JICA LIBRARY
1029073[2]

国際協力事業団	
受入月日 '84. 5. 21	108
	93.8
登録No. 06070	MCH

PREFACE

The Japanese Government decided to conduct a basic study on the present state of infectious diseases in Indonesia in consideration of the fact that the control and eradication of infectious diseases is an important subject in Indonesia, and entrusted the study to the Japan International Cooperation Agency. The Agency sent to Indonesia a study team headed by Dr. Ryosuke Murata, Consultant of the International Medical Foundation of Japan from August 2 to September 5, 1982.

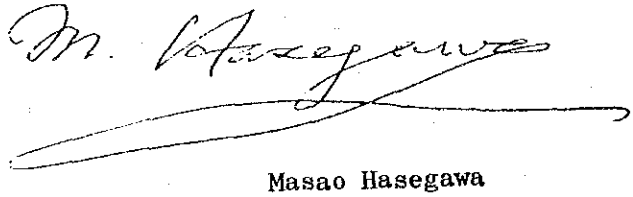
The study team exchanged views with the officials concerned of the Government of Indonesia, and conducted a field survey in Jakarta and other parts of Indonesia.

After the study team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will be useful for the further promotion of Japan's medical and health cooperation to Indonesia in the future and also contribute to the promotion of friendly relations between our two countries.

I wish to take this opportunity to express my deep appreciation to the officials concerned of the Government of the Republic of Indonesia for the full cooperation and kind hospitality extended to the study team.

October 1982



Masao Hasegawa
Executive Director,
Japan International Cooperation Agency

SUMMARY

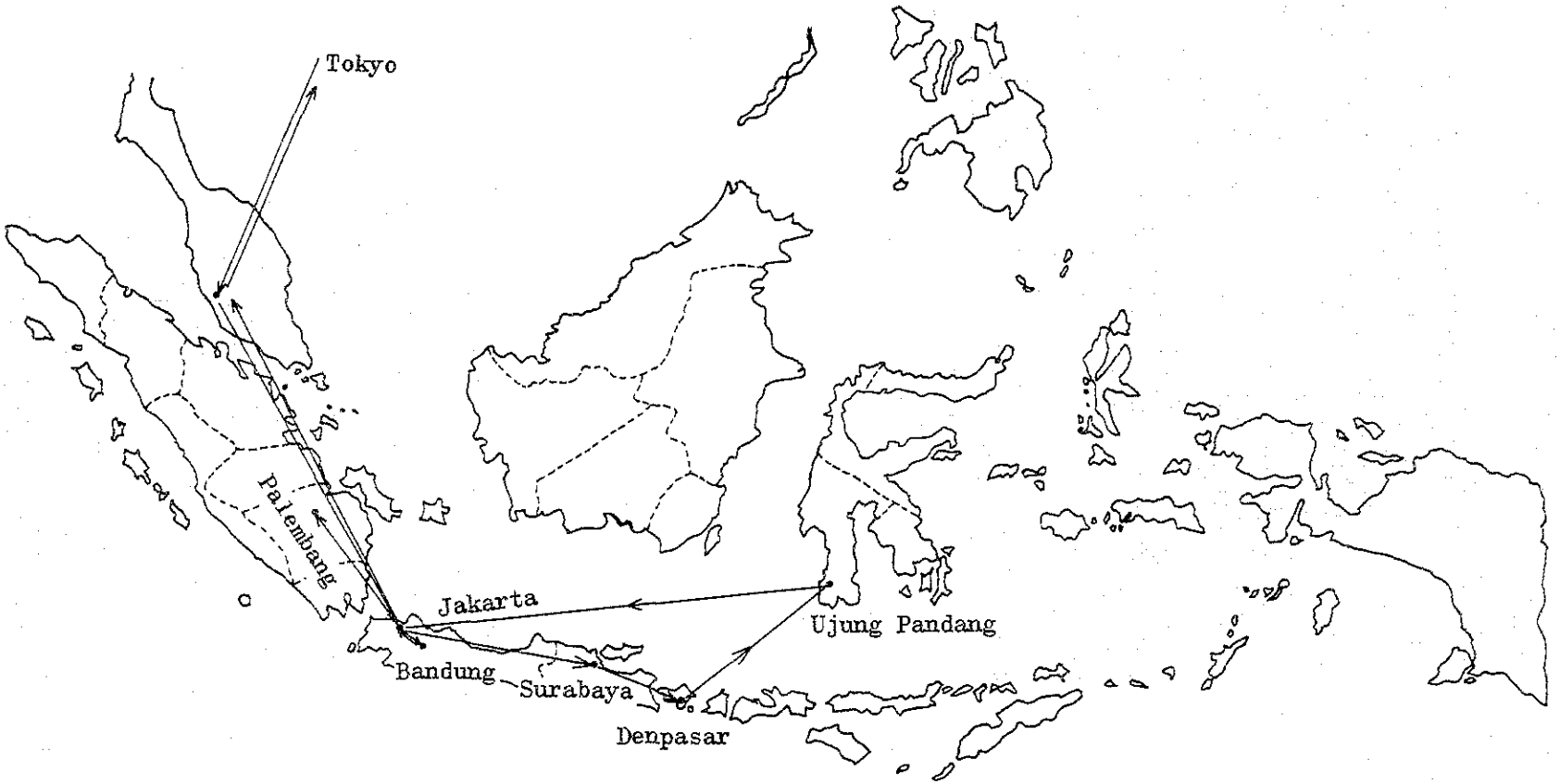
In order to carry out more fruitful cooperation in the field of communicable disease control, accurate informations on the existing problems are urgently required. Therefore, a team consisting of four experts was sent to Republic of Indonesia for 35 days from August 2 to September 5, 1982. The team studied the situation of the communicable diseases in Indonesia and scrutinized the control measures against the diseases. They also studied many documents available at present concerning the problems. This report is the summary of the results of the studies.

Communicable diseases are the major public health problem at present in Indonesia. Gastroenteritis (inclusing cholera), respiratory tract infections, tetanus (especially neonatal tetanus) and dengue hemorrhagic fever are the most important acute diseases because of high morbidity and/or mortality. With regard to chronic diseases, tuberculosis and leprosy need special attention because of high prevalence and social influence. Although signs of decrease of some diseases became evident recently as a result of the nationwide control campaign, infectious diseases stated above are still leading causes of high morbidity and/or mortality. As for venereal diseases, increase of gonorrhoea attracted attention. Furthermore, diseases due to parasites should be noticeable. Malaria and filariasis are prevalent violently over the whole country except Java and Bali islands where the control measures were successful. Malaria is especially a serious problem in the transmigration areas. Schistosomiasis is endemic, though the distribution is limited in a district of Sulawesi.

The government of Indonesia has established various programs to control the diseases which can be prevented by immunization, i.e. malaria, diarrheal diseases, tuberculosis, dengue hemorrhagic fever, filariasis, shistosomiasis, leprosy, zoonotic diseases, and soil transmitted parasite diseases. Programmes are also adopted for surveillance and control of vectors and for health protection of transmigrants and pilgrims. In addition, other relevalent programs, such as, those for improvement of environmental sanitary conditions, health education, training of medical and health manpower and family planning have also been considered in parallel with the direct control programs stated above.

The programs have been implemented enthusiastically as the important policy of the government through the successive five years' development plans (Palita I~III) since 1969. A considerable success was achieved, but shortage of facilities, drugs and man power seem to hamper the rapid implementation of the programs. The cooperation of foreign countries may be beneficial to promote the policy. Various cooperation projects such as for improvement of environmental sanitary conditions, consolidation of medical facilities, and health laboratories as well as improvement of production of control of vaccines and drugs may be helpful. After careful consideration of various conditions and the feasibility at present, the team would like to recommend to consider the collaboration projects regarding the following items.

1. Strengthening of ability and utilization of laboratory service.
2. Promotion of collaborative studies on communicable diseases.
3. Development of the ability to train medical entomologist.
4. Improvement of the system of recording and reporting.



1/16,000,000

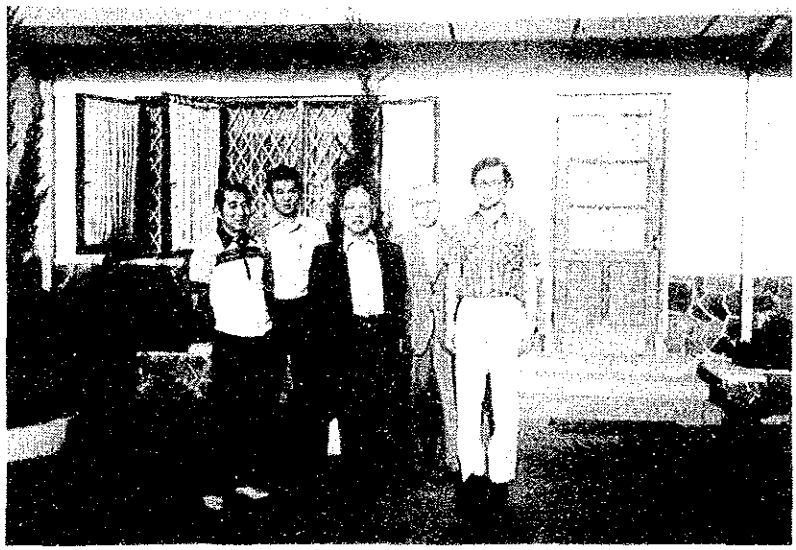
⟶ Course of travel • Places visited

Preliminary negotiation on

" Observation Team on Infectious Diseases in Indonesia "

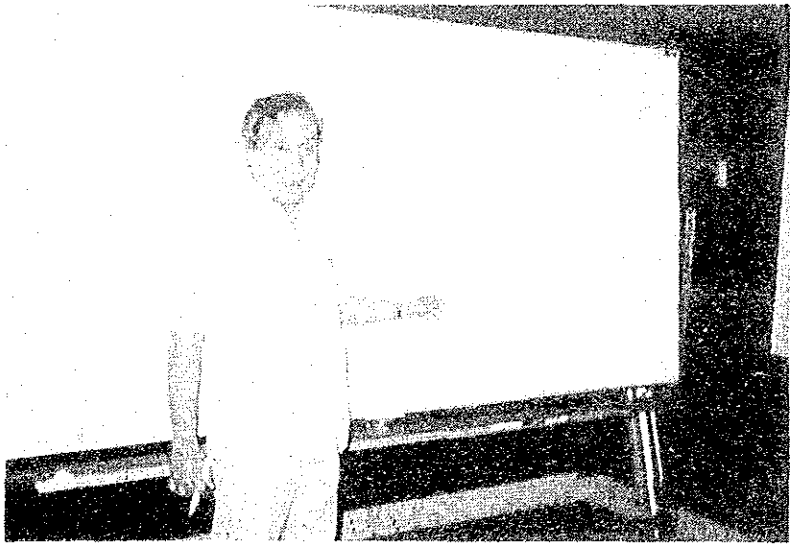
Mr. M. Adhyatma
Mr. Tanaka and
Dr. G. Hartono

Member of the Observation Team

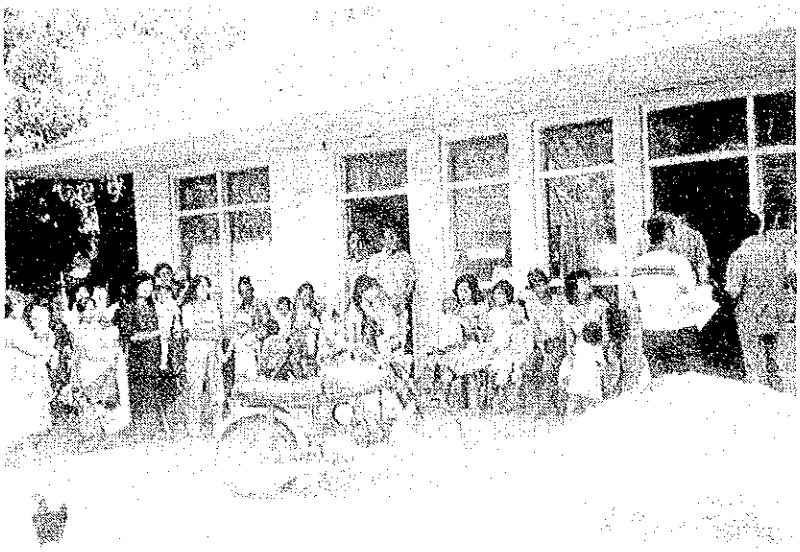


Prof. Loedin

Dr. Adhyatma

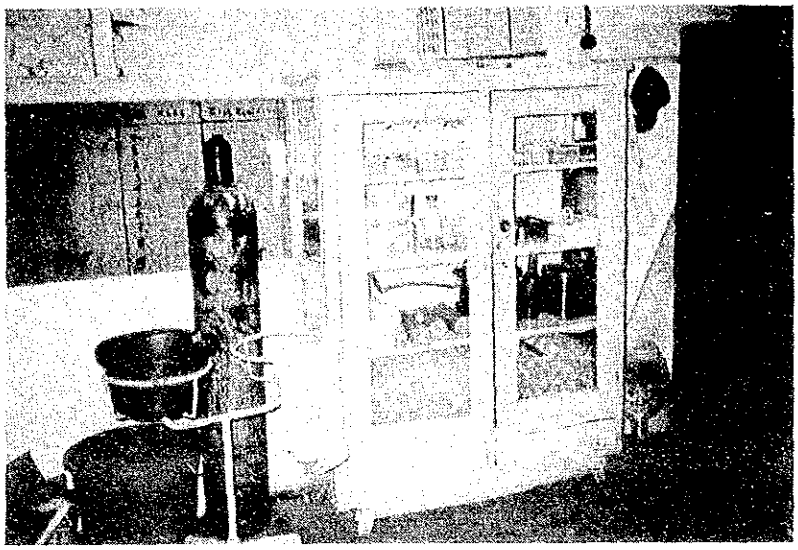


Dr. Koiman



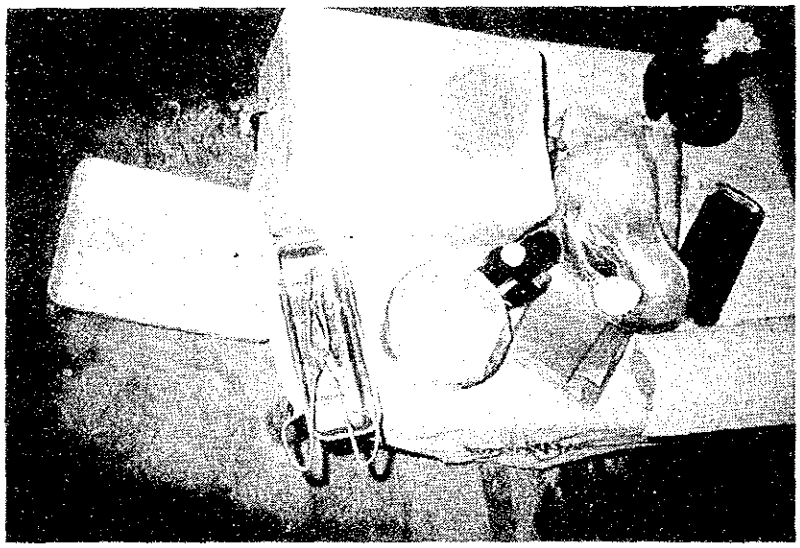
At a Health Center

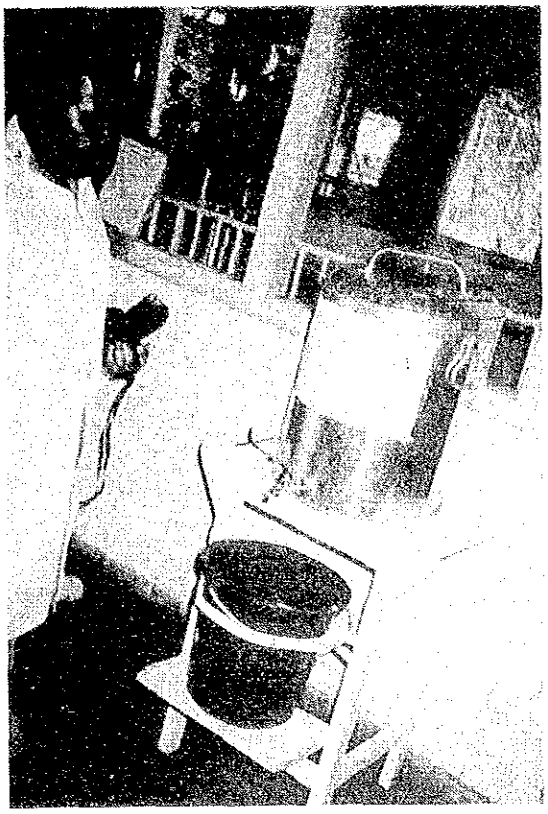
Poster of vaccination campaign



Medical Supplies
in Health Center

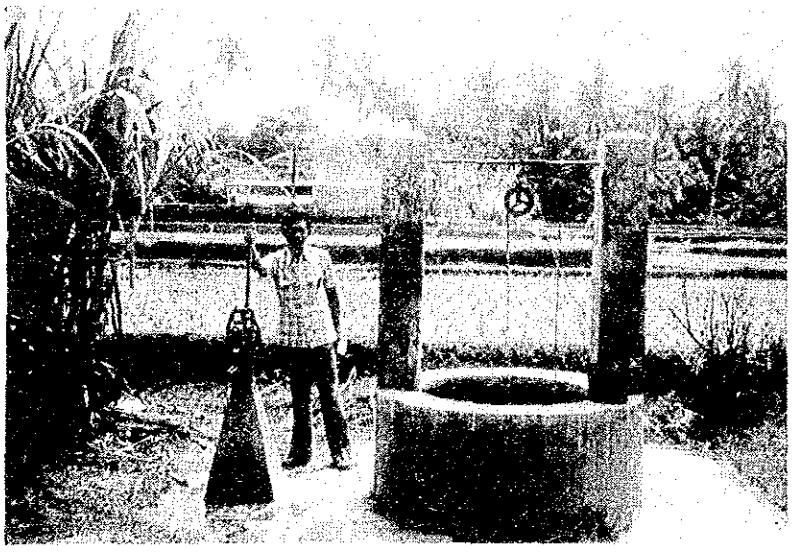
Dukun Kit





(ORALIT)

Deep Well
in Bali



Piping system
in Bali

Kit for water
examination

P R E F A C E

1. Introduction

Japan International Cooperation Agency (JICA) has been extending its technical cooperation to the Republic of Indonesia in various fields, among which health and medical cooperation is of vital importance. In order to establish the guidelines for more effective and efficient cooperation in future, JICA planned to carry out a preliminary study on the existing situation of communicable diseases and control measures against them in Indonesia, and entrusted the actual study to the International Medical Foundation of Japan (IMFJ). The latter organized a study team which is composed of 4 experts in the field of communicable diseases, namely one microbiologist, one parasitologist, one public health doctor and one pediatrician. The team has been in Indonesia for 35 days from August 2 to September 5, 1982. They visited various institutions which are in charge of medical and health services in Jakarta, West Java, East Java, Bali, South Sulawesi and South Sumatra. The visited institutions involve : National Institute of Health Research and Development, Directorate General (D.G.) of Communicable Disease Control, D.G. of Medical Care and D.G. of Community Health of the Ministry of Health, school of medicine of several universities, provincial health offices, provincial public health laboratories, hospitals, school of laboratory technician, and health centers.

They studied available statistical data and other documents. They observed the existing situation of medical and health care facilities, manpower and programmes and activities to control communicable diseases. However, the time was too short for performing a comprehensive observation of the actual situation of the diseases of this country which consists of 13,000 islands spread over an area of about 1,900,000 Km^2. Therefore, this report is limited to raise some important suggestions for more comprehensive and concrete studies in the future.

2. Existing situation of communicable diseases

Communicable diseases are the major health problem in this country, especially among younger generations. The Indonesian Government has made a great effort enthusiastically to provide the control measures against the communicable diseases through various programs during the successive 5 years' development plans (PELITA I-III). As the results of such nationwide campaign against the diseases, some communicable diseases have been eradicated or decreased remarkably during last decade. For example, smallpox was eradicated in 1972 and no cases of plague have been reported since 1970. Frambesia became rather rare diseases in Java and Bali islands inhabited by nearly 70 percent of the population of the country, and is expected to be less important in the whole country by the end of PELITA III (1983/84). Malaria and filariasis have also decreased remarkably in these islands, while they are still prevailing violently in other islands, as will be stated below. Dengue hemorrhagic fever is a problem in some districts, but the case fatality rate (CFR) was reduced by an adequate clinical management and early

diagnosis to 3.4 percents in 1981 from 5 percents in 1979. Death rate due to gastroenteritis including cholera decreased to 2.5% in 1981 from 5.1% in 1978. Improvement of the management, especially the use of oral rehydration solution (Oralit) and proper feeding during and after the diseases contributed greatly to reduce mortality and ill effect of diarrheal diseases in infants and children.

Control measures through PELITA I - III were effective to reduce morbidity or mortality of communicable diseases as stated above. However, according to the results of "1980 House Hold Health Survey", variety of the diseases are still found as the leading cause of morbidity and mortality as follows : (a) Morbidity: Upper respiratory tract infection, skin diseases, diarrhoea and tuberculosis; (b) Mortality: Lower respiratory tract infection, diarrhoea, cardiovascular diseases, tuberculosis and tetanus. Some problems which attracted interest of the team will be stated below.

(A) Diseases caused by microorganisms

(1) Gastroenteritis, including cholera

This disease shows the highest incidence and is the main cause of hospitalization in Indonesia. About 1.8 million patients were treated in 1981. However, case fatality rate has decreased (2.5% in 1981) recently by the extensive use of oral rehydration solution to the patients.

Diarrheal diseases may be caused by various pathogens, of which *V. cholera* is reportedly most popular among adults. However, the diagnosis has not always been confirmed by the laboratory test. Therefore, diseases caused by enteropathogenic *E. coli* and rota virus may be included in the reported cholera cases.

Supply of safe water, improvement of sanitary condition and health education are the prerequisites to control the diseases. Furthermore, nutritional condition is also related to the onset and prognosis of the diseases. In order to reduce mortality and morbidity by diarrheal diseases, a national Diarrheal Disease Control Program has been launched by the Government.

(2) Tuberculosis

Tuberculosis is one of the most important diseases in Indonesia and prevailing especially among community with low income. The prevalence is reportedly 3 per 1000 total population, by the microscopical examination of sputa. However, the figures are different greatly depending on the districts and source of report.

Campaign against tuberculosis started in 1969 supported by foreign countries via UNICEF, and BCG vaccination has been used widely for newborn (90%), preschool children and children before leaving school. At present, 1300 out of 5000 HC's are involved

in the tuberculosis program. The patients detected actively or visiting policlinic are firstly treated free of charge at local HC as the out patients. Severe cases or cases having risk of infecting others shall be sent to the Regency hospital or Provincial hospital.

Schedule for treatment in HC is divided into two categories, long term and short term treatment.

(1) In the former method, patients are treated by injection of streptomycin and oral administration of INH and vitamin B6 for 1 year.

(2) In the latter, patients are given with INH, rifampicin, ethanbutol and vitamin B6 for 6 months. Short term treatment is more effective.

(3) Typhoid fever

During the observation trip, we recognized that cases of typhoid fever are increasing recently, not only among adults but also among pediatric age groups. It is now one of the main causes of hospitalization. Two important problems should be pointed out. The one is regarding follow-up of the carrier after treatment. In most occasions, patients leave hospital without laboratory examination for the absence of the pathogen. The second is the increase of drug resistant organisms; about 3% are resistant to chloramphenicol. These two problems may be related to the increasing tendency of typhoid fever. In order to prevent typhoid fever among the population, oral live typhoid vaccine (Germaniek Ty 21) trial will be carried out in Indonesia in collaboration with WHO.

(4) Diphtheria

The disease has apparently decreased. However, estimation of the number of cases among children under 5 years and number of death is 28,500 and 5000, respectively (1979). Therefore, death due to diptheria may not be ignored. In some provinces (Central Java, East Java and South Sumatra) outbreaks of diphtheria were reported in 1981. Obstruction of upper respiratory tract, cardiomyopathy and encephalopathy are so frequent that hospitalized cases need intensive care and tracheotomy was necessary for about 50% of the hospitalized cases. Provincial health laboratory in Surabaya revealed that about two thirds of the cases were caused by intermediate type bacilli.

(5) Tetanus

Although number of tetanus patient is apparently decreasing, the disease is one of the leading causes of hospitalization in the pediatric wards in many hospitals and the case fatality rate is highest among immunizable diseases, being 23.8% and 53.3% for all and neonatal cases, respectively. High incidence of tetanus neonatorium is a characteristic pattern of the disease in Indonesia, as is the case of other developing countries. This is

related partly to malpractices by the traditional midwives which are common in rural area and partly to low rate of immunization of the pregnant women (about 32%). Neonatal tetanus can be prevented by immunization of the pregnant women and by training of traditional midwives for aseptic delivery.

(6) Whooping cough

The disease seems to be very common among children in Indonesia. The incidence was estimated in 1981 as follows : 10% for children under 1 year, 16% for those of 1 - 2 years and 8% for those under 5 years old, and number of death of children under 5 years was 75,000. Extensive immunization should be proceeded for babies under one year of age.

(7) Poliomyelitis

The diseases were not considered an important disease because of scantiness of the reported cases before 1977 when surveillance was performed on the neurologically handicapped people in rehabilitation centers and primary school. Large scale outbreaks of poliomyelitis were reported in East Java and South Kalimantan in 1981 - 1982 and about 500 paralytic cases were observed among children. Seasonal variation in the enterovirus infection has not been observed in the tropical area. However, more extensive surveillance based on the laboratory examination would be desirable to catch the actual situation of the infection, because many cases of enterovirus infection may be inapparent or abortive.

(8) Measles

Measles seems to be one of the common diseases among pediatric age groups. However, it is difficult to catch the real figures of infection from the reported cases, because most of the patients do not call on the clinic in the case of measles. However, large outbreaks accompanied with many fatal cases due to pneumonia were reported recently in various districts of Indonesia. Fatality of measles (10%) is apparently related to the poor nutritional status of children. Immunization against measles started in 1982.

(9) Dengue hemorrhagic fever (DHF)

The first case of DHF in Indonesia was reported from Surabaya & Jakarta in 1968. Since that time the number of DHF cases has been increasing each year and the disease has been spreading to rural as well as urban areas. Now 26 out of 27 provinces in Indonesia reported this disease. Some places become endemic but some places like Medan, Ujung Pandang remain free or reported very few cases. The annual reported cases for the last five years were around 6000 cases with 3% CFR. For the time being we do not know the mechanism of this disease and the only way to control this disease is just to control the vector using insecticide or larvaecide. Starting 1982/1983 CDC has stressed their eradication program through

controlling A. aegypti larva using Abate. In 20 provinces 2,558,087 houses will be covered and all done by volunters: chief of villages, prominent figures, boy scouts, teachers, school-children. Many studies have been done or still being done concerning this disease. Most of them were related to the problem faced by CDC in carrying their eradication programs as follows :

- Dengue hemorrhagic fever surveillance in Indonesia sponsored by IDRC (1981-1983)

- Prospective epidemiological study on Dengue virus in DHF endemic area and silent area, Jogya as endemic area and Medan as silent area, (1981 - 1986) sponsored by WHO.

- Evaluation of DHF Control - program using Abate (1982-1983) in Indonesia.

- Study on the resistansy of A. aegypti against Abate (1982/1983).

- Study on longevity of A. aegypti mosquito in some cities of Indonesia (1982/1983).

(10) Encephalitis

Attention should be paid to high prevalence and high case fatality (41.5% in 1981) of encephalitis, especially among pediatric age groups. No information is available on the pathogenesis at present, although a variety of viruses may cause the disease. It would be desirable to carry out survey on the causative organisms, based on the laboratory examination, to make an adequate plan to control the disease. Comparative study between WHO's criteria for Japanese B encephalitis and laboratory serological findings has been carried out by the Biomedical Research Center (1981).

(11) Hepatitis

Hepatitis is now one of the major public health problems in Indonesia. A considerable number of cases of liver cirrhosis and hepatoma are also observed. Serological examination for hepatitis B has started recently in some provincial laboratories and hosptals. Data on hepatitis B among blood donors at the Indonesian Red Cross Jakarta have been submitted to the Team.

No data are available as to Hepatitis A, although many outbreaks of acute hepatitis may suggest a high prevalence of the disease. The case fatality rate is reportedly 3 to 5 percent.

(12) Rabies

The disease is prevalent in 19 provinces, and 1 death every 10 days is reported in 1981. More than 1500 specimens from suspected dog were examined in 1980, and about 10,000 patients

bitten by dogs were treated with vaccine in 1980. Vaccine made from monkey brain was hitherto used and postvaccinal encephalopathy was reported in some cases. Suckling mouse vaccine will be used after 1982. Vaccination of dogs is also considered.

(13) Leprosy

Leprosy is one of the important communicable disease in Indonesia. The prevalence is 119,582 in 1982 or 0.82 per 1000 population. High prevalence was observed in Irian Jaya (7.0‰), Maluku (4.2‰), N.T.T. (4.0‰), South Sulawesi (3.2‰) and South West Sulawesi (2.7‰). However, the disease is now curable by effective antileprotic therapy. For the treatment DDS is first choice and rifampicin is used for DDS resistant cases. Patients are mostly treated at policlinic in Health Center. Some severe cases are treated in hospitals but without strict isolation from other patients.

It would be desirable to establish special hospitals with facilities for reconstructive surgery and rehabilitation.

(B) Diseases caused by parasites

Among parasitic diseases prevailing in Indonesia, malaria, filariasis and schistosomiasis are of importance from health problem as well as socio-economical view point. These diseases are transmitted by vectors such as various species of mosquito and snail. Therefore, vector control is also very important. In addition, soil transmitted parasites as ascaris, hookworm, and trichuris are prevailed in this country.

(1) Malaria and vectors

Statistics showed that the positive rate by microscopical examination of blood smear is only 2 percent among suspected patients in Java and Bali since 1969 to 1980, while it is about 20-24 percent in other islands in 1975 to 1980; the rate was as high as 40 percent in 1969 to 1974 in the latter islands. Thus, there is a tendency that malaria cases are decreasing recently in this country. According to provincial health officials in Palembang and Ujung Pandang, malaria patients are found mainly among transmigrants, but not many among local inhabitants, even though environmental factors are same. This may suggest a kind of "immunity" (or resistant phenomenon) among local inhabitants wheras most of the transmigrants are non-immune. In South Sumatra, clinical malaria cases are about 1000 and several fatal cases are reported among transmigrants in 1981.

Patients are treated free of charge at the local HC or in regency hospital depending on the severity of the symptom. Target for treatment is 47 million patients by the end of Pelita III. Blood smears are examined at HC and may be sent to the provincial laboratory to confirm the species of plasmodium. *P. falciparum* is becoming predominant recently, but three species are found in whole area of Indonesia.

An extensive survey of mosquitos has been carried out by the aid of WHO and more than 90 species were found. It is difficult to perform vector control covering all species, since each species has its own specific habitat. Several trained malaria workers and assistants visit house and spray every 6 month or once a year, depending upon transmission pattern. Fogging by organic phosphorus such as malathion and fenitrathion is also carried out in Central Java. Targets for vector control are 12 million, 1 million and 10 million houses, for DDT, fenitrathion and fogging, respectively (Pelita III).

Not all cases can be cured by chloroquine treatment. Resistant *P. falciparum* has been reported in several provinces, namely East Kalimantan, West Java, Central Java, East Java, Bali, East N.T., T.T., Lampung, Irian Jaya and Jakarta. Furthermore, anopheles resistant to DDT has been reported in Central Java.

(2) Filariasis

The disease is prevailing over the whole country, but lower in Java and Bali. Causative organisms are *B. malayi* for periodic and subperiodic forms, *W. bancrofti* for rural and urban type and *B. timori*. The vectors are *M. uniformis* for *B. malayi* subperiodic form, *An. barbilostris* for *B. malayi* periodic form, *An. barbilostris* for *B. timori* and *Culex fatigans* for *W. bancrofti*. An extensive survey of the disease has been carried out since 1979 in 20 provinces including 210,280 population. The rate of microfilaria detection varied from 0.03 - 35%. The rate is high in Sulawesi Tengah (35%), Kalimantan (6-11%) and N.T.T. (11%). Because of difficulty of control of mansonia mosquitos, the control measure is only limited to the mass-treatment with diethylcarbamazine (DEC). However, the complete treatment is sometimes difficult because of the side reaction of the drug. Extensive survey and education of people are important. Study to reduce the side effect by the drug is desirable. Trial to administer continuously low dose of DEC in table salt has been carried out in South Kalimantan in order to eliminate side effect of the drug.

(3) *Schistosomiasis is only endemic in Lindu valley and Napu valley* in Sulawesi. The population in these are is about 10,000 and infection rates were 27% in Lindu and 15% in Napu (1979/1980). However, the rate reduced to about 10 percent by the mass-treatment with praziquantel. Vector control has not been performed, although trials are under way.

Swimmer's itch due to larvae of bird schistosoma is also common in Indonesia.

(4) Soil transmitted Helminth

Ascariasis, hookworm infection and trichuriasis are very common all over the country. Recent survey of these parasites carried out in 23 provinces showed that the prevalence rates are different greatly depending on districts, and the rates reached to 80-90% in many provinces for each of the parasites stated above.

Although the rates decreased considerably by mass-treatment, the prevalence is still high, because of the reinfection. Examination for these parasities are carried out in Health Center, and the patients are treated there as the out patients. Additional health education and improvement of hygienic sanitation are still needed to reduce the prevalence of these diseases.

(5) Amoebiasis

No statistical data were available on the disease, although it was repeatedly explained in many institutions visited that *Entamoeba histolitica* is found commonly by the stool examination. Liver abscess due to amoeba dysentery was not observed in the hospitals visited except Palembang. The situation makes a distinct contrast to that of Thailand where the prevalence of the disease is very high. It is of interest to study the reason for such difference whether virulence of the pathogen is different. Early use of drug (chinoform) may be one of the factor(s). Although clioquinoform is used for amoeba dysentery and other diarrheal diseases, SMON cases were not found in Indonesia.

3. Control of communicable diseases

(1) General aspect of the control measures

As stated above, communicable diseases are the major health problem of this country. High prevalency of the communicable diseases seems to be influenced greatly by poor nutritional condition, poor environmental sanitation, ignorance of health among population and socio-cultural situation. The tropical climate and geographical characteristics of the country which consists of thousands of islands and hence the situation of transportation make the control of those disease more complicated.

The diseases control programs give the high priority to the diseases with the following criteria :

a) Diseases with high morbidity and mortality.

b) Those prevalent among children and the productive age groups.

c) Those prevalent among people with a low income in rural as well as urban areas.

d) Those prevalent among people working in the developing areas.

e) Those against which effective control measure is available.

f) Diseases which are mentioned in International Health Regulation.

During PELITA III, priority is given to the following programs : malaria control program, expanded program on immunization, diarrheal disease control program, tuberculosis control program. Furthermore, programs for dengue hemorrhagic fever, filariasis, shistosomiasis, control of veneral diseases, surveillance and control of vectors, control of leprosy and framboesia,

control of zoonotic diseases, soil transmitted parasitic diseases, health protection of transmigrated people and pilgrims have been also carried out.

Other relevalent programs such as improvement of sanitary conditions of environment (especially supply of safe water and excreta disposal), health education, training of medical and health manpower and family planning have also implemented in parallel with the direct control programs stated above.

Besides the implementation of the programs stated above, many studies have been carried out in order to support the national programs on (i) malaria, (ii) dengue hemorrhagic fever, (iii) filariasis and schistomiasis, (iv) diarrheal diseases and (v) Expanded Program on Immunization etc. These studies are carried out by experts from various institutions, such as National Institute of Health Research and Development (NIHRD), medical faculty of universities and other governmental and private institutes. Most of the studies are based on the Health Service Research (HSR) to guarantee the implementation of the results of the studies.

(2) Health Centre (Puskesmas)

Health center (HC) plays a very important role in the control of communicable diseases. As of 1982, there are 4753 health centers, at least 1 HC in subdistrict (Kecamatan, with 30,000 - 50,000 population). Health Center belongs to the local government, not directly to Ministry of Health. The standard health centers personnel consists of one medical doctor, 6 nurses (including midwife and assistant nurse), 1 sanitarian, 1 administrator, 1 driver, 1 dentist per 5 HC and 1 dental nurse per 3 HC. As of 1981, the filled up rate in HC was as follows :

Medical doctor	80 - 90 %
Nurse	50 - 60 %
Dentist	about 20%
Dental nurse	about 40 - 50%

Each health center has 2 - 5 sub - health centres which consist of one nurse or midwife and assistant nurse or midwife. In addition, the regency provides mobile health center (Puskesmas Keliling).

The main activities of health center are as follows :

a) Carrying out health measures to promote the state of health of the community and to diminish diseases.

b) Fostering the community within its territory to actively participate in health exertions, add giving assistance to health measures carried out by the community itself.

It is expected that at the end of Pelita III, conforming to need and capability, Health Centre can perform exertions in the direction of its twelve-fold tasks, embracing:

(i) - treatment
(ii) - maternal & child health care and family planning,
(iii) - communicable disease control,
(iv) - hygiene and sanitation,
(v) - health education to the public,
(vi) - public health nursing,
(vii) - recording and reporting,
(viii) - nutrition improvement,
(ix) - school health,
(x) - dental health,
(xi) - mental health,
(xii) - laboratory examinations.

The team was strongly impressed that young medical doctors are working actively in health center. For example, they treat 50 - 100 patients from 8.00 to 10.00 am and then go around village until 12.00 am. In the afternoon, they have to make reports or to engage in some special programs. These doctors have to work compulsorily in health center for 3 - 5 years immediately after graduating medical faculty. The fact that the curriculum of medical education attaches importance to public health and community service seems to have contributed greatly to promote the activities of health center.

It is planned in Pelita III, that sub-districts with more than 30,000 inhabitants and a large territory will have a new health centre in addition. In the context of spreading the health services to villages and inhabitants with low income, taking into consideration the existence of private health services, every health centre will be supported by five health centre branches of modest but comprehensive character, managed by a health nurse and an auxiliary. Beside that will be developed Health Posts, to be established by the community itself. There will be built about 800 new Health Centres and a number of Health Centre Branches according to the need.

It is planned that at the end of Pelita III every health centre has sufficient staff that is really capable to perform above mentioned task conforming to the demand. Nurses and midwives will have a re-training in order to become health nurses with a multipurpose character.

(3) Immunization

Immunization is performed along the line of Expanded Program on Immunization (EPI) recommended by WHO. BCG vaccination has been given to infants, preschool children and school children before leaving school. The rate of immunization seems high (more than 90%). However, tuberculin reactivity is not tested after immunization. Diphtheria pertussis tetanus combined vaccine (DPT) is given to infants at two doses and diphtheria and tetanus combined toxoid (DT) is given at the age of about 5 years. However,

the number of children with complete immunization seems to be less than 40% of target population. A study on the immune response of children to the vaccines may be desirable to carry out effective immunization. Tuberculin reaction for BCG and Schick test for diphtheria toxoid may be used for such purpose. Midterm evaluation of EPI will be carried out soon in order to know the result of the existing EPI.

Furthermore, cold chain to keep vaccines in good condition is a big problem in this country to proceed effective immunization. Electric as well as kerosene refrigirators do not work properly because of shortage of electric power and kerosene of good quality. In some rural areas, ice box is used, but the function is not always suitable to keep vaccines.

(4) Activity of Public Health Laboratories

Every province has a Public Health Laboratory. Most of the laboratories have sections for microbiology, serology, hematology and clinical chemistry, and some have pathology section. The ability of examination is different greatly depending on the laboratory. The laboratories are classified in two catagories, A and B. Class A laboratories are located in several large cities such as Denpasar, Medan, Palembang, Surbaya, Ujung Pandang and Yogyakarta. They have a long history and serve as the reference laboratory for the class B laboratories.

All laboratories have facility to examine pathological bacteria, especially for enterobacteria. However, serological identification is limited to a few species such as *V. cholerae*, *S. typhi* and *S. paratyphi* (A, B and C). For further confirmation, strains are sent to Biomedical Research Center as a National Reference Public Health Laboratory in Jakarta, if necessary. "A class" laboratories carry out test for sensitivity of bacteria against some antibiotics. They also perform serological test for antibody against dengue virus and for hepatitis B surface antigen and antibody. Some laboratories have fluorescent microscope, but it is not always used because of shortage of reagents such as fluorescine conjugated antibody. In a laboratory visited, toxigenicity test of diphtheria bacilli was carried out. No A class laboratory has section of virology.

Biomedical Research Center (BRC) of National Institute of Health Research and Development (NIHRD) located in Jakarta serves as the National Reference Public Health Laboratory to the provincial laboratories. The institute has facilities to carry out researches on communicable diseases and reference services in the field of bacteriology, virology, immunology and parasitology. They have also facilities to test vaccines used for Expanded Program on Immunization (EPI) and vaccine efficacy by means of sero-conversion test.

Hospitals have division for clinical pathology, but the bacteriological section is usually poorly equipped, compared with the sections for clinical pathology. "A class" hospitals are also National Reference Laboratory for clinical pathology. Examinations

for microorganisms are often carried out by the cooperation with Provincial Public Health Laboratory or Department of Microbiology of school of medicine.

Shortage of electric power and quality of water seems to be big problems for further development of laboratory activities.

(5) Surveillance system

In Indonesia, there are two kinds of reporting system for communicable diseases as of 1982.

a) Collection of the report by Bureau of Planning of the secretariate General of the Ministry of Health. This system started in 1980. Chief of HC has to report monthly the number of patients of ten leading diseases and other communicable diseases which are considered important in the area. The copies of this report are sent to the head of Regency Health services and Planning Bureau. In near future, these data will be processed by computer and sent to CDC as soon as possible.

b) Collection of the reports by surveillance section of Directorate General (D.G.) of CDC.

Three reports are included here.

i) Usual report is made by the head of HC and sent to the head of Regency Health Service and finally to Directorate General of CDC. However, when an outbreak of communicable diseases is observed, the HC head reports directly to D.G. of CDC and asks for their assistance.

ii) Reports from hospitals (provincial and regency) are also available for the surveillance of communicable diseases. Although these data are limited to admission patients, the informations for age distribution and case fatality rate can be calculated.

iii) Report of active surveillance of special diseases. These data are limited at present, but more development is expected in the future.

Report on the cause of death is not so useful in this country, because the head of village is allowed to issue the death certificate without the aid of medical doctor, especially in rural areas. Reliable data may be obtained only from hospitals.

Laboratory examination should be carried out more extensively to get informations on the causative organisms.

(6) Hygiene and sanitation

Hygiene and sanitation are very important to prevent communicable diseases, especially gastroenteritis (including cholera), typhoid fever, hepatitis A and poliomyelitis. Such fecal-oral

infections are still common all over the whole country, although environmental conditions have been gradually improved. The fact may suggest that hygiene and sanitation should be more intensively improved. In addition to level up the environmental conditions, health education for the people should be stressed, although it may be very difficult to change their habits. National project on safe water supply and family latrine (Samijanga) has been carried out since 1977 in order to reduce water borne communicable diseases.

Water supply program in Indonesia is well established. The program is very important not only for the control of communicable disease but also for health education and promotion of agriculture and quality of life of the Indonesian people. The rate of safe water supply has been increased recently, but the average rate is still under 30 percent and especially lower in the rural areas. Even during short trip, we found that several equipments for water supply are out of order for a long time.

Facilities for treatment of dirty water and sewage are also an important problem. Dirty water from latrine and kitchen is cast away directly to the river and sea, or penetrated underground. The pipe system for dirty water is planning in very few districts. Only 20 percent of the population have their own latrines. River, pond and field are used as the latrines for majority of population. Most of the gabbage are burned and buried under the ground. Movement for cleaning house or town is found in a few areas.

(7) Health manpower

In every institutions visited, shortage of manpower seems to be a big problem. Training of young people is an urgent need in quickly developing countries. The present team was impressed during the trip that young people are excellent and eager to perform their duty and hence the situation of disease control would be much improved within few decades.

a) Medical doctor

There are 14 medical faculties in the governmental universities and 13 private medical schools. Graduates from the latter should take the national examination for medical license. Medical doctor and medical specialist graduated from foreign country have to work at the teaching hospital for several months. About 2000 students are graduated from government medical schools every year. Since they have to work compulsorily in health center immediately after graduation, the curriculum of medical school lays stress on public health. Recently many medical school assign a public health practice in the rural areas to the students every year throughout 6 years course. The program of public health practice is well organized and in good collaboration with HC and the people. After graduation, more than 80% of the students have to work for the Ministry of Health and work in HC. The period of duty is different depending on districts.

b) Nurse and midwife

Before Pelita II, there were 24 categories of nurse in order to supplement the shortage of nurse, but at present only two kinds of education facilities are available, Academy of Nurse and School of Nurse. The former is to bring up teachers of nurse and the latter general nurses. In addition, there are many schools for assistant nurse. Now Academy of Nurse and School of Nurse are planning to develop by the aid of JICA.

Number of midwife is also insufficient. Training for one year is assigned for midwife after graduation of Academy of Nurse.

c) Laboratory technician

Many provinces have a school of analyst to train laboratory technician. Students are trained for 3 years for microbiology, parasitology, immunology, hematology, clinical chemistry and pathology. Approximately 30-50 students are graduated from the school. Some provinces have additional courses for several months to train technicians for the advanced technology in medical science. There is Academy for Medical Laboratory Technician under the University of Airlangga in Surabaya. They are trained for 3 years after graduated from School of Technician for special field of laboratory technology.

(8) Hospital

Medical care system in Indonesia is well organized now. Twenty seven provincial hospitals are located in the capital of each province, where all of diseases including communicable diseases are treated. Each regency or municipality has also its own hospital.

The governmental hospitals are classified into A, B, C and D according to their ability such as beds capacity, facility and medical speciality. Special hospitals such as mental, maternity, leprosy, tuberculosis are classified as E.

Although facility and manpower have been planned to improve through Pelita, some hospitals can not reach their standard ability.

The referal system of medical care is summarized as follows: Health Center ⟸⟹ Regency hospital ⟸⟹ Provincial hospital.

When we visited some hospitals during our observation trip, we recognized several problems in the hospitals.

a) There is a risk of hospital acquired infections due to inadequate precaution for highly infective cases.

b) Facility and equipments in some low rank hospitals are insufficient to apply the modern medical technology. In this respect, a limitation of local electric power supply in some regency hospi-

tals (class D) causes many hazards for electric equipments such as refrigerator, X-ray, surgical equipments and so on.

c) Medical and paramedical manpower is insufficient in many hospitals which resulted over burden of all medical participants.

Five main causes of death reported in the hospitals are as follows:

- lower respiratory tract infections
- diarrheal diseases
- cardiovascular disorders
- tuberculosis
- tetanus.

4. Summary and comments

The team was deeply impressed that control programs against communicable diseases are carefully planned and that health authorities in every institution visited are well aquainted with the existing situation and eager to proceed the campaign against the diseases. The health status of the people will be improved in future as the consequences of the multidisciplinary and multifactorial approaches to improve the health status of the population based on the National Health System.

Health center plays an important role to control the diseases; active case findings and treatment of the patients free of charge seem to be very useful to reduce the prevalence of malaria, tuberculosis, leprosy as well as gastroenteritis. However, number of manpower is not sufficient to proceed the control programs effectively. It seems difficult to extend the activities to include "primary health care" so that health status of entire population will be improved. Provision of more equipments and appropriate technology should also be considered.

The surveillance of the communicable diseases should be supported by laboratory examination, obtained by adequate and reliable technologies. Diagnosis of the diseases is decided by clinical symptoms in many occasions, not by the doctor in some cases. More extensive laboratory examination should be carried out for some diseases, e.g. gastroenteritis and infection of respiratory tracts. Laboratory supported study should be considered both in hospitals and public health service. Accurate diagnosis may be necessary to proceed the control programs effectively. Method of collecting information of the patients as well as the laboratory finding should be considered, including the use of computor.

Follow up of the carrier would be desirable for some disease such as typhoid fever, based on the laboratory examination to prevent further infection. Isolation of the patients from their family is necessary for some diseases such as typhoid fever, cholera and active tuberculosis.

It would be desirable to improve food sanitation, including the inspection of restaurants, hotels and, if possible, street stalls, based on the laboratory examination.

Supply of safe water, improvement of sanitary conditions of environment and health education are the prerequisites to control fecal-oral infections. It is also important to carry out the laboratory examination more extensively for portable water and pathogenic organisms in the sewage. However, further comments may not be necessary, because programs for these factors are well established.

Immunization is carried out along the line recommended by WHO, that is Expanded Program on Immunization (EPI). However, number of children and pregnant women receiving complete immunization is not sufficient to control immunizable diseases. Shortage and inadequate maintenance of cold chain seem to be serious obstacles to proceed effective immunization. Even inactivated vaccine such as pertussis vaccine may be deteriorated, needless to say live vaccines such as BCG, poliomyelitis and measles vaccines. Evaluation of the immune response of the vaccinees would be desirable to investigate whether the dosage and method of immunization are adequate to prevent the immunizable diseases.

Vector borne diseases such as malaria, dengue hemorrhagic fever and filariasis are still prevailing violently in many provinces. Schistosomiasis is endemic in Central Sulawesi. The control measures of the vectors are different for each species. Anopheles control is now going by residual spraying with DDT, and for *Aedes aegypti* fogging combined with larvaecide oiling in focus areas is carried out, but no control measure is available for Mansonia species. *Oncomelania hupensis linduensis*, vector of *Schistosoma japonicum* is now investigated extensively and control program is under planning. However, number of trained workers is not sufficient in the endemic areas. Strengthening of the training course of medical entomologist and Malacologist may be needed.

In summarizing, control of communicable diseases is still an important health problem in this country. Shortage of facilities and manpower stated above seem to hamper the rapid implementation of the control programs. Cooperation from foreign countries may be useful to supplement the financial limitation. The program for this should be planned carefully by considering various factors investigated from different points of view, inclusive of epidemiology, microbiology, immunology, ecology, as well as socio-cultures. Some suggestions for future cooperation will be stated below.

5. Recommendations

The team would like to recommend the following items :

(1) Strengthening of ability and utilization of laboratory services. The priority may be given to several Provincial Laboratories and Biomedical Research Center (BRC) which may serve as the reference laboratory.

a) Provision of some equipments and reagents necessary to carry out usual bacteriological examination including anti-sera for typing may promote the activities greatly. The following items may be considered.

Enterobacteria, especially entero-toxigenic *E. coli*

Corynebacteria

Pertussis bacilli

Streptococci, including pneumococci

Staphylococci

Neisseria

Serodiagnosis of syphilis, including TPHA and FTA

Parasites

Bacteriological examination of water and food

b) Some equipments and reagents to carry out serological examination of dengue hemorrhagic fever and hepatitis.

c) For a few selected laboratories, facilities for virological and ricketsial examination may be provided. The following items may be considered: Rota virus, dengue hemorrhagic fever, poliomyelitis, encephalitis and influenza.

d) Training of the staffs of Provincial Laboratory and BRC for the advanced technology of laboratory examination, in the country itself as well as abroad.

(2) Promotion of cooperative study of communicable diseases. It is important to involve some medical faculties of university. The following items may be considered.

Gastroenteritis

Malaria

Dengue hemorrhagic fever

Filariasis and schistosomiasis

Encephalitis

Rickettsiosis, especially in transmigrated area

Expanded Program on Immunization

(3) Strengthening the ability for training medical entomologist. In this connection, postgraduate international course for medical entomology carried out in Faculty of Agriculture of Bogor University may be considered. The program should contain both hard and soft wares.

(4) Improvement of the system of recording and reporting.

6. Acknowledgement

The observation team should like to mention that the present observation in Indonesia could not have been accomplished without kind cooperation and preparation of Prof. A.A. Loedin, Head of NIHRD, Dr. M. Adhyatma, Director General of CDC, staffs of the Ministry of Health, Kakanwil of each Provincial Health Office and their staffs. The team is also grateful to Dr. G. Hartono, Secretary General of CDC, Dr. I. Koiman, Head of BRC and Dr. S. Gandahusada, Center for Health Ecology Research, NIHRD, for their generous cooperation and useful discussions. The team should also emphasize that the observation and discussion here have been very instructive and encouraging for us.

Table 1 Trend of Suspected Cholera Cases

Year	Suspected cholera cases	Death	Case fatality rate (CFR)	Incidence rate per 100,000 population
1978	23,945	1,231	5.1	16.9
1979	31,516	1,491	4.7	21.7
1980	29,288	1,026	3.8	19.9
1981	22,450	552	2.5	-

* Until November

Although the incidence rate has not been changed, case fatality rate (CFR) has been decreasing year by year.

Table 2 Number and Percentage of Deaths by Cause of Death
1972 & 1980

Cause of death *)	1972		1980	
	Deaths	%	Deaths	%
(1)	(2)	(3)	(4)	(5)
1. Lower respiratory Tract Infection	70	12.0	180	19.9
2. Diarrhoea	99	17.0	170	19.8
3. Cardiovascular Disorders	30	5.1	90	9.9
4. Tuberculosis (T B C)	35	6.0	76	8.4
5. Tetanus	27	4.6	59	6.5
6. Diseases of the Nervous System	30	5.1	45	5.0
7. Liver Disorders	-	-	37	4.1
8. Injuries and Accidents	12	2.1	32	3.5
9. Neoplasm	-	-	31	3.4
10. Typhoid	12	2.1	30	3.3
11. Other Infection and Parasitic Diseases	-	-	27	3.0
12. Complications of Pregnancy and Delivery	13	2.2	23	2.5
13. Neonatal Condition	14	2.4	-	-
14. Others	241	41.3	62	6.9
15. Not Clear	-	-	43	4.8
Total	583	100.0	905	100.0

Note : *) There were eleven major diagnostics in 1972 and fourteen in 1980.

Source : Ministry of Health - 1972 and 1980 Household Health Survey.

Table 2b Prevailing Disease Patterns by Type of Disease.
1972 & 1980

Type of Disease	1972		1980	
	Morbidities	Percentage to population	Morbidities	Percentage to population
(1)	(2)	(3)	(4)	(5)
1. Upper Respiratory Track Infection	980	0.9	3,796	3.1
2. Diseases of the Skin	721	0.6	1,013	0.8
3. Lower Respiratory Track Infection	422	0.4	1,041	0.9
4. Diarrhea	297	0.3	947	0.8
5. Tuberculosis (TBC)	577	0.5	732	0.6
6. Cardiovascular Disorders	120	0.1	717	0.6
7. Eye Infection	224	0.2	451	0.4
8. Diseases of the Musculoskeletal System and Connective Tissues	26	0.0	442	0.4
9. Malaria	279	0.2	219	0.2
10. Disease of the Nervous System	74	0.1	254	0.2
11. Anaemia	182	0.2	250	0.2
12. Arthritis and Rheumatism	94	0.1	321	0.3
13. Disorders of Tooth and Tissues of Teeth	70	0.1	293	0.2
14. Infectious and Parasitic Diseases	107	0.1	268	0.2
15. Accident	55	0.1	248	0.2
16. Others	1,319	1.2	2,937	2.4
Total	5,547		13,929	

Source : Ministry of Health - 1972 and 1980 Household Health Survey.

Table 3 Morbidity of Ten Major Diseases by Age Group

1 9 8 0

Diagnostic of Disease	Age Group (Years)							Total
	1-4	5-14	15-24	25-34	35-44	45-54	+55	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Influenza	601	539	218	234	193	162	127	2,074
2. Respiratory Track Infection	364	321	141	109	92	78	77	1,182
3. Bronchitis, Emphysema & Asthma	125	110	49	64	119	169	288	924
4. Respiratory Tuberculosis	27	35	38	54	130	161	251	696
5. Intestinal Infectious Diseases	275	78	39	48	61	42	60	603
6. Infections of the Skin and Subcutaneous Tissues	256	189	31	27	33	31	25	592
7. Other Intestinal Diseases	9	-	62	108	117	89	100	485
8. Hypertensive Disease	-	-	14	50	108	132	151	455
9. Diseases of the Skin and Subcutaneous Tissues	89	100	46	35	41	39	67	417
10. Diseases of the Skin and Subcutaneous Tissues	-	-	-	46	98	121	162	427
11. Others	820	1,042	583	717	787	669	840	5,458
Total	2,566	2,414	1,221	1,492	1,779	1,693	2,148	13,313

Source : Ministry of Health - 1980 Household Health Survey.

Table 4 Seasonal Variation of Enteropathogenic Organisms Isolated in Acute Diarrhea Cases which Admitted in Infectious Disease Hospital in Jakarta (1980/1981)

Month	Examined			Result of Examination							
	Male	Female	Total	V. Cholerae	N.A.G.	Parahaemolyticus	Salmonella.	Shigella	Campylobacter.	Others	Total
April 1980	31	20	51	11	0	1	3	0	0	0	15
May	40	47	87	30	0	1	3	0	0	0	34
June	74	85	159	58	0	2	11	0	0	0	71
July	124	71	195	79	2	3	4	0	0	0	88
August	95	113	208	60	4	2	6	0	0	0	72
September	106	60	166	86	1	6	3	0	0	0	96
October	59	47	106	55	0	1	3	2	1	0	62
November	74	55	129	61	1	1	4	1	0	0	68
December	72	74	146	64	0	0	5	0	0	0	69
January '81	85	56	141	58	1	2	3	2	0	2	68
February	53	28	81	26	0	3	1	0	0	5	35
March	68	46	114	57	1	5	7	0	2	12	84
Total :	881	702	1583	645	10	27	53	5	3	19	762
(%) :				(40.7)	(0.6)	(1.7)	(3.4)	(0.3)	(0.2)	(1.2)	(48.1)

(by Dr. Syrus of C.B.R.)

Number of acute diarrhea cases has two peaks, July-August (in dry season) and December-January (in rainy season), respectively. The positive rate of enteropathogenic organisms is 48.1%, and *V. cholerae* positive rate is 40.7%. The seasonal variation of *V. cholerae* positive cases is almost parallel with that of total acute diarrhea cases.

Table 5 Age Distribution of Enteropathogenic Organisms Isolated in Acute Diarrhea Cases which Admitted in Infectious Disease Hospital in Jakarta (1980/1981)

Age group	Total	V.cholerae (%)	Salmonella (%)	Shigella (%)	V.parahaemolyticus (%)	N.A.G. (%)	Campylobacter (%)	Others (%)
0 -	234	40 (17.1)	7 (2.9)	0 (0)	0 (0)	1 (0.4)	2 (0.9)	3 (1.3)
1 -	272	102 (37.5)	11 (4.0)	0 (0)	0 (0)	1 (0.4)	1 (0.4)	1 (0.4)
5 -	88	61 (69.3)	3 (3.4)	0 (0)	1 (1.1)	0 (0)	0 (0)	2 (2.3)
10 -	70	29 (41.4)	5 (7.1)	0 (0)	1 (1.4)	1 (1.4)	0 (0)	0 (0)
15 -	814	347 (42.6)	22 (2.7)	4 (0.5)	24 (0.1)	6 (0.7)	0 (0)	13 (1.6)
Unknown	105	66	5	1	1	1	0	0
Total :	1583	645	53	5	27	10	3	19

(By Dr. Syrus of C.B.R.)

Positive rate for *V. cholerae* is relatively low under 4 years old.

Table 6 Age Distribution for Rota Virus and *E. coli* Isolated in Acute Diarrhea Cases which Admitted in Infectious Disease Hospital in Jakarta (1980/1981)

Age group	ROTA Virus		Toxigenic E.coli (ETEC)	
	Number examined	Positive (%)	Number examined	Positive (%)
0 -	50	20 (40.0)	45	7 (15.6)
1 -	47	18 (38.3)	51	11 (21.6)
5 -	9	2 (22.2)	4	0 (0.0)
10 -	1	0 (0.0)	0	0 (0.0)
15 -	16	1 (6.3)	27	1 (3.7)
unknown	7	3 (42.9)	7	0
Total :	130	44 (33.8)	134	19 (14.1)

Positive rate for Rota Virus and ETEC are both relatively high under 4 years old.

Table 7 Number of Outbreaks of Unusual Events in Indonesia 1981

No.	Disease	No. of Outbreaks	Patients	Death	CFR	Remarks
1.	Diarrhea	28 (40.5)	4094	235	5.77%	
2.	Measels	20 (29)	3415	325	9.51%	
3.	Poisoning	5 (7.2)	309	5	1.6%	
4.	D H F	2 (2.8)	49	7	14.3%	
5.	Diphtheria	3 (4.3)	75	6	8%	
6.	Poliomyelitis	3 (4.3)	38	-	-	
7.	Hepatitis	3 (4.3)	313	6	1.9%	
8.	Anthrax	1 (1.4)	6	4	66.6%	
9.	Influenza	1 (1.4)	-	20	-	
10.	Flu Hongkong	1 (1.4)	72	32	44.4%	except Irian Jaya
11.	Post vaccinale encepha-litis	1 (1.4)	1	-	-	
12.	Tetanus neomatorum	1 (1.4)	5	3	60 %	
13.	Malaria	1 (1.4)	73	-	-	
	Total	69				

Table 8 Number of Health Center Performing TB Program

No.	Province	1979/1980		1980/1981		1981/1982	
		LTT	STT	LTT	STT	LTT	STT
1.	D.I. Aceh	10		12		14	5
2.	Sum. Utara	29	1	32	3	45	17
3.	Sum. Barat	48	12	30	30	30	60
4.	R i a u	6	2	10	3	10	4
5.	Jambi	8	2	9	2	8	8
6.	Sum. Selatan	30	5	30	8	40	20
7.	Bengkulu	6	2	8	2	10	4
8.	Lampung	4	-	4	1	4	5
9.	DKI Jakarta	66	5	66	5	-	-
10.	Jawa Barat	58	8	66	12	71	25
11.	Jawa Tengah	181	3	192	13	228	29
12.	D.I. Yogyakarta	61	12	55	18	37	36
13.	Jawa Timur	89	11	122	18	149	31
14.	Kal. Barat	33	33	33	33	52	52
15.	Kal. Tengah	10		10		10	
16.	Kal. Selatan	7	2	7	3	6	7
17.	Kal. Timur	19	4	22	6	26	6
18.	Sul Utara	8		8		16	
19.	Sul Tengah	10	2	5	1	6	-
20.	Sul Selatan	23	2	24	5	31	13
21.	Sul Tenggara	5	3	5	3	7	3
22.	N.T.B.	4	-	4	4	4	4
23.	Bali	34	8	34	16	25	25
24.	N.T.T.	28	-	30	6	30	8
25.	Maluku	9	1	11	1	-	3
26.	Irian Jaya	1	-	1	-	2	2
27.	Timor Timur	-	-	-	-	-	-
Total		28		30		28	
		767	118	800	193	835	367
		913		1,023		1,320	

Note : LTT = Long term scheme of treatment
STT = Short term scheme of treatment

Table 9 Prevalences of BTA(+) Among Children over 15 age and all Population in Different Provinces

No.	Year	Province	Results	
			> 15 age	All Population
1.	1979	JAWA Tengah	0.22%	0.14 %
2.	1980	JAWA Barat	0.42%	0.2 %
3.	1980	Bali	0.14%	0.08 %
4.	1980	Sumatera Utara	0.88%	0.44 %
5.	1980	Sumatera Selatan	0.7 %	0.35 %
6.	1980	Sumatera Barat	0.64%	0.32 %
7.	1980	Jawa Timur	0.57%	0.28 %
8.	1980	Kalimantan Barat	0.24%	0.17 %
9.	1981	Kalimantan Timur	-	-
10.	1980	Sulawesi Selatan	0.75%	0.47 %
11.	1981	N.T.T.	-	-
12.	1980	D.K.I. Jaya	0.26%	0.13 %
13.	1980	D.I. Yogyakarta	0.42%	0.26 %
14.	1981	Sulawesi Utara	-	-
15.	1981	D.I. Aceh	0.24%	0.14 %

Table 10 Total Number and Case Fatality Rate of Infectious Diseases Treated at Hospital in Indonesia (1978-1981)

No.	Disease	1979		1980		1981		Proportional Rate %			Case Fatality Rate		
		C	D	C	D	C	D	1979	1980	1981	1979	1980	1981
1.	Tetanus neonatorum	1,102	563	933	497	692	354	0.14	0.16	0.18	51.1	53.3	51.2
2.	Tetanus	6,824	1,625	4,173	798	2,638	554	0.87	0.74	0.70	23.8	23.8	19.2
3,	Diphtheria	2,553	284	1,694	170	878	106	0.32	0.30	0.23	11.1	10.0	12.1
4.	Pertussis	183	12	354	11	192	9	0.02	0.06	0.05	6.6	3.1	4.7
5.	Poliomyelitis (Paralityc)	95	2	92	4	83	3	0.01	0.02	0.02	2.1	4.4	3.6
6.	Measles	861	58	1,104	32	574	13	0.12	0.18	0.15	6.7	3.2	2.7
7.	Typhoid fever	27,259	1,109	16,137	542	10,016	336	3.46	2.85	2.67	4.1	3.4	3.4
8.	Gastro-enteritis	100,640	2.785	53.443	1,636	36,441	942	12.76	9.43	9.69	2.8	3.1	2.6
9.	Hepatitis	8,247	469	6,673	263	4,645	158	1.04	1.18	1.24	5.7	3.9	3.4
10.	Encephalitis	1,229	573	932	342	600	249	0.16	0.16	0.16	46.6	36.7	41.5
11.	Rabies	132	9	100	9	46	3	0.01	0.02	0.01	14.4	9.0	6.5
12.	Other Cases	639,463	21,058	481,266	17,299	319,097	12,461	81.09	84.94	84.90	3.3	3.6	3.9
		788,588	28,547	566,811	21,603	375,902	15,188	100.00	100.00	100.00	3.6	3.8	4.0

The common hospitalized infectious diseases are gastroentertis, typhoid fever, hepatitis, tetanus, and diphtheria. The cause of death is high in gastroentertis, tetanus, typhood fever, encephalitis and hepatitis.

Table 11 Number of Patient and Case Fatality Rate of DHF in Indonesia (1979-1981)

No.	Province	1979			1980			1981 **		
		Patient No.	Death	CFR	Patient No.	Death	CFR	Patient No.	Death	CFR
1.	D.K.I. Jakarta	769	46	6	817	21	2.6	1488	31	2.2
2.	Jawa Barat	110	10	9.1	113	17	15	270	40	14.8
3.	Jawa Tengah	552	16	2.9	1524	50	3.3	1064	24	2.3
4.	D.I. Yogyakarta	542	13	2.4	836	12	1.4	859	15	1.7
5.	Jawa Timur	200	25	12.5	479	21	4.4	403	25	6.2
6.	Bali	31	2	6.5	132	32	24.2	342	17	5
7.	N.T.B.	-	-	-	-	-	-	-	-	-
8.	N.T.T.	25	-	-	261	2	0.8	35	-	-
9.	Lampung	14	-	-	43	6	14.0	7	-	-
10.	Sumatera Selatan	233	12	5.2	616	50	8.1	59	5	8.5
11.	Jambi	209	3	1.4	175	2	1.1	445	8	1.7
12.	Sumatera Barat	63	2	3.2	15	1	6.7	1	-	-
13.	Riau	80	11	13.8	25	3	12	7	-	-
14.	Sumatera Barat	21	2	9.5	37	6	16.2	1	-	-
15.	D.I. Aceh	1	-	-	12	-	-	-	-	-
16.	Kalimantan Selatan	51	6	11.8	48	3	6.3	21	1	4.8
17.	Kalimantan Barat	142	11	7.7	5	3	60	8	-	-
18.	Kalimantan Tengah	24	-	-	10	8	80	42	-	-
19.	Sulawesi Selatan	1	-	-	69	4	5.8	-	-	-
20.	Kalimantan Timur	15	3	20	2	-	-	4	-	-
21.	Sulawesi Tengah	1	-	-	-	-	-	-	-	-
22.	Sulawesi Tenggara	-	-	-	13	3	23	-	-	-
23.	Sulawesi Utara	315	8	2.5	126	4	3.2	148	8	5.4
24.	Maluku	3	1	33.3	2	1	50	6	-	-
25.	Irian Jaya	1	-	-	2	-	-	5	3	60
26.	Bengkulu	-	-	-	-	-	-	1	-	-
Total		3388	171	5	5362	249	4.6	5130	175	3.4

** During 48 w of the year.

Table 12 Status of Rabies 1978-1980

No.	Province	1978					1979							1980						
		No. of person bitten	Total No. of patient (died)	No. of specimen (+)	Postvaccinal encephalitis C	D	No. of person bitten	No. vaccinated	No. of patient (died)	Specimen examined	Specimen positive	Postvaccinal encephalitis C	D	No. of person bitten	No. vaccinated	No. of patient (died)	Specimen examined	Specimen positive	Postvaccinal encephalitis C	D
1.	DI. Aceh	577	4	16	-	-	499	393	5	19	12	1	1	454	388	2	84	45		
2.	Sum Ut	3214	13	55	-	-	4879	3275	3	376	275	5	3	4613	3115	14	436	278	2	1
3.	Sum Bar	2382	6	106	-	-	2460	1185	1	63	33	-	-	2433	1208	6	152	134	-	-
4.	Riau	18	-	-	-	-	117	-	-	-	-	-	-	-	-	-	-	-	-	-
5.	Jambi	177	-	53	-	-	216	59	-	15	14	-	-	244	59	3	63	63	-	-
6.	Sum Sel	1817	5	59	1	1	1605	808	7	86	60	-	-	1672	815	3	54	43	1	1
7.	Bengkulu	258	5	55	-	-	182	117	1	96	18	-	-	297	172	7	136	37	-	-
8.	Lampung	1363	11	6	-	-	1426	1412	7	27	3	3	1	1549	1540	14	17	6	-	-
9.	DKI Jaya	-	-	-	-	-	585	49	-	15	-	-	-	702	57	-	23	1	-	-
10.	Ja Bar	2578	6	106	-	-	4178	1633	11	310	179	-	-	4561	1553	11	428	202	-	-
11.	Ja Teng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	—	-	-	-	-
12.	DI Yogyakarta	161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.	Ja Tim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.	Kal Tim	132	-	-	-	-	335	39	-	2	2	-	-	275	24	-	6	1	-	-
15.	Kal Teng	37	-	-	-	-	144	144	5	19	8	-	-	112	112	-	14	2	-	-
16.	Sul Ut	1496	15	126	19	6	2949	1324	7	216	149	12	5	2536	980	6	286	125	20	7
17.	Sul Teng	154	1	16	-	-	200	200	1	50	14	-	-	303	303	-	50	8	-	-
18.	Sul Tra	161	7	3	-	-	186	157	1	7	4	-	-	225	145	1	3	3	-	-
19.	Sul Sel	1591	7	8	-	-	335	39	-	-	2	-	-	275	24	-	6	-	-	-
	Total	16096	81	609	20	7	20296	10834	49	1301	773	21	10	20251	10495	67	1758	348	23	9

Table 13 Situation of Leprosy in Indonesia (1979)

No.	Province	Kabupaten		Total population (X 1000)	No. of Patients who must be treated				Rate of regularly treated patient	Prevalence rate (o/oo)
		Total	Cooperated		L/B	T	I	Total		
1.	DI. Aceh	10	10	2,572	1,525	1,608	427	3,560	70.20	0.8
2.	Sum. Utara	17	17	8,232	1,475	1,677	226	3,378	70.10	0.4
3.	Sum. Barat	14	9	3,344	486	498	265	1,249	69.61	0.3
4.	Riau	6	2	2,058	296	225	56	577	71.23	0.2
5.	Jambi	6	6	1,286	112	120	43	273	95.63	0.2
6.	Sum. Selatan	10	10	4,116	540	1,001	105	1,646	64.94	0.3
7.	Bengkulu	4	3	772	61	289	46	396	76.26	0.5
8.	Lampung	4	4	3,348	59	121	2	182	97.80	0.0
9.	D.K.I. Jakarta	5	5	6,805	660	1,127	69	1,856	55.54	0.8
10.	Jawa Barat	24	20	24,630	2,435	5,442	626	8,521	77.60	0.3
11.	Jawa Tengah	36	34	25,450	1,193	4,753	77	6,023	50.45	0.2
12.	DI. Yogyakarta	5	5	2,463	73	133	37	243	41.97	0.0
13.	Jawa Timur	37	37	25,556	8,752	14,345	2,048	25,145	69.29	0.8
14.	Kal. Barat	6	6	2,446	546	723	176	1,445	67.12	0.5
15.	Kal. Tengah	10	10	849	211	302	82	567	63.84	0.6
16.	Kal. Selatan	11	11	2,053	1,436	1,572	391	3,399	69.87	1.6
17.	Kal. Timur	7	4	892	677	591	26	1,294	95.98	1.4
18.	Sul. Utara	6	6	2,068	1,064	1,553	296	2,913	86.57	1.4
19.	Sul. Tengah	4	4	1,136	6695	822	276	1,793	5.08	1.5
20.	Sul. Selatan	23	23	6,303	7,655	11,608	334	19,597	63.46	3.1
21.	Sul. Tenggara	4	4	827	623	1,158	593	2,374	71.95	2.8
22.	Bali	8	8	2,491	601	488	30	1,119	94.81	0.4
23.	N.T.B.	6	6	2,594	901	973	298	2,172	90.16	0.8
24.	N.T.T.	12	12	2,802	2,625	7,517	1,963	12,105	57.98	4.3
25.	Maluku	5	5	1,349	2,271	3,129	203	5,603	79.01	4.1
26.	Irian Jaya	9	8	1,141	1,796	6,250	63	8,109	30.81	7.1
27.	Timor Timur									
	Total	286	269	141,573	38,786	68,025	8,758	115,569	65.50	0.8

Prevalence of leprosy is very high in Indonesia, expecialy in some provinces such as Irian Jaya, NTT and Maluku.

Table 14 Total Number of Leprosy Patients Newly Discovered and Total Number of Patients Treated Regularly

No.	Year	Total population	Total No. of new patient	No. of new patient/ 100,000 population	Total No. of patient who must be treated	Rate of regularly treated patient (%)
1.	1969/1970	117,183	3,229	2.8	53,275	23.0
2.	1970/1971	120,149	8,621	7.2	53,275	23.0
3.	1971/1972	123,115	6,117	5.0	70,134	35.9
4.	1972/1973	126,088	10,695	8.5	81,050	43.5
5.	1973/1974	129,083	11,392	8.8	67,765	50.6
6.	1974/1975	132,190	10,843	8.2	99,450	65.4
7.	1975/1976	133,190	7,363	5.5	101,828	63.5
8.	1976/1977	138,342	6,976	5.0	108,817	64.13
9.	1977/1978	141,579	8,351	6.0	113,865	65.37
10.	1978/1979	144,912	7,151	5.0	115,569	65.50
11.	1979/1980	148,349	7,071	4.8	119,582	66.76
12.	1980/1981	151,749	7,583	5	84,575	71.00
13.						

No. of new patients/100,000 population

The newly reported cases of leprosy had been increased until 1975, then became constant about 5 to 6/100,000.

Rate of regularly treated leprosy patients increased year by year in the last decade.

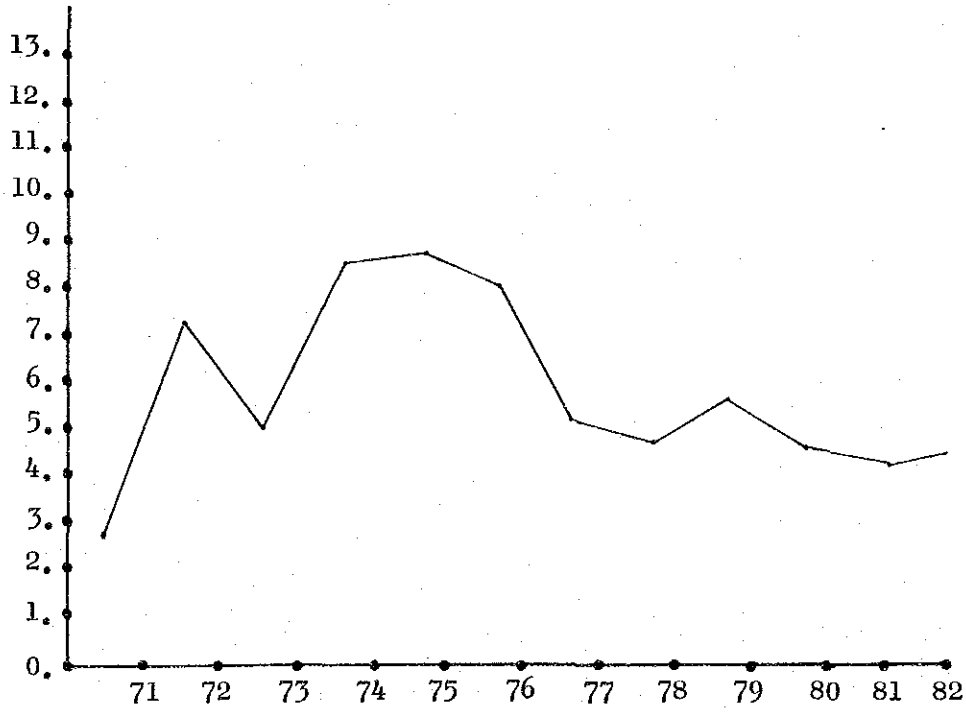


Table 15 Number of Health Facilities by Type of Facility
1973/74 - 1980/81

Fiscal Year	Health Facilities			
	Public Health Centers	Public Health Sub-Centers	Polyclinics	Maternal and Child Health Centers
(1)	(2)	(3)	(4)	(5)
1973 / 74	2,679	-	7,124	6,801
1974 / 75	3,113	-	7,124	6,928
1975 / 76	3,443	-	4,602	2,744
1976 / 77	3,893	-	4,180	2,412
1977 / 78	4,053	-	4,180	2,412
1978 / 79	4,353	-	4,180	2,412
1979 / 80	4,553	7,342	-	-
1980 / 81	4,753	8,386	-	-

Source : Ministry of Health

The number of Public Health Centers (HC) have been increasing year by year. In 1973/74 (at the end of PELITA I), there were 2679 HC and in 1980/81 (at the second year of PELITA III), there were 4753 HC. In PELITA III, policlinics and maternal and child health centers are combined to public health sub-centers.

Table 16 Results of Immunization

No.	Year	BCG Babies/Children				DPT 3 - 14 month			Polio 3 - 14 month			
				Revak. SD Pemb Klas I & II		Target	Realisasi		Target	Realisasi		
		Target	Realisasi	Target	Realisasi		DPT 1	DPT 2		Polio 1	Polio 2	Polio 3
1.	1976/1977	4,975,113	4,320,547	-	-	39,817	49,955	15,788	-	-	-	-
2.	1977/1978	4,742,773	3,722,781	-	-	203,217	205,619	103,189	-	-	-	-
3.	1978/1979	2,671,986	3,052,074	1,447,933	822,086	547,820	647,531	349,468	-	-	-	-
4.	1979/1980	2,454,732	2,442,106	1,144,557	874,460	788,445	691,998	576,200	-	-	-	-
5.	1980/1981	2,966,022	2,377,007	2,336,226	1,912,670	1,543,519	1,030,865	808,743	78,486	36,734	19,674	11,036
6.	1981/1982	2,544,064	707,308	3,636,592	794,957	2,544,064	657,247	481,081	58,682	48,606	26,212	14,397

Note :

a. 1976/1977 and 1977/1978 : BCG vaccination against children of 0 - 1 year, 12 - 13 years and other ages.

b. 1978/1979 and 1979/1980 : BCG vaccination against babies of 0 - 1 year and 3 - 14 years.

c. 1981/1982 : Data up to September, 1981

Table 17 Results of Immunization of Pregnant Mother
1976/1977 - 1981/1982

No.	Tahun	Target	Realisasi	
			TT 1	TT 2
1.	1976 / 1977	325,454	165,248	85,302
2.	1977 / 1978	587,547	273,862	147,700
3.	1978 / 1979	581,089	442,285	228,847
4.	1979 / 1980	783,620	423,285	323,898
5.	1980 / 1981	1,374,334	635,674	464,594
6.	1981 / 1982	3,294,702	393,963	256,135
7.	(April 1981 s/d September 1981)			
Total		9,946,746	2,334,317	1,506,476

Table 18 Situation of Cold Chain

	1979				1980 - 1982			
	Quantity		Quality		Quantity		Quality	
	Storage	Transport	Storage	Transport	Storage	Transport	Storage	Transport
1. Pusat	100%	90%	95%	95%	100%	100%	95%	95%
2. Propinsi	75%	50%	50%	90%	100%	100%	81.8%	90¢
3. Kabupaten	50%	25%	25%	50%	25%	100%	42.9%	90%
4. Kecamatan	100%	100%	10%	50%	100%	100%	12.5%	75%

Quality : Results of evaluation conducted by CDC and by Staley O. Foster in 5 provinces in September 1981.

Table 19 Rate of Safe Water Supply by Province

No.	Province	Rate of Safe Water Supply
1.	D.I. Aceh	22.5 %
2.	Sumatera Barat	15 %
3.	Riau	6 %
4.	Lampung	14.6 %
5.	Jawa Barat	18.52 %
6.	Jawa Tengah	19.30 %
7.	D.I. Yogyakarta	36.5 %
8.	Jawa Timur	25 %
9.	Kalimantan Barat	13 %
10.	Sulawesi Utara	26.9 %
11.	Sulawesi Selatan	16.34 %
12.	Sulawesi Tenggara	10 %
13.	Bali	35 %
14.	Nusa Tenggara Barat	26 %

The average rate of safe water supply is 20.3%; D.I. Yogyakarta and Bali have the highest rate (36.5% and 35%, respectively), and Riau the lowest (6%).

Table 20 Percentage of Households by Province/Island and Type of Toilet Facilities 1978

Province/Island	Type of Toilet Facilities				Number of Households (1,000)
	Private	Shared	Public	Others	
(1)	(2)	(3)	(4)	(5)	(6)
1. D K I Jakarta	58.4	9.0	15.0	17.6	1,014
2. West Java	13.7	11.3	7.0	68.0	5,517
3. Central Java & D.I. Yogyakarta	34.5	3.6	4.4	57.5	5,664
4. East Java	40.5	11.2	2.9	45.4	6,173
5. Sumatera	40.9	5.8	4.6	48.7	4,718
6. Kalimantan	28.7	14.7	9.8	46.8	1,257
7. Sulawesi	35.3	6.5	2.3	55.9	1,860
8. Other Islands	22.5	4.6	2.5	70.4	1,574
Indonesia	32.8	8.1	5.0	54.1	27,777

Source : 1978 National Socio- Economic Survey
Central Bureau of Statistics.

The rate of household which has private toilet is 32.8%; DKI Jakarta has the highest rate (58.4%) and West Jawa the lowest (13.7%).

Table 21 Number of Medical Personnel by Type
1973/74 - 1979/80

Fiscal Year	Type of Medical Personnel *)				Total
	Physicians	Nurses	Midwives	Assistants to Nurses/Midwives	
(1)	(2)	(3)	(4)	(5)	
1973/74	6,221	7,736	8,323	24,248	46,528
1974/75	7,644	8,066	9,160	26,262	51,132
1975/76	8,279	9,856	10,720	28,707	27,562
1976/77	8,977	11,284	12,642	30,972	63,875
1977/78	9,805	13,912	13,799	33,237	70,753
1978/79	10,456	16,140	14,921	35,577	77,094
1979/80	11,681	17,084	15,770	35,361**)	79,896

Notes : *) Based on the number of health personnel who completed an education and resigned/retired.

**) The number of assistants to nurses/midwives decreased because some of them are promoted to be nurses/midwives. Assistants to nurses/midwives are Junior High School graduates with two years vocational training in health service

Source : Ministry of Health

Table 22 Number of Graduates by Type of School 1976/77 - 1980/81

Type of Health School	Academic Year					Cumulative Total
	1976/77	1977/78	1978/79	1979/80	1980/81	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. School for Nurse	2,701	2,663	1,930	2,286	1,567	11,147
2. School for Health Nurse	-	-	33	291	459	783
3. School for Mental Nurse	146	80	90	92	38	446
4. School for Midwife	1,548	1,364	795	854	602	5,163
5. School for Nurse Teacher	118	149	131	113	117	628
6. School for Assistant to Nurse/ Midwife	3,188	2,443	1,939	793	337	8,100
7. School for Analyst	288	189	105	125	113	820
8. School for Assistant to Pharmacist	677	551	269	338	203	2,038
9. School for Sanitarian	395	338	172	188	81	1,174
10. School for Dental Nurse	266	212	85	201	254	1,018
11. School for Dental Technician	9	7	2	-	-	18
12. Senior School for Dental Health Nurse	39	16	2	-	-	57
Sub-Total	9,375	8,112	4,953	5,281	3,771	31,392
Academy						
13. General Nurse	147	174	176	206	188	891
14. Nurse Teacher	45	56	*)	*)	*)	101
15. Health Inspector	88	78	77	95	93	431
16. Nutritionist	29	46	25	47	34	181
17. Elektro Medis - X Ray Technician	6	6	9	11	-	32
18. Radiographics	30	28	12	-	34	104
19. Physiotherapist	25	-	49	28	22	124
20. Anaesthesist	16	30	-	-	25	71
21. Medical Analyst	-	-	20	19	12	51
Sub-Total	386	418	368	406	408	1,986
Total	9,761	8,430	5,321	5,687	4,179	33,378

Note *) Already closed

Source: Ministry of Health

The numbers of graduates for paramedical personnel are gradually decreasing. This is in accordance with the programme of the Ministry of Health not to train such manpower and those who are functioning will be upgraded to become health nurses.

Table 23 Number of Hospitals and Bed Capacities
by Type and Ownership of Hospital
1980

Ownership	Type of Hospital						Total
	General	Maternity	Mental	Leprosy	Tubercu-losis	Others	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Government	507 (58,566)	62 (1,339)	30 (5,984)	26 (3,685)	12 (818)	3 (422)	640 (70,814)
a. Ministry of Health	11 (6,794)	- -	26 (5,599)	2 (1,076)	6 (412)	3 (422)	48 (14,303)
b. Province Government	46 (11,456)	1 (117)	4 (385)	18 (2,311)	5 (367)	- -	74 (14,636)
c. Regency Government	242 (18,481)	11 (307)	- -	6 (298)	- -	- -	259 (19,086)
d. Ministry of Defence	130 (12,525)	40 (694)	- -	- -	1 (39)	- -	171 (13,258)
e. Other Ministries	78 (9,310)	10 (221)	- -	- -	- -	- -	88 (9,531)
2. Private	135 (17,200)	417 (9,620)	9 (414)	1 (60)	1 (320)	5 (320)	568 (27,729)
Total	642 (75,766)	479 (10,959)	39 (6,398)	27 (3,745)	13 (933)	8 (742)	1,208 (98,543)

Source : Ministry of Health
Figures in the bracket are the number of beds

Table 24 Indidence and Prevalence of Malaria in Java-Bali

1969 - 1980

Year	Total population (million)	Blood smear examined (SD)	Number positive for malaria in SD	SPR (%) (Slide posit. rate for M.)	API (%) (Incidence of malaria in all population	ABER	% F
1969	77.2	4,652,306	96,729	2.07	1.27	6.12	49.6
1970	77.9	5,946,866	117,056	1.97	1.43	7.28	52.89
1971	78.8	5,655,066	72,829	1.28	0.89	7.42	54.61
1972	80.6	6,715,155	128,830	1.92	1.61	8.37	55.75
1973	82.3	7,386,670	346,233	4.7	4.21	8.89	31.54
1974	84.1	7,519,286	229,711	3.05	2.75	8.9	34.55
1975	86.1	8,208,897	125,166	1.5	1.45	9.63	35.28
1976	87.7	7,859,677	96,999	1.23	1.11	8.96	40.84
1977	89.6	8,084,880	110,553	1.37	1.23	9.03	39.60
1978	91.5	8,174,431	127,590	1.56	1.39	8.91	34.39
1979	93.4	8,042,198	78,854	0.98	0.84	8.61	46.95
1980	95.4	9,089,354	176,733	1.94	1.85	9.53	46.6

Table 25 Prevalences of Malaria Outsides of Java-Bali

Year	Total population (1000)	Passive Case Detected					Malariometric Survey				Total			
		Clinical patients	Blood sm. examined (SD)	SD posit. number	S.P.R. %	P.f. + Mx %	SD examined	SD posit. number	S.P.R. %	P.f. + Mx %	SD examined	SD posit. number	S.P.R. %	P.f. + Mx %
1969	38,975	441,152	17,541	6,971	39.7		25,503	3,950	15.4		43,044	10,921	25.3	
1970	39,982	704,850	13,936	5,030	36.1	-	67,983	8,265	12.2		81,919	13,295	16.2	
1971	41,008	516,051	114,055	50,377	44.2	-	82,001	12,546	15.3		196,056	62,923	32.1	
1972	42,033	566,906	261,654	94,013	35.9	-	159,396	21,533	13.5		421,050	115,546	27.4	
1973	43,757	650,007	335,248	136,774	40.8	-	120,930	11,270	9.3		456,178	148,044	32.5	
1974	44,971	740,177	240,498	90,478	37.6	10.1	159,182	15,836	9.9		399,680	106,314	26.6	
1975	46,207	774,602	318,641	78,234	24.5	16.5	148,058	10,946	7.4		446,699	89,180	19.1	
1976	47,472	747,555	358,093	73,486	20.5	-	100,914	6,808	6.7		459,007	80,294	17.5	
1977	48,776	635,626	217,858	52,805	24.2	28.7	65,655	3,585	5.5	26.5	283,513	56,390	19.9	28.6
1978	50,127	579,756	236,203	51,962	22.0	34.4	193,001	8,308	4.3	35.5	429,204	60,270	14.0	34.6
1979	51,520	107,838	358,427	87,105	24.3	31.9	155,892	6,558	4.2	34.0	514,319	93,663	18.2	32.0
1980	52,963	994,278	311,630	67,199	21.6	29.9	192,087	8,563	4.5	30.4	503,717	75,762	15.0	30.0

Table 26 Prevalence of Malaria in Provinces Outside Java-Bali in 1980

Province	Population in 1,000	Passive Case Detection				Malariometric Survey		
		Clinical case	Slides	Pos.	S.P.R.	S.D.	Pos	PR
1. D.I. Aceh	2,633	15,620	13,032	1,780	13.7	11,676	860	7.4
2. Sum. Utr.	8,680	103,612	20,881	4,519	21.6	11,271	148	1.3
3. Riau	2,152	12,139	4,296	862	20.1	32,470	454	1.4
4. Sum. Bar.	3,661	12,309	7,430	52	0.7	9,152	54	0.59
5. Jambi	1,318	24,016	1,619	159	9.8	7,838	129	1.7
6. Sum. Sel.	4,514	75,191	32,482	2,249	6.9	4,424	103	2.3
7. Bengkulu	680	12,749	912	43	4.5	1,557	4	0.3
8. Lampung	3,640	50,589	2,564	720	46.0	-	-	0
9. Kal. Bar.	2,579	26,574	9,019	1,514	16.8	21,339	879	4.1
10. Kal. Sel.	2,169	9,921	4,683	298	6.4	17,392	65	0.4
11. Kal. Teng.	894	10,967	2,138	277	13.0	3,715	86	2.3
12. Kal. Tim.	936	28,072	15,748	3,252	20.7	6,187	367	5.9
13. Sul. Utr.	2,191	42,533	18,493	1,338	7.2	4,600	176	3.8
14. Sul. Teng.	1,166	39,797	10,060	4,924	48.9	7,174	1,790	25.0
15. Sul. Tra.	911	24,978	-	-	-	4,749	440	9.3
16. Sul. Sel.	6,618	40,896	16,143	2,227	13.3	2,505	10	0.4
17. N.T.B.	2,781	154,258	49,151	12,290	25.0	37,307	1,341	3.6
18. N.T.T.	2,899	271,261	65,047	21,907	33.7	7,399	1,453	19.6
19. Maluku	1,975	21,486	21,486	261	5.9	525	32	6.1
20. Irian Jaya	1,167	17,310	16,446	7,527	45.8	365	22	6.0
21. Tim. Tim.	-	-	-	-	-	442	150	33.9
Total	52,963	994,278	311,630	67,199	21.6	192,087	8,563	4.5

Table 27 Prevalences of Filariasis in each Province in Indonesia by PELITA III

Province	1979 / 1980			1980 / 1981			1981 / 1982			
	Blood smear examined	B.S. positive (mf) number	Rate of mf %	Blood smear examined	B.S. positive (mf) number	Rate of mf %	Blood smear examined	B.S. positive (mf) number	Rate of mf %	Species
1. D.I. Aceh	4,408	189	4.28	5,836	68	11.56	1,003	47	4.68	Bm + Wb
2. Sumatera Utara	1,538	41	2.66	2,642	20	7.41	-	-	-	Bm
3. Sumatera Barat	2,371	10	0.42	4,069	49	1.2	2,051	38	1.86	Bm
4. Riau	2,523	177	7.0	4,712	422	8.95	-	-	-	-
5. Jambi	2,002	102	5.09	3,842	391	10.17	-	-	-	-
6. Sumatera Selatan	979	33	3.37	2,038	70	3.43	3,288	56	1.7	Bm
7. Bengkulu	4,902	358	7.3	4,195	348	8.3	2,021	25	1.2	Bm
8. Sulawesi Utara	1,541	111	7.2	1,820	21	1.1	1,038	5	0.4	Bm
9. Sulawesi Tengah	2,388	839	35.1	3,016	141	2.8	1,770	223	12.6	Bm + Wb
10. Sulawesi Selatan	1,021	101	9.8	4,230	132	3.1	-	-	-	-
11. Sulawesi Tenggara	1,844	124	6.7	1,364	63	4.6	1,000	111	11.1	Bm
12. Jawa Tengah	6,479	13	0.2	5,125	99	1.39	-	-	-	-
13. Kalimantan Barat	818	69	8.4	4,813	284	5.9	1,107	146	13.2	Bm
14. Kalimantan Timur	5,368	356	6.63	3,011	268	8.9	1,696	41	2,35	Bm
15. Kalimantan Tengah	9,660	1,081	11.47	3,047	211	6.9	3,287	236	7.17	Bm
16. Kalimantan Selatan	8,149	541	6.3	18,472	1,164	6.3	11,029	4	0.03	Bm
17. N. T. T.	17,411	1,933	11.1	23,228	813	3.5	-	-	-	-
18. Maluku	614	21	3.4	688	20	2.8	-	-	-	-
19. Irian Jaya	1,565	74	4.7	2,383	170	7.1	-	-	-	-
Total	75,581	6,146	8.13	100,526	4,754	4.7	29,290	932	3.18	Bm+Wb+Bt

Table 28

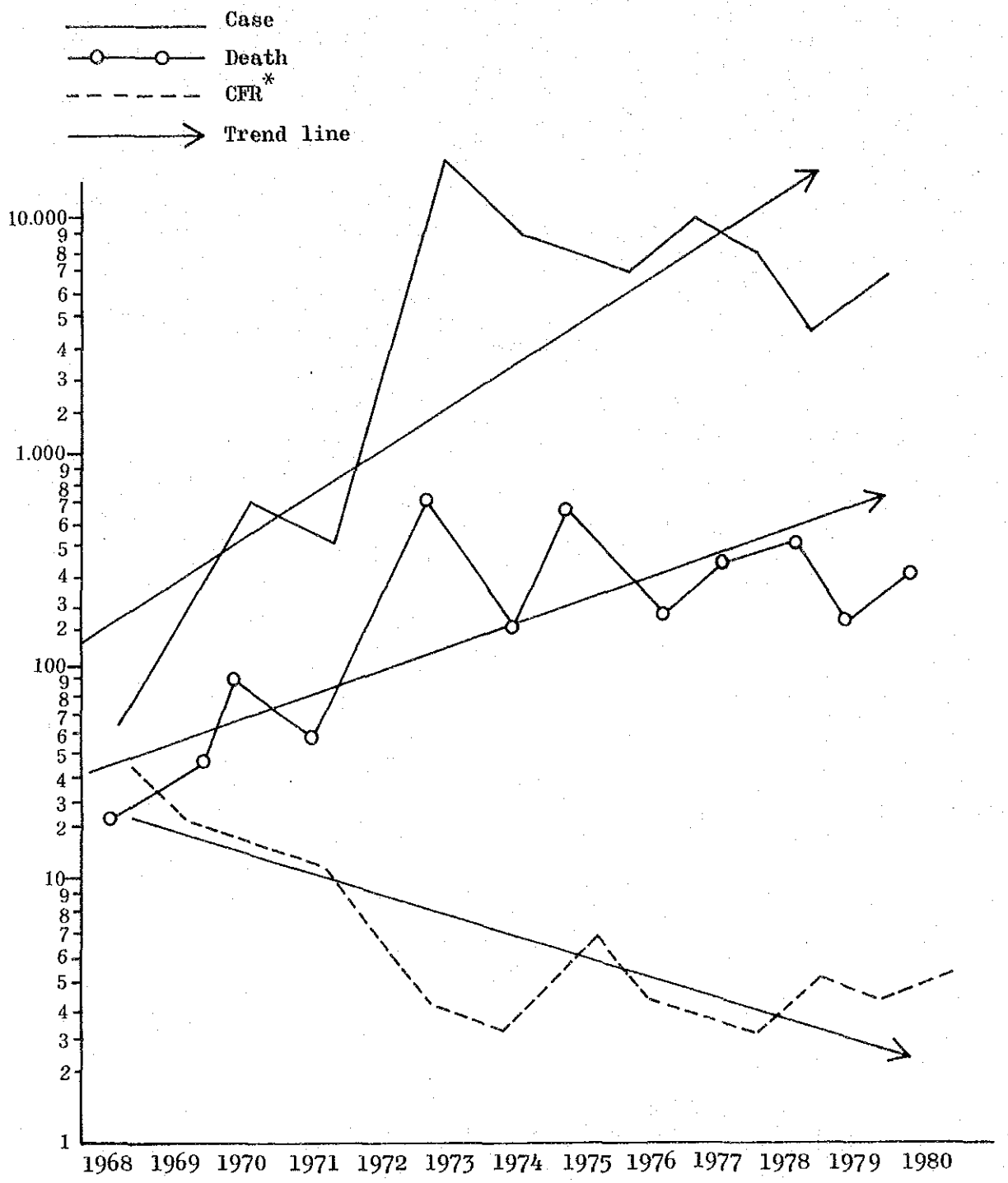
Prevalence of Intestinal Parasite Reported at various places in Indonesia

1975 - 1981

Location	Source of reference	Sample size	Kind of Parasites (%)									
			Ascaris lumricoides	Trichuris trichiura	Hookworm	Oxyuris vermicularis	Entamoeba histolytica	E. coli	E. nana	E. hartmani	E. butchlii	Giardia lamblia
1. P.Hasi dan p.beras, D.I. Aceh	1977 Stafford dkk,Bull 111th St (V), 2, 23-26	87	52	75	67	-	10	9	5	0	3	3
2. Musi vanyu asin dan Ogan Komering Ulu, Sum. Sel.	1975 Carney dkk, Bull Hlth St (111) 1, 6-10	358	78	83	59	1	4	29	2	1	5	3
3. Way Abung III, Lampung	1981 Gandahusada, Bull Hlth St (IK) 1, 15-24	203	59	60	42	2	4	22	9	-	1	2
4. Soraig, Jabar	1977 Carney dldn, Bull Hlth St (V), 2, 13-18	335	89	87	65	1	5	12	1	1	2	1
5. Sebambau, Kal. Sel.	1979 Dit. Jen P&M Tranamigrasi, laporan	250	82	50	30	1	5	15	-	-	-	-
6. Toili, Sul Teng.	1978 Cyrus dldk, Laporan Hasil Survey Penyakit Menular	693	43	12	20	6	2	4	0,7	0,4	1	-
7. Lombok, N.T.B.	1975 Carney Udk, Bull Hlth St (111) 2, 11-15	146	92	84	25	10	1	18	-	-	3	1
8. Timor, N.T.T.	1975 Carney Udk, Bull Hlth St (111) 2, 1-11	445	10	1	35	1	11	27	9	4	2	5
9. Siok, Riau	1978 PBM, Laporan Hasil Survey	853	69	35	18	0,2	2	4	1	0,6	2	0,7
10. Boyolali, Ja Teng	1970 Cross dkk, S.E.A.J. trop Med. Pub. Hlth 1, 354-860	1135	73	15	23	-	7	19	-	-	-	-
11. Yogyakarta	1973 Clark dkk, S.E.A.J. trop Med. Pub. Hlth 4, 195-201	744	85	91	52	-	13	36	-	-	-	-
12. Kreesk, Ja Bar	1973 Clark dkk, S.E.A.J. trop Med. Pub. Hlth 4, 32-36	603	90	91	52	-	10	40	-	-	-	-
13. Kal. Sel.	1975 Cross dkk, S.E.A.J. trop. Med. Pub. Hlth 6, 52-60	2169	79	83	65	-	12	37	12	2	11	5
14. Sulabumi, Jabar	1976 Rasidi dkk, Maj. Kad. Indon (1-2), 801-807	119	49	56	93	1,6	18	15	-	0,6	6	7

Bidan Baktsriologi & Parasitologi Puslit Biomedis.

Fig. 1 DHF Cases and Case Fatality Rate (%)
In Indonesia, 1968-1980



* CFR = Case Fatality Rate

The number of DHF cases increased remarkably until 1973, after this epidemy number of the cases was fluctuating about 5000 to 7000 year. The case fatality rate decreased from 41% in 1968 to less than 4% in 1981.

Fig. 2

Distribution of DHF in Indonesia, 1968-1980
DHF was firstly reported in Surabaya in 1968, then in big cities (Jakarta, Denpasar, etc.). Since 1975 it had spread to other cities throughout the country.

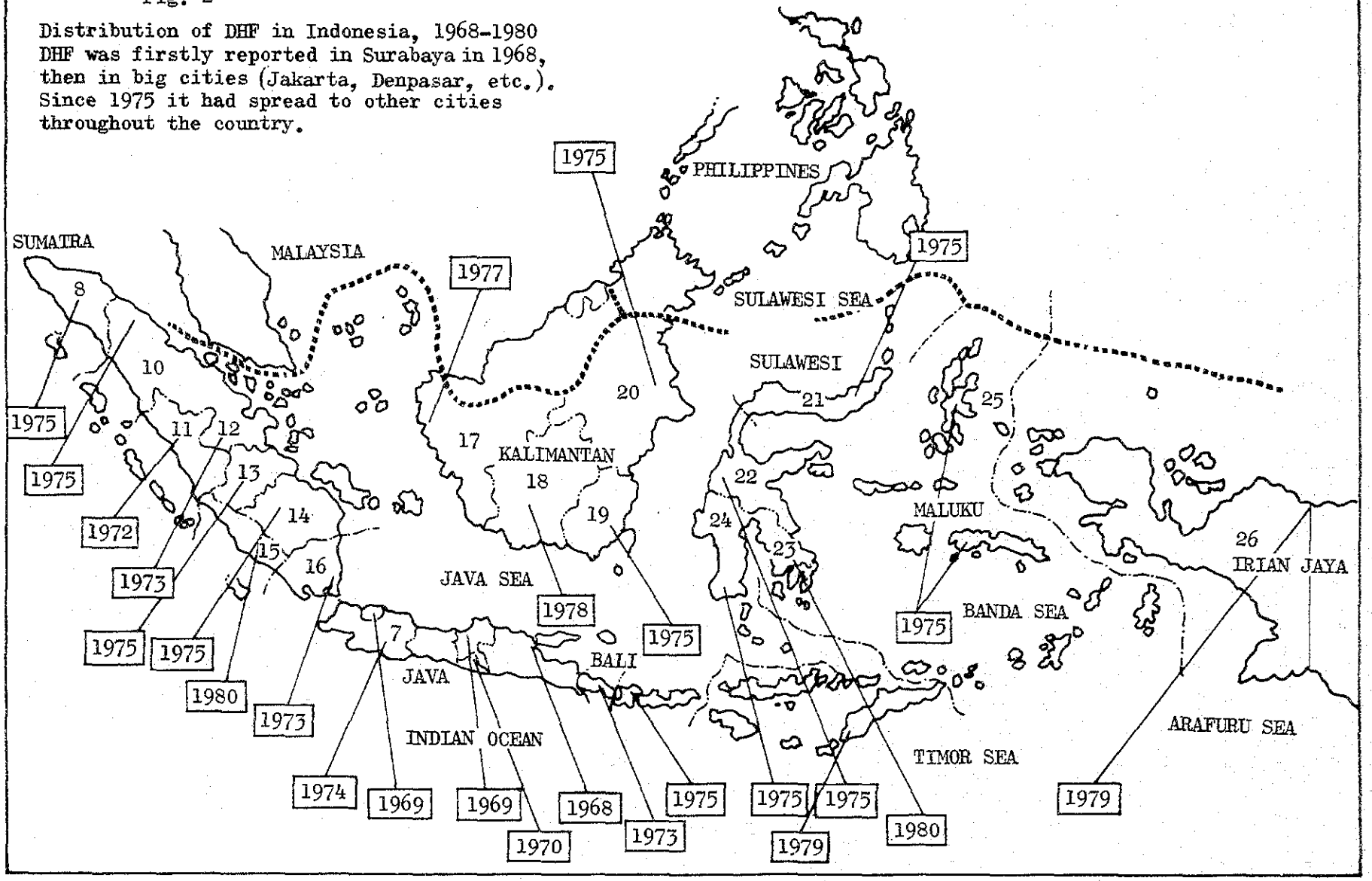


Fig. 3 The Program of Safe Water Supply until 1990

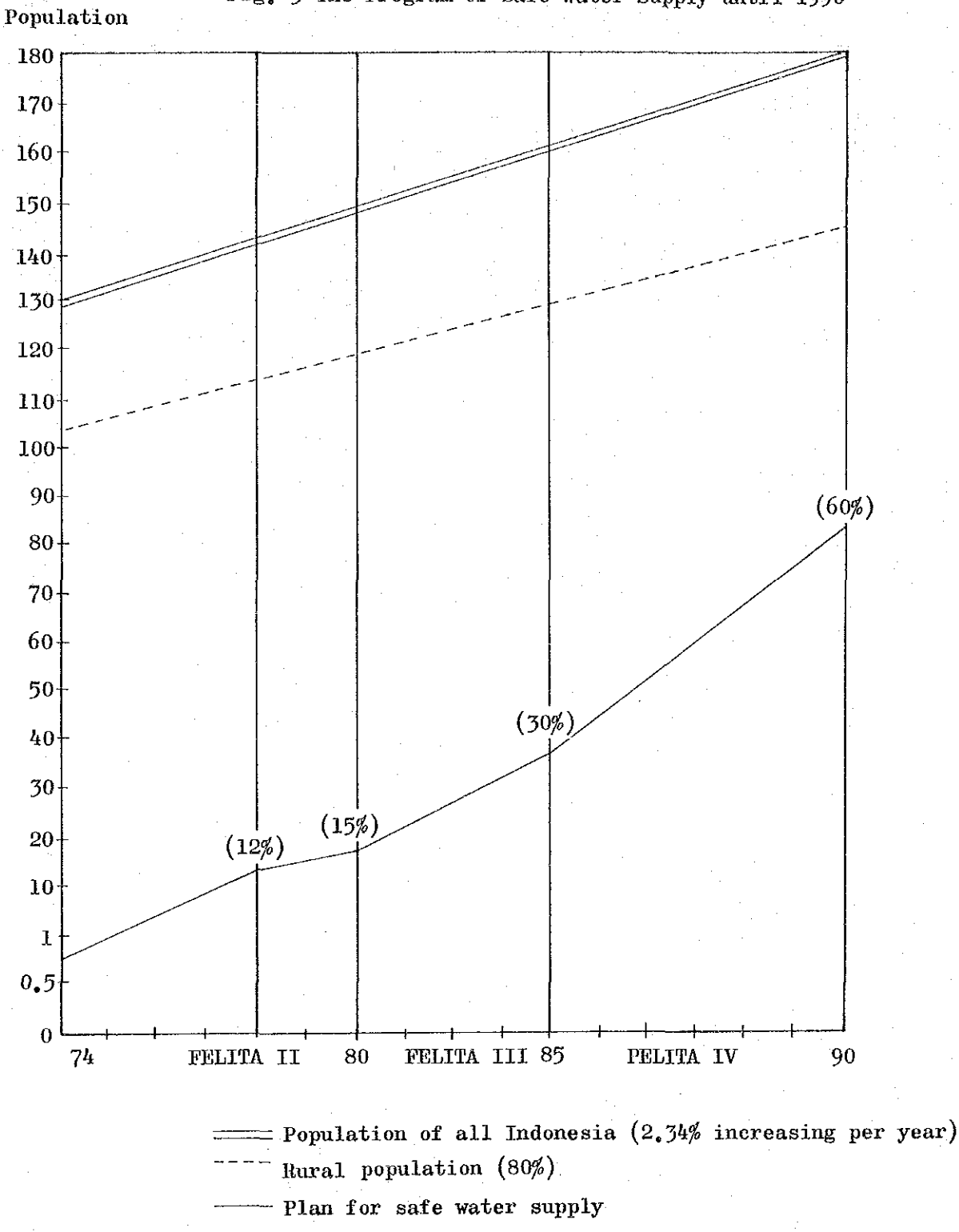
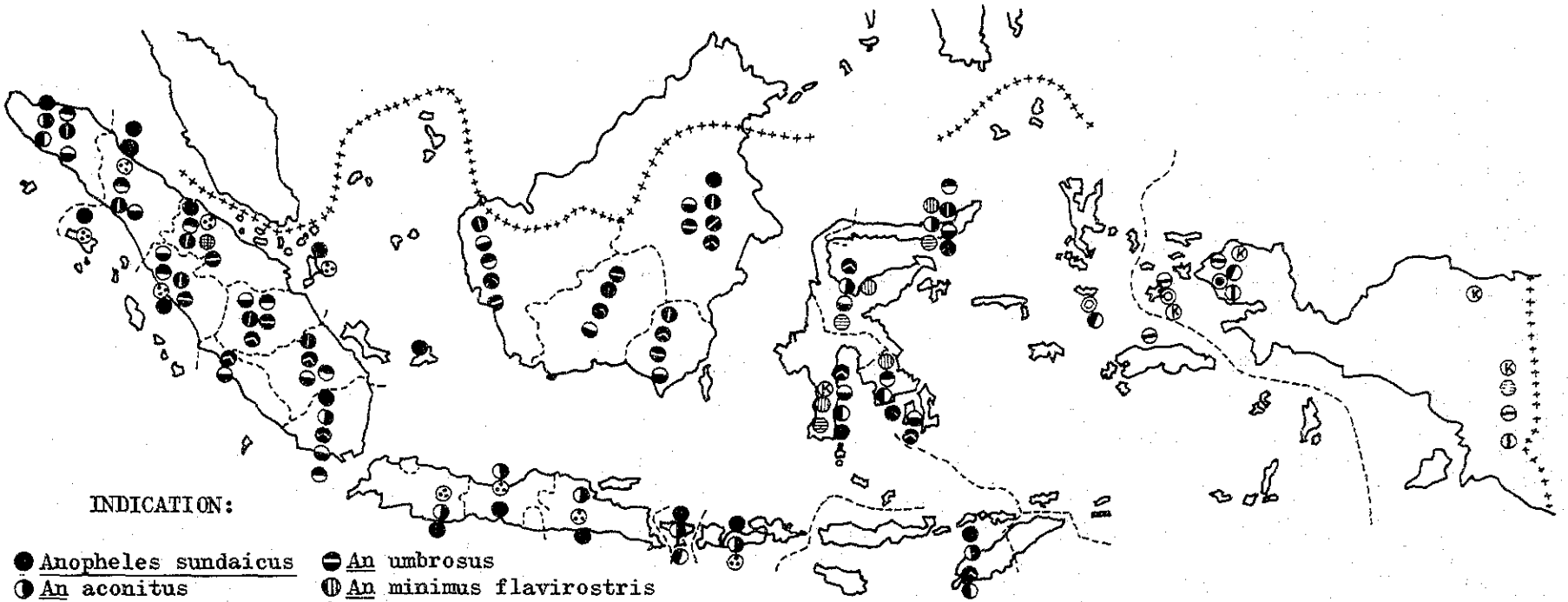


Fig. 4 Vector and Suspected Vector of Malaria in Indonesia



INDICATION:

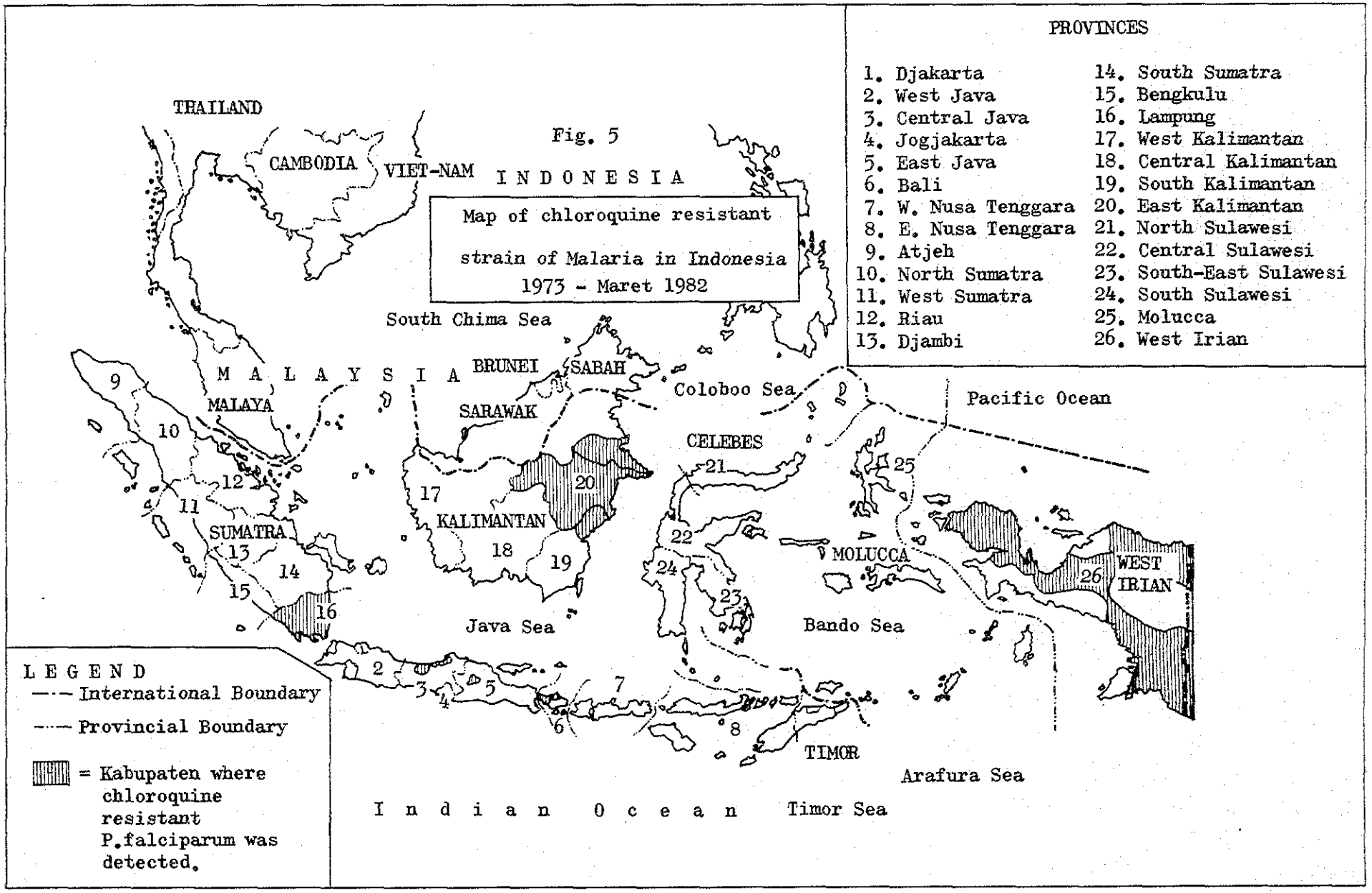
- Anopheles sundaicus
- An aconitus
- An subpictus
- An sinensis
- An peditaeniatus
- An barbirostris
- An nigerrimus
- An maculatus
- An tesselatus
- An umbrosus
- An minimus flavirostris
- An punctulatus
- An ludlowi
- An letifer
- An koliensis
- An bancrofti
- An karwari
- An faranti
- An balabacensis

SUMBER DARI

1. data-data laporan daerah
2. buku Anophelini di Indonesia (oleh:R.Waktoedi.K.)

Fig. 5

Map of chloroquine resistant strain of Malaria in Indonesia 1973 - Maret 1982



PROVINCES

1. Djakarta	14. South Sumatra
2. West Java	15. Bengkulu
3. Central Java	16. Lampung
4. Jogjakarta	17. West Kalimantan
5. East Java	18. Central Kalimantan
6. Bali	19. South Kalimantan
7. W. Nusa Tenggara	20. East Kalimantan
8. E. Nusa Tenggara	21. North Sulawesi
9. Atjeh	22. Central Sulawesi
10. North Sumatra	23. South-East Sulawesi
11. West Sumatra	24. South Sulawesi
12. Riau	25. Molucca
13. Djambi	26. West Irian

LEGEND

—·— International Boundary

—— Provincial Boundary

▨ = Kabupaten where chloroquine resistant P.falciparum was detected.

Fig. 6 DISTRIBUTION AND PREVALENCE OF FILARIASIS IN INDONESIA 1977

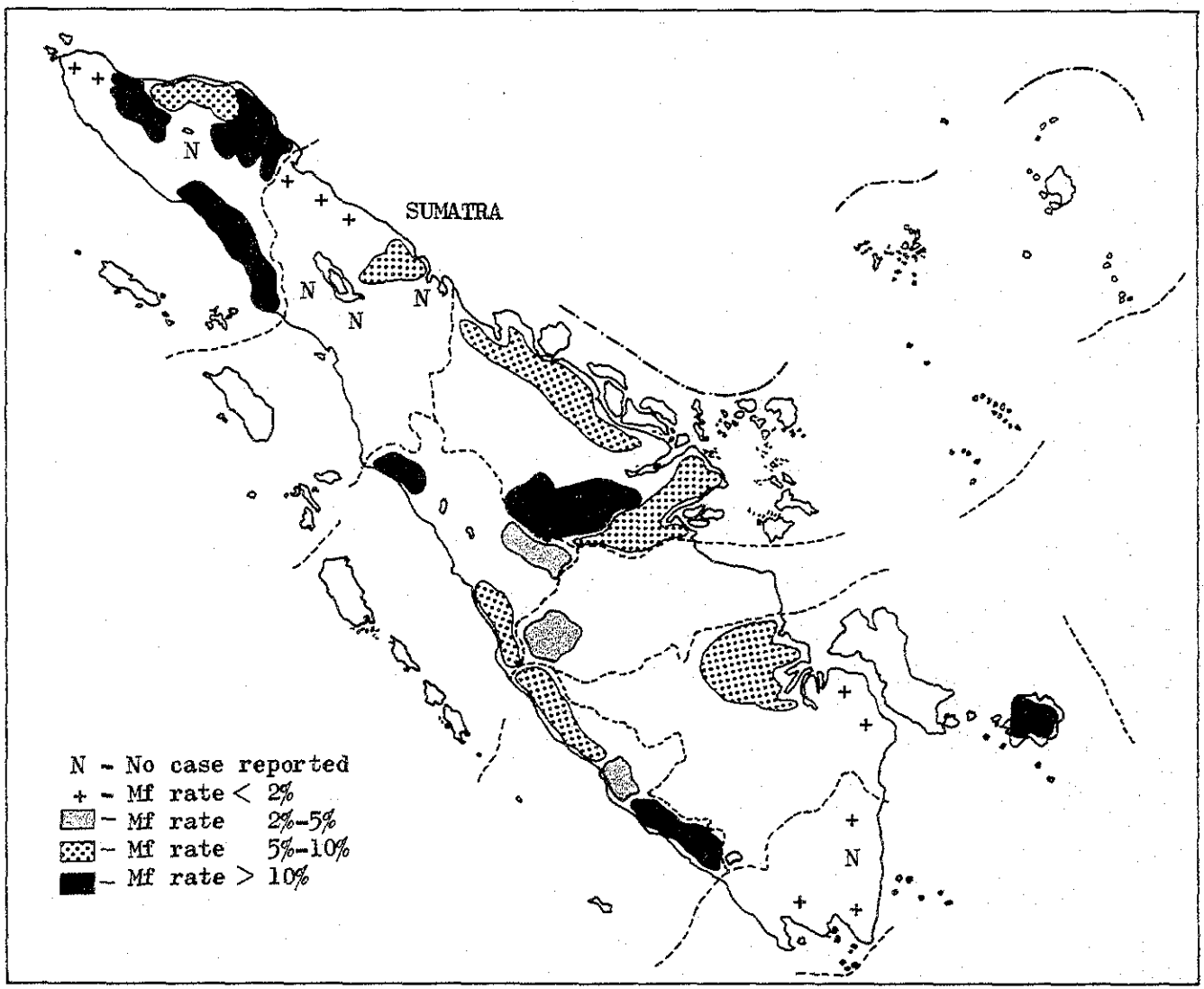


Fig. 7 DISTRIBUTION AND PREVALENCE OF FILARIASIS IN INDONESIA 1977

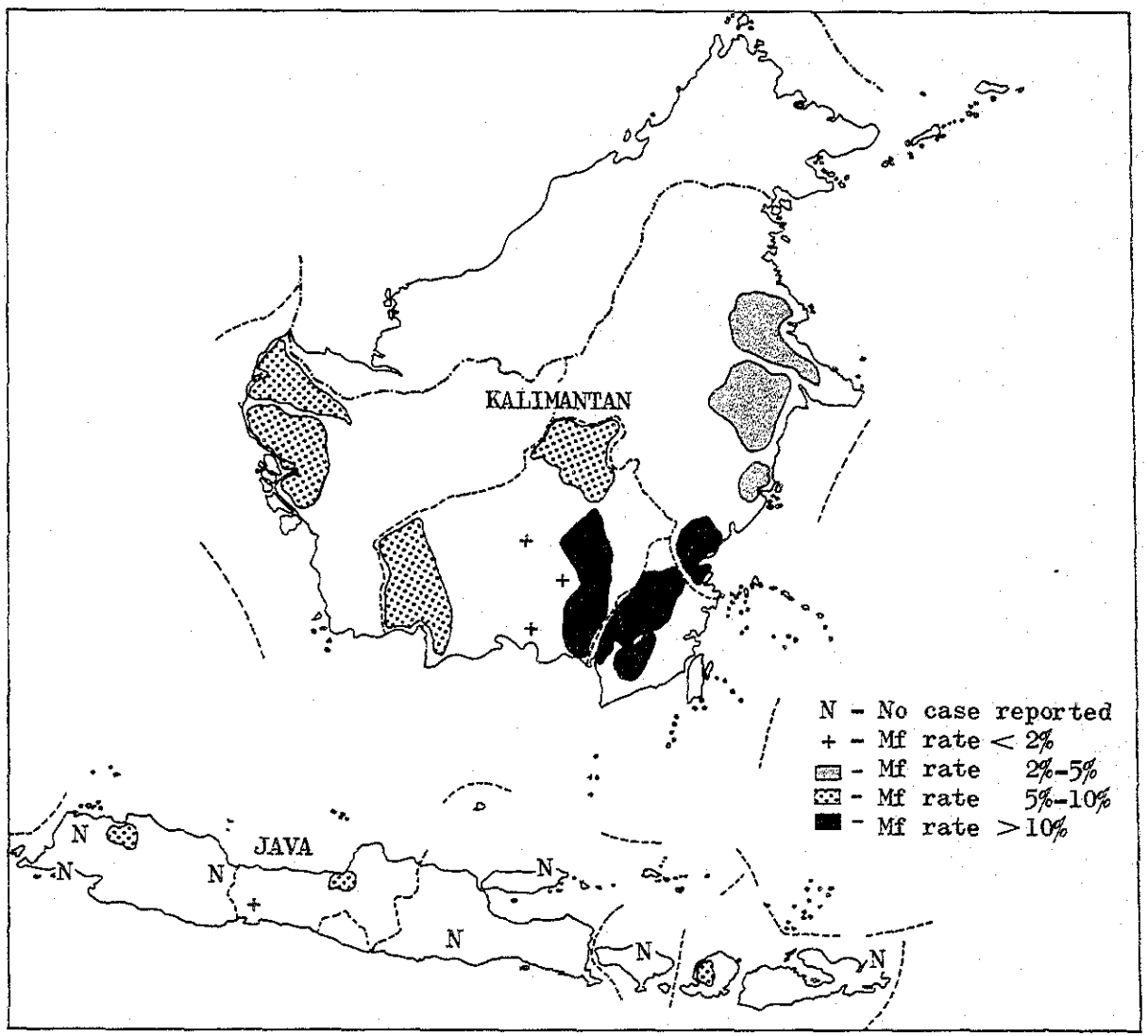


Fig. 8 DISTRIBUTION AND PREVALENCE OF FILARIASIS IN INDONESIA 1977

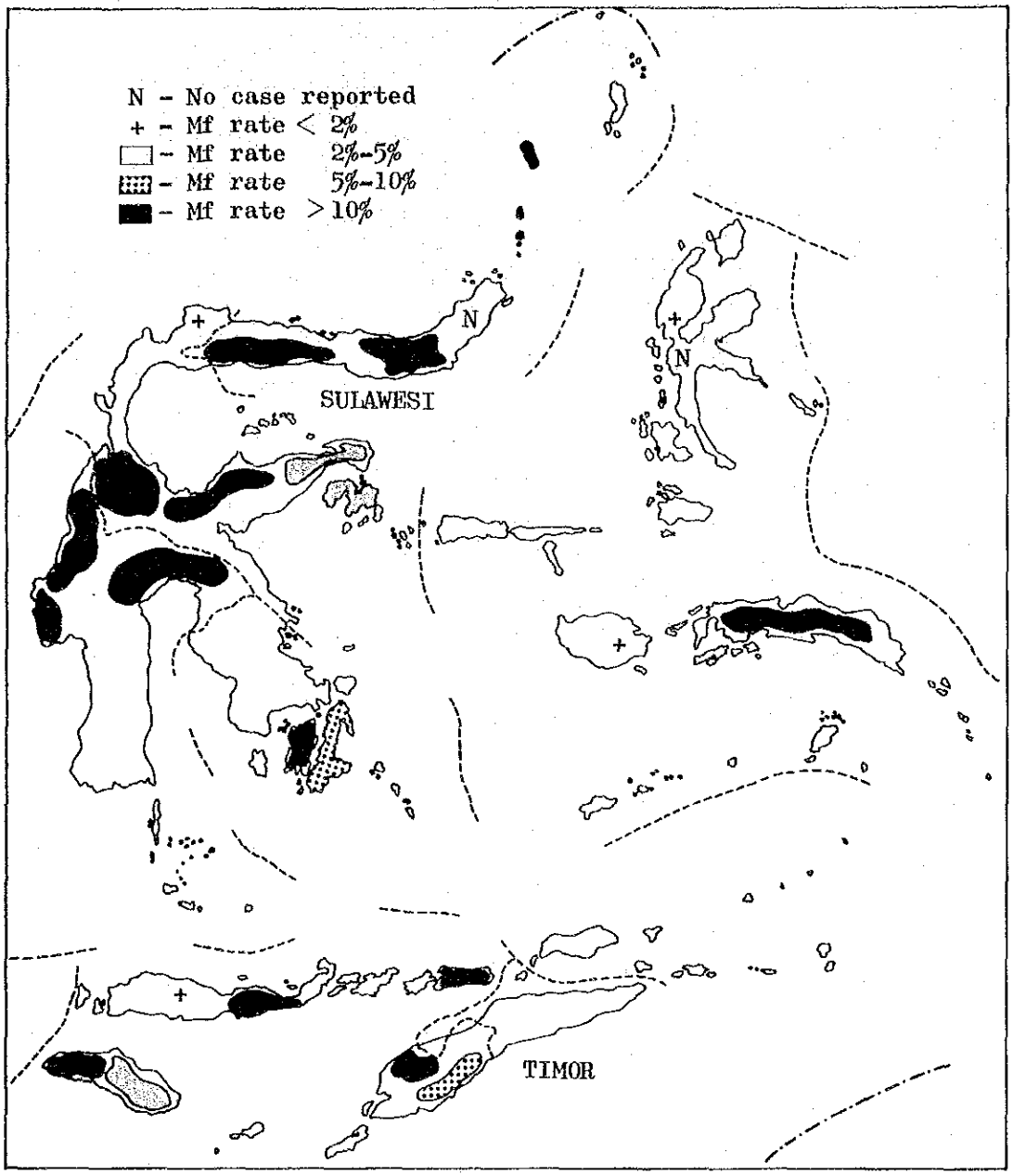
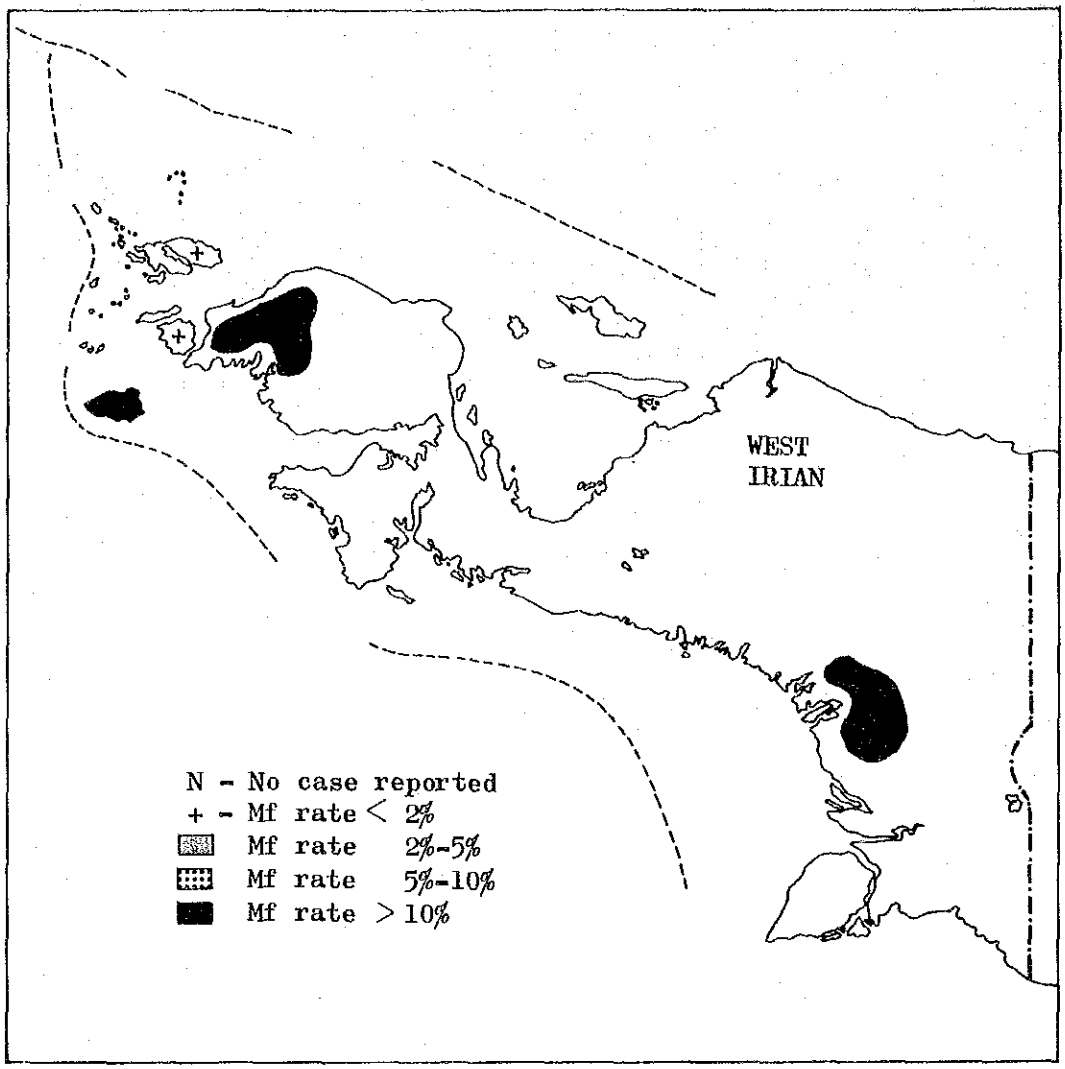


Fig. 9 DISTRIBUTION AND PREVALENCE OF FILARIASIS IN INDONESIA 1977



INCEPTION REPORT OF OBSERVATION TEAM ON INFECTIOUS DISEASES IN INDONESIA

Team Members

(Leader) Ryosuke Murata M.D.	International Medical Foundation of JAPAN
Tatsushi Ishizaki M.D.	"
Yutaka Inaba M.D.	"
Takeshi Horiuchi M.D.	"
Hiroshi Uehara	"

ITINERARY OF THE STUDY

August 2 (Mon) :	Leave Tokyo for Jakarta
August 3 (Tue) :	Visit to Japanese Embassy and JICA Office in Jakarta Visit to National Institute of Health Research & Development (HIHRD) Ministry of Health (MOH).
August 4 (Wed) :	Visit to Biomedical Research Center (BRC) of NIHRD Visit to Directorate General of Communicable Disease Control (CDC)
August 5 (Thu) :	Visit to Directorate of Vector Borne Disease Control of CDC (Malaria, Filariasis, Zoonotic and Dengue Haemorraghic Fever/DHF) Visit to US Naval Medical Research Research Center Unit 2 (NAMRU2) & Laboratory
August 6 (Fri) :	Visit to Directorate of Hygiene & Sanitation CDC Visit to Directorate of Epidemiology & Quarantine CDC
August 7 (Sat) :	Visit to Directorate General of Community Health Services (CHS) of MOH Visit to Directorate of Laboratory Services MOH Visit to Sub Directorate of TB Control CDC
August 8 (Sun) :	Leave Jakarta for Bandung (West Java) via Bogor and Visit to Agricultural University (IPB)
August 9 (Mon) :	Visit to West Java Provincial Health Office, Local CDC, Pajajaran Univ., BIOFARMA, Provincial Health Laboratory.
August 10 (Tue) :	Visit to Local CDC, BIOFARMA, Municipality Health Services, Hasan Sadikin General Hospital.
August 11 (Wed) :	Leave Bandung for Surabaya via Jakarta
August 12 (Thu) :	Visit to Provincial Health Laboratory, Health Services Research & Development Center of NIHRD, and Local CDC
August 13 (Fri) :	Visit to Airlangga University and Sutomo General Hosp.
August 14 (Sat) :	Courtesy call to Bupati of Sidoardjo and visit to local Health Center (Puskesmas)
August 15 (Sun) :	Leave Surabaya for Denpasar
August 16 (Mon) :	Visit to Provincial Health Office and local CDC. Visit to Provincial Health Laboratory.
August 17 (Tue) :	Visit to Kedisan village to see deep-well pump and community latrine
August 18 (Wed) :	Visit to Sanglah General Hospital and Udayana Univ.
August 20 (Fri) :	Leave Denpasar for Ujung Pandang
August 21 (Sat) :	Visit to Provincial Health Office, local CDC, School for Analysts, National Leprosy Training Center and Provincial Health Laboratory.
August 22 (Sun) :	Visit to Bantimurung village

August 23 (Mon)	:	Visit to Ujung Pandang General Hsopital, Hasanuddin University, Cenderawasih Health Center and Manjang Health Center.
August 24 (Tue)	:	Leave Ujung Pandang for Jakarta Visit to JICA Jakarta Office
August 25 (Wed)	:	Discussion on status of communicable diseases with Head of NIHRD, Director General of CDC and other staffs. Visit to Bureau of Planning MOH and Persahabatan Hosp.
August 26 (Thu)	:	B team leaves Jakarta for Palembang Visit Provincial Health Office and Sungai Kundur Leprosy Hospital in Palembang A team: visit to University of Indonesia and Cipto Mangunkusumo General Hospital (RSCM) in Jakarta
August 27 (Fri)	:	A Team: visit to Directorate General of Medical Care MOH and CDC Office in Jakarta B team: visit to Provincial CDC, Health Laboratory and Palembang General Hospital
August 28 (Sat)	:	A Team: visit to CDC Office, Ecology Research Center of NIHRD and Jakarta Municipal Health Office B team: visit to Banyuasin Regency Health Office and Hospital
August 30 (Mon)	:	Visit to Directorate of Health Facilities MOH and CDC Quarantine Hospital
August 31 (Tue)	:	Preparation of draft report
Sept 1 (Wed)	:	Preparation of draft report
Sept 2 (Thu)	:	Discussion with Director General CDC and staff about draft report
Sept 3 (Fri)	:	Final arrangement with CDC and NIHRD staffs
Sept 4 (Sat)	:	Visit to JICA Office and Leave Jakarta for Tokyo

List of Persons Visited (random order)

MOH

Dr. R. SOEBEKTI
Director General of Community Health Services, MOH, Jakarta

Dr. S.L. LEIMENA
Director of Community Health Services, MOH, Jakarta

Dr. WIDYA HARSANA
Director of Laboratory Services, MOH, Jakarta

Dr. ARIF MULIAHARJA
Sub-Director of Laboratory Services, MOH, Jakarta

Dr. BANRANG SUBROTO
Director of Hospitals, MOH, Jakarta

Dr. HAPSARA
Chief, Bureau of Planning, MOH, Jakarta

Dr. BRATA RANUH
Director General for Medical Care, MOH, Jakarta

Dr. BOENBOENAN E.S.
Head of Hospital Classification Subdirectorate
Directorate General Medical Care, Jakarta

Dr. SUTADJI
Planning & Reporting Division
Directorate General Medical Care, Jakarta

Dr. SRIAH DA COSTA
Chief Monitoring and Reporting Division
Planning Bureau, MOH, Jakarta

CDC JAKARTA

Dr. M. ADHYATMA
Director General of Communicable Diseases, Control, MOH, Jakarta

Dr. GANDON HARTONO
Secretary, Directorate General, CDC, Jakarta

Dr. A KARYADI
Chief of Epid. Surveyllance, CDC, Jakarta

Dr. ACE YATI HAYATI
Hygiene & Sanitation, CDC, Jakarta

Drs. H.M. RUSYID ST ALAMSJAH
Hygiene & Sanitation, CDC, Jakarta

Dr. BROTO WASISTO
Director of Epidemiology and Quarantine, CDC, Jakarta

Dr. GUNOWISESO
Chief of Sub Directorate of Immunization, CDC, Jakarta

Dr. ARWATI
Director of Vector Borne Diseases Control, CDC, Jakarta

Dr. KUMARA RAI
Chief of Malaria, CDC, Jakarta

Dr. ARBANI
Assistant Chief of Malaria, CDC, Jakarta

Dr. ARBAIN
Chief of Filariasis and Schisto somiasis, CDC, Jakarta

Dr. ISRIN
Assistant Chief of Filariasis and Schistosomiasis, CDC, Jakarta

Dr. KOESHA RYONO
Chief of Zoonotic Diseases, CDC, Jakarta

Dr. ROSAD
Assistant Chief Zoonotic Diseases, CDC, Jakarta

Mr. SANTIJO MSC
Chief of Entomology, CDC, Jakarta

Mr. ISFARAIN
Assistant Chief of Entomology, CDC, Jakarta

Dr. THOMAS SUROSO
Chief of Dengue Hem. Fever, CDC, Jakarta

Dr. GUNERDI A.S
Chief of T.B. Control, CDC, Jakarta

Dr. MOHO SYATAR MALIK
Provincial Health Office, Jakarta Municipality Chief of CDC, Jakarta

Dr. NYOMAN SUESEN
Surveillance Unit, Directorate of Epid. & Quarantine, CDC, Jakarta

Dr. DJAMAS EFFENDI HARAHAP
Chief of Laboratory Section, Infectious Disease Hospital, CDC, Jakarta

Dr. SUSILO SURACHMAD
Sub Directorate Isolation Communicable Diseases, CDC, Jakarta

Mrs. NURSILA
Staff Sub Directorate T.B. Control, CDC, Jakarta

Mrs. FLORIDA HARTATI
Staff Sub Directorate T.B. Control, CDC, Jakarta

SATRIJO DETOMO SKM
Staff, Sub Directorate Yaws & S.T.D. Control, CDC, Jakarta

Dr. INDRIYONO
Sub Directorate Intestinal Parasite, CDC, Jakarta

Dr. ANDI LOUHENAPESSY
Chief Sub Directorate Leprosy Control Directorate General, CDC, Jakarta

Dr. R.H. HARRIS
Sanitary Engineer WHO Consultant, CDC, Jakarta

Mrs. ROUTY HUTAJUHI
Staff of Directorate Hygiene and Sanitation, CDC, Jakarta

Dr. NOTO ABIPROJO
Staff of Sub Directorate Immunization, CDC, Jakarta

Dr. DJUMHANA SOE MANTRI
Chief of Program Planning Division, CDC, Jakarta

Mr. ZAINI AKHMAD
Staff of Program Planning Division, CDC, Jakarta

NIHRD

Prof. Dr. A. A. LOEDIN
Head, National Institute of Health Research and Development, MOH, Jakarta

Dr. ISKAK KOIMAN
Director, Biomedical Research Center, NIHRD, Jakarta

Dr. SUHARYONO
Chief of Virology Department of Virology, CBR NIHRD, Jakarta

Dr. S. GANDAHUSADA
Center for Health Ecology Research, NIHRD, Jakarta

Dr. FL. SIMANJUNTAK
CBR NIHRD, Jakarta

Dr. RATNA PUNDARIKA
Chief of Ecology, NIHRD, Jakarta

Miss. SITI MARIE KUSHIYAH
National Institute of Health Research and Development, Jakarta

Drs. T. SIREGAR
Staff of NIHRD, Jakarta

NAMRU

Dr. LARRY W. LAUGHLIN
Director, U. S. Naval Medical Research Unit 2, Jakarta

BOGOR

Dr. SINGGIH H. SIGIT DVM
Protozoology and Medical Entomology Laboratory

Department of Veterinary Pathology and Public Health
Fac. of Veterinary Medicine, Bogor Agricultural Univ., Bogor

Dr. EDI GUHARDJA
Assistant Dean of Postgraduate Studies Bogor Agricultural Univ., Bogor

JAKARTA UNIV. OF INDONESIA

Prof. Dr. Sujudi
Deputy Dean, University of Indonesia, Jakarta

Prof. Dr. BINTARI RUKMONO
Head, Dept of Parasitology Medical School University of Indonesia, Jakarta

Dr. UTOSO SUKATON
Professor, Chairman Dept, International Medicine
Faculty of Medicine Univ. of Indonesia, Jakarta

Dr. SUMARSONO
Chief, Division of Tropical Medicine and Infection
Dept of Internal Medicine Faculty of Medicine, Univ. of Indonesia, Jakarta

Dr. HADI BOEDIANTO
Public Health, Indonesia Univ. Jakarta

Prof. SWYUDI
Public Health, Indonesia Univ, Jakarta

Prof. RUKMONO
Directar of Cipto Mangunkusumo General Hospital, Jakarta

Dr. BOEDIHARTONO, MHA
Deputy Director of Cipto Mangunkusumo General Hospital, Jakarta

Dr. RHH NELWAN
Staff of Indonesia Univ. Div. of Tropical Infectious Diseases Dept of Med, Jakarta

Dr. SUMARSONO
Acting Chief of Dept of Internal Medicine,
Chief of Division Tropical Medicine and Infection, Dept of Internal Medicine,
Univ. of Indonesia, Cipto Mangunkusumo General Hospital, Jakarta

Dr. YEANNE LATU
Head Dept. of Clinicopathology, Univ. Indonesia
Medical School,/ Cipto Mangunkusumo General Hospital, Jakarta

Dr. MUSULEM
Head of Communicable Disease in Pediatrics, Cipto Mangunkusumo
General Hospital, Jakarta

Dr. H.M. SJAIFOELLAH NOER
Chief Division of Liver Diseases Department of Internal Medicine,
Cipto Mangunkusumo General Hospital, Jakarta

PERSAHABATAN HOSPITAL JAKARTA

Dr. A. PURWANTO
Chief, Dept of Child Health, Persahabatan Hospital, Jakarta

Dr. ERWIN PEETOSUTAN
Chief of TB Laboratory, Persahabatan Hospital, Jakarta

Dr. ANWAR JUSUF
Chief of Sub Dept. of Onkology
Dept of Pulmonary Diseases, Persahabatan Hospital, Jakarta

Dr. AHMAD SANOESI TAMBUNAN
Internist, Dept. of Internal Medicine, Persahabatan Hospital, Jakarta

Dr. ARIS SANTOSA
Deputy Director Persahabatan Hospital, Jakarta

Dr. RASMIN RASJID
Head, Dept of Pulmonology, Persahabatan Hospital, Jakarta

Dr. ROHIMIN
Chief, Division of Supporting Services, Persahabatan Hospital, Jakarta

Dr. ABDUL AZIS
Dept of Child Health, Persahabatan Hospital, Jakarta

Dr. HEUDATWANTO
Internist, Persahabatan Hospital, Jakarta

Dr. ISKANDAR ZULKARNAIN A.
Head, Dept of Int. Medicine Persahabatan Hospital, Jakarta

Dr. MAYANG ANGGRAINI
Staff of Persahabatan Hospital, Jakarta

Dr. UKSIM DJAMBO
Deputy Director, Persahabatan Hospital, Jakarta

Dr. ZAKARIA EFFENDIE
Director, Persahabatan Hospital, Jakarta

Dr. SYAKUR GANI
Chief of Division of Education and Tranning Persahabatan Hospital, Jakarta

BANDUNG

Dr. ROESTANDI
Chief of Provincial Health, West Jawa, Bandung

Dr. TJAHAYA
Chief of Medical Service, Provincial Health Office, Bandung

Mr. LUKMAN HAMID
Secretary of Provincial Health Office, West Jawa, Bandung

Dr. MOCH HARRISS.
Provincial Health Office, West Jawa, Bandung

Dr. DADI S. ARGADIREDJA
Chief of CDC Kanwil MOH, West Jawa, Bandung

Dr. RIDWAN MALIK
Head of Surveillance Unit, West Jawa, Bandung

Dr. GINARDI DHARMADINATA
Head of CDC Division, Bandung City Health Service

Dr. ALIBASHA
CDC, Province of West Jawa, Bandung

Dr. WIBISONO SUWARNO
Chief of Provincial Health Laboratory, Bandung

Dr. DJAMHOER MAYTAADISOEBRATA
Univ. of Pajajaran, Bandung

Dr. RIDAD AGOES
Director of Parasitology, University Padjadjaran, Bandung

Dr. H. SULAEMAN
Head of Bandung Minicipality Health Service

Dr. R.D. HARGOHO
Head of Health Center, Bandung City Health Service

Dr. M.W. HAZNAM
Chairman of Dept. of Medicine, Hasan Sadikin Hospital, Bandung

Dr. SAMBAS WIRADISURIA
Head of Department of Child Health,
Hasan Sadikin Hospital, Bandung

Dr. WYATI
Dept. of Gastro enterology, Hasan Sadikin Hospital, Bandung

Dr. H. KISWA. MINANTDIPURA
Secretary to the Director, Hasan Sadikin Hospital, Bandung

Dr. EDDI G
Hasan Sadikin Hospital, Bandung

Dr. SUPRAPTI THAIL
Biofarma/Microbiology Dept, Bandung

SURABAYA

Prof. SABDOHADI
Head of Depatment of Public Health
Faculty of Medicine Airlangga Univ, Surabaya

Dr. RACHMAT SANTOSO
Chief of Medical Faculty Airlangga Univ.
Professor, Chairman of Department of Pathology, Surabaya

Dr. EDDY PRANOWO SOEDIBYO
Chairman of Community Medicine
Chairman of Infectious Disease Unit
Medical Faculty Airlangg Univ, Surabaya

Dr. PURNOMO SURYOHUDOYO
Associate Dean, Academic Affairs
Chairman of Dept, of Bio Chemistry, Surabaya

Dr. SOEDARTO
Chairman of Sub Department Parasitology
Medical Faculty Airlangga Univ. Surabaya

Dr. SOEWIGNJO ADIPOETRO
Head of Dept. Microbiology & Parasitology
Medical FacultyAirlangg Univ, Surabaya

Dr. SOEJOTO MARTOATMODJO
Director, Sutomo Hospital, Surabaya

Dr. RANUM
Head of Dept. Child Health, Sutomo Hospital, Surabaya

Dr. BAMBANG SUBAGJO
Clinical Microbiology Section
Clinical Pathology Department, Sutomo Hospital, Surabaya

Dr. ABDUL KARIM
Clinical Pathology Department, Sutomo Hospital, Surabaya

Dr. DWI. A. SOEROSO
Dept, of Child Health, Sutomo Hospital, Surabaya

Dr. KARIJADI WIRYOATMODJO
Medical Director, Sutomo Hospital, Surabaya

Dr. WIRAWAN
Chief of Medical Record Dept. Sutomo Hospital, Surabaya

Prof. HOEPOEDIONO
Biostatistics and Nutrition, Sutomo Hospital, Surabaya

Dr. R. SOEDARMADI SKM
Director of CDC, Provincial Health Office, East Jawa, Surabaya

Dr. SOEDIONO
Staff of the CDC (Surveillance), East Jawa, Surabaya

Dr. HENDRO TJAHJONO
Chief of CDC Kanwil MOH, East Jawa, Surabaya

Dr. SOEHARTNO PAD MADIMIRJO
Director of the Provincial Health Laboratory, Surabaya

Dr. R. SOEJONO JACHIJA
Director of Provincial Health Office, East Jawa, Surabaya

Dr. SOEMASTONO
Acting Chief of Dev. of Manpower Economic Development Center of Research and Development NIHRD, Surabaya

Dr. SUKANTO SUMODINOTO
Head of Studies on Health Community Relationship, NIHRD, Surabaya

Dr. PARTIWI SUMANA
Health Service, Research and Development Center, Surabaya

Dr. H. MDAWAM WAHAB
CDC, Regency Health Office, Sidoardjo

Dr. Soedibyo
Sanitation Dept, Regency Health Office, Sidoardjo

Dr. TRI SULISTYO
Health Officer, Sidoardo, Regency

Mr. SUWANDI
Chief of Regency, Sidoardjo, East Jawa

Mr. SOEYONO BA
Chief of Sub District , Sidoardjo

BALI

Dr. MOH. ANSARI SULEH
Director of Provincial Health Office, Bali

Dr. WAYAN ARWATA
Staff of Provincial Health Office, Bali

Mr. RAKAPUTRA
Secretary of C.D.C., Bali

Dr. IW. SEMENDRA S.K.M.
Director of C.D.C., Bali

Dr. IGUSTI NGURAH AGUNG S.K.M.
Director of Provincial Health Laboratory, Denpasar

Dr. MD. SUDHIANA
Director of Sanglah Hospital, Denpasar

Dr. TJOKORDA RAKA PUTRA
Chief of Communicable Diseases, Sanglah Hospital, Denpasar

Dr. SUDARYAT
Child Health Dept. Sanglah Hospital, Denpasar

Dr. IDA BAGUS TJITARSA
Dean of Medical Faculty, Udayana Univ, Denpasar

Dr. M. SUTJITA
Dept. of Microbiology, Udayana Univ, Denpasar

Dr. SUKARDIKA I. KT
Chief, Dept of Microbiology, Udayana Univ, Denpasar

Dr. RAI TJOKORDE
Chief, Dept of Parasitology, Udayana Univ, Denpasar

Dr. WYN KANDEYA
Secretary UCHP. F. K. Udayana Univ., Denpasar

Dr. A.A. GD. SUDEWA D
Chief of Laboratory

Dr. IKOMANG GUNUNG
Secretary, Dept. of Public Health, Udayana Univ, Denpasar

Dr. I. A. SULASMI
Chief of Sukeawati Health Center, Bali

UJUNG PANDANG

Dr. TADJUDDIN CHALID
Director of Provincial Health Office, South Sulawesi, Ujung Pandang

Dr. F. WIDJAJANTO
TB Center, Ujung Pandang

Dr. I. WAYAN DANA
(Malaria Section) Provincial C.D.C., Ujung Pandang.

Dr. ASRORI
Director, School of Analyst, Ujung Pandang

Dr. SANDY RITUNG
Director, National Leprosy Training Center, Ujung Pandang

Dr. M.R. TETERISSA
Leprosy Division, C.D.C., Jakarta

Dr. NY. SRI. A. TADJUDDIN
Director, Ujung Pandang Hosp.

Dr. HANLMA
Clinical Pathology, Unjung Pandang Hospital

Dr. MAKALLWY
Head Dept. of Child Health, Ujung Pandang Hosp.

Dr. EMAHNEL
Vice-Director General Hospital, Ujung Pandang

Drs. NURNASRI NUR
Dean, Hasanuddin University, Ujung Pandang

Dr. JOHAN KURNIA
Health Center, Ujung Pandang

Dr. ETTY
Chief of Directorate Mamajaug Health Center

Dr. DJOHAN KURNIA
Chief of Medical Care Division, City Health Office, Ujung Pandang

Dr. MUIN
Head of CDC Kanwil MOH, South Salawesi, Ujung Pandang

Dr. MUSAKA RACHMAT
Chief of Provincial C.D.C., South Sulawesi, Ujung Pandang

Mr. NURNASRY NOOR
Epidemiologist, Hasanuddin Univ., Ujung Pandang

PALEMBANG

Dr. MANGASA SIREGAR
Chief of Provincial Health Office, South Sumatra, Palembang.

Dr. FARIDA SIRLAN
Director of Sungai Kundur Leprosy Hospital, Palembang

Dr. WAN AL KADRI
Director Leprosy Control, Provincial Health Office, Palembang

Dr. SOFYAN MUKTI
Director of C.D.C, Provincial Health Office, Palembang

Dr. NY.B.B. ROSELING
Provincial Health Laboratory, Palembang

Dr. SENO SUTEDJO
Director of General Hospital, Palembang

Dr. ADTI MUSLIHUDDIN
Vice Director of General Hospital, Palembang

Dr. WIDAGDO
Dept. of Child Health, General Hospital, Palembang

Dr. MUKTI OHMAR
Regency Health Office, Palembang

Dr. M. ARHASI
Director of Regency Hospital, Palembang

Dr. NADRIFIA
Senior Lab. Technician, Palembang

Mr. G.B. SHAFRONI SKM
Provincial CDC, South Sumatra, Palembang

Mr. SUDIONO
Public Health, Palembang

Dr. AGUS HENDRATA
CDC, Palembang

Dr. F.P. PARDEDE
Puskesmas Services Kannel, MOH, South Sumatra, Palembang