

PN-ABT-567

92484

HEALTHink

A PROGRAM OF
LOAN FINANCING AND HEALTH TECHNOLOGY TRANSFER TO
THE PRIVATE SECTOR IN INDONESIA AND THAILAND

NEEDS ASSESSMENT: REPORT I

Submitted to the
Bureau of Private Enterprise
United States Agency for International Development

by the
Program for Appropriate Technology in Health
Seattle, Washington

March 15, 1984

TABLE OF CONTENTS

I. INTRODUCTION	1
II. EXECUTIVE SUMMARY	4
III. INDONESIA	11
A. HEALTH STATUS	12
Health Status of the Indonesian Population	12
Major Causes of Death Among Infants	12
Major Causes of Mortality Among Pre-School Children	15
Factors Contributing to Maternal Mortality	16
B. HEALTH RESOURCES	18
GOI Budget Allocations and Expenditures for Health	18
Personnel Resources	18
Health Facilities	19
C. GOVERNMENT HEALTH PROGRAMS	22
Health and Nutrition Programs	22
GOI-USAID Cooperative Activities in Health	25
Government Involvement in Manufacturing	25
D. THE PRIVATE SECTOR AND HEALTH	27
Raw Materials Manufacturing	28
Price Regulation	28
Closed Areas for Pharmaceutical Investment	28
Investment Incentives	28
Raw Material from Local Sources	29
Future Regulation	29
E. SUPPLY OF FUNDS FOR THE HEALTH INDUSTRY	30
Commercial Banks	30
Development Banks and Financial Institutions	32
Other Financial Institutions	33
Investments	34
Conclusions	36
F. PRIORITY AREAS FOR THE IMPLEMENTATION OF HEALTHlink	37
FOOTNOTES	39

;

IV. THAILAND	42
A. HEALTH STATUS	43
Health Status of the Thai Population	43
Major Causes of Death Among Infants, Children and Mothers	43
B. HEALTH RESOURCES	46
RTG Budget Allocations and Expenditures for Health	46
Personnel Resources	46
Health Facilities	47
C. GOVERNMENT HEALTH PROGRAMS	49
Special Government Programs in Health	49
RTG-USAID Cooperative Activities in Health	52
D. THE PRIVATE SECTOR AND HEALTH	53
E. SUPPLY OF FUNDS FOR THE HEALTH INDUSTRY	55
F. PRIORITY AREAS FOR THE IMPLEMENTATION OF HEALTHlink	58
FOOTNOTES	59

APPENDICES

Appendix I:	Case Studies
Appendix II:	List of Health Care Manufacturers and Inventory of Pharmaceutical Products
Appendix III:	List of BKPM Priority and Closed Areas for Investments in the Health Care Sector
Appendix IV:	List of Drugs Marketed in Indonesia
Appendix V:	USAID-GOI Cooperative Activities
Appendix VI:	Selected Results of Multi-Client Survey, Pharmaceutical Sector
Appendix VII:	Health Care Investment Projects
Appendix VIII:	List of Contacts (Indonesia)
Appendix IX:	Loan Application Form for Bank Niaga
Appendix X:	Public Health Sector Financing Information
Appendix XI:	Review of Selected MOPH Programs
Appendix XII:	List of Contacts (Thailand)

INTRODUCTION

INTRODUCTION

This is the first of two reports on a Needs Assessment being conducted by the Program for Appropriate Technology in Health (PATH), at the request of the USAID Bureau of Private Enterprise (PRE). This assessment is part of the launching of a new effort to transfer appropriate health technologies from the U.S. and other developed countries to Indonesia and Thailand. The program, to be called HEALTHlink, would be directed to meeting the health needs of the majority poor.

The assessment is being conducted over a three and one-half month period from January to mid-April 1984. PATH staff in Seattle and the PATH representative in Jakarta are conducting most of the assessment. In addition, consultants in Bangkok have been retained. The assessment is being conducted in the framework of Terms of Reference prepared in advance and submitted to PRE for approval. The objectives of the Terms of Reference were:

1. To identify at least two loan possibilities in each of the two countries.
2. To establish procedures for loan development with Bank Niaga and Siam Commercial Bank.
3. To establish working relationships with relevant officers of the USAID Missions in each country.
4. To establish working procedures for financial feasibility studies with local firms in each country.
5. To identify additional local resources such as consultants, trade associations, etc.
6. To determine possible mechanisms by which government officers can assist in local project identification and formulation.
7. To identify government regulations, laws and policies that will influence project formulation and implementation.
8. To establish procedures for continuing communication between the program and the Office of Health of USAID/S&T and the Office of Asia Technical Resources of USAID/Asia Bureau.

This report addresses objectives 1, 3, 5, 7, and 8. The second report will address objectives 2, 4, and 6.

This first report provides an overview of the need for technology transfer linked with loan financing as a means to assist in improving the health of the majority poor in Indonesia and Thailand. It is based on research and investigations conducted up to mid-March. The report covers in

detail the current health situation in each country. It summarizes the government's health program. A review of the private sector role in health is also presented. Information is provided on the availability of credit financing for the health industry, and conclusions are drawn on the priority areas for further expansion of the private sector.

The second report will deal specifically with how HEALTHlink and the participating banks in each country would operate in meeting the need identified in the first report. It will also provide additional data on the past and present health sector financing of the participating banks. (Because of normal banking confidentiality constraints it has not been possible, for this first report, to gather detailed information about current bank financing of the health sector. Once banks are selected in each country, it is presumed those banks will be willing to provide more information about their financing activities.) The second report will be based on further investigations carried out by PATH staff and on the conclusions resulting from a trip made by PATH and PRE staff to Jakarta and Bangkok in late March 1984.

Because of PATH's historically deeper involvement in Indonesia, this first report concentrates on that country. Most of the major conclusions reached for the situation in Indonesia apply equally well to Thailand.

HEALTHlink would assist in the development of the private, for-profit health sector in Indonesia and Thailand. With grant assistance from PRE, HEALTHlink would assist in the transfer of health technology from the United States to private companies in Indonesia and Thailand. This technology transfer would result in the production of goods to meet the health care needs of the broadest possible cross-section of the Indonesian and Thai populations. If consumer goods are produced, they would be priced at a level accessible to the poor majority. The program would also encourage projects to supply raw materials to the health industry, as well as to supply finished goods to public and private health programs.

In Indonesia and Thailand, PRE intends to make available up to \$2.5 million on a 1:1 matching basis (for a total of \$5 million in each country) through conventional banking channels. These funds would be used for loans to participate in financing HEALTHlink health technology transfer projects. Loans ranging from \$50,000 to over \$1,000,000 would be extended to new manufacturing ventures. The terms and conditions of the loans would be negotiated by the bank and the borrower; however, PATH would have carried out financial analyses to assess loan options. The money could be used for fixed as well as working capital requirements. The local bank would manage the loan and bear the risk for its repayment.

HEALTHlink would act as broker, bringing together a local entrepreneur, a U.S. (or other developed country) health industry partner and access to financing. The projects would receive start-up and ongoing technical assistance, as appropriate, from PATH staff and experts.

USAID would receive market-linked interest rates and full repayment of principal. The local bank, not USAID, would bear risk for the repayment of the loans. The projects are intended to be profitable, that is, to generate enough cash on an ongoing basis to fulfill all financial obligations and give a reasonable return on investment for the owners. The U.S. partner would, in most cases, be compensated fully for its technical, managerial and financial assistance, and would earn a reasonable return on any equity investment it makes in the project.

HEALTHlink is designed to make use of financial markets by bringing together all the participants necessary for a successful new venture. For example, a U.S. firm may have developed a new product or process that could be successfully adapted to the needs of Indonesia or Thailand, yet it may not have the expertise, experience, or in-country capability to successfully transfer the product or process. On the other hand, a local enterprise may have identified a health need that could be satisfied locally and profitably, yet is unable to obtain financing at a reasonable cost, or perhaps lacks the necessary technical, managerial, and financial expertise. Finally, the local bank may wish to expand its portfolio of loans in the health sector, yet is unsure or unaware of new loan opportunities, or may need access to dollar funds.

This report is divided into four major divisions. The first is this Introduction. The second is an Executive Summary. The third is a review of the situation in Indonesia and the fourth covers Thailand. Each of the latter two divisions consists of several Sections.

Section A: HEALTH STATUS examines the current health status of the population, and provides data on levels and causes of infant, child and maternal mortality.

Section B: HEALTH RESOURCES provides information and data on resources currently available to each government for implementing its health program. Included are summaries of the government budget, its personnel resources and physical facilities.

Section C: GOVERNMENT HEALTH PROGRAMS reviews the management, priorities and activities of the Ministries of Public Health in Indonesia and Thailand. This section concentrates on identifying products used in these programs and problems with them. Products that could improve program performance are also identified. A summary of the government involvement in health products manufacture is presented.

Section D: THE PRIVATE SECTOR AND HEALTH describes the activities of the pharmaceutical industry, medical equipment manufacturers, pharmacists, and health care consumers. Total sales are summarized and trends in the growth of the market are discussed.

Section E: SUPPLY OF FUNDS FOR THE HEALTH INDUSTRY describes the various banking resources available to the health industry. It also presents data on the current and projected demand for investment funds by the health sector. This section is based on interviews with private, public and foreign health firms, as well as discussions with various government, international and private health agencies. Relevant government agency statistics and forecasts, and private publications were reviewed. For Indonesia, it also draws on a bank survey performed by P.T. Data Impact, a private business advisory group utilized by PATH to provide key background materials for the proposed program. For Thailand, a survey was conducted by Industrial Market Research Services.

SECTION F: PRIORITIES FOR THE IMPLEMENTATION OF HEALTHlink presents a discussion of the products that we believe should receive the highest priority for the implementation of HEALTHlink.

The divisions on Indonesia and Thailand each refer to several appendices providing additional data, documents or other information, such as case studies, lists of approved drugs and a listing of the more than 40 Indonesian and 35 Thai contacts made in the course of the needs assessment.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The central conclusion of this assessment is that in both Indonesia and Thailand there are profitable opportunities to establish, in the private sector, production of health products directed to meeting the health needs of the poor majority. These opportunities are not now being pursued because companies in each country do not have access to products and associated technical expertise and know-how. With the products and technical expertise in hand, loan financing will be required to bring the opportunities to realization.

Examples of products that could be produced in both Indonesia and Thailand are:

- Vaccines and/or raw materials for vaccine production,
- Cold chain equipment for immunization programs,
- Vitamin products, especially cheaper preparations of Vitamin A,
- Anhydrous glucose for production of oral rehydration salts,
- Larvicides and mosquito repellents for malarial control programs,
- Hospital equipment and supplies.

This conclusion rests on the following fundamental development in health in Indonesia and Thailand: It has become public policy to implement, whenever feasible, the local production of products essential for meeting the health needs of the poor majority.

The funds required to finance the listed opportunities are within the range of the loan pools that PRE has been considering establishing in each country, i.e. \$5 million. Each of the six examples listed above could require financing in the range of from \$100,000 to \$2 million. These six examples are only those identified in the course of the ten-week study and which are common to both countries.

Other projects that appear to be feasible in one or the other of the countries have been identified. With the launching of the proposed program, a much more thorough search will be undertaken. For Thailand, rabies vaccine production needs to be improved; production of gauze and bandage appears to be a viable commercial undertaking, and production of raw materials for antibiotics may be feasible. In Indonesia, manufacture of inexpensive spectacles and of weaning foods are options to be pursued in more detail.

In some cases, health project opportunities that meet the needs of the poor majority are already being pursued. These exceptions occur when developing world companies form joint ventures with multinational firms. These joint ventures are useful ways to stimulate the transfer of technology

and they have been able to meet important needs. Another way in which transfer occurs is when international technical assistance agencies such as WHO or UNICEF assist in setting up production of products, e.g., oral rehydration sachets and vaccines. Despite these important exceptions, the progress in implementing the local production public policy has been slow.

The development of a public policy to implement local production of essential products has resulted from many factors, two of which are of particular relevance to this report.

First, a consensus has been reached among health strategists of the priority areas for health in developing countries: diarrheal disease control, immunization, nutritional enhancement, prevention and treatment of respiratory diseases, family planning, improvement of the safety and outcome of birth, and control of infectious diseases such as malaria. Because this consensus has been reached, government health funds and personnel are being concentrated in a few priority areas leading to expanded distribution and use of the products that are involved in each.

This impact is being felt in both the public and private sectors. As more and more individuals learn from government educational programs of the value of various health products, the demand in the private sector for these products increases.

Second, in the last several years there has occurred in health a basic shift from reliance on donated commodities to procurement by the government itself of products needed to protect and maintain health. As a result governments are turning serious attention to the issue of local production and have concluded that many products should be made locally. As a corollary, developing world health sector business people have become aware of the rapidly growing public and private sector markets for their products and for other products which are not currently being manufactured in-country. They are understandably anxious to position their companies to take advantage of this fundamental change in the supply of health products.

Our investigations have documented how these changes are underway for each of the major primary health care products in both Indonesia and Thailand.

For diarrheal disease control programs UNICEF has been a source of supply for governments. However, as national diarrheal disease control programs have expanded, many governments have been faced with the necessity to assume responsibility for procuring supplies of ORS. In most cases, this has meant that local packaging facilities have been established.

In both Indonesia and Thailand, packaging of ORS is being expanded by government controlled agencies.

Private sector firms are considering expanding production of ORS packets. Because of the extensive informational campaigns launched by the government health program, more and more individuals are learning of the value of oral rehydration therapy leading them to procure oral rehydration salts in the private market.

In both Indonesia and Thailand private sector packaging of sachets of electrolyte powders is well established and sales are increasing. Also private sector production or distribution of oral rehydration salts tablets will soon be underway.

Anhydrous glucose is specified by WHO for production of ORS. Neither country manufactures anhydrous glucose. Currently this product is imported. Potentially, substantial savings in hard currency could be realized in Indonesia if local production were established. It may also be feasible to produce anhydrous glucose in Thailand where over 4 million packets of ORS are packaged annually.

For immunization programs, both the Indonesian and Thai governments are assuming greater responsibility for procurement of needed supplies. The technological sophistication of vaccine production makes it unlikely that all of the vaccines needed in government immunization programs or which individuals obtain from their private physician or pharmacist will be manufactured in-country. Nevertheless, the governments of both countries have decided to expand production of vaccines in government controlled companies. There is no private sector manufacture of vaccines, representing an area of considerable potential for private sector sales.

The private sector could play an important, and to-date largely unfilled, role in the provision of cold chain equipment. Indonesia is importing several thousand refrigerators which potentially could be manufactured locally. Even for the imported refrigerators, there will be a continuing need for spare parts, a need that could be met by local firms. Several concerns have recognized the need for production of syringes and are seriously considering establishing manufacturing facilities.

A variety of efforts have been made to assure that each country can more fully meet the nutritional needs of its population. Tremendous strides have been made in improving agricultural productivity. In addition, some limited production of weaning foods has been established and additional factories are being planned. Also, production of vitamins is well established. Much of the vitamin consumption is by socio-economic groups who do not have a major need for vitamin supplementation, and the vitamins being consumed are not among those of highest priority. Vitamin A is a high priority vitamin and the governments of Thailand and Indonesia have active programs to encourage its use.

Consideration is being given by a firm in Thailand to production of Vitamin A soft gelatin capsules that will have better resistance to high ambient temperatures than products currently on the market.

Some of the important acute respiratory diseases are being addressed by government programs. Antibiotics are a crucial drug group for these diseases. Very limited efforts have been undertaken to transfer know-how for production of antibiotics to Indonesia and Thailand; although there is a large amount of tableting and capsulation of imported raw materials. There is widespread agreement in Thailand that production of raw materials for some of the more critical antibiotics should be undertaken and would be financially viable.

Major changes have taken place in donor financial assistance for national family planning programs. Throughout the 1970s both countries relied almost completely on free, donor-supplied commodities for their programs. Such assistance has now all but been terminated. Aggressive steps have been taken in Indonesia to establish production of oral contraceptives, IUDs and condoms. Production of these products is being carried out by a government controlled company, Kimia Farma. In Thailand, injectables and oral contraceptives are being procured from local private sector firms. Condoms are being procured from a firm which imports bulk goods from Korea. There appears to be need for additional facilities for condom packaging and, perhaps, for IUD production.

Maternal and child health programs directed at improving the safety of birth and reducing neonatal and infant death rates are receiving increased priority in both Indonesia and Thailand. We have already noted the expanded activities in immunization including the vaccination of women for tetanus. Also it has been noted that weaning foods are attracting increasing attention and offer a potential for private sector involvement in primary health care. A major need is for accurate, inexpensive, easy-to-use scales for weighing children and newborns. Local production of traditional beam balance scales is already underway. UNICEF provides scales but these are relatively expensive and not accurate for newborns. Recently, improved scales have been developed in the United States and could be produced and/or distributed in Indonesia and Thailand.

Control of infectious diseases, especially malaria, is receiving increasing attention in Indonesia and Thailand. Malaria is once again becoming a serious problem in both countries. While foreign assistance and technical agencies played major roles in earlier efforts to control malaria, much of the financial resources will now have to be made available by the governments themselves. In Indonesia the need has been identified for better repellents, spraying equipment, mosquito coils, and various other supplies and equipment used in malaria control programs.

As illustrated by the examples given in the previous paragraphs, there is a large array of health products whose manufacture could be established in

Indonesia and Thailand, if technical expertise and know-how could be obtained. With the availability of technical expertise and know-how, projects could be designed that would be financially viable.

Our experience in PATH, as well as the additional investigations we have carried out as a part of the needs assessment, leads to the conclusion that it will be possible to identify needed products and to arrange for appropriate licensing and/or joint venture agreements. The U.S. (and other developed country) firms with which we will deal will be mostly small to mid-sized. Large companies can operate through their own resources in Thailand and Indonesia. There may be some occasions in which PATH will work with large companies. It is the innovative smaller U.S. firm, which is anxious to expand beyond the U.S. market, with which PATH will most often work. In addition, to working with private companies, PATH will undertake to license technologies it controls. For example, PATH is completing development of low-cost, easy-to-use diagnostic dipsticks for detection of glucose and albumin in urine and for the measurement of hemoglobin to detect anemia. PATH will work with Indonesian and Thai companies to assist them in establishing fabrication of these products.

What is the need for additional financing in the health sector?

The three components of the proposed program are the products, the technical assistance and the loan financing. The possibility of combining these three components into a package for a given project is a necessity for assuring the success of the program. The study suggests that the most important elements will be the product and the technical assistance. It appears that the loan money will not always be required. Our research has shown that in both countries loan funds are available to the health sector. It is probable that some projects developed by HEALTHlink will be financed by sources other than the loan pools established by PRE. While there are these other sources available to the health sector, they are mostly employed in serving the health needs of the wealthy sector of the society. Access to a committed loan fund pool for projects focussing on the needs of the majority poor will be, we believe, essential for achieving the goals of this program.

The project should result in a useful product reaching those who need it. To achieve this goal, there must exist appropriate incentives for the entrepreneur to address a market which might not otherwise receive attention. In this case the incentives are 1) long-term, fixed interest, dollar loans, and 2) the opportunity to explore in detail the requirements for undertaking a new project while being able to have a portion of the exploration costs shared by an outside organization.

Investigations undertaken in this needs assessment (and experience in managing the International Loan Fund) have led to the conclusion that these incentives will be adequate to result in projects that meet public health needs.

The needs assessment has also examined options for effective management of HEALTHlink.

ATH will pursue the establishment of an official presence of PATH in both countries to allow it to undertake legal negotiations with companies, to enter into collaborative relationships with the governments (ministries of health) and to have direct-hire staff. The process of establishing these presences is underway.

Based on discussions with USAID staff in Washington, Bangkok and Jakarta it has been concluded that HEALTHlink should maintain close communication with the Office of Asia Technical Resources and the Bureau of Science and Technology and with the USAID missions in each country. Each project should be reviewed with Mission staff and periodic program reports should be submitted to the Asia Technical Resources Office and the Bureau of Science and Technology.

We are of the firm belief that the Missions can make their most important contribution by providing guidance to the program based on Mission staff's close and continuing involvement in the public sector health programs in each country.

The USAID Asia Health Strategy Policy has been reviewed. It is anticipated that the priorities of HEALTHlink will complement fully those of the USAID policy.

At this time, it appears that the banks will have no difficulty in accepting the requirement that the USAID funds will be invested only in projects that have either been developed by or approved by PATH. We believe this is the best course for the program to follow to assure that the projects funded with USAID moneys are consistent with the priorities of USAID and the government health program.

In Indonesia, it is important that the USAID funds remain in the form of dollars. This will most likely require that the funds are placed outside the country. Availability of dollars is a significant asset of the proposed program. No problem of this kind exists in Thailand since the Bhat is freely convertible.

In each country we have identified firms with established reputations that can conduct financial feasibility studies. In addition, individual consultants have been identified.

INDONESIA

A. HEALTH STATUS

Health Status of the Indonesian Population

Despite progress made since the New Order Government came to power, Indonesia still ranks at or near the bottom of most health indicators compared with other countries in the ASEAN region.¹ The rate of mortality among infants is high (104.8 per 1000 live births) compared with neighboring Malaysia (33/1000) and the Philippines (59/1000).² Only 12% of the population has access to a clean source of drinking water,³ and fewer than 30% of urban and 4% of rural households have latrine facilities equipped with septic tanks.⁴ Two-thirds of the population consume well below the required amounts of calories and protein, and malnutrition is widespread, afflicting an estimated 33% of all children under five, and 7% and 3% of pregnant and lactating women respectively.⁵

Of all age groups, infants (0-1) experience the highest rate of mortality in Indonesia, followed by the 1-4 year age group (under-fives). Mortality among under-fives was estimated at 14.4 per 1000 population in 1979. This rate is nearly four times higher than rates reported from Sri Lanka (3.8) and twice that of the Philippines (7.5).⁶

An accurate estimate of the maternal mortality rate (MMR) has yet to be determined, mainly because 80% of all deliveries still take place in the home. National estimates run as high as 40 deaths per 10,000 pregnancies with rural levels perhaps reaching 80 per 10,000.⁷ An epidemiologic analysis of data derived from twelve hospital-based studies reported an MMR of 37.4 per 10,000 cases or 39.0 per 10,000 live births.⁸ A three-fold difference was found between the MMR for rural women (77/10,000 cases) and urban women (25/10,000 cases). Although the hospital-based MMR estimate (39/10,000 live births) does not take into consideration deaths during home deliveries, it is still ten times higher than rates reported from developed countries in the early seventies.

Major Causes of Death among Infants

Forty-five per cent of all infant deaths in Indonesia occur in the first month of life (neonatal period). There is strong evidence to show that tetanus is the major cause of death among neonates. The 1980 Home Health Survey found tetanus the cause of 43% of all neonatal deaths (see Table 1), while other researchers attribute 20% of the total infant mortality rate (IMR) to neonatal tetanus.^{9,10} The low percentage of pregnant women receiving tetanus immunization (20%) is directly related to the high incidence of neonatal tetanus.

Table 1: Causes of Death Among Neonates*
(0-1 Month): 1980

<u>Type of Illness</u>	<u>Percentage</u>
1. Tetanus	43.1
2. Birth Trauma	21.6
3. Acute Infections of Lower Respiratory Tract	10.8
4. Diarrhea	10.8
5. Neoplasms	3.9
6. Others	7.8
7. Unspecified	2.0
TOTAL	100.0

*Source: Department of Health, 1980 Home Health Survey

Another major cause of death among neonates is birth trauma. Both neonatal tetanus and birth trauma are undoubtedly related to unhygienic and detrimental birthing practices of traditional midwife healers (dukun-bayi) who still attend virtually all of the deliveries in rural Indonesia. Although the Ministry of Health has trained thousands of dukun-bayi in modern hygiene methods and improved delivery technology, many revert back to traditional practices. For example, a study conducted in Central Java¹¹ found that 70% of trained dukuns had reverted back to using bamboo knives to cut the umbilical cord.

Other factors which may contribute to neonatal mortality include low birth weight and maternal anemia. The best predictor of an infant's chances for survival is its weight at birth. Low birth weight is estimated to contribute to the early death of between 20 and 30 infants per thousand live births in Indonesia (20%-30% of the total IMR).^{9,12} The contribution of anemia has yet to be definitively calculated, although estimates based on maternity care monitoring research suggest that anemia accounts for 10-15 excess deaths per thousand live births.^{9,13}

Among older infants (1-11 months) diarrhea is the major killer, accounting for 33% of all deaths in this age group (see Table 2). Although breastfeeding is still commonly practiced in Indonesia, declines in frequency and duration of breastfeeding have been noted in many urban areas of the country. Approximately one-third of all urban-born infants are not breastfed beyond the age of 10-12 months¹⁴ compared with the median duration of 22.2 months for the country as a whole.¹⁵ At the same time, hospitals

report increasing incidence of diarrhea among bottle fed babies.¹⁶ Early introduction of supplementary foods, as early as the first week of life, may be another contributing factor to high infant mortality in Indonesia.¹⁷

Although it is well known that bottle feeding can lead to high rates of diarrhea and death, no laws have been passed to control the marketing and distribution of breast milk substitutes in Indonesia. Government health centers themselves are often a major sales outlet for infant formula.¹⁸

Given the current high price of breast milk substitutes in Indonesia, few families can afford the daily cost of artificial feeding -- which, at six months of age, is estimated at 16% of the basic minimum wage. Moreover, low income families are least likely to have access to clean drinking water sources. Consequently, infants from poorer families are often given over-diluted formulas mixed with contaminated water -- an important factor in the causal chain leading to diarrheal dehydration and infant death.

Table 2: Causes of Death Among Infants*
(1-11 Months): 1980

Type of Illness

1. Diarrhea	33.1
2. Acute Infections of Lower Respiratory Tract	29.8
3. Meningitis	11.3
4. Tetanus	4.6
5. Intestinal Blockage & Hernia	2.6
6. Birth Trauma and Certain Perinatal Conditions	1.0
7. Congenital Disorders	1.3
8. Neoplasm	1.3
9. Others	7.9
0. Unspecified	<u>7.1</u>
TOTAL	100.0

*Source: Department of Health, 1980 Home Health Survey

Major Causes of Mortality Among Pre-School Children

Diarrhea is also the major cause of death among Indonesian children of pre-school age (1-4 years), followed by acute infections of the respiratory tract and meningitis (see Table 3). On average, pre-school children suffer 3-5 episodes of diarrhea each year, and approximately 600,000 die from diarrheal dehydration and related infections.¹⁹

While the control of diarrheal diseases is addressed by the Communicable Disease Control (CDC) Department of the Ministry of Health, there is still no national program for diarrheal disease prevention and oral rehydration.¹

Although malnutrition is not an outright killer of children, studies in Java attribute up to 57% of all infant and child mortality to malnutrition, acting synergistically with diarrhea, pneumonia and other infectious diseases.¹⁸ Approximately one-third of all under-fives (7.5 million) are estimated to suffer from some form of calorie-protein malnutrition (CPM) with the highest prevalence seen among children under two years of age (50%).⁵

Many children die yearly from typhoid (which is endemic and epidemic) and immunizable diseases such as tetanus, diphtheria and measles. This is largely because immunization services reach only 20% of children, and effectiveness of coverage is poor do to the lack of an active outreach program and breaks in the cold chain.^{1,9} For example, one study noted that the kerosene refrigerator used to store vaccines at Puskesmas (rural health center) was set at 21°C, and Puskesmas staff were unaware that this ruined tetanus toxoid vaccine.⁹

Table 3: Causes of Death among Pre-School Children*
(1-4 years): 1980

<u>Type of Illness</u>	<u>Percentage</u>
1. Diarrhea	36.9
2. Acute Infections of Lower Respiratory Tract	28.8
3. Meningitis	13.8
4. Abdominal Typhoid	3.1
5. Tetanus	2.5
6. Diphtheria	2.5
7. Measles	1.2
8. Others	6.2
9. Unspecified	<u>5.0</u>
TOTAL	100.0

* Source: Department of Health, 1980 Home Health Survey

Another weakness of the cold chain system is the dependence on imported refrigeration units and portable thermos for storage and transport of vaccine in rural areas. Of those Puskesmas which have refrigerators, most are equipped with imported units (Japanese and American). Problems occur in maintaining these units because spare parts are not locally available, and delays are encountered when imported parts are out of stock.²⁰ The cost of a portable thermos for transport of vaccines is very high -- again because of the added cost of importation. Currently, there are no local producers of thermos of high enough quality to meet cold chain requirements.²¹

Factors Contributing to Maternal Mortality

A number of host factors, e.g., iron deficiency anemia, close pregnancy intervals, and poor hygiene, indirectly contribute to high maternal mortality in Indonesia by lowering women's general resistance to disease. An estimated 3.3 million pregnant women suffer from iron deficiency anemia nationwide.^{19,22} This deficiency was shown to be a high risk factor in the twelve-hospital study⁸ which found a three-fold difference in MMRs for anemic than for non-anemic women. Approximately 48% of rural women studied were found to be anemic as compared with 31.4% of urban women (See Table 4).

Table 4: MMR by Residence and Anemic Condition⁸
 12 Teaching Hospitals in Indonesia: 1977-1980
 (Per 10,000 Maternity Cases)

	<u>Anemia</u>	<u>Non-Anemia</u>	<u>Total</u>
Urban	38.8	18.4	24.8
Rural	134.8	22.8	76.2
Total	70.2	19.2	37.3

The highest relative risk reported in the above-mentioned study was "No antenatal visits" indicating its importance in the causal chain leading to maternal mortality.⁸ A five-fold difference in MMR was found between women who made no antenatal visits compared with those who made one or more visits. The low percentage of pregnant women who actively seek prenatal care from Puskesmas is attributed to the common notion that the Puskesmas is a place one visits only when ill, and that pregnancy is a normal part of life.⁸ Thus, there appears to be a need for alternative delivery systems for antenatal care if the MMR is to be reduced by 50% as targeted for the Fourth Five Year Development Plan.

IB. HEALTH RESOURCES

Government of Indonesia (GOI) Budget Allocations and Expenditures for Health

Until recently, the health sector was a low budget priority (less than 2%) in Indonesia. During the Third Five Year Development Plan (Repelita III: 1979-1984) government allocations for health increased to approximately 3-4% of the national budget, about \$1.20 per capita per year. However, only 25% of the national health budget was allocated for the 80% of the population which resides in rural areas.²³

The government health budget and realized expenditures on health infrastructure and rural health centers (PusKesMas) during 1980-1984 are summarized in Table 5.

Table 5: Government Health Sector Budget and Realized Expenditures on Health Infrastructure & PusKesMas* 1980-1984 (Billion Rupiah)

	<u>1980/1981</u>	<u>1981/1982</u>	<u>1982/1983</u>	<u>1983/1984</u>
Budget for Health Sector	124.2	163.6	204.5	214.2
First Six Months Realized Expenditures on Health Infrastructure & PusKesMas	27.1	31.3	24.5	
Full Fiscal Year (est.)	54.2	62.6	49.0	

* Source: Nota Keuangan

Personnel Resources

There are about 12,900 physicians in Indonesia, half of whom live and work in the four largest cities of the country. In these cities, the physician:population ratio almost equals Western levels, while in rural areas there may be only 1 physician for 40,000-100,000 persons.²³

The number of nurse/midwives and health care assistants is estimated at 35,500 and 35,700 respectively, which represents a four-fold increase over the total number available in 1969. It is estimated that an additional 24,000 physicians and 157,000 nurses will be needed by the year 2000.¹

Health Facilities

1. General Hospital Facilities

There are 1,239 government and private general hospitals in the country with a total of 98,543 beds (see Table 6). The current patient:bed ratio or average number of hospital beds available per 10,000 population is quite low -- 6.7 per 10,000 persons. General hospitals are unevenly distributed among the 27 provinces of Indonesia, with some provinces having patient:bed ratios below 4.0.

Table 6: Number of General Hospitals, Hospital Beds, and Patient:Bed Ratio*
Indonesia, 1981-1982

	<u>Number of Hospitals</u>	<u>Number of Beds</u>
Government Hospitals	637 (51%)	70,814 (71.8%)
Private Hospitals	602 (49%)	27,729 (28.2%)
Total	1,239 (100%)	98,543 (100%)
Patient:Bed Ratio	6.7 per 10,000	

* Source: Department of Health

Fifty-one percent of all general hospitals are owned by the government and contain 72% of the total number of available beds. Although government hospitals are generally larger than private hospitals, chronic shortages of professional staff, medical equipment and facilities limit the quality of service offered through these facilities. Those who can afford to do so, usually seek treatment at private hospitals.

During 1972-1980, annual growth of beds available in private hospitals exceeded growth in government hospitals. Table 7 illustrates this point.

Table 7: Number of Hospital Beds Available*
1975-1980

	<u>1975</u>	<u>1980</u>	<u>Annual Growth</u>
Government Hospitals	51,253	70,814	6.7%
Private Hospitals	15,824	27,829	11.9%

* Source: Calculations Based on Central Bureau of Statistics Data

Given the current low patient:bed ratio, it is anticipated that growth of hospital beds will remain the same or exceed the growth levels of 1975-1980. If growth levels remain the same, the availability of beds can be forecasted as follows:

Table 8: Forecast of Hospital Beds Available*
1984-1988

<u>Year</u>	<u>Government Hospitals</u>	<u>Private Hospitals</u>	<u>Total</u>
1984	91,786	43,476	135,262
1985	97,936	48,650	146,586
1986	104,497	54,439	158,936
1987	111,499	60,918	172,417
1988	118,969	68,167	187,136

*Source: Calculations based on annual rate of growth of government hospitals (6.7%) and private hospitals (11.9%).

2. Maternity Hospitals/Clinics

In addition to general hospitals, there are 479 government and private maternity hospitals/clinics in Indonesia with a total of 10,950 beds (see Table 9). More than 60% of existing maternity hospitals and 33% of maternity clinics are located in the neighboring provinces of Jakarta and West Java.

Table 9: Number of Maternity Hospitals/Clinics*
Indonesia: 1980

	<u>Number of Hospitals</u>	<u>Number of Beds</u>
Maternity Hospitals	16	934
Maternity Clinics	463	10,016
Total	479	10,950

*Sources: Biro Pusat Statistik: Statistical Profile
of Children and Mothers in Indonesia, 1982.

3. Public Health Centers

The need to expand health service delivery to rural populations became apparent during the second half of the First Five Year Development Plan (Repelita I: 1969-1974). A network of Puskesmas (rural health centers) was subsequently developed, based on the encouraging response of the rural population to small units for Child and Maternal Health (Balai Kesejahteraan Ibu dan Anak or BKIA) in preceding years. These intimate contacts between motivated primary health care educators/providers and pregnant women worked well, and most of the BKIA units (9,500 in 1977) were incorporated into Puskesmas during the Second Five Year Development Plan (Repelita II: 1974-1979.)²³

The goal to establish a Puskesmas in each sub-district of the country was realized during Repelita II. There are now 4,949 Puskesmas with 10,386 satellite centers scattered throughout the country. However, the ideal of a well staffed health center headed by a physician has yet to be achieved. (Approximately 50% of Puskesmas in Java and 60% outside Java still have no physician.)²³

Research conducted by the Community Health Care Delivery Research Unit of the Ministry of Health has shown that Puskesmas services reach only 20-30% of the population.^{1,23} With respect to socioeconomic class, Puskesmas seem to attract better educated clients who are familiar with modern medical practices. Most Puskesmas clients live within a 5 km radius of the center. Beyond this distance, transportation costs are too prohibitive, although the actual cost per visit is low (about \$0.25).²³

The fact that modern preventive medicine concepts and practices are not conducive to the traditional "cosmic" view of the rural people is another reason often cited for under-utilization of Puskesmas services.²³

C. GOVERNMENT HEALTH PROGRAMS

Health and Nutrition Programs

During Repelita III, government health policy and service delivery programs accorded maternal and child health high priority. This emphasis will be continued throughout the next Five Year Development Plan (Repelita IV: 1984 - 1989).²⁴ Among the largest national programs with a focus on maternal and child health are the following:

1. National Family Nutrition Improvement Program (UPKG)

UPKG is a large inter-sectoral nutrition program begun by the GOI during Repelita III in cooperation with UNICEF. Other external donors include USAID, IBRD, UNFPA and WHO. Village activities include monthly baby weighings, distribution of nutritional "first aids" to children (ORS and Vitamin A capsules), distribution of ferrous sulfate tablets to pregnant women, health education and organization of supplementary feeding activities. In some UPKG villages, income-generating activities have been integrated in an effort to promote program self-reliance.²⁵ More than 400,000 trained village volunteers (cadres) conduct UPKG activities under the supervision of the local Puskesmas. UPKG is now estimated to operate in over 30,000 villages where 70% (14.9 million) of the nation's under-fives live.²⁶

2. Expanded Program for Immunization (EPI)

EPI is a priority component of the Department of Communicable Disease Control (CDC), Ministry of Health. The program is largely funded by the GOI, with external assistance from UNICEF, WHO and USAID. Although started only recently, the program is aiming at national coverage. While the intended coverage in 1982 was approximately 60% of the total eligible population, actual coverage (fully immunized children) was only about 40% of intended coverage.²⁵

BCG, DPT, TT, Polio and Measles immunizations are made available to three target groups, namely: three- to fourteen-month old babies, school children, and pregnant women, with the first group receiving the highest priority. Both BCG and tetanus vaccines are locally produced by a state enterprise, Bio Farma. Vaccinators travel to outreach sites on a fixed schedule, and midwives perform immunizations in the MCH clinics. While an effective cold chain has been developed up to regency level, extension to sub-district and village level is still very limited.

Resource constraints are largely related to the high cost of vaccines, vaccine transport, and imported supplies such as portable thermos and reusable glass syringes. The GOI intends to promote more local production of vaccines -- especially measles and polio vaccine -- to meet future EPI needs. A technical and financial feasibility study is planned for June 1984, with joint funding from WHO, UNICEF and USAID. The potential role of the private sector in local production of raw materials and/or finished products will be investigated as part of this study.

3. Iodine Deficiency Control Program

Iodine deficiency afflicts approximately 12 million children and adults living in the "goitrous belt" of the Indonesian archipelago. More than 100,000 cases of childhood cretinism are estimated among the population in the endemic area.^{19,22} With financial assistance from UNICEF, the GOI has undertaken a major iodine deficiency control program which promotes mass treatment for goiter (Lipidol injections) and preventive measures (iodine fortification of salt). The Program Coordinator for Nutrition at UNICEF/Jakarta estimates that more than six million doses of Lipidol have been administered over the past five years. Lipidol is currently imported from France. Importation costs rose significantly with the devaluation of the Rupiah in early 1983. The GOI has since had to reduce its projected target for Lipidol injections because of rising costs and budgetary constraints. Local production of Lipidol, then, would help to meet a health need of a large segment of the population.

4. Dengue Hemorrhagic Fever (DHF) Control Program

The GOI recently announced that the control of dengue hemorrhagic fever will receive high priority in Repelita IV (1984-1989). A large campaign has already been launched to eradicate mosquito breeding grounds and to provide mass media prevention education. UNICEF is currently providing financial assistance to the GOI for the procurement of a new larvicide (Abate™), which is effective on all species of mosquitoes. This product can also be used for the control of malaria, filariasis, yellow fever, arboviruses and onchocerciasis. It is reportedly more effective and easier to use than oil larviciding agents, and non-hazardous to humans, animals and other non-target organisms when used according to label directions. Abate™ is not locally produced and is transported from the U.S. in sand. Approximately 150 tons of Abate™ sand were imported at very high costs last year. Under a licensing arrangement with the producer (American Cyanamid Co., Wayne, N.J.), Abate™ concentrate

could be produced in Sumatera where there is an adequate supply of the appropriate type of sand. This is one public health product which should receive priority attention.²¹

5. National Family Planning Program (KB)

Indonesia is said to have one of the most effective family planning programs in the developing world.¹ The national program is directed by BKKBN (the National Family Planning Coordinating Board) and is largely funded by the GOI with USAID as the major external donor. Phase I of this highly successful program started in 1970 with clinic-based services in Java and Bali. Phase II focused on developing a village family planning (VFP) network in Java/Bali (1974) and ten provinces of the Outer Islands (1977). The VFP network is now present in almost all the 62,000 villages of Indonesia.

The average proportion of contraceptive users (out of total married couples of reproductive age) has increased from less than 10% in 1975 to 40% at the end of 1982. However, contraceptive use in urban areas is still relatively low (30%).^{1,25} The program has developed a sizeable staff at the kecamatan or sub-district level. Other health services have been cost effectively "piggy-backed" on to this infrastructure, most notably the UPKG program.²⁵

At the current rate of population growth (1.9%), there will be an additional 19.6 million women of child-bearing age by the year 2000 -- an increase of 53.8% over the 1980 figure.²⁷ The need to further reduce the growth rate is evident, and government plans call for a reduction to 1.3% by 1990. To achieve this target, contraceptive prevalence must increase to 68% of eligible couples and 5.5 million new acceptors must be recruited annually. The BKKBN has projected that more than 120 million cycles of oral contraceptives will have to be produced and/or procured. USAID has already provided funds for the establishment of an oral contraceptive production facility which is currently producing 30 million cycles of pills. Moreover, the GOI has received loan funds from the PIACT/PATH International Loan Fund (ILF) to establish an IUD production facility.

6. Diarrheal Disease Control

The Communicable Diseases Control Program of the Ministry of Public Health is taking steps to deal with diarrheal disease. A special section has been established. Activities are underway in training, education, and distribution of ORS packets.

UNICEF has also provided technical and financial assistance to the GOI for the establishment of an ORS production facility in Indonesia. One of the major constraints to cost-effective production of ORS is the absence of locally manufactured raw materials, e.g., anhydrous glucose.²¹

7. Malaria Control

Since the 1960s the GOI and USAID have joined in cooperative efforts to control the spread of malaria on Java, Bali and Madura. By the mid-1970s, malaria had been successfully brought under control in Java. However, malaria-carrying mosquitos have recently shown signs of resistance to DDT and of a resurgence in Java¹.

Health staff of USAID/Jakarta indicated that high priority should be given to local production of agents to control/prevent human contact with mosquitos, such as larvicides (mentioned earlier under dengue hemorrhagic fever), mosquito repellents (coils and agents which can be applied to the body), mosquito nets, window screens and other products.

GOI-USAID Cooperative Activities in Health

In addition to the activities mentioned above, there are a number of other joint GOI-USAID projects (see Appendix V). For example, the GOI, USAID and Helen Keller International (HKI) have joined in a cooperative effort to prevent Vitamin A blindness in Indonesia. The GOI procures approximately 10 million high dose Vitamin A capsules for distribution to children through the UPKG and other programs. Although Vitamin A is produced in Indonesia, the per capsule price is higher than the cost of a comparable product manufactured in Australia. Therefore, most capsules are purchased from Australia at a unit cost of \$0.025 per capsule. It is postulated that the current cost of the Indonesian product could be reduced by up to 80% if a less expensive encapsulating agent was used or if the Vitamin A was packaged in glass bottles and dispensed by eye dropper.²⁷

Government Involvement in Manufacturing

The Indonesian government is involved in two pharmaceutical manufacturing enterprises: P.T. Kimia Farma and Indo Farma. Their combined sales for 1983 were \$40-60 million, about 10% of the market.

P.T. Kimia Farma, although owned by the state, is intended to be run like any other private enterprise. In fact, they are not as budget conscious as private firms and have certain advantages not enjoyed by the private sector. First, they have easier access to financing, often at below-market rates. Second, they have a lucrative monopoly on the import and manufacture of narcotic drugs. Third, they own an extensive network of retail stores. Currently, Kimia Farma is focusing on low-margin generic drugs. Combined with Indo Farma, they have captured about 80% of that market in the past few years. They intend to enter the more profitable name brand market, where they presently hold less than 1% of the market.

Indo Farma is a unit of the Department of Health. Its primary mandate is to supply high quality generic drugs at a low price to government health services. Profit is a secondary matter, although it has seen a profit in two years of its existence.⁷ Indo Farma currently produces 34 "essential" drugs. Capacity will be greatly expanded by a \$25 million plant (now under final review) that will be financed by the Italian government at concessional terms. The presence of Indo Farma, particularly when the new plant starts production in late 1985, will effectively limit the profitable marketing of generic drugs to sales by the government.

Indo Farma is not allowed to sell outside the government, although it is likely that it will soon be allowed to sell to private hospitals and social service agencies, dampening the profit potential for the private sector of those markets. Sales through a commercial distributor to retail markets will most likely not be permitted in the near future, so Indo Farma's impact on broader markets will probably be insignificant.

D. THE PRIVATE SECTOR AND HEALTH

More than 2,000 ethical preparations are currently available on the Indonesian market, including prescription drugs and over-the-counter (OTC) preparations.²⁸ In Rupiah terms, drug sales have grown rapidly over the past several years. Rapindo (the government investment bank) estimates that ethical and pharmaceutical drug sales grew 13% in 1981, while sales of the ten most popular traditional medicines grew a phenomenal 75% in the same period.²⁹ One local company estimated ethical pharmaceutical sales alone grew 24% in 1981 and 20% in 1982.³⁰ Statistics published by the Investment Coordinating Board (BKPM) reveal a 20% growth in total drug consumption for 1982, from Rps 450 to Rps 540 billion.³¹ For the past few years, profit per unit sale has not grown appreciably. Profitability varies considerably, although it is generally quite high. In 1982, both after-tax return on investment and on sales ranged from less than 5% to over 30%.

Growth in 1983-1984 is not matching previous years, due to the general slow-down caused by lower oil prices. However, virtually every executive and banker interviewed was optimistic about future growth and profitability. In a recent multi-client survey conducted by Data Impact (see Appendix VI), six of a total of sixteen pharmaceutical firms reported they plan significant capital investments in the next three years.

Personal income, education, population and health-care awareness -- all basic determinants of health care expenditures -- are expected to increase greatly over the next two decades. Presently, only 25% of the population obtains modern medical care, with the balance using self-medication, usually jamu (traditional medicine) or seeking the aid of a dukun (traditional healer). The fact that the jamu phenomenon has grown to a \$1 billion industry (annual gross sales), indicates the growing awareness and demand for preventive and curative health care.³²

The Indonesian Federation of Pharmaceutical Enterprises (G.P. Farmasi) estimates that per capita drug expenditures will grow from about \$3.50 to \$10.00 by the year 2000.³³ If the population in the year 2000 is 200 million, then the market for pharmaceuticals will have increased almost four times in real terms.

The following policies and regulations are particularly relevant to the industry's growth and profitability. These policies will have an important impact on the growth of the health industry in coming years.

Raw Materials Manufacturing

Approximately 95% of all raw pharmaceutical materials are imported. Many local pharmaceutical firms with ties to multinationals import raw materials from their parent companies, reportedly at higher than free market prices, thus raising the cost of many pharmaceuticals³⁴. To reverse this trend, the BKPM has issued a new policy requiring that joint venture (PMA) firms, wishing to expand or construct new pharmaceutical manufacturing facilities, must agree to manufacture raw or intermediate ingredients as a condition of receiving approval. While this policy reduces imports, it may also lead to over-investment in capital facilities. Several industry executives claim their raw material facilities constructed in response to this requirement operate for as little as three eight-hour shifts a year. Firms are now adapting to this situation by constructing scaled-down plants. Yet this remains a significant cost of doing business in Indonesia.

Price Regulation

Indonesia currently has a de facto system of drug price regulation. The maximum allowable retail prices are published in the Informasi Harga Obat, and revised semi-annually. The prices are developed by adding fixed margins to the manufacturer's ex-factory price for the distributor and retailer. This arrangement reduces price competition among the local producers, which is perceived as a benefit by some participants.

Closed Areas for Pharmaceutical Investment

The BKPM has placed certain restrictions on pharmaceutical investment in Indonesia, depending on the product produced, ownership of the firm, and location of the facility (see Appendix III for a list of these restrictions). This is done primarily to protect investments already made.

Investment Incentives

Prior to 1984, tax holidays and exemptions from import duties were granted to ventures in certain priority areas. The new tax laws, effective January 1, have essentially eliminated these incentives.³⁵ There are no plans to restore them, although the BKPM still publishes a list of priority areas in the health care sector (see Appendix III). The removal of incentives has reduced the profit potential of certain investments. However, the incentives, while attractive, appear not to have been a critical part of the decision to invest.

Raw Material from Local Sources

The Department of Health has instituted a policy requiring pharmaceutical manufacturers to obtain certain raw or intermediate materials from local plant sources through extraction or fermentation processes. Any expenditures in this area would certainly stimulate local development, most significantly agriculture.

Future Regulation

Proposals to lower royalty and assistance fees, or to set a maximum number of years for their duration, have been discussed. Pressure may build to introduce formal price controls, or to require licensing of new technologies after a set period. PMA firms may be forced to increase participation of their local partner, or sell some of their equity on the open market.

E. SUPPLY OF FUNDS FOR THE HEALTH INDUSTRY

A primary objective of HEALTHlink is to create previously unenvisioned opportunities by bringing together entrepreneurs, products, technical assistance, access to markets and, finally, financing.

This section is based on the results of extensive interviews with executives from a broad spectrum of financial institutions and health care firms. It is comprised of four parts; the first three are: 1) Commercial Banks, 2) Development Banks and Financial Institutions, and 3) Other Financial Institutions. Under each, a brief summary of the institution's objectives and permitted activities is given, and its specific involvement with the health industry reviewed. The fourth and final part presents our conclusions on the availability of investment funds for the health industry.

Commercial Banks

Commercial banks in Indonesia normally extend loans for up to one year for trade financing and working capital requirements. These loans are often rolled over indefinitely, so that they assume the purpose, if not the structure, of longer term debt. With the permission of the Bank of Indonesia, longer term loans can be made. Although permission is not difficult to obtain, few such loans are made by commercial banks.

1. Local Branches of Foreign Banks

Ten local branches of foreign banks operate in Jakarta. As one might expect, these banks only lend to the largest firms in the health sector, primarily the top fifteen pharmaceutical companies. They will make loans to smaller ventures only if a third party is willing to provide a guarantee. The banks may not lend directly to firms based outside Jakarta.

The loan, generally from \$100,000 to \$2 million, is usually offered as a line of credit to finance working capital. The loan application process is largely self-selecting; only the largest, most secure firms will approach, or are approached by, the foreign banks. These firms generally prefer dealing with the foreign banks because of the speed and sophistication of the services they offer. In the multi-client survey conducted by Data Impact, well over half the short-term loans reported by the pharmaceutical industry respondents were arranged with the foreign banks (See Appendix VI for other results of this survey).

2. State Banks

Commercial banking in Indonesia is dominated by five state-owned banks, accounting for nearly 90% of outstanding credits. State banks, like foreign banks, make short-term loans to the larger pharmaceutical firms. In general, these loans are for lesser amounts, from \$100,000 to \$1 million. The state banks also make short-term loans to a wide variety of second tier health firms, including such diverse enterprises as traditional medicine firms and mosquito coil manufacturers. These loans are generally smaller, ranging from \$50,000 to \$100,000. The banks reported turning down a small but significant number of loan applications, especially from the second tier firms. The reasons for rejection usually concerned inadequate technical capabilities or some other deficiency in the business plan of the new venture.³⁶

State banks have been substantially deregulated since June 1983, and by and large, are free to make short-term loans much as they please. Still, they were characterized by borrowers as being slow and inefficient, and were not considered the first choice when financing was sought.

3. Private Banks -- Foreign Exchange

Only 10 of the over 70 local private commercial banks in Indonesia are allowed to deal in foreign exchange. The remaining 60 conduct all their banking activities in Rupiah, although their leasing divisions are not subject to the currency restrictions.

Private foreign exchange banks make short-term loans to the larger pharmaceutical firms. Although loans range up to \$2 million, they are, on the average, smaller than those made by foreign banks. They also loan to the second tier firms in the drug industry, but to a much lesser extent than state banks. One bank officer mentioned his bank had loaned over \$1 million to an extremely successful manufacturer and distributor of Chinese medicines. The loan application process is generally self-selecting; only firms in secure financial positions with conservative business proposals approach the banks.

Private foreign exchange banks generally are held in higher regard than state banks, and are considered to be quicker and more professional. Pharmaceutical respondents in the Data Impact survey reported over 20% of their short-term loans are with private banks (including non-foreign exchange banks).

4. Private Banks -- Non-Foreign Exchange

These banks make short-term loans to a wide variety of local second tier health care enterprises, in amounts from Rps 15 million to 1,000 million (\$15,000 to \$1 million). One bank officer mentioned his bank has as a client a small pharmaceutical firm whose annual sales are only \$12,000.

Development Banks and Financial Institutions

There are 31 development banks and financial institutions operating in Indonesia. The following discussion focuses on Bapindo (Development Bank of Indonesia) and Jakarta-based development finance institutions. These enterprises play the role of development agencies as well as financial institutions; thus they have a similar mix of social goals and financial involvement as the proposed loan program.

1. Bank Pembangunan Indonesia (Bapindo)

Bapindo is the state development bank of Indonesia. Its mission is to lend and equity finance projects that contribute significantly to the socio-economic development of the nation. Of all institutions interviewed, Bapindo is the most concerned with social objectives, although it is operated to make a profit.

Bapindo's health care portfolio rose from Rps 3,629 billion in 1980 to Rps 6,455 billion in 1982. This growth in Bapindo's investment (Rps 2,826 billion) represents almost 10% of the total pharmaceutical investment made during this period. Thus, Bapindo plays a significant role in financing the health sector.

The loans were for fixed and working capital requirement -- all to locally owned pharmaceutical firms (including formulators, distributors, traditional medicine manufacturers, etc.). The loans to these firms are typically for Rps 1 billion, with 6-10 year terms. Bapindo has made no equity investment in the industry.

Bapindo plays an integral role in developing the business plan of the proposed projects, sometimes taking years to approve a loan application. This discourages many potential borrowers from approaching Bapindo. Furthermore, a very important, although not critical, criterion for loan approval is pribumi (native Indonesian) ownership of the venture.

2. Development Finance Corporations

The primary function of the development finance corporations is medium- to long-term financing, although they also participate heavily in the short-term money market. Equity investments are permitted, but represent only about 5% of total financing. Short-term financing is provided to a few of the largest pharmaceutical enterprises, by purchasing promissory notes or commercial paper, invariably backed by a third party guarantee.

Long-term financing to the health care industry is very limited. One corporation reported a Rps 2 billion financing of a PMA (joint venture) health care venture at a fixed rate of 18% for 7 years with a two-year grace period. This particular PMA firm could have obtained financing from a number of different sources, though not at such attractive rates.

Other Financial Institutions

1. Joint Venture Investment Banks

Joint venture investment banks are consortia of foreign trading and merchant banks, with one Indonesian participant. They have a monopoly on investment banking services, and are permitted to engage in a number of other financial activities. Although nominally not permitted to compete with commercial banks, in reality they offer stiff competition to the larger foreign and private local banks.

The joint venture investment banks provide financing to the health industry and working capital loans to the larger foreign and domestic pharmaceutical firms, for up to \$2 million.

2. Leasing Companies

Although relatively unimportant now, leasing is likely to play an increasingly vital role in financing new ventures in Indonesia. In essence, leasing is another way of packaging a medium-term loan. Leasing firms and leasing arrangements are not as strictly regulated as banks and bank loans, however, thereby creating greater flexibility.

Most larger banks have subsidiary leasing firms. They reported leasing equipment to major pharmaceutical firms in amounts from \$100,000 to \$1 million. In the Data Impact survey, leasing only accounted for 0.1% of outstanding credits to pharmaceutical companies.

Investments

The demand for investment funds is integrally related to the growth and profit potential of the health care industry. Except for the pharmaceutical sector, few statistics are available concerning the health industry's performance or future potential. If the prospects of the pharmaceutical industry can be taken as a barometer of other health-related sectors, then the outlook for all is generally optimistic.

1. Actual Investment

The BKPM estimates that the net investment in the pharmaceutical industry in 1982 was \$180 million, of which \$128 million was from foreign sources. This represents an annualized growth rate of nearly 35% over the 1980 estimates. Foreign investment grew at an annualized growth rate of 40%, while the comparable domestic rate grew over 20%. Many of those interviewed expressed skepticism over the size of these figures, however, so they should be taken as rough indicators.

2. Proposed Investment

The BKPM must approve all PMA (joint venture) investment projects and most large PMDN³⁷ (domestic) projects. In 1982, nine health sector proposals representing Rps 50.5 billion were submitted to BKPM. The number of proposals dropped in 1983, with only six submitted, totalling Rps. 20.7 billion. PMA firms submitted 8 of the 15 proposals for 1982, representing nearly 65% of the total Rupiah investment. PMA firms focused more or less on straight pharmaceutical projects, while PMDN firms had a much broader scope of activity (see Table 10).

3. Approved Investments

In 1982, six (of nine) health sector investment proposals totalling Rps. 13.6 billion were approved. In 1983, five (of six) were approved and the total Rupiah amount dropped to 11.9 billion. Of the eleven that were approved in 1982 and 1983, six were sponsored by PMA firms. These six incorporated nearly 75% of the total Rupiah investment. Ethical pharmaceutical manufacturing represented most of the investment for PMA as well as PMDN firms (see Table 11).

Table 10: Applications to BKPM for Health Care Investment*
1982-1983
(Billions of Rupiah)

CATEGORY	PMDN		PMA		TOTAL	
	Number	Rp	Number	Rp	Number	Rp
Eyeglasses	1	1.2	-	-	1	1.2
Syringes, Vials	2	7.0	1	6.0	3	13.0
Medical Equipment	1	8.5	1	3.6	2	12.1
Pharmaceutical- Raw Materials	1	3.9	-	-	1	3.9
Pharmaceutical- Finished Product	2	4.8	6	36.2	7	41.0
TOTAL	<u>7</u>	<u>25.4</u>	<u>8</u>	<u>45.8</u>	<u>14</u>	<u>71.2</u>
1982	4	14.2	5	36.3	9	50.5
1983	3	11.2	3	9.5	5	20.7
TOTAL	<u>7</u>	<u>25.4</u>	<u>8</u>	<u>45.8</u>	<u>14</u>	<u>71.2</u>

* Source: Indonesian Commercial Newsletter, Nos. 188-237
P.T. Data Consult, Jakarta

Table 11: Approvals by BKPM for Health Care*
1982-1983
(Billions of Rupiah)

CATEGORY	PMDN		PMA		TOTAL	
	Number	Rp	Number	Rp	Number	Rp
Pharmaceuticals	4	6.3	5	13.2	9	19.5
Medical Soap	1	0.4	-	-	1	0.4
Syringe, Vials etc.	-	-	1	5.6	1	5.6
TOTAL	<u>5</u>	<u>6.7</u>	<u>6</u>	<u>18.8</u>	<u>11</u>	<u>25.5</u>
1982	3	5.1	3	8.5	6	13.6
1983	2	1.6	3	10.3	5	11.9
TOTAL	<u>5</u>	<u>6.7</u>	<u>6</u>	<u>18.8</u>	<u>11</u>	<u>25.5</u>

* Source: Indonesian Commercial Newsletter, Nos. 188-237
P.T. Data Consult, Jakarta

The actual number and amount of investments planned by domestically-owned firms are undoubtedly understated by the BKPM statistics. Based on the historical rate of investment, current proposals for investment and the favorable prognosis for the health care industry, there most likely will be a strong demand for investment funds.

The proposed loan program funds (\$5 million) are intended to be invested over the course of several years. Even if the funds could be placed in a single year, they would only represent 20% of the average annual private sector pharmaceutical investment in 1981-1982. This would be an even smaller fraction of total private sector health care investment. Therefore, if invested over three years, the proposed loan program would represent, at a maximum, less than 10% of health care funds invested.

Put in a different perspective, the average annual investment from foreign sources in all sectors, including non-industrial areas, is planned to be about \$5.5 billion over the Fourth Five Year Development Plan (Repelita IV, 1984-1989). USAID's total contribution of \$2.5 million would be less than one-tenth of a percent of this annual amount.

HEALTHlink will develop projects that would probably otherwise not be realized. The brokering and technical assistance aspects of the proposed loan program, in addition to the increased access to financing, should engender demands for investment funds that otherwise would not have arisen.

Conclusions

With the exception of Bapindo and the development financial corporations, most of the loans reported are short-term, and finance working capital requirements of existing firms. This is confirmed by the result of the Data Impact survey: over 85% of the loan funds outstanding were short-term. Very few institutions make available long-term loans for start-up ventures in the health sector.

Bapindo and the other development financial corporations, who can and do make longer term loans, tend strongly to favor pribumi-owned enterprises. Over 80% of the local pharmaceutical companies are owned by non-pribumi; hence they are essentially cut off from these sources of financing.

The barriers to new health care investment appear to be as much technical as they are financial, especially for smaller firms. Many local health sector executives have mentioned the difficulty of obtaining adequate start-up and ongoing technical assistance. Hence, potential loan proposals are never made. Particularly in the pharmaceutical sector, there are many well-run second tier firms who could potentially play a major role in new investment projects with the proper kind of technical assistance.

PRIORITY AREAS FOR THE IMPLEMENTATION OF HEALTHlink

Based on this review of the situation in Indonesia with respect to the health status, health resources, government programs, the activities and financing of the private sector, we were able to identify several initial HEALTHlink projects.

Three-fourths of the mortality and much of the chronically debilitating morbidity of young children could be prevented by focusing nutrition, health and sanitation interventions on parturition and the first few years of life. Substantial reductions in child mortality could be cost-effectively brought about by focusing on two principal issues: diarrhea and immunizable diseases. In regard to diarrhea, the most important practical intervention is to assure an adequate intake of oral rehydration solutions to counteract diarrheal dehydration. Interventions which are likely to have an impact on immunizable diseases include: a) immunization of all children 3-14 months old, and b) assurance of viable vaccines through an adequate cold chain.

Reductions in infant and maternal mortality could be cost-effectively accomplished by focusing on three principal issues, i.e., neonatal tetanus, low birth weight, and anemia of pregnant mothers. Immunization of all married women of reproductive age against tetanus would have a major impact on neonatal mortality. Regarding low birth weight and maternal mortality, the most important practical intervention is to assure an adequate and appropriate diet for pregnant mothers, with greatest emphasis on total calorie intake and iron and folate supplementation.

Based on these principal components of the analysis, we have identified several possible projects and investments in health which would deal with critical health issues. These are production of:

1. Vaccines and/or raw materials for vaccine production (tetanus, polio, measles).
2. Lipidol (for treatment of goiter).
3. Sera (for pregnancy and other laboratory tests).
4. Cold chain equipment and immunization supplies (polyurethane transport boxes, portable thermos, refrigerator replacement parts, disposable syringes).
5. Vitamins and food supplements for mothers and children (weaning foods and more economical production techniques for vitamins).

6. Oral rehydration raw material (anhydrous glucose).
7. Sterile birthing supplies for traditional birth assistants (razor blades, gauze, suture, rubber gloves, fetal aspirators).
8. Economical, easy-to-use scales for weighing newborns to detect low-birth-weight babies.
9. Larvicides and mosquito repellents (larvicide concentrate, insecticide repellent sticks).
10. Contraceptive products and raw materials.
11. Hospital equipment and supplies.

FOOTNOTES

1. "Productivity and Participation -- Keys to Growth in Indonesia." Country Development Strategy Statement for FY 85, USAID, Washington, January 1983.
2. United Nations Population and Vital Statistics Report, Department of International Economic and Social Affairs Statistical Paper Series A, Vol. XXXV, No. 3, United Nations, New York, 1983.
3. "Selected Demographic, Social and Economic Characteristics for Countries in the World Fertility Survey 1974-1979." Population Reference Bureau Report on the World Fertility Survey, No. 5, June 1982.
4. The Central Bureau of Statistics, Seri: S, Nomor 2, Jakarta, SP 1980.
5. Appraisal of a Nutrition Development Project, World Bank Report No. 1318-IND, Indonesia, February 16, 1977.
6. The Indonesian Child in Maps, Central Bureau of Statistics, Jakarta, 1979.
7. "Field Assessment of Delivery Technology In Indonesia. A Proposal Prepared in Joint Consultation with the Technical Advisory Committee, Ministry of Health/UNICEF/WHO/Yayasan Kusuma Buana/PATH," August 1983.
8. I-Cheng Chi, et. al. "Maternal Mortality at Twelve Teaching Hospitals in Indonesia - An Epidemiologic Analysis." International Journal of Gynaecology and Obstetrics, 19, 1981.
9. Daulaire, N. "Consultation on Provincial Level Prenatal Care in D.I. Aceh Nusa Tenggara Timur and Sumatera Barat: Current Activities and Recommended Interventions for the Comprehensive Health Improvement Program Province Specific." Prepared for Provincial Health Offices, Nusa Tenggara Timur, Sumatera Barat and D.I. Aceh and Office of Health/Nutrition, USAID, Indonesia, June 7-July 9, 1982.
10. Ratna. "Preliminary Report, Household Survey, February-April 1980." Health Ecology Research Center, Jakarta, Indonesia, 1980.
1. Milone, Pauline. "Women in Development, A Preliminary Study in Three Countries, Indonesia Report." USAID, Washington, D.C., September 1978.
2. Alisjahbana, A. "Preliminary Report of the Prenatal Mortality and Morbidity Survey in Bandung-West Java, Indonesia." Department of Child Health, Faculty of Medicine, Padjadjaran University, West Java, Indonesia. Presented at the Mini-Task Force on Risk Approach to MCH Care, Bangkok, December 1981.
3. Bernard, R.P., Agoestina, S.S.T., and Kendall, E.M. "Maternity Care Monitoring (MCM) in Indonesia. Early Findings and Implications for the 1980s." Indonesian Journal of Obstetrics and Gynecology, Vol. 6, No. 4, October 1980.
4. Valyasevi, A. and Baker, J. (eds.). "Proceedings of Workshop on Breast-feeding and Supplementary Foods, 17-18 November 1978". Bangkok Medical Publisher, Bangkok, December 1980.

5. "Breast-Feeding, Fertility, and Family Planning." Population Reports, Series J, Number 24, November-December 1981.
6. "Conclusions and Recommendations of the Second National Symposium on Promotion of Breast-feeding." BK PPASI Pusat, Manado, August 29-30, 1980.
7. Kardjati, et. al. "Feeding Practices, Nutritional Status and Mortality in Pre-School Children in Rural East Java, Indonesia." Tropical and Geographical Medicine, Vol. 30, 1978.
18. Rhode, J., Hull, T. and Hendrata, L. "Who Dies of What and Why," PRISMA, Jakarta, March 1978.
19. "Editorial Berita." UNICEF/Indonesia, 1980.
20. Based on information collected during interviews with staff of the Office of Population and Health, USAID/Jakarta, January 1984.
21. Based on information collected during interviews with procurement staff of UNICEF/Indonesia, February 1984.
22. Tarwotjo, et. al. "Masalah Gizi di Indonesia" (Nutritional Problems in Indonesia). Paper presented at Widya Karya Nasional Pangan dan Gizi, Jakarta, July 1978.
23. Rienks, A. and Iskandar, P. "Primary and Indigenous Health Care in Rural Central Java: A Comparison of Process and Contents." Paper prepared for the IUAES Congress Symposium on Anthropology and Primary Health Care, Amsterdam, April 21-25, 1981.
24. Suwardjono Surjaningrat, Dr., Minister of Health of the Republic of Indonesia. Address to the Third Perinatology Symposium in Bandung, West Java, January 1983.
25. Cornia, G.A. "A Cost Analysis of the Indonesian Experience with GOBI-FF 1979-1982." UNICEF, New York, May 1983.
26. "Village Family Planning/Mother-Child Welfare." Project Paper Indonesia (497-0305), USAID/Jakarta, October 1979.
27. Sturgis, R. "Evens N Middles - Part II: Selected Population and Development Issues: Focus on Indonesia," Population Council, New York, 1983.
28. See Appendix II for an inventory of pharmaceutical products and list of companies currently manufacturing drugs in Indonesia.
29. BAPINDO Annual Report for 1981.
30. P.T. Merck Annual Reports for 1981 and 1982.
1. BKBM figures include proprietary as well as ethical drug sales, and purchases of contraceptives by the government.
2. Eiseman, F. "Indonesia's Billion Dollar Herbal Tonic," Asia, Dec. 1981.

33. Personal communication with Drs. Sudirman, Director of P.T. Tempo.
34. Personal communication, Mr. Amir, Commercial Director of Indo Farma.
35. The fate of import duty exemptions has not been resolved.
36. See the Plastic Disposable Syringe case in Appendix I for details of one such instance.
37. PMDN is an acronym for Penanaman Modal Dalam Negeri (Domestic Capital Investment).

THAILAND

A. HEALTH STATUS

Health Status of the Thai Population

Important progress has been made in improving the health of Thai people in recent years. The family planning program, in particular, has been successful in assisting Thai couples to control their fertility. Over 50% of Thai women are protected with some form of contraception. There have also been substantial decreases in maternal and child mortality and morbidity in the country.¹ Major problems remain, however. As with all developing countries, morbidity and mortality among all age and sex groups, except the very wealthy, are substantially greater than in developed countries. The government and the private sector are undertaking a number of important programs to improve health in Thailand.

Infant mortality is estimated to range between 20 and 96 deaths per 1,000 live births. While the high number would not be considered good, it apparently is reached only in rural areas. The lower number is very good compared with any developing country.

Child mortality (aged 1-4) is estimated to have been reduced from around 11 per 1,000 children in 1964-65 to about 5.5 per 1,000 in late 1983-84, or a 50% decline over nearly 20 years.²

Maternal mortality has also been decreasing and currently stands at around two deaths per 1,000 live births. According to Ministry of Public Health Statistics, there was roughly a 35% decrease in maternal mortality between 1977 and 1981.³ In part this can be attributed to some success in immunizing women against tetanus (roughly 30% by 1981).

Major Causes of Death Among Infants, Children and Mothers

The World Fertility Survey⁴ from the 1970s covers some 29 countries, and identifies five levels: Moderate (4-8% of children dying before their fifth birthday), Moderate to High (8-12%), High (12-15%), Very High (16-20%), Extremely High (20% or more).⁴ Representative countries among the first group are Costa Rica, Jordan, Korea, and Malaysia (the latter two are the only Asian developing countries in this group). Thailand has an infant mortality level which falls into the Moderate to High range. Besides Thailand, the second group includes Colombia, Mexico, Paraguay, the Philippines, Sri Lanka and Syria. By way of comparison, Indonesia falls in the High level. Thus, while having reduced infant and child mortality rates, Thailand has an unacceptably high mortality level.

According to the Ministry of Public Health⁵ the major causes of infant death, as of 1981, are (in order of importance):

1. Pneumonia
2. Diarrheal disease
3. Convulsion
4. Acute nasopharyngitis
5. Avitaminases and nutritional maladjustment
6. Diphtheria
7. Influenza
8. Malaria

For newborns the major causes of death are: 1) diseases of the respiratory tract, 2) congenital anomalies, and 3) sepsis (primarily tetanus).⁶

The USAID Health Sector Assessment Report states, "...it is estimated that more than 90 percent of deaths in the pre-school age groups are preventable with currently available technology and services."¹ Thus, the government and USAID have taken a "technology-oriented" approach wherein efforts are directed to assuring that critical technologies are made available to individuals in need.

The following paragraphs dealing with maternal mortality and morbidity are quoted from the Health Sector Assessment Report.

Mortality rates for women of childbearing age declined about 40% between 1960 and 1970 and appear to have continued to decline during the past decade. Current (1978) Ministry of Public Health (MOPH) data suggest that the maternal mortality is 1.2 deaths per 1,000 live births, while the World Bank [data] suggest that after accounting for under reporting, the rate might be about 2 deaths per 1,000 live births.

However, data from special studies suggest that the maternal mortality rate is considerably higher in some areas. For example, a 1978 Ramathibodi Hospital study of all births in Bang Pa-In district found a maternal mortality rate of 5.4 deaths per 1,000 live births, and in the same study, the stillbirth rate was 8.9 stillborns per 1,000 births. Another study of 5,864 births in Sukhotai Province in 1982 showed a stillbirth rate of 12.2 stillborns per 1,000 births. The causes of maternal death were not clearly specified in these studies, but are generally attributed to inadequate antenatal care, complications of delivery and puerperium. The impact of recurrent infection (malaria, diarrhea episodes, etc.), iron deficiency anemia and parasitic infection on maternal mortality [has] not been fully assessed.

Thai women, particularly in the rural areas, appear to seek antenatal care infrequently, and then only late in their pregnancies. In 1982, only about 30 percent of rural Thai women had at least two antenatal service contacts, as measured by records of two prenatal tetanus toxoid injections. Special surveys of immunization coverage also indicate antenatal service coverage as low as 15 to 20 percent in some areas. Thus, high-risk pregnant women are not identified at an early stage when potentially [life-]threatening conditions could be detected and dealt with. Moreover, early antenatal care is also a crucial factor in preventing fetal wastage, stillbirths and infant mortality.

The Ministry of Public Health has identified the leading causes of maternal mortality as 1) complications during pregnancy, delivery and the puerperium and 2) other diseases which occur before or during pregnancy and which become life-threatening because of the co-existing pregnancy.

■. HEALTH RESOURCES

RTG Budget Allocations and Expenditures for Health

The Health Sector Assessment Report deals with this matter. Appendix X is a copy of the relevant section of the Report. The major conclusions to be drawn from the Needs Assessment Report are:

1. After a period of increasing (as a percent of GNP) allocations to health in the mid-1970s, government expenditures have steadily decreased.
2. Thailand's per capita expenditures on health (\$3.00) have been less than half the average amount (\$7.00) spent by other countries with similar GNPs per capita. (In the period 1979-1984, Indonesia spent an average of only \$1.20 per capita on health expenditures.)
3. The planning budgets for the Fifth Five Year Plan (1982-1986) have steadily reduced the budget for the Ministry of Public Health. For example, a budget projection prepared in 1981 showed 1984 expenditures of Bh 12 million, whereas the actual budget (as stated by the Health Planning Division in September 1983) is Bh 8.7 million. As a consequence, for example, there will be a slowdown in the expansion of hospital facilities in urban areas.

Personnel Resources⁷

Thailand, as most developing countries, has an inadequate supply of health personnel. In addition, available personnel are concentrated in urban areas rather than dispersed over rural areas, where the need is greatest. Thailand has about one physician per 6,800 persons. However, outside Bangkok the ratio is one physician per 15,000 individuals. Also, in rural areas, there are one nurse per 3,700, one auxiliary midwife per 5,500 and one health worker per 6,200 people.

Since the beginning of the Fourth Five Year Health Development Plan (1977-1981), the MOPH has focused on primary health care and has instituted a program of training for "Village Health Communicators" (VHCs) and "Village Health Volunteers" (VHVs). By mid-1983, the MOPH had trained almost 40,000 VHVs and nearly 360,000 VHCs, covering approximately 70% of the villages in the country. In addition, there are an estimated 16,000 traditional birth attendants (TBAs) of whom 6,700 were trained by the Family Health Division of the Ministry of Public Health.

Health Facilities

The following description of Thailand's public health facilities is taken from the USAID Health Sector Assessment Report.

1. Provincial Health Office

All of the nation's 72 provinces have a Provincial Health Office, headed by a physician called the Provincial Chief Medical Officer (PCMO), who is nominally responsible for both the Provincial Hospital and Provincial Health Office. In practice, the day-to-day running of the Provincial Hospital is left to a hospital director and the PCMO tends to focus on the supervision of rural health facilities and support for the various health programs for which he is responsible. For technical and policy matters, the PCMO is responsible to the Permanent Secretary of the MOPH, but he also is directly responsible to the governor, the senior civil administrator of the province (who reports to the Ministry of the Interior).

2. Provincial and Regional Hospitals

Most provincial hospitals have 150 to 500 beds, but regional referral centers (14) have 500 to 1,000 beds and provide training for a variety of medical and paramedical workers. Provincial hospital services are predominantly curative, but a full range of maternal and child health and family planning services are also offered. Except for the large, regional referral hospitals, provincial hospitals are predominantly utilized by people in the immediate area of the provincial capital.

3. District Community Hospitals

Almost two-thirds of the nation's districts have a District Hospital (now renamed District Community Hospital). Although these hospitals normally have 10-30 beds (a few have 60 beds), they are predominantly out-patient facilities, providing a relatively limited range of inpatient care. The hospital normally has one physician, but there may be two or three in 30-bed facilities and up to five in a 60-bed facility. The District Community Hospital also provides full preventive and promotive health services (e.g., MCH and family planning services and immunizations) and has official responsibility for the supervision and technical support of tambol health center workers and programs in the tambol in which the hospital is located. District Hospital physicians are generally recent medical graduates with little experience in managing rural health programs and are usually serving a mandatory two-year

commitment of rural service. They tend to concentrate their efforts on medical care at the hospital, leaving the preventive/promotive activities to the nursing and midwife staff.

4. District Health Offices

The District Health Office suggests an organizational entity, but in fact, it simply refers to the place where the District Health Officer (DHO) is located. The DHO is normally a senior sanitarian worker who is responsible for all health centers and health programs in the tambols outside of the one where the District Community Hospital is located. The DHO is directly responsible to the District Officer (who is responsible to the Ministry of the Interior). In practice, however, most of the DHO's technical and managerial support and supervision come from the Provincial Health Office.

5. Tambol Health Centers

About three-fourths of the 5,777 tambols of Thailand have a tambol health center. Most of the 1,000 to 2,000 midwifery centers have been upgraded and are included within the tambol health center totals. Each tambol center is normally staffed by an auxiliary midwife and a junior sanitarian (a practical nurse is being added to many tambol health centers). All of the major preventive and promotive health services are integrated into the tasks of the two health center workers. The midwife and sanitarian are responsible for prenatal, delivery and postnatal services, child immunizations, nutrition, family planning and water supply and sanitation activities. Health centers also provide limited treatment for emergencies or minor illness and referral to district or provincial hospitals for more serious problems. In theory, these activities are to be centered in the community, (e.g., home visiting, and supervision/support for village health volunteers). However, in practice, health center workers spend most of their working time at the health center awaiting patients and providing curative care.

In recent years, construction and equipment have represented about 20% of the national health budget. Budget projections call for a continuation of this proportion representing on the order of \$6 million per year. Thus there will continue to be substantial allocations for the building and equipping of health facilities throughout Thailand. This represents an opportunity for local entrepreneurs to provide services and products to the government.

C. GOVERNMENT HEALTH PROGRAMS

Appendix XI is taken from Chapter V of the USAID Health Sector Needs Assessment Report and summarizes the more important Royal Thai Government health sector programs. These are: 1) Primary Health Care Project, 2) various Nutrition Programs, 3) National Control of Diarrheal Diseases Program, and 4) Expanded Program on Immunization. The report analyzes each program and identifies certain problems and constraints inhibiting more successful implementation. It then makes recommendations as to how USAID (and others) can provide assistance or take steps to ameliorate these problems. Several of the recommendations relate to issues which have implications for the implementation of HEALTHlink.

Special Government Programs in Health

1. Primary Health Care Project

The strategy of the Primary Health Care Project is to extend basic health care to all the people of Thailand by recruiting and training the Village Health Communicators (VHCs) and Village Health Volunteers (VHVs).

An important component of this program is the establishment of village level cooperatives for the procurement, sale and resupply of pharmaceuticals and other medical supplies. The average working capital of these cooperatives can be estimated as roughly Bh 3,000. For 50,000 villages, the total working capital for this program would be Bh 150 million or approximately \$7 million. Drugs are procured by the cooperatives from the Government Pharmaceutical Organization which manufactures many of them, or acts as a procurement agent, buying drugs from private Thai firms or from overseas. These village cooperatives are competitive with private sector pharmacies. So far the cooperatives' impact has not been fully realized because of management and resupply problems. The expansion of the Primary Health Care Project and its concomitant utilization of the cooperatives will not necessarily result in an increase in demand for pharmaceuticals from the private sector. The GPO will provide many of the drugs and the cooperatives are competitive with the private pharmacies.

Nevertheless, the expansion of the Primary Health Care Project and the establishment of village health cooperatives provide individual villagers a wider array of health products for their health needs. The Primary Health Care Project can be a major user of products introduced and manufactured as a result of HEALTHlink. HEALTHlink will attempt to integrate its activities into the operations and plans of the Primary Health Care Project.

2. Nutrition Programs

The Fifth National Food and Nutrition Plan, now underway, comprises three major components: 1) Nutritional Surveillance, 2) Promotion of Breastfeeding, and 3) Local Supplementary Food Production and Distribution.

These programs involve the procurement and use of fairly substantial quantities of equipment and supplies. The Nutritional Surveillance program will procure at least 25,000 scales with funding from UNICEF. Most likely, scales manufactured outside of Thailand (those listed in the UNIPAC catalog) will be bought. There would seem to be some potential for the establishment of local production of scales for child weighing programs. (This constitutes a specific lead for HEALTHlink and PATH to pursue. PATH has completed the development of a pneumatic scale which could be assembled quite easily in developing countries. PATH will be prepared to work with local manufacturers to establish production.)

The Health Sector Assessment team recommends that steps be taken to develop and manufacture a cheap weaning food for middle-income groups and for urban areas unable to produce their own food. A number of such products have been developed in Thailand and more could be introduced from other developing countries. Two major government research centers in Bangkok are prepared to assist private companies to initiate or expand production of weaning foods directed to middle-income and/or urban groups.

3. National Control of Diarrheal Disease Program

This program is attempting to: 1) reduce mortality from acute diarrheal diseases as well as diarrhea-related malnutrition (especially in under-fives) by means of oral rehydration therapy, 2) reduce morbidity from acute diarrheal diseases in children under two years of age by promotion of maternal and child health care practices, and 3) conduct operational research to develop improved tools and strategies. The major product distributed in this program is packets of ORS. These are manufactured by the GPO, and efforts are underway, in connection with UNICEF and WHO, to enhance both the quality and quantity of production. Private firms manufacture some electrolyte powders (mixtures of sugar, salt, flavoring and coloring which do not match the WHO-recommended ORS formula), but it is not known how widely these are used for treatment of diarrhea. Pending approval of the Thai FDA, B.L. Hua, a local firm, will initiate distribution of the PATH ORS tablet within the next few months. Depending on demand, B.L. Hua

may also begin production of the tablet in its factory in Bangkok. Justification for additional commercial production of ORS sachets may also emerge. With PATH financial assistance, Population and Community Development Association, a local nonprofit group, is testing the social marketing of electrolyte powders specifically for the treatment of diarrhea. Depending on the outcome of this study, a full-scale social marketing program could be implemented, providing further justification for the establishment of additional sachet production facilities or for the expansion of existing facilities.

Of particular note is that the USAID Health Sector Assessment team recommended that "USAID, through the PRITECH or WASH projects, could support a study of the current and future role of private sector pharmaceutical companies in production and distribution of ORS, propagation of ORT messages through advertising, and the standardization of ORS to two (or at most three) sizes of packets." We expect that the activities of HEALTHlink would make a substantial contribution to this goal. HEALTHlink would explore expansion of production and distribution of ORS products by private companies. If a specific project should emerge, both advertising and product design (including packet size) would be reviewed.

4. Expanded Program on Immunization

With respect to vaccines, the USAID Health Sector Assessment Report states, "Vaccines are ordered at least six months in advance with specified schedules of delivery. DPT and tetanus toxoid (TT) vaccines are manufactured domestically by the GPO. The GPO was to have begun producing dT vaccines by 1983 and it purchases BCG vaccines from a private firms. Viral vaccines (OPV and measles) are obtained from UNICEF, or are imported by the GPO. Data available to the team suggest that the EPI program may experience shortages in vaccine supply if plans to start, or step up, the GPO's production of DPT, dT and TT vaccines are not achieved and/or if UNICEF only provides one million doses annually of each vaccine." In addition, the team noted the problems that exist without an adequate supply of cold chain equipment (refrigerators, cold boxes, etc.).

While the GPO will most likely continue its role as the major supplier of vaccines, there would appear to be opportunities for private firms in the importation and rebottling of vaccines, as well as in the production of cold chain equipment, including replacement parts for refrigerators and other cold chain items. (Note that these opportunities were also identified in Indonesia.)

RTG-USAID Cooperative Activities in Health

USAID has long been an important donor for health in Thailand. Currently it is supporting activities in nutrition (for example, village revolving funds and community production of infant supplementary foods), population (information and services expansion), malaria (vector control, training and management) and water/sanitation (a possible \$6 million loan for construction and maintenance of piped water systems). According to the "Country Development Strategy Statement - 1985," expenditures in health will remain relatively constant at about \$5 million per year through 1988. (Support for health is being reviewed; these figures and their allocation to projects may be changed substantially. These changes will be summarized in the "Country Development Strategy Statement - 1986" which is under review by USAID staff and will be available in a few months.)

Assuming that no fundamental changes are made in USAID strategy, it can be expected that population and health will be accorded high priority, with special emphasis placed on technology transfer and involvement of private enterprise. HEALTHlink will complement these emphases.

Furthermore, HEALTHlink would direct attention to the USAID priority areas of nutrition (e.g., weaning foods, encapsulation of Vitamin A), population (e.g., local packaging of condoms), malaria (e.g., production of mosquito coils, mosquito traps, and new drugs for treatment of chloroquine resistant malaria), and water/sanitation (e.g., production of hand pumps). In addition to these USAID priority areas, HEALTHLINK would address itself to a number of other important health areas, such as diarrheal disease (e.g., production of ORS sachets), and immunization (e.g., production of cold chain equipment).

D. THE PRIVATE SECTOR AND HEALTH

Among ASEAN countries, Thailand is the largest consumer of pharmaceutical products, accounting for about 35% of the total retail value of drugs marketed in the region, with on the order of 20,000 individual formulations on the market.⁸ This is a very large number of products in comparison with, for example, Indonesia, the ASEAN country with the next greatest number of formulations, which has approximately one-third that of Thailand.

There is most likely a very high level of self-treatment and over-medication in Thailand. Between 1969 and 1976 the fastest growing drug categories in terms of total consumption were psychotherapeutics (189% annual increase), analgesics (105%) and diuretics (154%). It has been noted that most drugs consumed in Thailand are for diseases that do not exist, and most of the diseases that occur are not treated with drugs that do exist. Thus, there is a major need to expand the effective distribution of necessary drugs and, concomitantly, to increase or establish their production.⁹

Because Thailand has almost 190 pharmaceutical firms, there is a very high level of competition. Many factories operate at less than full capacity - many at 50%. Not all the pharmaceutical firms play a significant role in the market. For instance, the Thai Pharmaceutical Manufacturers Association has only about 50 members, and ten firms account for the bulk of production and sales.

Based on figures for 1977, the total market of drugs in Thailand was Bh 6,500 million or roughly \$325 million (at the then-current exchange rate).¹⁰ Of this amount, 83% originated from domestic production with the remainder imported by 385 different agents. Of the 187 factories, 185 were privately owned and two (the Government Pharmaceutical Organization and the Military Pharmaceutical Factory) were under government control. The government factories accounted for only 3% of total production.

Private distribution represented 81% of the consumption with various government hospitals, clinics, and health posts taking the remaining 19%. There are almost 8,000 pharmacies in Thailand.

It is clear that Thailand has a pharmaceutical industry dominated by the private sector. Within the last few years, the GPO has instituted several policies that will increase its portion of the total market. For instance, all "essential" drugs (not already-being produced in the country) will be produced by the GPO, if technically feasible. Nevertheless, the private sector is likely to remain the predominant force in drug manufacture and distribution.

Thailand's pharmaceutical industry remains largely a repackaging enterprise. Besides the two government factories, only two private companies manufacture chemical ingredients or precursors. Both of these companies are affiliates of drug multinationals. There are no independent, Thai-owned firms engaged in the production of chemical ingredients.

During the HEALTHlink needs assessment there was a consensus among all contacts that a variety of opportunities exist for the production of chemical ingredients by Thai firms. The main inhibitor to the establishment of production capacities was lack of access to technical know-how.

E. SUPPLY OF FUNDS FOR THE HEALTH INDUSTRY

There are two major public sources of financing for the health industry. The government has established the Industrial Finance Corporation of Thailand (IFCT). It provides low-interest, long-term loans for projects which are felt to meet the development needs of Thailand. The second source is banks, the largest of which are the Bangkok Bank, Siam Commercial Bank and Thai Farmers Bank. In addition to these major sources, health industry financing is available from smaller banks and Thailand's active stock market.

In recent years, the IFCT has not provided significant loan financing to the health industry. It has felt that much of the pharmaceutical industry is involved predominantly in the import of raw materials from the People's Republic of China. This is not seen as contributing to the country's development needs as compared with the introduction of new technologies (products or know-how). One exception to this policy was a loan to a company to initiate production of a pharmaceutical product. The production process involved the introduction of a new technology that was viewed as a modernization of Thai industry.

For a project to qualify for IFCT financing, it must receive Board of Investment promotion. Furthermore, IFCT requires that the ratio of long-term financing to equity not exceed 3:2. IFCT carries out feasibility studies of projects. These studies have a reputation of quality. IFCT loans currently bear 4.5% interest per annum with a 5-8 year term and up to a three-year grace period.

In our discussion with IFCT staff, considerable interest was expressed in working with HEALTHlink in implementing the PRE program. It was felt that HEALTHlink would provide a means to overcome IFCT's principal concern about financing the health industry, i.e., lack of introduction of new products and technologies.

The Bangkok Bank is Thailand's largest private bank. In the last few years its headquarters in Bangkok has provided loan financing to three major projects. We were not able to ascertain the loan amounts involved. One loan was to the Government Pharmaceutical Organization to set up production of ampicillin. A second was to Thai Meiji Pharmaceutical Co., Ltd., to establish production of ganamycin. The third was also to Thai Meiji Pharmaceutical for production of an antibiotic. The Bank could not release further details on these loans. The Bank is interested in the health sector but few loans are actually made.

Thai Farmers Bank reports that it makes a number of loans in the health sector. Most of these loans are made through branches. The process of gathering this information is somewhat time consuming

and the data were not available in time for the completion of this report. Additional information will be provided in Report II.

Siam Commercial Bank reports that it has made no loans in the health sector from its headquarters. Some loans may be made through branches but the amount was thought to be very small. Bank officials state that there is interest in health but no applications have been received.

In addition to these institutions, the government has established the Small Industries Finance Organization. It is intended to provide small loans (less than \$200,000) to companies with assets of less than \$500,000. The Organization has yet to make any loans because the parliament has not authorized funding. If SIFO were funded, it could play a role in the financing of small-scale health companies.

While not a financing institution per se, the Government Bureau of Investment provides certain incentives having considerable financial value for the establishment of industry. It can approve up to eight year's corporate tax exemption, exemption from duties on imported machinery and equipment, and freedom to employ needed expatriate staff.

To qualify for BOI promotion, the applicant must meet certain standards in value of expected exports, job creation, and use of locally manufactured raw materials. Special consideration is given to companies setting up operations outside Bangkok. There are no fixed standards as each project is evaluated on its individual merits.

Since 1965, however, only 14 projects in the pharmaceutical and health equipment/supplies industry have obtained BOI approval. Among these 14 are the following:

1. TS Polyproducts received approval for a project involving manufacture of aluminum hydroxide gels, comprising a total investment of Bh 11.6 million.
2. Thai Meiji obtained approval for a project involving manufacture of antibiotics, which had a total associated investment of Bh 143 million.
3. Besi Chemicals was granted BOI benefits for a project involving Bh 11.85 million investment and the manufacture of paracetamol and phenacetin.
4. The BOI awarded incentives to Thai Pharmaceutical Industries for a project to manufacture various analgesics which would result in investments totalling Bh 69 million.

5. A project to manufacture pharmaceutical capsules was granted BOI approval. The project was under the direction of Capsule Products and represented Bh 60 million in investment.
6. ME Co., Ltd. obtained BOI approval for a Bh 13 million project to manufacture various infusion equipment.
7. Bever Medical Industries also obtained endorsement for an infusion equipment project involving Bh 17 million.
8. In the 1970s BOI provided approval to Intonin Co. and to Smith and Nephew, Co., Ltd. to manufacture medical plasters and bandages. Both of these projects involved joint ventures with European firms.

For these projects the applicant must submit estimates of the ratio of imported versus locally originated products. On average this ratio was about three to one.

Of the approved undertakings, less than 30% involved entirely Thai-owned firms. This demonstrates the difficulty faced by locally-owned companies in obtaining access to innovative products and technologies.

The BOI has published a list of pharmaceutical products to which it would give priority. This list is brief and contains only "1) Mixing stuff for pharmaceuticals, 2) fungicides, 3) insecticides, and 4) herbicides." However, BOI staff emphasize that any project will be evaluated on its individual merits whether or not it falls within these four priority product categories. The BOI suspended favorable consideration for aspirin production in 1980 presumably because it was not a high priority for new ventures. The BOI considers only projects involving more than Bh 10 million (\$450,000) in investment.

It would appear that unlike the situation in Indonesia (as reported in the previous section) financing of the health industry is largely from internal sources. The weight of the data from BUI, IFCT, and the private banks indicates that the health industry looks inward for its financing. This is consistent with the fact that there is a great deal of duplication of products in the industry and that most manufacturers are quite small in scale, with only 10 of 187 actually playing a significant role. Also it indicates that with the exception of a few large joint ventures there is little innovation in the Thai pharmaceutical industry. This is supported by the fact that there is very little manufacture of raw materials in Thailand with most of the industry involved simply in filling, tableting and packaging.

F. PRIORITY AREAS FOR THE IMPLEMENTATION OF HEALTHlink

Based on interviews with health professionals, industry executives, expatriate personnel and others, the needs assessment has identified several projects as candidates for development under HEALTHlink.

1. Production of economical, easy-to-use scales for weighing newborns and children.
2. The production of soy-based weaning foods, perhaps involving the transfer of technology from local government research groups.
3. The packaging of ORS sachets primarily for distribution through the commercial sector. The government has its own manufacturing source.
4. Cold chain equipment for immunization programs including spare parts for refrigerators.
5. Manufacture of more economical preparations of Vitamin A and B supplements.
6. Production of drugs for the treatment of chloroquine-resistant malaria.
7. Packaging of condoms for distribution through commercial channels and for sales to the government.

FOOTNOTES

1. This section of the report is based heavily on the recently-completed "Thailand: Health Sector Assessment," prepared by Robert Benjamin, Dayl Donaldson, Prapont Piyaratn, Stig Regli, John Rogosch and Aree Valayasevi. The Assessment was prepared for the USAID/Bangkok Mission and is based on a four-week visit in Thailand beginning September 5, 1983. Because of its direct relevance to our report, we quote extensively from it and have attached as Appendices several especially relevant sections. We are grateful to the authors and to USAID for access to the assessment report.
2. Ibid., p. 30.
3. "Public Health Statistics, 1977-1981," Division of Health Statistics, Office of the Permanent Secretary, Ministry of Public Health, Thailand, 1983.
4. Rutstein, S.O. "Mortality Trends of Young Children in Developing Countries," IPPF Medical Bulletin, Fall 1984.
5. "Current MCH Situation," Family Health Division, Department of Health, Ministry of Public Health, Thailand, April 1983.
6. "MCH Data," Ministry of Public Health mimeograph, 1983.
7. "Current MCH Situation," Family Health Division, Ministry of Public Health, April 1983.
8. Much of the data in this discussion is drawn from: "The Influence of the Multinationals on the Thai Pharmaceutical Industry," Bangkok Bank Monthly Review, April 1983.
9. Beal, Peter. "An Investment Opportunity in Thailand: Pharmaceutical Ingredients and Products," prepared for the Board of Investment, RTG.
0. In 1981 total sales were estimated to have increased to Bh 12,000 million or roughly \$550 million. The total value of the Thai pharmaceutical market increased at an annual rate of roughly a constant 14% for the five-year period 1978-1982.

APPENDIX I

CASE STUDIES

A. INSTANT WEANING FOOD

P.T. Tatas Mulia, a domestically-owned Indonesian firm, is requesting a loan of Rp 400 million to construct a plant for the production of instant soy-based weaning foods, and similar products. The total investment, including working capital requirements, is Rp 826 million; the balance of the funds will come from equity and shareholders' loans.

At least 75% of the capital equipment, including the soybean extruder, must be imported. The principal raw ingredient, soybeans, also must be imported through BULOG (the Indonesian commodity stabilization agency).

The planned capacity of the factory is 1,500 tons of product annually, about 20% of the sponsor's projections of the total Indonesian market. An unspecified amount of other soy-based food products will also be produced by the plant.

Based on a preliminary analysis of the financial projections supplied by P.T. Tatas Mulia to PATH, the proposal seems financially sound, generating enough cash in the start-up year to meet obligations and eventually earning an adequate return for the shareholders. At the planned level of production, reached in the fourth year, the after-tax return on sales is 14%, and after-tax return on investment is 23%, acceptable levels for the food processing industry. Debt service coverage (which measures the ability of the firm to meet interest and principal payments using internally-generated cash flow) in the initial 3 years is not adequate. However, sufficient cash reserves have been set aside to meet these obligations. Finally, after the plant reaches planned capacity, the after-tax return to shareholders of 48% is sufficient, given the risk involved in the project.

Recommendation

Because the project seems financially feasible and will produce high-priority consumer products, we believe it should be selected as a potential candidate for the proposed loan program. Those are, however, a number of issues that will need to be resolved before a positive recommendation can be given.

Some issues of immediate concern are:

- The ability of P.T. Tatas Mulia to obtain secure supplies of soybeans at their projected costs.

- The ability of P.T. Tatas Mulia to construct and operate the new plant, as evidenced by their past operating record.
- The market and profitability of the other unspecified food products to be produced at the plant.
- The apparent lack of plans to test-market what is a completely new consumer product.

P.T. Mulia will need to supply further data for a full financial and technical feasibility analysis.

B. COTTON BALLS, SWABS, PADS, ETC.

Company A, an Indonesian-owned enterprise plans to construct a factory to produce sterile cotton balls, swabs, and pads, etc. They have made arrangements with a major British firm for licensing, quality control, and other technical assistance. Currently, no other firm in Indonesia is manufacturing these products.

Company A sought a working capital loan of approximately 500 million Rupiah from the Jakarta branch of a major international bank. The bank turned down the loan request, on the basis that it could not be sufficiently collateralized due to covenants of previously-arranged loans.

Recommendation

Although Company A's project may produce beneficial products at accessible prices, it does not qualify as a candidate for HEALTHlink. The project is an example of how large multinational firms can directly initiate projects without the intervention of resources like HEALTHlink. The project has been halted because of technical flaws in the firm's existing financial structure, which would not be remedied by the proposed loan program.

C. DISPOSABLE PLASTIC SYRINGES

Company B seeks to open a plant to produce plastic disposable syringes, estimating their total investment to be \$4.7 million. They approached Bumi Daya (a state-owned commercial bank) for a working capital loan of \$1 million, and a 5-10 year loan of \$2 million. The balance of the funds, \$1.7 million, was to be financed internally.

Bumi Daya gave two reasons for denying the loan. First, it felt that insufficient value would be added to the imported raw materials. Second, and more important, it believed strong competition from high-quality, low-cost Japanese products threatened the marketability of the syringes. After meeting rejection from Bumi Daya, Company B approached Bapindo, where their application is still under evaluation.

At the time Company B made its first application for funds, all disposable syringes were imported, mostly from Japan. Changes have come to the market, however. Igar Jaya, a PMA firm, will open a plant in mid-1984 capable of producing 40 million syringes a year. Igar Jaya estimates their price will be 20% below imports.

Recommendation

Both Igar Jaya and Company B believe there is room for at least one other low-cost domestic producer. This is a project deserving further study by HEALTHlink.

D. THERMOS FLASKS FOR VACCINES AND SERA

Ordinary one-liter thermos flasks have proven to be the most cost-effective way to transport vaccines from local health centers to the field.

Currently, all thermos flasks are imported, mostly from Hong Kong; there are no domestic producers. The current requirements for the UNICEF program alone run from one to three thousand annually; the net requirement for all private and government vaccination programs is probably many times that amount. UNICEF has expressed its willingness to contract for local production, provided that quality and price, after adjusting for delays and inconvenience of importing, are comparable.

Three Indonesian firms have been identified as potential manufacturers of thermos flasks: CV Tomasu, V. Petakimia, and P.T. Straightway. All three have experience in manufacturing "cold" boxes, used for cold transport of larger quantities of vaccine and other goods.

Recommendation

A guaranteed health care market for part of the production output, plus a substantial retail market, would point to the commercial viability of the project. Furthermore, the plant would supply a key link in the domestic vaccination cold chain, a high priority health care area for Indonesia.

Questions must be answered before a serious investigation begins. These are:

- What are the necessary investment for and costs of production from an efficient thermos flask plant?
- Is the necessary know-how available?
- What are the size and characteristics of the retail thermos flask market?
- Is there a local firm or group willing to own and operate a plant?

If preliminary indications are favorable, HEALTHlink should pursue the project.

E. COUGH, HEADACHE, AND SORE THROAT REMEDIES

Company C, a locally-owned pharmaceutical firm, wanted to build a plant in Padang, West Sumatera to produce proprietary cough, headache, and sore throat remedies. The total investment required is unknown, but it sought financing of one billion Rupiah in the form of a medium-term loan from Bapindo.

Bapindo was in the process of evaluating the proposal when Company C decided to go elsewhere for financing. Company C believed it could wait no longer and sought more expeditious, if not quite as advantageous, forms of financing.

The loan officer at Bapindo explained that the evaluation process was so lengthy because of concern over the overall business plan of the proposal. He believed that insufficient attention was given to existing competition from imported products and to the means of distribution to the retail level.

Recommendation

As far as can be determined, Company C has not obtained financing from other sources. However, given the low priority of the type of health care products they intend to produce, we would not recommend this project for the proposed loan program.

F. MOSQUITO COIL PRODUCTION

Company D proposes to build a plant in Surabaya to produce mosquito coils (an incense-like product that repels mosquitos and other airborne insects).

Company D seeks a working capital loan from Bumi Daya for 100 million Rupiah. Bumi Daya is now in the process of evaluating the application.

Recommendation

In general, there is a need for this type of product, especially as an adjunct to malarial control programs. However, it is unclear how well this need is currently met by existing domestic suppliers. This project would merit further investigation by HEALTHlink, possibly as a joint financier with Bumi Daya.

APPENDIX II

LIST OF HEALTH CARE MANUFACTURERS
and
INVENTORY OF PHARMACEUTICAL PRODUCTS

ANTI MOSQUITO INDUSTRY

Obor Mas Jaya, PT	- Jakarta	Pendowo Lino	- Pekalongan
Obor Mas Jaya, PT	- Sukabumi	Pollen & Co.	- Jakarta
Agung Sakti Bersaudara, PT	- Jakarta	Perindoni Medan, PT	- Jakarta
Johson & Son Indonesia, S.C., PT	- Jakarta	Reckitt & Colman Indonesia, PT	- Jakarta

HOSPITAL EQUIPMENT

Lion Metal Works, PT	- Jakarta	PT Siemens	- Jakarta
----------------------	-----------	------------	-----------

MEDICAL EQUIPMENT & SUPPLIES

Kimia Farma	- Jakarta	Puncak Perindustrian Latex, PT	- Jakarta
Maison Gan Perusahaan Industry	- Surabaya	Kasa Husada Perusahaan Farmasi	- Surabaya
Igar Jaya	- Jakarta		

NUTRITIONAL PRODUCTS

Mirota - FSM, Inc.	- Jakarta	Sari Husada, PT	- Jakarta
Warner Lambert, Ltd.	- Jakarta		

PHARMACEUTICAL MACHINERY

Rotar Pharmaceutical Workshop
- Surabaya

BEST AVAILABLE DOCUMENT

Abadi, PT - Jakarta
 Abudis (Apotik Budi) - Semarang
 Ago Abadi International, PT - Jakarta
 Amapharm (ASTA), PT - Semarang
 Arco Indonesia, PT - Jakarta
 Ary, CV - Ujung Pandang
 Ary Jaya, PT - Ujung Pandang
 Avant Raya, PT - Jakarta
 Ayus Adhika Corporation, PT - Jakarta
 Bagelen Trading Co, NV - Jakarta
 Bayer Farma Indonesia, PT - Jakarta
 Beierdorf Indonesia, PT - Jakarta
 Bhunneka Kina Farma, PT - Bandung
 Bina, UD - Yogyakarta
 Bintang Toedjoe, PT - Jakarta
 Bintang Toedjoe, PT - Medan
 Bintraco Dharma, PT - Semarang
 Bire Pharmantara, PT - Jakarta
 Biro Pharmantara, PT - Surabaya
 Bison, PT - Jakarta
 Boehringer Ingelheim Division Of PT Schering Indonesia - Jakarta
 Brataco - Semarang
 Bristol Myers Indonesia, PT - Jakarta
 Eulan Mas Indonesia, PT - Surabaya
 Carlo Erba Indonesia, PT - Bandung
 Ciba Geigy Pharma Indonesia, PT - Jakarta
 Cibunying Apotik (PT Magna) - Bandung
 Comphard, Pmercan Terbatas - Jakarta
 Daryo Vana Laboratorium, PT - Jakarta
 Dewi Tunjong Industri Pharmasi, PT - Medan
 Dexta Medica, PT - Palembang
 Djawa Indah, NV - Surabaya
 Djawa Maluku, PT PD - Jakarta
 Dosni Roha - Jakarta
 Doves Chemical & Pharmaceutical Laboratories, CV - Jakarta
 Dumex Indonesia, PT - Jakarta
 Dupa, PT - Jakarta
 Duta Kaiser Pharmacy, PT - Solo
 Dwi Pardi, PT - Jakarta
 Egan Pharma - Jakarta
 Eisai Indonesia, PT - Jakarta
 Essex Indonesia, PT - Jakarta
 Eunneo Comandit PT - Jakarta
 Eunneo Comandit PT - Bandung
 Farma, PT - Jakarta
 Farma Pharm, PT - Jakarta
 First Medipharma, PT - Surabaya
 First Samwood Indonesia, PT - Jakarta
 Gada Mas, FA - Jakarta
 Gaijoch Trading Coy, PT - Bandung
 Gemini Trading Ltd, NV - Ujung Pandang
 G.P. Farma International Pharmaceutical - Jakarta
 Grace Partnership Ltd, PT - Surabaya
 Great Mataram, PT - Semarang
 Hansi Gading Ltd, PT - Aceh
 Hasto Husodo, PT - Jakarta
 Heins Von Have Representative - Jakarta
 Henpharm Jaya, PT - West Java
 Henson Farma, PT - Surabaya
 Hexpharm Jaya, PT - Gpanas (West Java)
 Himalaya Kava, PT - Bandung
 Hoechst Pharmaceutical De Indonesia, PT - Jakarta
 Hucson Indonesia Ltd, PT - Jakarta
 IC Farma Indonesia, PT - Jakarta
 Imecco Farma, PT - Jakarta
 Impact Indonesia, PT - Jakarta
 Inocxim Alpha, PT - Cabang Medan - Medan
 Indomed, PT - Jakarta
 Indonesia, Selatan, CV - Jakarta
 Indonesian Drug House, PT - Jakarta
 Indonesina Drug House, PT Medan Branch - Medan
 Indonesian Pharmacy, PT - Jakarta
 Industri Farmasi Laurel, PT - Jakarta
 Industry Jamu & Farmasi Cap Jago, PT - Semarang
 Irawan Djaya Agung, PT - Surabaya
 Irian Bhakti, PD - Irian Jaya
 Istana Apotik, CV - Medan
 Itrasal Pharmaceutical Factory, PT - Semarang
 Johnson & Johnson Indonesia, PT - Jakarta
 Kable Farma, PT - Jakarta
 Kable Farma, PT Branch - Semarang
 Karumbi, PT - Bandung
 Kembang Bulang Farma, PT - Surabaya
 Ken Rose Indonesia, PT - Jakarta
 Kerta Farma Perusahaan Daerah - Bandung
 Kertajaya Jaya Utama, PT - Bandung
 Kimia Farma, PT - Jakarta
 Kimia Farma Pt Unit Produksi - Bandung
 Kimia Farma, PT - Manado
 Kimia Farma, PT - Solo
 Kimia Farma, PT - Bandung
 Konomex, PT - Surakarta
 Kusat Semaudara, PT - Jakarta

BEST AVAILABLE DOCUMENT

Lenko Surya Perkasa Cabang UP, PT - Ujung Pandang.
 Machi Enterprises - Jakarta.
 Madhya, PT - Jakarta.
 Malino, PT - Ujung Pandang.
 Marin Farma, PT - Jakarta.
 Mata Bhakti Surya, PT - Jakarta.
 Maccain Indonesia, PT - Jakarta.
 Medifarma Laboratories, Inc, PT - Jakarta.
 Medipex Internasional Ltd, PT - Jakarta.
 Mega Elits Bandung Branch, PT - Bandung.
 Mega Esa Farma, PT - Jakarta.
 Meiji Indonesian Pharmaceutical Industries, PT - Jakarta.
 Mendjanpan, PT - Jakarta.
 Merapi Utama Dharma, PT - Surabaya.
 Merapi Utama Pharma, Utamia, PT - Jakarta.
 Merbabu Fala, PT - Klaten.
 Merck Indonesia, PT - Jakarta.
 National Capsul Industry Ltd - Bandung.
 Nattermann Indonesia, PT - Jakarta.
 Nelico Indopharma, PT - Jakarta.
 Nelico Indopharma, PT (Branch) - Ujung Pandang.
 New Dharma Raya, PT - Jakarta.
 New Interbat, Laboratories, PT - Jakarta.
 New Tombak Farma, PT - Jakarta.
 Nicholas Laboratories, PT - Jakarta.
 Nusa Tenggara Makmur, PT - Jakarta.
 Nyonya Moneer, PT - Semarang.
 Organon Indonesia, PT - Jakarta.
 Otto Pharmaceutical Industries, PT - Bandung.
 Panacea, PT - Jakarta.
 Panto Pharm, NV - Jakarta.
 Paraco Coy, PT - Bandung.
 Parapharm, PT - Bandung.
 Pari Anom, PT - Surabaya.
 Pari Padang, PT - Jakarta.
 Patmo, CV - Jakarta.
 Paya Finang, PT PD - Medan.
 PBE Malin, PT - Ujung Pandang.
 Pebapan, PT - Jakarta.
 Pebapan, PT - Ujung Pandang Branch - Ujung Pandang.
 Pebapan, PT Medan Branch - Medan.
 Pebapan, PT Bandung Branch - Bandung.
 Pelita Baru Trading Co Ltd, PT - Jakarta.
 Pelita Poultry Shop - Jakarta.
 Pembangunan Industry Farmasi - Jakarta.
 Penta Valent, PT - Jakarta.
 Penta Valent, PT Surabaya Branch - Surabaya.
 Pesaman, FA - Jakarta.
 Pfizer Indonesia, PT - Jakarta.
 Phadrox, NV - Semarang.
 Pharco, PT - Semarang.
 Pharmaco Apodik - Semarang.
 Pharmac Apex, PT - Jakarta.
 Pharmantara Biro, PT - Surabaya.
 Pharmantara Biro PT - Jakarta.
 Pharus Indonesia Ltd, PT - Jakarta.
 P.I.E. Padjawall Nusindo, PT - Jakarta.
 Pim, PT - Surabaya.
 Piaton, PT - Jakarta.
 Pper. Rajawali Nusantara Indonesia, PT - Jakarta.
 Pradja Pharmaceutical Industries, PT - Jakarta.
 Puspita Akmi, PT - Semarang.
 Rachmat Apodik, PT - Jakarta.
 Rudeca Raya, PT - Jakarta.
 Ratan Laya Utama, PT - Purwokerto.
 Ratan Suminar Corporation, PT - Jakarta.
 Ruarima Abad, PT - Jakarta.
 Roche Indonesia, PT - Jakarta.
 Rowa Mankola, PT - Jakarta.
 Rostar - Surabaya.
 Ruslan Nusantara, PT - Jakarta.

Satan Putra & Co Ltd - Jakarta.
 Sagi Capri, PT - Jakarta.
 Sahabat Apodik, CV - Surabaya.
 Samic Sahani, PT - Jakarta.
 Sanphindo Kimia & Farmasi Industri, PT - Bekasi.
 Santa Apodik, CV - Jakarta.
 Sawah Besar Farma, PT - Jakarta.
 Scanchemic, PT - Jakarta.
 Scanchemic, PT - Jakarta.
 Seger Waras, PT - Sidoarjo.
 Sehat Bengkulu, PT - Bengkulu.
 Sekar Mirah, PT - Semarang.
 Seta Sari Farma, PT - Jakarta.
 Siaga I Apodik - Jakarta.
 Sila Mira, PT - Surabaya.
 Sinabung, PT - Medan.
 Soedarpo Corporation, NV PD - Jakarta.
 Soho Industri Farmasi, PT - Jakarta.
 Sputnik Apodik, NV - Semarang.
 Squin Indonesia, PT - Jakarta.
 Sterling Products Indonesia, PT - Jakarta.
 Sumber Sehat, PT - Jakarta.
 Sumber Sehat, PT - Semarang.
 Sumera, NV - Jakarta.
 Takeda Indonesia, PT Joint Venture - Jakarta.
 Tanabe Abadi, PT - Bandung.
 Tawon Jaya Makassar, PT - Ujung Pandang.
 Tebet Apodik, PT - Jakarta.
 Tempo, PT - Jakarta.
 Terang Jaya Nugraha, PT - Tarakan.
 Terry II, CV - Medan.
 Thaib TM, PT - Medan.
 Timur Sakti Wijaya, PT - Jakarta.
 Tritanata, PT Industry Farmasi - Bandung.
 Tosiga Trad Corporation, PT - Jayapura.
 Tosiga Trad Company, PT - Jayapura.
 Timur Sakti Wijaya, PT - Jakarta.
 Tritanata, PT Industri Farmasi - Bandung.
 Tosiga Trad Comp Coy, PT - Jayapura.
 Uni Lion Pharma, PT - Jakarta.
 United American Pharmaceutical - Jakarta.
 United Dico Glas & Co Ltd, PT - Jakarta.
 Upjohn Indonesia, PT - Jakarta.
 Upjohn Indonesia, PT - Jakarta.
 Utama Farma Jaya, PT - Jakarta.
 Varia Sekata Pharmaceutical Labs, PT - Medan.
 Vira Pabrik Farmasi, PT - Surabaya.
 Wahid Trad Comp Ltd, PT - Medan.
 Wari, PT - Jakarta.
 Warner Lambert Parke Davis Indonesia, PT - Jakarta.
 Wigo, PT - Jakarta.
 Wijaya, CV - Padang.
 Wismo Husodo, PT - Jakarta.
 Wwaco Ltd - Bandung.
 Wonder Indonesia Pharmaceutical, CV - Jakarta.
 Wweh Laboratories, Indonesia Ltd, PT - Jakarta.
 Yakum Farma, PT Industry Farma - Surakarta.
 Yantny Industry Farmasi, PT - Medan.
 Yupnann Pharmaceutical Industry - Jakarta.

BEST AVAILABLE DOCUMENT



PHARMACOLOGICAL CLASSIFICATION:

1. Alimentary System

- a. Antacids, Gastric Ulcer Remedies
- b. Antacids with Sedatives/GIT Regulators
- c. Antispasmodics
- d. Laxatives, Purgatives

2. Cardio-Vascular System & Diuretics

- a. Cardiac Drugs
- b. Anginal Drugs
- c. Antihypertensives
- d. Beta Blockers
- e. Diuretics & Antidiuretics
- f. Peripheral Vasodilators & Cerebral Activators
- g. Vasoconstrictors & Migraine Drugs
- h. Haemostatics
- i. Anticoagulants
- j. Haemorrhoidal, Phlebitis & Varicose Preparations
- k. Other Cardio-Vascular Drugs

3. Respiratory System

- a. Respiratory Stimulants
- b. Antiasthmatic Preparations
- c. Cough & Cold Remedies
- d. Decongestants & Other Nasal Preparations

4. Neuro-Muscular System

- a. Anti-inflammatory Enzymes
- b. Analgesics & Antipyretics
- c. Antirheumatic, Anti-inflammatory Analgesics
- d. Gout Preparations
- e. Tranquillisers
- f. Hypnotics & Sedatives

BEST AVAILABLE DOCUMENT

BEST AVAILABLE DOCUMENT

INVENTORY OF PHARMACEUTICAL PRODUCTS CURRENTLY ON THE INDONESIAN MARKET*

PHARMACOLOGICAL CLASSIFICATION:

1. Alimentary System

- a. Antacids, Gastric Ulcer Remedies
- b. Antacids with Sedatives/GIT Regulators
- c. Antispasmodics
- d. Laxatives, Purgatives

2. Cardio-Vascular System & Diuretics

- a. Cardiac Drugs
- b. Anginal Drugs
- c. Antihypertensives
- d. Beta Blockers
- e. Diuretics & Antidiuretics
- f. Peripheral Vasodilators & Cerebral Activators
- g. Vasoconstrictors & Migraine Drugs
- h. Haemostatics
- i. Anticoagulants
- j. Haemorrhoidal, Phlebitis & Varicose Preparations
- k. Other Cardio-Vascular Drugs

3. Respiratory System

- a. Respiratory Stimulants
- b. Antiasthmatic Preparations
- c. Cough & Cold Remedies
- d. Decongestants & Other Nasal Preparations

4. Neuro-Muscular System

- a. Anti-inflammatory Enzymes
- b. Analgesics & Antipyretics
- c. Antirheumatic, Anti-inflammatory Analgesics
- d. Gout Preparations
- e. Tranquillisers

INVENTORY OF PHARMACEUTICAL PRODUCTS CURRENTLY ON THE INDONESIAN MARKET*

- g. Antiparkinsonism Preparation
- h. Anticonvulsants
- i. Antihistamines & Antiallergics
- j. Antiemetics & Antivertigo Drugs
- k. CNS Stimulants/Nootropics & Neurotonics
- l. Antidepressants
- m. Muscle Relaxants
- n. Cholinergics

5. Hormones

- a. Sex Hormones & Related Synthetic Drugs
- b. Corticosteroid Hormones
- c. Tropic Hormones & Related Drugs
- d. Anabolic Agents
- e. Other Hormones - Related Drugs

6. Contraceptive Agents

- a. Oral & Depot Contraceptives
- b. Other Contraceptives

7. Antibiotics

- a. Aminoglycosides
- b. Cephalosporins
- c. Chloramphenicol
- d. Macrolides
- e. Penicillins
- f. Tetracyclines
- g. Antifungals
- h. Antibacterial Combinations
- i. Others

8. Other Chemotherapeutics

- a. Streptomycins
- b. Other Antituberculous Agents

- c. Sulphonamides
- d. Antidiarrhoeals
- e. Antiamoebics
- f. Anthelmintics
- g. Antileprotics
- h. Antimalarials
- i. Leishmaniacides, Trypanocides
- j. Filaricides
- k. Antivirals
- l. Antineoplastics

9. Genito-Urinary System

- a. Preparations for Vaginal Conditions
- b. Urinary Antiseptics
- c. Drugs Acting On Uterus
- d. Drugs Acting On Genito-Urinary System

10. Metabolism

- a. Insulins
- b. Oral Hypoglycaemic Agents
- c. Thyroid Preparations
- d. Antithyroids
- e. Antihyperlipidaemic Agents
- f. Other Agents Affecting Metabolism

11. Vitamins & Minerals

- a. Vitamins A, D, E
- b. Vitamin B1
- c. Vitamin B2
- d. Vitamin B6
- e. Vitamin B12
- f. Vitamin B Complex/with C
- g. Vitamin C
- h. Vitamin D and Calcium
- i. Multi-vitamins/with Minerals

BEST AVAILABLE DOCUMENT

- j. Pre & Post Natal Vitamins
- k. Vitamins with Hormones/Geriatric Preparations
- l. Paediatric Vitamins
- m. Appetite Stimulants/Tonics
- n. Antianaemics

12. Nutrition

- a. Infant Formulae & Nutritional Products
- b. Electrolytes & Minerals
- c. Digestive Enzymes/Digestives
- d. Cholagogues, Cholelitholytics & Hepatic Protectors
- e. Antiobesity Agents
- f. Parenteral Nutrition

13. Eye/Ear/Mouth/Throat

- a. Anti-infectives & Antiseptics
- b. Corticosteroids
- c. Antiseptics with Corticosteroids
- d. Mydriatics & Miotics
- e. Eye Miscellaneous
- f. Ear Miscellaneous
- g. Mouth/Throat Preparations

14. Dermatologicals

- a. Anti-infectives
- b. Anti-infectives with Corticosteroids
- c. Tropical Corticosteroids
- d. Acne & Dandruff Preparations
- e. Antiseptics & Disinfectants
- f. Medicated Surgical Dressings
- g. Fungicides & Anti parasites
- h. Keratolytics

- i. Skin Protectives
 - j. Antihistamines/Antipruritics
 - k. Analgesics & Anti inflammatory
 - l. Dermatologicals - Others
-
- 15. Anaesthetics - Local & General

 - 16. Diagnostic Aids & Test Preparations

 - 17. Vaccines, Anti-Sera & Immunologicals

 - 18. Antidotes & Detoxifying Agents

 - 19. Intravenous Solutions

APPENDIX III

LIST OF BOARD OF INVESTMENT
PRIORITY AND CLOSED AREAS FOR
INVESTMENTS IN THE HEALTH CARE SECTOR

A. PRIORITY LIST

<u>CATEGORY</u>	<u>PRIORITY</u>	<u>CONDITIONS</u>
NUTRITIONAL	MANUFACTURE OF DAIRY PRODUCTS Soybean milk substitutes	<ol style="list-style-type: none"> 1. Location : Outside of Java and with own plantation 2. Participation of weak economic groups/and or cooperatives
MEDICAL EQUIPMENT	MANUFACTURE Glass vials, ampuls, serum bottle Manufacture of laboratory equipment Manufacture of Medical instrumentations	<p>Should comply with Department of Health regulations.</p> <p>Should comply with the regulations of Department of Health</p>
PHARMACEUTICAL FORMULATION		<ol style="list-style-type: none"> 1. New Investment is closed 2. Expansion, with conditions as follow : <ol style="list-style-type: none"> a. In the framework of going public with minimum 30% share b. Maximum expansion capacity is 75% within 5 (five) years c. Must comply with the Capital Market (BAPEPAM) regulation d. After fulfilment of commitment for producing pharmaceutical raw material
PHARMACEUTICAL MANUFACTURERS	A. ANTIBIOTICS : Benzyl Penicilin, salt and derivates except Ampicilin Tetracycline, salts and derivates Streptomycin and salts Erythromycin and salts except estoplat Oxytetracycline and derivates Neomycin Sulphate	<ol style="list-style-type: none"> 1. New Investment, with conditions: <ol style="list-style-type: none"> a. High Technology b. In the first stage, each component can be manufactured by a maximum of two PMA/PMDN firms to fulfill National Capacity 2. Expansion

BEST AVAILABLE DOCUMENT

CATEGORYPRIORITYCONDITIONS

- B. SULPHONAMIDES :
Sulphadiazine -
Sulphamerazine
Sulphadimidine
Sulphasomidine
Sulphamethoxazole
- C. ANTIMALARIAL DRUGS :
Chloroquine and salts
Primaquine
Pyrimethamine
- D. ANTITUBERCULAR DRUGS:
Isoniazide
- E. ANALGESIC/ANTIPYRETICS
Acetosal
Methampyrone
- F. ANTHELMINTICS :
Piperazine and salts
Pyrantel pamoate
Mebendazole
- G. VITAMINS :
Vitamin A and salts
Vitamin B1 and salts
Vitamin B2 and salts
Vitamin B6 and salts
Vitamin B12 and salts
Vitamin C
Vitamin K
Nicotinamide
- H. ANTIHISTAMINES :
Chlorpheniramine and
salts
Diphenhydramine and
salts
Promethazine
- I. CONTRACEPTIVES :
Steroid hormones for
contraceptives
OTHER :
Caffeine
Clioquinol/Iodohydro-
xyquinoline
Theophylline
Dextromethorphan
Prednisone and
derivates
Ephedrine and deri-
vates
Lactose
Dextrose
Sucrose
Starch, Glucose and
Vitamin C
Pharmaceutical grade

CATEGORY

PRIORITY

CONDITIONS

- J. VACCINES, SERUMS,
AND DIAGNOSTIC
AGENTS :
Manufacture of vac-
cines, serums and
biological products
for human or veterinary
use :
Manufacture of diagnos-
tic agents
- K. EXTRACTION & ISOLA-
TION OF ESSENTIAL
SUBSTANCES :
Preserpine isolation
for Rauwolfia Radix
Vincristine isolation
(Vinblastine form
Vinca Rosea)
L. Dopa isolation
from Macuna pruriens
Emetine isolation
from Cephaelis Ipeca
Diosgenin isolation
from Coctus specious-
sus
Colchicine from Glo-
riosa superba
Solasidin isolation
from Solanum speci-
ousus

BEST AVAILABLE DOCUMENT

B. RESTRICTED LIST

<u>CATEGORY</u>	<u>RESTRICTED</u>	<u>CONDITIONS</u>
PHARMACEUTICAL FORMULATION	ALL	NEW INVESTMENT
RAW MATERIALS FOR		
	Tetracycline	
	Ethambutol	
	Paracetamol	
	Propranolol	
	Clioquinol/Iodo- hydroxyquinolin	
	Trimethoprim	
	Salicylamide	
	Ethoxybenzamide	
EMPTY GELATIN CAPSULES		

BEST AVAILABLE DOCUMENT

APPENDIX IV

LIST OF DRUGS MARKETED IN INDONESIA

LIST A

DAFTAR OBAT INPRES DAFTAR A
TAHUN 1983/1984
(SUSUNAN MENURUT ABJAD)

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Kel
1	2	3	4	5	6
1.	Ampisilina tablet 500 mg	100 tablet	Botol	Antibakteri sistemik	
2.	Antalgin tablet 500 mg	1000 tablet	Kaleng	Analgetik-Ampipiretik	
3.	Atropina Sulfat (Atropinal) injeksi 0,25 mg/ml - 1 ml	100 ampul	Kotak	Antispasmodik	
4.	Deksametason injeksi 5 mg/ml - 1 ml	100 ampul	Kotak	Obat pada syok; Anti-asma; Kortikosteroid.	
5.	Deksametason tablet 0,5 mg	1000 tablet	Kaleng/ Botol	Anti asma; Kortikosteroid	
6.	Diazepam injeksi 5 mg/ml - 2 ml	100 ampul	Kotak	Antiepilepsi-Antikonvulsi	
7.	Diazepam tablet 2 mg	1000 tablet	Kaleng/ Botol	Antiepilepsi-Antikonvulsi; Antiansietas; Hipnotik-Sedatif	
8.	Dioksitracinon tablet 150 mg	1000 tablet	Kaleng	Kasartik/Laksan	
9.	Efedrina HCL (Efeorinal) tablet 25 mg	1000 tablet	Kaleng/ Botol	Anti asma	
10.	Etambutol HCL (Etambutol) tablet 250 mg	100 tablet	Botol/ Strip	Antituberkulosis	
11.	Fenobarbital tablet 30 mg	1000 tablet	Kaleng/ Botol	Antiepilepsi - Antikonvulsi	
12.	Fenobarbital tablet 100 mg	1000 tablet	Kaleng/ Botol	Antiepilepsi-Antikonvulsi	
13.	Furosemda tablet 40 mg	250 tablet	Botol	Diuretik	
14.	Glibenklamida tablet 5 mg	100 tablet	Botol	Antidiabetik oral	
15.	Griseofulvin tablet 125 mg. Micronized	100 tablet	Botol	Antilungi	
16.	Hidroklorotiazida (HCT) tablet 25 mg	1000 tablet	Kaleng/ Botol	Diuretik, Antihipertensi	
17.	Isoniazida (INH) tablet 100 mg	1000 tablet	Kaleng	Antituberkulosis	
18.	Isoniazida (INH) tablet 300 mg	1000 tablet	Kaleng	Antituberkulosis	

BEST AVAILABLE DOCUMENT

LIST A

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Kat.
19.	Kloramfenikol kapsul 250 mg	1000 kapsul	Kaleng	Antibakteri sistemik	
20.	Klorfeniramina Maleat (C.T.M) tablet 4 mg.	1000 tablet	Kaleng	Antihistamin	
21.	Klorokina Fosfat (Klorokina) tablet 250 mg.	1000 tablet	Kaleng	Antimalaria	
22.	Kotrimoksazol tablet, kombinasi : Sulfametoksazol 100 mg + Trimetoprim 20 mg	100 tablet	Botol	Antibakteri sistemik	
23.	Kotrimoksazol tablet pediatrik, kombinasi Sulfametoksazol 100 mg + Trimetoprim 20 mg	100 tablet	Botol	Antibakteri sistemik	
24.	Lidokaina comp. injeksi, kombinasi: Lidokaina HCL 2% + Epinefrina 1:80.000-2 ml.	100 ampul	Kotak	Obat gigi	
25.	Mebendazol tablet 100 mg	100 tablet	Botol	Antelmintik	
26.	Metronidazol tablet 250 mg	100 tablet	Botol	Antiamubiasis	
27.	Natrium Karbazokrom Sulfonat (Karbazokrom) tablet 10 mg	100 tablet	Botol	Hemostatik	
28.	Oksitetrasiklina HCL (Oksitetrasiklina) salep 3%	5 gram	tube	Antibakteri topikal	
29.	Papaverina HCL (Papaverina) injeksi 40 mg/ml - 1 ml	100 ampul	Kotak	Relaksan uterus	
30.	Papaverina HCL (Papaverina) tablet 40 mg	1000 tablet	Kaleng	Relaksan uterus	
31.	Parasetamol tablet 500 mg	1000 tablet	Kaleng	Analgetika-Antipiretika	
32.	Pirantel Pamoat (Pirantel) tablet 365 mg setara dengan 125 mg basa)	100 tablet	Botol	Antelmintik	
33.	Pyridoksina HCL (Vit. B6) tablet 10 mg	1000 tablet	Kaleng/ Botol	Vitamin dan Mineral	
34.	Freonison tablet 5 mg	1000 tablet	Kaleng/ Botol	Kortikosteroid	

BEST AVAILABLE DOCUMENT

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Kel.
25.	Propranolol HCL (Propranolol) tablet 40 mg	100 tablet	Botol	Antiangina, Antiaritmia	
36.	Reserpina tablet 0,25 mg	1000 tablet	Kaleng/ Botol	Antihipertensi	
37.	Sianokobalamina (Vit. B12) injeksi 500 mcg/ml - 1 ml	100 ampul	Kotak	Antianemia	
38.	Tiamina HCL/Mononitrat (Vit. B1) tablet 50 mg	1000 tablet	Kaleng	Vitamin dan Mineral	

BEST AVAILABLE DOCUMENT



DAFTAR OBAT INPRES DAFTAR B
TAHUN 1983/1984 -
(SUSUNAN MENURUT ABJAD)

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
	2	3	4	5	6
1.	Aminofilina injeksi 24 mg/ml - 10 ml	1000 ampul	Kotak	Antiasma -	
2.	Antasida DOEN tablet, kombinasi : Magnesium Hidroksida 200 mg - Aluminium Hidroksida 200 mg	1000 tablet	Kaleng	Antasid	
3.	Asam Askorbat (Vit. C) tablet 50 mg	100 tablet	Kaleng	Vitamin dan Mineral	
4.	Asetosal tablet 500 mg	1000 tablet	Kaleng/ Botol	Anestetik-Antipiretik; Antiinflamasi non Steroid, Antipirai	
5.	Besi (III) Sulfat tablet salut 300 mg	1000 tablet	Botol	Antuanemi	
6.	Dekskrometorian HBr (Dekskrometorian) tablet salut 15 mg	1000 tablet	Botol	Antitusiv	
7.	Difenhidramina HCL (Difenhidramin) injeksi 10 mg/ml - 1 ml	100 ampul	Kotak	Antihistamin	
8.	Ekstrak Belladon tablet 10 mg	1000 tablet	Kaleng	Antispasmodik	
9.	Dehidroemetina HCL (Dehidroemetinal) injeksi 30 mg/ml - 1 ml	100 ampul	Kotak	Antiemubiasis	
10.	Epinefrina HCL/Bitartrat (Epinefrinal) injeksi 0,1 % - 1 ml	100 ampul	Kotak	Obat pada syok; Antiasma	
11.	Etakridina (Rivanol) serbuk	100 gram	Botol	Antiseptik-Desinfektan	Untuk RS Kab/ Koope
12.	Eter Anestesi	140 ml	Botol	Anestetik umum	
13.	Eugenol cairan	10 ml	Botol	Obat gigi	
14.	Fenobarbital injeksi 50 mg/ml - 2 ml	100 ampul	Kotak	Antiepilepsi - Antikonvulsi	

BEST AVAILABLE DOCUMENT

LIST B

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
15.	Garam Oralit untuk 1000 ml	100 kg tahanan lembab	Kantong	Obat Diare; Larutan Keseimbangan Cairan Elektrolit	
16.	Gliseril Guayakolat tablet 100 mg	1000 tablet	Kaleng	Ekspektoran	
17.	Hidrokortison krim 2,5 %	5 gram	Tube	Antiinflamasi	
18.	Yodium Povidon larutan 10 %	1000 ml	Botol	Antiseptik - Desinfektan	
19.	Yodium Tintur 2 %	10 ml	Botol	Antiseptik	
20.	Kalsium Laktat (Kalik) tablet 500 mg	1000 tablet	Kaleng	Vitamin dan Mineral	
21.	Kina Dihidroklorida (Kinina) injeksi 25 % - 2 ml	100 ampul	Kotak	Antimalaria	
22.	Kina Sulfat (Kinina) tablet 222 mg (7 H ₂ O)	1000 tablet	Botol	Antimalaria	
23.	Kloramfenikol Salep Mata 1 %	5 gram	Tube	Antiinfeksi topikal mata	
24.	Kloramfenikol suspensi 125 mg/5 ml	60 ml	Botol	Antibakteri sistemik	
25.	Klorpromazina HCL (Klorpromazina) injeksi 25 mg/ml - 1 ml	100 ampul	Kotak	Antipsikotik; Antiemetik	
26.	Klorpromazina HCL (Klorpromazina) injeksi 5 mg/ml - 2 ml	100 ampul	Kotak	Antiemetik	
27.	Kodeina HCL (Kodeina) tablet 10 mg	1000 tablet	Kaleng	Antitusiv; Obat Diare	
28.	Lisol, mengandung Kresol terabun 50 %	1000 ml	Botol	Antiseptik	
29.	Menadion (Vit. K3) injeksi 10 mg/ml - 1 ml	100 ampul	Kotak	Hemostatik	
30.	Menadion (Vit. K3) tablet salut 10 mg	1000 tablet	Botol	Hemostatik	
31.	Metilergometrina Maleat (Metilergometrina) tablet salut 0,125 mg	100 tablet	Botol	Oksitosik	
32.	Natrium Tiosulfat (Tiosulfat) injeksi 25% 10 ml	10 ampul	Kotak	Antidotum kimit	
33.	Petidina HCL (Petidina) injeksi 50 mg/ml 2 ml	10 ampul	Kotak	Analgetik - Narkotik	Untuk RS. Kab./Kodva

BEST AVAILABLE DOCUMENT



LIST B

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
34.	Piperazina tablet 500 mg (sebagai heksahidrat)	1000 tablet	Kaleng	Antelmintik	
35.	Primarkina tablet 15 mg	1000 tablet	Kaleng	Antimalaria	
36.	Retinol (Vit. A) tablet setiap 50.000 IU	1000 tablet	Botol	Vitamin dan Mineral	
37.	Serum Anti Baa Ular Polivalent Inj. 5 ml	10 vial	Kotak	Serum	
38.	Serum Anti Difteri Inj. 20.000 IU/vial (A.D.S.)	10 vial	Kotak	Serum	Untuk RS dan Puskesmas yang punya tempat tidur
39.	Serum Anti Tetanus Inj. 1.500 IU/ampul (A.T.S.)	100 ampul	Kotak	Serum	
40.	Serum Anti Tetanus Inj. 20.000 IU/vial (A.T.S.)	10 vial	Kotak	Serum	Untuk RS dan Puskesmas yang punya tempat tidur
41.	Temporary Stopping Fletcher (Fletcher)	Set @ 100 gram	Botol	Obat gigi	
42.	Tetrasiklin HCL (Tetrasiklin) kapsul 250 mg	1000 kapsul	Kotak	Antibakteri sistemik	
43.	Tiamin HCL (Vit. B1) injeksi 100 mg/ml - 1 ml	100 ampul	Kotak	Vitamin dan Mineral	
44.	Trisulfon tablet 500 mg	1000 tablet	Kaleng	Antibakteri sistemik	
45.	Vitamin E Kompleks tablet	1000 tablet	Kaleng	Vitamin dan Mineral	

BEST AVAILABLE DOCUMENT

LIST C

DAFTAR OBAT INPRES DAFTAR C TAHUN 1983/1984 (SUSUNAN MENURUT ABJAD)

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
1	2	3	4		6
1.	Air rebus dental use	100 g	Botol	Obat gigi	
2.	Aminofilina tablet 200 mg	1000 tab.	Botol	Antasma	
3.	Ampisilina sirup kering 125 mg/ 5 ml	60 ml	Botol	Antibakteri sistemik	
4.	Amitriptilina HCL (Amitriptilina) tablet salut 25 mg	100 tab	Botol	Antidepresi	
5.	Analgin injeksi 250 mg/ml 2 ml	100 amp	Kotak	Analgetik-Antipiretik	
6.	Asam Benzoat 3% + Asam Salisilat 6% Salep kombinasi (Whitfield salep)	30 g	Pot	Antifungi	
7.	Asam Salisilat 2% - Belerang Endap 4% Salep kombinasi (2 - 4 salep)	30 g	Pot	Antiskabies	
8.	Atropina Sulfat (Atropina) tablet 0,5 mg	500 tab	Kaleng	Antiparkinson	
9.	Atropina Sulfat (Atropina) tetes mata 0,5%	5 ml	Botol	Midriatik	
10.	Aquadest steril	500 ml	Botol	Lain-lain; untuk membas	
11.	Aqua pro injeksi steril, bebas pyrogen	20 ml	Vial	Lain-lain; Pelarut obat injeksi	
12.	Boraks Giserol 5% larutan	15 ml	Botol	Obat topikal mulut	
13.	Dekstran 70 - larutan infus 6% steril	500 ml	Botol	Produk dan substituen plasma	
14.	Dekstrometoran HBr (Dekstrometoran) sirup 10 mg/5 ml	100 ml	Botol	Antitusiv	
15.	Devitalisasi pasta	-	Botol	Obat gigi	
16.	Digoksina tablet, 0,25 mg	100 tab	Botol	Glikosida jantung	
17.	Ergotamina Tartrat 1 mg + Kofeina 50 mg tablet salut kombinasi	100 tab	Botol	Antimigran	

BEST AVAILABLE DOCUMENT

88

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
18.	Etakridin (Rivanol) larutan 0,1%	300 ml	Botol	Antiseptik, Desinfektan	
19.	Etanol 70%	1000 ml	Botol	Antiseptik, Desinfektan	
20.	Etil Klorida semprot	100 ml	Botol	Anestetik lokal, Obat gigi	
21.	Fenilburazon tablet salut 200 mg	1000 tab	Botol	Antiinflamasi non Steroid, Antiprur.	
22.	Fenol Gliserol tetes telinga 10%	5 ml	Botol	Lain-lain, Obat T.H.T.	
23.	Gamkuan erupsi 1%	100 ml	Botol	Anuskaber	
24.	Gentian violet larutan 1%	10 ml	Botol	Obat topikal mulut	
25.	Gliserol	1000 ml	Botol	Katartik/Laksan	
26.	Glukosa larutan infus 5% steril	500 ml	Botol/ Plastik	Larutan nutrisi	
26.	Glukosa larutan infus 5% steril	500 ml	Botol/ Plastik	Larutan nutrisi	
27.	Glukosa larutan infus 10% steril	25 ml	Ampul	Larutan nutrisi	
28.	Glukosa larutan infus 40% steril	100 stick	Kotak	Obat gigi	
29.	Gutta Percha points	30 g	Pot	Antiseptik	
30.	Iktamol salep 10%	set	Kantong	Lain-lain, Alat Kesehatan	
31.	Infusion set	10 vial	Kotak	Antidiabetik	
32.	Insulina Regula: injeksi 40 IU/ml - 10 ml	5 g	Botol Gelas	Antiseptik	Untuk RS Kab/Kodys
33.	Kalium Permapanpat serbuk	-	Botol coklat	Obat gigi	
34.	Kalsium Hidroksida pasta	10 vial	Kotak	Antibakteri sistemik	
35.	Kanamisin serbuk Inj. 1000 mg/vial (sebagai basa)	200 g	Bungkus	Lain-lain, Alat kesehatan	Untuk RS Kab/Kodys
36.	Kapas Absorben 200 gram				

BEST AVAILABLE DOCUMENT

LIST C

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
37.	Kapas berlemak 500 gram	500 g	Bungkus	Lain-lain, Alat kesehatan	
38.	Kapas pembalut 250 gram	250 g	Bungkus	Lain-lain, Alat kesehatan	
39.	Kapas pembalut steril 100 gram	100 g	Bungkus	Lain-lain, Alat kesehatan	
40.	Kasa kompres 40/40 steril	40 x 40	Bungkus	Lain-lain, Alat kesehatan	
41.	Kasa pembalut hidrofili 4 m x 3 cm	4 m x 3 cm	Roll	Lain-lain, Alat kesehatan	
42.	Kasa pembalut hidrofili 4 m x 15 cm	4 m x 15 cm	Roll	Lain-lain, Alat kesehatan	
43.	Kasa pembalut steril	12 m x 80 cm	Roll	Lain-lain, Alat kesehatan	
44.	Kloramfenikol tetes telinga 3%	10 ml	Botol	Antibiotik T.H.T.	
45.	Kloropramida tablet 250 mg.	500 tab.	Kaleng	Antidiabetik	Untuk RS Kab/Kodya
46.	Klorpromazine HCL (Klorpromazine) tablet salut 25 mg	1000 tab.	Botol	Antipsikotik; Antiemetik	
47.	Klorpromazine HCL (Klorpromazine) tablet salut 100 mg	1000 tab	Botol	Antipsikotik	
48.	Lidokain HCL (Lidokaine) injeksi 1% - 2 ml	100 amp	Kotak	Anestetika lokal	
49.	Magnesium Sulfat serbuk 30 gram	30 g	Kantong	Mengurangi absorpsi	
50.	Metakresilsulfonat dan Metanol kondensasi (Metakresol kondensat)	50 ml	Botol	Obat topikal mulut	
51.	Metilergometrin Maleat (Metilergometrin) injeksi 0,200 mg/ml - 1 ml	100 amp	Kotak	Oksitokik	
52.	Minyak Ikan Sirip 10%	30 g	Roll	Perangsang jaringan granulasi	

BEST AVAILABLE DOCUMENT

LIST C

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
53.	Monokloramfet Mentol cairan	10 ml	Botol	Obat gigi	
54.	Mummifying pasta	-	Botol	Obat gigi	
55.	Natrium Bikarbonat (Bikarbonat) tablet 500 mg	1000 tab	Kaleng	Antidotum Kimia	
56.	Natrium Fenitoina (Fenitoina) kapsul 30 mg	250 kap	Botol	Antiepilepsi- Antikonvulsi	
57.	Natrium Fenitoina (Fenitoina) kapsul 100 mg	250 kap	Botol	Antiepilepsi- Antikonvulsi	
58.	Natrium Fluorescein (Fluorescein) tetes mata 2%	5 ml	Botol	Lain-lain - Tes fungsi	Untuk RS Kab/Kodya
59.	Natrium Karbazokrom Sulfonat (Karbazokrom) injeksi 5 mg/ml - 5 ml	50 amp	Kotak	Hemostatik	
60.	Natrium Klorida larutan infus 0,9% steril	500 ml	Botol/Botol Plastik	Larutan keseimbangan cairan elektrolit	
61.	Natrium Tiopental (Tiopental) serbuk injeksi 1.000 mg/amp	25 amp	Kotak	Anestetik umum	
62.	Nitrofurantoina kapsul 50 mg, makrokristal	100 kap	Botol	Antiseptik saluran kemih	
63.	Nistatin 500.000 IU tablet salut	100 tab	Botol	Antifungsi	
64.	Nistatin 100.000 IU/p, tablet vaginal	100 tab/ 10 strip (x 10)	Kotak	Antifungsi	
65.	Obat Batuk Hitam (C.B.H.) cairan	200 ml	Botol	Ekspektoran	
66.	Obat Batuk Putih (C.B.P.) cairan	100 ml	Botol	Ekspektoran	
67.	Oksigen Gas dalam tabung	m ³	-	Lain-lain, Alat kesehatan	
68.	Oksitetrasiklina HCL (Oksitetrasiklina) injeksi 250 mg/3 ml (sebagai basa) - 3ml	10 amp	Kotak	Antibakteri sistemik	

BEST AVAILABLE DOCUMENT

LIST C

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
66.	Oksitetrasiklina HCL (Oksitetrasiklina) injeksi i.m. 50 mg/ml (sebagai basa) - 10 ml	10 vial	Kotak	Antibakteri sistemik	
70.	Oksitetrasiklina HCL (Oksitetrasiklina) salep mata 1 %	3,5 p	Tube	Anti infeksi mata	
71.	Oksitosina injeksi 10 IU/ml 1 ml	100 amp	Kotak	Oksitosik	
72.	Paraformaldehid tablet 1 gr.	100 tab	Botol	Antiseptik-Desinfektan	
73.	Parasetamol sirup 120 mg/5 ml	50 ml	Botol	Analgetik - Antipiretik	
74.	Pembawa gigi	rol	Rol	Lain-lain, Alat kesehatan	
75.	Pikokarpina HCL/Nitrat (Pikokarpina) tetes mata 2%	5 ml	Botol	Motik	
76.	Piperazina sirup 20% (sebagai heksahidrat)	60 ml	Botol	Antelmintik	
77.	Plester 5 yard x 2 inch	5 yard x 2 inch	Rol	Lain-lain, Alat kesehatan	
78.	Proksina Penisikina G. Inj. 3 juta IU/ml	100 vial	Kotak	Antibakteri sistemik	
79.	Propilourasil tablet 100 mg	1000 tab	Kaleng	Tiroid dan Antagonis	
80.	Rebhol (Vit. A) kapsul lunak 200.000 IU	1000 kap	Botol	Obat sistemik mata	
81.	Ringer Laktat Larutan infus steril	500 ml	Botol/botol Plastik	Larutan seimbang cairan elektroli	
82.	Saisil Bedak 2%	100 g	Kotak	Lain-lain, obat untuk kulit	
83.	Semen Seng Posfat, serbuk dan cair	set 30 g	Botol	Obat gigi	
84.	Silver Amalgam serbuk 65 - 75%	1 oz	Botol	Obat gigi	

BEST AVAILABLE DOCUMENT

LIST C

Nomor Urut	Nama - Obat	Satuan Kemasan	Kemasan	Kelas Terapi	Ket.
85.	Spons Gelatin cubicles 1 x 1 x 1 cm	30 buah	Kaleng	Obat gigi	
86.	Streptomisina Sulfat (Streptomisina serbuk injeksi 1.000 mg/vial)	100 vial	Kotak	Antituberkulosis	
87.	Sulla conus (kerucut) preparasi	50 pellets	Botol	Obat gigi	
88.	Sulfasetamida tetes mata 15%	5 ml	Botol	Antiinfeksi mata	
89.	Suspensi Seng Insulina injeksi 40 IU/ml-10 ml	10 vial	Kotak	Antidiabetik	Untuk RS Kab/Kodys
90.	Synthetic filling material larutan & serbuk	set	Botol	Obat gigi	
91.	Tetrakaina HCL (Tetrakaina) tetes mata 0,5 %	5 ml	Botol	Anestetik lokal untuk mata	
92.	Trikresol Formalin (TKF) cairan	10 ml	Botol	Obat Gigi	

BEST AVAILABLE DOCUMENT

APPENDIX V

USAID-GOI COOPERATIVE ACTIVITIES

GOI-USAID COOPERATIVE ACTIVITIES IN HEALTH - APRIL 1983

- Java/Bali Malaria Control

\$24,700,000 life of project USAID contribution. USAID assistance to GOI malaria control on Java/Bali/Madura (and small outer island efforts) was quite constant since the late 1960s. The project was completed in 1982 with excellent achievement of its objectives, and a strong GOI malaria control organization has been functioning well for several years.

- Timor Malaria Control

\$3,600,000 life of project USAID contribution. Begun 1981. Goal is to establish basic malaria control coverage to 30-40% of the population of Timor Island (Timor and part of NTT provinces). As of last spraying cycle of 1982, approximately 10% population coverage is claimed.

- Expanded Program in Immunization

\$13,200,000 life of project USAID contribution. Begun 1979. This ambitious and vitally important project is active in all 27 provinces. Geographic expansion is meeting targets but population coverage is not. A recent major evaluation identified many issues for intensified activity and management improvement.

- Comprehensive Health Improvement Program-Province Specific

\$9,000,000 life of project USAID contribution. Begun in 1981. This project is concentrating on developing the capabilities for health services delivery improvement in three very different outer island provinces: NTT, D.I. Aceh, and Sumbar. Efforts include provincial health services management strengthening, increased output of trained paramedical workers, and (in Aceh and Sumbar) assistance to COME program development in the medical schools.

- Health Training Research and Development

\$4,600,000 life of project USAID contribution. Begun 1979. This project has had four components:

- (a) Health Manpower Development - developing manpower planning unit in Biro Perencanaan, strengthening personnel information system in Bureau of Personnel, and strengthening planning and management in Pusdiklat.

*This is a copy of a document distributed by USAID/Jakarta

BEST AVAILABLE DOCUMENT

- (b) Health Systems Research - attempting to stimulate "client-oriented research" capabilities and procedures through LitBangkes and to produce high quality health services research products.
- (c) Nutrition Surveillance - working on field development of a food-crisis early warning system based on local collection and analysis of indicator data.
- (d) Health Education - organization development in Health Education Directorate, with special emphasis on health education assistance to the EPI.

- FKM/Johns Hopkins University Cooperative Agreement

\$2,475,000 life of project USAID contribution. Begun 1981. This project is intended to strengthen the FKM (Faculty of Public Health of the University of Indonesia) faculty and curriculum for its major role in training Indonesia's health system managers.

- Infant Feeding Studies and Seminars on Infant Feeding

About \$150,000 USAID contribution. Begun 1981. The purpose of the field research effort is to gather and analyze information on infant feeding trends (breastfeeding, formula, weaning foods), related socio-cultural factors and commercial practices. It is hoped this information will be useful to GOI in setting its policies and regulations in infant feeding matters. The purpose of the Seminars on Infant Feeding is to disseminate modern concepts of infant feeding and supporting studies to influential health professionals around Indonesia.

- Vitamin A Blindness Prevention

USAID contribution - variable. Decided annually with Helen Keller International and GOI. Begun 1976. These activities focus on prevention of xerophthalmia through diet modification, Vit. A capsule distribution, food fortification, and improved diagnosis and treatment. Primary counterpart is Direktorat Gizi.

- Family Planning/Maternal-Child Welfare (KB/Gizi)

\$10,000,000 life of project USAID contribution. Begun 1980. This project supports development of village-level nutrition education and intervention programs in thousands of villages through the family planning acceptor group network. It is hoped to improve child survival and health as well as stimulate family planning acceptance. The basic nutrition model is the UPKG model.

- Assistance to Consortium of Medical Sciences for Planning New Schools of Public Health

\$67,000 USAID contribution. Begun 1983. This activity supports the new public health section of the Consortium of Medical Sciences in its role of providing guidance and assistance to the new schools of public health around Indonesia.

- Rural Sanitation Manpower Development

\$6,800,000 life of project USAID contribution. Begun 1976. This recently-completed project supported the construction, equipping, staff development and curriculum development for eleven regional schools for sanitarians around Indonesia. All schools are reported to be functioning. The degree to which the project developed curriculum is being utilized is unclear.

- Other Private Voluntary Organization (PVO) Program

USAID contribution - variable. Grant proposals are reviewed whenever submitted by PVOs. USAID is able to directly support some PVO projects that meet GOI development goals and policies. The grants usually are relatively small. A wide variety of PVOs have received assistance, including CARE, Save the Children Federation, Foster Parents Plan, Catholic Relief Services, Project Concern, Salvation Army, Helen Keller International, Yayasan Essentia Medical, Yayasan Indonesia Sejahtera, Dien Desa, etc.

- Additional USAID Assistance

Through other funding mechanisms, USAID sometimes can provide short-term technical assistance to meet specific health/nutrition needs as requested by GOI. In addition, USAID's health/nutrition staff in Jakarta has some technical background. USAID remains ready to discuss with GOI at any time possible future collaborative health/nutrition development efforts, as well as implementation of current efforts.

- Family Planning and Population

USAID maintains a multi-million dollar assistance program to support GOI's family planning and population program. Assistance is provided directly to the government and through private family planning intermediary organizations operating with government approval. Additional information on these activities can be provided upon your request.

APPENDIX VI

SELECTED RESULTS OF MULTI-CLIENT SURVEY

PHARMACEUTICAL SECTOR

CONDUCTED BY P.T. DATA IMPACT

SURVEY RESULT PHARMACEUTICAL FIRMS

RESPONDENTS = 16

OWNERSHIP OF FIRM

	<u>PMA</u>			<u>PMDN/OTHER</u>	<u>NA</u>
	UK	US	W GERM		
		12			
	2	8	2	4	0

DOMESTIC PORTION OF OWNERSHIP

<u>PRIBUMI</u>	<u>NON PRIBUMI</u>	<u>MIXED</u>	<u>NA</u>
3	7	6	0

ANNUAL SALES (Includes non-pharmaceutical products)

<u>\$ 5-25 Million</u>	<u>25-100 Million</u>	<u>Greater than \$ 100 Million</u>		<u>NA</u>
10	4	1	1	

10 4 1 1

SIGNIFICANT CAPITAL INVESTMENT WITHIN THREE YEARS

<u>YES</u>	<u>NO</u>	<u>NA</u>
6	9	1

BEST AVAILABLE DOCUMENT

TYPE OF FINANCING (Amounts in \$ 000's)

	<u>RANGE</u>	<u>MEAN</u>	<u>TOTAL</u>	<u>PERCENT OF TOTAL</u>
SHORT TERM	10 - 20,700	2,300	65,500	86
MED TERM	150 - 2,500	1,360	6,775	9
OTHER	100 - 2,000	1,360	4,100	5
T O T A L	-	2,120	26,375	100

LENDING-PARTICULAR FINANCIAL INSTITUTIONS

	<u>NUMBER OF LOANS</u>	
	<u>SHORT-TERM</u>	<u>OTHER</u>
FOREIGN BRANCH/REP. OFFICES	31	2
STATE OWNED	1	0
PRIVATE	9	0

BEST AVAILABLE DOCUMENT

APPENDIX VII

HEALTH CARE INVESTMENT PROJECTS

A. PMDN APPLICATIONS

SUBMISSION DATE	A. NAME OF FIRM B. LOCATION	A. INDUSTRY B. OUTPUT	A. INVESTMENT IN MILLION OF RUPIAH: B. INDONESIA EMPLOYEES C. EXPATRIATE EMPLOYEES
FEB 1982	A. PT Industry Optik B. Jakarta	A. Spectacle frame industry B. 1,800 frames/year	A. 1,184 B. 100 C. 3
OCT 1983	A. Perusahaan Umum "Bio Farma" B. Bandung	A. Bio-Pharmaceuticals B. 1,000,000 bottles/year	A. 2,387 B. 80 C. 0
NOV 1982	A. PT Uno Medic Corporation B. Jakarta	A. Disposable syringes B. 24,000,000 pcs/year	A. 2,068 B. 101 C. 3
	A. PT Kimia Farma B. Bandung	A. Pharmaceutical, medical equipment B. 550,000 - 900,000 gross per year	A. 8,500 B. 319 C. 14
MARCH 1983	A. PT Krisna Mulia Nusantara B. Bekasi	A. Disposable syringes 50,000,000 pcs/year	A. 4,912 B. 186 C. 6
NOV 1983	A. PT Riasiman Abadi B. Bogor	A. Pharmaceuticals B. 2,360 tons/year	A. 2,402 B. 93 C. 3
JAN 1984	A. PT Pengolah Antar Baku Kimia Pertama B. Bogor	A. Pharmaceutical chemicals Para nitro phenols - 2,000 tons per year Para amino phenols - 1,200 tons per year	A. 3,870 B. 76 C. 4
FEB 1984	A. PT Srifana Ananta Dharma B. Jakarta	A. Medical Equipment B. -	A. 6,000 B. 66 C. 3
	A. PT Mustika Ratu B. Jakarta	A. Traditional Medicine Herbal Drink B. 4,800 tons/year	A. 1,369 B. 134 C. 0

Source : INDONESIA COMMERCIAL NEWSLETTER, NOS. 188 - 237,
PT DATA CONSULT INC. JAKARTA

B. PMA APPLICATIONS TO BKPM

SUBMISSION DATE	A. NAME OF FIRM B. LOCATION	A. INDUSTRY B. OUTPUT	A. INVESTMENT IN MILLION OF RUPIAH; B. INDONESIAN EMPLOYEES C. EXPATRIATE EMPLOYEES
DEC 1981	A. (Sponsor Unknown) B. Jakarta	A. Pharmaceuticals B. Tetracycline HCL, oxy-tetracycline & Tetracycline - 300 tons/year	A. 15,000 B. 179 C. 2
MARCH 1982	A. PT Meiji Indonesia B. West Java	A. Pharmceuticals Sterile Kaumycin Sulphate, Bulk : B. - 3,000 Kg/year	A. 2,392 B. 326 C. 20
OCT 1982	A. PT Kifalim, PT Kimia Farma, Revalin Investment B.V. B. Semarang	A. Assembling and manufacturing of medical equipment and professional precision instruments. B Hearing aids - 10,000 units/years Hearing aids multiple - 2 units/year Dental units - 20 units/year X-ray units - 20 units/year Tank Gauge equipment - 25 units/year Physical therapy centres - 3 units/year	A. 3,641 B. 63 C. 15
DEC 1982	A. PT Sikili R.P. Scherer Indonesia, PT Sirih Gading Indonesia, R.P. Scherer Corporation, USA. B. Pulc Gadung	A. Manufacturer and marketing of empty hard gelatin capsule B. - 1,500 million pieces/year	A. 7,660 B. 95 C. 5

BEST AVAILABLE DOCUMENT

C. PMDN PROJECTS RECEIVING FINAL APPROVAL

SUBMISSION DATE	A. NAME OF FIRM B. LOCATION	A. INDUSTRY B. OUTPUT	A. INVESTMENT IN MILLION OF RUPIAH; B. INDONESIAN EMPLOYEES C. EXPATRIATE EMPLOYEES
MAY 1982	A. PT Gelatin Karya Mukti B. West Java	A. Gelatine capsules B. 1,5000 million pieces/year	A. 3,333 B. 205 C. 3
OCT 1982	A. PT Ripha Daya Sekata B. Padang	A. Pharmaceuticals B. Pills - 194,400,00/year Capsules - 21,600,000/year Injection Liquid - 8,928,000/year Syrups - 648,000 bottles/year Ointment - 150,000 tubes/year	A. 1,267 B. 81 C. 0
NOV 1982	A. NV Pharros B. Central Java	A. Pharmaceuticals industry B. Tablet - 50,000,000 tablets/year Drages - 50,000,000 tablets/year Injection - 500,000 ampules/year	A. 471 B. 8
NOV 1983	A. PT Darya Varia B. Bogor	A. Pharmaceuticals B. 8.5 million vials/year	A. 1,160 B. 52 C. 2
FEB 1983	A. PT Bukit Perak B. Semarang	A. Medical soap B. - 2,500 tons/year	A. 414 B. 124 C. 0

Source : INDONESIAN COMMERCIAL NEWSLETTER, NOS. 188 - 237,
PT DATA CONSULT INC. JAKARTA

BEST AVAILABLE DOCUMENT

DEC 1982	A. PT Squibb Indonesia B. Cilangkap, Bogor	A. Pharmaceuticals B. Tablets - 66,000 tablets/year Capsules - 22,000 Capsules/year Cream & Ointments - 60,000 Kilos/year Bulk Raw Materials - 77,000 Kilos/year Semi Bulk Material - 1,000,000 Kilos/year Antiseptic Liquids 50,000 Liters/year	A. 7,629 B. 303 C. 8
APRIL 1983	A. PT Medifarma Lab. Inc. (Philippine) B. Jakarta	A. Pharmaceutical Mfg. B. Ampicillin Bulk - 20 to 25 tons/year	A. 3,000 B. 452 C.
APRIL 1983	A. PT Igar Jaya (USA) B. Jakarta	A. Plastic containers principally utilized in the Pharmaceutical indus- try including but not limited to vials, ampuls syringes for paranteral use B. - 24 million pcs/year	A. 6,000 B. 422 C. 3
AUGUST 1983	A. PT Rhone Poulenc Indonesia Pharma B. Bogor	A. Pharmaceutical industry B.	A. 524 B. 10

Source : INDONESIAN COMMERCIAL NEWSLETTER, NOS. 188 - 237,
PT DATA CONSULT INC. JAKARTA

D. PMA PROJECTS RECEIVING FINAL APPROVAL

SUBMISSION DATE	A. NAME OF FIRM B. LOCATION	A. INDUSTRY B. OUTPUT	A. INVESTMENT IN MILLION OF RUPIAH; B. INDONESIAN EMPLOYEES C. EXPATRIATE EMPLOYEES
MAY 1982	A. The Welcome Foundation Ltd., England PT Pharos Indonesia B. West Java	A. Pharmaceutical materials B. Trimethoprim - 4,000 kgs per year Tablet - 5,000,000 pcs/year Liquid - 84,000 liters/year	A. 2,300 B. 157 C. 38
OCT 1982	A. PT Meiji Indonesia B. West Java	A. Kaumycin Sulphate Injection B. - 6,000,000 vials/year - 3,000 kg/year	A. 2,338 B. 332 C. 9
OCT 1982	A. PT Roche Indonesia B. Cimanggis,	A. Pharmaceuticals B. Tablet - 200 million tablets Ampules - 3 million ampules/year	A. 3,900 B. 0 C. 0
AUGUST 1983	A. PT Igar Jaya B. Jakarta	A. Plastic Containers & Syringes B. 40 million units/year	A. 5,600 B. 422 C. 3
NOV 1983	A. PT Rhone Poulenc B. Bogor	A. Vaccines B. 578,810 vials/year	A. 1,524 B. 10 C. 0
JAN 1984	A. PT Pfizer Indonesia B. Jakarta	A. Pharmaceuticals B. Capsules - 10 million capsules /year Tablets - 20 million tablets/year Sterile fills - 2.3 million vials/year Non-sterile fills - 2.7 million bottles/year Ointment - 2.5 million tubes/year	A. 4,232 B. 282 C. 8

Source : INDONESIAN COMMERCIAL NEWSLETTER, NOS. 188 - 237,
PT DATA CONSULT INC. JAKARTA

BEST AVAILABLE DOCUMENT

APPENDIX VIII

LIST OF CONTACTS (INDONESIA)

BANKS AND FINANCIAL INSTITUTIONS

Garry T. Knight
President Director
P.T. Aseam Indonesia (Joint Venture Investment Bank)
Jl. Thamrin 54
335-025

T.R. Johnson
Vice President
American Express International Banking Corporation
Arthaloka Building
587-401

Indra Widjaya
Managing Director
Bank Int'l Indonesia (Private)
Jl. Kalibesar Barat 18 - 19
671-161

Masjhud Ali
Head Manager, Credit (Section II)
BAPINDO
Jl. Gondangdia Lama 2 - 4
321-408

Janpie Siahaan
Manager
Bank Bumi Daya (State)
Jl. Imam Bonjol No. 61
333-721 Ext. 4113

Gaylord Burke
Vice President
Bank of America
Jl. Merdeka Selatan
374-031

Andi Buana
General Manager
Bank Central Asia (Private)
Jl. Gajah Mada No. 112 C/D
657-056

Yan Arial Karaini
Manager
P.T. PDFCI (Development Finance)
Jl. Abdul Muis 60
366-608

BEST AVAILABLE DOCUMENT

Jim Mailer
President/Director
P.T. Stephens Utama (Leasing Division of Bank Pertiagaan Indonesia)
Jl. S. Wiryopranoto No. 9.
6389-108

Douglas Rea
Assistant Manager of Commercial Accounts
Chase Manhattan Bank
Jl. H.R. Rasuna Said 62
513-134

David Roberts/Gaby Motulah
Corporate Banking
Citibank
Jl. M.H. Thamrin 55
333-507/354-811

Prijadi Ps.
General Manager
Bank Rakyat Indonesia (State)
Jl. Veteran 8
374-208

Richard Pigossi
Regional Vice President
PICA (Investment Finance)
Jl. Medan Merdeka Selatan 17
342-705

Max Siddharta
Assistant Vice President
P.T. Bank Niaga
Jl. Gajah Mada No. 18
Tel. 377-809

J. Maschli Mohammad
Assistant Vice President
P.T. Bank Niaga
Jl. Gajah Mada No. 18
Tel. 377-809

BEST AVAILABLE DOCUMENT

GOVERNMENT CONTACTS

Mr. Hanjoyo Nitimiharjo, Director
Urusan Pendayagunaan Produksi Dalam Negeri (UPPDN)
[Utilization of Domestic Products]
Jl. Veteran IV No. 17
"SEKNEG" Building
352-581

COMMENTS:

UPPDN is part of the Executive Office that must approve government procurements over 500 million Rupiah. An important part of the approval process is determining if imported goods to be procured could be produced in Indonesia. UPPDN identifies potential local manufacturers, and sets up meetings with foreign firms or local technological institutes to arrange for technical assistance.

Dr. Hadi Santoso, Secretary
Director General of Health Services
Jl. Prapatan No. 10

Sri Dadi Soebono
BKPM (Investment Coordinating Board)
Jl. Gatot Subroto 6
512-008 Ext. 41

Dr. Haryono Suyono
Chairman
National Family Planning Coordinating Board
Jl. M.T. Haryono
Jakarta

Dr. N. Winarno
Director
Food Technology Development Centre (FTDC)
Bogor Institute of Agriculture
IPB, Bogor

B. Setiawan, M.D., Ph.D.
Faculty of Medicine
University of Indonesia
Jakarta, Indonesia

HEALTH FIRMS

K. Hussein
Komisaris
P.T. Arungtalabangi (local non-pribumi)
Jl. Gatot Subroto Kav. 12
511-804 Ext. 248

Will Deiss
President Director
P.T. Igar Jaya (PMA)
Jl. Pulogadung No. 35
484-804

Amir Basir
Commercial Director
Indo Farma (State)
Jl. Hasanuddin No. 55
774-950

Bara Siwabessy
Director of Operations & Finance
Johnson & Johnson Indonesia
Jl. Medan Merdeka Selatan 17
346-095

Dr. Eddie Lembong
P.T. Pharos Indonesia (local non-Pribumi)
40, 42 A-B Jalan Limo
732-613

Dr. J. Widjaya
P.T. Tigabaksa (local non-Pribumi)
Jl. Rasuna Said
512-307

Brian Ritter
President Director
P.T. Upjohn Indonesia
583-791

Dr. Ananta Wijaya
Director/President
P.T. Darya-Varya (local non-Pribumi)
586-224

BEST AVAILABLE DOCUMENT

Dr. Sudirman
President/Director
P.T. Tempo (local non-Pribumi)
Jl. Rasuna Said

COMMENTS:

Sudirman is President of G.P. Farmasi, the local Pharmaceutical Manufacturers Association. He is interested in the PATH program, and has queried his members for ventures that would qualify for the PATH program. Sudirman is very knowledgeable about the local environment and should be actively involved in the selection process.

Mr. Raharjo
P.T. Finpac Nusa Indonesia (Ltd.)
Jalan Wolter Monginsidi 28
Kebayoran Baur, Jakarta

COMMENTS:

Actively seeking financing for a disposable syringe factory.

Mr. C. Adhyatman
Manager
Pharmac Apex P.T.
Jl Biak 39
Jakarta

COMMENTS:

Seeking technical and financial assistance for production of intravenous solutions and primary eye care products.

T.V.G. Krishnamurthy
P.T. Tatas Mulia
Jl Jend A. Yani
Jakarta

COMMENTS:

Actively seeking technical and financial assistance for production of instant weaning foods and texturized vegetable protein products.

BEST AVAILABLE DOCUMENT

Zisuddin Tariq Ali
Plant Director
P.T. Squibb Indonesia
K.M. 38 Jl Raya Jakarta
Bogor

Roy Mandy
P.T. Kalbe Farma
Dankos Lab. Building
Jl Let. Jend. Suprpto Cempaka Putih
Jakarta

INTERNATIONAL ORGANIZATIONS

L.D.F. Wungubelen
Supply & Logistics
UNICEF
Jl. M.H. Thamrin No. 14
321-308 Ext. 282

Dr. El-Zahwary
Representative
WHO
Jl. M.H. Thamrin No. 14

Dr. Sukker Aslam
Program Coordinator Health
UNICEF, Jakarta

Mr. Rodney Hatfield
Program Officer Health
UNICEF, Jakarta

Dr. Terrel Hill
Program Coordinator Nutrition
UNICEF, Jakarta

Mr. Charles Schlegel
Project Officer for Research, Evaluation and Monitoring
UNICEF, Jakarta

BEST AVAILABLE DOCUMENT

Mr. Robert Tilden
Helen Keller International
Ministry of Health
Primary Eye Care Unit
Jakarta

Mr. Michael Walden
World Bank
Arthaloka Building, 8th Floor
2 Jl. Jenderal Sudirman
Jakarta

Mr. Al Ali Bastry
Marketing Consultant
American Soybean Association
Royal Oriental Building
Jl. M.S. Thamrin No. 51
Jakarta

BEST AVAILABLE DOCUMENT

APPENDIX IX

LOAN APPLICATION FORM FOR BANK NIAGA

TRADE QUESTIONNAIRE

RAHASIA
CONFIDENTIAL

Phone No. :

Reporting Date :

Reference No. :

1. Nama perusahaan
Name of Firm

Alamat
Address

Kantor Pusat
Head Office

Kantor Cabang
Branches

2. Bentuk perusahaan Harap diberi tanda
Character of Organization : (Please mark whichever applicable)

Perorangan
Proprietorship

Firma (Fa.)
Partnership

Perseroan Komanditer
Limited Partnership

Perseroan Terbatas (P.T.)
Private Limited Company

Japanese Joint Stock Company

Perseroan Terbatas Umum
Public Limited Company

Jenis Usaha
Nature of Business :

Importir
Importers

Eksportir
Exporters

Industri
Manufacturers

Perwakilan Perush. Industri
Manufacturers' Representatives

Komisioner
Commission Agents

Pedagang Besar
Wholesalers

Pedagang Eceran
Retailers

Perantara Lain?
Brokers Others :

Jenis barang yang diproduksi
Manufactures of

Jenis barang yang diimpor
Importers of

Jenis barang yang diekspor
Exporters of

Jenis barang yang disalurkan
Dealers in

(A) Modal Dasar
Authorized Capital

(A)

(B) Modal disetor
Paid-up Capital or

(B)

(C) Modal yang ditambahkan
Capital Invested in Business

(C)

Nama lengkap, Riwayat hidup singkat, usia, titel, Kebangsaan dari pemilik, Pesero/Direktur, dan hubungan dengan lainnya.
Full Names and Brief Biographies of Proprietor, All Partners or Directors, their Ages, Titles, Nationality, and other Business Connection and Interests

6. Persero atau Pemegang saham terbesar serta jumlah saham'nya.
 Financing Partner(s) or Large Shareholders, and the Proportion of their Holdings.
7. Pabrik, jumlah pegawai, Kapasitas produksi perjenis perbulan (Sebutkan alamat pabrik tsb).
 Plants, Number of Employees, Monthly Productive Capacity by Items (Please Give Address of Each Plant)
8. Perputaran uang perbulan atau penjualan periode fiskal terakhir
 Monthly Business Turnover or Sales for the Latest Fiscal Period.
9. Latar Belakang : Kapan dan dimana didirikan : Riwayat perush. termasuk pergantian reorganisasi. peleburan dan pemodalan kembali
 Background : When and Where Established : Brief History Including Successions, Reorganizations, Mergers, Recapitalization
10. Relasi Dagang Dalam Negeri (dgn. alamat)
 Local Trade Relations (with addresses)
11. Relasi Dagang Luar Negeri (dgn. alamat)
 Overseas Trade Relations (with addresses)
12. B a n k
 Bankers

BEST AVAILABLE DOCUMENT

Tanda tangan
 Your Signature

117

APPENDIX X

PUBLIC HEALTH SECTOR FINANCING INFORMATION

from

USAID HEALTH SECTOR ASSESSMENT REPORT
October 1983

D. Public Health Sector Financing Information

The following section will review information about financial support (both from the government budget and from patient fees) for public sector health services. More detailed information about household expenditures for health services is provided in Appendix V.

1. RTG Support for Public Health Sector Activities

Looking at the health sector as a whole, government expenditure for health increased as a percent of GNP from 0.83 in 1975 to 1.27 in 1977, but then fell in 1979 to 1.21. Government expenditure on health as a percent of total government expenditure, and per capita government health expenditure, follow the same pattern of increasing between 1975 and 1977 and then decreasing again in 1979 to 6.2 percent and 124.39 baht respectively. Finally, although total government expenditures on health increased every year in nominal terms, they stagnated after 1977 when converted to constant 1980 baht. MOPH real expenditures follow the same pattern to 1980, but increased in 1981 and 1982 (see Table 3.1). These trends suggest that government health programs do not have the financial support required to expand the coverage of existing programs, nor to launch new programs within the existing health services network. Thailand's total public health expenditure is already low in comparison with other middle-income countries. Whereas Thailand spent \$3 per capita on health in 1979, the average for other countries with similar GNP per capita was \$7.2/

Although the MOPH is the principal Ministry concerned with public health services, health activities are carried out by eight other government agencies, principally the State University Bureau (for support to medical schools and affiliated teaching hospitals) and the Ministry of Interior (for support of "municipal and tambol" doctors and other services).^{3/} The MOPH budget accounted for 64 to 73 percent of total government health expenditures from 1975 to 1979. The State University Bureau budget accounted for another 20 to 25 percent of total health expenditure and the Ministry of Interior for 6 to 9 percent (see Table 3.1).

2. The MOPH Budget, Fourth and Fifth Plans

Information about the capital and recurrent allocation of the MOPH budget, and its annual increases as compared to increases in the total government budget for 1975 to 1986 is presented in Table 3.2. From 1975 to 1982, MOPH recurrent expenditures equalled from 69.2 to 81.1 percent of total MOPH expenditures, with most years clustering about 78 percent. Over the same period, salaries ranged from 40.4 to 60.8 percent of total MOPH recurrent expenditures, with most years clustering at 50 to 56 percent. The rate of increase in MOPH's budget ranged widely, from -3.3 to 76.1 percent per year. In 6 of 9 years (1975-1983) the rate of budgetary increase for the Ministry exceeded that of the total government budget as a whole.

TABLE 3.1
TOTAL GOVERNMENT EXPENDITURES ON HEALTH BY AGENCY,
FY 1975 - 1980

	FY1975		FY1976		FY1977		FY1978		FY1979		FY1980		FY1981		FY1982	
	Amount	X	Amount	X	Amount	X	Amount	X	Amount	X	Amount	X	Amount	X	Amount	X
Total Govt. Expenditures on Health (Current Baht)	2,415.1	100.0	3,889.0	100.0	4,840.2	100.0	4,916.3	100.0	5,740.5	100.0						
(Constant 1980 Baht)	3,839.6		5,937.4		6,865.5		6,486.8		6,865.6							
MOPII (Current Baht)	1,547.4	64.1	2,725.3	70.1	3,520.6	72.7	3,405.8	69.3	3,976.9	69.3	4,494.6		5,571.8		6,652.3	
(Constant 1980)	2,460.1		4,160.8		4,993.8		4,480.3		4,757.1		4,494.6		4,943.9		5,609.0	
Other Agencies																
State University Bureau		24.6		21.7		19.6		23.0		22.7						
Ministry of Interior		8.6		6.3		5.7		5.7		6.2						
Ministry of Defense		0.8		0.5		0.7		0.6		0.7						
State Railway of Thailand		0.7		0.5		0.4		0.4		0.4						
Ministry of Agriculture and Cooperatives		0.2		0.1		0.1		0.1		0.1						
Ministry of Communications		0.2		0.1		0.1		0.1		-						
Port Authority of Thailand		0.3		0.3		0.3		0.4		0.2						
Hospital of Thai Tobacco Monopoly Organizations		0.6		0.4		0.4		0.4		0.4						
Total Govt. Expenditure on Health as % of Total Govt. Expenditure		0.5		0.6		7.0		6.1		6.2						
Total Govt. Expenditures on Health as % of GNP		0.83		1.16		1.27		1.11		1.21						
Per Capita Govt. Expenditure on Health (Current Baht)		57.68		90.53		109.90		109.01		124.39						
(Constant 1980 Baht)		91.70		138.21		155.89		143.43		148.79						

Source: Health Planning Division, Base Year Data and Background Information - Thailand, June 1980.

TABLE 3.2
RECURRENT, CAPITAL AND TOTAL BUDGET FOR THE MOPH
1975-1986

(Million Baht)

Year	RECURRENT			CAPITAL 2/ INVESTMENT	TOTAL	ANNUAL % INCREASE	
	Salaries 1/	Other	Subtotal 2/			MOPH	Total Government
1975	750.54 (60.8)	484.08	1,234.62 (79.8)	312.73 (20.2)	1,547.35 (100)	39.0	33.3
1976	864.14 (40.4)	1,274.44	2,138.58 (78.5)	586.71 (21.5)	2,725.29 (100)	76.1	30.5
1977	1,200.45 (49.2)	1,237.40	2,437.85 (69.2)	1,082.76 (30.8)	3,520.61 (100)	29.2	9.8
1978	1,285.85 (49.9)	1,288.95	2,574.80 (78.5)	820.97 (21.5)	3,405.77 (100)	-3.3	17.8
1979	1,513.08 (50.2)	1,499.10	3,012.18 (75.8)	964.73 (24.2)	3,976.91 (100)	16.8	13.6
1980	1,884.99 (53.8)	1,620.52	3,505.51 (78.0)	989.07 (22.0)	4,494.58 (100)	13.0	18.5
1981	2,572.38 (58.8)	1,798.96	4,371.34 (78.4)	1,200.45 (21.6)	5,571.79 (100)	24.0	28.4
1982	2,809.11 (54.2)	2,371.10	5,180.21 (77.9)	1,472.11 (22.1)	6,652.32 (100)	19.4	15.0
1983	3,542.30 (55.3)	2,863.85	6,406.15 (81.1)	1,496.26 (18.9)	7,902.41 (100)	18.8	9.9
1984 3/	-	-	-	-	8,655.80	9.5	-
1985 3/	-	-	-	-	9,493.66	9.7	-
1986 3/	-	-	-	-	10,396.88	9.5	-

Notes: 1/ Salaries are given as a percent of total recurrent expenditures.
2/ Total recurrent and capital investment expenditures are given as percents of total MOPH expenditures.
3/ Estimated.

Source: Health Planning Division, MOPH.

BEST AVAILABLE DOCUMENT

With respect to the MOPH budget projections for the Fifth Plan, it is instructive to compare estimates given over time (see Table 3.3). Whereas, a June 1981 estimate of the MOPH budget for the Fifth Plan was 59,105 million baht, a September 1983 estimate was only 43,101 million baht. Originally, it was estimated that the MOPH budget would increase by 15.5 percent annually over the Fifth Plan period. However, recent projections indicate that there will be only a 10.6 percent increase from 1984 to 1985 and a 9.5 percent increase from 1985 to 1986. These projected annual increases are lower than for 8 of the previous 9 years (1975 to 1983). These changes will require adjustments in the Fifth Plan health programs. For example, the MOPH has determined that there will be a slowdown in the expansion of hospital facilities in urban areas. To the extent that inflation is higher than budgetary increases, further reductions in MOPH existing and planned programs will have to be made.

TABLE 3.3
MOPH BUDGET PROJECTIONS
1982-1986

	(Million Baht)					Fifth
	1982	1983	1984	1985	1986	Plan Total
MOPH June 1981	8,292	10,112	12,003	13,569	15,128	59,105
MOPH April 1982	5,804	7,587	9,123	10,263	11,287	44,064
NESDB May 1982	6,406	7,221	8,569	10,626	12,833	45,651
NESDB August 1982	6,406	7,641	8,450	10,080	12,170	44,747
NESDB/BOB/MOPH Dec. 1982	6,437	7,435	8,587	9,918	11,455	43,832
Health Planning Division 9/83	6,652	7,902	8,656	9,494	10,897	43,101

Source: MOPH; NESDB.

Curative care activities claim from 56 to 59 percent of the total budget, disease control activities claim 18 to 19 percent, health promotion activities from 15 to 17 percent, training from 4 to 5 percent, administration about 2 percent, and medical research, food and drug control and health services support activities each receive from 0.5 to 1 percent (see Table 3.4).

It is estimated that actual expenditures Ministry-wide fall short of appropriations by 22 percent. The breakdown of the 1982 MOPH budget (Table 3.5) shows that expenditures for equipment and construction are those which most lag behind appropriations. The MOPH is currently undertaking a study to determine what changes need to be made to facilitate expenditure of the allocated budget.

TABLE 3.4
MOPH BUDGET BY TYPE OF ACTIVITY
1977-1983

Type of Service	(Million Baht)						
	1977	1978	1979	1980	1981	1982	1983
General Administration	60.56 (1.7)	52.30 (1.8)	79.15 (2.0)	94.59 (2.1)	114.86 (2.1)	128.82 (1.9)	134.16 (1.7)
Curative Care	2,052.97 (52.3)	2,004.48 (58.8)	2,252.91 (56.7)	2,617.90 (58.3)	3,298.23 (59.2)	3,708.62 (55.8)	4,490.65 (56.8)
Disease Control	604.31 (18.9)	612.77 (18.0)	753.33 (18.9)	841.95 (18.7)	1,011.15 (18.2)	1,214.52 (18.3)	1,425.42 (18.0)
Health Promotion	552.28 (15.7)	502.30 (14.8)	64.03 (15.8)	633.06 (14.1)	778.99 (14.0)	1,121.43 (16.9)	1,319.97 (16.7)
Training	133.99 (3.8)	188.55 (4.7)	175.09 (4.4)	194.69 (4.3)	230.56 (4.1)	353.82 (5.3)	374.56 (4.7)
Medical Research	21.47 (0.6)	24.85 (0.7)	32.23 (0.8)	44.23 (1.0)	47.49 (0.9)	34.44 (0.5)	43.31 (0.6)
Food/Drug Control	15.94 (0.5)	19.86 (0.5)	29.25 (0.7)	34.25 (0.8)	51.39 (0.9)	47.56 (0.7)	49.74 (0.6)
Health Services Support	18.97 (0.5)	20.64 (0.6)	26.90 (0.7)	33.47 (0.7)	39.07 (0.7)	43.11 (0.6)	64.60 (0.8)
TOTAL	3,520.61 (100)	3,405.77 (100)	3,976.91 (100)	4,494.58 (100)	5,571.79 (100)	6,652.32 (100)	7,902.11 (100)

Source: Health Planning Division, MOPH.

BEST AVAILABLE DOCUMENT

TABLE 3.5
BUDGETED VS. ACTUAL MOPH EXPENDITURES BY TYPE OF EXPENDITURE
1982

Type of Expenditure	(Million Baht)			
	Budgeted ^{1/}	Actual ^{2/}	Carry Over ^{2/}	Returned to Treasury ^{2/}
1. Salary	1,918.96 (34.4)	1,766.09 (92.0)	-	152.87 (8.0)
2. Salary non-gazette	624.15 (11.2)	577.82 (92.6)	-	46.33 (7.4)
3. Salary Temporary	29.27 (0.5)	24.18 (82.6)	-	5.09 (17.4)
4. Honorarium	27.26 (0.5)	27.39 (100.5)	0.08 (0.3)	-0.21 (-0.8)
5. Supplies	102.49 (1.8)	98.56 (96.2)	0.05 (0.0)	3.88 (3.8)
6. Utilities	90.92 (1.6)	94.53 (104.0)	-	-3.61 (-4.1)
7. Materials	1,001.77 (18.0)	867.34 (86.6)	84.65 (8.5)	49.78 (5.0)
8. Equipment	175.67 (3.2)	56.06 (31.9)	91.49 (52.1)	28.12 (16.0)
9. Construction	999.28 (17.9)	364.33 (36.5)	623.67 (62.4)	11.28 (1.1)
10. Support	596.17 (10.7)	462.64 (77.6)	87.40 (14.7)	46.13 (7.7)
11. Others	5.85 (0.1)	5.69 (97.3)	-	0.16 (2.7)
Total	5,571.79 (100.0)	4,344.63 (78.0)	887.34 (15.9)	339.82 (6.1)

- Notes: 1. Budgeted expenditures are given as percentages of total MOPH expenditures.
2. Actual and carry over expenditures and monies returned to Treasury are given as percents of expenditures in that type.

Source: Health Planning Division, MOPH.

BEST AVAILABLE DOCUMENT

3. Private Expenditures for Support of Public Hospitals

A 1973 study documented the contribution of revenue from patient fees to the operating costs of provincial and district hospitals, and tambol health centers. These revenues comprised over 10 percent of total provincial health revenues in 52 of the 57 provinces studied, over 25 percent in 39 of the 57 provinces, and over 40 percent of total revenues in 22 of the 57 provinces.^{5/}

A 1980 study provides additional information about the sources and uses of district hospitals and health center revenues. For example, revenues collected at 9 district hospitals accounted for over 35 percent of those hospital's total revenue, and at 4 of the facilities accounted for over 50 percent of revenue. Fees for drugs accounted for over 60 percent of total hospital-generated revenue at all 9 facilities, and for over 85 percent of revenue at 4 of the 9 facilities. Fees for X-rays, diagnostic services (i.e. lab test), food, rooms, donations or "other" services comprised from 0 to 13 percent of fee-generated revenues (see Appendix Tables 3.3 and 3.4).

The same study provides similar information about the revenues collected at tambol health centers. Revenues collected at 14 health centers accounted for 0 to 28 percent of the total revenue of these health centers, but at 10 of the 14 facilities these revenues equalled less than 10 percent of their total revenue. Payments for drugs comprised over 90 percent of the total revenues generated at all but 2 health centers (see Appendix Tables 3.5 and 3.6).^{6/}

4. Government Financing of Health Service Fees for Special Groups

The RTG provides payment for fees levied at public health facilities for government employees and for the poor. These programs are described below.

One fringe benefit of all employees of the central government is support for most of their personal medical care and that of their immediate families (i.e. spouses, children and parents). If use is made of government hospitals or health centers, the full costs are paid by the employee's ministry to the public facility. If use is made of private clinics, hospitals, drugstores, or other providers of health care, the employee is reimbursed for about 50 percent of the cost of the service, up to a certain maximum. These benefits are continued for certain retired government employees. Although each Ministry covers these expenses for its employees, the money comes from a central fund of the Ministry of Finance.^{7/}

In an effort to ease the burden on the poor of payments for health services, the Free Medical Care Service Project (FMCSPP) began in 1976 and was expanded throughout the country as a component of the RTG's Fourth Plan. The objectives of the project are to:

- Create equity in receiving medical care among the people.
- Improve the health status of the poor, especially in rural areas.
- Pave the way for national health insurance for the poor.
- Create positive attitudes in the poor regarding health services.

In 1979, the project's budget equalled 359 million baht, or about 6 percent of the total government budget spent on health in that year. Eighty-four percent of the FMCSPP budget was distributed to all ministries and municipalities responsible for provision of health services to cover the costs of drugs at health centers; and the cost of drugs, diagnostic tests, examinations, surgery or deliveries at district and provincial hospitals. Ten percent of the budget covered the costs of services provided by mobile clinics and 6 percent the costs of radio outreach programs.

Persons or households eligible to receive FMCSPP benefits are:

- Single persons with an income of less than B1,000/mo.
- Married couples with incomes less than B2,000/mo. and their children less than 20 years of age (and also those over 20 years who are mentally or physically handicapped).

Initially cards, entitling the holder to free care, were issued from Bangkok, however this policy changed so that the personnel at public health facilities decide who is eligible.^{8/}

An MOPH study identified several problems with the project. These included: (1) the general public and service providers' lack of knowledge or misconceptions about the project, (2) the difficulty of health personnel in determining who is eligible for FMCSPP benefits, and (3) the provision of approximately 10 percent of the cards to wealthier families.^{9/} MOPH officials also commented that government hospital revenues have dropped since the start of the project and that utilization of the government facilities (particularly hospitals) has risen as a consequence of the reduction in the cost to patients of consuming medical care services.

Another study of the FMCSPP determined that the project budget was allocated disproportionately to the relatively wealthier regions of the country. More specifically, in 1980, FMCSPP per capita allocations were lowest in the North and Northeast Regions (where the largest percentage of the population is in poverty) and highest in the Central region and Bangkok. However, the same study found that 25 percent of the population in the Northeastern region received FMCSPP benefits, 21 percent in the Central region, 17 percent in the Northern region and 10 percent in both the Southern region and Bangkok. Further, almost 40 percent of in-patients in the Northeastern region received FMCSPP benefits, 37 percent in the Central region, 33 percent in the Southern region and 25 percent in the Northern region. In sum,

although a greater proportion of the population and of in-patients in the Northeast received FMCSF benefits than in any other region, a greater percentage of the poor in Bangkok or the Central region received FMCSF benefits. By almost all measures, the poor in the Northern Region benefit least from the FMCSF program.10/

In view of the above problems, e.g. lack of basic understanding of the FMCSF by providers and patients, increases in hospital utilization, decreases in hospital revenues and inequitable distribution of benefits, the MOPH is considering making adjustments to the FMCSF. Formation of a MOPH Task Force to examine the problems and to consider alternative solutions might be an appropriate mechanism whereby new policies could be formulated.11/

CHAPTER III NOTES

1. Ministry of Public Health (March 1982) Summary of Fifth Five Year National Health Development Plan, 1982-1986, Bangkok: Health Planning Division/MOPH, 12 pp.
2. World Bank (February 1983) Thailand, Review of the Health Sector, Washington, D.C.: World Bank, pp. 88, 92 (draft).
3. Brief descriptions of the health activities of other government agencies are given in Appendix IV.
4. Three-quarters of the MOPH budget is allocated to the Office of the Permanent Secretary, 9 percent to both the Department of Medical Services and the Department of Communicable Disease Control and 6 percent to the Department of Health. The Department of Medical Sciences and the Office of Food and Drugs will each receive less than 1 percent of the budget (see Appendix Table 3.1).
5. The study also suggested that:

There is considerable variation between provinces in MOPH per capita expenditure, with some tendency for wealthier provinces to receive higher per capita health MOPH expenditures.

Per capita MOPH expenditure for improvement of provincial hospitals in most cases equalled or exceeded per capita MOPH expenditures for provincial and district health administration and improvement and expansion of other rural health facilities (for further details see Appendix Table 3.2).

Molldrem, Vivikka (March 1975) A Look at Programs to Expand the Rural Health Delivery System in Thailand, 46 pp. (mimeo).
6. Ministry of Public Health (1980) Study of the Cost of Rural Health Facilities in Thailand, Bangkok: MOPH (in Thai).
7. Roemer, Milton, (1978) The Health Care System of Thailand, Bangkok: WHO.
8. Mills, Anne (September 18, 1980a) Health Services for Low Income Groups: Access to Free Medical Care, Bangkok: WHO, pp. 2-3.
9. Ministry of Public Health (March 1982) A Study on the Results of the Free Medical Care Service Project for Low Income Patients, 1980, Bangkok: Rural Health Division/MOPH, 167 pp. (in Thai)
10. Mills, Anne (September 18, 1980b) op. cit., pp. 14-19.
11. An alternative would be to continue to provide FMCSF benefits at tambol health centers which are closer to the rural poor (whereas hospitals are generally in wealthier towns) and which do not rely so heavily on patient fees for recurrent expenditures (as do hospitals). The financial implications of this alternative are described in: Mills, Anne (September 18, 1980a) op.cit., pp. 23-25.

APPENDIX XI

REVIEW OF SELECTED MOPH PROGRAMS

from

USAID HEALTH SECTOR ASSESSMENT REPORT
October 1983

CHAPTER V
REVIEW OF SELECT MOPH PROGRAMS

Given the background information about the structure of the MOPH system presented in Chapter III, and fertility, mortality and morbidity trends in Chapter IV, more detailed descriptions and analyses are given in this chapter of select MOPH programs, particularly those which impact on the health problems of infants, children and mothers.

A. Primary Health Care Project

1. Description of the Problem

Budgetary constraints limit the extent to which the MOPH can increase coverage of the Thai population with health personnel, facilities, drugs and other supplies in order to move towards "Health for All by the Year 2000." Thus, the MOPH has elected to develop a cadre of village level volunteers to provide preventive, promotive and simple curative health services at village levels. In addition, these volunteers, with village committees, are responsible to develop and run revolving funds to generate additional revenues to support health-related activities. These efforts are described below.

2. MOPH Interventions

The Primary Health Care Project (PHCP) was initiated by the MOPH in the Fourth National Health Development Plan, and operates under the direction of the Office of Primary Health Care, within the Office of the Permanent Secretary of Public Health. The policies and activities of the project are proposed and coordinated with other departments of the MOPH and related sectors through the National PHC Advisory Committee. Implementation of the program is integrated into the Provincial and District Health Offices under the leadership of the Provincial Governor assisted by the PCMO. In addition to this nationwide effort, a separately funded PHC Project has been established under the Rural Poverty Eradication Program (RPEP) to provide PHC activities to villages in the 286 districts of the 8 provinces designated as poverty areas.

The objectives of the project are:

- To expand the coverage of health services, particularly among the underserved rural population.
- To utilize community resources and encourage community participation so as to solve local health problems and to establish self-help programs at the village level.
- To promote the dissemination of health information.
- To collect data reflecting the needs and health problems of communities.
- To promote the health status of the people who live in the rural areas as well as their own awareness of health problems and problem solving.

The principal strategy to achieve these objectives is the training of ten Village Health Communicators (VHCs) and one Village Health Volunteer (VHV) in every village in the country. As of mid-1983, 357,109 VHCs and 38,300 VHVs have been trained, covering approximately 70 percent of the total villages in the country. The responsibilities of these volunteers are:

Village Health Coordinator

- Collect information regarding the health problem of villagers and about births, deaths, migration and pregnancies.
- Disseminate knowledge about the 8 essential elements of PHC.
- Assist in the coordination and implementation of health activities in the village.

Village Health Volunteer

The responsibilities of the VHV are the same as those of VHCs plus the following other services:

- Weigh pre-school children and distribute supplementary foods to malnourished children.
- Provide simple symptomatic medical care by using home remedies or medicines approved by the MOPH.
- Give first aid treatment for flesh wounds, fractures, burns, etc.
- Distribute birth control pills and condoms. (Theoretically, the women receiving the oral contraceptive have already been examined by the staff of government health facilities.)

The health volunteers are trained by tambol trainers in their communities. Tambol trainers are trained by district and provincial level trainers, who are trained by ministerial-level trainers, who are trained by ministerial trainers. Training materials consist of 52 self-instructional modules for each of the tasks/skills required of the volunteers. The training programs consist of pre-service (10 days for VHVs), and refresher courses.

The volunteers are expected to carry out their PHC tasks in addition to their usual work. Although not compensated by any salary, incentives for the VHVs have recently been initiated (e.g. receipt of part of the profit from the sale of drugs to villagers, per diems and health care kits during training courses, access to free care from health centers and government hospitals, and radio sets and bicycles to outstanding VHVs).

The MOPH has placed special emphasis on the development of local cooperatives managed by village health volunteers (see Appendix VI for descriptions of the cooperatives). Thus, the volunteers' role, over and above providing promotive, preventive and curative health services, is seen as one of generating local resources which can be used to resolve health problems.

In addition, the concept of PHC has evolved from a strictly health focus to one of broader community development. Instead of being viewed as a village-based extension of the government's rural health delivery infrastructure, the village volunteers are now seen as catalysts for involving the village community in many development activities, not only those directly related to the health sector. Senior MOPH leaders strongly articulated their belief that the village health volunteer program (which they refer to as the heart of the Primary Health Care Program), in cooperation with village and tambol planning committees, and are a means by which to stimulate villagers to recognize their own problems and to plan ways to resolve them using local resources.

In recognition of the fact that the health sector alone could not achieve the overall community development that is a necessary precursor and concomitant to individual health, a program of Basic Minimum Needs (BMN) has been developed under the leadership of the NESDB. This BMN approach is aimed at: integration of health into overall social development, stimulation of community participation, resource allocation and self-reliance, and stimulation of intersectoral coordination, through technical advisory groups of health, community development, agriculture workers and local teachers.

The Team believes that USAID should clearly understand what is meant by the PHC and BMN approaches, how they have evolved, the degree of commitment the RTG has for them, and the responsibility that the RTG has placed on the VHV as the vehicle upon which the PHC, and to a lesser extent, the BMN efforts ride.

3. Problems/Constraints

The performance of VHVs has been periodically evaluated and found to be unsatisfactory as a result of unrealistic expectations of the number of services they will perform on a voluntary basis, inappropriate and inadequate training for the number of subjects they are required to master, and inadequate support and supervision from the tambol health personnel. More specifically, the problems identified include:

At the Village Level

- Social preparation of communities is inadequate for communities to understand PHC. As a consequence, village level PHC activities are not planned and managed by the existing village organization but are planned by the central level.
- PHC activities at the village level are still carried out separately from overall developmental efforts, lacking intersectoral and intrasectoral coordination with development activities of other government sectors.
- Although the production of volunteers and trainers has been moderately successful in meeting targetted numbers, the effectiveness of the health volunteers is less than expected, as they tend to provide only the curative care activities demanded by the villagers.

- Recommended methods and criteria for selection of VHVs are not being followed in most cases.
- The incentives given to the health volunteers are inadequate to motivate many to continue their PHC work.
- Supervision and support by the tambol health personnel is inadequate because of inadequate financial provision, and training in supervision.
- The number of village drug cooperatives is markedly below targets as a result of poor preparation of the VHVs and communities.

Problems at the district and provincial levels are generic to many programs and will be discussed in Chapter VII.

At the MOPH level

- The National PHC Committee is not functioning effectively in terms of policy formulation, evaluation and intersectoral coordination of concerned sectors and organizations.
- Orientation of high level officials of health and related sectors towards PHC is inadequate because the PHC Office is short of staff and educational materials.
- Effective monitoring and evaluation of the PHC Project is lacking due to technical constraints.
- The management of logistics and health supplies is poor as a result of administrative and budgetary constraints.

4. Donor Assistance

UNICEF and WHO are currently the principal donors supporting the PHC program. UNICEF has budgetted US \$4.95 million for the period 1982 to 1986 to support: 1) PHC training for 80,000 VHCs, 6,000 urban VHVs, 10,000 primary school teachers and 3,000 multisectoral workers, 2) refresher training for 3,000 VHCs and 3,000 VHVs, 3) printing expenses for 276 VHV self-learning kits and 50,000 performance guidelines, and 4) purchase of 46,000 VHV kits, 9,000 radios and 10 pick-up trucks.^{1/} WHO will provide support for: 1) re-orientation of health and other sectoral personnel to PHC, 2) continuing education training for VHVs, 3) subsidies to revolving funds, and 4) research on appropriate communication process models for engendering village involvement in the planning, implementation and support of PHC activities.^{2/}

Recently Japan added their support to PHC through provision of funds for the construction of the ASEAN Training Center for Primary Health Care (ATC/PHC) at Mahidol University and to PHC regional training centers. It is envisioned that the ATC/PHC will support health personnel in ASEAN countries to: 1) develop, test and promote PHC training and service models, 2) engage in

the development of appropriate PHC technology, and 3) carry out research related to: food and nutrition, health education, safe water supply, sanitation, immunizations, diagnosis and treatment of simple medical problems and injuries, essential drugs, family planning and MCH, occupational health and policy and management issues.^{3/}

5. Recommendations

To avoid confusion of the PHC approach and the PHC project, the MOPH should reformulate documentation on PHC in such a way that it gives an overall picture of the PHC approach and of the role of the PHC project within a system oriented towards PHC.

The MOPH should strengthen the National PHC Advisory Committee and PHC committees of the Provinces.

The MOPH should allocate additional budgetary resources to the Office of PHC for additional personnel, office equipment and IEC materials on PHC. USAID might provide technical assistance to help determine what additional allocation is required.

The MOPH should develop an effective monitoring and evaluation system so that the Office of PHC, as well as each province, is able to effectively manage PHC activities and solve problems as they arise through existing resources or/and requesting additional support from other relevant sources. Training in program management for PHC is needed.

Health volunteer training with respect to key PHC inventions, as well as community participation and intersectoral coordination, requires review and modification. Continuing education for health volunteers and health staff at tambol and distric level in PHC should be included in this review. USAID could provide technical and financial support to develop training strategies to be applied in the pre-service and in-service training of volunteers and other health personnel at all levels. Additional support should go through the Office of PHC with collaboration from ATC/PHC and other educational institutions within and outside the country.

Strengthening of supervision and support to health volunteers by the tambol health staff is greatly needed. This could be accomplished by strengthening training in supervision and increased provision of MOPH budget for travelling expenses and incentives to health staff.

B. Nutrition Programs

1. Description of the Problem

Studies carried out in Bangkok and provincial hospitals indicate that 8 to 15 percent of babies born weigh under 2,500 grams, and about 2 to 3 percent weigh under 2,000 grams. Over half of all reported neonatal deaths were among low birth weight babies. Studies in other countries have shown that infant mortality in children with birth weights of between 2,000 and 2,500 grams is three times the rate of normal (over 2,500 grams) children, and that the mortality of infants with birth weights below 2,000 grams was over four times that of normal infants.^{4/}

Repeated surveys have consistently confirmed that Protein Energy Malnutrition (PEM) in infants and pre-school children is a serious problem in Thailand, and one which has not significantly changed over the past decade. Nutrition survey ^{5/} have found 50 percent of the under-five population to be undernourished, with 12 to 15 percent falling in the more serious second and third degree categories. A 1980 survey found 59.5 percent of pre-school children to be malnourished in the Northeast, as compared with 53.6 percent in the Northern and 51.6 percent in the Southern regions. Other nutritional disorders, such as iron deficiency anemia, goitre and vitamin A deficiency are also widespread.

The disease cycle of malnutrition-infection-malnutrition is well documented. For undernourished children, episodes of diarrhea, measles, or upper respiratory infection (URI) become more serious problems, with enhanced risk of complications and mortality. At the same time, diarrhea, URI or measles may send a marginally normal child into a malnourished category. Consequently, the high level of PEM is a serious problem in itself, as well as acting as a major contributing factor in childhood mortality and morbidity.

There are three factors most strongly associated with malnutrition: low household incomes, inappropriate dietary/feeding behaviors and high levels of parasitic infection. Each of these are discussed in more detail below.

A 1982 study found that income constraints limited the average nutritional intake of sampled households. Low family intake was found to be one of the main causes of malnutrition in children. A 1973 study concluded that a family with an income less than 1,000 baht per month was at risk of malnutrition, as this level of income was not adequate to meet minimal nutrition requirements for an average family. Sixty-four percent of the total households in Thailand fell under this income level in 1973.^{6/}

Several factors are likely to affect poor households' ability to acquire sufficient food in the future. First, the supply of land which can be newly put under cultivation is limited. Thus, increases in agricultural production are limited by the extent to which more intensive application of labor and other factors can increase production. Demand for agricultural goods will increase as a function of increasing population size, and of demands for earnings from agricultural exports to provide foreign exchange for fuel and

other industrial imports. Thus, without price controls, market prices for agricultural goods will increase, making it more difficult for poor households to purchase food, and more attractive to sell rather than consume their output.

Inappropriate dietary/feeding behaviors result from women's preference for easy deliveries, and the early weaning of children born to urban women who work. In a 1973 survey, 61% of women reported not increasing food intake during pregnancy (and 9 percent reported restricting food intake) in order to have small infants and thereby reduce the risk of a painful or complicated delivery.^{7/} Urban mothers who work substitute infant formulas, sweetened, condensed milk and other foods for breastmilk. A 1979 study of infants in Bangkok hospitals found a significantly higher frequency of diarrhea in bottlefed than breastfed infants.^{8/} Another non-optimal feeding practice is the introduction of Thai infants to solid foods (usually rice and pre-masticated banana) in the early months of life. These foods are difficult for infants to digest, are low in protein, and may lower infant's appetite for breastmilk, thus reducing suckling frequency, and hence mother's milk production. Further the solid foods are more likely to be contaminated and thus lead to diarrhea.^{9/}

2. MOPH Interventions

The Fourth Plan (1977-1981) was the first 5-year plan to officially address the problem of malnutrition in Thailand. A Food and Nutrition Committee was formed to consider the malnutrition problem, with representation of the Ministries of Agriculture and Cooperatives, Education, Health and Interior. The following interventions were selected for implementation: provision of food supplements to children (from 6 to 60 months years old) in low income families, construction of Child Nutrition Centers (CNCs), provision of nutrition education to mothers through mobile units, promotion of breast feeding, production and distribution of iodized salt, and training of health and nutrition personnel.^{10/}

However, several of these interventions were found to be ineffective. For example, most of children admitted to CNC's were not malnourished nor were from poor families. Further, the children attending the CNC's were between 3 to 6 years of age, already past the critical age group when malnutrition is prevalent. The provision of supplementary food at the CNCs was irregular and only met 30 percent of the total requirements. Moreover, there was duplication of effort due to the lack of a single, responsible agency for overall coordinating and monitoring.

Other shortcomings in the RTG's nutritional programs observed during the Fourth Plan include: 1) lack community awareness regarding nutritional problems, 2) the public health care system only served approximately 20 percent of the population and concentrated on primarily curative services and thus was not the most effective vehicle for providing nutrition assistance, 3) the four sectors (i.e. agriculture, community development, education and health) concerned with nutritional matters did not co-ordinate their efforts, and d) there was no person in villages, tambols, districts and provinces who was responsible for nutrition activities.

In the Fifth National Food and Nutrition Plan, new nutrition program strategies were developed based on the self-reliance principle of Primary Health Care. Nutrition interventions are to be targetted to pregnant and lactating mothers and infant and pre-school children with special emphasis on those with second or third degree malnutrition. School age children are also a group of concern. Specific aspects of the new strategy are as follows.

Nutritional Surveillance. VHCs and VHV's are trained to weigh infants and pre-school children by using a simple beam scale. A growth chart based on Thai standards is issued to illustrate the different degrees of malnutrition. Thus, the VHC, VHV, or the villagers themselves, should be able to record and interpret the nutritional status of the children in the village and recognize those that are malnourished.

Promotion of Breastfeeding. The promotion of breastfeeding has been effectively carried out and more than 80 percent of rural mothers now breastfeed their babies beyond one year of age. More effort must still be made to educate urban mothers about the benefits of breastfeeding, and to all mothers regarding their own nutritional requirements during lactation and the problems associated with early substitution of rice/bananas for breastmilk in the feeding of their babies.

Local Supplementary Food Production and Distribution. In the past, the RTG made efforts to develop, produce, and distribute protein-rich foods to alleviate protein malnutrition. These food mixtures were high in protein but relatively low in fat content. Furthermore, these foods were centrally produced in Bangkok, and due to logistical problems were usually unavailable to low income groups in rural areas.

During the current Fifth Plan, several supplementary food mixtures have been developed by the Institute of Nutrition, Mahidol University (INMU). These mixtures are low cost, high protein and high energy supplementary foods which can be grown and processed at the village level. Nutrition revolving funds are being created for the purpose of supporting the production costs of the supplemental foods (see Appendix VI for description of the nutrition revolving funds.). As of August 1983, 1,668 villages had started producing supplemental foods. Sixty-three percent of these are in the Northeast and 57 percent had started revolving funds to maintain production efforts (see Table 5.1).

VHV's and VHCs, under the village committee, are responsible for the problem identification, nutrition education, supplementary food production and revolving fund activities described above.

TABLE 5.1
 INSTITUTION OF LOCAL SUPPLEMENTARY FOOD PRODUCTION
 AND NUTRITION REVOLVING FUNDS
 AUGUST, 1983

Region	No. of Villages			
	Suppl. Food Production		Nutrition Funds	
	Existing	In Preparation	Existing	In Preparation
Northeast	1,057	-	488	-
North	300	-	270	-
Central	150	2	80	-
South	161	1	120	2
Total	1,668	3	958	2

Source: Valgasevi, A. (September 1983) Personal communication.

3. Problem and Constraints

Several problems with the present nutrition program were communicated to the assessment team and are given below.

Overall, Thailand's nutrition programs seem to emphasize the identification and treatment of malnourished children, rather than the prevention of malnutrition. None of the five sub-committees of the National Committee on Food and Nutrition (MCH, Food Technology, Research and Training, Communications and Education, and Food and Nutrition Planning) are given the task of examining agricultural production, food availability and prices.

At the service delivery level, weighing, revolving fund and education activities rely on the willingness of volunteers to obtain scales from the tambol health center, organize and conduct the weighing sessions, administer revolving fund activities and distribute the food supplements. The volunteers' work is not always co-ordinated with that of agricultural extension and home economic workers. The number of supervisory and administrative personnel at the provincial and district level focusing on nutritional problems and programs is limited.

With respect to weighing activities, often the name, age and weight of children weighed by VHVs are inaccurate. Weighing activities are carried out irregularly because scales must be picked up at tambol health centers and are not available in villages.

With respect to the locally-produced supplemental foods, the texture and taste of the foods are not always acceptable to children between one to two years of age. The amount of supplemental food distributed to second and third degree malnourished children is insufficient to alter the child's nutritional status, and is often substituted rather than added to the foods in the child's diet, or is consumed by adults. The production of supplemental foods is irregular (e.g. during the farming season there is not time for food processing). The shelf life of the supplement is too short to allow for storage to distribute during the farming season.

Institution of the nutrition revolving funds is behind schedule (i.e. only 1,668 had been started as of August 1983, in comparison to the 8,000 targetted to have been completed by the end of 1983). Many are decapitalizing, possibly as a consequence of primarily deriving their revenues from sale of the food to families with malnourished children.

Finally, nutrition educational programs are based primarily on the distribution of printed materials. Although 90 percent of Thai households have radios, there are only two fifteen minute nutrition education spots per week. Further, education alone may not be sufficient to alter women's preference for smaller infants to ease deliveries, or for early weaning to allow them to return to work.

4. Donor Assistance

AID is currently supporting village-level nutrition activities (e.g. nutrition education, weighing and growth charts, supplemental food production and distribution) as part of the Extended Rural Primary Health Care Expansion Project. UNICEF is also a major donor in the nutrition area with plans to provide US \$3.2 million from 1982 to 1986 for the provision of materials (i.e. 25,000 scales, 6 million growth charts, seeds and other agricultural implements for 8,000 villages, audio-visual aids, and vehicles) and grant assistance to train 3,000 multisectoral officials and to develop IEC materials. Australia, IDRC, New Zealand and WHO are providing smaller grants for improvements in supplementary food production and processing.

5. Recommendations

USAID's Office of Population, Health and Nutrition should work with the USAID Office of Agriculture to develop an intersectoral food and nutrition strategy. The two offices should encourage the Food and Nutrition Committee to develop policies and program interventions oriented towards the prevention of malnutrition (e.g. increased food production, improved distribution, improved education on appropriate feeding practices). Technical or financial support might be required to insure these policy and program recommendations are incorporated into Thailand's planning and budgeting process. Information on the subsidization of rice distribution, price controls on other food stuffs, the development of "fair price shops" and government discount brands of food^{11/} should be updated, especially evaluation of these government programs vis a vis improvements in nutritional status and targetting of these programs to the urban and rural poor at risk of malnutrition. Use of AID's Nutrition IQC might be utilized for such a review.

Technical assistance should be provided to assist in the development of educational inputs regarding: 1) nutrition during pregnancy, 2) proper breastfeeding and weaning practices, 3) supplementary food production and use, 4) basic family nutrition and 5) early identification of poor growth patterns and malnutrition. Special attention should be given to developing educational messages that are effective in altering the bases for traditional beliefs and practices. Financial assistance might be provided for the purchase of radio and television spots and the printing of booklets and posters. Technical assistance could be provided to assist the MOPH in identifying private sector for profit firms which would contribute for radio and TV time as a public service, and non-profit groups which might raise private funds for educational efforts.

Financial assistance should be provided to increase the supply of weighing scales at the village level. These inputs might be given as incentives to villages that have over 70 percent of households purchasing shares in drug or nutrition co-operatives.

Finally, AID might provide technical and financial assistance for the following areas of research: 1) identification of methods to create awareness of nutritional needs, 2) improvement of the acceptability and shelf life of food supplements, 3) determination of ways to integrate an intersectoral nutrition program into the overall village development process, 4) development of methods to increase nutritional and overall food production, 5) development of a cheap weaning food for middle income groups and for urban areas unable to produce their own foods, 6) determination of the distribution patterns of food within the household itself, 7) determination of the extent, severity and determinants of low birth weight in rural areas of Thailand, and 8) to follow up PRICOR research findings about the nutrition revolving funds.

C. National Control of Diarrheal Disease Program

1. Description of Problem

Diarrheal diseases appear to be the leading cause of morbidity in Thailand. Various estimates of the frequency of diarrhea among children under five suggest an average of 1 to 2 episodes per child per year, or a total of about 6,000,000 to 12,000,000 episodes nationwide.^{12/} The suggested overall mortality rate from diarrhea is 0.5 percent and about 2 percent in hospitalized cases.^{13/} However, recent WHO reports suggest that the mortality rate from diarrhea has recently fallen to under 5 deaths per 1,000 children and that the number of severely dehydrated cases presenting to hospitals has declined as well.^{14/}

Factors associated with mortality from cases of diarrhea would include traditional practices in some areas to withhold food and water, and malnutrition. About 56 percent of deaths in hospitalized cases of children with diarrhea were in children who were malnourished.^{15/} Factors associated with diarrheal morbidity include use of contaminated water supplies or food, and poor infant and child hygiene. Levels of intestinal parasitism are generally quite high with 80 to 85 percent of the population bearing at least one parasite (often several different ones).

2. MOPE Interventions

Certainly key interventions to reduce the incidence of diarrhea and the prevalence of parasitic diseases are water supply and sanitation systems. Since many government agencies are involved in water supply and sanitation efforts, in addition to the Environmental Health, Rural Water Supply and Sanitation divisions of the MOPH, the RTG's water supply and sanitation programs are discussed separately in Chapter VI.

The MOPH program primarily responsible for diarrheal disease control activities is the National Control of Diarrheal Disease Program (NCDDP). At the ministerial level, the NCDDP is managed by the Communicable Disease Control (CDC) department and by the provincial and district health officers at those levels. The three main objectives of the NCDDP are: 1) to reduce mortality from acute diarrheal diseases as well as diarrhea-related malnutrition (especially in children under 5 years of age) by means of oral rehydration therapy (ORT), 2) to reduce morbidity from acute diarrheal diseases in children under 2 years of age by promotion of maternal and child health care practices, and 3) to conduct operational research in order to develop improved tools and strategies.

The first two objectives are accomplished through training of health personnel in the benefits and use of ORT and through distribution of ORS through health centers, village drug cooperatives and VHV's. Provincial chiefs of the health promotion section who are responsible for MCH and nutritional programs have also received NCDDP training. These provincial chiefs in turn train and supervise MCH workers (nurses and midwives).

Routine surveillance is done entirely by existing health facilities down to the tambol level. Stool samples, water and foods suspected as sources of infection are collected by health workers and sent to provincial health laboratories to identify the enteric pathogens. With the supervision and coordination of provincial staff, teams of 3 to 4 local health officers are sent into the reported epidemic areas to provide control measures.^{16/}

Oral rehydration salts (ORS) packets are purchased from the GPO by the CDC department and distributed to all health facilities (except provincial hospitals which produce them on their own) and to village health volunteers, for free distribution or sale in the drug cooperatives (4.5 baht per 750 ml. packet). In 1982, 1.85 million packets of ORS were supplied to the NCDDP (77 percent of the total ORS produced by the GPO). This amount equalled 98 percent of the total amount of the NCDDP's projected ORS requirement for 1982 (assuming 30 percent coverage of all children under five with one episode per child requiring ORS). Several private sector firms also produce and widely distribute ORS packets which sell for 6 baht per 200 ml. packet.^{17/}

Although the NCDDP did not reach its coverage target for children with access to ORT, the increase from 12 percent coverage in 1981 to 30 percent in 1982 suggests that NCDDP targets may be met in the next few years (See Table 5.2).

TABLE 5.2
 TARGETS AND ACHIEVEMENTS OF NCDDP
 1981-1982

Program Target	Fiscal Year			
	1981		1982	
	Target	Achievement	Target	Achievement
1. Operation Target				
- Access of ORS for Children under 5 year of age.	40%	12%	50%	30%
- ORS usage rate in diarrheal children under 5 year of age.	20%	12%	30%	20%
2. Problem reduction target (in children under 5)				
- Mortality reduction	13%	8%*	20%	13%*
- Reduction of hospital attendance.	20%	12%*	30%*	25%*

*By estimation.

NCDDP activities proposed for 1984 to 1985 include: 1) supporting provinces in training provincial medical staff, peripheral health workers and VHVs on the management of diarrhea by ORT, 2) strengthening health education activities through radio, television network and schools, 3) conducting research on the use of homemade fluid in the treatment of early cases of diarrhea, 4) studying the role of the commercial sector in the production and distribution of ORS, and 5) improving the reporting system for the NCDDP program. 18/

3. Problems/Constraints

The following problems/constraints with respect to the NCDDP were identified by a recent WHO review.

- Training of MOPH staff in CDD, at the provincial, health center and village levels, has been much slower than targetted levels.
- Existing health facilities do not receive enough ORS from the GPO, and coverage varies in different areas.
- Information needed for planning and evaluation, especially concerning diarrhea mortality, and morbidity, and the use of ORS, is not available through existing reporting systems.
- Linkage and coordination between the NCDDP and the RTG units responsible for the Water Decade program and the Nutrition and MCH programs are weak.
- Overuse of anti-diarrheal drugs and antibiotics in the treatment of diarrhea.
- Only a very limited supply of CDD-oriented educational leaflets and posters have been distributed.
- Insufficient information has been collected to determine if continued breastfeeding and other feeding during diarrheal episodes is related to a decreased incidence of diarrhea-induced malnutrition.
- Commercially produced ORS comes in many different sizes, possibly leading to inappropriate mixing if mothers do not read instructions.

4. Donor Assistance

WHO and UNICEF have been supporting the NCDDP since its inception in 1979. WHO is supporting NCDDP training activities in clinical case and program management, ORS production at the GPO in cottage-scale industries and provincial hospitals, survey and operations research, and assistance to strengthen laboratory diagnosis of enteric pathogens. WHO's direct support for the prevention and control of diarrheal disease will equal US \$58,000 for 1984 and 1985. However additional support equalling at least US\$ 25,000 will be available to the CDD through other WHO projects. UNICEF provided funding of US \$75,000 in 1982 for purchase of ORS production equipment for the GPO. This support is in addition to the RTG's budgetary support of 12.78 million baht (US \$555,652) for 1984 and 1985.

5. Recommendations

It appears that the current diarrheal disease control efforts of the MOPH with WHO and UNICEF assistance and of the private sector in distributing ORS, have already achieved significant reductions in infant and child mortality from diarrhea. Given WHO's leadership role in the NCDDP, USAID might support the NCDDP by providing ad hoc technical assistance via the centrally-funded PRITECH project. Technical assistance could be provided at the request of NCDDP staff for unanticipated program needs which require a quick response, or for the program needs identified below.

USAID could provide assistance to strengthen the NCDDP's educational outreach programs, especially utilizing mass media to improve the hygienic and diarrhea treatment behaviors of households. USAID should consult with NCDDP staff and WHO to determine how training of peripheral health workers could be increased and made more effective. In addition to promoting use of ORT through household preparation of home solution, USAID should determine if the GPO will require additional ORS mixing and packaging equipment in order to produce the ORS required by the program. Finally USAID, through the PRITECH or WASH projects, could support a study of the current and future role of private sector pharmaceutical companies in production and distribution of ORS, propagation of ORT messages through advertising, and the standardization of ORS to 2 (or at most 3) sizes of packets.

D. Expanded Program on Immunization

1. Description of the Problem

Although neonatal tetanus accounts for only 17 deaths per 100,000 live births in official MOPH statistics, results from the National Childhood Mortality Survey indicated that about 20 percent of all infant deaths (or 500 per 100,000 live births) were a result of neonatal tetanus. Thus, less than 10 percent of all neonatal tetanus mortality is reported to the public health service.^{19/} The high level of neonatal tetanus is associated with the generally low immunization coverage of pregnant women (less than 30 percent coverage with a two-dose antenatal regimen of tetanus toxoid).^{20/} The MOPH stated that about 40 percent of all tetanus reported is neonatal tetanus.

The National Childhood Mortality Survey suggests that over 8 percent of mortality in children under two years of age resulted from complications of measles.^{21/} MOPH staff from the Expanded Program on Immunization (EPI) stated that the reporting of measles has greatly increased in recent years, and that substantial proportions of pneumonia, upper respiratory infection cases and diarrhea (to a lesser extent) in pre-school children are complications of measles. Most officials stated that overall mortality for measles is generally low, but among infants under age one, the disease is more serious.

Diphtheria, pertussis and non-neonatal tetanus appear to be problems of decreasing importance, probably linked to the relatively increasing coverage of infants and under-fives with the trivalent DPT immunization. However, although coverage is increasing, the rate of completion for all three DPT doses is less than 25 percent.

World Health Organization (WHO) surveys have indicated that although 85 percent of poliomyelitis cases are in children under age five, the rate per 100,000 has decreased from 2.7 in 1979 to 0.6 in 1982. Even though levels of completion of the three doses of oral polio vaccine (OPV) are low (less than 40 percent coverage), they have progressively increased in the past several years.^{22/}

While specific data about tuberculosis in mothers and under-fives were not readily available, CDC Department officials indicated that tuberculous meningitis, a very severe disease in children, has become relatively rare, and that tuberculosis (TB) infection in pre-school children is diminishing. Specifically, only 13.9 percent of the 418 cases of tuberculous meningitis reported in 1980 occurred in the under-five population. This finding corresponds to very high levels of coverage (75 percent) of infants with BCG vaccination.^{23/24}

2. MOPH Interventions

The Expanded Program on Immunization (EPI) was begun as a nationwide program in 1977. Budgetary allocations to the EPI program equalled US \$1.1 million in 1981 and US \$1.5 million in 1982 for vaccines, cold chain equipment, per diem and travel allowances, training and research. At the central level, the Department of Communicable Disease Control (CDC) is responsible for EPI planning, supply of all vaccine and equipment, monitoring, supervision, coordination, training, operational research and evaluation. However, the actual immunization work is carried out by the provincial and municipal health services as an integral part of their regular MCH tasks. Provincial/District hospitals with reliable refrigeration, offer immunization clinics on specified days of the week. Peripheral clinics, lacking reliable refrigeration, offer clinics on a certain day each month. Mobile clinics are conducted every 4 to 6 months for more remote communities.

The CDC Department makes annual estimates of nationwide vaccine requirements. Vaccines are ordered at least 6 months in advance with specified schedules of delivery. DPT and tetanus toxoid (TT) vaccines are manufactured domestically by the GPO. The GPO was to have begun producing dT vaccines by 1983 and it purchases BCG vaccines from a private firm. Viral vaccines (OPV and Measles) are obtained from UNICEF, or are imported by the GPO. Data available to the team suggest that the EPI program may experience shortages in vaccine supply if plans to start, or step up, the GPO's production of DPT, dT AND TT vaccines are not achieved and/or if UNICEF only provides 1 million doses annually of each vaccine.

From the GPO central cold rooms and freezer, vaccines are shipped to provincial health offices. From the provincial health office, vaccines are distributed to District Health Offices where they are stored in electric

refrigerators until the health center/midwifery clinics' scheduled immunization sessions. Vaccines are transported to these facilities by vaccine carriers capable of maintaining required temperatures for up to two days. Frequent testing of biological activity, carried out by the CDC department, suggest that the cold chain is maintained.

Motivation and education of pregnant women and new mothers as to the value of immunizations is the responsibility of the nurse-midwives, VHVs and VHCs. For the VHVs, this responsibility has been delineated in training and operational handbooks as: 1) information dissemination, 2) regular compilation of names of eligible children and pregnant women, 3) making appointments for immunization clinics, 4) helping to organize and supervise outreach sessions, 5) follow-up of drop-outs, and 6) assisting in surveillance of EPI target diseases.

3. Problems/Constraints

Although vaccine coverage of the under-one population with BCG and first doses of DPT and OPV is over 50 percent, drop-out rates for the second and third doses of DPT and OPV are high. Coverage of pregnant women is low, only 41 percent of women who sought antenatal care (20 to 30 percent of pregnant women) received the first dose of TT and only 30 percent received the second (see Table 5.3).

A WHO survey found that of mothers of children who were not fully immunized, 52 percent lacked information about the importance of doing so, 44 percent were prevented by some "obstacle" (undefined) and 4 percent were indifferent. The same study identified health personnel as the source of information about immunizations for 84 to 87 percent of mothers, VHVs and VHCs as sources for 0 to 4 percent, neighbors and relatives for 0 to 6 percent and mass media for 2 to 5 percent.^{25/} Thus, VHVs and VHCs are not contacting nor motivating mothers to get immunizations. The "obstacles" women faced in obtaining complete immunizations possibly include time conflicts (e.g. other child care, agriculture activities) or travel logistics. However, these obstacles might be surmounted if mothers and families were aware of the necessity to complete the immunization series in order to gain immunization benefits.

The provision of immunizations at the periphery is limited by the lack of reliable refrigeration in health centers. Funds to provide electric refrigerators to facilities newly connected to an electrical grid are limited. Although vaccine supply is generally reliable, importation of OPV has often lagged behind schedule, and stocks of vaccine at the center are limited by the lack of adequate cold room storage space. Although tests of vaccine potency have indicated that the vaccines meet WHO standards, the testing is performed by the firm (GPO) which manufactures the vaccine.

TABLE 5.3
 REPORTED NUMBER VACCINATIONS AND POPULATION COVERAGE
 1981-1982

Target Population Vaccine	1981		1982		Fifth Plan Target
	No. Vaccinated	Coverage (%)	No. Vaccinated	Coverage (%)	
<u>Children under one year</u>					
(N = 1,175,086)					70%
BCG	825,413	71	859,932	73	
DPT I	766,585	66	802,907	68	
DPT II	603,275	52	632,556	53	
DPT III	-	-	249,792	21	
OPV I	414,341	36	680,706	58	
OPV II	301,080	26	504,512	43	
OPV III	200,380	19	397,279	34	
<u>Pregnant women</u>					
(N = 1,196,899)					60-70%
TT I	441,957	37	493,795	41*	
TT II	311,413	26	360,298	30*	
<u>1st year primary school children</u>					
(N=1,534,355)					80%
dT I	-	-	768,819	50	
dT II	-	-	426,625	28	
dT booster	-	-	260,736	17	
BCG	-	-	272,082	17	

* Percent of those seen for antenatal care, not of all pregnant women who are at risk.

Although epidemiological surveillance of the immunizable diseases is to be done routinely by health workers, the data recorded at peripheral units is not accurate, nor analyzed at that level and incorporated into future program efforts. Records of participation in immunization sessions are often incomplete and are not used to develop follow-up strategies. These weaknesses may result from the lack of EPI training for tambol level workers. Although the EPI program has trained provincial and district health personnel, by and large these personnel have not then trained health center personnel because of insufficient resources and administrative support. There is no protocol for issues to be covered during supervisory visits, and thus systematic problem identification and resolution is not undertaken.

Finally, personnel and office space for EPI efforts at the central (and doubtless at the more peripheral levels), is limited.

4. Donor Assistance

UNICEF and WHO are the principal donors supporting the EPI program. If UNICEF's requested budget for 1982 to 1986 is fully funded, then UNICEF will be providing 100 percent of the MOPH's request to UNICEF for vaccines and refrigerators. UNICEF will also provide funding for surveillance surveys, printing of field worker's manuals, and EPI training for provincial and district health personnel. Equipment for DPT production (US \$500,000) appears on UNICEF's noting budget.^{26/} WHO support to EPI will primarily consist of technical support in training, epidemiological surveys, and evaluation and assessment activities.

5. Recommendations

Although UNICEF and WHO are already supporting the EPI program, there are additional "gaps" where AID assistance might lead to measurable increases in immunization coverage and completion.

Clearly educational inputs are needed to develop the population's awareness of the benefits of complete immunization. Given the current minor role being played by VHVs and VHCs in informing mothers about immunization benefits and services, development of mass media approaches to provide information about the value of immunizations and to announce dates for immunization clinics should be supported. In addition, AID should collaborate with the EPI program and WHO to develop guidelines for provincial and district personnel regarding training and supervision of tambol level workers,^{27/} taking into account the time and budgetary constraints facing provincial and district personnel and the need to combine such EPI directed efforts with NCDDP and other tasks related to the operations of the peripheral health system. Support should be given to determine the personnel and budgetary requirements of implementing the birth certificate and reminder card system more widely in urban and rural areas. The centrally-funded PRITECH projects might be utilized to provide the above assistance to the EPI program.

USAID should determine with EPI and UNICEF staff the likelihood that UNICEF's provision of vaccines will adequately supplement those produced by the GPO to supply EPI program needs. USAID should also inquire if funds for the DPT production equipment on UNICEF's noting budget have been identified. Inquiry should be made as to estimates of future requirements for electric refrigerators and temperature monitoring equipment for existing refrigerators and cold boxes.^{28/} Analysis should be undertaken of the recurrent budgetary requirements of the EPI program for the next 5 to 10 years and the government and donors' roles in supporting these recurrent costs.

CHAPTER V NOTES

1. UNICEF (January 1982) Thailand, Recommendation for UNICEF Assistance 1982-1986, Submission to the 1982 UNICEF Executive Board, Bangkok, UNICEF.
2. SEARO/WHO (—) Detailed Country Programme and Budget for 1984-1985, Thailand, New Delhi: SEARO.
3. Moto, T. (September 1983) Personal communication, JICA.
4. Ministry of Public Health (April 1983) Current MCH Situation, p. 5.
5. Nutrition suveys in Thailand have used the Gomez classification for PEM (weight for age) on the basis of body weight as a percentage of mean reference body weight (Harvard standard).
6. It would be desirable to have updated information about the incidence of poverty and its correlation with malnutrition. Although it would be possible to inflate the poverty level to 1983 values, income data is not available after 1975/6. Baker, J. (1983) Determinants of Malnutrition in Thailand, Bangkok: Population Council (draft), pp. 13-14.
7. World Bank (February 1983) Thailand, Review of the Health Sector, Washington, D.C.: World Bank (draft), p. 25.
8. Baker, J. (1983) op.cit., p. 11.
9. Ibid., p. 7.
10. Ibid., p. 17.
11. Stewart, M. Dworkin, D. and Rogers, B.L. (1980) Review of Health, Population, Nutrition Activities in Thailand, Washington, D.C.: APHA, pp. 25-27.
12. World Bank (February 1983) op. cit., p. 9.
13. Country Review of Control of Diarrheal Disease Program, 1981-1982, Thailand, (mimeo), p. 2.
14. World Health Organization (21-31 March 1983) Diarrheal Disease Control Programme, Comprehensive Programme Review Report, Bangkok: WHO, p. 29.
15. Country Review, op.cit., p. 6.
16. Ramaboot, S. (—) NCDDP- Thailand, Bangkok: CDC/MOPH, p. 2.
17. World Health Organization (21-31 March 1983), op. cit., p. 127.
18. Ramaboot, S. (—), op. cit., p. 6.
19. World Bank (February 1983) op. cit., p. 8.

20. Ramaboot, S. (September 1983) op. cit.; p. 13.
21. World Health Organization (November 1982) Review of EPI and Selected PHC Activities in Thailand, Summary Report of the Joint Government/WHO/UNICEF Review Team, 23 August - 10 September 1982, New Delhi: SEARO, (SEA/EPI/38), p. 22.
22. Ibid., p. 27.
23. Ramaboot, S. (September 1983) op. cit., p. 13.
24. TB is a major source of morbidity and mortality Thailand, and one of the leading ten causes for hospitalization. The National Tuberculosis Survey (1977) indicated that the prevalence of infection in the population is about 1.4 percent, and that mortality is 0.6 deaths per 1,000 population. The survey indicated a substantial decrease in morbidity and mortality over the past 15 years (i.e. TB attributable deaths went from a rate of 15.8 per 100,000 population in 1977 to 11.8 in 1981), but levels of infection remain high, and TB remains an important problem in the working population.
25. World Health Organization (November 1982) op. cit., pp. 31, 33.
26. UNICEF (January 1982) op. cit., pp. 270-284.
27. Training should include lessons demonstrations and practice in: record keeping, vaccine administration, identification, enrollment and follow-up of target children and women, and cold chain equipment use and maintenance.
28. Although it is recognized that EPI's first priority should go to providing BCG, DPT, OPV, and measles vaccines to under-fives, and TT to women of childbearing age, the EPI program in the future may wish to consider adding DPT and OPV booster immunizations at school exit and TT immunization of men at the time of draft registration and physical examination.

APPENDIX XI

LIST OF CONTACTS (THAILAND)

BANKS AND FINANCIAL INSTITUTIONS

Mr. Narong Sri Sa-an
Director and Senior Executive Vice President
Thai Farmers Bank

Ms. Oropin Uthaithan
Assistant to Managing Director
Branch Network
Thai Farmers Bank

Mr. Paiboon Chuaysongkram
Business Development Officer
Bangkok Bank

Mr. Khan Prachuabmoh
Chief of Division
International Banking Department
Thai Danu Bank

Mr. Dennis Mellor
Manager for Thailand
The Chartered Bank

Mr. Worawit Simachai
Lending Officer
Bangkok Bank

GOVERNMENT OFFICES

Mr. Pornchai Tulyadhan
Director
Project Development Division
Bureau of Investment

Ms. Vanee Lertdumrikarn
Director
Information and Promotion Division
Bureau of Investment

Mr. Chira Panupong
Deputy Secretary General
Bureau of Investment

Mr. Visut
2nd Vice President
Research and Planning
Investment Finance Corporation of Thailand

Dr. Suwan Wangsarojana
Deputy Permanent Secretary
Ministry of Public Health

Dr. Somsak Varakamin
Deputy Director General
Department of Health
Ministry of Public Health

Dr. Wichit Maturosapas
Department of Communicable Disease Control
Ministry of Public Health

Mr. Tree
New Drug Approval
Food and Drug Administration

Dr. Prasert Saisithi
Director
Institute of Food Research &
Product Development
Kasetsart University

Dr. Santasiri Sornami
Faculty of Tropical Medicine
Mahidol University

HEALTH FIRMS

Mr. Chonchin Chantaraskul
Pharmaceutical Plant Manager
Siam Manufacturers Limited
and
President
Thai Pharmaceutical Manufacturers Association

Mr. Vinun Chaipanich
Marketing Manager
Pharmaceutical Traders Co., Ltd.

Mr. Tirapongse Pangsrivongse
President
B.L. Hua Pharmaceutical Co.

Mr. Kian Tengamnuay
President
Greater Pharma, Co., Ltd.

Mr. Vichai Plaphongphanich
Managing Partner
Royal Industries (Thailand) Co., Ltd.

Mr. Manu Jotikabhukkana
Managing Director
Juventa Co., Ltd.

Mr. D.M. Kennedy
Chairman
White Group of Companies
Bangkok

Mr. J.M. Worsch
Director Administrative Services
Regional Office
R.P. Scherer
Melbourne, Australia

INTERNATIONAL AGENCIES

Mr. Terrance Tiffany
Population, Health and Nutrition
USAID, Bangkok

Mr. Jeff Evans
Private Enterprise
USAID, Bangkok

Mr. Robert Halligan
Mission Director
USAID, Bangkok

Mr. Narintr Tima
Program Specialist (Health)
USAID, Bangkok

Mr. Mit Pramuanvorachat
Commercial Specialist
USAID, Bangkok

Mr. J. Lee Barnes
Commercial Attache
American Embassy, Bangkok

Dr. Henry Wilde
Regional Medical Director
American Embassy, Bangkok

Mr. Richard Kalina
USAID Project Officer
Malaria Division
Ministry of Public Health

Dr. Barnett Baron
Senior Representative
The Population Council
Bangkok

Ms. Mary McGovern
Regional Director
Family Planning International Assistance
Bangkok

Dr. Peter Weldon
Vice Chairman
Social Research Group
Bangkok

Mr. Pairojana Sornjitti
Director
Population and Community Development Association
Bangkok

Mr. M.A. Piracha
Senior Officer
UNICEF
Bangkok

Mr. Dera Sumitra
Program Planning Officer
UNICEF
Bangkok

Mr. Alexander H. Good
Deputy Assistant Secretary
International Economic Policy
U.S. Department of Commerce
Washington, D.C.