipment was often found to be compromised. Inadequate boiling times, rinsing of syringe between patients in water kept in an open container (sometimes using the contaminated needle), and placing contaminated needles in sterile areas were noted. The current policy is to use only one sterile syringe per EPI antigen.

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It was noted that vaccinators would often refuse to open a vial of vaccine if only one child required immunization (in some instances vaccinators stated they would not open a vial until at least five children were present). It is common for health workers to recommend starting BCG vaccination at three months of age.

Cadres are involved in mobilization of eligible children and assist in organizing the immunization session in the posyandu. They are not directly involved with vaccine storage, handling, or delivery.

The majority of doctors and nurses indicated that they knew how to handle vaccines and sterilization correctly. While few immunization sessions were witnessed, documentation and observation of handling of vaccine and equipment indicated that their practice was often inferior to their knowledge.

#### 8.6.2 Health facility interviews

Immunization registers in health facilities were often kept by date of immunization session and not by village, making identification of drop-outs difficult. Vaccines administered to children over 14 months of age were reported either as administered to children under 15 months or as doses wasted. Average reporting completeness for the reporting month of October 1986 was 84%.

In some facilities (including some university hospitals) the simultaneous administration of more than one EPI antigen was not practiced. Sometimes children outside of the target age group were denied immunization even though they had already started an immunization series.

In several areas immunization cards were in insufficient supply and, even when available, were found to be incorrectly used or not used.

It was noted that, in hospitals, MCH clinics were not coordinated with immunization clinics. Also immunizations performed in hospitals were often poorly recorded and not reported. Typically there was infrequent or no supervision of the cold chain and poor logistics.

It was noted that scheduled immunization sessions at puskesmas, vaccination posts and posyandus were not always conducted.

Health education regarding the EPI was typically missing during the immunization sessions and the importance of returning to complete immunization series was not stressed nor the possible side effects explained.

A summary of drop-out rates based on records available in visited health facilities is presented in table 8.2. It can be seen from this analysis that more than 40% of health facilities have drop-out rates higher than 50% from the first to third dose for DPT and OPV.

Table 8.2 Distribution of drop-out rates, by vaccine, based on records in 47 puskesmas and hospitals.

Vaccine	Drop-out rate		
	0-29%	30-49%	50% and higher
DPT1 - DPT3	36	24	40
OPV1 - OPV3	28	26	46
TT1 - TT2	47	29	24

### 8.6.3 Kabupaten and provincial level interviews

Full-time staff responsible for the EPI were well identified at provincial and kabupaten levels. Ninety-six percent of the EPI managers in the 24 kabupatens interviewed reported spending in excess of 80% of their time in EPI-related activities. Seventy-six percent of kabupaten EPI managers had participated in either a senior or mid-level EPI management course and only 8% indicated no formal EPI training.

More than 80% of the kabupatens indicated available transportation was a constraint to programme operations in their areas.

In some areas it was felt that the target population denominator provided by higher levels was too large and that coverage was therefore underestimated. Typically, however, kabupatens did not have a good estimate of the number of newborns for their areas.

It was evident that there was a lack of local level planning and management of the EPI. In general, supervisors are not given responsibility to change work plans based on local needs. There are usually no systematic monitoring of

immunization performance by geographic area. Areas not covered by puskesmas, vaccination post or posyandu are not being identified and special efforts are not being made to cover these populations.

Although it was encouraging that some provinces have made special efforts to ensure that vaccination posts are not dropped, in some areas they are being stopped in favour of complete posyandus. More than one health worker capable of delivering immunizations, e.g. both a nurse and a vaccinator sometimes attend the same posyandu at the same time, thus missing an opportunity to provide immunization elsewhere.

It is noteworthy that some provinces had devised "sweeping" operations to increase immunization coverage in kabupaten where coverage was low. Some had used surveillance data to focus efforts for collaborative assistance for the EPI from the PKK. When faced with inadequate budget for supervision, some provinces had found innovative solutions such as mail surveys.

8.6.4 Missed opportunities for immunization

A "missed opportunity to immunize" is defined as a child or woman visiting a health care facility who should have and could have been immunized, but was not.

Eligible children and pregnant women presenting at curative facilities often were not screened properly for their immunization status. In addition, rarely did curative facilities have immunization services available at the same time as the outpatient department clinics.

As part of the review, a total of 104 children 2-14 months of age attending 6 provincial hospitals, with minor ailments, not considered contraindications for immunization, were assessed for missed opportunities (table 8.3).

Table 8.3 Missed opportunities for immunizing children 2-14 months of age attending outpatient clinics at 6 provincial hospitals

	South Sulawesi	South-East Sulawesi	Aceh	Jakarta	West Java	East Java	Total
Number of children	16	18	20	20	16	14	104
Number who needed but did not receive any immunization	15	7	16	16	10	11	76
Percentage	94%	39%	100%	80%	63%	79%	76%

Overall, 76% of the eligible children who required immunizations did not receive them. Also a large percentage needed more than one antigen, but few were provided even one antigen.

None of the 28 children aged 9-14 months of age who needed measles immunization received vaccine.

### 8.7 Key issues

Recent new strategies for increasing EPI activities and coverage were noted by the review team. Many unresolved issues were, however, noted. The major issues are listed as items I.1.1 - I.1.8 of the Executive Summary (Part A). Other specific issues are listed below.

#### Planning and administration

- 8.7.1 There is a lack of planning and responsive use of reported data at the local level to adapt strategies to local conditions or respond to problems or performance failures.

#### Coverage

- 8.7.2 Many rural areas in low population density provinces have no awareness of the need for immunization or the location of immunization services. These areas will have difficulty meeting the national targets.

8.7.3 High drop-out rates for the multi-dose vaccines represent a failure to follow-up on those individuals who, by definition, have used health services for immunization.

8.7.4 Denominators for determining coverage rates are sometimes in dispute.

8.7.5 There is no provision for reporting of doses administered to children older than the target age group.

#### Sterilization

8.7.6 Injections are rarely given with a sterile needle and sterile syringe for each person. Therefore, any injection, including those given for immunization, carries a high risk of transmission of viral diseases such as hepatitis B.

8.7.7 Sterilization of vaccination equipment was found to be inadequate. The current practice of using only one syringe per antigen is inadequate.

#### Policy and strategy

8.7.8 "Missed opportunities" for immunization of children and women are occurring primarily in two ways : (1) children attending clinical facilities for illness and women bringing their children for care are not being screened for immunization status and given the needed immunizations; (2) many curative facilities do not offer immunization at all, or do it only in special immunization or well-child units.

8.7.9 Immunization programmes have not been integrated in many hospitals and polyclinics.

8.7.10 Staff other than vaccinators have been trained to provide immunization, but in outreach situations MCH staff rarely provide immunizations, while in fixed facilities MCH staff rarely immunize children coming for treatment of illness. This lack of functional integration results in many missed opportunities for reaching children who need immunizations.

8.7.11 It is common for health workers to refuse to vaccinate children with mild fever, diarrhoea, and malnutrition.

- 8.7.12 Vaccinators often refuse to open a vial of vaccine when only one child requires immunization.
- 8.7.13 The target age group for immunization services is currently 3 to 14 months of age rather than children under 12 months of age and the immunization schedule does not yet fully conform to the most recent recommendations of the EPI Global Advisory Group for protection at the earliest possible age.
- 8.7.14 Women are rarely provided immunization cards for tetanus immunization.
- 8.7.15 Measles immunization is sometimes denied those individuals who have a history of prior measles disease.

## 8.8 Recommendations

Reference should also be made to major recommendations made in the Executive Summary (Part A), some of which are reiterated below.

- 8.8.1 Efforts should be made at province and kabupaten level to encourage and assist kabupaten and puskesmas staff to develop local plans of action to improve immunization coverage based on the unique programme constraints and opportunities in their areas. These local plans should show which strategy will be used for providing immunization services for each village.

### Coverage

- 8.8.2 There is still a need to geographically expand the programme. In the remote rural areas, especially in the low population density provinces, there is a need to develop special, innovative strategies suitable for the unique situations in each area planned at the local level. Mobile activities, "sweeping" operations, and other strategies should be considered. In addition, all provinces should make use of surveillance data to focus resources and programme activities to areas of greatest needs.

8.8.3 Immunization registers should be organized by village and by name of child to easily assess the immunization status and to identify drop-outs. It is further recommended that newborns registered by the PKK on form F1 be entered onto these immunization registers to identify eligibles and to make efforts to reach those children who do not present for immunization services. Once a child has started an immunization series, the complete immunization series should be provided even if the child becomes older than the target age group.

8.8.4 The basis for denominators for determining percent coverage should be the best estimate of the total number of newborns. Each province has been given the provincial crude birth rate and the formula that each kabupaten and puskesmas can use to estimate the target of newborns. At present, this would seem to be the best estimate for determining coverage in puskesmas, kabupaten and province areas. Coverage should always be expressed as a percentage of newborns.

8.8.5 Immunizations should be reported separately for children younger and older than the first birthday.

Sterilization

8.8.6 In-service training on sterilization procedures should be conducted with special emphasis on vaccinators and other health workers directly responsible for delivering immunization services.

8.8.7 A policy of one sterile needle and one sterile syringe per child should be established. Implementation of this recommendation will require the development of a plan of training and motivation of staff as well as a plan of procurement of equipment.

Policy and strategy

8.8.8 A policy that immunization services be available at all curative centres during times of scheduled outpatient department activities for children and pregnant women should be established.

- 8.8.9 All children less than 2 years of age coming to a health facility for treatment of illness should be screened for their immunization status and appropriate immunization given, in the absence of high fever. Children so ill that they need hospitalization should be given measles vaccine at admission and the balance of the immunizations prior to discharge from the hospital.
- 8.8.10 In urban areas it is especially important to provide immunization services in all health care facilities, including subcentres. These facilities and subcentres, as well as health insurance schemes, can be made responsible for immunization of the population in their catchment areas.
- 8.8.11 Hospitals should be brought into the immunization delivery system to ensure a continuous vaccine supply, adequate cold chain procedures and regular standardized reporting.
- 8.8.12 A policy of opening a vial of vaccine even if only one child is present should be instituted. It is better to waste the vaccine than to "waste" a child.
- 8.8.13 The contraindications policy needs to be disseminated to all levels.
- 8.8.14 The immunization schedule and the target age group should be established to complete the immunization series prior to the first birthday.

Where poliomyelitis has not been controlled, use of OPV in the newborn period is important to provide early protection. In this situation, oral polio vaccine is given at birth or at first contact, with subsequent doses at 6, 10 and 14 weeks of age. Routine immunization with DPT and OPV can be safely and effectively initiated at 6 weeks of age. The EPI Global Advisory Group designed the following schedule to provide protection at the earliest possible age:

<u>Age</u>	<u>Vaccine</u>
Birth	OPV, BCG
6 weeks	OPV, DPT
10 weeks	OPV, DPT
14 weeks	OPV, DPT
9 months	Measles

8.8.15 Increased priority should be given to the provision of tetanus toxoid to eligible women.

The first priority should be to increased collaboration with the Ministry of Religion to ensure that TT immunization prior to marriage becomes a routine requirement, throughout the country, before the end of the current Five Year Plan. This information should be recorded in the marriage book.

The next priority should be to ensure that each woman receives immunization during pregnancy with two doses of TT. Third priority should be directed to the immunization of all women in the reproductive age group. Immunization of schoolgirls is necessary to make an impact on the longer term.

Immunization records should be provided to women receiving tetanus immunization.

8.8.16 Increased priority should be given to the provision of measles vaccines. Efforts should be made to assure that measles vaccine is available on a daily basis at all health facilities seeing eligible children.

8.8.17 The strategies of intensification of activities in the 8 largest provinces covering over 70% of the Indonesian population, the reorientation of vaccination delivery from unipurpose vaccination posts to integrated posyandus and the active recruitment of government and voluntary organizations (specifically: PKK, religious leaders, and teachers) as partners in the immunization programme should be continued and the activities accelerated.

## 9. Surveillance

### 9.1 Introduction

A distinction must be made between reporting and collecting data, and surveillance. In Indonesia there are several different schemes for reporting and collecting information, but the appropriate use of that information for surveillance is more difficult to ascertain.

Surveillance involves the collection, collation, analysis and dissemination of information so that it can be used to control disease and improve the operation of programmes. The surveillance system should be well described so that all workers know what is expected of them. Reports must be timely so that those that provide information realize their importance. The information requested by central office must be limited in amount to facilitate ease and accuracy of reporting.

Surveillance should be conducted either by or in close coordination with the organization responsible for acting upon the information. Surveillance should not be limited to actual disease occurrence, but should also include the surveillance of activities for the control of disease. This section of the report, however, deals primarily with disease surveillance.

Within the Ministry of Health in Indonesia, surveillance is the responsibility of the Directorate-General of Communicable Diseases and Environmental Health (usually referred to as CDC).

## 9.2 Reporting systems

There is a multiplicity of reporting systems (Annex 11), and it frequently becomes difficult to compare or utilize the various reports. Some of these reports are described below and selected data for the years 1981-1985 presented in tables 9.1 and 9.2.

### 9.2.1 Weekly reporting from puskesmas

The basic working surveillance mechanism is the weekly reporting of selected diseases (using form W-2) by puskesmas to kecamatan, to kabupaten and to provincial offices. Consolidated weekly reports are sent to the CDC. These are examined for completeness and provinces not responding are queried. This information is published in the EPI-D bulletin.

This system is intended to provide a passive monitoring of the occurrence of disease and stimulate early warning of unusual occurrences.

### 9.2.2 Unusual occurrence reporting

The weekly reporting system is augmented by a less formal system of notification of outbreaks or unusual occurrences, which are, in greater frequency, investigated by epidemiologists from the Field Epidemiology Training Programme.

### 9.2.3 Monthly reporting from hospitals

A further reporting system (SRS) involves monthly reports of diseases from hospitals. While it would seem that data from this system should show some correlation with those from the sentinel hospital reporting system, there are major variations. This is also the case for the provincial distributions shown in Annex 12.

### 9.2.4 Monthly report from puskesmas

The source of information for this system, operated by the Directorate General of Community Health, is the puskesmas daily register of patients or patients' individual reports.

The puskesmas keeps one copy and sends the other copies to kabupaten, province and central levels. With completeness of reporting greater than 90% this system has potential. For surveillance the main disadvantages are the lack of accurate information on deaths and on the number of cases occurring outside the puskesmas.

Table 9.1 : Cases and deaths of vaccine preventable diseases reported through various surveillance systems, 1961 - 1965

System	Year	reported via													
		Diphtheria		Measles		Pertussis		Polio		All Tetanus		Neonatal Tetanus		Tuberculosis	
		C	D	C	D	C	D	C	D	C	D	C	D	C	D
A. Weekly reports puskesmas	1965	343	18	21071	136	1323	26	112	0						
B. Monthly hospital reporting	1961	2293	221	2475	232	336	17	160	5	1652	1350	1476	135		
	1962	3315	264	3021	234	216	5	86	0	1637	1604	617	617		
	1963	3767	281	3133	207	173	7	122	2	1626	1163	586	556		
	1964	3332	223	2811	115	236	7	84	2	1523	1554	447	447		
	1965	1761	103	1981	71	436	14	73	1	1651	1601	524	524		
C. EPI sentinel hospitals	1961	262		142		47		19		356		179		506	
	1962	362		122		41		20		672		1276		552	
	1964	324		756		44		21		839		410		1055	
	1965	282		471		65		34		823		1232		952	
D. EPI sentinel puskesmas	1961	45	11	221		379	0	33	0			39	21		
	1962	45	2	4356	42	122	0	42	0			17	9		
	1963	104	12	4419	42	562	0	32	0			39	21		
	1964	66	7	6472	32	540	0	19	0			36	24		
	1965	45	4	3997	36	171	1	3	0			33	15		

5.2: Diarrhoea cases and deaths reported through various surveillance systems, 1951 - 1965

diarrh.wks

yr	Weekly puskesmas reporting (all ages)			Monthly hospital reporting (all ages)			Integrated health reporting <sup>a)</sup>					
	C	D	b) DCR	C	D	b) DCR	C		D		b) DCR	
							C	D	C	D	C	D
51	16,655	392	23.5	80,445	2,151	26.9	244,510	109	0.44	1,493,124	1,452	0.97
52	51,591	1,664	32.3	92,192	2,613	28.6	766,074	272	0.38	2,434,615	1,952	0.81
53	24,450	528	21.6	129,322	2,855	22.1	256,128	83	9.32	2,924,048	1,366	0.47
54	17,543	332	18.7	71,620	1,561	22.1	1,015,133	217	0.21	4,032,707	1,645	0.41
55	152,656	470	0.9	204,878	2,070	10.1	1,375,162	481	0.35	3,552,667	1,278	0.36

This information was collected through the integrated health reporting system but compiled at provincial level by the responsible CDC.

Reported Death to Case Ratio (deaths per 1000 cases). This cannot be considered a true case fatality rate due to uncertainty concerning relative efficiency of death and case reporting as shown by the wide variation in rates.

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In most provinces the CDC staff request access to this data through individual arrangements with the community health staff. In some kabupaten and provinces it is the only source of more or less reliable incidence data.

#### 9.2.5 Sentinel reporting systems

Hospitals in each province have been designated as sentinel reporting sites for vaccine preventable diseases under a system introduced in 1982. In 1985, however, only 43% of expected reports were received and there is a high rate of delayed reporting.

An additional sentinel reporting system for diarrhoeal and vaccine preventable diseases exists using selected puskesmas in each province. Since they do not necessarily cover the same populations it is difficult to make comparisons between the two sentinel systems.

#### 9.2.6 Integrated health reporting system

This computerized system operated by the Directorate General of Community Health, incorporates all diagnoses for puskesmas and ambulatory hospital attendances. It is not, however, conducive to surveillance functions due to the unevenness of reporting and the delays in data entry and processing.

#### 9.2.7 Local area monitoring system

Recently CDC has introduced this new concept in an attempt to make available data more useful in monitoring programmes. It provides a step by step method for collating and analysing trends in data already being collected. Following its testing in Bali the system is gradually being expanded. To be effective those responsible, respectively, for surveillance and programme operation will need to improve their communication.

#### 9.3 Completeness of reporting

The expected and received numbers of reports for four surveillance systems in 1985 are shown in Annex 13. Reporting completeness for provincial to national level reporting ranged from 30 for the CDD sentinel system to 71% for weekly reporting from the puskesmas. These data give no indication of completeness of reporting at lower levels.

#### 9.4 Feedback to reporting units

The six review teams that visited the provinces reported a lack of feedback concerning the reported data. This discourages the reporting units from providing quality data, and therefore frustrates the system. The EPI-D and the epidemiology bulletin are the only regularly scheduled feedback and they are frequently not of direct relevance to the reporting units.

#### 9.5 Reported cases and deaths due to EPI target diseases and diarrhoea

Data collected on vaccine preventable diseases and diarrhoea through various surveillance systems for the years 1981-1985 have been presented in Table 9.1. and 9.2

Examination of the tables suggests that different systems are more suited to different disease entities. Inconsistencies in trends between systems make interpretation and useful analysis of trends difficult.

The decreasing trend in reported diarrhoea death-to-case ratios for all age groups as shown in the last column of table 9.2 has been cited as evidence of programme impact, however, variations in reporting completeness under reporting of deaths and lack of a trend for the 0-4 years age group cast doubt on this interpretation.

Based on data collected during 1985/86 a recent report estimated current morbidity and mortality levels for the vaccine preventable diseases in spite of an active immunization programme. These data are presented in table 9.3.

Table 9.3 Diseases preventable by immunization. Estimated cases and deaths without intervention and at current programme coverage levels.

Disease	Estimated cases of deaths :					
	Cases would occur without intervention		Cases are averted by current intervention		Cases continue to occur	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Neon. Tetanus	100,000	51,200	29,350	26,400	70,650	35,400
Measles	1,530,000	45,500	1,014,400	30,140	515,600	15,360
Pertussis	1,580,000	20,400	1,338,200	5,700	2,411,800	30,700
Diphtheria	51,500	5,100	24,100	2,400	26,400	2,700
Childhood TBC	5,100	4,500	1,500	1,400	3,600	3,100
Polioarthritis	5,000	500	2,700	200	2,300	200

From Foster S.O., Internal EPI Review (unpublished)

Assumptions underlying this table are presented in Annex 14.

#### 9.6 Cholera surveillance

A summary of data concerning suspected cholera cases for the years 1979-1985 is presented in Annex 15.

#### 9.7 Diarrhoea, morbidity, mortality and treatment surveys

Two national diarrhoea morbidity, mortality and treatment surveys have been conducted using the standardized WHO methodology, in 1983 and 1985. Unadjusted annual diarrhoea incidence rates (episodes per child per year) were found to be 2.8 and 2.6 for infants and 1.9 and 2.2 for children aged 0-4 years, respectively. For West Java Province a 1985 survey reported similar rates, 2.1 and 2.0 for infants and under-fives, respectively. (see table 9.4)

For infants, diarrhoea associated mortality rates were found to be only 3.0, 6.8 and 3.0 per 1000 infants in the 1983 National, 1985 National and West Java Province surveys. For children 0-5 years rates were reported as 1.6, 2.0 and 1.6, respectively. As the national Infant Mortality Rate was reported as 97/1000 live births in 1980 and significantly higher in West Java at 129/1000, the low rates found in the diarrhoea surveys are believed to be due to inadequate training and supervision of surveyors due to manpower,

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budgetary and time constraints. This most likely led to inadequate interviews with mothers concerning death during the past year. Morbidity data, using the 2-week recall period, would appear more reliable.

In the West Java survey the average duration of a diarrhoea at the time of the survey was found to be 4.3 days suggesting an overall duration of 8-9 days.

The 1985 national survey data indicated that a large proportion (46%) of families seek care for their children with diarrhoea at health facilities while 23 percent treat their children themselves. This is consistent with the high use of "enterovioform" pills.

The 1985 West Java survey found relatives, friends and neighbours to be the most common source of information on ORS and medicines for treating diarrhoea (51%). Health care personnel were consulted frequently (39%) while village cadre (1.7%) and village leaders (<1%) were of minor importance. Small shops and health care personnel were found to be the leading sources of medicines with no rehydrating potential (56% and 34%, respectively). Fully 77 percent of cases used these drugs, with or without ORT. Hydroxyquinoline containing medicaments and antibiotics were most commonly used.

Marketing research surveys in West Java (1985) by Survey Research International revealed seven common names for loose stool which varied in frequency of use by the age of the child-patient. OTC drug retailers tended to sell pills for early diarrhoea but recommend physician treatment after several days of illness. They rarely advocated use of Oralit. Corresponding attitudes were evidenced by consumers. Most caretakers (78%) expect to be given pills and many (36%) injections as treatment at the puskesmas, while few (10%) expected Oralit.

Table 9.4 Diarrhoeal diseases morbidity, mortality and treatment survey results, 1983 - 1986

	1983 National Survey <sup>b</sup>	1986 National Survey <sup>c</sup>	1985 West Java Survey <sup>d</sup>
Annual incidence rate (episodes/child):			
- infants	2.8 (1.1 - 6.6)	2.6	2.1
- 0-4 years	1.9 (0.7 - 5.7)	2.2	2.0
Source of treatment (percent):			
- health facilities	65.5 (38.5 - 88.5)	57 <sup>e</sup>	NA
- pharmacy	13.6 (1.1 - 33.1)	24 <sup>f</sup>	NA
- traditional	6.0 (0.5 - 16.2)	8	NA
- self treatment	15.0 (1.9 - 30.6)	13	NA
Treatment (percent):			
- ORS (Oralit)	18.0 (1.9 - 26.11)	52.5 (16.7 - 88.5)	17.4
- Salt/sugar (LGG)	4.3 (0.8 - 9.2)	7.4 (0.0 - 40.0)	7.1
- Home fluids	NA	10.0 (0.0 - 52.5)	16.7
- Traditional	13.5 (3.6 - 24.1)	NA	NA
- Intravenous fluid	NA	NA	< 1.0
- Antibiotics	NA	NA	11.0
- "Enterovioform"	64.3	NA	34.0

<sup>a</sup> Figures in parentheses are ranges of figures for individual provinces.

<sup>b</sup> 1983 15 provinces, 1 kabupaten each (30 cluster sample), n = 13,648 (infants), n = 64,797 (0-5 years)

<sup>c</sup> 1986 12 provinces, 23 kabupaten (30 cluster sample) n = 2,035 (infants), n = 7,993 (0-5 years)

<sup>d</sup> 1985 West Java province survey, 6 districts stratified by high, middle, lower IMR based on 1980 survey (2 districts each) with 30 clusters for each. n = 3750 (0-5 years)

<sup>e</sup> 46% health centre and 11% posyandi:

9.8 EPI disease surveys

In addition to routinely collected data, various special surveys have been conducted to determine with greater specificity the occurrence of EPI disease. Results of neonatal tetanus surveys are shown in table 9.5.

Table 9.5 Results of neonatal tetanus surveys in Indonesia

Area	Births	Neonatal tetanus deaths	Neonatal tetanus deaths per 1000 live births	
			12 month recall	4 month recall
Jakarta	2310	16	6.9	
10 provinces	4971	53	10.7	
NTE	4779	79	16.7	
NTT	4769	22	4.6	10.1
Aceh	4839	101	20.9	27.5
West Sumatera	4769	42	8.8	13.3

A survey on paralysis due to poliomyelitis was conducted in 1976 in five provinces. A prevalence rate of 1 per 1,000 study population among a total of more than 51,000 children aged 6 - 14 years surveyed was found. Similar surveys were conducted during the years 1977 - 1980. Among a total of more than 146,000 children aged 0 - 14 years surveyed, 237 cases occurred, a prevalence of 1.6 per 1,000 study population.

### 9.9 National household surveys

Two national household surveys have been carried out, in 1980 and 1985. Selected preliminary findings of the 1985 survey were compared with those from 1980 as shown in table 9.6. Interpretation of the differences between the two surveys is difficult as the sampled populations are not directly comparable, the 1985 sample being more biased toward population of lower health status. The 1985 survey results do, however, indicate clearly that diarrhoea, tetanus and measles remain prominent among the causes of death of young children.

Table 9.6 Selected findings of the 1980 and 1985 <sup>a</sup> National Household Surveys

Cause of death	Percent of all deaths detected			
	<u>Infants</u>		<u>1-4 years</u>	
	1980	1985	1980	1985
Diarrhoea	24	15	37	26
Tetanus	20	19	2	2
Measles		8	1	25

<sup>a</sup> Preliminary results

### 9.10 Field Epidemiology Training Programme (F.E.T.P.)

Since 1984 this joint effort by the Government of Indonesia, WHO and the US Government has aimed to improve the supply of trained epidemiologists in Indonesia. So far the FETP has trained 9 epidemiologists who are currently employed in various programmes of the Ministry of Health. Six more are currently receiving training in Jakarta in basic skills of epidemiology, surveillance, disease outbreak investigation and improved disease control. More involvements of the FETP in CDD and EPI activities would benefit both the trainee and the programmes.

### 9.11 Field visit findings

Reviewing records at individual provinces and kabupatens yielded few objective findings on the efficacy of surveillance. However, it was apparent that there were many deficiencies in the surveillance systems at all levels. These are reflected in the key issues stated below.

In one province over 600 cases of polio were recently recorded, mainly in two kabupatens, however the national report for that year showed only 1 case. No effort had been made by the provincial team to evaluate the polio situation; it was assumed to be a reporting error. Similar discrepancies were found elsewhere.

Lack of feedback was reported as a major problem. Health staff also reported that apparent duplication of reports was a disincentive to reporting. Most kabupaten level offices visited had graphic displays of immunization coverage, but there was little evidence that this was used to evaluate or change programme activities.

### 9.12 Key issues

9.12.1 There is a multiplicity of reporting systems incorporating data on EPI diseases and diarrhoea. Problems include:

- considerable overlap and duplication of effort
- incompleteness of reporting
- major discrepancies in data generated by different systems (compounded by use of different denominators)
- lack of definition and understanding of the objectives of each system
- major difficulties in timely analysis of data in a manner which would allow programme monitoring and improvement.

9.12.2 Most data collected are not used at the level of collection and delays are experienced in analysis at all levels. Feedback, to the extent that it exists, is not directed towards stimulating progress toward programme objectives and targets.

9.12.3 Reports of unusually high numbers of cases of some diseases (e.g. poliomyelitis) are not always investigated, often being dismissed as recording errors.

9.12.4 The changing epidemiology of poliomyelitis and measles which can be expected with increasing immunization coverage will demand a more sensitive surveillance system and better outbreak investigation.

9.12.5 The full potential of the integrated health reporting system is not being realized due to major problems in reporting and analysis.

9.12.6 The concept and use of integrated sentinel reporting sites for EPI and CDD are not well developed.

### 9.13 Recommendations

9.13.1 The objectives of disease reporting should be clearly defined and the number of reporting systems should be reduced to the minimum necessary, to avoid duplication of effort and difficulties of analysis and interpretation.

9.13.2 Ultimately all communicable disease surveillance and outbreak investigation should become the responsibility of one body within the CDC. Integration of EPI disease and diarrhoea surveillance, in the near future, should be considered.

9.13.3 Surveillance should be geared towards timely analysis of data to monitor and improve programme performance. Major attention must be paid to developing a system of prompt feedback of consolidated information that will guide appropriate actions and encourage continued cooperation.

9.13.4 Immediate reporting of a small number of selected diseases up to 4, including poliomyelitis should be required so that immediate investigation can be undertaken. Improved surveillance of poliomyelitis is essential if its elimination from Java is to be achieved and confirmed.

9.13.5 Increased emphasis should be placed on combined sentinel sites for reporting both EPI diseases and diarrhoea. A limited number of sites that are representative and stable should be utilized. Particular attention should be paid to initial training of staff responsible for reporting and to feedback so that their continued enthusiastic cooperation will be assured.

9.13.6 The Field Epidemiology Training Programme should be strengthened in line with the recommendations of the September 1986 evaluation. Consideration should be given to increased utilization of the staff and graduates of this programme in disease control activities at the central and provincial levels. Supervision from the CDC should continue.

9.13.7 Health staff trained in epidemiology should be assigned to posts where their skills can be utilized.

9.13.8 Less emphasis should be placed on diarrhoea outbreak investigation. Efforts made to control outbreaks should focus on stimulating permanent changes in diarrhoea case management and control.

9.13.9 In line with modern public health concepts the activities of the port health authorities should be reviewed and the possibility of more efficient use of resources for other surveillance purposes should be considered.

9.13.10 Consideration should be given to an effort, throughout the health services, to discard reports that are no longer of use or are duplicative.

10. Health education and information (see also section 11)

There is a national policy commitment to health education programmes, but this policy does not specifically highlight either EPI or CDD.

There has been a significant increase and qualitative improvement in information and communication activities related to immunization and the control of diarrhoeal diseases. However, the production of materials relating to CDD is lagging behind that of EPI.

10.1 National level linkages

The EPI and CDD programmes have established links with various governmental and non governmental bodies including the Family Welfare Movement (PKK), Family Planning Coordinating Body (BKKBN), the Family Nutrition Improvement Programme (UPGK), the Department of Home Affairs, the Consortium of Health Sciences, and the Ministry of Religion. Rotary Clubs are expected to become more involved, particularly in urban areas, in 1987.

Most of these organizations are involved to some extent in the planning, production, distribution and evaluation of health education and information materials, however, coordination is inadequate resulting in overlap or duplication.

10.2 Health education materials

A wide variety of audio, visual and audio visual items have been, and are being produced. These include printed materials, national and local radio and TV spots, TV puppet programmes, slide sets, cassettes, films and videos. Manuals for use by health staff, teachers and others have also been developed.

Emphasis has been greatest on production, less on distribution, and least on evaluation. Design of materials has not always given attention to the attitudes, practices and sources of information of the intended audiences. Distribution has been concentrated in only 5 provinces. In 1986 alone, at the national level over 280,000 posters, 34,000 flipcharts, 40,000 manuals and booklets, and 170,000 health cards were produced that dealt with immunization, diarrhoeal disease control, child nutrition, and water supply and environmental sanitation.

The majority of resources to assist production have come from UNICEF (Rp. 112 million in 1985, Rp. 70 million in 1986) through the Health Education Division, but other agencies, governmental units and NGOs have been involved. This year the Family Health Directorate has produced simple 3-volume booklets for cadres and TBAs.

### 10.3 Health education activities

There has been an improvement in public awareness of immunization and oral rehydration therapy, largely achieved through health staff and cadres, particularly those of the PKK. An excellent example of this was the communications role of over 20,000 PKK volunteers in the successful TT immunization of 400,000 mothers in Lombok in 1986. (see also section 11.1). Radio and TV have contributed little to date.

For primary schools there is a standard basic curriculum involving the five components of the integrated health programme. This places greater emphasis on EPI than on CDD. A manual on EPI has been prepared and distributed for teacher training.

Special attention in recent years has been paid to increased input into medical services. The Health Education Division's pilot EPI/CDD project involved 17 hospitals in 9 provinces in 1985 and is being extended into 50 hospitals in 20 provinces this year. Increased efforts are being made to increase awareness of EPI and CDD programmes through the various professional organizations.

#### 10.4 Communications research

Increasing emphasis is being placed on operations research to determine health knowledge and practices, and communication channels among targetted audiences of health workers, cadres and the community. The EPI normally commissions university departments to undertake this work. In 1986, studies were done on the reasons for drop-outs, factors affecting coverage, the attitudes of mothers regarding immunization and health services in several areas, and the role of NGOs in immunization. The most sophisticated communications planning is being done to support the West Java intensified CDD project. This has involved more than one dozen communication studies designed to improve the development, delivery and reception of messages on ORT. Private sector survey research and advertising firms have been used for several of these.

#### 10.5 Field visit findings

Lack of information remains the most common reason for non-immunization or non-completion of immunization. Although the acceptance of ORS has greatly increased, the demand for inappropriate drugs to treat diarrhoea remains strong among mothers and health professionals alike.

Despite the great number of posters and leaflets produced, distribution to the health centre level and below is uneven, as is their display in public areas and their use in health education sessions with mothers.

In successful posyandu, health education activities are sometimes hampered by large numbers of mothers and children and poor control of their movement through the various services.

Verbal explanations of ORS preparation are more common than actual demonstrations or supervision of mothers administering ORS.

Insufficient use is made of the KMS growth charts as a counselling tool for mothers and inadequate attention is given to messages on nutrition, personal hygiene, food handling, and water supply and sanitation as important elements of CDD.

## 10.6 Key Issues

- 10.6.1 Existing mechanisms for coordinating the planning, production and distribution of EPI and CDD health education materials and for developing an integrated communication strategy need strengthening. Coordination does not yet extend to all groups involved.
- 10.5.2 The development of health education materials does not take into account adequately the attitudes, practices and sources of information of the intended audiences. Few materials are adequately pretested.
- 10.5.3 The principal reason for immunization failure is mother's lack of information.
- 10.5.4 Understanding of the use of fluids to prevent dehydration and of the need to continue feeding during diarrhoea is limited. Inappropriate drugs remain in strong demand in the treatment of diarrhoea.
- 10.5.5 There is uneven awareness and understanding among health professionals of several critical EPI and CDD issues, which reduces their effectiveness as communicators with mothers.

## 10.6 Recommendations Coordination

- 10.6.1 The integrated Family Health Steering Committee should give particular attention to the coordination of EPI and CDD activities. Consideration should be given to the formation of a Communications Working Group within the Integrated Family Health Task Force to coordinate health education activities of the technical working groups. A similar coordination mechanism should be developed at the provincial level involving all relevant bodies.

### Communications planning

- 10.6.2 Development and implementation of health education messages and materials should give more emphasis to:
- regional variations in socio-cultural characteristics and language
  - considering usual sources of information of the target audience
  - adequate pretesting before production/dissemination
  - routine evaluation of effectiveness

Findings of audience research and evaluation should be widely shared.

10.6.3 Consideration should be given to sub-contracting of competent public and commercial groups to develop and implement communications activities. Greater emphasis should be given to the development of short clear radio and TV spots.

10.6.4. Communication with community members

Individual face-to-face communication between health workers/volunteers and community members should be stressed by the EPI and CDD Programme as the principal health education medium at the village level.

The training of health workers and volunteers should include techniques of counselling and educating community members.

10.6.5 School children should be further involved in the registration of children eligible for immunization, and in the dissemination of information on EPI and CDD within their families.

10.6.6 Quantities of printed materials should be sufficient to cover needs down to the puskesmas and posyandu levels. When available they should be prominently displayed in appropriate places.

10.6.7 Information on immunization should stress the need to complete the full series of vaccinations, as well as the possible reactions to vaccinations.

10.6.8 ORS preparation should be demonstrated as well as described during health education sessions, and mothers should be given an opportunity to prepare the solution under supervision. Each contact for treatment of diarrhoea should be exploited as an opportunity for health education.

Communications with health professionals

10.6.9

Clear policy statements need to be communicated to all public and private sector health professional, particularly concerning:

- diarrhoea case management
- specific actions that can be taken to prevent diarrhoea
- the importance of tetanus toxoid immunization of pregnant women
- the immunization schedule
- contraindications to immunization
- the concept of "missed opportunities" for immunization

Professional organizations should be enlisted to support application and dissemination of this information.

11. Social mobilization and community participation (see also section 10)

In the last two years there has been increasing effort at intersectoral and NGO involvement in programmes aimed at improving community participation.

Possibly the major factor in the success of many aspects of the CDD Programme and the EPI has been the active and effective role of the various community based organizations.

11.1 Achievements

President Soeharto has issued a public statement expressing support for the development of the new integrated family health programme and a joint statement of support for this programme has been made by the Ministers of the Interior and Health, and by the head of BKKBN.

The most successful development has been the nation-wide posyandu project through the PKK, local government and LKMD village development council. Higher rates of coverage of immunization and greater knowledge and use of ORS has occurred in those kecamatans where this programme is strongest, and where supervision and support for its cadres is greatest. The training programme for cadres has been developed by the Directorate of Community Participation and the Nutrition Programme.

In some instances community participation has led to spectacular success. One example of this is the role of the women's organizations, local government and LKMD in increasing participation in the tetanus toxoid mass programme in NTB. Another example is the collaboration with the Ministry of Religion through the local religious organizations in parts of Java and other provinces to require a TT immunization certificate before marriage. Other major programmes include the special urban health education project using volunteers, that is being piloted in 5 cities, supported by UNICEF and WHO. Intersectoral cooperation has been particularly successful in some areas where "sweeping" activities have been instituted to increase immunization coverage by short-term intensive campaigns.

An extensive CDD social mobilization project in West Java is being funded by USAID, UNICEF, WHO and local pharmaceutical companies.

Additional support has been provided through the 'Dokter kecil' (little doctor) programme in some primary schools and through the Boy Scouts and national youth organization (Pemuda).

## 11.2 Key Issues

11.2.1 There is not yet a high level of awareness of, and support for, community participation at all levels of the national administration.

11.2.2 The enormous potential for effective collaboration through joint programmes with women's and religious organizations, local government and other sectors and NGOs has not yet been fully exploited. (Relatively few mothers interviewed said that cadres are their source of information about CDD/EPI).

11.2.3 While initial enthusiasm by PKK, religious leaders, and others in implementing posyandu is high, many volunteers drop-out or work passively. This is, in part, due to lack of regular attention and encouragement by health staff, some of whom visit posyandu sessions rarely, others who use them only to perform specific health functions. Publicity is lacking concerning the role and effectiveness of the better programmes in which cadres are involved.

11.2.4 There appears to be relatively little involvement of the TBAs (trained and untrained) in CDD and less than their potential involvement in the EPI programme.

11.2.5 The cadres being largely volunteers, the 'rewards' for productivity need to be developed. Little progress appears to have been made in this area in recent years.

11.2.6 There is a lack of effective supervision and simple, practical, continuing education of cadres. This is particularly related to a lack of interest by professional health staff.

## 11.3 Recommendations

11.3.1 Following the recent statement by the President concerning his strong support for the integrated programme, each governor and each bupati should be requested to issue an "instruction of support" for the EPI and CDD Programme.

- 11.3.2 Each administrative leader should summarize the efforts made at quarterly, or more frequent, intersectoral meetings, and urge all members toward further action related to national objectives.
- 11.3.3 To assist the above, the motivation of the senior health officer at each level needs to be increased. He should provide the relevant health information for such meetings.
- 11.3.4 Efforts should be made to consolidate the work of existing posyandu and to promote new ones. Publicity concerning the effectiveness of village cadres should be increased.
- 11.3.5 Efforts should be made to increase collaboration with the Ministry of Religion to ensure that TT immunization prior to marriage becomes a routine requirement, throughout the country, before the end of the current 1st Five Year Plan.
- 11.3.6 Village cadres (PKK and KPD) should demand and receive supervision and continued training. Teaching modules and simple manuals need to be developed. To ensure doctors at puskesmas and kabupaten CDD/EPI staff can train cadre effectively, they should receive teacher training.
- 11.3.7 Urgent attention should be given to developing effective, simple and practical check-lists for supervision of village cadres by puskesmas doctors. The involvement and training of the existing field workers from the family planning programme may be able to be used in this supervision.
- 11.3.8 Each dokabu (kabupaten medical officer) should ensure that each puskesmas doctor has and implements a plan of applied, simple continuing education and supervision of village cadres, and the increased use of 'dokter kecil' programmes.
- 11.3.9 Where the issue of a high drop-out rate by village PKK cadres is a problem, it should be studied immediately and remedies found.

11.3.10 Methods of reward for the successful completion of cadre activities should be developed and implemented, e.g., for greater than 80% immunization coverage and correct treatment of diarrhoea. These could include certificates, scarves or badges, and be related to increased status e.g. Hari Ibu awards. Consideration should also be given to providing appropriate uniforms. Awards should also be made to the puskesmas and kabupaten which shows the most improvement each year.

11.3.11 The recording system at the posyandu should be simplified. Target age groups in each posyandu area may be listed in birth cohorts. A regular function of the community volunteers should include maintenance of birth cohorts with updating of births and deaths. This will facilitate identification of eligible children for different interventions.

12. Research

No attempt was made to review or summarize the vast amount of research conducted in relation to CDD and EPI. Much of this research is documented in the Indonesian language.

12.1 Research achievements

The need for more and better studies concerning operational, managerial and epidemiological issues has been recognized by both programmes. Ministry of Health staff participated in a workshop on Child Survival at the University of Indonesia in November 1986. This workshop was to determine research priorities to advance the integrated health service approach (table 12.1). Participation by numerous non-governmental organizations and universities in the conference demonstrates interest by many groups in the conduct and results of research efforts. A national workshop in Surabaya, also in 1986, delineated broad areas for CDD Programme operations research (Table 12.2). A large amount of research in communications and other aspects of programme implementation is being carried out in association with the intensified CDD programme in West Java.

12.2 Key issues

- 12.2.1 Problem-solving research has not yet been adequately applied to overcoming constraints to programme implementation.
- 12.2.2 No central source of complete published and unpublished research results exists to facilitate programme planning and further research development.
- 12.2.3 There is lack of guidance to medical faculties and other institutions concerning topics for research proposal development and implementation related to EPI and CDD activities.

### 12.3 Recommendations

Relevant operational, clinical and epidemiological research geared to improving programme activities should be stimulated. This should occur through active involvement of government programme staff, university researchers and, where appropriate, members of the international scientific community.

Organizations such as the PKK should be involved in problem solving research related to programme implementation in the community.

Suggested research topics, in addition to those already formulated at the previously mentioned national workshops are listed below.

Table 12.1: Partial listing of research priorities for the integrated health services as identified at a national workshop (Jakarta 1986)

1. Community participation in posyandu.
2. Drop-out of village health volunteers.
3. Knowledge-attitude-practice survey for each province.
4. Local leadership role in promotion of the posyandu.
5. Determination and use of locally available resources.
6. Knowledge-attitude-practice of providers.
7. Mechanisms for inter-sectoral collaboration.

Table 12.2: Research areas for CDD identified at a national workshop (Surabaya 1986)

1. The role of the posyandu in CDD activities.
2. Clinical characteristics of diarrhoea cases seen in hospital and community settings.
3. Nutritional management of diarrhoea.
4. Mortality following rehydration.
5. KAP surveys for each province.
6. Preventive strategies in diarrhoeal control.
7. Chronic diarrhoea.
8. Home fluid vs. ORS (efficacy, use).
9. Age specific ORT regimens for young children.
10. Epidemiology of diarrhoeal disease.
11. Vaccine trials e.g. typhoid, measles.
12. Improved indicators for programme performance.

### 12.3.1 Suggested CDD-related research topics

#### Higher priority

- Improved indicators and monitoring systems for CDD service delivery.
- Community use and clinical efficacy of home fluid solutions (those currently as well as alternatives).
- Determination of the burden of diarrhoeal disease in the community, including differentiation of dysentery and persistent diarrhoea.
- Risk factors for severe dehydration.
- Printed materials for teaching mothers to prepare ORS.
- Methods for changing pharmacists/drug sellers sales patterns away from antidiarrhoeal drugs towards ORS.
- Cost effectiveness of improved case management in hospitals.
- Effectiveness of different approaches to face-to-face education during diarrhoea case management.
- Feasibility of a single ORS distribution point in each province.

### 12.3.2 Suggested EPI-related research topics

#### High priority

- Methods to overcome missed opportunities for immunization.
- Alternative methods for reducing the incidence of neonatal tetanus.
- Methods of using TBAs to give tetanus toxoid.
- Umbilical cord care practices.
- Role of health facilities in EPI disease transmission.
- Alternative methods to achieve sterile immunization.
- Alternative approaches to increasing coverage in low coverage areas.

#### Others

- Seroconversion studies for OPV given at birth and operational aspects of this strategy.
- Delayed measles-associated morbidity and mortality.
- Risk factors for EPI disease morbidity and mortality.
- Effects of immunization on mildly ill children.

12.3.3 Suggested research topics related to both programmes

- Improved sentinel surveillance and local area monitoring methods.
- Cost effectiveness of different training methods for health staff and cadres.
- Cost effectiveness of different health education and communication approaches.
- Alternative incentives/schemes for cadres.
- Effective ratio of cadres to population to achieve adequate coverage.
- Methods and impact of supervision of posyandu.
- Relative effectiveness of group and individual health education in posyandu.
- Improved design of health education materials.

13. Urban issues in EPI and CDD

There is no identifiable urban strategy, but rather the overall national strategies are expected to apply to urban areas. From visits to a limited sample of health facilities during the review it appeared that great problems exist in the urban area of Jakarta. Reliance is placed upon the availability of curative services to provide preventive care and this strategy is clearly not working. The curative services rarely pay attention to immunization when children present with a complaint.

The large turnover in the puskesmas makes organized health education difficult and appears to prevent other than cursory record keeping. Review of records of diarrhoea cases showed that often the diagnostic code number alone was recorded and rarely details of the treatment provided.

In the places visited the mechanics of the EPI programme were in place: vaccine supplies, schedules, equipment, records of coverage, etc. However, appreciation of the use of the data collected to improve coverage appeared limited.

During the household survey in Jakarta few respondents mentioned the posyandu as a source of immunization advice and there appeared to be little public awareness of the need for immunization.

Other observations made are reflected in the following key issues.

13.1 Key Issues

- 13.1.1 National priorities and operational procedures are not always adapted for application to metropolitan areas.
- 13.1.2 Mothers with sick children (other than minor complaints) often by-pass the puskesmas and attend outpatients clinics in hospitals where preventive services are not always offered.
- 13.1.3 In urban areas posyandus are not as significant a factor as they are in rural areas in the delivery of immunizations and advice and treatment for diarrhoea.

13.1.4 The use of non-sterile needles and syringes in Jakarta is a particularly hazardous situation because if AIDS is introduced into Indonesia, Jakarta is at particular risk (tourism, transvestite prostitutions, etc.)

13.1.5 The crowded urban environment is more conducive to explosive outbreaks of most vaccine preventable disease than are rural areas.

13.1.6 Ease of communication should make surveillance easier, but the surveillance system in Jakarta is functioning at a low level of efficiency.

13.1.7 Organized private sector medicine enjoys greater accessibility and influence in the urban area. About 25% of immunizations are reported to be given by private physicians. The review found the private sector cold chain to be deficient (see section 7).

13.1.8 Urban physicians do not believe neonatal tetanus is a problem, although at least 170 cases were reported to have occurred in Jakarta in 1985, and on occasions do not offer, or refuse to give, TT to pregnant women.

## 13.2 Recommendations

Many of the issues relevant to urban areas are covered by recommendations in other sections of the report. Further specific recommendations follow.

13.2.1 Government and private sector medical practitioners in urban areas should be the target of an intensive education campaign, with particular stress on :

- correct diarrhoea case management
- the importance of TT immunization for women, even in urban areas
- the absolute necessity for sterile techniques for immunization

Efforts should also be made to inform pharmacists and drug sellers.

- 13.2.2 EPI and CDD activities in Jakarta should be integrated so that logistics, training, supervision, surveillance and assessment can be more easily managed. Since hospital outpatient departments and puskesmas should be providing both diarrhoea case management and immunization a single focus of supervisory responsibility and accountability at the provincial and kabupaten levels is desirable.
- 13.2.3 Special efforts should be made to provide preventive health services in all urban hospitals. Space should be allocated at all hospitals for oral rehydration to be demonstrated and administered before the patient leaves the hospital.
- 13.2.4 Consideration should be given to encouraging urban health facilities to set their own targets, not necessarily based on administrative divisions of responsibility, so that they can assume more responsibility for them. Coverage surveys should be recognized as the most appropriate evaluation method for the EPI in the urban areas.
- 13.2.5 The enormous potential of the Infection Diseases Hospital diarrhoea training unit for training health staff of Jakarta should be more fully exploited. Appropriate funding should be sought from central, provincial and external sources.
- 13.2.6 An epidemiologist from the FETP should be assigned to the Jakarta municipal health office under supervision from the CDC.

14. Results of EPI coverage surveys conducted during the review

EPI cluster surveys utilizing the standard EPI cluster survey methodology of 30 clusters of 7 children (15-23 months of age) each were conducted in the six provinces selected for in-depth review.

The detailed findings of the surveys are presented in Annex 16 and are summarized in the following tables and text.

Table 4-1. Immunization coverage of children 15 - 23 months of age (Percent immunized based on card or history)

Vaccine	East		West		South	South-East
	Jakarta	Java	Java	Aceh	Sulawesi	Sulawesi
DPT1	78	79	82	42	62	56
DPT2	50	72	66	27	43	40
DPT3	50	60	41	13	32	26
OPV1	74	78	68	41	41	34
OPV2	60	72	50	26	30	21
OPV3	49	59	34	13	23	15
MEASLES	25	55	29	10	28	18
BCG	77	78	81	42	55	56
BCG (SCAR)	61	67	72	39	48	45
Fully	25	50	23	9	18	12
Partially	60	30	61	40	46	48
Not Imm.	16	20	16	51	37	41
Drop-out rate						
DPT1-DPT3	36	24	50	69	48	54
OPV1-OPV3	34	24	50	68	44	56

These results help to document the progress in immunization coverage since the last EPI review in 1982 when only 2 doses of DPT were used and measles and OPV immunization had been introduced only on a very limited basis. These findings were compared to reported immunization coverage based on doses administered and, in general, were found to be consistent with the routine reporting system. The high drop-out rates between first and third doses for both DPT and OPV contribute to the fact that less than 51%

of surveyed children were fully immunized (received 1 dose BCG, 1 dose measles, 3 doses DPT and 3 doses OPV).

Table 14.2 Proportion of children with an immunization card and sources of immunization

Source	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
Cards <sup>a</sup>	49	80	62	23	54	13
Sources: <sup>b</sup>						
Hospital	18	2	2	8	15	15
Puskesmas	23	28	29	61	22	9
Outreach	35	69	62	30	61	76
Private	24	1	7	2	2	0

<sup>a</sup> Percent of all children surveyed

<sup>b</sup> Percent of all vaccinations received

Outreach activities were found to be important sources of immunization. The potential of hospitals and the private sector in immunization is not being fully utilized. Also there appears to be limited use and retention of immunization cards.

A survey of mothers with children less than 15 months of age was concurrently conducted to assess mothers' tetanus toxoid immunization status, antenatal care, place of delivery and person in attendance at delivery.

Table 14.3 Tetanus toxoid immunization of mothers with children less than 15 months of age.  
(Percent immunized based on card or history)

Vaccine	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
TT1	29	59	77	54	47	39
TT2	22	46	69	44	33	32
Drop-out rate						
TT1-TT2	24	22	10	19	30	18

Table 14.4 Proportion of mothers with an immunization card and sources of immunization

	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
Cards <sup>a</sup>	1	29	19	10	15	13
Sources <sup>b</sup>						
Hospitals	17	3	5	3	17	30
Puskasmas	24	60	66	65	58	26
Outreach	28	29	16	21	22	44
Private	31	8	13	11	3	0

<sup>a</sup> Percent of all mothers surveyed

<sup>b</sup> Percent of all vaccinations received

Table 14.5 Antenatal and delivery care of mothers with children under 15 months of age.  
(Percent of all mothers)

	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
Antenatal care	93	85	89	72	73	54
Delivery at:						
Home	26	79	79	86	85	91
HC/Hosp	74	16	18	9	15	9
Other	0	5	3	5	0	0
Delivery Attended by:						
Untrained TBA	11	18	15	18	23	27
Trained TBA	4	47	64	33	45	48
Health staff	85	32	20	34	32	25
Other	0	3	1	15	0	0

Although a high proportion of mothers received at least one antenatal care visit, this opportunity to provide tetanus immunization was often missed. It is also noted that the vast majority of women delivered at home (except in the urban province of Jakarta) and are therefore at higher risk. Immunization cards for tetanus were not in common use.

Respondents for children who were partially or not immunized were asked the most important reason for failure to immunize or not fully immunize the child.

Table 4.6 Reasons for failure to fully immunize children 15-23 months of age  
(Percent of all children not fully immunized)

Reason	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
Lack of information	26	38	35	71	41	64
Obstacles	69	58	61	25	55	33
Lack of motivation	5	4	4	4	4	2

The results clearly show that lack of information and obstacles are the primary reasons for immunization failure.

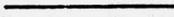
Knowledge regarding diseases prevented by immunization, the number of doses of DPT required for full immunization and the source of information on immunization were asked in households in which a child 15-23 months of age resided. Results indicate the need for EPI education.

Table 4.7 Knowledge regarding immunization in households with children 15-23 months of age  
(Percent of households)

Item	Jakarta	East Java	West Java	Aceh	South Sulawesi	South-East Sulawesi
<b>EPI target diseases</b>						
4 or more known	17	19	21	18	8	8
1 or more known	68	56	49	47	45	31
None known	32	44	51	53	55	69
3 doses DPT needed	67	49	58	26	25	22
<b>Source:</b>						
Health staff	59	43	45	40	28	38
Volunteer	12	20	25	7	15	2
Radio/TV	7	0	5	1	10	4

**GLOSSARY**

Apotik	Pharmacy or dispensary
Rinkesmas	Community Health Development (Directorate)
BKKBN	Family Planning Coordinating Board
Bupati	Administration head of a kabupaten
Cadre	Kader or Volunteer health worker
CDC	Directorate General of Communicable Disease and Environmental Health
Depkes	Ministry of Health
DPT	Diphtheria, pertussis and tetanus vaccine
Kabupaten	Regency or District (subdivision of a province)
KB/Kes	Family Planning/Health
Kecamatan	Sub-district
KMS	Road-to-health chart
LGG	Sugar and salt solution
OPV	Oral polio vaccine
Oralit	Oral Rehydration Salts
PKK	Family Welfare Movement (predominantly a women's movement)
Posyandu	Integrated health service post
Puskesmas	Primary health care centre
Toko obat	Drug seller
TT	Tetanus toxoid vaccine
UPGK	Family Nutrition Improvement Programme
Warung	Small shop or stall



## LIST OF ANNEXES

1. Review participants.
  2. List of kabupaten visited.
  3. Administrative structure of the Ministry of Health relevant to the EPI and CDD Programme.
  4. Detailed budget for the CDD Programme, 1986/87.
  5. Total number of health centres and numbers providing vaccination by year, 1979-1989.
  6. Summary of EPI and CDD training courses held.
  7. Projected EPI and CDD training requirements by 1988/89.
  8. Composition of selected commonly used "antidiarrhoeal" medications.
  9. Random selection of vaccine transactions showing time interval from order to despatch.
  10. Graphs showing immunization coverage, by vaccine, 1979-1985.
  11. Disease reporting systems in Indonesia
  12. EPI monthly hospital and sentinel hospital reporting system data, by province, 1985.
  13. Completeness of provincial to central reporting for 4 surveillance systems in 1985.
  14. Assumptions underlying table 9.3.
  15. Suspected cholera cases and deaths, affected areas and laboratory results, 1979-1985.
  16. Detailed province-wise results of EPI coverage surveys conducted during the current review.
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Rotary International

The core team were joined by over 50 part-time team members at provincial level and many more health staff served as resource persons at central and provincial level.

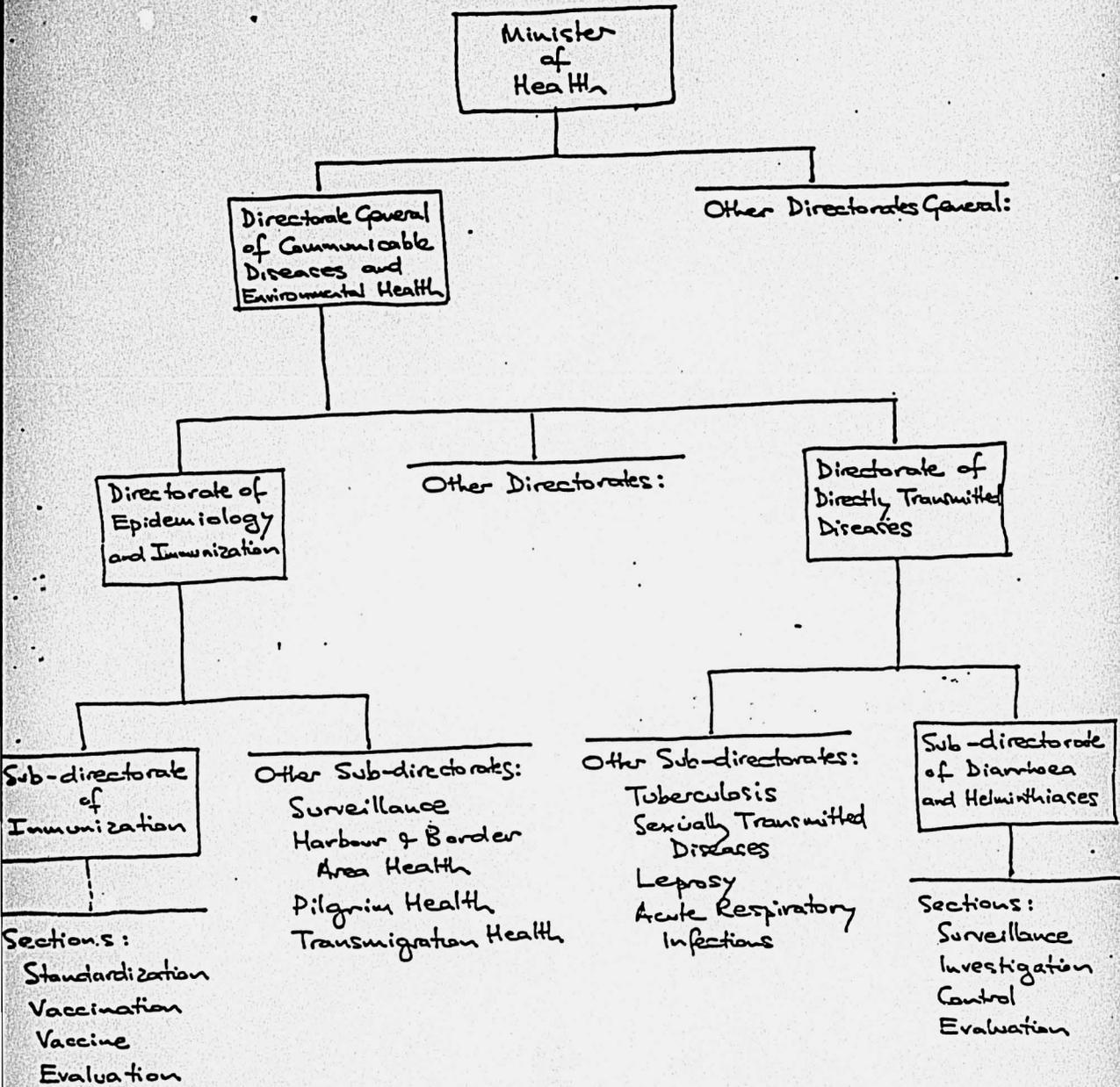
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List of kabupaten visited

<u>Province</u>	<u>Kabupaten</u>
D.K.I. Jakarta	1. Jakarta Selatan 2. Jakarta Timur 3. Jakarta Barat 4. Jakarta Utara
West Java	1. Lebak 2. Bandung (Kodya) 3. Garut 4. Bekasi
East Java	1. Jember 2. Madiun 3. Lamongan 4. Malang
South Sulawesi	1. Penrang 2. Enrekang 3. Soping 4. Gowa 5. Bulukumba
D.I. Aceh	1. Aceh Timur 2. Aceh Besar 3. Aceh Barat
South East Sulawesi	1. Kolaka 2. Muna 3. Buton 4. Kendari

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Administrative Structure of the Ministry of Health relevant to the EPI and the CDD Programme.

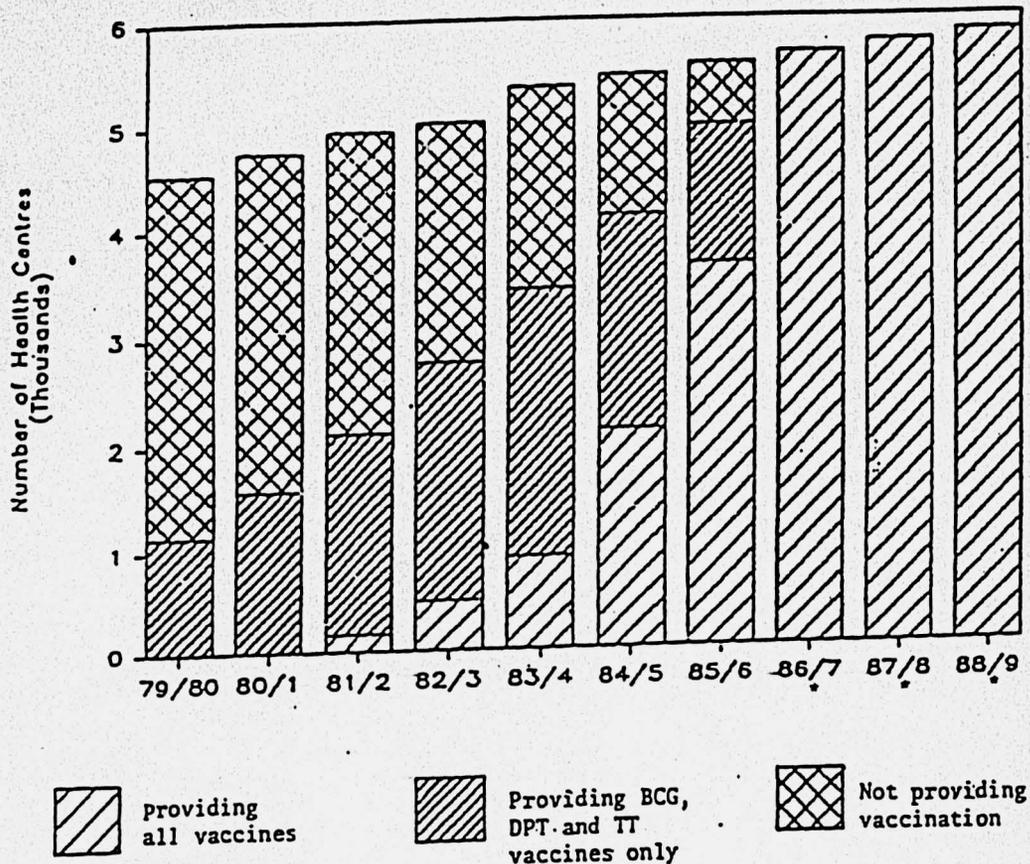


Annex 4

Detailed budget for the CDD programme, 1986/87  
(all figures in thousands of Rupiah)

ACTIVITIES	BUDGET	SOURCE					
		GCJ	USAID	V E C	UNICDF	CIBA	PHARO
1. <u>Development of the National Programme</u>	1,745,293	895,657	624,165	345,470	-	70,000	-
a. Coordination and organization	9,500	-	9,500	-	-	-	-
b. National meeting of Provincial CDD managers	27,832	1,000	15,382	10,400	-	-	-
c. National intersector meeting	25,500	-	25,500	-	-	-	-
d. Seminar on CDD Programme	52,300	-	52,300	-	-	-	-
e. Training	489,799	-	214,000	255,799	-	-	-
f. Surveillance	108,925	50,400	37,345	5,270	-	-	-
g. Research	345,000	-	345,000	-	-	-	-
h. Monitoring and Evaluation	187,457	10,700	120,000	56,757	-	-	-
12. <u>Others</u>	745,557	619,557	80,000	-	-	70,000	-
13. <u>West Java Project</u>	558,000	55,000	251,000	24,000	228,000	15,500	9,500
a. Coordination and organization	7,500	-	7,500	-	-	-	-
b. Logistics and CIE	240,500	40,500	78,000	-	160,000	15,500	9,500
c. Inter-section meeting at kabupaten level	10,000	-	10,000	-	-	-	-
d. Inter-section meeting at kecamatan level	20,430	-	20,430	-	-	-	-
e. Training	160,000	-	55,000	50,000	55,000	-	-
f. EAP Study	.....	-	.....	-	-	-	-
g. Mass media campaign	75,000	-	75,000	-	-	-	-
h. Monitoring	20,000	5,000	15,000	-	-	-	-
i. Evaluation meeting	7,430	-	7,430	-	-	-	-
<b>TOTAL BUDGET 1986/87</b>	<b>3,248,650</b>	<b>1,610,714</b>	<b>1,012,072</b>	<b>624,470</b>	<b>228,000</b>	<b>155,500</b>	<b>9,500</b>

Total numbers of health centres and numbers providing vaccination,  
by year, 1979 - 1989



\* Projected figures

Summary of EPI and CDD training courses held

Table A Number of persons trained in various EPI training courses, 1982 - 1986

Type of Training	Year	Place	Number trained
Refrigerator repair	1982/83	Jakarta	30
Cold room maintenance	1982/83	Bandung	8
Logistics and cold chain	1984	Ciloto	19
Immunization in practice for vaccinators and midwives	1982/83 1983/84 1984/85 1985/86 1986/87	27 provinces " " " "	1406 1595 1125 1826 1236
Immunization in practice for puskesmas doctors	1983/84 1984/85 1985/86 1986/87	" " " "	1791 1200 1131 723
Immunization in practice for teaching and nursing staff	1985/86	21 medical colleges	36?
Community mobilization training for women's welfare movement cadres	1985/86	14 provinces	11,275

## Annex 6 (contd.)

**Table B** Numbers of persons trained in various CDD training courses, 1984-1986

Type of training	Year	Place	Number trained
CDD supervisory skills course	Upto 1986	Various	116
Diarrhoea cases management:			
- 10 day course	1984 - 85	4 localities	139
- 6 day course	1985 - 86	7 localities	202
- 3 day course	1986	Garut	40
Communications in CDD	1986	Garut	40 doctors 127 puskesmas staff 3295 cadres

**Table C** Numbers of persons trained in joint EPI/CDD training activities

Type of training	Year	Place	Number trained
Mid-level management	1984	Cipanas	17
Strengthening of EPI/CDD in curricula of:			
- para-medical schools	1985	Ciloto	32
- medical schools	1986	Ciloto	42
Integrated EPI/CDD for hospitals and puskesmas staff	1986	Palembang	16

## Projected EPI and CDD training requirements by 1988/89

## a. EPI

Category of manpower to be trained	1987/1988	1988/1999
Vaccinators, midwives and nurses	1,250	1,250
Health centre doctors	750	750
Mid level managers	Not determined	Not determined
Cold chain management	50	50
Women welfare movement cadres PKK	50,000	50,000
Village religious cadres	30,000	30,000

## b. CDD

Activities	1986/1987	1987/1988	1988/1989
Clinical training	255	250	250
Mid-level management	150	100	100
Peripheral health staff	8,868	10,144	11,144
Epidemiology	-	30	-
Laboratory techniques	-	10	-
Village coordinators	266,040	304,320	343,320
Village health cadres	886,670	1,014,000	1,144,450

Composition of selected commonly used  
"antidiarrhoeal" medications.

Component Brand name	Hydroxyquinolines	Phthalylsulphathiazole	Papaverine HCl	Kaolin	Vitamins	Sulphaguanadine	Others
Diarent	x	x	x	x	x		x
Diastop	x	x	x	x	x		x
Entero- vio sulfa	x		x		x		
Koniform			x			x	
Ultrastop	x		x		x	x	
Entrostop	x	x	x		x		
Kaomycin							

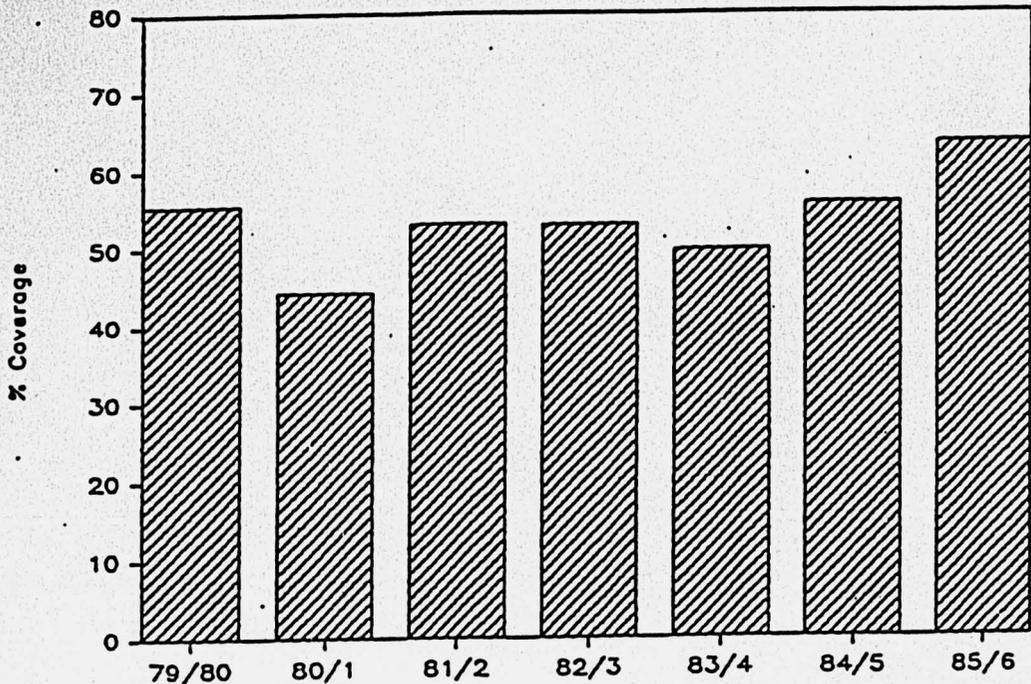
Random selection of vaccine transactions showing time interval from order to despatch.

Request sent from province	Request received at the Directorate-General	Request received by Sub-Directorate	Vaccine despatched	Appropriateness of supply
08 October	09 October	09 October	13 October	Less
14 October	16 October	16 October	20 October	Exact
01 November	06 November	09 November	12 November	Exact
11 November	12 November	12 November	Not sent as of 24 Nov.	
29 October	30 October	30 October	28 October <sup>a</sup>	Exact
15 October	17 October	17 October	20 October	Exact
7 November	10 November	10 November	12 November	More
20 October	28 October	28 October	28 October <sup>a</sup>	Exact
30 October	31 October	31 October	Not sent as of 24 Nov.	
10 November	12 November	12 November	12 November	More

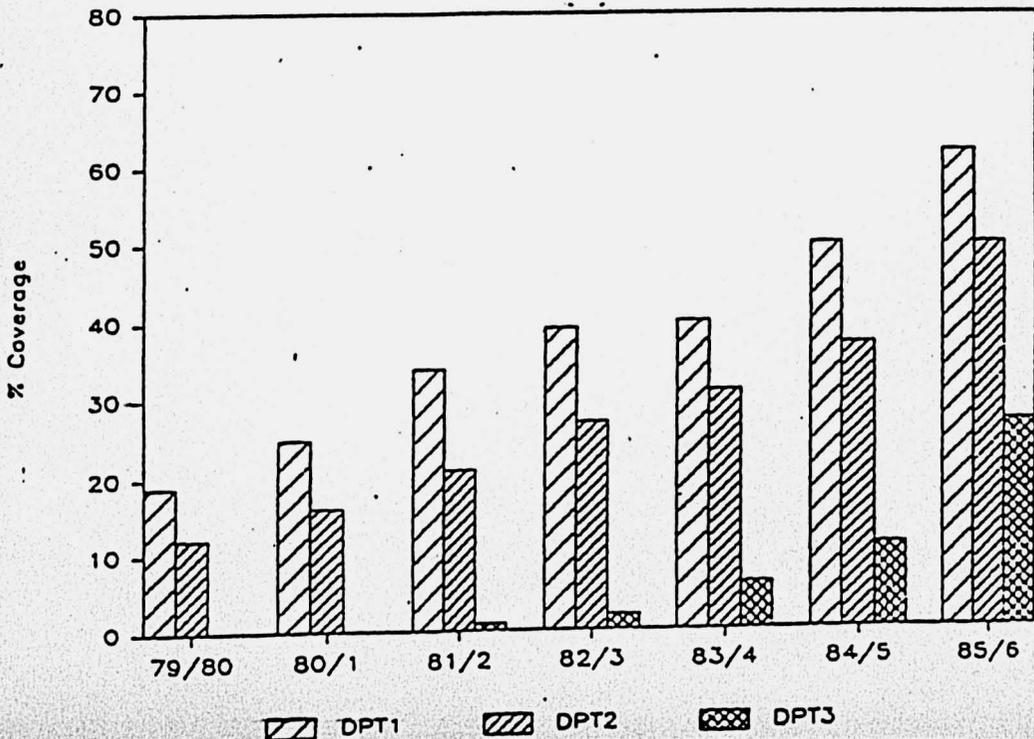
<sup>a</sup> Vaccine sent in response to telephoned request.

Graphs showing immunization coverage, by vaccine, 1979-1985

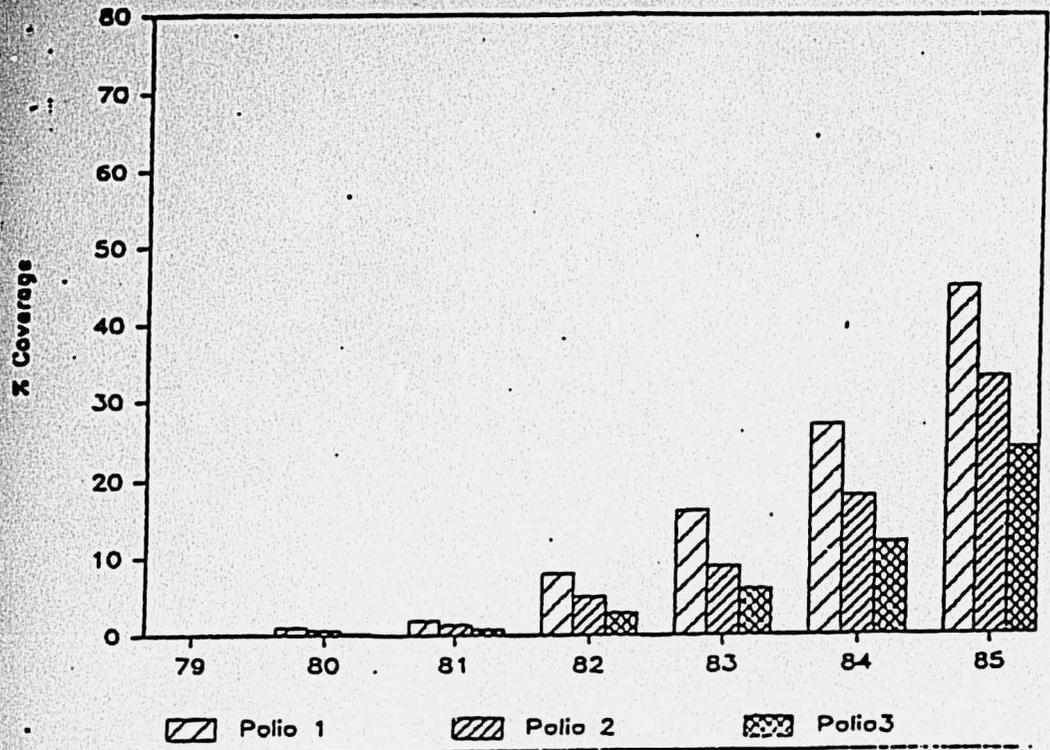
### BCG Coverage 1979-85



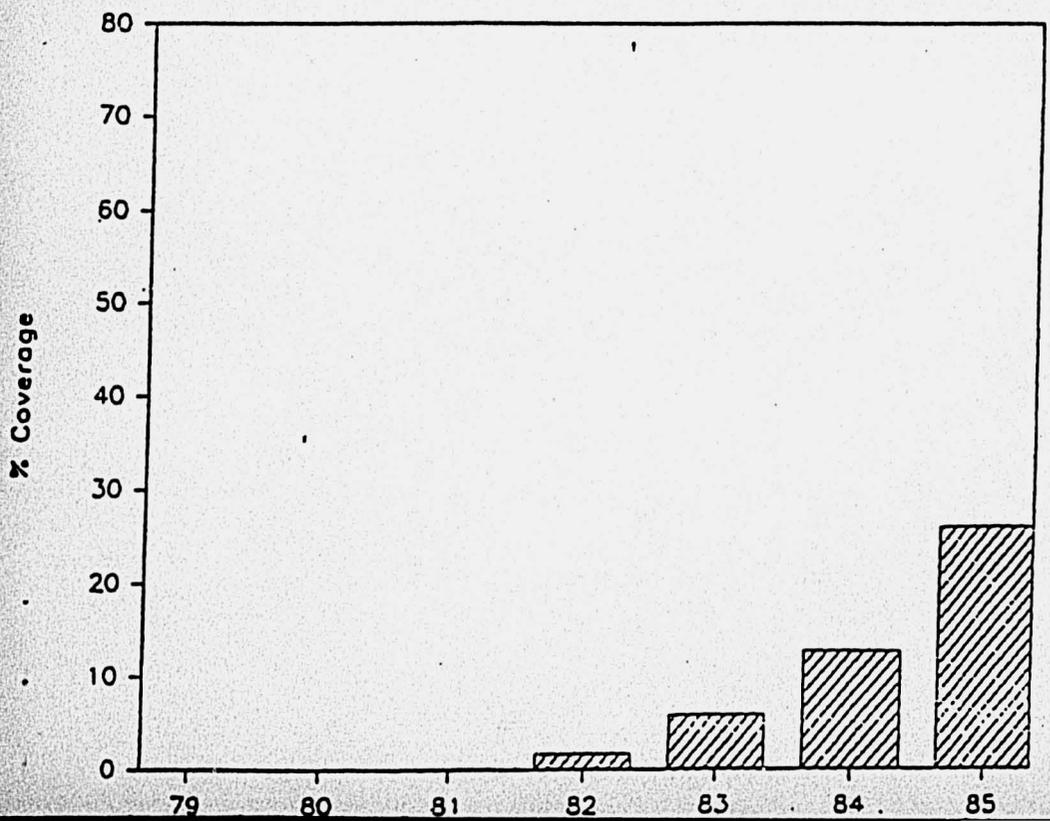
### DPT Coverage 1979-85



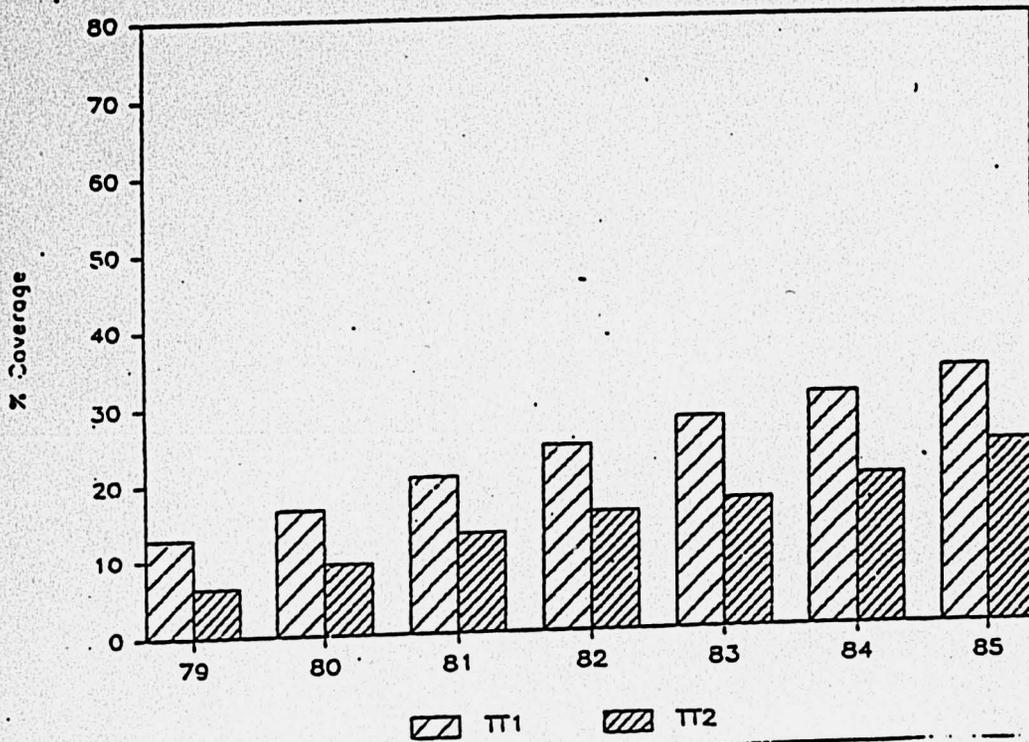
# Polio Coverage 1979-85



# Measles Coverage 1979-85



# TT Coverage/Pregnant Women 1979-85



## Annex 11

**Disease reporting systems in Indonesia**

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- 1) Puskesmas weekly report of infectious disease
  - 2) Puskesmas monthly report of disease
  - 3) Integrated reporting system
  - 4) System Informasi 27 forms
  - 5) KLB reports
  - 6) Puskesmas sentinel reporting system
  - 7) Hospital reports of cases and deaths
  - 8) Hospital sentinel reporting system
  - 9) Outbreak investigations
  - 10) Special survey (neonatal tetanus, lameness, diarrhoea morbidity, mortality and treatment)
-

Monthly hospital and EPI sentinel hospital reporting system  
data, by province, 1985.

Monthly hospital reporting system (SRS) data by province, 1985 (all ages)

annex1.xls

Health Division	Diphtheria		Pertussis		Neonatal Tetanus		All Tetanus		Polio		TB		Measles		Diarrhoea	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
GI. ACER	9	1	-	-	15	10	119	30	3	-	-	-	5	-	899	12
SUMATERA UTARA	7	-	3	1	18	7	109	16	1	-	-	-	50	-	1469	23
SUMATERA BARAT	77	18	2	-	11	4	50	13	1	-	-	-	33	-	1255	40
SIAU	13	2	-	-	4	3	20	8	-	-	-	-	18	-	686	19
JAMBI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BENGKULU	3	1	-	-	3	1	31	3	-	-	-	-	4	-	339	15
SUMATERA SELATAN	23	13	-	-	59	24	115	34	8	1	-	-	55	2	1921	136
LAMPUNG	18	2	-	-	57	22	146	39	-	-	-	-	11	1	901	21
D.E.I. JAWA	78	11	2	-	46	28	295	57	-	-	-	-	24	2	3532	134
JAWA BARAT	399	35	150	-	455	167	1557	323	7	-	-	-	193	4	16793	245
JAWA TENGAH	146	22	114	-	91	37	1332	258	15	-	-	-	1521	19	13245	445
DI. YOGYAKARTA	10	2	-	-	3	-	98	20	2	-	-	-	-	-	2749	31
JAWA TIMUR	693	24	21	-	217	101	2234	491	13	-	-	-	532	28	33717	516
SALAMANTAR BARAT	11	2	3	-	25	16	52	24	1	-	-	-	36	4	1342	28
SALAMANTAR TENGAH	2	-	2	-	6	7	12	8	-	-	-	-	5	-	390	13
SALAMANTAR SELATAN	9	4	1	-	-	-	19	7	-	-	-	-	5	1	132	8
KALIMANTAN TIMUR	77	9	7	-	-	-	82	32	1	-	-	-	24	-	2005	26
SULAWESI UTARA	5	2	-	-	25	11	74	23	2	-	-	-	21	-	1175	11
SULAWESI TENGAH	-	-	-	-	-	-	1	-	-	-	-	-	-	-	146	2
SULAWESI SELATAN	127	11	4	1	25	8	266	57	-	-	-	-	20	2	3891	76
SULAWESI TENGGARA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B A L I	103	12	15	1	61	31	224	62	11	-	-	-	104	3	7218	67
NUSA TENGGARA BARAT	2	-	4	-	18	10	53	21	1	-	-	-	87	4	1634	8
NUSA TENGGARA TIMUR	-	-	10	-	23	17	45	25	-	-	-	-	30	-	1523	35
NALURU	1	-	2	-	19	7	69	29	7	-	-	-	41	1	891	24
IRIAN JAYA	-	-	3	-	22	13	37	21	-	-	-	-	12	-	625	41
TIMOR TIMUR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INDONESIA	1791	210	415	14	1201	529	6951	1601	73	1	-	-	1983	71	204,878	2070
DEATH TO CASE RATIO %	11.7		3.4		44.0		23.0		1.4				3.6		1.0	

C = cases D = deaths .. = not available

## FPI sentinel hospital reporting system data by provinces, 1985 (all ages)

annex. vts

Health Division	Diphtheria	Pertussis	Neonatal Tetanus	All Tetanus	Polio	Tuberculosis	Measles
DI. ACEH	-	-	4	9	-	-	4
SUMATERA UTARA	-	-	-	-	-	-	-
SUMATERA BARAT	43	3	6	29	-	-	-
RIAU	5	-	1	3	-	-	3
JAMBI	-	-	-	-	-	-	-
BENCULU	2	-	3	7	-	-	5
SUMATERA SELATAN	57	3	54	107	14	-	8
LAMPUNG	27	10	27	52	-	-	48
D.K.I. JAKARTA	97	-	67	188	-	-	36
JAVA BARAT	134	-	42	94	-	-	34
JAVA TENGAH	96	-	10	60	-	-	35
DI. YOGYAKARTA	9	2	3	8	-	-	3
JAVA TIMUR	176	2	9	77	4	-	76
KALIMANTAN BARAT	-	-	-	-	-	-	-
KALIMANTAN TENGAH	-	-	-	-	-	-	-
KALIMANTAN SELATAN	29	1	14	24	-	-	3
KALIMANTAN TIMUR	38	-	17	24	-	-	17
SULAWESI UTARA	-	-	-	-	-	-	-
SULAWESI TENGAH	3	37	7	8	-	-	6
SULAWESI SELATAN	99	-	13	55	4	-	4
SULAWESI TENGGARA	-	-	-	-	-	-	-
BALIK	43	1	13	14	2	-	5
MUSA TENGGARA BARAT	4	5	20	27	3	-	96
MUSA TENGGARA TIMUR	-	-	2	3	-	-	11
MALUKU	-	-	20	34	7	-	22
IRIAN JAYA	-	-	-	-	-	-	-
TIMOR TIMUR	-	-	-	-	-	-	-
TOTAL	852	62	332	823	34	-	471

## Annex 13

Completeness of provincial to central reporting for 4  
surveillance systems in 1985

System	Reporting units	Number of reports expected	Number of reports received	% of expected reports received
Weekly report from puskesmas	27	1404	1000	71
EPI sentinel hospitals	27	324	139	43
Sentinel puskesmas:				
EPI	27	324	227	70
CDD	26	104	31	30
Monthly reporting from hospitals	27	324	156	48

Assumptions underlying table 9.3

Assumptions:

- Population: 160 million
- Birth rate: 3.17/100 (5.1 million births)
- Neonatal Tetanus Mortality Rate Unvaccinated 20/1000
- Neonatal Tetanus Case Fatality Rate: 90 deaths per 100 cases
- TT Efficacy 1 dose : 50%
- TT Efficacy 2 doses: 90%
- Measles Attack Rate: 90%
- Measles Case Fatality : 1%
- Measles Vaccine Efficacy: 85%
- Pertussis Attack Rate: 80%
- Pertussis Case Fatality: 0.5%
- Pertussis Vaccine Efficacy 2 doses: 50%
- Pertussis Vaccine Efficacy 3 doses: 80%
- Diphtheria Attack Rate: 1%
- Diphtheria Case Fatality: 10%
- Diphtheria Vaccine Efficacy 2 doses: 90%
- Diphtheria Vaccine Efficacy 3 doses: 99%
- TBC Attack Rate: 0.1%
- TBC Case Fatality: 90%
- BCG Efficacy: 50%
- Poliomyelitis Incidence Rate: 5.6 per 100,000 population
- Poliomyelitis Mortality Rate: 10%
- Poliomyelitis Vaccine Efficacy:
  - 1 dose 40%
  - 2 dose 65%
  - 3 dose 80%

## Annex 15

## Suspected cholera cases and deaths, affected areas and laboratory results, 1979-1985.

Year	Reported suspected cholera			Affected areas		Laboratory	
	Cases	Deaths	Death-to-case ratio %	Provinces	Kabupaten	Specimens tested	% cholera positive
1979	31510	1420	4.7	25	205	17510	29.3
1980	32233	1026	3.5	34	127	3554	25.5
1981	33331	512	2.3	31	212	4256	24.5
1982	32544	1019	3.5	25	31	1330	28.0
1983	47195	1105	2.3	15	54	2141	24.4
1984	17867	333	1.9	19	70	1709	21.9
1985	13894	286	2.1	21	46	1994	21.6